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The California Surveyor

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The California Surveyor

is 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 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 the Land Surveyors and their work."

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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 submitted on floppy diskette medium is encouraged. For compatibility, disks should be 5.25 or 3.5 inch, MSDOS (IBM compatible) format. We can accept ASCII text files or word processor files from the following programs: WordPerfect, Microsoft Word.

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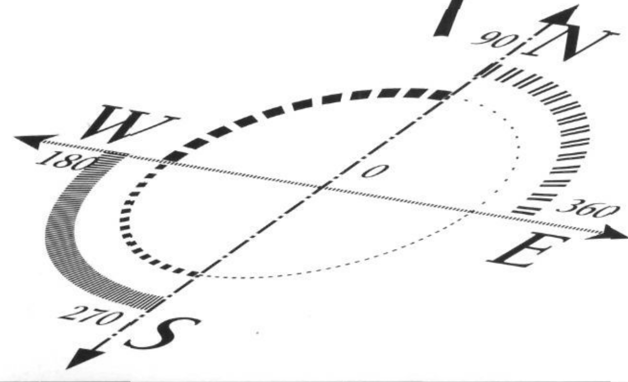

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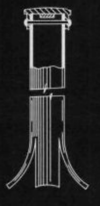

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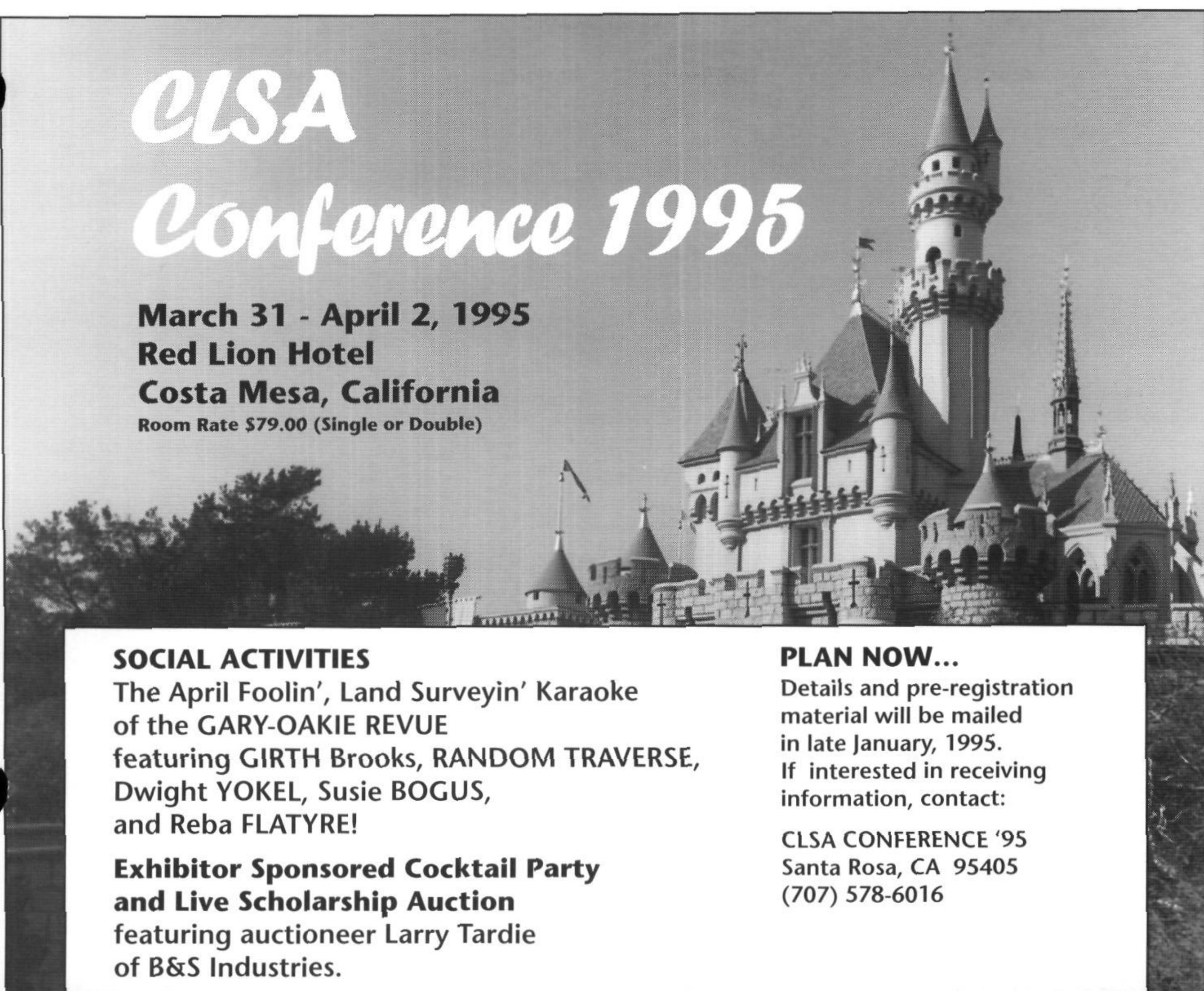

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FROM THE EDITOR

I Must Be Getting Old, I Can't Even Remember Who Won the '94 World Series

By Tom Mastin, PLS

1990 SOMETHING. It's back to work now. The holidays are over, the scales are all moaning, the gifts are all lost or forgotten, and we don't have to put up the good cheer front anymore. Yes, it is the beginning of a new year. Of course that means that this column either has to cover the highlights of the old year or resolutions for the new.

This is one of the fun benefits of being editor, not writing this column (What! are you nuts!), it is a fact, that I am writing this in mid-1994. Okay, not mid-1994 but third Quarter 1994. Okay, okay, I am writing this as Santa is saddling up, but it is still before 1995 exists.

I don't know if I am alone here, but don't you just yearn for the '60s or the '80s all over again. (I can't believe anyone would yearn for the '70s). Yes that's always the choice, youth or money. When we are doing okay with money, we yearn for our youth (i.e. Harleys), which means lately we have been yearning for the '80s. It is hard to believe that we are halfway through this decade. It seems like only five years ago, we were talking about how the '90s would be the decade of something. I can't remember what it was going to be the decade of, but I am sure that the decade of confusion wasn't it.

Listing the highlights of 1994 wouldn't be appropriate for a family magazine, therefore, I am going to list my resolutions for 1995. I know what you are thinking, "Oh no, not one of those moronic resolution lists again." Hey, you've read this magazine before, great! First, when the staff and I compiled this list, researched the issues, and edited the information, we realized that there was one best way to present it to the readers. That way is in a non-sequential order, with no thought given to the context and rambling soliloquies following each item.

I resolve, at least once, in 1995, to honestly explain what I am doing in the middle of the street to a civilian. I have those pat answers I tend to give all those that walk by and ask what I am doing. "Hey what are you taking a picture of," answers range, depending on the age of the individual, from "that fat guy over there with the javelin" to "we're doing the swimsuit issue of *Surveyors Illustrated*," to something about your wife and the milkman. I have been using the standard "A toxic waste storage site," when asked "What are you building here?" but, locally I have found "State water" works much better.

I resolve, at least once, in 1995, to go into one of those new coffee houses. I think this is a new phenomena in California. That is, of course, except for San Francisco, which has had coffee houses since the 1950s. If you're not from Seattle, you are probably as confused about this situation as I am. Where I live, all the old gas stations and banks are being replaced by coffee houses. As best as I can tell, some market researcher has decided that when Californians go out for food, they want expensive coffee and two pizzas. I have always tended to shy away from places that appear to cater to people, who have nothing else better to do all day than sitting around reading the newspaper and chatting about world politics, and all that on constant doses of odd contortions of coffee and other French foods. I am not one to drink coffee so much as for the experience as for the caffeine. This experience has gone from the coffee houses into the real houses. My sister has some huge contraption that hisses and spews out some strange brew. A cup of coffee is never just black, and takes half the day to make. I would never say anything to hurt my sister, but she isn't a surveyor, so I'm safe, besides I know where they hide their old coffee maker.

I resolve, at least once, in 1995, to be productive using a computer. This is not coming from one, who has a phobia of computers, only a phobia of upgrades. There are times, when I feel like all I am doing is servicing these machines, built to make our life easier. When there was a big fear of losing jobs in the 1960s to computers, the response was that these computers would create new jobs. Apparently, these new jobs consisted of taking these very systematic, logical, and orderly components and messing with them so that they worked together as well as the Federal government. Of course, the other job that came from computers was that of writing and talking the praises of new software and hardware, often long before the product is ever ready, so that dupes, like me, will feel inadequate until I have the newest of the new. I really need a CD-ROM and speakers on my computer. There is nothing I

like better than a computer telling me I have made a mistake in stereo. In surveying and engineering, we were the first to benefit from the use of computers. As is the case with many things, someone finally realized we weren't where the money was, and so the computers moved on without us. This is fine, as we have really benefitted from the improvements made in the computer field. However, I can still sit down in front of a computer for a half a day, and produce a good 20 minutes of worthwhile work. If that isn't progress, I don't know what is. This has nothing to do with the so called "Information Superhighway," which is the ultimate in producing the least amount of results with most amount of effort.

I resolve, in 1995, to start S.A.I.D. This is, of course, Surveyors Against Idiots and Dummies. This is not an attack on any individuals, but an attack on marketing of self education. If you are looking for a self-help book in any area, what you will find prominently displayed in any bookstore is the *Complete Idiots Guide for...* or *...for Dummies*. This started with repairing VW bugs, which in all honesty, seems appropriate. It has gone from there to every thing else. I realize that one of the founding ideals of the United States is the right to be self depreciating, but I don't think we need to send this message to the world or worse, our children. I don't know about you, but if I was looking to hire an expert in computers, I am not so sure I would want to see *The Complete Idiot's Guide to PCs* on his or her bookshelf. I see this trend heading towards the professional arena. I have heard that the "Law College for dummies" is almost complete. I have this fear of some day seeing a surveyor up on the witness chair being verified as an expert. Attorney: "So, Mr. Surveyor, I see you have 20 year of experience in surveying, but what is your educational background?" Surveyor: "Well, I have completed the Complete Idiot Courses in Mathematics, Physics, Electronics, Geophysics, and Surveying from C.I.U." Attorney: "So, that makes you?" Surveyor: "That's right, the Complete Idiot." I don't know, the whole idea just bugs me.

