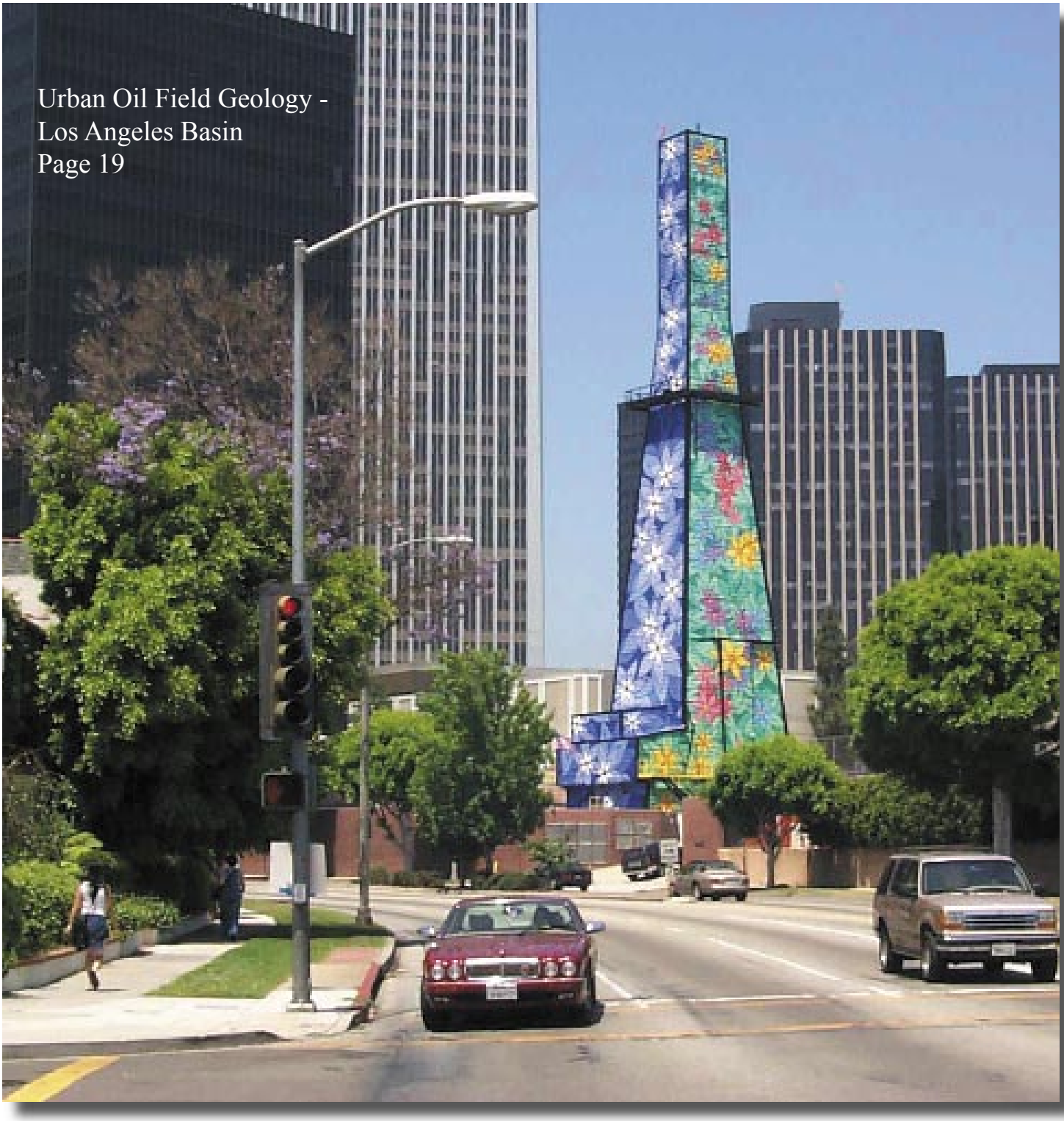
Pacific Petroleum Geologist NEWSLETTER

Pacific Section • American Association of Petroleum Geologists **January & February • 2007**



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Message from the President

Mike Wracher

We at PSAAPG sincerely hope that you all had a good Thanksgiving, a Merry Christmas, and a happy New Year. Now that the holidays are over, it's time to start a new year with warm memories of the past, and thoughts towards the future. The oil business has been on fire over the past few years and the PSAAPG has now responded to that activity by upgrading member services. This month we officially roll out our latest enhancements to the Newsletter and to the website. These changes address communication and information exchange inside and outside the organization.

The last issue of the Newsletter introduced the new look and feel we hope you will enjoy. The new look is largely the work of our editor, Karen Blake. The content remains largely the same, but important structural changes in the background will help it to continue to thrive.

Along with changing the newsletter, Karen Blake has worked with a professional web designer to improve our website. Our strategy was to make the new site utilitarian, visually pleasing and user friendly. Although we've been making steady progress with the website over the last few years, we finally bit the bullet and hired professional help. I invite you to log on to this new site (www.psaapg.org) and look around. You'll discover interesting new additions that were designed to be helpful. Rest assured to those out there desiring hard copy, we will always communicate to you through traditional channels. Please contact us with suggestions. We will consider all comments from membership for continued improvement of the newsletter and website.

The executive committee is very pleased with both the upgraded newsletter and new website and we sincerely hope they better serve the geoscientists of the Pacific Section.

Mike

Message from the HOD

Larry L. Jones

On December 2, AAPG had the Midyear House of Delegates meeting in Houston. The HoD Executive Committee was present and each Committee of the HoD was represented. We were joined by the Chairman-Elect candidates, AAPG President, President Elect and a Representative of the Advisory Council.

Multiple business was conducted, but I want to concentrate on one Motion to be considered at the House of Delegates meeting in Long Beach. Based on present demographics, imagine what AAPG would look like in 15 years. Domestic (Section) population would have shrunk dramatically due to an aging membership and failure to attract younger members in order to reverse this spiral. International (Region) membership would have grown, but not enough to overcome this vision of the future. The primary cause would be the inability of some Domestic and International geoscientists to pay AAPG dues in the present form ($80 US per year). As a result, AAPG may no longer be the superior geoscience association in the world, and might strain for survival at all levels. Therefore, AAPG needs an influx of worldwide, very active members, who can ultimately make a financial impact on the Association.

A Motion will be brought before the House at Long Beach that seeks to establish a graduated dues structure based on an "Ability to Pay" model. This proposal has had a complete study by the AAPG Graduated Dues Committee, the Staff, the Advisory Council, the AAPG Executive Committee, the HoD Constitution & Bylaws Committee, and finally, the HoD Executive Committee. Each reached a conclusion to bring this proposal before the full House of Delegates.

First, based on the results of a Graduated Dues Program that was initiated by SPE, the AAPG proposal should provide a significant increase in applications for membership world wide. The "Ability to Pay" Model could benefit all of the membership, both Section and Region members and potential members. It could benefit a junior college teacher, a mudlogger, a jobless geoscientist,(who wants to maintain his or her membership), or a person working internationally for a national oil company at a salary much less than many of his or her peers.

Three "personal income" brackets will be established. On the annual dues invoice, members may elect to place themselves in one of those brackets, or they can elect to pay full dues even if they do not fall within that bracket. Other than the upper bracket, members will not receive full services relating to the Bulletin/Explorer. Can we "trust our members" to make honest reporting of income? I believe so, and based on SPE's experience, this has proven to be true.

Many geoscientists want to join AAPG or maintain their involvement, but they cannot afford the full dues. Again based on the experience of SPE, this proposal should result in an orderly growth for AAPG.

The House of Delegates will retain complete oversight of the AAPG dues structure. Staff studies of projected multiple year income and expense indicate that with expected growth, the proposal shall be close to revenue neutral. The HoD Executive Committee has received a legal opinion that nothing in the proposal should violate IRS guidelines for maintaining 501(c) 6 Status.

We are breaking new ground, but we need to do Graduated Dues. The plan has been evaluated in great detail, and the AAPG requests the support of its general membership. An AAPG "graduated dues" website will be initiated from 1/1/07 thru 2/28/07, and you are invited to make comments. We want to hear from you.

llj

Message from the Editor

Karen Blake

As we improve the quality of the look and feel of the newsletter, some common problems keep popping up involving images. Tapping the experience of others, I am requesting that you submit your materials in the following formats, if possible.

All materials are due by the 15th of the month, 2 weeks before issue publication. Abstracts should be 500 words or less; extended abstracts up to 1000 words; articles can be any length. All submissions are subject to editorial review and revision.

Text should be submitted by email as an attached text or Word file or on a clearly labeled CD in Word format with a hardcopy printout to the Editor. If sending an email, please put PS-AAPG in the subject line.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator, Freehand, Canvas or CorelDraw. Files should be saved and submitted in .eps (Adobe Illustrator) format. Send them as separate attachments via email or on a diskette or CD if they are larger than 1 MEG each, accompanied by figure captions that include the file name of the desired image. DO NOT EMBED them into your text document; they must be sent as separate files from the text. DO NOT USE POWERPOINT, CLIP ART or Internet images (72-DPI resolution) as these do not have adequate resolution for the printed page and cannot be accepted. All digital files must have 300-DPI resolution or greater at the approximate size the figure will be printed.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 1 MB) or on CD or zip disk.

