

THE SIERRA FUND

presents:



Reclaiming the Sierra

Green \$olutions to Abandoned Mines

Tours

Exhibits

Workshops

Poster Session

Awards

Films

May 3-5, 2012

Miners Foundry,
Nevada City, Calif.



www.reclaimingthesierra.org

Highlights

Opening Speaker

Mark Nechodom, Director of California Department of Conservation
Thursday, May 3 - 9:15 am

Green \$olutions Document & Discussions

Saturday, May 5, 9:00 am - 1:00 pm

The title track of the conference, this inter-disciplinary session will begin with a presentation of The Sierra Fund's working document "Using Green Solution Mining Techniques to Clean Up Mine Scarred Land and Waters." Technical presentations will follow, then a panel discussion with representatives from the California mining industry, reclamation firms, regulatory agencies, and the industries consuming mined products. Finally, all conference participants will contribute to the discussion through a breakout session. Feedback received from this workshop track will help build the working document and develop a platform for action to be implemented by The Sierra Fund and the Mining Toxins Working Group.

Sierra Crest Awards

During conference reception - Friday, May 4, 6:00 pm

The Sierra Fund's awards are annually presented to an organization, an agency, and an individual demonstrating exceptional leadership and initiative in their work to address the impacts of historic mining in California.

"That's my Story and I'm Sticking to It" A Play in Maidu

Thursday, May 3, 5:15 pm

A humorous original skit performed in the Maidu language (with an English interpreter) portraying a view of mining's impacts from a native person's perspective, written and performed by Farrell Cunningham and members of the local Maidu language class. Their production about mercury and wildlife was such a hit at the first Reclaiming the Sierra conference that they have composed a new script for this year's conference.

Dear Conference Participant,

150 years ago the forests of both slopes of the Sierra Nevada were decimated to build the towns and timber the mines for the gold and silver strikes. The rivers ran thick with mud from hydraulic mining, and the San Francisco Delta and Bay became so clogged with this debris that boats couldn't get up the river to Sacramento. Millions of pounds of mercury were used to aid in gold recovery throughout the region and left behind when mines were abandoned. The Original People of the area were displaced by people from all over the globe.

After nearly 100 years, the mines began to close in the mid-20th century. The price of gold and other precious metals fell to basement prices and the miners walked away from their mines. In some cases the metal buildings were removed and re-used as part of the World War II scrap metal drive effort.

Nothing has been done to remediate the large majority of mines that were abandoned, and that continue to bleed contamination into the ecosystem of California and her people.

This conference takes on this legacy with a call for action by business, government, and community leaders to craft real solutions to the problems caused by California's abandoned mines. There is a hundred years of work to do to reclaim thousands of abandoned mines in California's watershed. Incentivizing and funding this work is what we need to do right now. With right planning, The Sierra Fund believes that we can create jobs for rural Sierra communities while cleaning up yesterday's waste so it doesn't impair the health of future generations.

The goal of this conference is to define and prioritize environmentally sound and economically viable practices to remediate mine scarred lands including abandoned mines and mine tailings. We call these practices "green solutions to abandoned mines." One potential outcome of efforts to address some abandoned mine problems, such as mercury-entrained sediments in reservoirs that have to be removed, will be marketable materials including gravel, sand, and gold. We call these "green solution materials."

To quote California Governor Jerry Brown in a recent interview published in the Wall Street Journal about the economics of creating environmental capital, "...you have to think big, think long, but you don't get there overnight."

The time has come to think big and think long about remediating California's abandoned mines.

Welcome to our conference!



Elizabeth "Izzy" Martin
Chief Executive Officer
The Sierra Fund



Agenda

Thursday, May 3

8:00 am Registration Opens, Exhibit Hall and Student Poster Session Open

--- coffee and light refreshments available all day ---

9:00 am **Opening Plenary Session, Osborn/Woods Hall**

KEYNOTE: Mark Nechodom, Director of CA Department of Conservation

“Green Solutions to Abandoned Mines” - Elizabeth “Izzy” Martin, CEO, The Sierra Fund

10:30 am **Morning Workshop Sessions Begin**

Policy & Coordination Workshops, 10:30 am - 12:30 pm, Osborn/Woods Hall

Case Studies & Remediation Technologies, 10:30 am - 12:30 pm, Stone Hall

Policy & Legal Workshops, 10:30 am - 12:30 pm, City Hall (see map on p. 29)

--- 12:30 pm - Lunch ---

--- 12:30 pm - 1:30 pm, Students Present Posters at Poster Session ---

1:30 pm **Early Afternoon Workshop Sessions Begin**

Case Studies & Remediation Technologies, 1:30 pm - 3:30 pm, Osborn/Woods Hall

Case Studies Relevant to Technical Tours, 1:30 pm - 3:30 pm, Stone Hall

Healthcare Professionals Workshops, 1:30 pm - 4:00 pm, City Hall (see map on p. 29)

--- 15 Minute Break ---

3:45 pm **Late Afternoon Workshop Sessions Begin**

Case Studies & Remediation Technologies, 3:45 pm - 5:15 pm, Osborn/Woods Hall

Case Studies Relevant to Technical Tours and other Studies, 3:45 pm - 5:15 pm, Stone Hall

5:15 pm **“This is my Story and I’m Sticking to It”** A skit in Maidu and English, Osborn/Woods Hall

Written and performed by Farrell Cunningham and students from the Maidu Language Class

