NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

NCGS Newsletter Editor:
Dan Day: danday94@pacbell.net

NCGS Voice Mail: **925-736-6039**

MEETING JANUARY ANNOUNCEMENT

DATE: **Wednesday, January 30, 2002**

LOCATION: **Orinda Masonic Center, 9 Altarinda Rd., Orinda**

TIME: **6:30 p.m. Social; 7:00 p.m. talk (no dinner)**
Cost is $5.00 per person

RESERVATIONS: Leave your name and phone number at 925-736-6039 or at *danday94@pacbell.net* before the meeting.

SPEAKER: **Roger P. Ashley, U.S. Geological Survey, Menlo Park**

Lode Gold Deposits of the Sierra Nevada and Their Environmental Impacts

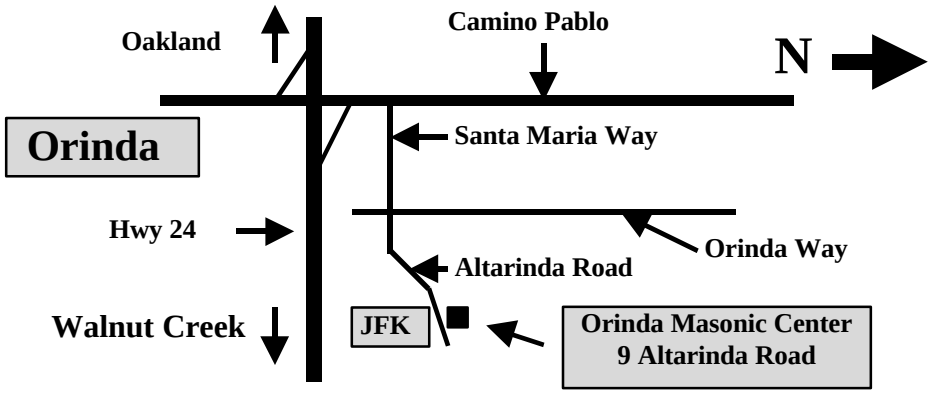
The Sierra Nevada region is a world-class gold-mining province that has produced about 2800 tons of gold since 1848, including 1000 tons from lode mines and the remainder from placers. There are more than 4000 lode gold mines with recorded production; about 70% of this production came from 25 mines. The deposits are low-sulfide gold-quartz veins, also called orogenic gold deposits. The ore bodies occur in quartz-carbonate veins that contain a few percent sulfides, mainly pyrite, cutting hydrothermally altered metamorphic and plutonic host rocks. Arsenopyrite and arsenian pyrite are common; ores often contain more than 1000 mg/kg arsenic. Thus the main environmental problem associated with these mines is high levels of arsenic in mill tailings.

Another concern is mercury in tailings. Most gold mines in the Sierra Nevada used stamp mills to crush the ore and mercury amalgamation to recover free gold. Total loss of mercury to the environment from lode mills is estimated at about 1100 tons. Before 1890, mercury losses to tailings ranged from 6 g/t to more than 20 g/t.

The volume of lode-gold mill tailings is significant relative to non-mining sediment yields in some affected drainage basins. Tailings produced before 1912, when California required mill tailings to be impounded, are now entrained in stream sediments. Pre-1912 tailings comprise about 40% of the total, and contain 65% of the mercury lost. Improvements in milling technology beginning in the 1890's, the most important being cyanidation, greatly reduced mercury usage and losses by 1910, and modestly reduced the amounts of arsenic passed to tailings. Therefore, accumulations of mill tailings that now remain (about 90 MMt) should generally have average mercury concentrations <3 mg/kg, and arsenic concentrations <1000 mg/kg. Most of the post-1912 tailings are retained behind aging tailings dams, and pose physical and health hazards in developed areas.