I resolve, at least once, in 1995, to write a serious editorial on the problems plaguing the surveying profession in California. Well maybe not in 1995, but as soon as I lose all that weight, I have been resolving to lose, since shortly after high school. It is safe to say, and, in fact, some readers have even said it, I am not in the top 2 billion when it comes to great orators. As I have pointed out time and again, my job as editor is to make sure they have a name to fill in under editor on page one.

Speaking of *The California Surveyor*, I am also resolved to have some good photos of the Conference, this year. To that end, I am looking for someone that is good with a camera and willing to take pictures at the conference. You can contact me on the Internet, if I knew how to get on the Internet, or you can call me at 805.544.6434. I've tried taking pictures, but they usually end up being close-ups of my thumb.

I resolve to never do a new year's column again. It's sort of like my weight resolution. ⊕

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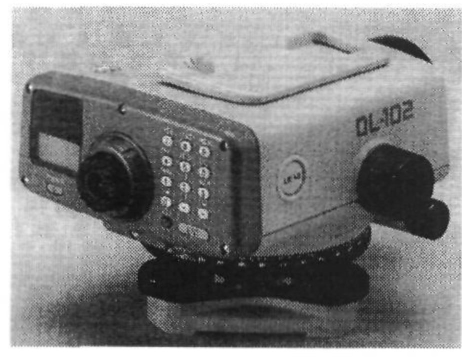

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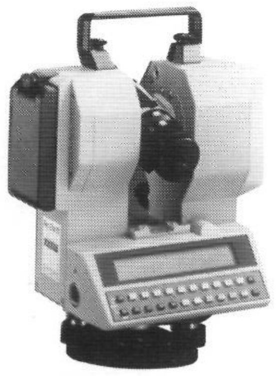

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LETTERS TO THE READERS

CALIFORNIA STATE UNIVERSITY — FRESNO

34th Annual Surveying Engineering Conference
January 26, 27 & 28, 1995

The students of the Surveying Engineering Program will be hosting the 34th Annual Surveying Engineering conference on January 26, 27, 28, 1995. Each of the thirty-four annual conferences have been organized and presented by current Surveying Engineering students of CSUF. Past conferences have been very successful. Our goal is to bring professionals together to share their expertise and experiences.

The intent of the conference has always been to present professionals with informative and current advancements in the surveying field and to also benefit future surveying professionals in the field of surveying.

For more information contact:

Lillian Lee-Seay
California State University
Dept. of Surveying Engineering
Fresno, CA 93740-0094
(209) 447-5132 or
FAX (209) 278-6759
E-mail:
Lillians@zimmer.csufresno.edu

Thank you for your time and effort. Your contribution will help the success of the 34th Annual Surveying Engineering Conference.

Lillian Lee-Seay; Conference Chairperson

UPDATE ON HPGN DENSIFICATION

In 1991, Caltrans, in cooperation with the National Geodetic Survey (NGS) and others, established the California High Precision Geodetic Network (CA-HPGN). The CA-HPGN consists of 238 Order B stations placed along transportation corridors throughout California at intervals of about 45 to 65 kilometers. After the establishment of the CA-HPGN, Caltrans directed efforts to densify the network, in cooperation with local entities, to provide a monument spacing that would facilitate the use of "high-production" GPS survey procedures. The CA-HPGN densification (HPGN-D) stations are being established in conformance with the Federal Geodetic Control Subcommittee standards and specifications for Group C, First-Order GPS surveys, at an average interval of 20 kilometers along transportation corridors. The actual spacing varies from 10 to 30 kilometers. The densification surveys are accomplished by the Caltrans district survey offices in cooperation with local entities. The scope and scheduling of densification surveys are dependent on current control needs, district resources available, and assistance provided by others. In most cases, processing of the densification survey data has been accomplished by the Caltrans district survey units and the Caltrans headquarters GPS unit. Data is submitted to the NGS in "bluebook" format for inclusion in the National Geodetic Reference System (NGRS).

CLSA 1995 Annual Conference
March 30 – April 2, 1995
Red Lion Hotel
Costa Mesa, CA

STATUS — HPGN DENSIFICATION

DISTRICT/PROJECT	LOCATION	STATIONS	SUBMITTED
District 1 Mendocino County	Mendocino County	31	8/94
District 3 Phase 1	Vic. Oroville, Yuba City / Marysville and Auburn	18	8/94
District 4 Santa Clara County North Bay East Bay	Santa Clara County Marin, Sonoma and Napa Alameda and Countra Costa	23 28 19	8/94 6/94 8/94
District 5 District Wide	Monterey, Santa Barbara, San Benito and San Luis Obispo Counties	85	3/94
District 7 District wide*	Los Angeles and Ventura Counties	67	7/94
District 9 South Conway Redrock Olancha	Vic. Conway Summit Vic. Redrock Vic. Olancha	2 2 2	8/94 8/94 8/94
District 10 Rio Vista	Vic. Rio Vista	3	6/94
District 12 District wide	Orange County	16	7/94

***Prior to the Northridge Earthquake.**

To date, 296 HPGN-D stations have been processed and submitted to the NGS. This includes county-wide surveys performed and submitted to Caltrans by Orange County and Santa Clara County. Densification surveys involving the establishment of 200 additional HPGN-D stations are in various stages of completion. Attached is a summary of the location and submittal date for the HPGN-D surveys completed.

It is anticipated that the HPGN-D station data will be included in the NGRS data base within one to three months after submittal to the NGS. The HPGN-D stations are not included in the data base that was to be released on a CD-ROM by the NGS, however, future releases should include HPGN-D station data.

If you have any questions, please contact Dick Davis at (916) 227-7328.

Lawrence R. Fenske, Chief, Geometronics Branch, Dept of Transportation

IN MEMORY

Leroy Martin, PLS 2578, RCE 7996, died November 9, 1994, at the age of 73. Lee graduated with a degree in Civil Engineering from the University of California in 1947 after returning from a tour of duty in the Navy during World War II. Mr Martin, was licensed as a Land Surveyor in 1949 and registered as a Civil Engineer the following year. In 1957, he founded AAA Engineering in Hayward, which he owned and operated until his retirement in 1989.

Lee was an early supporter and member of CLSA. In 1990, the Board of Directors recognized his contributions to the land surveying profession and granted him a Life Membership.

Lee was a true professional, expending considerable effort and energy towards the improvement of the land surveying profession in California. Lee Martin, PLS 2578, rest in peace. ⊕

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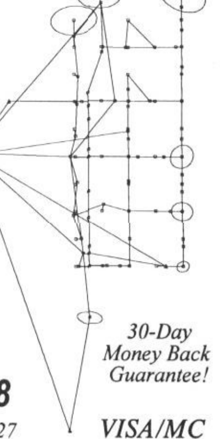

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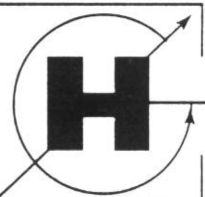

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An Underwriter's View of the Surveying Profession

By Alicia K. Igram

FOR OVER THIRTY YEARS, underwriters at Victor O. Schinnerer & Company, Inc., have been examining the risks encountered by surveyors in providing their professional services. Schinnerer, the underwriting manager for the world's largest professional liability insurance program for surveyors, the CNA/Schinnerer Land Surveyors Professional Liability Insurance Program, has a unique perspective based on the claims experience of the thousands of surveyors insured in the program. As an independent broker of insurance services for surveyors and other design professionals, I recently explored the exposure of surveyors with representatives from Schinnerer, and I offer the following observations:

Theories of Liability — Tort and Contract Law

In your activities as a professional, you are subject to the two broad categories of civil law: tort and contract. Both grew out of the English system of common law and have developed over the years to have special meanings to professionals. Professional surveyors must be sensitive to the risks inherent in the tort law system and the risks assumed under contract law.

Duty to Meet a Standard of Care

Tort law makes life within society possible. It requires no specific activity but sets a course of action that requires everyone to act in a reasonable manner to prevent harm to others. It is this tort law theory of reasonableness that creates the negligence standard applied to those holding themselves out as design professionals. Negligence on the part of a design professional can result in professional liability.

A professional provides a service, is judged by a negligence standard, acts as an agent rather than a vendor, and is a consultant rather than a contractor. An error or omission for which any professional is responsible may or may not be negligent. Negligence is determined by considering first the duty owed to a party and then judging the action of the professional using as a guide the ordinary skill and competence exercised by members in good standing of the same profession in the community at the time of the event creating the cause of action.

The Insurable Risks of Surveyors — The Common Standard of Negligence

Professional liability is determined by examining whether or not the professional acted in a negligent manner. Surveyors should realize that the law does not require professionals to do certain things but to act in certain ways. The surveyor creates a duty to its client based on the contract, and to the client and the public based on laws such as registration statutes, codes, and standards, and on actual conduct. If the surveyor breaches a duty that is, if the surveyor does not carry out its responsibilities in a way similar to its peers the surveyor will be found to be negligent. And if that negligence is the proximate cause of harm or damage, the surveyor can be held liable to correct that damage or harm.

Under a professional negligence standard, these elements must be present for a surveyor to be held liable under a tort law professional negligence standard:

- Was there a duty owed by the surveyor and an expected standard of care?
- Was there a breach of the duty to conform to the standard?
- Was this breach the cause in fact of a foreseeable harm?
- Was there actual damage?

Every professional action you undertake carries with it a risk, but that risk is what you have been educated and trained to deal with. By holding yourself out as a professional, you publicly state that you have specialized knowledge and training and that you will use due care and appropriate skill and judgment on behalf of your client and the public.