Publication Deadline is February 15th for the March - April 2007 issue.

Advertising Rates

Members	Single issue	Year (6 issues)
Full Page	$400.00	$1600.00
Half Page	$250.00	$1050.00
Quarter Page	$150.00	$650.00
Business Card		$250.00

Societies Free Advertising

Conventions	Unlimited Space	PS-AAPG Newsletter
Societies	1/4 page	AAPG Explorer

2007 AAPG Annual Convention

Member Rates

by February 7th - $295
by March 22nd - $350
after March 22nd - $430

Register Early and Save!

Pacific Section Members, You're Invited!

On behalf of the convention committee it is my pleasure to extend a sincere invitation to participate in the 2007 Annual Convention and Exhibition of the American Association of Petroleum Geologists (AAPG) and the Society of Sedimentary Geologists (SEPM) at Long Beach, California. Long Beach is located in Southern California at the center of oil production in the Los Angeles Basin. This location provides a unique venue where the weather is always good, and spectacular outcrops as well as field analogues are just a short drive away. Since the PSAAPG is the host organization, you can get the member price just for belonging to PSAAPG. Please note the pricing increases in tiers and takes its first step on February 8th.

The technical program, exhibits, field trips, and short courses will be the foundation of the Long Beach meeting. The theme of the meeting, "Understanding Earth Systems, Pursuing the Checkered Flag", puts you in the driver's seat to increase your knowledge of the earth, its structure, provinces, environment and resources. Whether you are interested in learning about new technologies, exploring new basins, or developing strategies to maximize production and reserves, you will see that our technical program promises to be one of the strongest in years (over 1000 presentations). Oral and poster sessions along with special forums have been organized to highlight eleven major themes. These themes will be packed with timely papers and include comprehensive research on:

Deep Water Reservoirs
Stratigraphy and Sedimentology
Structural Innovations and Applications
Global Exploration Portfolio
Reservoir Characterization and Models
Geoscience Tools
Unconventional Reservoirs
Hydrocarbon Systems and Basin Analysis
The new Oil Business
Astrogeology and the Bigger Picture
Geoscience and Public policy

AAPG's divisions, the Division of Environmental Geosciences (DEG), the Energy Mineral Division (EMD), and the Division of Professional Affairs (DPA) will be well represented throughout these themes to provide a well rounded and coherent meeting.

California provides a laboratory in your backyard where world class outcrops and analogue exposures abound. All our field trips are being sponsored by PSAAPG local geological societies. Most of the field trips are linked to technical sessions to promote an in-depth understanding of the earth systems you think about on a daily basis. Depositional systems, heavy oil reservoirs, tectonic processes, and complex structures, are all on display in field trips ranging from 1 day to 5 days. If you're interested in the field trips only, you may sign up for those without registering for the convention ($30. fee will be applied). In addition there will be a deep water core workshop highlighting cores from oil fields throughout California.

Short courses will be practical and timely, focusing on providing foundational courses as well as advanced technical material. Our student programs, career programs and outreach efforts are robust.

One of the advantages of holding the convention in Long Beach is that all the convention hotels are within walking distance to the Convention Center and planned social events. To assist you in enjoying Southern California, the entertainment committee has organized quite an agenda for social pursuits. Highlights include a night at the blues club cafe to meet, greet and listen to cool music. For spouses and guests, trips have been planned to many southern California destinations, such as the Getty Museum, Catalina Island, and shopping in Beverly Hills.

There are many other activities for you and your family during your time here. If you're looking for food and casual entertainment, there are renowned restaurants and shops surrounding the convention hotels on Pine Avenue, Shoreline Village, the Pike, and the Aquarium of the Pacific or the Queen Mary.

If you don't have an announcement, I urge you go get one from the AAPG website at www.aapg.org/longbeach. As you look through this announcement and develop a feel for the convention, I am confident you will increase your desire to understand earth systems and be inspired to pursue the checkered flag. Register on-line and come join us in Long Beach.

Dalton F. Lockman
General Chair

Subsurface Characterization of the Potrero-Ryer Island Thrust System, Western Sacramento-San Joaquin Delta, Northern California

Principal Investigators:
Jeffrey R. Unruh, William Lettis & Associates, Inc., Walnut Creek, CA.
Scott Hector, Paul Graham Drilling, Rio Vista, CA

Editor's Note: This is the second of three parts of a paper on the history of the formation of the gas-bearing structures in the western Sacramento-San Joaquin Delta region. This segment of the paper discusses the smaller fields found in the area, and discusses the folds related to gas entrapment. The anticlines in the western Delta region are part of a contractional belt that extends southward to the northern Diablo Range, and which includes the late Cenozoic Mt. Diablo anticline. The contractional structures in this belt trend westerly and exhibit a right-stepping, en echelon geometry with respect to the bounding Greenville and Concord strike-slip faults. South of the Sacramento River, the asymmetric folds consistently verge to the southwest and underlying thrust faults dip northeast. This pattern changes north of the Sacramento River and Suisun Bay, where the Suisun-Grizzly anticline, Honker-Van Sickle anticline and the Potrero Hills anticline verge to the northeast and are underlain by southwest-dipping thrust faults. This second segment of the paper discusses the smaller gas fields in the Western Delta Region: Honker, Kirby Hills, Potrero Hills and Van Sickle.

Honker Bay and Van Sickle Island Structures

The Honker Bay and Van Sickle Island gas fields are located north of the Sacramento River directly north of the city of Pittsburg (Figure 2). Although the antiformal hydrocarbon traps associated with the fields are treated as discrete structures by the Division of Oil and Gas (1982), we evaluate them together because of their close proximity.

The Van Sickle Island gas field is formed by an anticline or dome that is cut by the Pittsburg-Kirby Hills fault (Figure 8), which is an approximately north-south-striking fault that coincides with an alignment of seismicity north of the town of Pittsburg. (oral communication, 1997; also, Williams and Gabet, 1997). Although poorly constrained by the available well data, the anticline or dome appears to be broader and has less structural relief on the east side of the fault than on the west. Based on an abrupt steepening in the bedding on the northwest side of the closure indicated by dipmeter logs, we interpret that the fold west of the Pittsburg-Kirby Hills fault is asymmetric, vergent toward the north, and may be underlain by a southeast-dipping thrust fault (Figure 8). If this interpretation is correct, then the fault geometry suggests that the south-dipping thrust merges with the Pittsburg-Kirby Hills fault at depth.

The Honker Bay and Van Sickle Island gas fields are separated by an approximately north-south-striking fault zone that displaces the Domengine sandstone a total of about 360 m (about 1200 ft) down to the east (Figure 8).

We interpret that the east-side-down fault zone between the Van Sickle Island and Honker Bay fields is related to other structures in the greater Delta region mapped as early Tertiary normal faults. Specifically, we correlate the east-side-down fault zone between the Van Sickle Island and Honker Bay fields (Figure 9) with the Kirker fault of Graymer et al., 1994 (also shown as the "Kirker Pass fault" on compilation maps by Crane, 1995), which is mapped southwest of Pittsburg within the uplifted and northeast-tilted section of Cretaceous and Tertiary strata on the back limb of the Mt. Diablo anticline (Figure 1).

Following the Division of Oil and Gas (1982) and MacKevett (1992), we interpret the Honker Bay structure west of the Kirker fault to be a faulted anticline (Figure 8). A seismic reflection profile from the western end of the Honker Bay gas field published by MacKevett (1992) shows that the structure is an asymmetric, north- to northeast-vergent anticline similar to the Suisun-Grizzly anticlinorium. MacKevett (1992) interpreted that the anticline is bounded

on the northeast and southwest by inwardly-dipping thrust faults. Based on the vergence of the fold, the southwest-dipping fault identified by MacKevett (1992) probably has accommodated the greatest amount of slip at the northwest end of the anticline. The well data available to us for mapping the structure do not constrain the location of this southwest-dipping thrust fault along strike to the east. Based on the seismic reflection data published by MacKevett (1992), we suggest that it may cut up section to the stratigraphic level of the Domengine sandstone north of the area covered by well data (i.e., north of the detailed map area in Figure 9). Moving eastward, slip on the southwest-dipping thrust fault beneath the Honker Bay anticline may be transferred to one or more north-dipping back thrusts, which are primarily responsible for growth of the two small anticlines shown in the structure contour map (Figure 8).

Kirby Hills

The "Kirby Hills" collectively refer to a range of low hills located north of Van Sickle Island, west of the Montezuma Hills, and southeast of the Potrero Hills (Figure 11). The Kirby Hills gas field is divided into a "main area" south of Nurse Slough and a "north area" north of Nurse Slough. As discussed below, we interpret that the gas-producing structures in both areas are associated with splays of the Pittsburgh-Kirby Hills fault zone.

The "Main Area" of the Kirby Hill gas field is developed in several distinct anticlinal structures that are cut by strands of the Pittsburg-Kirby Hills fault zone (Figure 12). Near the southern end of the detailed map area, the Pittsburg-Kirby Hills fault zone passes through or along a small unnamed bedrock hill that lies east of Meins Landing and rises about 40 m above the marshy areas adjacent to Montezuma slough. Well data are sparse in this region, but we interpret that the Domengine sandstone in the vicinity of the unnamed hill is elevated a few hundred feet relative to surrounding areas by two splays of the Pittsburg-Kirby Hills fault.

