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# The California Surveyor

Summer 1999

The Voice of the Land Surveyors of California

NO. 123





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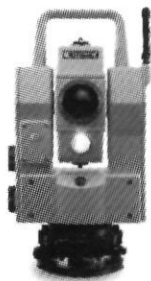


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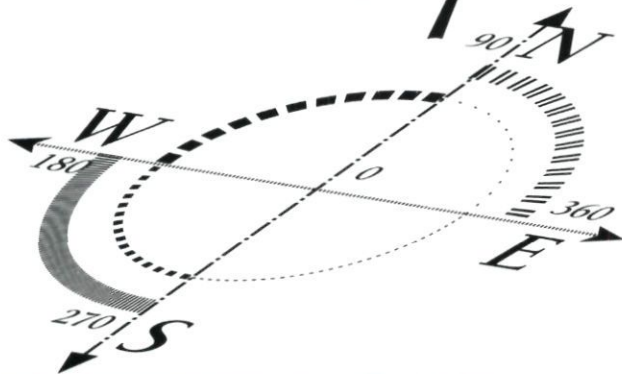
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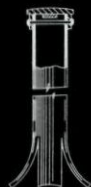


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# The California Surveyor

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"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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## 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 submitted on floppy diskette medium are 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 or Microsoft Word.

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## DEADLINE DATES

Spring ..... January 10, 2000      Summer ..... April 10, 2000  
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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.*

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# On The Cover

Photo submitted by Michael A. Brogan, PLS



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## From the Editor

# CAL - TAKE A BOW

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By: Phil Danskin, PLS

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That's right my cousins - take a bow. *The California Surveyor* was one of five national survey journals, which received "honorable mention" at the ACSM/NSPS Excellence in Professional Journalism awards, in Portland, Oregon. This would not have been possible without the outstanding efforts of our members. Congratulations to all those who contributed to the California Surveyor, to assistant editors Dave Ryan and Ted Kerber (who trapped the grammatical errors), those in Composing at Central Office for the magazine's layout, Dorothy Calegari's patience for my consistently tardy deadlines, and my lovely wife who reminds me to keep it clean. (*It's gettin' deep. And yes, I have an anniversary coming up. And yes, this is what the business calls "filler"*).

To our adjoining northerly neighbor, Joel Smith, editor of *The Oregon Surveyor*, your California cousins allelomimetically raise our hands, in toast of your achievement, as the 1998 recipient of the NSPS/ACSM Excellence in Professional Journalism Award! Well done Oregon!

## CLSA/NALS 1999 Conference

Again, I forgot to step back. One would think I'd learned my lesson when I volunteered for this post. Well, I offered to "cover" this year's CLSA/NALS Conference and was handed Dorothy's new state-of-the-art digital camera and asked to "take pictures." After nineteen seconds of intense instruction and stack of "floppies" in hand - off I went in my quest for the Pulitzer Photo. Terry McHenry, Editor of the *Nevada Traverse*, stopped me and asked me to forward these "fine-pictures-that-you're-about-to-take." Upon downloading the images, one may have assumed I was covering a mining disaster deep in the bowels of a coal mine! I sure hope Terry has some backup . . . *from a real camera.*

This year's conference luncheons were visited by none other than Thomas Jefferson and Meriwether Lewis. (*The Gary Oakie Revue is probably on sabbatical - dreaming up new stuff ... I hope*). The characters were played by Clay Jenkins who is a Rhodes and Danforth scholar - just like me! (*Yeah, and pigs fly, Phil*). He mesmerized us. If you would like to know the schedule of future appearances, or hear "President Jefferson," visit Clay's website at clay@th\_jefferson.org. I would also recommend attending the "Chautauqua" festival, on July 17th & 18th in Reno, Nevada, for a host of "character" portrayals.

## Another year of wonderful help!

Thank you, young ladies and gentlemen! Not only will these students be an asset to our profession, they will be an asset to our world. Again, thank you!



Lt to Rt. Back row: Christopher Bateman, Steve Deveny, Jon Franz, Aaron Fowler. Lt to Rt. Middle row: Justin Silva, Antonio Alvarado, Shawn Dyer, Ben Bardakjian. Lt to Rt. Front row: Julie Eckman, Tiffany Mason, Anne Minney. All students are from California State Fresno, save the above underlined names, being from Community College of Southern Nevada.

Earnest dialogue between the professional GIS worshipers and the surveying community ensued, (liken a peace accord, although I rather doubt we've heard the last of it). A GIS panelist posed the following, paraphrased question: "as a professional Surveyor, in charge of GIS, would you "certify" that the boundaries are true and correct?" Touché! As we all know, these systems are expensive to develop and maintain. Would one build a high-rise building on a foundation of sand? Without *our* profession, the *foundation* of the GIS may be rebuilt over . . . and over . . . and over. In order to have a dependable base-map, one should have a good foundation. Could it be a matter of job security - for both professions?



To side with the GIS folks, (here we are in the heart of earthquake country), then why do some Surveyors think base mapping should be nearly on par with HPGN! Why split hairs? Our profession must come to terms with the GIS's professionals' needs. It's only digital mapping with selected attributes. Accuracy depends on how much the consumer wants to spend. Enough said.

The profession must be going through some sort of flux. Debates in GIS. Debates on the status of education. What next?

## Which Brings Us To . . .

Education. As one who has observed the winds of the continuing education/baccalaureate debate raging the past several years, I could have gone either way. It would take an idiot to say he or she knows all there is to know about his/her profession! Dr. Nader shared one of his father's idioms: "*If you stop learning, you'd better check your pulse, 'cause you're probably dead!*"

There should be some *middle ground* on this education debate. Degree or not to degree? Mandatory or compulsory education? Other professions require mandatory continuing education - nurses, doctors, attorneys, educators, police and fire - even Realtors! Why not ours? Are we so smart we don't need continuing education? When attending CLSA seminars, I can't help but think, "why aren't these seminars brimming with my peers?" Sometimes for the price of admission, it's worth hearing a debate or answer to a *what-if*-question, posed by an attendee. It seems that by not attending such professional development courses, *nor* being involved with a professional society or taking an occasional college course - one is operating negligently.

Professors Dave Gibson and Fareed Nader spoke on the benefits to the profession and the graduate whose major is surveying/geomatic engineering/or-what-

ever-ya-want-to-call-it. Both spoke with sincerity and passion for their cause. Dave Gibson, shared a Florida Supreme Court ruling that says for one to use the term "professional" one must possess a baccalaureate. In Florida, no degree - no *professional status*.

Some may find this outrageous, others may agree, but a sentence or two of what Theodore Kaczynski, wrote regarding technology at times may be applicable in our times. (*Phil, take your medication, put on your helmet!*) Is technology dumbing us down?

Programmable calculators are tools of the trade and used as such during the PLS examine. Do you remember *before* the programmable? Curta and Peters? Traverse sheets? Latitudes and Departures? Studying intersections problems, compass rule adjustments, etc., with The Book of Tables. Logarithms. Imagine the genius and education required to determine longitude and latitude a century ago. It was the educated person that performed such calculations and observations. Imagine the genius that invented the solar compass. Educated? Yes. Elite? Probably.

In a *perfect world* . . . requiring a degree would do wonders for the profession. In a perfect world wouldn't a traffic stop be pleasant, if the law enforcement officer possessed a degree. Is it *necessary* in their profession? In a perfect world - absolutely! In a perfect world we'd all have an intelligence quotient of one-forty . . . and we'd all have money to attend college.