Freedom to Assume Risks

While tort law puts life within society on a reasonable basis, contract law makes business operations practicable, Contract law, with the broad autonomy granted the contracting parties to determine the terms of their exchange, grants lawmaking power to those who make contracts. This is the most democratic form, since contracting parties freely determine the terms of their exchange and limit their freedom of action voluntarily by agreeing to perform in the future.

Generally, American law gives autonomy to contracting parties to choose the substantive content of their contracts. Contracts are sometimes classified as negotiated or as contracts of adhesion. A negotiated contract arises when two parties with reasonably equivalent bargaining power enter into negotiations and jointly work out a mutually satisfactory agreement. The adhesion contract involves no or minimal bargaining. The dominant party hands the contract to the weaker party on a take-it-or-leave-it basis.

The common law has made the doctrine of "consideration" the chief vehicle for determining which promises will be enforced by the courts. Early law required benefit, usually in the form of money, to the promisor. Later decisions enforced a promise where the promisor did not receive pecuniary benefit but where the promisee suffered a detriment. The courts examine a transaction to see whether there has been a bargain. If so, usually there is "consideration."

Determining the remedies available for breach of contract is much more difficult than determining whether a valid contract has been made. Although the function of awarding a remedy for contract breach is to compensate the injured party, measuring the losses incurred and gains prevented can be very difficult. The common law has developed conventional formulas that are applied in particular cases to implement the object of basic compensation for a breach of contract.

Other Theories of Liability

The duty of the surveyor to provide professional services in a non-negligent manner and the obligations assumed during contract negotiations represent the most significant professional liability risks to a surveyor. There are, however, other theories of recovery that may be pursued by clients or third parties.

Warranties

Express warranty provisions often find their way into contracts or are established by certifications or other representations to the client or a third party. Warranties, although inappropriate for the services provided by surveyors, are attractive to owners since the breach of a warranty provision is much easier to establish than is negligence in the performance and furnishing of services. Such promises do not require proof of negligence. The elements of a breach of warranty action are simple and involve the following:

- Representation - Was a statement made describing the performance of services or a particular result?
- Falsehood Was the performance or result as stated?
- Reliance Did the party rely on the statement being true?
- Causation Was the false representation the actual cause of harm to the party relying on the statement?
- Damages What damages must be rectified?

Misrepresentation

Misrepresentation cases typically involve surveyors who are found liable to third parties for economic losses notwithstanding the lack of a contractual relationship between the party and the surveyor. As long as a surveyor can reasonably foresee the type of harm and who would be harmed by the surveyor's services, the surveyor may be liable to third parties for misrepresentation.

Risk Management

A prudent, assertive program of risk management allows you to predict the costs and consequences of your practice. It enables you to provide services and protect your investment in your firm. You have professional concerns that affect the delivery of your services within a business context. While there is simply no substitute for quality services, you can effectively manage the many risks you face and minimize your exposure through loss prevention programs.

"Professionalism" means using your education, practical knowledge, capabilities and judgment to respond to unique challenges. You are trained to provide services. Your ability to identify risks, analyze the potential impact and act changes over time. Your ability to measure your exposure and capacity to manage that exposure increases with experience. But you also must have the responsibility and authority to manage your exposure.

The Underwriter's View of Risk

When an underwriter reviews a professional liability insurance application from a surveying firm, the underwriter analyzes the types of services performed by the firm. From an underwriting standpoint each category of services represents a different exposure. The underwriter adjusts the premium based on the level of exposure determined by the service concentrations of the surveying firm.

Generally, from a professional liability underwriter's point of view, services such as construction stakeout and subdivisions represent a higher exposure than boundary and title surveys because both the frequency of claims against surveyors and the severity of losses when the claim has merit are high. Insurers measure how often, historically, insured firms report claims (frequency) and how much each claim ends up costing (severity).

Although each insurance application is analyzed and priced individually, this is the general guideline followed by underwriters.

Surveyors' services can be categorized into three general exposure levels. The groupings, which are based on loss experience, are as follows:

Category 1 — This represents the lowest level of exposure for land surveyors. The claims from services in this category have historically resulted in lower severity, lower frequency or both.

Boundary and Title Surveys
Photogrammetic Surveys
Geodetic or Control Surveys
Mapping or Cartography
Route Surveys for Engineering Projects

Category 2 — Although this represents a higher exposure level for a land surveyor than Category I, from an insurance company's point of view these services do not represent the most hazardous services a surveyor will perform. The claims for these types of services have resulted in, and will potentially result in, somewhat higher severity and frequency.

Subdivisions
Topographic Surveys
Construction Stakeout
Hydrographic Surveys
Site Plans

Category 3 — At this level, the services are considered to be general civil engineering services and have the highest exposure.

Plans or Specifications for Highways
Natural Drainage Systems
Utilities or Buildings

The reason one type of service is considered to be of greater exposure than another is claims experience. Professional liability underwriters traditionally have seen a greater frequency and severity in claims for negligent stakeout than they have for negligent boundary and title surveys.

While only about one out of every five reported claims actually ends up costing the insured firm or the insurance company an amount to rectify damage, each claim involves defense costs both in terms of time and money. Because services such as construction stakeouts can involve large indemnity costs if negligently performed, the combination of high frequency and severity results in higher premiums needed to offset defense costs and indemnity payments.

Boundary surveys, while generating a fairly high frequency of claims, usually do not result in significant payments in defense costs or indemnity payments.

Facing Risk in a Prudent Manner

Surveyors provide their professional services within an increasingly adversarial business context. Understanding the challenges presented by the climate in which services are provided is essential to minimizing risk of loss.

Indemnifications

A surveyor may be asked to commit to an indemnification obligation beyond the normal common law liability. Without any contractual obligation to do so, a surveyor will be held responsible to indemnify an injured party to the extent that harm was caused by the negligence of the surveyor. If forced to accept a contractual provision to indemnify a client for damage or expenses other than those caused by the negligence of the surveyor in performing professional services, the surveyor is assuming a business risk not covered by professional liability insurance.

Express Warranties Creating Uninsured Risks

Professional liability insurance policies provide no coverage for breach of express warranty claims or breach of contract actions based on express warranty or guarantee provisions unless the breach is a direct result of the negligence of the surveyor in performing professional services. Acceptance of a contract containing guarantee language, or consent to an express warranty or guarantee provision in a certification or other third party representation, means that you again may be assuming a business risk far in excess of any insurance coverage.

The Dangers of Certifications

With increasing frequency, surveyors are being requested or required to sign certificate forms that result in additional liability exposure and involve possible uninsurable express warranties and guarantees of conditions beyond the surveyor's knowledge or control.

As a general rule, it is appropriate for surveyors to sign only those certification statements that are accurate, contain appropriate qualifying language, and relate to conditions within the surveyor's knowledge or control. Land surveyors are not responsible for guaranteeing the discovery of all easements or other encumbrances on the property they survey; they are required by the standard of care only to notify the client about items that a reasonable inspection of the property would disclose and to note the existence of conditions that might disclose the existence of an easement or encumbrance.

Since a certification that certain conditions exist is an assurance of such conditions' existence, it would be improper to certify, or declare, that certain conditions exist when the land surveyor cannot assure they exist. Accordingly, a client should not require the surveyor to sign any certification or declaration, no matter by whom requested, that would result in the surveyor certifying the existence of conditions whose existence cannot be known by the surveyor. As a surveyor, however, you can certify those facts of which you are certain and express a professional opinion in a certification or declaration. The key seems to be the facts or professional opinions being stated and how those facts and opinions were determined.

It could be beneficial to have every certification or declaration include language clarifying that "certify" is understood to be an expression of professional opinion by the surveyor based on knowledge, information and belief at the time of the services and that, as such, it constitutes neither a guarantee nor a warranty. However, this is probably not acceptable to most clients. The client should be made aware that such language attempts to preserve, for the client's benefit, the professional liability insurance coverage. Often clients do not understand that surveyors and other professionals are insured against their negligence and not for breach of contract. Thus, by accepting the "professional opinion qualifier," it is highly likely that the certifications would not be considered to be express warranties that would be excluded by the policy.

When a surveyor undertakes to certify that something has been done or not done, or done in a certain way, the client has the right to rely on the professional knowledge and skill of the surveyor in making that certification. Be certain that what you are certifying is consistent with the services you have rendered. Avoid providing a certification that goes beyond the scope of services for which you were retained and avoid making the certification an unqualified statement of fact.

Risk Allocation

Unlike in most states, where provisions used specifically to shift risk or limit liability in a case where a party is being protected against its own negligence are discouraged by the courts, California surveyors are in a position to limit their responsibility for damage caused by their negligence without specifically negotiating such a broad limitation. Forms of limitation of liability used vary. Some of the more typical ones are those that limit the risk to the amount of the compensation, to a specific dollar limit, to the insurance proceeds or to a percentage share of total negligence. Limitation of liability provisions that allocate risk to the client rather than the surveyor can be effective in mitigating the risks faced by the surveyor and its professional liability insurer.

Transfer of Surveyor's Information

It is realistic to expect that information generated by the professional services of the surveyor will be reused; the danger is that a party not understanding the limitations of the information will rely on it in an inappropriate manner. Such detrimental reliance may subject the surveyor to a meritless claim.

At times, surveyors are asked to

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transfer their data. In transferring information to a third party, a surveying firm should require that the third party not only assume full responsibility for the use of the information but also agree to indemnify the surveying firm for any expenses or damages to it resulting from the third party's utilization of the information. A third party, of course, can contract with you to re-establish the information and verify the use of that information. This should be done only with the full knowledge and acceptance of your original client and, if your original client was not the owner, of the owner.

Language that might be incorporated into any agreement to provide a third party with your data probably should include an indemnification provision and a general denial or responsibility for the use of the data.