We trace splays of the Pittsburg-Kirby Hills fault about 1.0 km north to Kirby Hill (Figure 12), which rises about 80 m above the surrounding marshlands and is associated with a local structural high in the Domengine sandstone. Analysis of aerial photos and topographic maps reveals several pronounced north-northwest-trending bedrock lineaments in eastern Kirby Hill that control local drainage patterns and probably are coincident with major splays of the Pittsburg-Kirby Hills fault zone. Our interpretation of the fault splays in Figure 12 is based in part on the location of the prominent topographic lineaments at Kirby Hill. A distinct anticlinal closure in the Domengine sandstone about 1.0 km northwest of Kirby Hill is associated with a very small, unnamed 30-m-high bedrock hill. The anticlinal closure is irregular in shape, represents about 460 m (1500 ft) of local relief on the Domengine sandstone, and appears to be abruptly truncated to the east by a splay of the fault zone (Figure 12).

North of Bradmoor Island, the Pittsburg-Kirby Hills fault zone turns westward and projects toward a fault zone mapped along the eastern margin of the Potrero Hills anticline (Figure 11; see

discussion in section on Potrero Hills, below; also, Weber-Band 1998). As mapped by Sims et al. (1973), the fault zone is bounded by two northwest-southeast-striking faults, contains slivers of Eocene and Pliocene strata, and cuts obliquely across the east-west trend of the Potrero Hills anticline axis (Figure 11).

Potrero Hills Anticline

The Potrero Hills is an east-west-trending range of low hills along the northern boundary of the study area (Figures 1 and 11) that coincides with an east-west-trending anticline. Based on the extent of the Potrero Hills and the mapped exposures of folded early Tertiary strata, minimum length of the anticline is about 9 km. The north-south width of the Potrero Hills is about 3 km, but drill hole data (discussed below) indicate that the width of the associated anticline probably is greater than 3 km. Based on map patterns of folded Capay shale, Domengine sandstone and Nortonville shale in the Potrero Hills, the anticline plunges east and is truncated on its eastern margin by the northern extension of the Pittsburg-Kirby Hills fault zone (Figure 11). Sims et al. (1973) show that Pliocene-Pleistocene strata of the Tehama Formation are deformed along the limbs of the fold; if this mapping is correct, then at least some growth of the fold has occurred during late Cenozoic time.

We constructed two north-south cross-sections across the Potrero Hills anticline to evaluate the subsurface structure. Our interpretations follow previous unpublished cross-sections by D. Diamond developed for gas exploration at the Potrero Hills field. The anticline shown in the eastern cross-section (Figure

13) is constrained by surface mapping and data from 6 wells drilled in the now-abandoned Potrero Hills gas field. Dipmeter logs for three of these wells, and paleontological analysis of the deformed Eocene and Cretaceous strata at depth, were incorporated in the cross-section (Figure 13) and provide good constraints on the internal structure of the anticline. Because only one well was drilled in the vicinity of the western cross section (Figure 14), the subsurface relations are based primarily on projecting surface geology to depth, and by assuming lateral continuity of some of the structures interpreted in the eastern cross-section (Figure 13).

The eastern cross-section (Figure 13) depicts the Potrero Hills as an asymmetric, north-vergent anticline. The asymmetry of the fold is best defined by dipmeter data, which indicate that the Eocene strata exposed in the core of the fold at the surface are overturned beneath the northern limb at depth and dip southwest (Figure 13). We interpret that the anticline formed primarily by fault-propagation folding above the tip of a blind, north-vergent thrust fault. A thrust or reverse fault with about 150 m to 200 m of displacement is inferred to cut up section through the tightly folded Eocene Martinez shale in the core of the fold and flatten in the upper 300 to 500 m. This fault probably roots in a deeper, less steeply south-dipping thrust fault at depth that has accommodated most of the slip during development of the Potrero Hills anticline (Figure 13).

The interpretation of subsurface structure in the cross-section to the west (Figure 14; see Figure 11 for location) similarly depicts the Potrero Hills anticline as a north-vergent fault-propagation fold deformed by complex faulting at depth. We infer that the reverse fault that cuts the core of the anticline in the cross-section to the east also is present to the west, and that it splits into two splays. Based on dipmeter and paleontology data from the Potrero No. 3 well (Figure 14), the lower splay displaces the Eocene Martinez sand approximately 250 m to the north over the Capay shale. The upper splay is less well constrained by the data; if present, it probably has accommodated 60 m or less of total dip-slip displacement.

We interpret that a small, south-vergent anticline on the southern limb of the Potrero Hills anticline indicated by overturned Eocene strata dipping steeply to the north is related to the presence of a small, antithetic north-dipping thrust fault that splays upward from the reverse faults in the core of the fold. An antithetic thrust fault mapped at the surface north of the fold axis similarly is shown as a shallowly-rooted feature with a maximum displacement of several tens of meters (Figure 13). We infer that the faults in the western cross-section (Figure 14) splay upward from a deeper, south-dipping thrust fault that is primarily responsible for growth of the Potrero Hills fault-propagation fold.

We estimate local shortening across the Potrero Hills anticline by measuring bed lengths in the cross-sections between two arbitrary points or "pins". We use the contact between Capay shale and Waganet sand for the shortening estimates because this contact was picked in all wells shown on both cross-sections and thus is contact best constrained by subsurface data. Total deformed length of this contact between the pins on the eastern cross-section (Figure 13) is about 3250 m (10,652 ft), and the horizontal distance between the pins is 2015 m (6600 ft). If it is assumed that the Capay-Waganet contact was originally horizontal prior to folding, shortening between the pins on Figure 13 is 1235 m, or 38% of the predeformed length. Performing a similar analysis on the western cross-section, total length of the Capay-Waganet contact between the pins shown on Figure 14 is 2210 m (7250 ft) and the horizontal distance between the pins is 981 m (3219 ft), indicating a local shortening of 1229 m or 56% of the predeformed length. The ratio of the present horizontal length of this contact

to the predeformed length for the eastern and western cross sections is 62% and 44%, respectively. We emphasize that these are minimum shortening estimates for the Potrero Hills anticline because the "pins" we have chosen are not placed far enough apart to fully encompass the limbs of the structure.

EXPLORATION UPDATE: Since the writing of the original report on the Suisun Bay region by William Lettis and Associates in 1999, 3D seismic surveys have resulted in additional discoveries in the Suisun Bay Basin. A 3D survey shot by D.C. Slawson over the east half of the Potrero Hills structure and the adjoining Kirby Hills resulted in a one-well pool at the northeast edge of Potrero Hills. The Slawson "Davisson" well in section 2-T4N-R1W made just over 100,000 Mcf in 2002 from the Wagenet sand in what appears to have been a small fault block in the complexly faulted east end of the fold. Farther south, a 3D survey over the Grizzly, Van Sickle and Chipps Islands was shot by Enron Oil and Gas and later acquired by Occidental Petroleum. As a result of this survey, Venoco, a partner in the shoot, made a new pool (Domengine?) discovery with their "Roaring River" wells at Van Sickle Island field (sec.29-T4N-R1E). The "Roaring River" # 20-1 well has just been released from confidentiality by the DOGGR. The well has made 1.4 billion cubic feet of gas since being completed in late 2004. An offset confirmation well is still confidential. These recent discoveries show that there is the potential for more discoveries in the Suisun Bay region in the future.

This concludes the second of three newsletter articles on the Suisun Bay area. The next and last article will discuss the theories on the development of the Potrero-Ryer thrust system.