6:00 pm No-host reception at the Holbrooke Hotel and restaurant in Grass Valley



Agenda

Friday, May 4

8:00 am Registration Opens, Exhibit Hall and Student Poster Session Open

Tours begin – departure time and location vary depending on the tour:

8:45 am - Meet at Miners Foundry for Malakoff/Humbug Tour - bus departs at 9:00 am, returns by 4:30 pm

8:45 am - Meet at Miners Foundry for Spenceville/Goldfields Tour - bus departs at 9:00 am, returns by 4:30 pm

9:00 am - Meet at Miners Foundry for Sixteen to One Tour - bus departs at 9:15 am, returns by 4:30 pm

9:30 am - Meet at Empire Mine Visitors Center parking lot for Magenta Drain/Empire Mine Tour - walking tour departs at 9:45 am, returns by 3:30 pm

10:00 am - Meet at Miners Foundry for Tribute Trail/Stocking Flat Tour - walking tour departs at 10:15 am, return on your own

1:00 pm **Film Series** 1:00 pm - 4:30 pm, Osborn/Woods Hall

5:00 pm **Reception** – 5:00 pm - 7:00 pm, Stone Hall

Hosted wine, beer and appetizers, music

Sierra Crest Awards Presentation 6:00 pm

Saturday, May 5

8:00 am Registration Opens, Exhibit Hall and Student Poster Session Open

--- coffee and light refreshments available all day ---

9:00 am **“Green Solutions to Abandoned Mines”** – Elizabeth “Izzy” Martin, CEO, The Sierra Fund

10:00 am **Green Solutions Workshop & Panel Discussions** – Osborn/Woods Hall, 10:00 am - 1:00 pm

10:00 am **Community Workshop: Mercury and Fish** – Stone Hall, 10:00 am - 11:15 am

11:30 am **Community Workshop: Mine-Related Property Concerns** – Osborn/Woods Hall, 11:30-12:45pm

--- 1:00 pm - Lunch ---

--- 1:30 pm - Student Poster Awards Presentation ---

--- Formal Conference agenda concludes at lunch, but Community Workshops continue ---

2:00 pm **Community Workshop: What to Do if a Mine is Proposed in My Community?** Osborn/Woods Hall, 2:00 pm - 3:30 pm





Ongoing Activities

Green \$olutions Feedback

Please reflect on the “Four Questions” on Green \$olutions to Abandoned Mines presented in the opening plenary session (also listed on p. 14), and provide your thoughts during the discussion session on Saturday morning, or write them down and stick them to the “Four Questions” poster in the Foyer.

Exhibit Hall

Businesses, nonprofit organizations and government agencies are displaying educational and technical information about their programs and products all three days of the conference in the Upper Gallery.

Student Science Posters

Students from area colleges and universities were invited to submit posters on legacy mining impacts and the policies, technologies and programs that address these impacts. Students will present their posters at lunch on Thursday, May 3. Posters will be judged by a panel of experts and awards and cash prizes will be presented at lunch on Saturday, May 5.

Sierra Environmental Services Directory

To continue building the diverse network established at our Reclaiming the Sierra conferences, The Sierra Fund has developed a comprehensive e-directory of the businesses, organizations and agencies providing environmental restoration, legal, outreach, financial and other services in the Sierra. Listing in the Directory is free – you can fill out an entry using the computer station located at conference registration.

Morning Workshops Sessions

Thursday, May 3, 10:30 am - 12:30 pm

Policy & Coordination Workshops, 10:30 am - 12:30 pm, Osborn/Woods Hall

Sponsored by: Sierra Nevada Conservancy

- **Addressing Administrative Challenges to Abandoned Mine Site Cleanup**
Stephen McCord, Ph.D., McCord Environmental & Delta Tributaries Mercury Council
Greg Reller, Burleson Consulting
- **Transport of Mercury Past a Recreational Dam on Deer Creek in Nevada County, CA**
Justin Wood, Sierra Streams Institute
- **PANEL: Mercury and Reservoir Operations (1 hour)**
Carrie Monohan, The Sierra Fund - facilitator
Tim Crough, Nevada Irrigation District
Andy Fecko, Placer County Water Agency
Stephen McCord, McCord Environmental & Delta Tributaries Mercury Council
Robert Shibatani, The Shibatani Group, Inc.

Case Studies & Remediation Technologies, 10:30 am - 12:30 pm, Stone Hall

Sponsored by: California State University Chico

- **Mercury Old and New on the Kuskokwim**
Kendra Zamzow, Ph.D., Center for Science in Public Participation
- **Reclaiming Hydraulic Gold Mine Sluice Tunnels**
Rick Humphreys
- **Marrall Chrome Mine Preliminary Assessment/Site Inspection, Tahoe National Forest**
Rick Weaver, US Forest Service, Tahoe National Forest
- **Penn Mine Ecosystem Restoration Project: Effective Soil Remediation and Revegetation Techniques on Pyritic Mineral Deposits at an Abandoned Copper and Zinc Mine**
Max Busnardo, H.T. Harvey & Associates

Policy & Legal Workshops, 10:30 am - 12:30 pm, City Hall (see map on p. 29)

- **A Short Course on CA Mining Law & CEQA (1 hour, for MCLE credit)**
Ellison Folk, Shute Mihaly & Weinberger LLP
- **Update on 1872 Mining Law Reform, and How it Pertains to Californians**
Elyssa Rosen, Pew Charitable Trusts, Campaign for Responsible Mining
- **Update on CA Suction Dredge Mining Regulation, Legislation, Litigation**
Steve Evans, Friends of the River



Early Afternoon Workshop Sessions

Thursday, May 3, 1:30 pm - 3:30 pm

Case Studies & Remediation Technologies, 1:30 pm - 3:30 pm, Osborn/Woods Hall

Sponsored by: California State University, Chico

- **Proposed North San Juan Mine**
Tim Callaway, Shasta Gold Corp
- **Revegetation for Slope Stabilization and Erosion Control in CA Mine Reclamation**
Leah Gardner, CA Dept. of Conservation, Office of Mine Reclamation
- **Remedial Technologies for Mine Wastes - an ITRC Web Based Guidance (1 hour)**
Paul Eger, Golder Assoc., Inc.