Appropriate language might be as follows: "The coordinates data provided to (third party) have been prepared for the Owner and are furnished to (third party) for general information only. While this information is believed to be reliable, the surveyor cannot assure the accuracy, and thus is not responsible for the accuracy of any work based on this data. (Third party) is advised to obtain independent verification of the accuracy of the data before applying it for any purpose. Use without independent verification will be at (third party)'s sole risk."

To provide for an indemnification, a transfer agreement might include this language: "(Third party) agrees to waive any claim against surveyor and defend, indemnify and hold surveyor harmless from any claim or liability for injury or loss allegedly arising from the use of surveyor's data. (Third party) further agrees to compensate surveyor for any time spent or expenses incurred by surveyor in defense of any such claim, in accordance with surveyor's prevailing fee schedule and expense reimbursement policy."

Summary

Professional Surveyors face many risks in providing surveying services. A study of claims statistics over the years suggests that the professional liability risks can be lessened. In addition to providing technically sufficient services, surveyors must understand the legal determinants of their risks and the likelihood of claims from specific services. An understanding of the legal treatment of professional services and the ability to explain the role of the surveyor as a professional are essential. Close attention to contract language and concern about the establishment of rights in third parties must be part of the business framework in which services are provided. While professional liability concerns should not dictate the practice management techniques of surveyors, a sensitivity to contractual considerations and claims history can reduce the risk encountered in providing professional services.

Alicia K. Igram is the assistant vice president of the Business Insurance Division of Association Administrators and Consultants, Inc., an Irvine-based independent broker of insurance programs for surveyors and other design professionals. ⊕

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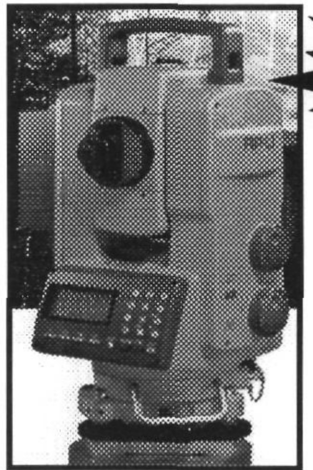

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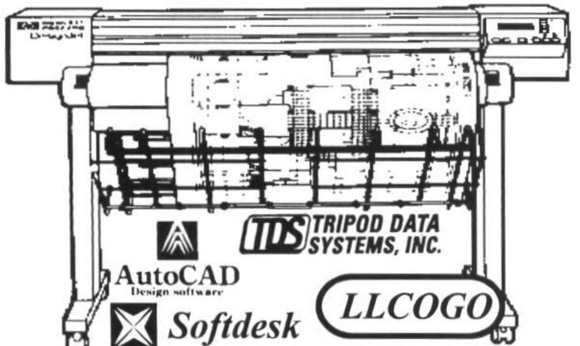

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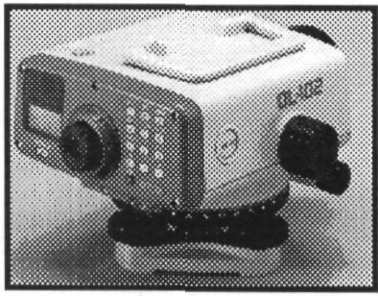

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Summary of Significant 1994 Legislation Related to Land Use

(Effective January 1, 1995 unless otherwise indicated)

Prepared by Daniel J. Curtin, Jr. and Brandt Andersson
Assisted by Stephen L. Kostka on CEQA legislation
and Michael P. Durkee on Map Act legislation

THIS WAS NOT A YEAR FOR major changes to land use legislation. Crime and other high-profile issues pushed less "glamorous" legislation out of the headlines. Nevertheless, a number of important land use bills (and bills on related issues) were enacted into law. This summary describes some of the more important changes in land use law.

A. Legislation Relating to the California Environmental Quality Act (CEQA)

Chapter 1294, Assembly Bill No. 314 (Sher)
Environmental Quality

AB 314 is the broadest of the CEQA bills passed in 1994, but apparently only became law through an oversight by the Governor's staff. As the story goes, the Governor intended to veto the legislation, but a staffer misplaced several veto notices (including AB 314) and missed the deadline for notifying the Legislature. Ironically, it is an urgency statute, and took effect immediately, on October 1, 1994. It has numerous provisions, which make many technical changes to CEQA and few substantive changes.

Public agencies must provide that mitigation measures adopted as conditions of approval are fully enforceable through permit conditions, agreements, or other measures. Pub.Res.Code 21087.

The new law clarifies a previous ambiguity in the statute, but may reduce the usefulness of the master EIR process. The lead agency cannot use a master EIR for a subsequent project if the approval of a project that was not described in the master EIR may affect the adequacy of the environmental review for any subsequent project, unless (1) it finds that no substantial changes in circumstances have occurred or that no new information which could not previously have been known has become available or (2) it certifies a subsequent or supplemental EIR which modifies the master EIR. Pub.Res.Code 21157.6.

AB 314 adds procedures that will speed up CEQA litigation. Any party may request that the court set a briefing schedule and hearing date. As under prior law, a hearing must be requested within 90 days after the case is filed. Now, however, briefing must be completed within 90 days of the request for the hearing, and, if possible, the hearing must take place within 30 days of completion of briefing. Pub.Res.Code 21167.4.

To permit significant environmental effects disclosed in an EIR to occur, the CEQA Guidelines require that a public agency adopt a statement finding that specific benefits outweigh the significant effects on the environment. This requirement for a statement of overriding consideration that describes the economic, legal, social, technological, or other benefits, is now part of the statute. Pub.Res.Code 21081.

Master environmental impact reports may now be prepared for regional transportation plans, congestion management plans, and military base reuse plans. Pub.Res.Code 21157.

Chapter 1230, Senate Bill No. 749 (Thompson)
Environmental Quality

SB 749 is also a broad bill containing some substantive changes to CEQA, but primarily technical revisions. It is also an urgency statute and took effect on September 30, 1994. The more important provisions are described below.

The lead agency is authorized to substitute, in a mitigated negative declaration, a mitigation measure that is equivalent or more effective in mitigating a significant environmental effect for a mitigation measure, identified in the initial study, that the lead agency finds to be "infeasible or otherwise undesirable." Substitution of new mitigation measures does not trigger recirculation of the mitigated negative declaration. Pub.Res.Code 21080.

For CEQA litigation, the minimum materials required for the record of proceedings are listed. They include applications, staff reports, written testimony, transcripts and minutes, notices, evidence and correspondence, the EIR or negative declaration, comments on environmental documentation, documentation of final decisions, and other material. Pub.Res.Code 21167.6.

An affordable housing development is exempt from CEQA if: it is not more than 45 units; it is not more than two acres; it is surrounded by urban uses; it includes legal commitments to maintain the units as low- or low- and moderate-income units; it is consistent with the local general plan and zoning; the site is assessed for hazardous contaminants; and there is no "reasonable possibility" that unusual circumstances would cause significant environmental effects. Pub.Res.Code 21080.14.

SB 749 changes the definition of "Project" to provide that it only applies to "activity which may cause either a direct physical change in the environment, or a reasonably fore-

seeable indirect physical change in the environment." Pub.Res.Code 21065. This essentially codifies judicial interpretation of the definition found in the CEQA Guidelines. The OPR is directed to recommend changes to the guidelines to conform to this definition.

B. Legislation Relating to the Subdivision Map Act

Chapter 458, Assembly Bill No. 1414 (Gotch)

Subdivision Map Act; Property Boundaries

AB 1414 is a technical bill, which adds express references to code sections related to the Subdivision Map Act ("Map Act") into the Map Act itself, and makes other changes to make the Map Act more usable. The changes include:

The exclusion for leases of agricultural land is moved from the definition of "subdivision" to the list of exclusions. Gov't Code 66412, 66424.

The meaning of a conveyance of land to a governmental agency to include a fee interest, easement, or license is made explicit. Gov't Code 66426.5, 66428.

The State zoning regulations provide that permits issued in conjunction with a tentative map expire with the map, unless an earlier expiration appears on the face of the permit. The Map Act now expressly references that provision, as well as the requirements for issuing building permits, also part of the planning and zoning law. Gov't Code 65863.9, 66961, 66452.12.

The authority to letter, as well as number, parcels on final or parcel maps, is made explicit, to conform with common practice. Gov't Code 66434, 66445.

Chapter 655, Assembly Bill No. 3353 (Gotch)

Subdivision Map Act; Maps; Certificates of Compliance

Like AB 1414, AB 3353 provides more clarification than it does substantive change to the Map Act. AB 3353 clarifies the improvements that can be required of a subdivision of less than five lots.

Although state law generally required only parcel maps for such subdivisions and limited the scope of the conditions of approval and when they were to be satisfied, it also allowed local agencies to require tentative maps for any such subdivisions. AB 3353 makes clear that the timing and scope of limitations for parcel maps apply, even if the local agency processes them as tentative maps. Gov't Code 66411.1, 66428.

This new law also identifies the information to be included on certificates of compliance, including a statement that it relates only to issues of compliance with the Map Act and development of the parcel may require permits or other approvals. It also permits more than one certificate application to be filed concurrently and for one certificate to apply to multiple parcels. Gov't Code 66499.35.

Chapter 977, Senate Bill No. 243 (Lewis)

Subdivision Map Act

Under existing law, a local agency cannot require a routine waiver of statutory time limits for accepting or processing tentative, final, or parcel maps. SB 243 provides that no advisory agency or legislative body may disapprove an application for such maps in order to comply with the time limits specified in the Map Act, unless there are reasons for disapproval other than the failure to timely act. Gov't Code 66451.4, 66452-66463.5. It also sets a 60-day time limit for local agency action on exceptions from the Map Act and parcel map waivers. Gov't Code 66451.4, 66451.7.

The time available before expiration of the tentative map does not include any period during a development moratorium. SB 243 extends the definition of a "development moratorium" to include actions by the agency with power to approve a tentative map, which prevent, prohibit, or delay approvals. Gov't Code 66463.5.