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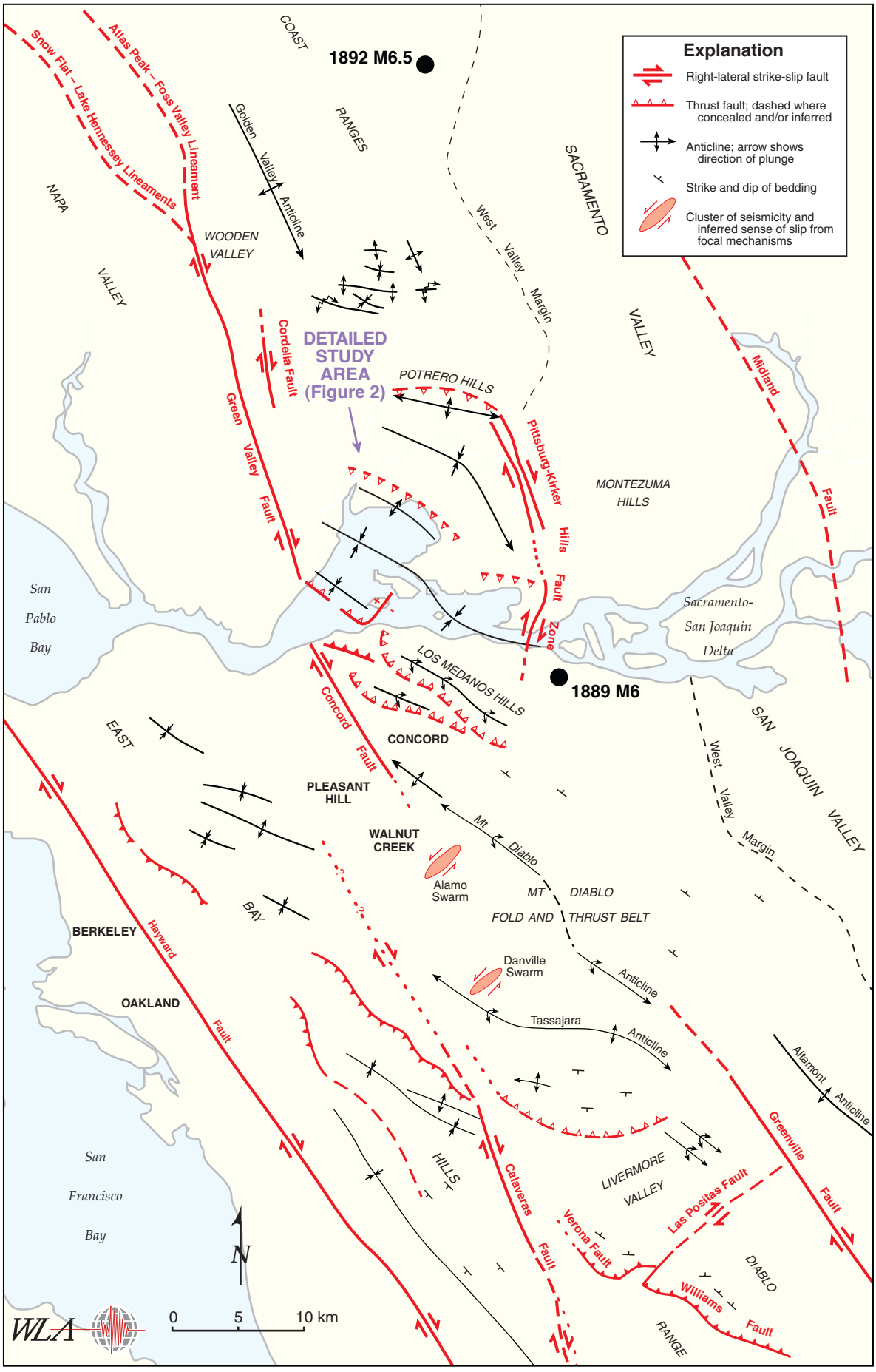


Figure 1. Generalized tectonic map of the eastern San Francisco Bay area, northern California.

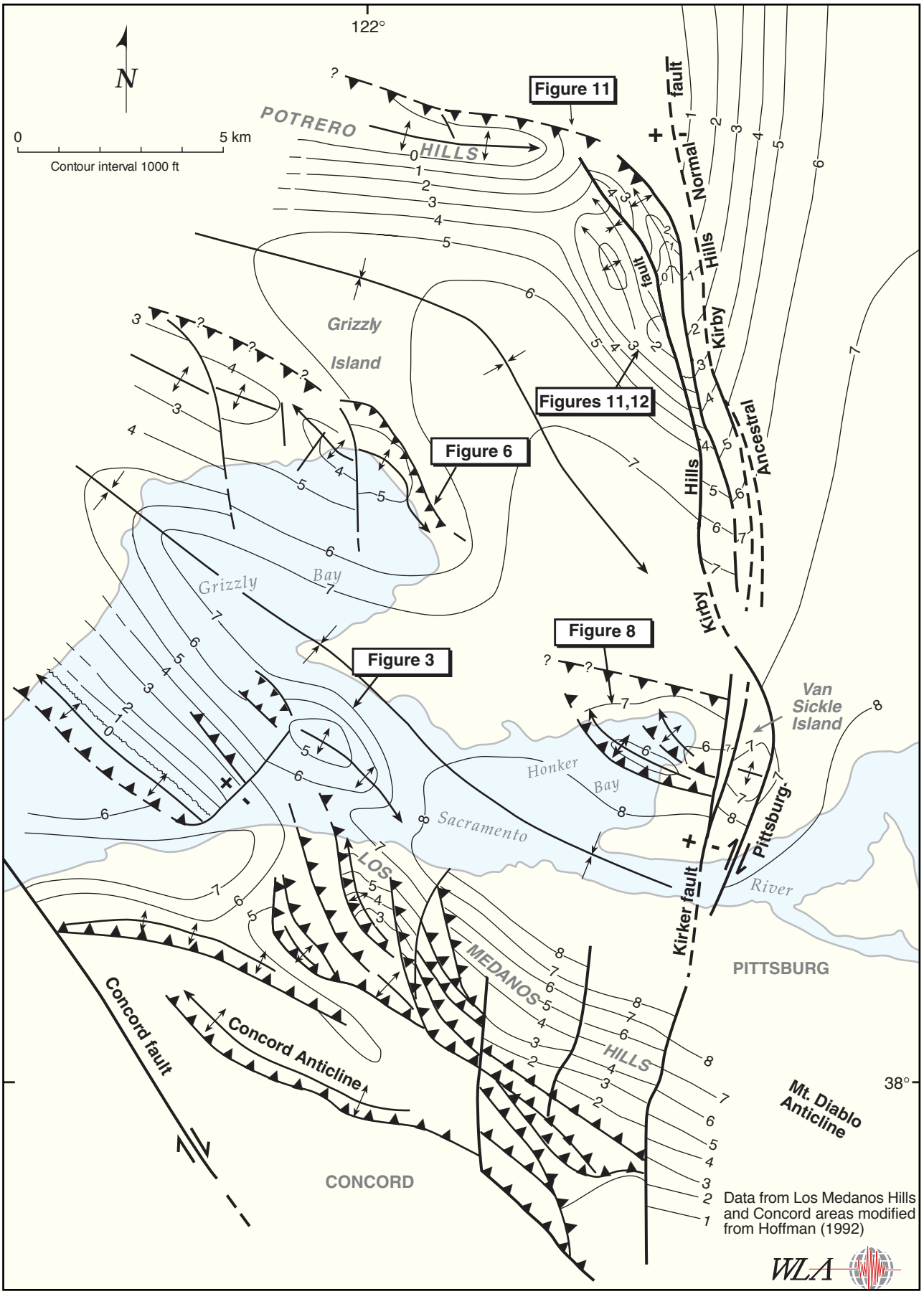
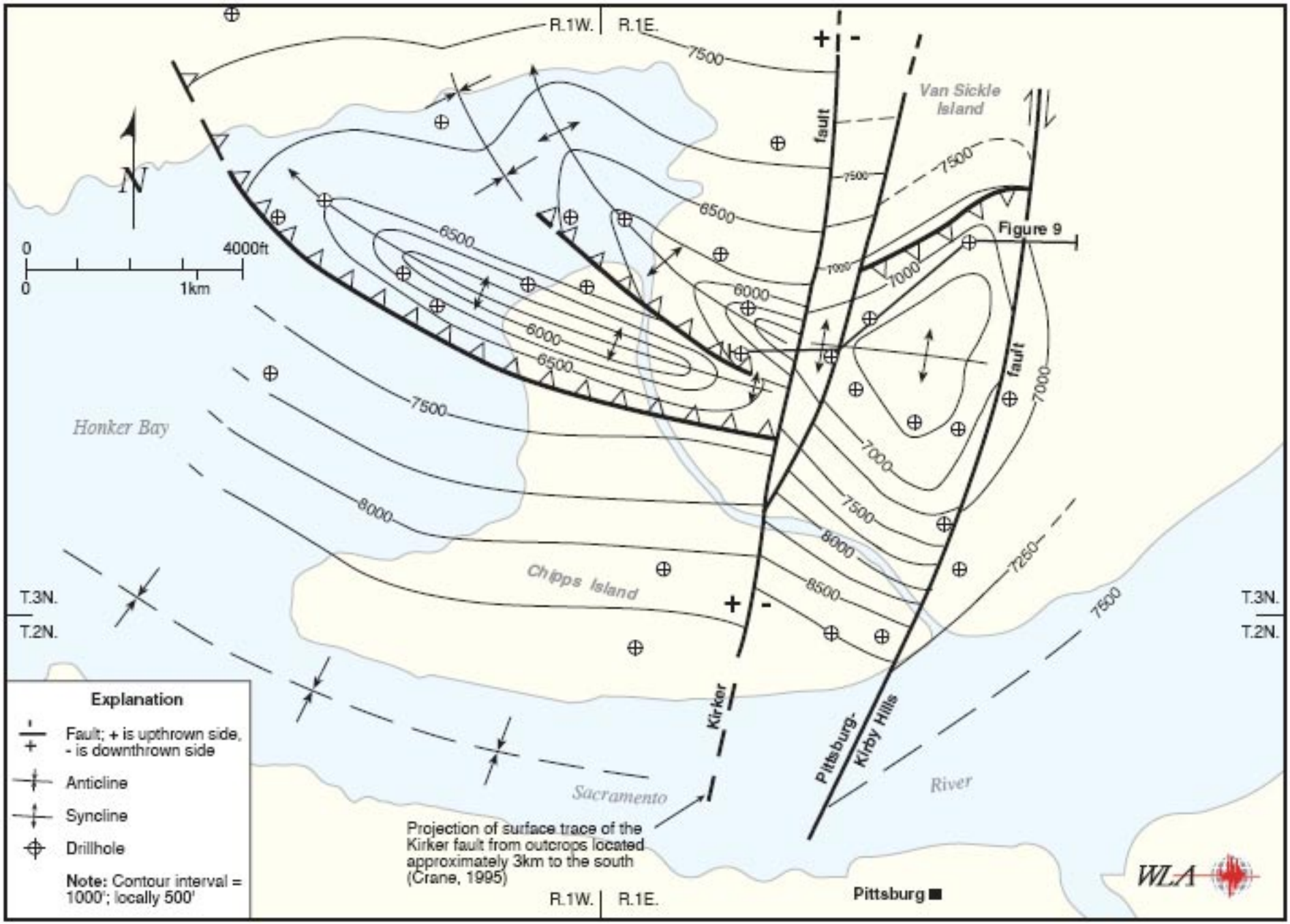


Figure 2. Structure contour map on the top of the Eocene Domengine sandstone in the western Delta study area. Cuntour interval is 1000 feet. Data from the Los Medanos Hills and Concord areas are modified from Hoffman (1992). See indicated figures for detailed maps of individual gas fields.