Case Studies Related to Technical Tours, 1:30 pm - 3:30 pm, Stone Hall

- **Malakoff Diggins/Humbug Creek Watershed Assessment**
Carrie Monohan, Ph.D., The Sierra Fund
- **Three Centuries of California Gold**
Michael Miller, Original Sixteen to One Mine
- **Assessment of Mercury and Mine Waste Deposits at Stocking Flat in the Deer Creek Watershed, Nevada County, California**
Charles Alpers, Ph.D., USGS
- **Alternative Methods for the Evaluation of Arsenic Bioavailability: Reclaiming Mine-Scarred Lands While Protecting Human Health**
Valerie Mitchell, Ph.D. and Perry Myers, CA Dept. of Toxic Substances Control

Healthcare Professionals Workshops, 1:30 pm - 4:00 pm, City Hall (see map on p. 29)

Sponsored by: Sierra Health Foundation

- **Mercury Health: Information on Mercury in the Environment and the Human Body (1 hour, for CME or CNE credit)**
Sherri Norris, California Indian Environmental Alliance
- **Fish and Dust: Two Studies on Exposure to Mining Toxins in the Gold Country**
Carrie Monohan, Ph.D., The Sierra Fund
- **Environmental Health History Pilot Study at Sierra Clinics (pending)**
Becky Damazo, R.N., California State University Chico
- **Pediatric Environmental Health Toolkit Training Program for Healthcare Providers**
Anthony DeRiggi, M.D., Physicians for Social Responsibility



Late Afternoon Workshop Sessions

Thursday, May 3, 3:45 pm - 5:15 pm

Case Studies & Remediation Technologies, 3:45 pm - 5:15 pm, Osborn/Woods Hall

Sponsored by: California State University, Chico

- **Semi-Passive Bioreactors for Treatment of Acid Mine Drainage**
Timothy Tsukamoto, Ph.D., TKT Consulting, LLC
- **Engineered Pumpable pHoam: A New Innovative Method for Mitigating Acid Rock Drainage**
Paul Eger, Golder Associates, Inc.
- **Leona Quarry Reclamation: Soil Treatments, Native Plant Revegetation & Long-term Monitoring**
Patrick Reynolds, H.T. Harvey & Associates

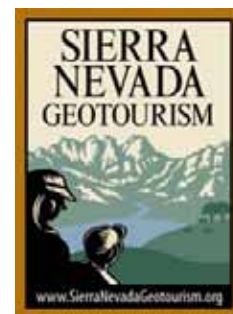
Case Studies Related to Technical Tours, 3:45 pm - 4:45 pm, Stone Hall

- **Installation and Operation of a Passive Treatment System at Empire Mine State Historic Park**
William Agster, Golder Associates, Inc.
- **Reclamation of the Spenceville Copper Mine**
Stephen Reynolds, California Geological Survey



The Sierra Nevada Conservancy initiates, encourages, and supports efforts that improve the environmental, economic, and social well-being of the Sierra Nevada Region, its communities, and the citizens of California.

www.sierranevada.ca.gov



Tours

Friday, May 5

Tour Host: Magenta Drain & Empire Mine State Historic Park
Alison Harvey, The Sierra Fund Board of Directors

Speakers: William Agster, Golder & Associates
Dan Millsap, P.E., California Dept. of Parks and Recreation
Ralph Silberstein, CLAIM-GV
Charlie Alpers, United States Geological Survey (USGS)
Perry Myers, Dept. of Toxic Substances Control
Valerie Mitchell, Dept. of Toxic Substances Control

Tour Begins: 9:45 am, Empire Mine Visitor Center Parking Lot in Grass Valley
10791 East Empire Street
(see directions in your registration packet)

At 9:45 am, tour participants will meet in the parking lot of the Empire Mine Visitors Center/Main Entrance. Participants will then walk .25 miles to the Magenta Drain Passive Treatment System settling ponds on Empire Street. William Agster of Golder & Associates and Dan Millsap of California State Parks will describe the mine drainage problem and solution that the Passive Treatment System offers. Ralph Silberstein of CLAIM-GV will discuss mine impacts in and around Grass Valley and the work of local organizations to protect and restore the watershed. Participants will then return to the main entrance of the Park where a box lunch will be provided. A representative of the Empire Mine Park Association will give the group a private tour of the mine yard and entrance to the underground workings starting at 1:00 pm. Finally, participants will take a short walk to a series of hard rock waste rock piles on the Empire property and hear a discussion led by Charlie Alpers of USGS and Valerie Mitchell and Perry Myers of Dept. of Toxic Substances Control about arsenic exposure problems at the park, remediation efforts, and the ongoing study of arsenic bioavailability using samples from the park. The tour will conclude approximately 3:30 pm at the Empire Mine Visitors Center.