Chapter 1075, Senate Bill No. 869 (Bergeson)

Subdivisions; Approval Process

SB 869 makes consistent the time limits to be followed (1) when a city or county refers a tentative map out to another jurisdiction for comment and (2) when such other jurisdictions must respond. Under the new law, notice must be given to such local agencies within five days of a determination that a tentative map application is complete, and they each then have fifteen days to submit recommendations. The local agency with jurisdiction must consider those recommendations before acting. Gov't Code 66453, 66455, 66455.1, 66455.7.

D. Legislation Relating to Planning and Zoning Law

Chapter 580, Assembly Bill No. 3198 (Hauser)

Zoning: Residential Second Units

AB 3198 states the legislature's finding that second units are a valuable form of housing in California. It restricts local agencies from enacting arbitrary or burdensome ordinances that would unreasonably restrict second units. However, it authorizes the local agency to establish minimum and maximum unit sizes, as long as it permits at least an efficiency unit to be built, and an attached unit does not exceed 30% of the area of the first unit. More than one parking space per bedroom cannot be required unless the requirements are directly related to second unit use and consistent with neighborhood standards. Gov't Code 65852.2, 65852.150.

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Chapter 300, Senate Bill No. 517 (Bergeson)
Mediation and Resolution of Land Use Disputes

SB 517 encourages mediation of land use disputes, and establishes a process for such mediation. However, the process is strictly voluntary. The court may invite the parties to consider mediation, and ask them to identify a mutually acceptable mediator, either the council of government, the Office of Permit Assistance, or any other qualified mediator. If they cannot agree on a mediator within 30 days, the lawsuit proceeds. This process may be applied to an approval or denial of a development project, any CEQA decision, failure to meet agency time limits, various fee determinations, general or specific plan adequacy, sphere of influence or urban service area validity, and redevelopment plans. Gov't Code 66030-66037.

E. Legislation Relating to the Williamson Act
Chapter 1251, Assembly Bill No. 2663 (Sher)
Land Use

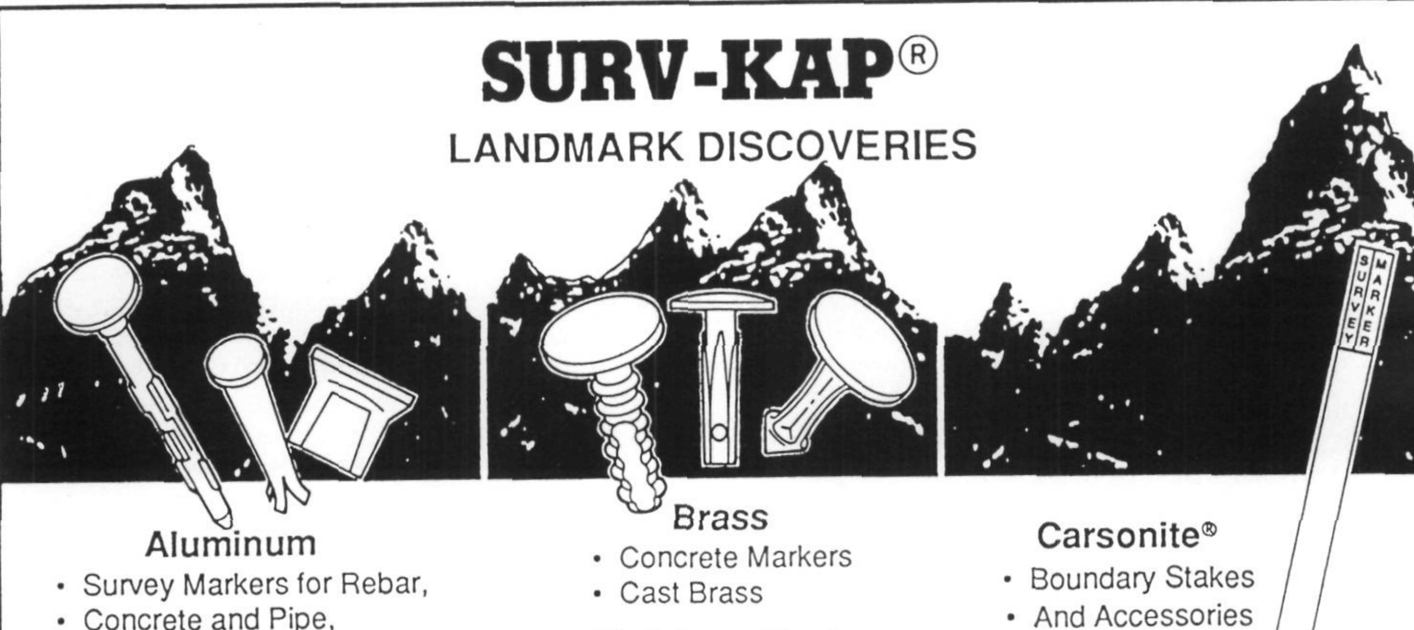
The Williamson Act authorizes conditional permitting of compatible uses on contract lands. AB 2663 provides princi*ples of compatibility to guide such per*mitting. Compatible uses (1) will not compromise long-term agricultural productivity, (2) will not impair current or foreseeable agricultural operations, and (3) will not cause removal of adjacent contracted land from agricultural or open-space use. On nonprime agricultural land, conditional uses which do not follow the principles are authorized if findings are made relating to the conditions imposed, considerations of the agency, and purpose of agricultural preservation. Residential subdivisions are not a compatible use. Gov't Code 51238.

F. Legislation Relating to Local Government Assessments
Chapter 897, Assembly Bill No. 3754 (Caldera)
Parking and Business Improvement Areas

*AB 3754 enacts the Property and Busi*ness Improvement District Law of 1994, as an alternative funding mechanism for business district improvements to the Parking and Business Improvement Area Law of 1989, to supplement previously enacted provisions of law that authorize cities to levy assessments within a business improvement area.

It authorizes a benefit assessment on *property owners rather than business* owners within the improvement area, subsequent to a petition by property owners who would pay more than 50% of the assessment. Assessments may be levied for no more than five years.

It authorizes assessments for improvements and activities, including parking facilities, street and sidewalk improvements, lighting and heating facilities, parks, landscaping, security equipment, structure removal or rehabilitation, promotion of public events and tourism, furnishing public music, marketing and economic development, and supplemental municipal services. Gov't Code 36600-36651. ⊕



Multiple Remainder Parcels Question

OPINION from the OFFICE OF THE ATTORNEY GENERAL State of California

By Daniel E. Lungren, Attorney General

THE HONORABLE TRICE HARVEY, Member of the California State Senate, has requested an opinion on the following question:

Under the provisions of the Subdivision Map Act, may two or more remainder parcels be designated when a developer subdivides portions of more than one parcel for the first phase of a housing development and intends later to subdivide the undeveloped portions for subsequent phases of the development?

Conclusion

Under the provisions of the Subdivision Map Act, two or more remainder parcels may not be designated when a developer subdivides portions of more than one parcel for the first phase of a housing development and intends later to subdivide the undeveloped portions for subsequent phases of the development.

Analysis

We are advised that a developer plans to subdivide portions of contiguous parcels of land for the first phase of a housing development. The portions that are not part of the first phase will be subdivided later for the subsequent phases. For example, a developer purchases 3 contiguous parcels of 20 acres each. He plans as a first phase to subdivide five acres of each parcel into half-acre lots. We are asked whether, in creating the 30 lots, he may designate the remaining 15 acres of each original parcel as a "remainder parcel" on the maps of the subdivision. We conclude that he may not so designate these undeveloped areas.

The Subdivision Map Act (Gov. Code 66410-66499.37; "Act") vests local governments with control over the design (66418) and improvement (66419) of land subdivisions in California (66411; see *Morehart v. County of Santa Barbara* (1994) 7 Cal.4th 725, 748; *City of West Hollywood v. Beverly Towers, Inc.* (1991) 52 Cal.3d 1184, 1189). A subdivider must obtain approval of and record a subdivision map with the governing local entity before the resulting parcels may be sold, leased, or financed. A "parcel map" is required when creating four or fewer parcels (66428), while a "tentative map" and "final map" (66426) are required when creating five or more parcels under the Act's general provisions. (See *John Taft Corp. v. Advisory Agency* (1984) 161 Cal.App.3d 749, 755; *South Central Coastal Regional Comm. v. Charles A. Pratt Construction Co.* (1982) 128 Cal.App.3d 830, 845; *Simac Design, Inc. v. Alciati* (1989) 92 Cal.App.3d 146, 157-159.)

The main purposes of the Act are to facilitate orderly community development and to protect the public from fraud and exploitation. (*South Central Coast Regional Comm. v. Charles R. Pratt Construction Co., supra*, 128 Cal.App.3d at 844-845; Benny v. City of Alameda (1980) 105 Cal.App.3d 1006, 1011; *Simac Design, Inc. v. Celciati, supra*, 92 Cal.App.3d at 157-158; *Pratt v. Adams* (1964) 229 Cal.App.2d 602, 605-606.)

As conditions of approving a subdivision map, a city or county may require the subdivider to install or pay fees for the installation of such improvements as streets, sewers, parks, and school facilities made necessary by development of the subdivision. (See, e.g., 66419-66421, 66462-66485; *South Central Coast Regional Comm. v. Charles A. Pratt Construction Co., supra*, 128 Cal.App.3d at 845, 74 Ops.Cal.Atty.Gen. 89, 91 (1991); 73 Ops.Cal.Atty.Gen. 152, 153 (1990); 66 Ops.Cal.Atty.Gen. 120, 121-123 (1983); 62 Ops.Cal.Atty.Gen. 246, 247 (1979).)

A "subdivision" for purposes of the Act's Requirements is defined in section 66624 as follows:

"'Subdivision' means the division, by any subdivider, of any unit or units of improved or unimproved land, or any portion thereof, shown on the latest equalized county assessment roll as a unit or as contiguous units, for the purpose of sale, lease or financing, whether immediate or future except for leases of agricultural land for agricultural purposes. Property shall be considered as contiguous units, even if it is separated by roads, streets, utility easement or railroad rights-of-way. . . ."