Firgure 8. Structure contour map on the top of the Eocene Domengine sandstone, Honker Bay and Van Sickle Island gas fields (see Figure 2 for location in the western Delta study region).

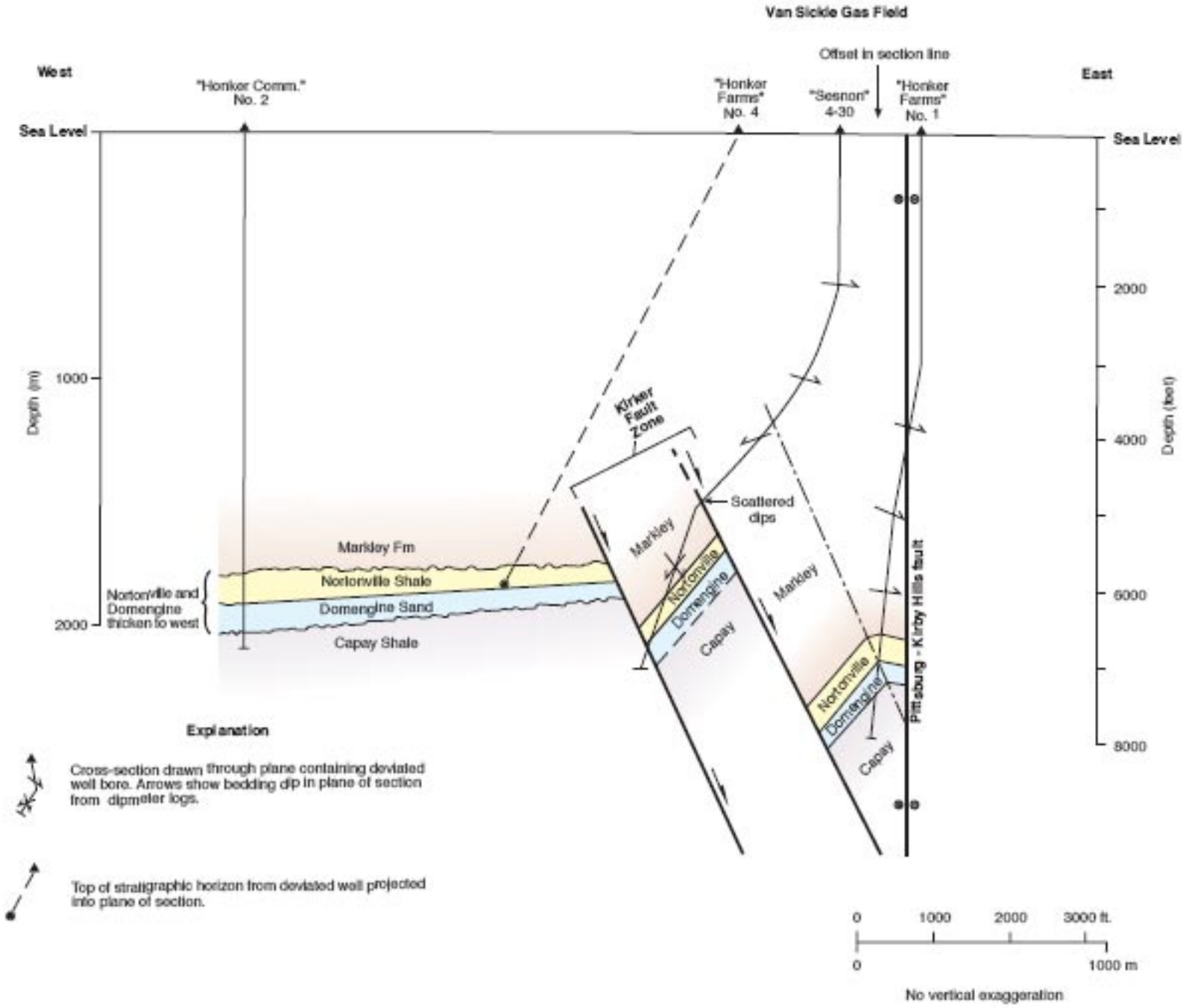


Figure 9. Generalized east-west cross section through gas wells in the Honker Bay and Van Sickle Island fields showing interpreted normal offse□

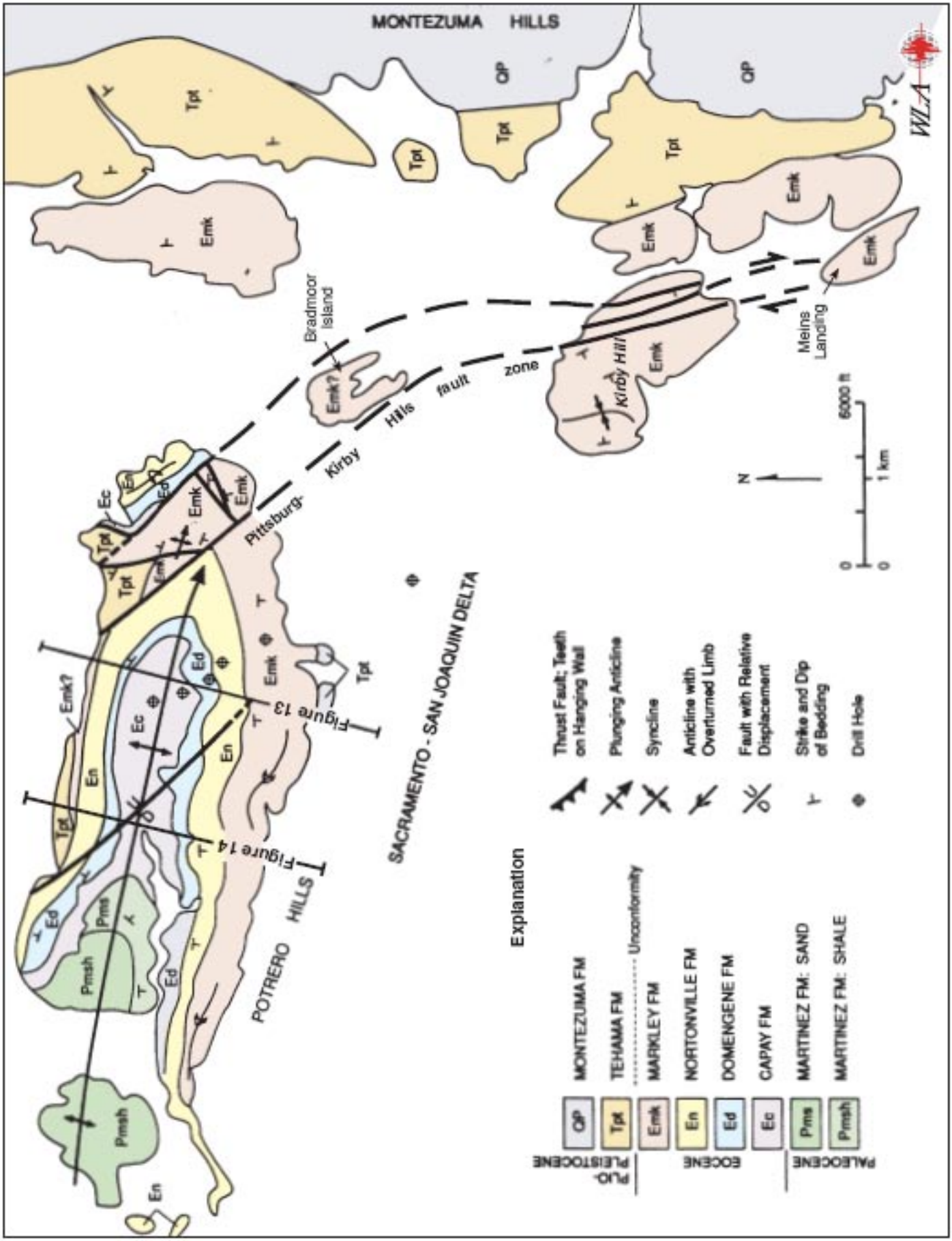


Figure 11. Generalized geologic map of the Potrero Hills- Kirby Hills region, California.