Sixteen to One Mine, Alleghany
(Cost: \$100/participant)

Tour Leader: Mike Miller, Sixteen to One Mine

Tour Host: Lisa Thompson, Ph.D., UC Cooperative Extension & The Sierra Fund Board of Directors

Tour Begins: 9:00 am, Miners Foundry, Nevada City

Participants will meet at the Miners Foundry at 9:00 am and board buses that will depart at 9:15 am sharp. Upon arrival in the historic town of Alleghany participants, will be taken into the active Sixteen to One gold mine, which is still actively mining in quartz veins. Mike Miller, operator of the mine for more than 30 years, will provide safety equipment and a brief training before leading folks into the underground mine. A box lunch will be served at the mine. After the tour of the mine, participants will get a chance to peruse the historic mining museum on the site, as well as to check out the center of this small Gold Rush town. The bus will depart at 3:15 pm and will arrive back at the Miners Foundry by 4:30 pm.



Tours (continued)

Friday, May 5

Malakoff Diggins State Historic Park & Humbug Creek Watershed Assessment

Tour Leader: Carrie Monohan, Ph.D., The Sierra Fund
Speakers: Professor Dave Brown, CSU Chico
Peter Graves, Bureau of Land Management
Rick Humphreys
Tour begins: 8:45 am, Miners Foundry, Nevada City

Participants will meet at the Miners Foundry at 8:45 am and board a bus that will depart at 9:00 am sharp. The bus will arrive at the historic Gold Rush town of North Bloomfield within Malakoff Diggins State Historic Park by 10:00 am. Participants will tour the town site, then walk to the mine pit overlook, discharge point Hiller Tunnel, and pit pond. Along this route, Carrie Monohan and Rick Humphreys will discuss the history of the mine operation and the current impacts it has on the watershed. A box lunch will be served at the pond site, then participants will walk down the Humbug Creek trail downstream of the pit, where tour leaders will discuss The Sierra Fund and California State Parks' current assessment work that will result in a management plan for the watershed. Dave Brown of California State University Chico will speak about the graduate and undergraduate level research focused on this site. Peter Graves will discuss the current assessment project on BLM land at the convergence of Humbug Creek and the South Yuba River. The bus will leave the park at 3:30 pm and arrive back at the Miners Foundry by 4:30 pm.

Spenceville Wildlife Refuge Mine Remediation, Yuba Gold Fields & Hallwood Gravel Operation

Tour Host: Izzy Martin, The Sierra Fund
Speakers: Stephen Reynolds, California Geological Survey
Ralph Hitchcock, Friends of Spenceville
Gary Reedy, South Yuba River Citizens League
John Lane, Teichert Materials
Tour Begins: 8:45 am, Miners Foundry in Nevada City

Participants will meet at the Miners Foundry at 8:45 am and board a bus that will depart at 9:00 am sharp. The first stop on this tour will be the Spenceville Wildlife Refuge owned by the CA Department of Fish and Game in western Nevada County where an abandoned copper mine was recently remediated. Stephen Reynolds, CEG, CHG with the California Geological Survey, who led this remediation activity, will discuss the problems encountered at the site and the process of the remediation. Ralph Hitchcock with the Friends of Spenceville will add details about their organization's experience working with this remediation effort. Participants will be served a box lunch at the refuge, and then re-board the bus to travel to the Yuba Gold Fields, an area where millions of cubic yards of debris from upstream hydraulic mines were deposited in the 19th century. Gary Reedy of the South Yuba River Citizens League will discuss opportunities for restoration of this area, and his organization's efforts. The final stop on the tour will be the Hallwood Plant, a Teichert Materials gravel operation in the Gold Fields. John Lane of Teichert Materials will lead a tour of this plant. The bus will leave the Hallwood Plant at 3:00 pm and return to the Miners Foundry by 4:30 pm.



Tours (continued)

Friday, May 5

Nevada City Tribute Trail, Brownfields Assessment & Stocking Flat

Tour Leader: Jason Muir, Holdrege & Kull
Tour Host: John Regan, The Sierra Fund Board Member
Speakers: Kyle Leach, Consulting Geologist
Shelly Covert, Nisenan Tribe of the Nevada City Rancheria
Sherri Norris, California Indian Environmental Alliance
Eric Jorgensen, Greater Champion Neighborhood Association
Jacob Fleck, United States Geological Survey (USGS)
Tour Begins: 10:00 am, Miners Foundry, Nevada City

Participants will meet at the Miners Foundry at 10:00 am for this five mile (round trip) walking tour. The Tour will depart from the Foundry at 10:15, and will be led by Jason Muir of local environmental consulting firm Holdrege & Kull. The tour will proceed out of town along the recently completed Deer Creek Tribute Trail, a community project that involved several local organizations and agencies, which The Sierra Fund served as fiscal sponsor. Along this route:

- Kyle Leach, a consultant working with The Sierra Fund and other local groups, will discuss the former mine sites in Nevada City that received funding from the EPA Brownfields Program for assessment and cleanup.
- Eric Jorgensen of the Greater Champion Neighborhood Association will tell participants about the community's vision for a trail and obstacles encountered building a trail through areas that were previously mined.
- Shelly Covert of the Nevada City Rancheria will discuss the impact of Gold Rush mining activities on the native peoples of the area, and their current efforts to restore native culture and ecology.
- Sherri Norris of California Indian Environmental Alliance will point out the human health impacts of toxins left from the Gold Rush, particularly on native peoples, as well as the importance of fish consumption awareness among local sustenance fishers and native peoples.