The statute requiring our interpretation is section 66424.6 defining "remainder parcels." Section 66424.6 provides:

"(a) When a subdivision, as defined in Section 66424, is of a portion of any unit or units of improved or unimproved land, the subdivider may designate as a remainder that portion which is not divided for the purpose of sale, lease, or financing. Alternatively, the subdivider may omit entirely that portion of any unit of improved or unimproved land which is not divided for the purpose of sale, lease, or financing. If the subdivider elects to designate a remainder, the following requirements shall apply:

"(1) The designated remainder shall not be counted as a parcel for the purpose of determining whether a parcel or final map is required.

"(2) For a designated remainder parcel described in this subdivision, the fulfillment of construction requirements for improvements, including the payment of fees associated with any deferred improvements, shall not be required until a permit or other grant of approval for development of the remainder parcel is issued by the local agency or, where provided by local ordinance, until the construction of the improvements, including the payment of fees associated with any deferred improvements, is required pursuant to an agreement between the subdivider and the local agency. In the absence of that agreement, a local agency may require fulfillment of the construction requirements including the payment of fees associated with any deferred improvements, within a reasonable time following approval of the final map and prior to the issuance of a permit or other

grant of approval for the development of a remainder parcel upon a finding by the local agency that fulfillment of the construction requirements is necessary for reasons of:

"(A) The public health and safety; or

"(B) The required construction is a necessary prerequisite to the orderly development of the surrounding area.

"(b) If the subdivider elects to omit all or a portion of any *unit of improved or unimproved land which is not divided* for the purpose of sale, lease, or financing, the omitted portion shall not be counted as a parcel for purposes of determining whether a parcel or final map is required, and the fulfillment of construction requirements of offsite improvements, including the payment of fees associated with any deferred improvements, shall not be required until a permit or other grant of approval for development is issued on the omitted parcel, except where allowed pursuant to paragraph (2) of subdivision (a).

"(c) The provisions of subdivisions (a) and (b) providing for deferral of the payment of fees associated with any deferred improvements shall not apply if the designated remainder or omitted parcel is included within the boundaries of a benefit assessment district or community facilities district.

"(d) A designated remainder or any omitted parcel may subsequently be sold without any further requirement of the filing of a parcel map or final map, but the local agency may require a certificate of compliance or conditional certificate of compliance."

Under the general terms of section 66424.6, a "remainder parcel" is not to be counted when determining whether a parcel or final map is to be recorded, and improvements or fees assessed for improvements on the remainder parcel are to be delayed until the remainder parcel is developed. A remainder parcel may either be designated as such on the appropriate subdivision map or omitted entirely from the map. (See 66434 [final map], 66445 [parcel map].) In the example given at the outset, the issue would be whether the undeveloped 15 acres of each of the initial parcels may be designated as remainder parcels or omitted entirely from the requisite tentative and final maps or whether they must be considered as part of the first phase of the development.

In analyzing the language of section 66424.6, we are guided by several well recognized rules of statutory construction. "In construing a statute a court's objective is to ascertain and effectuate the underlying legislative intent." (*Moore v. California State Board of Accountancy* (1992) 2 Cal.4th 999, 1012.) "In determining intent, we look first to the language of the statute, giving effect to its plain meaning.'" (Kimmel v. Goland (1990) 51 Cal.3d 202, 208.) Both the legislative history of the statute and the wider historical circumstances of its enactment may be considered in ascertaining the legislative intent. (*California Mfrs. Association v. Public Utilities Commission* (1979) 24 Cal.3d 836, 844.) "The words of the statute must be construed in context, keeping in mind the statutory purpose, and statutes or statutory sections relating to the same subject must be harmonized, both internally and with each other, to the extent possible. [Citations.]" (*Dyna-Med, Inc. v. Fair Employment & Housing Com.* (1987) 43 Cal.3d 1379, 1387.) "When uncertainty arises in a question of statutory interpretation, consideration must be given to the consequences that will flow from a particular interpretation. [Citation.] In this regard, it is presumed the Legislature intended reasonable results consistent with its expressed purpose, not absurd consequences. [Citation.]" (*Harris v. Capital Growth Investors XIV* (1991) 52 Cal.3d 1142, 1165-1166.)

Applying these rules, we find that the division of a portion of a unit of land for the purpose of sale, lease, or financing is a "subdivision." (66424.) The portion of the unit that remains, *i.e., the area which is not intended to be sold, leased, or financed* is the "remainder." While a remainder parcel is thus created by a division of property for the purpose of sale, lease, or financing, the subdivider has no such purpose for the remainder parcel itself. Such construction of section 66424.6, in light of section 66424, is reasonable and effectuates the Legislature's apparent intent.

In the example given above, the proposed subdivision is of portions of three contiguous units of land. Each unit will have a portion that is not intended to be part of the initial phase of the development. We believe that under the language of section 66424.6, a subdivider may designate as a remainder only one portion of a unit; the terms "a remainder" and "that portion" are both singular. However, there is nothing in the statute to suggest that a portion of only one of several units may be so designated. Specifically, the words "a portion of any unit or units" are neither literally nor logically limited either to a portion of any one unit or to a single portion which encompasses territory of more than one unit.

Even without regard to the words "or units" contained in section 66424.6, "a portion of any unit" is not inherently constrained. Thus, the second sentence of subdivision (a) of section 66424.6 provides that "....the subdivider may omit

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entirely that portion of any unit" of land which is not intended to be sold. We have previously observed that the use of the indefinite adjective "any" indicates that the application is without restriction or limitation. (71 Ops.Cal.Atty.Gen. 167, 169 (1988); see *Emmolo v. Southern Pacific Company* (1949) 91 Cal.App.2d 87, 92.)

Our reading of section 66424.6 is confirmed by examining the statute's legislative history. The report of the Assembly Committee on Local Government dated April 29, 1991, stated in part with respect to the statute's most recent amendment:

"This bill:

1) Authorizes a subdivider to designate remainder parcels, which cannot be counted in determining whether a parcel map or final map is required. Prohibits the payment of fees related to their improvement. Allows the remaining parcels to be sold, which may be outside the parcel or final map."

Accordingly, more than one remainder parcel may be designated on a subdivision map if more than one unit of land is being subdivided. There may be one remainder for each unit subdivided.

Here, however, the problem is not the number of remainder parcels which may be shown on the map. Rather, it is that the subdivider is a developer creating a "first phase" of a housing development. The developer's intent is that the three undeveloped portions in the example given will be subdivided in subsequent phases for the purpose of sale. We conclude that a remainder may not be designated when the subdivider intends to subdivide it later for the purposes of sale, lease, or financing.

As previously indicated, a "subdivision" is defined as the division of land "for the purpose of sale, lease or financing, whether immediate or *future*..." (66424; emphasis added.) The proposed remainder parcels in our example will be created by the developer for "future" division and sale. They would thus be part of the initial subdivision as that term is defined in section 66424. As stated in the leading text:

"Because a map is not required on conveyance of the remainder parcel, a subdivider may be tempted to use the parcel to avoid tentative and final map requirements. If, however, the subdivider intends to sell, lease, or finance the remainder parcel (either when the other parcels are subdivided or in the future), the remainder parcel should be considered part of the subdivision and would not qualify under Govt C 66424.6" (CEB, supra, 3.3, p. 47.)

We find support for this conclusion in the case of *Pescosolido v. Smith* (1983) 142 Cal.App.3d 964, where a landowner divided his 37-acre parcel into 7 parts, giving 1 part to each of his 6 children and retaining the 7th. No "sale, lease, or financing" was intended by the landowner at the time of the division. Nevertheless, the court ruled that the division was subject to the Act's provisions:

"We conclude that in order to effectuate the purposes of the Subdivision Map Act, the phrase For the purpose of sale, ...whether immediate or future' in the definition provided by Government Code section 66424 must encompass the *ultimate* purpose for which the particular land division is done. In the case of a bona fide gift, if the gift is of a distinct, independently developable and salable parcel, the ultimate purpose — eventual development and sale — is revealed by the form of ownership transferred and the intent of the conveyors, a form selected to maximize the market value and marketability of the land conveyed. The fact that the donor does not himself intend to sell the land which is the subject of the gift does not change the ultimate purpose for creating the gift parcel." (*Id.*, at p. 972.)

In reaching its decision, the *Pescosolido* court relied upon the often cited case of *Pratt v. Adams, supra*, 229 Cal.App..3d 602. In *Pratt*, 12 landowners owned 46,000 acres in undivided interests and obtained a court order partitioning their property into 12 parcels. Even though the division was "approved" in the partition proceedings, it was held that the landowners had "caused" the division and thus were subject to the Act's provisions:

"The Subdivision Map Act and the ordinances passed in conformity with it have several salutary purposes, such as: to regulate and control the design and improvement of subdivisions, with proper consideration for their relation to adjoining areas [citations]; to require subdividers to install streets [citations]; to require subdividers to install drains [citations]; to prevent fraud and exploitation [citations].

"These purposes would be defeated if the courts were to recognize avoidance of the statutes by such use of an action in partition as was devised here..." (*Id.*, at pp. 605-606.)

Based upon the language contained in *Pratt* and *Pescosolido*, we believe that it is the substance of a transaction creating a division of property which must be examined to determine if the requirements of the Act are applicable. Here, we have a "first phase" of a development. Orderly community development and protection of the public would be undermined if in the example given the three undeveloped portions of the property were to be designated as remainders or omitted entirely from the requisite subdivision map.

We believe that a remainder parcel is one that is created without the intention to be further divided or sold by the subdivider. In 62 Ops.Cal.Atty.Gen. 246, *supra*, we observed:

"A common practice in California is for a landowner to subdivide a portion of his property, retaining a remainder for his personal residence. For example, an owner of 25 acres of land might subdivide 20 of the acres into 1 acre parcels, and retain 5 acres without intending to further subdivide it."