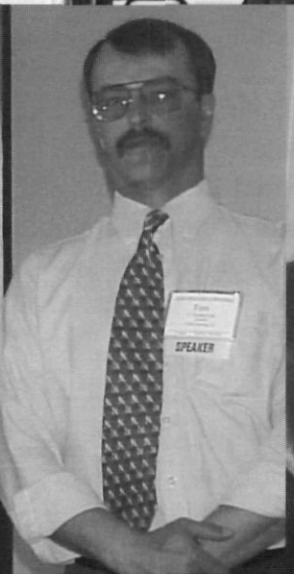
The Federal Aviation Administration does not require a college education before one can sit for the pilot's exam. Their responsibility to the public's health, safety and welfare is off the chart, compared to ours. The FAA relies heavily on knowledge and experience. Is this wrong? A pilot is certified, as a Student pilot, a Private pilot . . . Commercial pilot . . . and the ultimate - Airline Transport Pilot, (*Capt. God*). Within the pilot's certificate he or she has category, class or

***"If you stop learning, you'd better check your pulse, 'cause you're probably dead" - Fareed Nader***

*Continued on page 10*

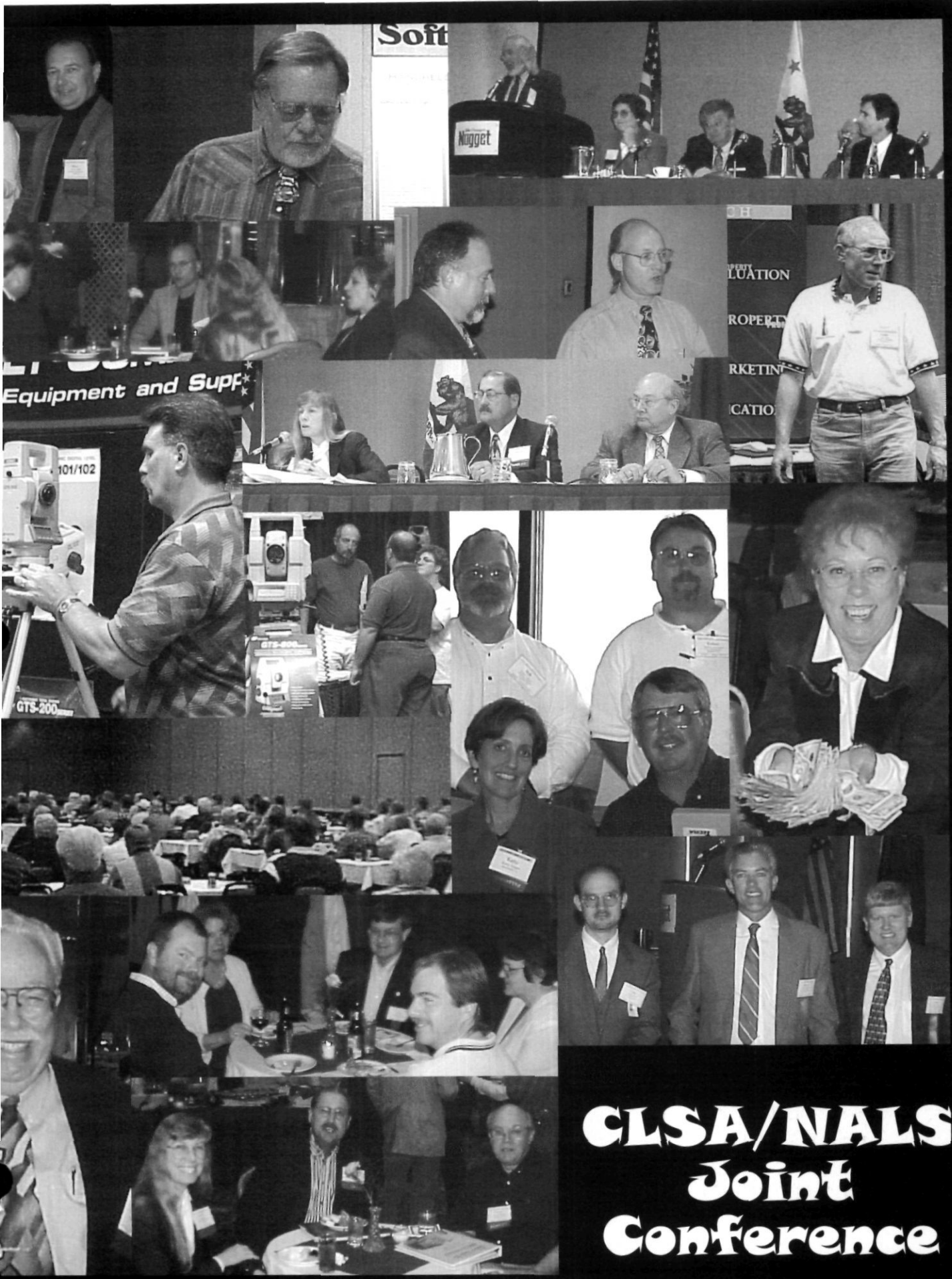


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# CLSA/NALS Joint Conference



type rating. A Private pilot may fly an airplane, (category), single-engine, (class), turbojet powered airplanes, (type). With these certificate/category/class & type airman certificates comes the responsibility to operate within the rules of one's certificate. (*Phil, where ya goin' with this?*)

Are the NCEES examinations/Model Law a prelude to the creation of a "Federal" Surveyor? Let's be honest - an experienced and knowledgeable Land Surveyor-In-Training can, and does perform most topographic mapping (without boundaries), on par with the aforementioned Private pilot analogy.

Throw a boundary on that topo and whoa! The experience levels and knowledge increases exponentially. Some aspects of boundary resolution cannot be taught in the classroom - rather they can *only* be acquired from years of *experience*. Liken the Airline Transport Pilot.

Fly in the clouds, under instruments? A pilot must possess an Instrument rating on his/her pilot's certificate. Another approach could be, a Surveyor who provides GPS services, is required to have a GPS rating on his/her license? Perform subdivision work;

then one should possess a Subdivision rating. See where this could lead? A dream for a bureaucracy. When you're driving a \$197,000,000 bus . . . with 400 souls on board . . . in a snowstorm . . . maybe, the FAA's approach to licensing is the way to go.

In a recent California general election, a ballot initiative abolishing affirmative action was passed. This has affected admissions for minorities to California colleges. Let's be frank - a four-year degree to an ABET college is not only expensive but few exist. An education at a decent Community College is attainable by more students. This route is also more attainable to those working in the profession, and/or with families. Not to sound like a foaming-at-the-mouth raging socialist, but those who can *afford*, are almost certainly guaranteed a handsome salary (as pointed out by Dr. Nader at the conference). Money is the wrong reason to choose a profession. Would you want to employ somebody that chose their major and/or profession, solely based upon salary? The status quo may not agree with Florida's *read* on "professionalism," but it allows minorities and the pecuniarily challenged a chance at the "brass ring" in this wonderful profession.

Well, the aforesaid should get some heated response! If not, we'll know you're using it to line the bird's cage. Keep those cards and letters coming. Smokey says, "Remember, only you prevent being the voice of the California Surveyor." (Or was it Gary Oakie's famous quote?) We need your thoughts, wisdom, pictures and membership . . . and throw in a strumpet or two for the ol' Gipper! ❖



**NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS**

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Patricia A. Canfield, Executive Administrator

February 10, 1999  
Mr. Phillip A. Danskin  
Editor, The California Surveyor  
P.O. Box 1796  
Sonoma, California 95476-1796

Dear Mr. Danskin:

On behalf of NSPS President Robert R. Prescott, I extend sincere congratulations to you for being selected to receive a Certificate of Merit for the "NSPS/ACSM Excellence in Professional Journalism Award." The certificate will be presented to you at the ACSM Annual conference in Portland, Oregon, March 13-17, 1999.