Lunch will be served at the location of the new Chinese Tribute Trail bridge on Deer Creek on land owned by the Bureau of Land Management. After lunch Jason Muir will give an overview of the BLM preliminary site investigation at that site, also known as Stocking Flat, and BLM trail portions. Jacob Fleck of USGS will discuss the current research on mercury fate and transport at the Stocking Flat site. The tour will conclude at the Chinese Tribute bridge at 2:00 pm and tour participants will then be free to walk back to Nevada City on their own.



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Film Series

Friday, May 4, 1:00 pm - 4:30 pm, Sponsored by SYRCL



The Sierra Fund is pleased to partner with SYRCL (South Yuba River Citizens League) a local watershed organization and founder of the **Wild & Scenic Film Festival** to present a film series at Reclaiming the Sierra this year. We have invited our community in to enjoy this aspect of the conference and to browse the exhibits and posters for the duration of the series.

1:00 pm *Welcome: Caleb Dardick, Executive Director of SYRCL*

Gold, Greed & Genocide (30 min.)

Speakers: Don Ryberg, Chairman, Tsi-Akim Maidu and Sherri Norris, CA Indian Environmental Alliance discuss the making of Gold, Greed & Genocide and the outreach tour after the film was released

Tar Creek (55 min.)

Speaker: Lori Van Laanen, Assistant Producer of SYRCL's Wild & Scenic Events

The following films are selections from SYRCL's 2012 Wild & Scenic Film Festival:

Deep Down's People Power Series: Mountain Roots (6 min.)

One Plastic Beach (8 min.)

Seasons: Winter (4 min.)

Marion Stoddard: The Work of 1,000 (30 min.)

Weed War (6 min.)

The New Environmentalists: The Rhino's Flight (5 min.)

The Craziest Idea (7 min.)

Seasons: Spring (4 min.)

Chasing Water (18 min.)



Green \$olutions to Abandoned Mines

a white paper under development by The Sierra Fund

Using Green Solution Mining Techniques to Clean Up Mine Scarred Lands and Waters

The year's conference is built around the theme "Green \$olutions to Abandoned Mines." After nearly seven years of working to assess and address the long term environmental, health and cultural impacts of the 19th century Gold Rush, The Sierra Fund has developed a framework for approaching these legacy problems using 21st century methods.

On Thursday morning May 3 The Sierra Fund CEO Izzy Martin will present an overview of these "Green Solutions" as a way of framing the technical, legal and medical workshops that will be held that day. On Saturday morning May 5 she will present a more detailed presentation on this subject followed by a panel discussion with experts in a wide array of fields from mining, to mine reclamation, to consuming mined products.

This presentation, "Using Green Solution Mining Techniques to Clean-up Mine Scarred Lands and Waters" will touch briefly on the problems left over from legacy mining and obstacles to remediation. It will focus on solutions that identify, evaluate and promote green solution mining technology for cleaning up mine scarred lands and waters, introducing the following four "green solution" strategies:

- Identify, evaluate and require scientifically proven methods for remediating mine scarred lands and illuminating the human health and environmental hazards posed by abandoned mines.
- Create incentives for remediating abandoned mine lands when a "responsible party" cannot be found.
- Develop sources of financial support for abandoned mine land remediation when a "responsible party" cannot be found.
- "Remediation with Benefits:" Stimulate and organize consumer demand for "green solution" mining products.

To facilitate discussion on this topic, we have formulated "Four Questions" related to these strategies. Please reflect on these questions throughout the conference and share your feedback at the discussion session Saturday, or by posting your thoughts on the "Four Questions" poster in the Foyer.

1. How can local, state and federal governmental agencies most effectively coordinate their activities to encourage Green Solutions to Abandoned Mines?
2. Should development of Green Solution Products be driven by market forces or should the government stimulate and enforce these developments?
3. How can consumer demand for Green Solution Products be built?
4. What are the top priorities for a campaign to stimulate Green Solutions to Abandoned Mines, and what is the timeline for these activities?



Green \$olutions Workshop

Saturday, May 5, 10:00 am - 1:00 pm

Green Solutions Workshop & Panel Discussions, 10:00 am - 1:00 pm Osborn/Woods Hall

- **Framework for Responsible Mining - An Alaskan Perspective**
Kendra Zamzow, Ph.D., Center for Science in Public Participation
- **Sustainable Remediation and Green Resource Extraction Practices of Acid Mine Drainage Sites**
James Jacobs, Clearwater Group
- **PANEL: Green Solutions to Abandoned Mines**
James Pompy, California Dept. of Conservation, Office of Mine Reclamation
John Lane, Teichert Materials
James Jacobs, Clearwater Group
Elizabeth "Izzy" Martin, The Sierra Fund
- **BREAKOUT DISCUSSIONS: Green Solutions to Abandoned Mines**

Working together for better results

We can energize each other's efforts—and help reach those common goals faster. That's why PG&E applauds the Sierra Fund and the Reclaiming the Sierra Conference on Green Solutions to Abandoned Mines. Together, we can help make great things happen.