The classic example of a remainder parcel is the family homestead that is handed down from generation to generation. Of course, at a later time a landowner may change his mind and wish to sell a remainder parcel. Section 66424.6 provides for such a change of intent. Under subdivision (d) of the statute, a sale of a remainder parcel may occur without "the filing of a parcel map or final map, but the local agency may require a certificate of compliance or conditional certificate of compliance."

In answer to the question presented, therefore, we conclude that two or more remainder parcels may not be designated when a developer subdivides portions of more than one parcel for the first phase of a housing development and intends later to subdivide the undeveloped portions for subsequent phases of the development. One remainder parcel may result from the division of each unit of land when creating a subdivision, but no remainder parcels may be designated or omitted from the requisite map if at the time of the division they are intended to be divided in the future for the purpose of sale, lease, or financing. ⊕

What's new in diseases?

TICK TROUBLES

brought to you by your neighborhood ticks

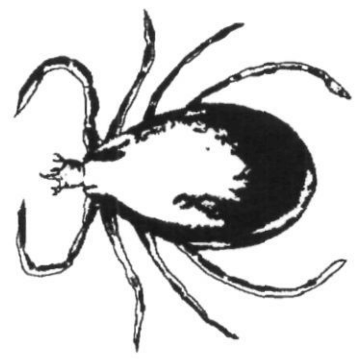
By Marc R. VanZuuk, PLS

ANYONE, THAT HAS REMOVED a tick from their skin, can tell you about the sensation you get from it, the feeling that there's another one crawling unseen somewhere on your body. Scientists that study tick-borne diseases are getting that feeling lately. Seems every time they identify a new, and possibly deadly organism that the little bloodsuckers spread, a new one pops up.

In the mid to late 1960s, the newly-discovered ailment: Rocky Mountain spotted fever, was shown to be caused by a genus of a bacteria in the family Rickettsiaceae. Most physicians are aware of the symptoms of this tick-borne ailment; so much so, that the newer types of tick-borne troubles are frequently misdiagnosed as Rocky Mountain spotted fever.

Lyme Disease Appears

The next well-advertised disease associated with ticks was discussed by The American Society of Clinical Pathology (ASCP) in Chicago during the Summer of 1975. Lyme Disease was first diagnosed when a mysterious illness created an arthritis epidemic among families in Lyme, Connecticut. Originally thought of as an East Coast dilemma, it has spread into a nationwide problem. In 1982, when the Centers for Disease Control (CDC) first began their surveillance of the disease, 497 cases were reported. In 1992, the reported cases climbed to 9,200 cases, with the bulk of the cases in the Northeastern states. Lyme disease has now been reported in every state in the country, except Montana.



Some states do not require physicians to report the cases they diagnose and treat. Experts believe most cases go unreported, undetected, or misdiagnosed and believe the actual number of cases may be as much as four times the number of documented cases. The culprit in the disease is a spirochete (corkscrew shaped) bacterium, *Borrelia Burgdorferi*. It is carried in the body of the deer tick varieties: *Ixodes Dammini*, in the Eastern and Midwestern states, and *Ixodes Pacificus*, in the Western states.

The Tick Life Cycle

The adult ticks feed and mate, usually on a deer, then drop off to lay eggs. The eggs hatch into tiny tick larvae in the spring. The larvae have their first blood meal on a small mammal, often mice. This is where the tick acquires the spirochete. The larvae molt the following spring and develop into nymphs. These disease-carrying adolescents feed once during the summer months on mice or larger animals: squirrels, foxes, mountain lions, dogs, and, yes, humans. In the fall, they molt into adults. The adults attach themselves to a host, usually deer, where they mate. The males die shortly thereafter, but the females continue to feed in order to obtain sufficient protein necessary for egg development. Females lay their eggs and die, and thus the cycle is repeated.

What To Look For

The greatest threat to humans lies with the nymphs' summer blood meal. At this stage, the nymphs are no larger than a pinhead. The ticks transfer the bacteria to humans via a bite, in which they feed on blood for several days. The summer months are when most tick bites occur and most cases of tick-borne disease are contracted.

A study, by A.C. Steere, et al., published in the *Annals of Internal Medicine* in 1983, reveals many people don't realize they have been bitten, unless they develop the first symptom of Lyme disease, which is a circular red rash known as erythema chronicum migrans (ECM). This occurs 3 to 30 days after the bite of an infected tick. The rash is red, circular or oval shaped, and often blotchy. It is typically hard in the center, slightly swollen, and expands to several inches in diameter. This rash will fade, with or without treatment within a few weeks.

In one study of 314 patients, 100% first developed the characteristic rash. Within several days, almost half of the patients developed multiple secondary lesions, which resembled the original rash, but were generally smaller. Larger rashes may also appear, often on the back. They may be easy to overlook, because they are often faint. Size varies

from 6 to 20 inches in diameter. Within about two weeks, sufferers may develop fatigue, fever, headache, and joint and muscle aches, symptoms frequently misdiagnosed as the flu. It is possible to contract Lyme disease and discover it through later symptoms, without experiencing the first stage symptoms.

Up to 15% of patients experience some second-stage symptoms, which develop within weeks to months after the initial symptoms. The second stage is marked by neurological complications and abnormalities of the heart. The most common neurological manifestation is aseptic meningitis, which causes severely painful headache and stiff neck. Encephalitis, facial paralysis, and other conditions, involving peripheral nerves, have also been linked to Lyme disease.

Under 10% of the patients experienced cardiac involvement, which lasted from 3 days to 6 weeks in duration. This typically is seen in young adult males and causes fainting, palpitations, or shortness of breath. In months to years after the onset of Lyme disease, about 60% of patients develop arthritis. This usually begins with pain in joints, tendons, muscles, or bones. Pain tends to affect one or two sites at a time, occasionally without swelling. The knee is by far the most affected area, other joints affected are the shoulder, elbow, jaw, ankle, wrist, and hips. In its advanced untreated stages, Lyme disease is known to cause acute meningitis, hepatitis, permanent cardiac disorders, arthritis, and even death.

An Equal Oppurtunity Attacker

Menace Parsley, the U.S.D.A. Health and Safety Manager, was bitten by a tick in 1992. She spent two weeks on intravenous antibiotics because oral antibiotics were not effective enough during initial treatment. Those in good physical condition and health have no advantage when it comes to Lyme disease.

Case in point is the first-person article by Jeanne Ennis in *UltraRunning*, a magazine devoted to running distances longer than marathons. Ennis was bitten by a tick while vacationing in the Northern California wine country. She had symptoms but was not diagnosed for six years. Despite bone and muscle problems, and pain that physicians attributed to overuse, Ennis continued to run. She is a finisher of the Western States 100 and the women's American record holder for the 150 mile run across Death Valley.

About three years ago, she was finally tested for Lyme disease and was told to take a month off work. She hasn't been employed since. "Today, my main problems are my knees (three operations), muscle and body fatigue and neurology (brain) problems," Ennis states in her article. "I have gone from the corporate world to a level of sixth grade reading and third grade spelling." I am currently going to cognitive therapy to teach my brain to process and to learn to read and spell again." Currently Ms. Ennis is suffering from a disintegrating skull.

The Newest Tick-Borne Disease

The latest deadly tick-borne disease to be identified is ehrlichiosis, caused by *Ehrlichia*, a genus of the *Rickettsiaceae* family of bacteria, which is in the same family of Rocky Mountain spotted fever. In the May *Annals of Internal Medicine*, the largest case study of human ehrlichiosis to date, was published by the Centers for Disease Control and Prevention (CDC). The report covered 237 cases, including three who died from the infection. Two months prior, a team discovered an *Ehrlichia* species never before seen in humans, granulocytic *Ehrlichia*, in six people from the Wisconsin and Minnesota. Two of the six people died.

James G. Olson of the CDC states "I think we are going to keep finding new species. . . . There is a lot of *Ehrlichia* out there." The CDC now knows of at least 300 people who have developed ehrlichiosis, nine of whom have died of it. Olson adds "there are undoubtedly many more infected individuals whom the CDC has not heard about."

This disease fools physicians, it masquerades as a bad cold, flu, Lyme disease, Rocky Mountain spotted fever or even sepsis. Again, even those who are properly diagnosed are not necessarily reported to CDC. Most importantly, not all people infected with Ehrlichia will develop symptoms.

In 1987, the *New England Journal of Medicine* published the first description of this ailment. These include fever, headache, muscle pain, nausea, a low number of white blood cells, and poor liver function, among others. While some show no symptoms, others die from the infection. Most lived in the southern United States. E. Dale Everett, of the University of Missouri Health Sciences Center in Columbia, notes quick treatment is crucial for those who do fall ill.

Veterinarians have known for years that animals harbor a species of this bacteria. At first, it was thought that man's best friend had shared their species, *Ehrlichia canis* with humans. In 1990, CDC researchers discovered subtle differences in the DNA sequence of *E. canis* and the bacterium infection humans. The new *Ehrlichia*, the CDC team had detected, was named *Ehrlichia chaffeensis*. J. Stephen Dumler, of the University of Maryland School of Medicine in Baltimore, one of the discoverers of granulocytic *Ehrlichia*, asserts "we know that the canine tick (*Dermacentor variabillis*) doesn't like to bite humans." Since laboratory tests suggest that deer are also susceptible to the bacterium, the previously noted deer tick varities are suspected of transmitting *Ehrlichia*.

In 1991, the C.D.C. collected thousands of *Ambylomma americanum*, or Lone Star tick from the Southeast and South Central states. Of this sample, 1% to 5% were shown to carry the Ehrlichia bacteria. According to David Dennis, a C.D.C. representative, this is significant due to the voracious feeding habits of this type of tick. They seem to prefer humans over deer and other mammals. The Lone Star tick is suspect in *Ehrlichia* transmission, and is also now linked to Lyme disease transmission.