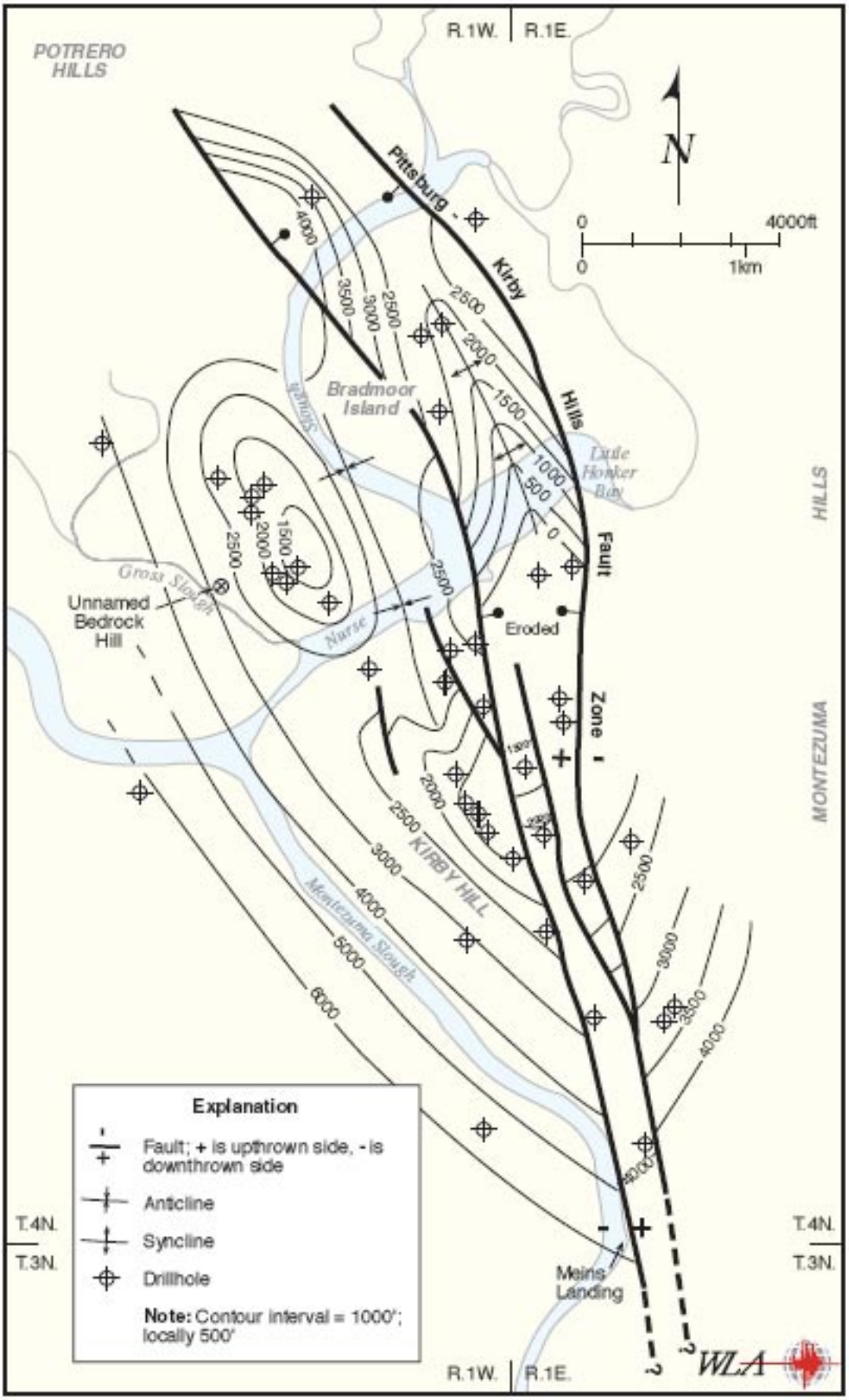


Figure 12. Structure contour map on the top of the Eocene Domengine sandstone, Kirby Hill gas fields (see Figure 2 for location in the western Delta study region).

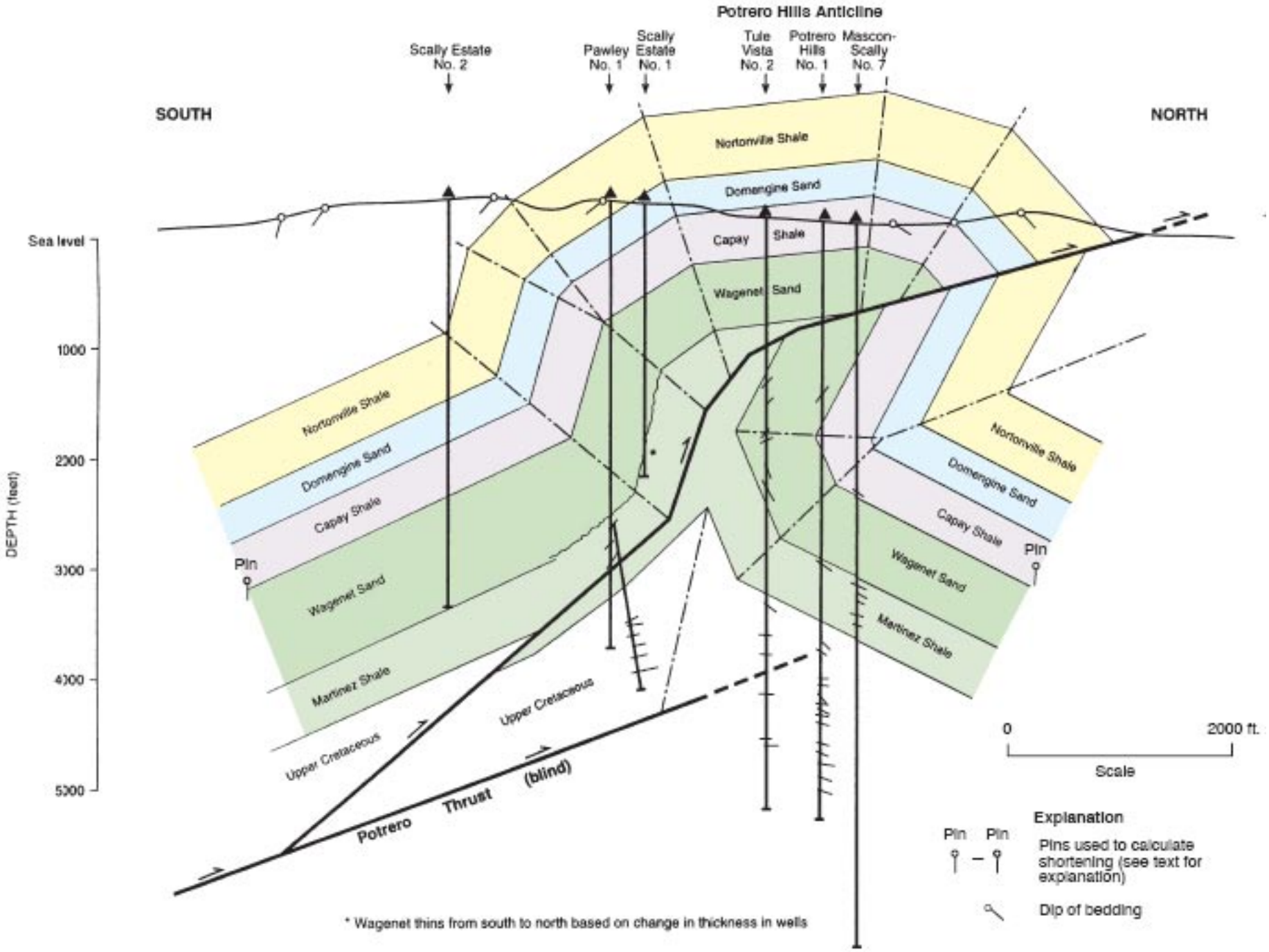


Figure 13. North-south cross section through the Potrero Hills anticline (see Figure 11 for location of section line).