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Community Workshops

Saturday, May 5, 10:00 am - 3:30 pm, Sponsored by the Rose Foundation

Community Workshop Series: Mercury and Fish (10:00 am - 11:15 am)

Fraser Shilling, Ph.D., University of California, Davis will lead this workshop. He will answer:

- *How did mercury get into the fish here?*
- *Is it safe for me to eat the fish I catch?*
- *Is it safe for my kids to eat the fish we catch?*
- *Where can I get information about which kinds of locally caught fish are safe to eat?*

Gregory Weisswasser, N.D., Whitewater Naturopathic Medicine will answer:

- *How can I test my body for the presence of heavy metals?*
- *Who should get tested and who should seek treatment for heavy metal toxicity?*

David McGuire, M.P.H., Got Mercury Program will answer:

- *Is it safe to eat fish I buy from the store?*
- *Where can I get information about what kinds of fish that I buy are safe to eat?*
- *How can I get involved in the movement to address mercury in fish?*

Community Workshop Series: Mine-Related Property Concerns (11:30 am - 12:45 pm)

Jason Muir, Holdrege & Kull will lead this workshop. Some of the questions he will answer include:

- *What kinds of problems do abandoned mines cause for private property owners?*
- *How do I know if there was an abandoned mine on or near my property?*
- *Is it better to not know if there was a mine on my property?*
- *How can I get my soil tested to learn whether there are heavy metals?*

Chauncey Poston, Nevada County Real Estate will answer questions associated with purchasing property:

- *What are the responsibilities of agents and property owners to pass on information to prospective buyers?*

Jason Fouyer, Cranmer Engineering, Inc. will answer questions including:

- *How do abandoned mines affect groundwater?*
- *How can I get my well tested and what should I test for?*
- *What can I do if I learn there are heavy metals in my well water?*

Community Workshop Series: What to Do if a Mine is Proposed (2:00 pm - 3:30 pm)

James Pompy, CA Dept. of Conservation, Office of Mine Reclamation will answer questions including:

- *What are the rules for siting a mine?*
- *What mitigation measures or financial assurances does a mine have to put up before it opens?*

Tom Grundy, CLAIM-GV

- *What are CLAIM's concerns about the proposed Idaho-Maryland Mine (Grass Valley) & how were they voiced?*
- *What is the current status of the Idaho-Maryland Mine proposal?*

Elyssa Rosen, Pew Charitable Trusts, Campaign for Responsible Mining

- *What are some examples of new or reopened mines?*
- *What have people in those communities done to hold them accountable?*
- *How can I get involved in mining law reform?*



Many Thanks

Thanks! Thank YOU for participating in this historic event.

Thanks! Thank you to conference sponsors of all levels for monetary and in-kind contributions that allowed us to keep conference registration fees low. Sponsors are recognized in ads throughout this program.

Thanks! Special thanks to Flower Essence Services and California State University Chico Dept. of Geological and Environmental Sciences for printing of this program and the posters you see.



Thanks! And, we couldn't do it without our fantastic team of volunteers - from students to weathered activists to local organizations!



Gold Level Sponsor

The Rose Foundation for Communities and the Environment is a grantmaking public charity. Its funding comes from donations, grants from other foundations, or legal restitution payments and cy pres funds. Rose's grantmaking programs support community-based projects and organizations that are building long-term solutions that benefit people, the environment and the economy.

www.rosefdn.org

Thanks! This conference would also not be possible without the visionary foundations that support our ongoing Initiative to address the impacts of legacy mining: Clarence E. Heller Charitable Foundation, Richard & Rhoda Goldman Fund, True North Foundation, Nell Newman Foundation, and The Tiffany & Co. Foundation. We are honored that these organizations have chosen to invest in our work, showing their confidence in our abilities and the importance of this issue.



Speaker Contact Information

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Speakers

Biographies A - B

A BIG THANK YOU to all speakers, who are donating their precious time to share their expertise and enrich our discussions.

William Agster is a Senior Construction Manager with Golder Associates, Inc. in Denver, CO. Mr. Agster specializes in total construction project management for the installation of both active and passive water treatment systems in the mining, oil and gas, and industrial sectors. He spent almost one year in total time in Grass Valley during the design and installation of the Empire Mine passive treatment system, thoroughly enjoying it and reports Grass Valley is high on his "retirement location" list.

Charles N. Alpers, Ph.D., has an undergraduate degree in geology from Harvard University and a Ph.D. in geology from the University of California, Berkeley. For the past two decades he has been a Research Chemist with the U.S. Geological Survey in Sacramento where his work has focused on environmental problems related to abandoned mine lands. In addition to his work on acid mine drainage from copper mines including Iron Mountain and Penn Mine, he has led several investigations of mercury contamination and bioaccumulation associated with past mining of gold and mercury in the Coast Ranges, the Trinity Mountains, and the Sierra Nevada.

Max Busnardo, M.S., is an ecologist specializing in ecosystem restoration. He is a senior manager within H.T. Harvey & Associate's ecological restoration division. Building on 17 years of professional experience, Max's restoration expertise extends across a wide variety of California habitats including riparian, wetland, oak woodland, and chaparral/coastal scrub plant communities. His work has included habitat restoration at several highly impacted mines, quarries, and landfills including Penn Mine (Sierra Nevada foothills, CA), Leona Quarry (Oakland, CA), and landfills within The Presidio of San Francisco (CA).