Although drainage from mine openings and tailings piles may show elevated levels of mercury (>100 ng/L) and arsenic (0.01-1.0 mg/L), discharges from individual sources of these types in the region tend to be small (<500 L/min), so notable affects on surface waters are local. Similarly, although

Continued on back page of newsletter



arsenic contamination of groundwater exists in local areas, no widespread contamination clearly attributable to gold mining has been recognized. *In evaluating impacts of mining on a regional scale, history of mining and ore processing are as important as characterizing mine wastes.*

Roger P. Ashley received a B.A. in Geology from Carleton College (1962), and a Ph.D. in Geology from Stanford University (1967). He joined the U.S. Geological Survey in Menlo Park in 1966, and since then has carried out geologic investigations of precious-metal and base-metal deposits in western Nevada, southern Arizona, northern California, and the Cascade Range of Oregon and Washington. He has conducted remote-sensing studies of mining districts in various parts of the western U.S. He also participated in regional geologic mapping of the Cascade Range in the vicinity of Mount St. Helens. From 1980-84 Ashley served as chief of the USGS Branch of Western Mineral Resources and supervised completion of the U.S. Forest Service Wilderness Mineral Resource Assessment Program in California, Oregon, Washington, Nevada and Arizona. He also served as the gold-resources specialist for the USGS for more than 20 years. In recent years he has conducted investigations of geochemistry and environmental impacts of gold deposits, mostly in the Sierra Nevada. He retired from USGS in 2001, but continues part-time work as a scientist emeritus on environmental impacts of gold mining in northern California and western Nevada, and metallogeny of the Cascades. Ashley is a fellow of the Geological Society of America, a fellow of the Society of Economic Geologists, and a member of the American Association for the Advancement of Science, the American Geophysical Union, the Association of Exploration Geochemists, and the Society for Environmental Geochemistry and Health.

Northern California Geological Society
c/o Dan Day
9 Bramblewood Court
Danville, CA. 94506-1130

Would you like to receive the NCGS newsletter by e-mail? If you are not already doing so, and would like to, please contact **Dan Day** at danday94@pacbell.net to sign up for this service.

NCGS 2002 Calendar

Saturday, January 26, 2002 NCGS Field Trip
Dr. Gary Greene, California State University Moss Landing Marine Laboratory
Moss Landing Marine Laboratories and Point Lobos Field Trip
See announcement on next page for details.

Wednesday January 30, 2002
Roger Ashley, USGS Menlo Park
"Lode Gold Deposits of the Sierra Nevada and Their Environmental Impacts"
Orinda Masonic Center

Wednesday February 27, 2002
James Moore, USGS Menlo Park
"Exploring the Highest Sierra"
Orinda Masonic Center

Wednesday March 27, 2002
Donald L. Gautier, USGS Menlo Park
"The Ghost of Malthus, the Global Greenhouse, and the Perilous Geography of Petroleum"
Orinda Masonic Center

Wednesday April 24, 2002
Charlie Bacon, USGS Menlo Park
"New Insights into the Geology of Crater Lake" (tentative title)
Orinda Masonic Center

Wednesday, May 15, 2002 AAPG Distinguished Lecture
James Harrell
"Archaeological Geology in Egypt: Ancient Oil Wells and Mummy Bitumen, Earliest Geological Map, First Paved Road, Pyramid Temple Pavements, and the Sphinx Age Controversy"
Orinda Masonic Center

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AIPG/CCGO Geoscience Awards, California State Science Fair

Reported by Dave Sadoff, CPG 09933

On behalf of the California Council of Geoscience Organizations and the American Institute of Professional Geologists, I attended the 2001 California State Science Fair to judge and present two Geoscience Awards on 22 May 2001. The Fair was held at the California Science Center, adjacent to the University of Southern California in Los Angeles. The California Science Center opened in 1998, and consists of 5½ acres of buildings and grounds. A Natural History Museum and Imax Theater anchor the facility.

Earth Sciences was one of eighteen categories represented at the Fair. Twenty-eight junior division and ten senior division earth science exhibits were featured. Exhibitors qualified by placing in at least two previous local science fairs. All of the exhibits were of superior quality, making for difficult decisions by this judge.

The winner of the junior division was Emma Kelsey, for her project "Big Lagoon: Salinity vs. Time." Ms. Kelsey generated data by taking measurements while traversing Big Lagoon in a canoe over the course of a year. She was able to time the periodic Pacific Ocean breakthrough of a sand bar from her data.