The ceremony will be held Sunday, March 14 beginning at 6:00 P.M. It will take place in the Oregon Convention Center, concourse C. We hope that you can join us and be present to receive your Certificate of Merit.

Again, congratulations and continuing success.

With best wishes,

Patricia A. Canfield  
NSPS Executive Administrator

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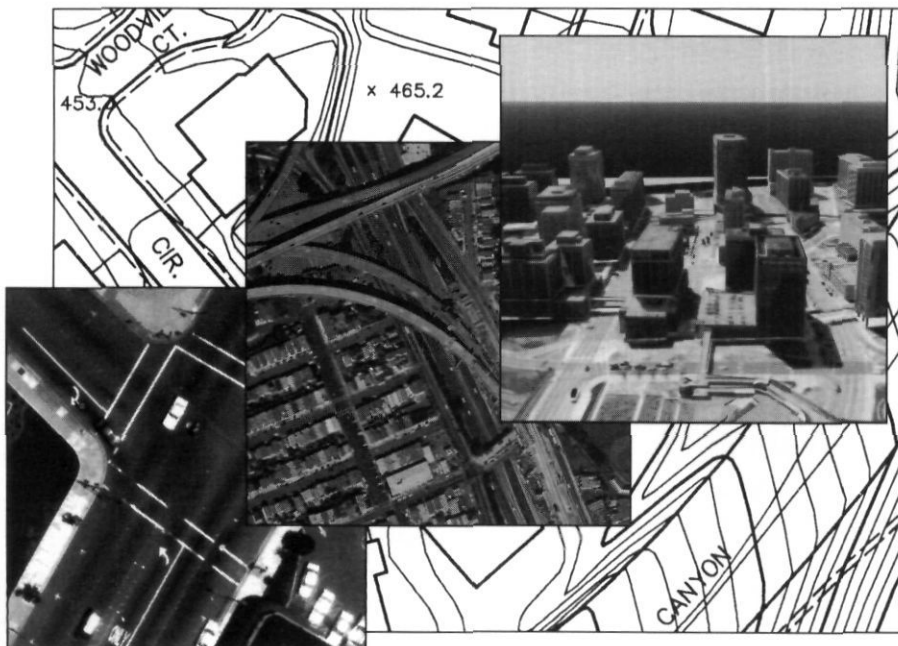
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# Letters to the Editor

## To Check, Or Not To Check? California Assembly Bill 1342

Dear Editor:

This bill would relieve the County Surveyor of the responsibility to check anything on a Record of Survey map having to do with the relationship of the boundary lines of the subject parcel to the boundary of whatever adjoins said parcel, be that another parcel, tract, street or a senior conveyance. The County Surveyor could thus effectively ignore the single most important aspect of a survey, the "boundary resolution," and do nothing more demanding than run down a short checklist to make sure that the map has a scale and a north arrow—a 20 minute exercise in rubber-stamping the work of private Surveyors.

Presumably, this bill was introduced as the latest in a series of attempts to pare down the exorbitant checking fees being charged by some California counties, in an effort to encourage the viability of, and increased use of, the Record of Survey by the public. This is understandable; it is counterproductive to the interests of the public to charge anything more than a few hundred dollars to check a Record of Survey. And, since previous attempts to curtail fees have failed, it is now thought that the answer lies in severely restricting the scope of what the counties have to check. The prime motivation for all this being to "save" the Record of Survey—a valuable and necessary tool for the protection of the public and the preservation of survey evidence.

But, are we sure that this is the best way to solve the fee problem and encourage the continued use of the Record of Survey? The "resolution of the boundary" is the sine qua non of the entire map (any map, for that matter). If we remove the responsibility of the counties to check boundaries, then what is the point of the map being checked at all?

There is a long and proud history of state and County Surveyors in our country. One of their

traditional roles—at least in recent history—has been to provide the public with some measure of assurance that private Surveyors are following good precedent when they perform their responsibilities. Remember the early years when the country had its hands full dealing with fraudulent surveys, or Surveyors who didn't fully understand the constantly evolving, complex rules governing their work? Are we ready to scuttle this practice altogether and ask the public to place the entirety of their trust in private firms? Do we really believe that we are that different from engineers who must have their house plans or grading plans checked by the public works department? What would happen to the quality of residential construction if the Building Code was thrown away, and the only thing that was checked on a house plan was the inclusion of a title block, scale and street address of the site?

The more I think about the long term consequences of gutting Section 8764, the more I worry that we are going to be inadvertently creating an environment that would allow inadequate surveys to increasingly plague our profession and damage the interests of the public.

Having worked for about 15 different firms over the past 30 years, and having operated my own very small firm for 10 of those years, I have been exposed to all types of operations, from those with only a handful of employees to firms with many hundreds.

One thing that impressed me is that there was not as much uniformity among these firms in the quality of their surveys as you would expect, or desire. In general, it was my experience that the smaller the firm, the more likely it was that their surveys were weak, or sometimes, even incompetent. The reasons for this varied, of course. In some cases it was budget constraints that limited the checking of a work product. Sometimes it was because there were not enough experienced licensed professionals in the office, resulting in a job receiving the careful attention of only one person. In more serious cases it was because the professional in charge was not adequately educated in certain aspects of a boundary resolution and simply did not know the correct principal to

*Continued on page 14*

## Record of Survey Checking

Dear Editor:

**H**ow much checking does your survey work need? Are you secure with what you do, or are you so unsure of your work that you need it checked?

The California Land Surveyors Association is a member of the Western Federation of Surveyors, which includes the 13 western states. Of those 13 states, California is the only state that has records of surveys checked. Two of the states do have the County Surveyor check to see if the person filing the map is authorized to practice surveying, that is all.

What makes us so different? Maybe it is because we want perfect maps, or is there such a thing? Could it be there are so many Surveyors doing poor work that we need the County Surveyor to check our work because he is a much better Surveyor than we are. But wait, he was not even on the job in the field to get the feel of how the survey fits the fences, other improvements and survey monuments. He can however, at times, find map or note references that we may have overlooked. Not to sell the County Surveyor short, he can be a very great help at times.

I have been surveying for 46 years. Having the County Surveyor checking my maps is, at times, very comforting. However, over the years there have been a few times that the County Surveyor checked my map, agreeing with my survey and procedure, and we still went to Court. The County Surveyor cannot solve all your problems.

The checking of Record of Survey maps problem is a very broad and complex problem. This has been talked about for the last 10 to 15 years, at least. About three years back C.L.S.A. formed a committee to look into the problem. After two years of contacting Surveyors and reviewing what was the checking problem, over 90% of the concerns revolved around item (d) in section 8764 and problems with adjoining land boundaries. What is the solution? Removing item (d) from checking was the C.L.S.A. Board of Directors solution to the checking problem. That was included in A.B. 1342, but has since been removed

Not all surveys are complex and need the County Surveyor to check them. On the other hand there are surveys that have material discrepancy or gaps or overlaps, in which case need a Record of Survey review and a map needs to be filed. Many of the small property surveys that are part of an old lot or an old metes & bounds description, that do not show a recorded map, really do not need to be a Record of Survey unless there is a material discrepancy. You as a Surveyor can always file a Record of Survey map if you desire to have your work checked by the County Surveyor. Then, on the other hand, why require it if there are no problems. Would a check or a no-check Record of Survey be the answer? Require the Record of Survey to be checked only when there are material discrepancies or other boundary problems.

The Legislation Committee is working to create survey plats and maps that will let you share your surveys with the rest of the Surveyors. It may come

*Continued on page 14*

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Is the requirement to check surveys based on the fact that there are Surveyors who do a poor job? Then should we solve that problem by turning their poor work into the Board of Registration? I think so. They either need to get the training to do good work, or have the Board of Registration remove their registration. Is continuing education needed to solve these cases? These are items the Legislation Committee needs your input on. Please send your thoughts to the C.L.S.A. Central Office.