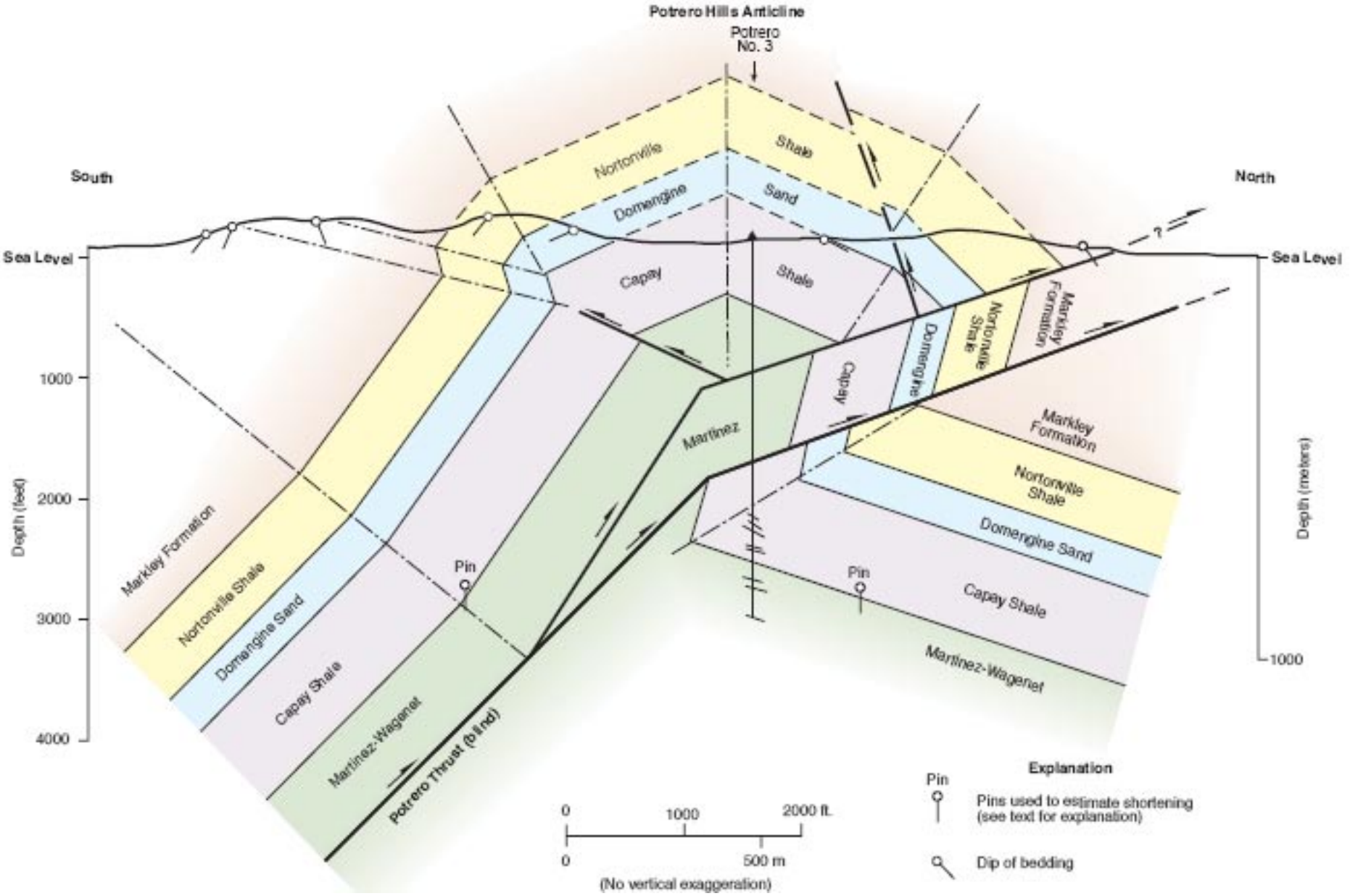


Figure 14. North-south cross section through the Potrero Hills anticline (see Figure 11 for location of section line).

Mike Wracher's recent remarks on the joys of field geology reflect the fact that that's where geology really begins. Simon Winchester told about it in his story "The Map That Changed the World," William Smith's map of 200 years ago that demonstrated the relationships between structure and stratigraphy in sedimentary rocks.

Mike told of the Colorado Plateau's colorful geology. Less colorful but more complex and varied geology is right at his front and back doors. Near the front door; the apex of the Ventura Avenue anticline, looking west from that avenue; horizontal fossiliferous Pleistocene sands lying on steeply dipping Pliocene Pico Formation near Rincon; tar seeps in Upper Miocene shales near Carpinteria; Sespe Formation red beds thrust over Pleistocene gravels near the San Marcos Pass Road.

At the back door: Thick dead-oil sand near the highway just east of Fillmore, evidence of a sizeable oil field that was breached by erosion (Talk about an oil spill!); Fossiliferous Lower Miocene Vaqueros sandstone in a tightly folded syncline in Upper Sespe Creek; thick overturned Eocene beds in upper Ventura River canyon. I heard a Midwesterner on an AAPG field trip in that area say: "I simply connot believe it!"

Consider the Owens Valley region, where I live. It has everything that the coast doesn't have, and vice versa. Rather than petroliferous thrust-faulted Tertiary marine sediments, the thickest Lower Cambrian section in the world is visible up the road to Westgard Pass; in Papoose Flat you can put your hand on the contact between the eponymous pluton and the rocks it intruded; the Sierra Nevada normal fault, and Pleistocene lavas that came up on it south of Big Pine; the White/Inyo Range normal fault system, with myriad visible scarps that have springs at their base. Three creeks that head in the Sierra Nevada cut down through the Alabama Hills as antecedent streams, proving that those hills are younger than the Sierras. That's why, every summer, you run across geology professors with their students from the University of North Carolina; University of California, Santa Barbara; and a few foreign countries.

This is the kind of country where Grove K. Gilbert and William Morris Davis invented geomorphology. Show these things to a geology student and s/he will say: "I see what you mean!" And literally mean it.

And now, down to the present. To his and my horror, a Syracuse University friend of mine, a geology professor emeritus, told me that some colleges are dropping field geology from their curriculum. That's about like a medical school dropping anatomy.

One other thing to consider: Geophysics is <u>not</u> geology. Geophysical data reveal simply the siesmic, magnetic, or gravitational characteristics of the rocks. Some data are significant and useful, and others are not.

And finally: Computers cannot correlate electric logs, or decide on the location for a wildcat well, or determine the optimum spacing for development wells. Those things are done in the minds of human beings. So repeat after me this solemn oath:

THE COMPUTER IS ONLY A TOOL, AND THEREFORE, NO MATTER HOW CLEVER IT IS, IT IS NOT SMARTER THAN I AM.

Robert H. Paschall
Consulting Geologist
Bishop, California

DOE Invites Nominations for Two Advisory Committees

http://www.fossil.energy.gov/news/techlines/2006/06075-Advisory_Committee_Nominations.html

Issued on: December 21, 2006

Washington, DC - The Department of Energy invites any interested person or organization to nominate qualified individuals to serve on one of two federal advisory committees established under the Energy Policy Act of 2005, Subtitle J, Section 999 - Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources.

The Secretary of Energy must carry out a program of research, development, demonstration, and commercial application of technologies for ultra-deepwater and unconventional natural gas and other petroleum resource exploration and production, including addressing the technology challenges for small producers, safe operations, and environmental mitigation (including reduction of greenhouse gas emissions and sequestration of carbon). The advisory committees will advise the Secretary on the development and implementation of this program and review and comment on the program's annual plan.

The Ultra-Deepwater Advisory Committee (UDAC) comprised of 15 to 20 members will advise the Secretary on development and implementation of programs related to ultra-deepwater natural gas and other petroleum resources.

The Unconventional Resources Technology Advisory Committee (URTAC) comprised of approximately 25 members will advise the Secretary on the development and implementation of activities related to onshore unconventional natural gas and other petroleum resources.

Nominations for either of these committees must be received by January 26, 2007.

For more information, contact:
Bill Hochheiser or Elena Melchert, 202-586-5600

Urban Oil Fields of the Los Angeles Basin - Geology, History, Oil and Urban Living

This trip will provide a geologic overview of the oil fields along the Newport-Inglewood and La Cienegas Fault trends as well as an overview of the petroleum industry today in the Los Angeles Basin. The agenda includes discussions on the geology, environment, politics, energy, history and the future of urban oil fields. The trip starts with a look around Long Beach where the Giant Wilmington field underlies the entire harbor area. The trip will quickly make its way to Signal Hill, the Dominguez Oil Field, Rosecrans Oil Field and to the Inglewood Oil Field, where we will examine the Newport-Inglewood Fault and see how urban development co-exists with historic and active oil field activities. The trip continues north to Beverly Hills to visit the Pico and Packard Drill sites designed as buildings to fit in with the high rise buildings that surround the area. In addition, the route will drive by the La Brea Tar Pits, where oil seeps show the richness of the basin at the surface. After taking this trip, your view of how oil fields can be developed will be change forever, a one in a lifetime opportunity.

Borderland Rift Basement Tectonics and Geology of Santa Catalina Island

We will visit Santa Catalina Island to examine the outstanding examples of basement rock outcrops exposed on the island, evidence of ancient and active faulting, and explore the most recent tectonic models and earthquake potential for the island and surrounding California Continental Borderland. A visit to the East End Quarry will provide excellent exposure of the "Breccia" used to construct the Long Beach breakwater as well as the volcanic intrusions. We will see spectacular examples of landsliding on the island and will discuss the history of mining and development on this offshore piece of Los Angeles County. There will be three major geological themes for discussion and examination during the field trip: 1) basement rocks and the subduction history; 2) Neogene volcanic rocks and magmatism in the Inner Borderland Rift; 3) Neotectonics and what are the major geological processes occurring on the island today. The rocks to be seen on the island and their structural relationships provide important insights into the geologic history of the southern California continental margin that cannot be easily observed elsewhere. In particular, this field trip will discuss exciting new discoveries of major crater structures in the Inner Borderland and their relevance and potential as "Rosetta Stones" to enable greater understanding of the late Cenozoic tectonic evolution of the Borderland and the Pacific North America transform boundary. We will consider how the complex basement geology and tectonic history have exerted control on late Cenozoic structure, basin evolution and subsequent structural inversion that generated and trapped significant quantities of hydrocarbons along the California continental margin. Did you know that natural seeps leave tar globs on some of Catalina's beaches? Did you know that Catalina Schist basement rocks provide reservoirs for some of southern California's producing oil and gas fields? We will examine high-resolution seismic reflection profiles across active tectonic inversion structures–strike-slip restraining bend "pop-ups" that provide clues to the internal structure and tectonic evolution of these important Borderland hydrocarbon reservoirs. With these seismic data and the outcrops on the island, we can gain a broader understanding of Borderland geology and the tectonic evolution of a broad continental transform plate margin.