Julie Gilbert was the winner of the senior division for her project "Blast of Ash from the Past!" Ms. Gilbert collected ash samples from five volcanic venues. She then analyzed the samples for chemical composition, and was able to deduce the type of volcano responsible for the corresponding sample. In a thank you letter, Ms. Gilbert said "even though this is my last year of high school, I'm not finished with my science fair project yet ... I want to continue doing research on it while I'm in college…I'm really starting to get curious about what would happen to my results if I were to get several other volcanic ash samples from around the world and analyze them... Who knows where this could lead?"

Each winner received a handsome certificate, a check for $250, and a one year subscription to TPG. I wish to express my gratitude to the AIPG Foundation, Inc. for their generous matching grant.

It was very satisfying to see such enthusiastic and scholarly earth science project exhibitors. I hope many of these young people will enter the earth sciences profession. I am already looking forward to next year's California State Science Fair.

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

Moss Landing Marine Laboratories and Point Lobos Field Trip

Saturday, January 26, 2002

Trip Leader:
Dr. Gary Greene, California State University Moss Landing Marine Laboratories

Dr. H. Gary Greene is a marine geologist who has studied the geology of the Monterey Bay region for the past 35 years. He received his BS (Geology/Paleontology) from Long Beach State University in 1966, his MS (Geology/Geophysics) from SJSU/ MLML in 1969, and a Ph.D. (Geology/Marine Geology) from Stanford in 1977. His doctoral thesis was on the geology of the Monterey Bay region and since then he has explored the offshore areas of California, including Point Lobos. In 1994, after 28 years with the USGS, he took up the directorship of Moss Landing Marine Laboratories. Dr. Green is currently the director at MLML in the Geological Oceanography Group.

Dr. Greene has been Chief or Co-Chief Scientist on over 60 oceanographic cruises including the NSF Ocean Drilling Program. His expertise lies in the of active plate margins, both transform margins like California and New Zealand and subducting margins such as along South America and the Aleutian Islands. He has spent over 10 years investigating the island-arc regions of the South Pacific. Presently, his research involves the characterization of marine benthic habitats and the study of underwater landslides. His research has focused on Marine Geophysics, Plate Boundary Tectonics, Submarine Canyon and Coastal Processes. His recent work includes onshore/offshore geology of Point Lobos using detailed sonar images of the offshore.

This field trip will start with a morning tour of Moss Landing Marine Laboratories situated just a few hundred meters east of the head of the Monterey Submarine Canyon, the largest such feature on the west coast of the Americas. Weather permitting, we will have a picnic lunch at Point Lobos State Reserve. Following lunch, Dr. Gary Greene will talk about the onshore/offshore geology at Point Lobos. If the weather is not permitting, we will hear his presentation indoors at the Moss Landing Marine Lab.

Time: **Saturday, January 26, 2002** Meet at San Ramon - 7:30 a.m. San Jose - 8:30 a.m.
Return Saturday evening to San Ramon at 6:00 p.m.

Departure: **Danville** - Park and Ride Parking Lot, Sycamore Valley Road exit off I-680. Traveling north on I-680, take the Sycamore Valley Road offramp and turn right onto Sycamore Valley Road. Make an ***immediate left*** into the Park and ride lot at the next stoplight. If traveling south on I-680, take the Sycamore Valley Road exit and turn left onto Sycamore Valley Road, crossing over the freeway. Turn ***left*** into the Park and Ride lot at the second stoplight over the bridge, ***immediately after*** the stoplight for the I-680 onramp heading north to Sacramento.

San Jose - Location to be announced. **Please indicate you will be meeting in San Jose by checking this box: ð**

Cost: $30 for adults (18 and over); $20 for adolescents (11 to 17). Cost includes transportation, lunch, refreshments, and guidebook.