Richard P. Siegmund, P.L.S. 3490  
Legislative Committee Chairman

apply to a situation.

Some of the above problems could also be found in the larger firms, however, especially the tendency to shortcut the checking process when the budget was running out or the work was too close to a critical deadline. Another problem with bigger firms is that they sometimes find themselves with too many large, demanding projects converging at the same point in time and the checking process gets abbreviated. Also, there can be a problem with too many people working on the same project, causing the potential for miscommunication or the assumption that everyone understood what the other had done, when in fact they did not.

To illustrate just one of the above problems, I can remember working in another state where I ran across a survey by a competitor. This was a modern (circa 1992) Record of Survey for 5 or 6 adjacent lots, all of which had metes and bounds legal descriptions. As I studied the map and the relevant descriptions, I realized that the Surveyor had, based on his survey and analysis, concluded that there were multiple building encroachments and had convinced all the owners that the thing to do was to record new legal descriptions and file a new Record of Survey to "fix" the various problems.

The only trouble was this: he had used the wrong boundary resolution principal in his analysis! He had prorated all the lot corners in, presumably because all the modern parcels were located in a block from a much older subdivision. But, the modern lots were all metes and bounds and had the same block corner for a point of beginning. Thus, this was actually a junior/senior situation and not one where proration applied. For whatever reason the Surveyor either did not understand the difference between simultaneous and sequential conveyances, or chose to take the easier route,

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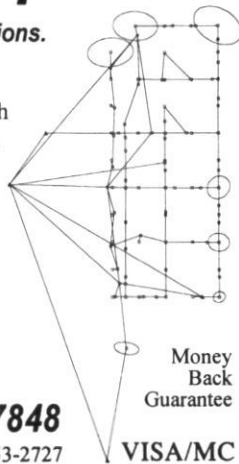
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and proceeded to prorate all the lots in.

After completing a new survey with the lot lines located using the principal of the "order of seniority," the amazing discovery was that there was not, and never had been, any encroachments. The Surveyor-out of ignorance-had gone into a situation that had no problem and proceeded to create one, and then convinced everyone to record new deeds that the owners believed were necessary in order to remedy a serious (but non-existent) problem.

This is the worst case I know of where incompetence was to blame. Obviously this is not a common problem. But, to lesser extents, I can say that similar errors of judgment have come to my attention over the years. Sometimes they were "innocent" mistakes, and other times I believe that the Surveyor or engineer simply took a chance and used the method that was the cheapest, easiest or quickest to apply.

Another example concerns a map that I submitted to a California County Surveyor for checking very early in my career. Along with the usual redline comments over details in the content of the map, he had included a comment suggesting that I consider favoring "angles" over "distance" as a way to calculate a particular "lost" property corner. I forget the details, but the truth of the matter is that, after going back to my books on boundary resolution, I realized that he was right and that my map would be improved by applying his suggestion.

In hindsight I have realized that it takes many years for a new Surveyor to really appreciate some of the principals that we should be working under. Surely, we can't believe that we are as competent in our first ten years of practice as we are afterwards, can we?

I could cite other examples that would illustrate different mistakes or problems. The point is that I have come across too many such cases (and I think all experienced Surveyors can attest to the same fact) where errors of judgment have been made. If we accept that this is the case, then how can we not want to preserve the core principles behind the law that County Surveyors should check these maps? Do we really want to tell our County Surveyors to look the


other way when they notice significant errors or deficiencies?

If we accept that our maps should be checked (and how can we not, and still believe that we are "protecting the public") then, what is a fair fee, and what about the liability exposure of the county?

In any of the firms that I have had direct experience, and where quality control was taken seriously, I can honestly say that the average Record of Survey could be checked by a supervisor in less than three hours. A technician can be assigned the routine checking of minor details (north arrows, certificates, etc.), with a professional being assigned to review the boundary resolution. Now if a county cannot handle the typical Record of Survey in this way, in this short of a time period, then there is something wrong with how they approach the project.

As for the exposure to liability for the county . . . is

*Continued on page 16*



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this even a problem? Have there been any cases at all in this state where the county has been taken to court for issues involving the checking of a Record of Survey? And what about other public service agencies, such as the police department. They are routinely taken to court when judgmental errors by their officers cause harm to the public. Why should we pretend that the public works department should be immune from scrutiny? I see no reason that we should feel compelled to structure state statutes in such a way as to attempt to limit responsibility for what they do.

Finally, there remains another question about this bill. If it should pass, what assurance is there that any-let alone all-counties in California would scale back their fees as a result? Yes, there is Section 8766.5, which requires a study to justify costs that exceed \$100 per map. But will counties necessarily be forced to return to the minimum fee once this bill is passed? AB1342 does not address the issue. And, if they are, how soon do they have to lower their fees? What about maps already submitted for checking, but not recorded? What about maps submitted on January 1st in the year following passage of the amendment? When would the bill take effect? Shouldn't the bill incorporate language to handle all the possibilities, and explicit wording to require the immediate lowering of county fees to the statutory minimum?

And even if 8766.5 is sufficient to require the lowering of fees, how much lower would they have to go? After all, what's to prevent County X from only reducing their current fee of, say, \$600 by a mere \$50 or \$100, out of obstinacy, inefficiency or the desire to keep their fee structure largely in place, or because they maintain that it will still take a long time to check what's left of 8766? And if they do begin another study to determine what the appropriate reduction should be, why aren't they required to include representatives from the private sector, as insurance that a balanced view prevails?

A worst case scenario for the public? Counties would partially reduce their fees, but still charge \$200 or \$300 or more to check a Record of Survey. If our

paramount concern is to not discourage private citizens from having these surveys done and recorded, then what are they going to think (not to mention sharp attorneys) when it sinks in that they will be charged hundreds of dollars-not to check the boundary-but to rubber stamp mere trivia arranged around the edges of the map?

It comes down to a confrontation between the interests of the public (a reasonable fee) and the needs of the public agencies (they need to pay their employees). In the post-Prop 13 environment, we have faced an endless stream of attempts by local agencies to make up for "lost" revenues. Must we succumb to the argument that every single service provided by an agency be compensated for by charging a fee to the public? Should the fire department charge us when they respond to put out a fire in our kitchen? Or are there still at least a few services left wherein the city or county should absorb these costs as just part of their "doing business?"

Personally, I believe that the government *should* check Records of Survey, and charge only a token amount for doing so. If this is impossible, then we need to find a new way to supply counties with the funds they need to do this job, and do it right. Perhaps we can consider this to be a legitimate use of the Monument Preservation Fund; a certain percentage of the \$7 fee attached to property conveyances could be allocated to public works departments specifically for the checking of Record of Survey maps.

The question that should be asked first is: "Is it, in fact, important and worthwhile to check the most important characteristic of the Record of Survey, its boundary resolution?" If the answer is "Yes" then we have two basic options: 1) require that counties charge a token amount only for their work, absorbing the rest in the name of the public good, or, 2) begin seeking new sources of funding.

If the answer is "No," then the appropriate action is to no longer require any checking at all. To continue to charge the public for a "checking" which is patently trivial dodges the central issue and merely substitutes a pointless fee for an excessive fee. Either check the boundary or check nothing.

The "other shoe" of new legislation is that someday the results will eventually trickle down to the public—those people for whom the law protects. Will we be ready for that confrontation? Myself, if I can't explain to a client that, on top of my fee, the county will charge a modest amount to check the boundary on my map, then I do not want to have to explain that they will be paying hundreds of dollars for what a clerk could do for nothing at the recorder's office.