Tim Callaway, Shasta Gold Corp



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Speakers

Biographies C - G

Shelly Covert is the Nisenan Tribal Council Secretary and Director of Culture and Public Relations. Shelly can be found at the forefront of Tribal affairs acting as liaison between the Tribal community, Tribal Council and the local non-native community. Traditional use of plant, food and medicine gathering brings the Nisenan into direct contact with pesticides and pollutants. Thus, the environmental health impact becomes of deep relevance to Ms. Covert as she bridges the traditionalists in the Tribe with modern environmental issues.

Tim Crough, Nevada Irrigation District

Caleb Dardick, South Yuba River Citizens League

Tony DeRiggi, M.D., Physicians for Social Responsibility



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Paul Eger is a senior engineer with Golder Associates. He specializes in passive treatment of mining influenced water, waste management, reclamation and regulatory issues. Before joining Golder in 2011, he was a principal engineer with the Minnesota Department of Natural Resources, Division of Lands and Minerals, where for over 30 years he worked with environmental issues related to mining. Paul has been involved with ITRC for 10 years. He earned a bachelor's degree in chemical engineering from the University of Rochester in Rochester, NY. Paul is a registered professional engineer.

Steve Evans coordinates Friends of the River's Wild & Scenic Rivers program. Steve was hired by Friends of the River in 1988 and has more than 35 years of conservation policy experience in public lands and resource issues. He has played a key role in the legislative expansion of the federal and state Wild & Scenic Rivers Systems in California. Steve is an avid hiker, rafter, and outdoor photographer.

Andy Fecko, Placer County Water Agency

Ellison Folk is a partner with the legal firm Shute, Mihaly & Weinberger, where she has worked since 1990. Ms. Folk represents community groups, public agencies, and environmental organizations on a wide range of environmental and land use issues, including CEQA, Proposition 65, the Clean Water Act, the Endangered Species Act, and general plan and zoning law. She received her law degree from Boalt Hall School of Law, and she also holds a Master's in city and regional planning from the University of California, Berkeley. Ms. Folk graduated magna cum laude from Princeton University in 1984.

Jason Fouyer, Cranmer Engineering, Inc.

Leah Gardner graduated from UC Davis with a Bachelor's degree in Restoration Ecology and a Master's in Plant Geography. For the past seven years, she has been working for the California Department of Conservation as a botanist and restoration



Speakers

Biographies G - M

ecologist in the Reclamation Unit of the Office of Mine Reclamation (OMR). As part of reviewing mine reclamation plans, her position requires her to travel around the state to inspect mines and offer technical assistance for the revegetation of mined lands using local native species. She also gives presentations and writes articles on topics related to mine reclamation, revegetation, and environmental restoration.

Tom Grundy is a community volunteer in Nevada City California, and a board member of Citizens Looking At Impacts of Mining in Grass Valley (CLAIM-GV). CLAIM's current focus is the proposed Idaho-Maryland Mine project which would operate inside the city limits of Grass Valley, a town of 10,000 adjacent to Nevada City. Tom shares the all-volunteer organization's concerns that area residents are not being presented with the straight complete story or with a fair deal regarding the mine proposal.

Rick Humphreys until his recent retirement, was a Senior Specialist Engineering Geologist with the State Water Resources Control Board, where he worked since 1986. Mr. Humphreys began specializing in mining issues related to water quality in 1991. Mr. Humphreys holds both a BS and a MS in Geology.

James Jacobs, P.G., C.H.G., Clearwater Group and Environmental Bio-Systems, has focused on the evaluation and implementation of remedial treatments of soil and groundwater impacted by petroleum hydrocarbons, chlorinated solvents, and heavy metals for environmental consulting companies. Many of the projects relate to *in-situ* applications, while some include above water or vapor treatments. He is a Fulbright Scholar winning three awards in environmental engineering and science teaching post-graduate workshops and a graduate class in environmental assessment and *in-situ* remediation methods. Mr. Jacobs has bachelors and masters degrees in geology and almost 20 years of experience in *in-situ* remediation as a project manager and contractor.

John Lane, R.G., R.E.A., Chico
Environmental Science and Planning

John Lane, Teichert Materials

Elizabeth "Izzy" Martin, the CEO of The Sierra Fund, is an organizer and advocate with thirty years of experience working in rural communities to promote economic and environmental justice. She worked with farm workers, farmers and environmentalists to develop pioneering programs to promote organic agriculture and reduce community exposure to pesticides. While serving as Nevada County Supervisor, Izzy led the fight in the legislature to put the Yuba River into the state's wild and scenic river system, spearheaded the effort to clean up an abandoned mine in her district, and began a successful five-year campaign to establish the Sierra

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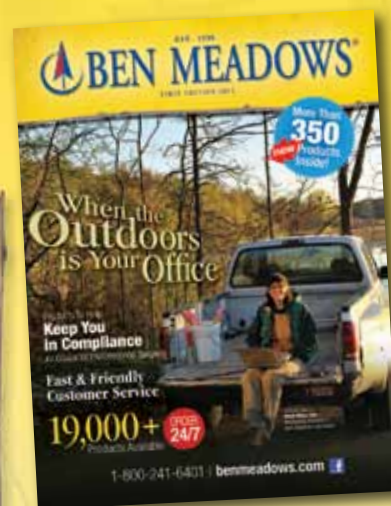
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Speakers

Biographies M

Nevada Conservancy. Izzy conceived of and directs The Sierra Fund's Mining Initiative.