********** REGISTRATION FORM --- PLEASE RSVP by Monday, January 21, 2002 **********

Name _____

Address (Street/City/Zip)_____

Phone (day) _____ **Phone (evening)** _____ **E-mail or Fax No.** _____

Indicate if you are a nonmember (cost is $35) _____ Regular Lunch _____ Vegetarian Lunch _____ **(Please check one)**

I am willing to drive my van or SUV on this trip _____ (check if YES) Mileage will be paid by the NCGS

Please mail form and a check made out to NCGS by **January 21, 2002** to: **Jean Moran, P.O. Box 1861, Sausalito, CA. 94966**

If you have any questions or need additional information, e-mail Jean at **jeanm@stetsonengineers.com** or call **415-331-6806** (even.)

A Tectonostratigraphic Model of the Colorado Plateau

Past Pacific Section AAPG and NCGS President **Mel Erskine** discussed his concepts of the Colorado Plateau as a tectonostratigraphic unit at the November 28th NCGS meeting. Mel has spent much of his geological career working in the Colorado Plateau. Over the years he has formulated a theory for its evolution based on what he considers to be permissive but not conclusive scientific evidence. The geological and geophysical basis for his hypothesis was detailed in his presentation ***"The Colorado Plateau Tectonostratigraphic Unit."***

The Colorado Plateau occupies a unique place in North American geology. It is a coherent "microplate" relatively devoid of tectonic deformation, bounded by the Basin and Range Province to the south and west, and the Rocky Mountains to the east. This ancient (>500 million years old) province has stood the test of time as an intact unit, and its geological history, in the context of a its complex plate tectonic voyage as part of North American continent, bears repeating here.

The Colorado Plateau province preserves an extensive geological record in an essentially undeformed state. The Plateau occupies northern and northeastern Arizona, eastern and southeastern Utah, western Colorado, and northwestern New Mexico. It is a region of soaring mesas, prominent cliffs, and deep canyonlands cut into a thick layer of near-horizontal Paleozoic, Mesozoic, and Lower Cenozoic sediments. The Grand Canyon is the most prominent feature in the Plateau, and exposes a geologic cross-section from Precambrian crystalline basement and tilted upper Precambrian sediments through an overlying layer-cake sequence of Cambrian to Triassic sandstones, limestones, and shales. Outcrops capture: 1) the deposition and metamorphic deformation of the 2 billion-year-old Vishnu schist crystalline basement rocks; 2) a period of prolonged erosion to form a flat peneplain; 3) the deposition, uplift, and block fault tilting of the upper Precambrian 1.1 billion-year-old Grand Canyon series sediments; 4) a second period of prolonged erosion; 5) deposition of Paleozoic through lower Mesozoic sedimentary strata; 6) uplift and erosion; and 7) final major uplift to an elevation of over 8,000 feet in late Tertiary times to initiate the current period of erosional incision and canyonland formation. Progressively younger sedimentary layering in a relatively continuous sequence continues northward in the Plateau to form the layers exposed in the Zion and Bryce Canyon areas in southern-southwestern Utah. How this major geological terrain has survived relatively undisturbed while major tectonic events occurred in areas bounding it has intrigued geologists for decades.

Structurally, the Colorado Plateau is a succession of plateaus and mesas cut in nearly horizontal sediments. The cliff outcrops expose older layers to the south and are collectively dubbed "The Grand Staircase." The Plateau encompasses numerous sedimentary basins formed during various periods of marine inundation, has been locally intruded by igneous rocks that worked their way along bedding planes as laccoliths and sills, and in places has been capped by Tertiary to Recent volcanic units. The normally flat-lying layers are locally upwarped along steeply dipping faults, asymmetric folds, or across regional monoclines associated with vertical displacements along reactivated high-angle Precambrian basement fault systems. The southern and southwestern edges of the Plateau in Arizona are bounded by the Mogollon Rim and the Grand Wash Cliffs, respectively, which are separated from the Basin and Range province by a 100 mile-wide Transition Zone representing a fault-block style down-drop from the Plateau rim at 6500 to 7000 feet elevation, to ~4000 feet where it meets the Mojave and Sonoran deserts. Conglomerates exposed at the rim tops match beds exposed in the Basin and Range, indicating these units were once continuous and shed detritus from higher elevations northward onto the Plateau.