R. Lee Hixon, PLS 4806

## Broadening Surveying Into Geomatics

Dear Editor

Bill Hazelton should be commended for his provocative article. I can fully understand the frustrations that the academic community has with practicing land Surveyors. As Surveyors, we need to do a far better job of promoting our profession to the general public and the next generation of Surveyors.

Will an organizational change or name change advance surveying into the 21st century? Possibly, but maybe we should start by working on attitudes. We cannot expect others to have a positive view of the profession if we don't have one ourselves. What authority or poll indicates that the public perceives surveying as "an occupation requiring limited skills"?

I take notable exception to Hazelton's comment that boundary retracement is "just a technical process". A technical process is obviously incorporated into boundary retracement, but the heart and soul of boundary retracement is based on subjective evidence analysis. This requires Surveyors to have more practical knowledge of appropriate laws and rules than measurement technique.

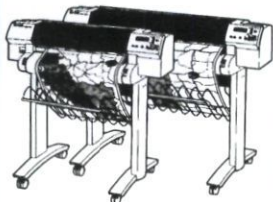
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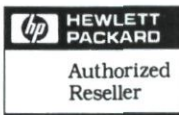
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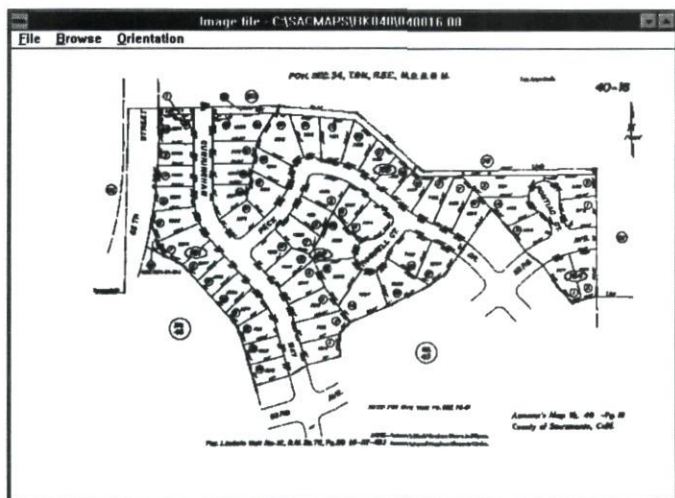
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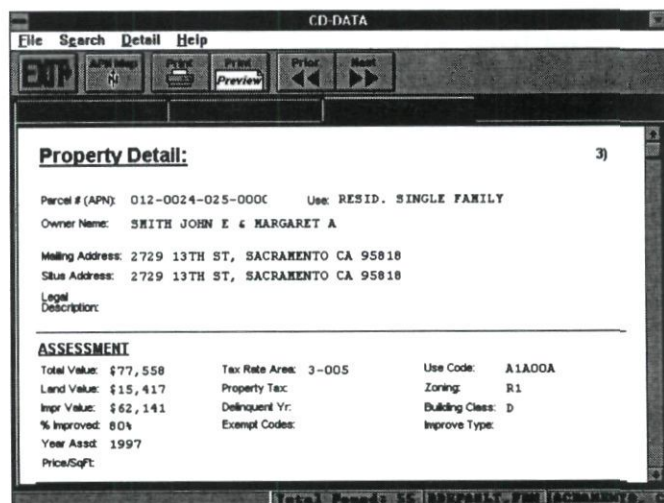
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# GPS 'N GATORS

By: Judith Frank

Not being a licensed surveyor myself, I can understand the concept of the average citizen who might think of a land surveyor as "that guy in the orange vest who stands out in the middle of an intersection with a tripod and performs a fairly mundane job in a fairly conventional occupation."

That is to say, it could have been my impression too, before my field trip. The mission involved re-mapping two counties in Southeastern South Carolina for a U.S.G.S. job. Promised a part vacation/part working trip, I saw my first compromise when my allowable airline luggage was revised to include a

steel case with a GPS unit thus reducing my wardrobe to one suitcase! Little did I know that dirty jeans are "in" and it wouldn't matter anyway. But I was a rookie and I was yet to learn a lot on this trip. We arrived in Charleston, South Carolina, around midnight and had a very short night before waking to get on the road and travel to our first point (over 100 miles away).

At first light we headed for Dorchester County airport where we needed to find a monument and witness post about 40 feet west of a runway. Protocol called for us to gain access permission and we did and across the runway we drove. After learning to "kick the dirt around" I was proud to be the one to actually find our first point and remains of a witness post! We set up our first GPS session. The next couple of points were over a wide area including across the border into Georgia. We used a GPS computer program to navigate to our points which was useful until we came to unforeseen locked iron gates and then had to



Two Gators, Santee Wildlife Refuge

reconnoiter around them and go extra miles to get around creeks and rivers. Rivers and swamps were everywhere. Burned fields were everywhere. I learned about the benefit of having a 4WD vehicle as we drove down dirt roads for six to seven miles off the main

dirt road and set up our equipment. Once in a great while there would be a trailer home on a lot with several discarded cars, and quite often an old yellow school bus among the cars. One trailer home must have had a lot of status because they had two school buses. Surveyors must be accustomed to happening upon historical data, but it was a nice

surprise to me when we observed a historical marker in Robertsville. A sign at the Black Swamp Baptist Church depicted this as the hometown of the man who wrote Roberts Rules of Order.

It wasn't long before I found out a surveyor's daily diet consisted of donuts or cookies or whatever else the local country store was selling. The stores seemed to be spread out and we only came upon a country store every couple of hours down the red dirt roads we traveled. The fast food chains had not made inroads to this part of our nation yet. I got a sense of the area and its people when we stopped in country stores where smoked hams hung in the back and everything from instant grits to shotguns and men's underwear were sold to the locals. You could even sit in a rocker at the front of the store and "jaw" a little. No jawing for us, we were on a tight schedule and daylight was burning.

*Continued on page 22*



At the end of the first day we called into the office and told them we got 5 points and they were dismayed. Forget the fact we covered over 500 miles! Gees I thought, a little time in the field would help those office guys get some understanding of what we field guys have to deal with! So much



Dorchester County Airport, South Carolina

of the area we worked in was remote that it was necessary to travel back to a main artery for creature's comforts. That was my introduction to the "per diem" golden rule. Spend less than you get! Eat little, sleep cheap, make a little money. Up to the Interstate at dark to look for a motel and download our day's accomplishments to see if they make sense. We e-mail our efforts off to the office and wait for results.

Up at dawn the next day, and off to the Santee Swamp and other points. We set a couple of points and then went down one of those smaller red clay roads where the locked gate happened to be hanging open. The road was no wider than our vehicle and brush was high on all sides. I drove in all wheel drive when a stream of water was rushing across our path. How to cross it? I was told to "Back up and give it hell". I did and we did. We followed a narrow winding trail dwarfed by reeds and swamp grass for about four miles, snaking our way through South Carolina's version of wilderness until we detected the impossible, improbable hum of engines. Around the next turn we came upon a pickup and in front of that, a bulldozer at work. The end of the "road", literally. I asked where we had to go to set the point and Roger replied "About a quarter mile past that truck". Rule number one: this is an opportunity for the licensed professional to get out and assess our chances of getting to the point (I was only the helper after all). Surely I thought they would put him and the equipment on the bulldozer and take him to the point. He got back into our car and said "Pull ahead they're going to let us through." We traveled past the

rumbling equipment and some skeptical glances and on to our point. It was late in the afternoon, we were literally at the end of the road and the sky looked ominous as we set up the GPS unit. The local farmer came by in his pickup, got out and asked "How did y'all get on my private road, I always have the gates locked". Roger

explained the gate was open and took out the aerial quad photos from U.S.G.S. Roger tried to explain the U.S.G.S. was re-mapping the county and we would only be there about 20 minutes and wouldn't be back again. Just when we thought the guy was impressed he said "Like this is supposed to be the most important moment in my life - that the government wants to map my road and I'm supposed to remember this for the rest of my life? Where are y'all from anyway?" "California", we replied, and his facial expression read "Hollywood". "Well y'all tell your friends you were in the Santee Swamp and there's some weather moving in and you were lucky to get in and y'all be luckier to get out, so y'all be careful now heah?" That got my attention! Off he went in his pickup. I watched the clouds move in and thought about his urgency to see us leave, his concern about His Private Road and wished that GPS could somehow be speeded up. About 25 minutes went by when the old pickup showed up again and he said "That bad weather is moving in now, I'll make tracks and y'all follow them to get out of here, or y'all be stuck bad in here for the night". Not wanting to spend the night there or to return, we made sure we had enough satellite time for the point and briskly packed up. We followed the old boy's tracks and got out! Great big raindrops began to splash off our windshield.