In the May *Annals of Internal Medicine*, D.B. Fishbein, of the CDC, describes the human cases of *E. chaffeensis* reported to the center from 1985 to 1990. In the same issue, E. Dale Everett and colleagues report on their study of 30 people diagnosed with *E. chaffeensis* in Missouri. The case studies resemble each other closely. All the people in the

studies felt ill enough to go to a doctor and most were hospitalized, so they represent the worst-case scenarios of the disease.

Patients generally fell ill between April and September, after being in a tick-infested area, or being bitten by a tick. Symptoms generally appear about 9 days after exposure to the bacteria. Recovery taking about 3 weeks after treatment is started. *Ehrlichia* causes illness by taking up residence in white blood cells, leading to inflammation of blood vessels, Fishbein explains. This inflammation restricts blood flow to vital organs. What actually kills some people isn't known as yet. Victims tend to develop multiple complications, including lung and kidney problems.

The stomping grounds for granulocytic *Ehrlichia* appears to be in the Northern United States, also the stomping grounds for the infamous deer tick, known to transmit Lyme disease. Another piece of evidence to implicate the deer tick in transmitting granulocytic *Ehrlichia*.

Diagnosis of *Ehrlichiosis* proves tricky, due to its many common symptoms. Only about 20 percent of the cases cited by the CDC report were correctly diagnosed initially as a rickettsial illness. Incorrect diagnosis included upper respiratory disease, influenza, gastroenteritis, or some other ailment. While it has yet to be proven that ticks actually carry the bacterium around, evidence (some previously noted) strongly supports the theory. The CDC's Jacqueline E. Dawson suggests that physicians should start by asking patients if they have been bitten by a tick recently. "A very high percentage of patients do recall being bitten."

Decreased leukocyte and platelet counts, seen in blood tests, differentiate this infection from Rocky Mountain spotted fever. Dawson also states that "since ehrlichiosis is potentially a fatal disease... the physician doesn't have time to wait for lab results" before beginning treatment. Tetracycline cures ehrlichiosis, as it does most other tick-borne ailments. Patients should feel better within 24 to 48 hours after treatment begins the CDC report states. Misdiagnosis is not a big problem. The same antibiotics (tetracycline, 250mg, 4 times daily for 10 to 20 days) works for most varieties of *Ehrlichia*; however, with Lyme disease, tetracycline is sometimes not the first antibiotic of choice.

What To Do!

While tick-borne diseases strike more often now than in the past, it probably can be attributed to better diagnosis and better reporting of cases, not because ticks are carrying any more bacteria, says Olson. People, who work or recreate in outdoor areas, should be educated on the symptoms of the possible infections. Be prepared to inform your physician should you require medical care. Most importantly, if you suspect you may be infected, **don't** wait to be tested! Time may well be of the essence.

Common sense tells us that prevention is the best treatment of all, but for most of us, staying out of tick habitat is not a conceivable means of preventing tick bites. There are a few precautions we can all take to protect ourselves and minimize the chance of becoming a new statistic. Anyone, that ventures into wooded or brushy areas where ticks abound, should wear clothing that covers as much of your body as possible. Since ticks generally latch onto your body at ankle height and climb up, wear your pants tucked into your socks or boots. They love to crawl up your boot, onto your leg, and upward too... tuck in your shirt also.

Insect repellents also offer some protection against ticks. Most repellents contain as the active ingredient N,n-diethyl-meta-tolumide (DEET). DEET repels ticks but does not kill them. It can be applied to skin and/or clothing. Repellents with less than 50% DEET are considered ineffective against ticks. More than 80% DEET is considered extremely strong, and is known to melt some plastics and synthetic clothing. It is best to use the concentrated DEET repellents **only on your clothing**. Permanone is an aerosol spray tick repellent. The active ingredient is permethrin, a potent contact insecticide. It not only repels ticks, it kills them on contact. The U.S. Environmental Protection Agency currently sanctions use of Permanone in 24 states, but remember, it is for use only on clothing. Permanone is available in very limited supplies from a small mail order business in Montana, First Aid Systems of Montana. It comes in a case of 12 cans, at a cost of about $75, plus shipping. Their address is First Aid Systems of Montana, 45 West Park Street, Butte, Montana 59703, 406/782-6227 (Frank).

At the end of the day in the out-of-doors, it is important to give yourself a good close look. Check around your ankles, waistline, scalp, and back of the neck. Have someone check your back, and anywhere you can't see in a mirror. According to Everett "as best we can tell, the ticks have to be attached for about 24 hours to transmit these diseases, so early removal of ticks is very important."

Tick Removal

It is recommended to use tweezers for tick removal. Ticks do not put their head into the flesh, only the mouth parts. It is important not to break off parts of the tick by pulling too hard and fast. Do not grasp or squeeze the tick by the body, it may cause bodily fluids from the tick to be forced into your blood stream. If possible, have someone else handle the tweezers while you press down on and gently pull the skin away from the tick. Firmly, but gently pull straight back on the tick, at the angle it is entering the skin.

During the grooming session, when you may be feeling a bit like a monkey on a PBS special, keep in mind Everett's comforting observation: "There are literally hundreds of tick bites for every person who develops a disease." And while you contemplate the proper method of death to apply, if you do find a tick, remember Olson's words: "The tick is but an innocent reservoir."

The purpose of this article is to provide information. The risk of contracting a tick-borne disease is **low**, but is not **zero**. **This is not a land-based** jaws! It is important to **be aware of the** risks.

Marc R. Van Zuuk, P.L.S., is the President of Gold Country Chapter C.L.S.A., as well as on the Board of Directors of the California Land Surveyors Association. Mr. VanZuuk also sits on the Board of Governors of the Western States Trail Foundation, and is President of Native Sons of the Golden West, Auburn #59. ⊕

How Can We Recruit the Next Generation of Surveyors

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Editor's Note: The following paper was presented at the 1994 ACSM/ASPRS Convention in Reno Nevada by Mr. Brinker.

Abstract

FOR OVER TWO HUNDRED YEARS in the United States, surveyors have not been recruited, trained, or interned. They have, for the most part, just "happened," pretty much as if they had crawled out from under a rock! Granted, many surveyors, past and present, went through a short period of apprenticeship, but few in their formative years, said to themselves, "I want to be a surveyor," and entered a formal training program to reach that goal. When I operated the Brinker School of Surveying and Mapping (1971-1980), I made it a point to learn what factors attracted students to the surveying arena. Only two common denominators emerged: first, a desire to do creative and responsible work, and second, to be able to spend a large portion of the work week outdoors. These two factors agreed closely with those that attracted me to surveying and mapping in 1950, so I felt they were fairly valid, even in 1975. Since then, however, amazing changes have occurred in surveying technology, and surveying today is a totally different ball game from that which existed before 1975. New ways must be found, and found soon, to recruit qualified persons, who will become the surveyors of tomorrow.

Discussion

Unless you have been on a twenty-year siesta with Rip Van Winkle, you know that public education in the United States is in a state of disarray. There are many opinions as to why this condition has evolved and I certainly have my share. However, it is not the purpose of this discussion to explore the problems facing public education, but rather to examine how this situation may be related to the "art and science" of surveying in the twenty-first century.

Note, that I did not refer to the "profession" of surveying! This is intentional, since I am still not convinced that we, as a group, deserve that distinction. If you are intrigued by this concept, please read my comments in "What They Say," in the *ACSM Bulletin* of June 1984. In my opinion, the situation has improved only slightly since then.

Getting back to the problem of public education, it has been my observation that many schools do a poor job of preparing young students for careers. Most high schools do have so-called "career counselors," but often these people have had little or no actual job experience in any of the fields they try to explain to students, and many seem to be mostly occupied with maintaining a "library" of job information booklets. In any event, the problem is more deeply seated, because high school is too late to be exposing students to various types of jobs and the required training.

There is a glimmer of hope, however, and that is the fact that many (if not most) teachers and counselors welcome outside help. It is in this arena that you, as a practicing surveyor, can exhibit some real professionalism. Go to your local school (grade, middle, or even high school, depending on what age kids you prefer as "students") and offer to explain to them and their teacher a little about surveying and mapping. Classes in geography (usually buried somewhere in "social studies") offer a natural place to start. This is particularly true in schools, which are making use of *National Geographic* training materials. You don't have to have teacher training or a teaching certificate — you are simply a guest of the teacher and are explaining to the class, information with which you are very familiar. It's easy and after you do it a few times, it actually becomes fun!

However, here is a word of warning. Don't go into a classroom "cold turkey" or the students almost surely will embarrass you with their questions. I have been asked very profound questions by second graders; questions which many practicing surveyors wouldn't even think of. Have an outline of what you want to present to the class and, if you are asked questions, which you can't answer (and you probably will be), offer to find the necessary information and take or send it to the teacher. Be open-minded about your choice of topics. You may be amazed at how receptive young children are not only to mapmaking, but to world geography, aerial photography, navigation, and astronomy.

The idea behind this effort is, if enough young, impressionable children learn firsthand what surveyors do for a living, a few may be inspired to seek the necessary training and eventually be qualified to hold responsible surveying and mapping positions. This training is essential, because surveying and land-information systems have become so sophisticated that newcomers to the field can no longer "learn it all on the job," and the surveyors of the future will not just "happen." Becoming involved, in recruiting work of this type, has a positive side effect, in that the best way to master a subject, is to explain or teach it to someone else. You'll be surprised how much you learn, if you really work at it.

I have mixed emotions about mandatory "continuing education," but certainly any state, which has such a requirement, should allow credit for liaison work of this sort. However, with or without "credit," by investing some time in this much-needed activity, you will be bringing surveying and mapping one step closer to being a real profession.

Conclusion

In this discussion, I have suggested one way in which the practicing surveyor can help recruit the next generation of surveyors. Very likely, you can think of other ways. As a final thought, consider this idea: How great it would be if just one of the doctor, lawyer, police, murder mystery, or paramedic television shows could be replaced by a new series called, *The Surveyor*! ⊕

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