Those familiar with the detailed structural geology of the region have speculated on its origin as a discrete tectonic province. Mel's long fascination with the Colorado Plateau prompted him to construct detailed balanced cross sections in fault-bounded areas of coherent stratigraphy to help him understand its tectonic history. He also incorporated work done by other researchers who studied sedimentary basins in the plateau and constructed regional cross sections from the Wyoming thrust belt into Nevada. By restoring these cross sections using key marker beds, Mel discovered that the listric faults repeatedly soled out at 3 to 4 kilometers below sea level. The upper plate to this apparent thrust sheet averaged about 5 to 7 kilometers thick, and the decollment thrust surface displays regional dips of only about 1 degree. Restored thrust zones show basement ramps dipping only 5 to 6 degrees. The sub-thrust sedimentary package in the Wyoming Thrust Belt to the northeast occurs at the same crustal elevation (3.5 km below sea level) in drill holes along the western Plateau margin between Moroni and the Sevier River valley. A seismic low velocity zone between Hanksville, Utah, and Chinle, Arizona, also occurs at 3.5 km below sea level. The coincidence of this apparent detachment surface with salt horizons and the occurrence of tectonically-displaced salt along the Plateau margins lend credence to Mel's belief that the province is a major blind thrust plate lubricated by evaporite horizons. Although paleomagnetic data is inconclusive, it suggests the Plateau has migrated northward between 125 and 200 kilometers since the Triassic, with a 13º clockwise rotation. This northward motion stopped in Sevier time (Cretaceous) as the northern Plateau boundary locked. Many of the thrusting features reversed direction as the compressive action relaxed, and tensional forces associated with Basin and Range faulting were transferred into the Plateau. Mel admits that the structural and geophysical data is compelling but not conclusive evidence to support this theory. But it does stimulate interest in this only mildly deformed terrane surrounded by two highly disrupted tectonic provinces.

Our warm thanks to Mel Erskine for sharing a thought-provoking model for the emplacement of the Colorado Plateau as a regional thrust sheet. The Plateau's overall structural simplicity belies the difficult task of explaining its coexistence among substantially more complex tectonic provinces.

Pacific Section AAPG & SPE Western Region Joint Meeting

Energy Frontiers: A 2002 Perspective

May 18-23, 2002

Anchorage, Alaska

CALL FOR ABSTRACTS / PAPERS

Papers are invited in both oral and poster format for the theme sessions listed below. The deadline for abstract submittal was **November 15, 2001**. AAPG oral and poster presentations will be judged. *Please check registration, lodging, and program information on the 2002 Convention website at:* **http://www.aapg-spe-2002.org**.

POSTER SESSION INFORMATION

Poster abstracts should be submitted for one of the technical sessions listed below. Final poster sessions will be determined after abstracts are accepted. Posters will be displayed during morning or afternoon sessions. Authors must be present at specific times. Poster space includes 3 panels, each 4'x 8' Some booths may accommodate tables.

SPE TECHNICAL SESSION THEMES

SPE Program Coordinator - Gordon Pospisil (907) 564-5769 pospisg@bp.com
Poster Chair - Nina Woods nwoods@ppco.com

Innovations & Novel Applications

Fracture Stimulation

Reservoir Characterization & Reservoir Mechanisms

Surface Facility Applications

Health, Safety, and Environment

Improved Oil Recovery & Reservoir Management

Production Optimization & Artificial Lift

Coiled Tubing Drilling

Rotary Drilling Technology

Formation Evaluation

Completion Innovations

New Development Case Histories

GEMS Sessions (Short Topics)

AAPG TECHNICAL SESSIONS

AAPG Program Coordinator - Bob Swenson
(907) 265-6808; rswenson@ppco.com
Poster Session Coordinator - Robert Krantz
(907) 265-6573; bkrantz@ppco.com

Geology of the Brooks Range and Southern Colville Basin, Alaska - Gill Mull (gil@dnr.state.ak.us) (907) 269-8791

North Slope Gas Resources Symposium - Ken Thompson, Mark Myers (Mark_Myers@dnr.state.ak.us) (907) 269-8800, Kirk Sherwood (907) 271-6085