We weren't finished with the Santee Swamp region though, and we approached the Santee Swamp National Refuge at dusk. I drove as directed down dirt roads lined with trees hanging heavy with Spanish Moss and saw a little deer in the road, he flipped his



white tail and disappeared into the brush. As I continued down the narrow dirt road I became aware of a large dark object off to the left in my peripheral vision. I hit the brakes when my brain kicked in the "alligator" recognition button. The biggest alligator I had ever seen, laying there, approximately 12 feet long and a head as wide as the 5 Freeway. Another 'gator was half submerged near him. Once over the initial shock, I took a picture and then spotted 3 alligators just lying in a heap. A little further on there was a baby alligator. It was like a photo mosaic, the closer you looked the more you saw. We came to the place where we had to set the point. Now mind you,

there weren't even signs around that said, "Keep Your Hands and Legs Inside the Vehicle" - even Disney does that! I made up rule number 2: it should be the licensed surveyor who gets out of the vehicle in this animal kingdom to set up the equipment. There was swamp water on all sides of us and I know from watching the Discovery Channel that those

critters can travel quickly when they decide to. I sat in the vehicle as the sky clouded over with gray once again. It would soon be nightfall and the GPS unit chirped away as we talked to space from high atop the Hixon pole. The GPS session came to an end and we set out to seek our own refuge for the night...or so I thought. Surveyors always make the most of whatever daylight is left! We then stopped off at one more site along the Santee River to see what it would take to get in to where we needed to go at first light and discovered a pair of gates and a sign for "The Berkeley Hunting Club" No Trespassing! There were a few bullet holes in the sign to emphasize their sincerity. Roger pondered that and wrote down the name of the club and headed for the Interstate.

Once more we downloaded the data, e-mailed our files and hoped for the best. So far everything had

been working out. Now for another dimension to being a surveyor, being a private detective and using public relations skills. He tried the local phone book for a listing for a Berkeley Hunting Club but to no avail. Roger then called information and tried for any hunting club within the area and got two listings. After calling and introducing himself, he got a lead to call yet another hunting club guy who might know more and Roger tried him. He wasn't sure but gave Roger yet another phone number to try and at last, success! We had the Berkeley Hunting Club president and he gave permission to get on the land tomorrow but was somewhat perplexed as to how we got his number.



Santee Swamp

Early next morning (and hopefully our last working day) we set out for the Hunting Club, winding our way under the bridge and through the construction area to the entrance. Roger swung open the heavy iron gates. As we drove through the outback along the Santee River it seemed paradoxical to me to have street signs with names "Main St.",

"Sundowner Lane", and "Bulldozer Lane" on these back roads which had no traffic, let alone a busy intersection. I asked for an explanation for one of the signs, which was the "Gut Pit". Ugh. Don't ask. As we continued on, about 4 or 5 wild turkeys were ahead of us, but took off in flight as our motor sound got louder. After 5.5 miles of navigation past deer blinds and duck blinds and more swamps, the GPS driving program let us know that we had found our destination for the final setup. It was a beautiful morning and the sun was shining and it was very peaceful. Certainly there were eyes out among the woods and swamps watching us in a curious fashion, one could almost feel it. When we reached an area where the cell phone had a signal, we called the office and got the bad news. One of the points just wouldn't solve and we had to revisit it. Which one was it? The good news

*Continued on page 24*



was that it wasn't in the Santee Swamp, the bad news was that it was about 100 miles back from our current position. So off we went and our job ended after 3 long days and 1200 miles on the trip odometer.

We drove up to Myrtle Beach (oh, and just had to stop and get a HARN, after all it was practically on our route) with what little energy we had left to take our little vacation. We found Myrtle Beach was a stark contrast to the rest of the terrain and level of activity we had seen in this state for the past few days. Golf courses galore, hotels, waterparks, restaurants, a virtual tourist Mecca.

Like the contrast in South Carolina, I also saw a totally different aspect of surveying than the general public sees. The "orange-vested freeway surveyor" vs. the off road adventurer. I learned that a dirt road could be considered a "fairly good road" compared to having no road at all on some jobs. I will certainly have better visualization when I read those field descriptions from now on. Surveying can be a multifaceted profession requiring detective work,

ingenuity, public relations, physical endurance (we may have hiked back to some areas had there not been poison ivy all over), interest in historical artifacts and a command of complex technology.

Imagine setting up a little disk on a tripod that talks to several satellites in outer space, regurgitating data that will travel via the internet to another computer 3,000 miles away...resulting in a mathematical equation to put a pin prick on an aerial photo of some guy's property who could care less and whose only world revolves around his road and his bulldozer. Mundane? Conventional? Those would not be the adjectives I would choose based on my short venture as a field person. Who'd of thunk it? GPS and alligators. ❖

*Judith Frank is Administrative Coordinator at Johnson-Frank & Associates, Inc. in Anaheim, CA. She has a degree in Sociology from California State University in Fullerton, and took courses in journalism and wrote a column for a local weekly newspaper. Writing continues to be a hobby for her.*



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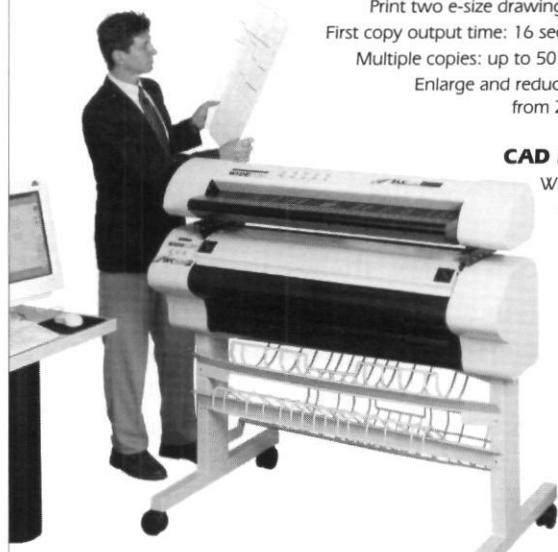
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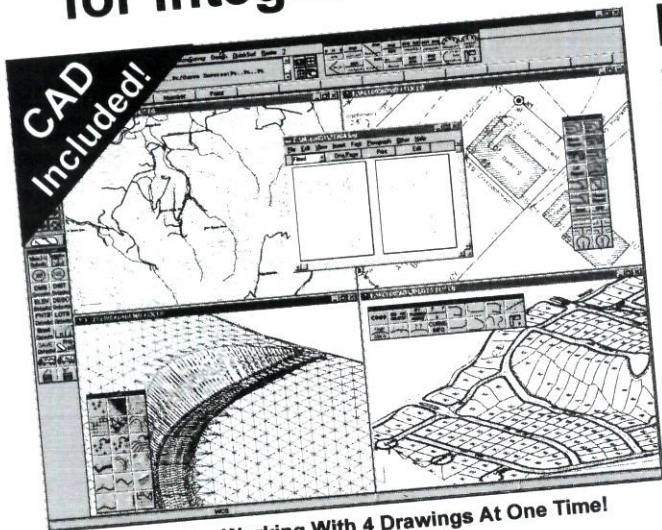
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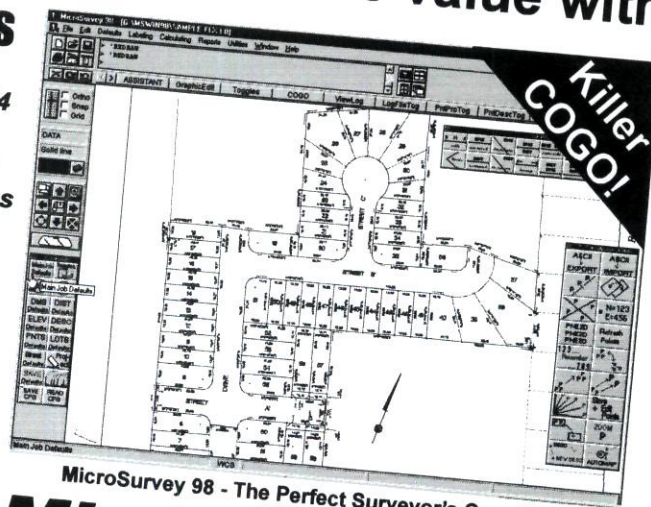