http://www.rain.org/~akraemer/catalina.html

Photo by MR Legg

Photo by MR Legg

Santa Monica Mountain Outcrops - Deep Production from the Los Angeles Basin

The Los Angles Basin is one of the most prolific oil and gas basins in the world. The juxtaposition of extremely rich organic source rocks next to very deformable sediments, a rapid thermal maturation history, short migration pathways, and strong structural deformation, has resulted in several extremely large and many unique hydrocarbon accumulations. The sedimentary deposits which produce hydrocarbons from many of the fields along the northern edge of the LA Basin crop out within 3 miles in the nearby Santa Monica Mts. The units looked at on the trip range in age from the non-productive Jurassic (~200 Mya) Santa Monica Slate to the highly productive upper Miocene (10-5 Mya) Monterey Formation siliceous shales and equivalent interbedded submarine fan turbidite units. These upper Miocene submarine fan systems (which are hydrocarbon productive in the basin, leak to help create natural seeps such as the nearby La Brea tarpits, and also crop out in the Santa Monica Mts.) represent a period of basin-filling after the Miocene triple-junction passed under the subduction zone complex along the western margin of the continent, and then opened and rotated deformable units within the basin. The variety of complicated trapping configurations were created by the severe structural deformation of these young uncompacted units, and the later deformation from the right-lateral shear impact and associated compression of the Newport-Inglewood and San Andreas fault zones. Some of these traps were discovered in the late 1800's and were the objective for many exploratory and development wells in the 1900's. Fields and zones discussed on the trip were discovered as recently as the late 1960's, and successful drilling continues to this day in designated urban drilling sites. Rapid lateral structural changes combined with the highly deviated wellbores from these drillsites can create extremely steep and complicated fold geometries. Modern tools, including modern gyros, image dipmeters and 3D visualization programs, aid in deciphering these complicated structures.

Alaska Geological Society

www.alaskageology.org

P. O. Box 101288
Anchorage, AK 99510

Contact: Robert Blodgett
786-7416

Luncheon meetings are held monthly September through May, usually on the third Thursday of the month, at the Anchorage Hilton (500 W. 3rd Avenue) from 11:30 a.m. to 1:00 p.m. The cost is $17 (members with reservations) or $20 (members without reservations and nonmembers). For reservations, call the AGS reservation voice mail at 907-646-7106 or contact **Edna Beuhler** at edna.beuhler@encana.com by noon on Monday before the meeting.

2007 - 2007 Officers - TBA

Jan 19th - David Lepain, "Depositional Environments of the Late Cretaceous Nanushuk Group, North Slope Alaska"
Feb 15th - Rod Combellick, "Tsunami Hazard Mapping for Coastal Communities"

Coast Geological Society

www.coastgeologicalsociety.org

P. O. Box 3055
Ventura, CA 93006

Contact: Shaun Simon
805.495.2197

Dinner meetings are held monthly September through June, usually on the third Tuesday of the month, at the Veterans of Foreign Wars Hall at 3801 Market Street in Ventura. Social hour starts at 6:00 p.m., dinner is served at 7:00 p.m., and the talk starts at 8:00 p.m. The cost of dinner is $15 (with reservations), $18 (without reservations), or $8 (students and K-12 teachers); the talk is free. For reservations, contact **Dave Brown** at 805.653.7975 or make reservations online at www.coastgeologicalsociety.org. Reservations should be made by 4:00 p.m. on Friday before the meeting.

2007 - 2007 Officers:

President:	John Minch	805.682-4711, ext 137	president@coastgeologicalsociety.org
Past-President:	Shaun Simon	805.495.2197	ppresident@coastgeologicalsociety.org
Vice President:	Mike Phipps	805.495.2197	vpresident@coastgeologicalsociety.org
Treasurer:	Greg Millikan	805.766.2040	treasurer@coastgeologicalsociety.org
Secretary:	Susan Bartz	805.682.4711	secretary@coastgeologicalsociety.org
Assistant Webmaster:	Hal B. Myers	805.672.0491	awebmaster@coastgeologicalsociety.org
Webmaster:	Geoff Faneros	805.320.3973	webmaster@coastgeologicalsociety.org

Jan 16th - TBA

Los Angeles Basin Geological Society

www.labgs.org

515 So. Flower Street, Ste 4800
Los Angeles, CA 90071

Contact: Jon Kuespert
213.225.5900 x224

Luncheon meetings are held monthly September through November and January through June, usually on the third or fourth Thursday of the month, in the Monarch Room at The Grande at Willow Street Conference Centre (4101 E. Willow Street) in Long Beach. Lunch is served at 11:30 a.m., and the talk starts at 12:15 p.m. The cost is $20 (with reservations), $25 (without reservations), or $5 (students). Reservations can be made online at www.labgs.org or by contacting **Ivan Aburto** at iaburto@breitburn.com or 213-225-5900 ext. 234. Reservations should be made by Tuesday before the meeting.

2007 - 2007 Officers

President:	Jon Kuespert	213.225.5900	jkuespert@breitburn.com
Treasurer:	Steve Zigan	949.355.4467	szigan@eri-us.com
Secretary:	Ivan Aburto	213.225.5900	iaburto@breitburn.com

Jan 26th - Nancy Beresky, She will be speaking on an environmental topic
Feb 22nd - Gene Fristche, "The Santa Monica Mt. Volcanics"

Northern California Geological Society
www.ncgeolsoc.org

9 Bramblewood Court
Danville, CA 94506-1130

Contact: David Bero
dbsquare@earthlink.net

Evening meetings are held monthly September through May, usually on the last Wednesday of the month, at the Masonic Center (9 Altarinda Road) in Orinda. Social hour starts at 6:30 p.m., and the talk starts at 7:00 p.m. (no dinner). The cost is $5. For reservations, contact **Dan Day** at 925-294-7530 (leave your name on the voice recorder any time before the meeting).

2007 - 2007 Officers

President:	David Bero	dbsquare@ earthlink.net
President Elect:	Bill Perkins	weperkins@comcast.net
Treasurer:	Phil Reed	philecreed@msn.com
Secretary:	Dan Day	danday94@pacbell.net

Jan 31st - Dr. George Plafker, "New evidence for the source of the devastating Banda Aceh tsunami of 2004"
Feb 28th - Paul Belasky, " The real 'geopoetry' and the 'poets of the soil': Geological school of 20th century poetry in St. Petersburg, Russia, explores why we are geologists

Northwest Energy Association
dlgellar@msn.com

P. O. Box 6679
Portland, OR 97228-6679

Contact: James Jackson
503-771-3887

Luncheon meetings are held monthly October through May, usually on the second Friday of the month, at the Multnomah Athletic Club (1849 SW. Salmon Street) in Portland. The meeting starts at 1:00 p.m. The cost is $15. For information or reservations, contact **Shelley Thomas** at 503-848-2947 or **Treck Cardwell** at 503-226-4211 ext. 4681.

2007 - 2007 Officers

President	Jamie Schick	(503) 948-7726

Remaining Officers: TBA

Sacramento Petroleum Association

P. O. Box 571
Sacramento, CA 95812-0571

Contact: Rick Blake
925-422-9910

Luncheon meetings are held monthly January through November, on the third Wednesday of the month at the Hungry Hunter Restaurant (450 Bercut Drive) in Sacramento. The meetings starts at noon. The cost is $16. For information or reservations, contact **Pam Ceccarelli** at 916-322-1110 or pceccare@consrv.ca.gov.

2007 - 2007 Officers

President:	Rick Blake	blake2@llnl.gov
Vice President:	Marc Brennen	marc.brennen@halliburton.com
Secretary/Treasurer/Editor	Pam Ceccarelli	Pam.Ceccarelli@conservation.ca.gov

San Joaquin Geological Society
www.sjgs.com

P. O. Box 1056
Bakersfield, CA 93302

Contact: Rob Negrini
rnegrini@csub.edu

Dinner meetings are held monthly October through June, usually on the second Tuesday of the month, at the American Legion Hall (2020 H Street) in Bakersfield. The icebreaker starts at 6:00 p.m., dinner is served at 7:00 p.m., and the talk starts at 8:00 p.m. The cost of dinner is $20 (with reservations) or $23 (without reservations); the talk is free. For reservations, contact **Tracey Fleming-Reese** at Tracey_Fleming-Reese@oxy.com or phone her at 661.763.6523.

2007 - 2007 Officers

Acting President:	Jonathan Lange	jlange@chevron.com
President- Elect:	Dave Miner	dmminer@aeraenergy.com
Vice President:	Jonathan Lange	JLange@chevron.com
Secretary:	Tracey Fleming-Reese	tracey_fleming-reese@oxy.com
Treasurer:	Linda Specht	linda.specht@corelab.com
Past-President	Rob Negrini	rnegrini@csub.edu

Jan 9th - Tim Elam, “Gold in Kern County”
Feb 13th - TBA

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