Russian Arctic and Sakhalin - Dick Garrard (rgarrard@ppco.com) (907) 265-1536

Shifting Paradigms and Application of New Technologies in Mature Development Areas - Chris West (Westcc@bp.com) (907) 564-4626

Resource Development in the Mackenzie Delta, Canada - Larry Lane (LLone@NRCon.gc.ca) 403-292-7131

NPRA: The Emerging Frontier - Greg Wilson (gcwilso@ppco.com) (907) 263-4748

ANWR Coastal Plain: Geology and Petroleum Potential - Dave Houseknecht (dhouse@usgs.gov) (703) 648-6466

Cook Inlet Forearc Basin: An Old Petroleum Province Getflng New Attention - David Bdmberry (dibrimberry,@marathonoll.com) (907) 561-5311

Arctic Petroleum Systems - Doliam Masterson (wmaster@ppco.com) (907) 265-1138

Exploration for Unconventional and Shallow Gas Resources of Alaska - Jim Clough Oim@dnr.state.ok.us) (907) 451-5030; Charles Barker (barker@usgs.gov) (303) 236-5797

Environmental Geology in Northern Regions - Marilyn Plitnik (Marilyn.A.Plitnik@poaC2.usace.army-mil) (907) 753-2881/ Bob Braunstein

Beyond the Petroleum Window - Mineral Resources of the North Pacific Region - Tom Bundtzen (bundtzen@mosquitonef.com) (907) 458-8951

Geophysical Techniques in ArcTic Regions - Mike Foust (mfoust@ppco.com) (907) 263-4471

Triassic Paleogeography of Alaska and the Arctic: lmplicaflons for Source and Reservoir Rock Deposition - Mike Whalen, mtwholen@gi.alaska.edu (907) 474-5302

The Borrow Arch: Geologic Evolution and Hydrocarbon Habitat - Sandy Phillips (phillis2@bp.com) (907) 564-4587

Tectonics of the Circum-Arctic - Tom Homza (homzotx@bp.corn) (907) 564-4720

GRA Short Course

Principles of Groundwater Flow & Transport Modeling

This Course Will Be Held In **March/April 2002**: Exact date to be announced

Course Description

The use of computer modeling tools has become a standard practice in many groundwater investigations. Groundwater resources evaluation, groundwater quality assessment, contamination site assessment and remediation, environmental impact review, and other groundwater related activities increasingly rely on computer models as a means of understanding groundwater flow and the fate of contaminants in the subsurface. This course introduces the conceptual principles and practical aspects of groundwater modeling in an intuitive yet comprehensive manner. The course objective is to demystify the use of groundwater models by providing solid understanding of the principles, methods, assumptions, and limitations of groundwater models, as well as hands-on experience with the planning, preparation, execution, presentation, and review of a modeling project.

The first half of the course reviews the concepts of groundwater flow and transport, and of finite difference and finite element methods. It provides an overview of various software programs for ground-water flow and transport modeling and accompanying pre- and post-processing programs. The second half of the course features hands-on exercises based on the USGS MODFLOW flow model and transport model MT3D. Exercises include site-specific models as well as basin/water-shed wide models. The course is taught by experienced instructors familiar with in-depth knowledge of basic and advanced principles of modeling as well as California hydrogeology. At the end of the course, participants should be able to understand and actively engage in planning, supervision, and/or review of groundwater modeling projects.

Who Should Attend

The short-course is intended for professional consultants, technical personnel in engineering/geology firms and irrigation/water districts, regulatory agency specialists and managers, and those in the legal community specializing in groundwater issues. Participants should have a working knowledge of the principles of groundwater hydrology and be familiar with the PC Windows 95 (or Windows 2000) environment. No formal training in computer programming is necessary.