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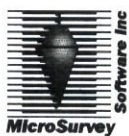
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# Isn't It Time You Started Using MicroSurvey?



# Conversion is Out, Measurement is In

## Are we Beginning the Surveying and Mapping Era of GIS?

*By David W. Gibson, University of Florida Geomatics Program Director*

Many people are questioning applicability and coverage of State regulatory statutes on Surveying and Mapping. Could it be that legislatures really believe that unlicensed "surveying and mapping of land, water, and space presents a significant threat to the public"? At issue is whether new activities in GIS and GPS fall under regulation. Most statutory definitions clearly cover professional services involving specialized knowledge of math, science, and the legal requirements for the determination of the facts of size, shape, topography, orientation, legal location or geodetic location of features on or near the earth's surface. Statutes usually state that no person shall practice surveying and mapping unless such person is licensed. Many questions emerge. "What is surveying"? "Is cartography a branch of surveying"? "Is GIS activity a form of surveying"? Perhaps some answers can be found in a brief review of GIS in relation to traditional surveying activities.

### **The Conversion Era**

Most agree that cartography is not surveying because new original measurements of ground features are not needed for cartographic operations. Early developers of GIS, coming from academic environments in geography, employed cartographic conversion techniques to build computerized spatial models of features on or near the earth's surface. Conversion activities were encountered quite frequently from 1985 to about 1995 as a large wave of initial GIS implementations occurred. However, use of conversion as a primary source to support GIS development is beginning to diminish.

The term 'conversion' implies that pre-existing graphical maps are converted from analog (graphic) to digital form by cartographic processes such as digitizing or scanning, often with supplementary processes such as differential scaling or warping. GIS

conversion has proceeded so rapidly that today most pre-existing usable maps with geographic accuracy have been digitized. Many U.S. Geological Survey quadrangle maps are now available as vector or raster files. Appraisal property ownership maps are now seamless parcel base maps for counties. Utility schematics are now in overlays over parcel maps. Soil maps are also in overlay files. Contour maps are now Digital Elevation Models, or DEM's, and are often used in the production of orthophoto base layers for GIS applications.

### **GIS' Silent Partners**

Surveyors and photogrammetrists were "silent partners" in this first (conversion) phase of GIS building. Even though their role has never been fully acknowledged, surveyed products have formed the basis for geographic fidelity in a GIS. It can be safely said that, "All spatial truth in any map can be traced back to a surveying and/or mapping process." Someone, at sometime, measured features using a surveying and/or mapping process." Someone, at sometime, measured features using a surveying and/or mapping technology: tape, transit, level, theodolite, electronic distance measuring system, aerial camera, or satellite positioning system, in order for a map to adequately convey facts of size, shape, or location.

For example, geographic accuracy in "tax maps" can be traced to the accuracy by which original surveyors set out and mapped the first divisions of public land within the U.S. during the 1600's, 1700's, and 1800's. Additional accuracy comes from surveyors who furnished measured or computed information for deed calls and recorded plats. When these fragments of information are assembled into seamless ownership maps, the surveyor and mapper's work forms the fundamental basis of accuracy, or ground truth, even though the surveyor and mapper's identity does not

carry through the deed writing and map compilation process in most cases.

The concept also applies to USGS quadrangle sheets. From 1920 to 1990, surveyors and mappers for the USGS compiled original graphic overlays for quad sheets from field surveys by plane table or photogrammetry using control set by geodetic surveyors. Baselines of road and railroad systems were painstakingly calculated, laid out, and documented by surveyors and mappers of various road departments or railroad companies. Other surveyors and mappers assisted power, water, telephone and cable utility companies in developing truth in their utility maps. Photogrammetrists over the past four decades painstakingly contoured the earth's surface producing broad contour coverage locally and through USGS quad sheets. Accuracy in georeferenced images can be traced to the source measurement of latitude and longitude of selected control points and, in the conversion process, the scanner or digitizer geometric.

Digital conversion did not increase geographic accuracy of these pre-existing maps. In fact, many times, good map information was degraded by poor digitizing or by georeferencing to approximate control points, thereby introducing stretching and warping that yielded less geographic accuracy after conversion than the map had before.

### The Measurement Era

Direct measurement is becoming an increasingly important GIS tool. The only way to develop or enhance geographic accuracy of GIS in the coming years is by direct measurement of features. The problem is that direct measurement of many features. The problem is that direct measurement of many features on or near the ground is called surveying. Those who perform surveying are called surveyors or some similar title in most states or jurisdictions world-wide.

The global positioning system (GPS) is the latest in a series of surveying and mapping tools, and came

*Continued on page 28*



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along during the time period when conversion opportunities in GIS were winding down. Those who did GIS by conversion for ten or fifteen years, without direct involvement of a surveyor, naturally expected to move into the realm of direct measurement using GPS under the label "GIS Mapping". However, many state boards of registration are questioning this move, recognizing that the activity represented by GIS mapping includes activities already defined as surveying and mapping in most state laws.

Signs are plentiful that the GIS world is moving toward direct GPS measurement. In many academic, government and consulting arenas today, the terms GIS and GPS are often used together, as in "my GIS/GPS academic course", or "GIS/GPS activity in agency programs", or "a new integrated GIS/GPS . . .". Jack Dangermond, founder and President of ESRI, Inc., announced in 1997 that Arc/Info is extending its data model from the x, y coordinate to the measurements from which coordinates are derived: distances, angles, and GPS vectors. Academic geography departments are responding by adding an increasing amount of measurement technology study into a discipline traditionally based in the arts and general sciences.

### **A New Wave of Surveying and Mapping**

Is it possible that we are seeing the emergence of a new wave of participants in the surveying and mapping arena? GIS mappers who began using simple cartographic processes are now migrating toward the traditional knowledges and practices of surveyors and mappers. The term "survey" is of French origin with the common prefix "sur" indicating "above", and the suffix "vey" meaning "to see" – or "to see as if from above". The term originally applied to activities related to measurement of earth features and presentation of the land's content graphically in a view from above. Content included spatial relationships, counts, land cover classifications, values, and many other position-related facts about things on the land.

The "first wave" of participants in the discipline could be termed 'traditional surveyors', those who used compasses, theodolites, tapes, and EDM's to measure and map features by direct measurement. Beginning in ancient times, surveyors can track a continuous

record of intellectual development resulting in a well-identified collection of knowledge, tools, methods, applications, books, publications, regulational features, and academic programs. Today there are approximately 50,000 "first wave" practitioners of surveying in the U.S. today.

The 'second wave' of practitioners in this discipline is comprised of photogrammetrists and remote sensors – those who measure and map from photos and images. With pioneer work in data must now be made suitable for unknown users who may attempt to make entirely inappropriate application.

As GIS continues to make its way into the mainstream of society, innocent use will lead to claims of damage. GIS mapping organizations will then respond in several ways, firstly by modifying the data presented so as to minimize risk exposure. As an example, the USGS has already decided to drop the Public Land Survey layer as a maintained layer in the national mapping program in response to several high-profile damage-related incidents that pointed to misuse of that layer as an ownership base map. Responsibility for that layer is being transferred to the Bureau of Land Management, the agency that is the true source for the data.

GIS organizations will most likely provide additional protection by enhancing GIS personnel credentials, so that GIS organizations will be able to respond appropriately to technical issues that surround public accusations of harm. One of those credentials may be state licensure. Truth-in-labeling, the current quality control paradigm of GIS, may not be enough. Only a GIS professional can make a proper interpretation of metadata. Metadata in itself will not stop an innocent user from making a misapplication of geospatial data, because that user can not really be expected to understand the underlying quality of the data being presented. Instead, GIS data presented for general public use in the future may be required to be tested and certified as meeting some minimum geometric quality standard. Persons doing the certification will most likely hold a state license to do so.

*Part 2 of this GIS article by David W. Gibson will appear in the Fall issue of The California Surveyor.*

## 1999 ACSM/MSPS Fall Conference is Nationally Focused, Locally Oriented

*Fall Conference to Feature a Compendium of Workshops, Technical Sessions, Exhibits and Society Meetings*

The American Congress on Surveying and Mapping and the Michigan Society of Professional Surveyors are holding a joint conference, October 16 - 20, 1999 at the Amway Grand Plaza Hotel, Grand Rapids, Michigan. The joint meeting will bring a new dimension of national focus appealing to the surveying and mapping community. Continuing education workshops, exhibits of the latest products and technology, technical sessions and Society meetings will provide a host of activities for the Michigan Society and attendees from throughout the United States.

The ACSM/MSPS Fall Conference will be promoted through advertising, press releases and calendar entries in national and international magazines and newsletters. There will be discounts for early registration, and workshops will be filled on a first come -- first served basis. The four-day event will offer attendees the opportunity to meet and network with their peers, view the latest technology and services, and enhance their professional skills. ❖

For more information on the conference, contact

Cory Chandler

Conference Coordinator

301/530-1619, Extension 10

E-mail: [coreychandler@mindspring.com](mailto:coreychandler@mindspring.com)

Website: <http://www.survmap.org>.

## Obituaries

### William August Angeloni, PLS 3156

William A. Angeloni, 87, of Sonoma, passed away March 27, 1999.



Bill was born in Salt Lake City, Utah in 1911. He was raised in San Francisco and Los Angeles and settled in San Francisco after marrying Enes Mary Trinei in 1938.

He was employed by the U.S. Army Corps of Engineers from 1936 until his retirement in 1973. During his years of service with the corps, he was Chief of Surveys for the San Francisco District office and chief of automated data processing center for the South Pacific Division and district offices.

Bill was a charter member of the American Congress on Surveying and Mapping, a Life Member of the California Land Surveyors Association, the American Society of Civil Engineers, and the Society of American Military Engineers.

Bill is survived by his wife, Enes; sons, William C., of Sonoma and Edward T., of San Francisco; his daughter, Julie Angeloni of Sonoma; daughter-in-law, Shirley Angeloni of Sonoma; son-in-law, Richard Lindsey of Sonoma; grandchildren, Carleen Marcorelle of Antioch, Ed Angeloni of San Bruno, Steven Angeloni, Bill Angeloni of Pittsburgh, Pa., Christina Angeloni of Sonoma and Aaron Lindsey of Sonoma; great-grandchildren, Cindy Lucero, Katie Marcorelle and Ellen Angeloni. ❖



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# SUBDIVISION MAP ACT

## What are the Requirements and Procedures for a "Merger"?

A "merger" is where contiguous legal parcels owned by the same person or entity is combined into a single legal parcel. Mergers that are initiated by local agencies (except Napa County that by statute has separate merger requirements) must conform to the requirements of Gov't Code § 66451.10 et seq. These include adoption of a merger ordinance, specific requirements of when a merger can occur, notice to the landowner of the local agency's intention to merge the parcels and a hearing if requested by the landowner. The merger becomes effective when the local agency records a notice of merger that states the names of the landowners and a description of the resulting parcel. If a local agency cannot merge two parcels under the merger provisions of the Subdivision Map Act, it cannot require a merger as a condition of a development approval. *Morehart v. County of Santa Barbara*, 7 Cal. App. 3d 1201 (1988).

Owners can merge parcels under the Map Act in a variety of ways. A local agency can adopt a merger ordinance for owner-initiated mergers pursuant to Gov't Code § 66499.203/4. This ordinance must contain a provision requiring the recordation of an instrument evidencing the merger. Another way for an owner to merge parcels is to file a final map or parcel map. Filing a parcel map can have the effect of either a reversion to acreage or the resubdivision of the parcels. Filing a final map can only have the effect of a resubdivision. Gov't Code §§ 66499.201/4, 66499.201/2. In either case, the prior lots merge and new lots are thereby created.

Some local agencies will permit a lot line adjustment for the purpose of merging parcels. Usually lot line adjustments are used to reconfigure lots, but the Map Act expressly permits lot line adjustments where a "greater number" of parcels is not created. Gov't Code § 66412(d). For example, a lot line adjustment including two subdivided lots that moves one lot line to be coterminous with another lot line can result in a single parcel. However, not all local agencies recognize this type of lot line adjustment.

After a merger has occurred, it is advisable to obtain a certificate of compliance from the local agency to confirm that the resulting parcel is a legal parcel.

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# Here's Some Important Information About CLSA

The goal of the California Land Surveyors Association is to promote and enhance the profession of surveying, to promote the common good and welfare of its members, to promote and maintain the highest possible standards of professional ethics and practice, and to elevate the public's understanding of our profession. CLSA represents all Land Surveyors, whether they are employees or proprietors, whether in public or the private sector.

## Representation

■ **LOCAL:** Your local chapter represents you in local issues. Through your chapter representative to the State Board of Directors, the individual member can direct the course CLSA will take. ■ **STATE:** The Surveyor is represented at the state level through an active legislative program, legislative advocate, and liaison with the State Board of Registration. ■ **REGIONAL:** CLSA is an active member of the Western Federation of Professional Surveyors. This Federation is composed of associations throughout the western United States and addresses regional issues. ■ **NATIONAL:** Through institutional affiliation with the National Society of Professional Surveyors and the American Congress on Surveying and Mapping, CLSA is represented at the national level.

## Education Opportunities

CLSA presents annual conferences which provide technical and business programs, as well as exhibits of the latest in surveying and computing technology. Seminars and workshops are presented to assist in continuing education. CLSA publishes the California Surveyor magazine and the CLSA NEWS to keep the membership abreast of changing legislation, legal opinions, and other items which affect our profession.

## Business and Professional Services

CLSA provides a fully staffed central office which is available to answer questions or to provide up-to-date referrals concerning legislation, educational opportunities, job opportunities, or other issues concerning our membership. Professional liability insurance programs are available to members.

## Join CLSA Today!

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