- principles and concepts of groundwater modeling
- overview of groundwater modeling software
- conceptual model development
- data collection and preparation
- model grid design
- boundary conditions: concepts and application
- simulating rivers, lakes, recharge, drainage
- modeling multiple aquifer systems
- sensitivity analysis
- model calibration and verification
- contaminant transport modeling
- capture zone analysis

Course Instructors: To be announced

Course Benefits

At the end of the course, participants should have:

- a well-founded knowledge of the principles of groundwater flow and transport modeling
- familiarity with the major elements of groundwater modeling studies
- hands-on experience in designing simple groundwater flow and transport studies with
- MODFLOW using popular groundwater modeling software
- a fundamental understanding of the capabilities and limitations of groundwater modeling
- an understanding of the appropriate role of groundwater models in groundwater assessment and management

For more information, contact GRAC, 915 L Street, Suite 1000, Sacramento, CA 95814 Phone: (916)446-3626 Fax: (916)442-0382

GRA Sponsored Symposium

Perchlorate, NDMA, and Other Groundwater Contaminants from Aerospace and Rocket Fuel Facilities

April 17, 2002 at the Radisson San Gabriel Valley

The Groundwater Resources Association of California is developing the Fourth Symposium in its Series on Groundwater Contaminants -- "Perchlorate, NDMA and Other Groundwater Contaminants from Aerospace and Rocket Fuel Facilities". The Symposium will be held at the Radisson San Gabriel Valley on April 17, 2002.

The investigation of aerospace facilities where rocket fuel has been used has revealed the presence of several highly recalcitrant contaminants in groundwater, particularly perchlorate (ClO_4) and NDMA (N-nitrosodimethylamine). These chemicals have been found to impact drinking water aquifers in California, leading to the closure of numerous municipal water supply wells (refer to the California Department of Health Services web site at http://www.dhs.ca.gov/ps/ddwem/chemicals/NDMA/NDMAindex.htm for an overview of NDMA in California's drinking water). Other sources of these compounds have been identified and include wastewater treatment processes, fertilizer usage, rubber and textile manufacturing, metals refining and finishing and automotive air bag manufacturing.

Information about the use and behavior of these chemicals is not abundant. The Fourth Symposium will showcase experts and offer up-to-date knowledge on the occurrence and potential sources of NDMA perchlorate, their fate and transport characteristics, regulatory status, toxicology and chemical detection challenges. The program will also provide information about the known impact on water resources from these compounds, current remediation/water treatment options. In addition, the program will address other critical issues surrounding rocket-fuel contaminants in groundwater.

The Symposium will consist of the following four sessions:

SESSION 1:
Occurrence and Characteristics: Potential Contaminant Sources, Geochemistry, Fate and Transport in the Subsurface
SESSION 2:
Toxicity, Chemical Analysis Methodology and Regulatory Standards
SESSION 3:
Perchlorate and NDMA in California San Gabriel Valley (Water Supply Impacts, Sources, Responsible Parties Actions, Water Supply Treatment, Agency Activities)
Sacramento Area (Historical Sources, Regulatory Interaction, Water Supply Impacts, Litigation)
Remediation and Treatment Alternatives
SESSION 4: Regulatory and Legal Status
Regulatory Status (Agency Responsibility and Interaction)
Impacts to Municipal Water Supplies (Regulatory Response, PRP Litigation, Toxic Tort Lawsuits)

Hotel Information

Radisson Hotel San Gabriel Valley
14536 Baldwin Park Towne Center
Baldwin Park, CA 91706
Toll-Free: 1-800-333-3333
Tel: (626) 962-6000
Fax: (626) 962-1053
http://www.radisson.com/baldwinparkca

The Radisson Hotel San Gabriel Valley is conveniently located approximately 20 minutes from the Ontario Airport, 40 minutes from Los Angeles International Airport and just 20 minutes from downtown Los Angeles. In-room amenities include daily maid service, coffee makers, irons, ironing boards, hair dryers and data ports. The Hotel features elevator key access, heated pool and spa, 24-hour exercise room, business center and free parking.

GRA will also coordinate a pre-Symposium site visit of a perchlorate water treatment facility in the San Gabriel Valley area the day before the Symposium. For additional information about the Symposium, please contact GRA Executive Director, Kathy Snelson, at 916/446-3626. Updated program information will be posted to this page. If you would like to receive automatic Symposium updates by email, sign up for GRA's email distribution list email distribution list.