David McGuire, M.P.H., a marine biologist and ocean advocate, is director of the Got Mercury Program of Turtle Island Restoration Project. David is a Research Associate of the Department of Aquatic Biology at the California Academy of Sciences. As a captain, dive master and filmmaker, David has explored the world ocean on numerous sailing voyages producing media with an emphasis on ocean awareness. He holds a master's degree in Environmental Health, has worked in education and public health at the University of California at Berkeley for over a decade, and has published numerous articles on the state of the ocean.

Stephen McCord, Ph.D., P.E., is President of McCord Environmental. Dr. McCord is a registered Professional Engineer in California and received his graduate degrees in Civil & Environmental Engineering from UC Davis. He has over 20 years of consulting, research and teaching experience in the environmental engineering field with projects throughout California, the US, and internationally. A particular area of focus has been mercury – monitoring, modeling and controlling sources; assessing and cleaning up abandoned mine sites; developing strategic plans; and facilitating stakeholder groups.

Mike Miller is President and Chief Executive Officer of the last fully functional gold mine in California – the Original Sixteen to One Mine in Alleghany. Mike Miller is responsible for the day-to-day operations of the company. In 1975, Miller became the sole proprietor of the Morning Glory Gold Mines. He served as a trustee and President of the Sierra County Board of

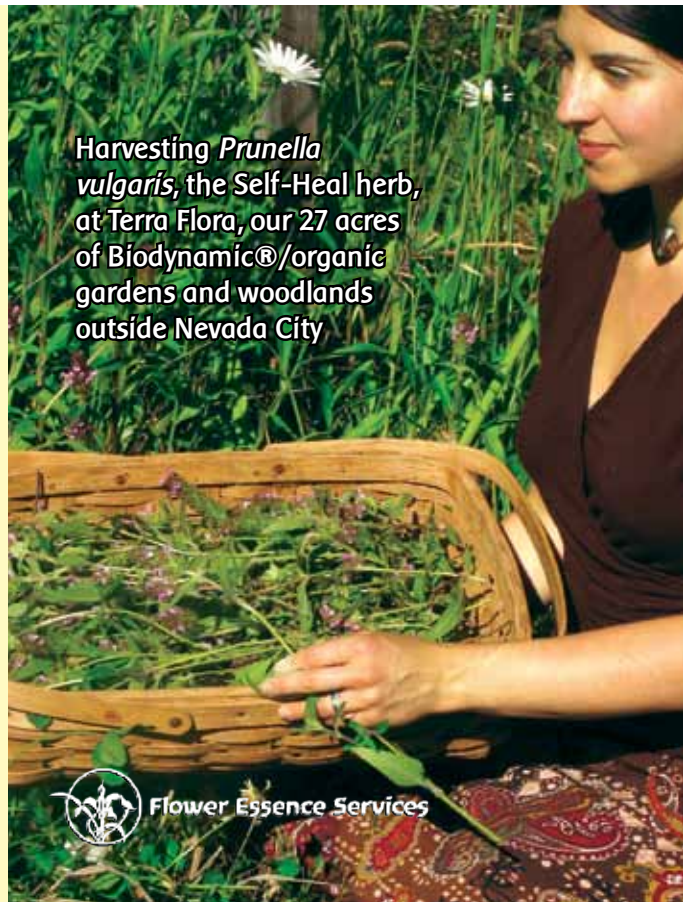
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Speakers

Biographies M

Education (1979 to 1983 trustee; Director in 1976, President in 1983). From 1991 to 1999 he served as a member of the Sierra County Planning Commission (Chairman 1992 and 1993). He is licensed as a California Class A general engineering contractor and is a member of the American Institute of Mining Engineers. In 1965, Mr. Miller received a B.A. from the University of California at Santa Barbara in combined Social Sciences-Economics.

Dan Millsap, P.E., is a Construction Supervisor II with California Department of Parks and Recreation. Mr. Millsap's duties include a full range of project management and construction support activities. Projects range from architecturally oriented projects to response activities including site characterization, environmental monitoring, work plan development and implementation, evaluation and analysis of response action alternatives, implementation of response actions, long term O&M and reporting. Over the last several years has been DPR's primary point of contact for all remedial efforts at Empire Mine SHP.

Valerie Mitchell, Ph.D., is a Toxicologist for the Department of Toxic Substances Control (DTSC). Valerie received her Bachelor's degree in Molecular, Cellular, and Developmental Biology from UC Santa Cruz and her PhD in Comparative Pathology from UC Davis where she also completed a postdoctoral fellowship in respiratory toxicology. Dr. Mitchell provides toxicological support for DTSC project managers on various sites including former mining sites. She is the toxicologist for the arsenic bioavailability grant awarded to DTSC by the US EPA.

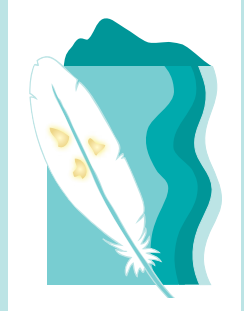
Carrie Monohan, Ph.D., earned her Ph.D. in Forest Engineering and Hydrology in 2004 from the University of Washington, Seattle. Her dissertation work addressed the relationship between water quality in agricultural streams and diminishing salmon habitat. Throughout her graduate program, she was a research assistant to the Northwest Fisheries Science Center, National Oceanic and Atmospheric Administration (NOAA). Other notable recent positions include Senior River Scientist for the Natural Heritage Institute and project manager and lead scientist for the EPA Brownfields Community Wide Assessment in Nevada City. Carrie has worked as a consultant to The Sierra Fund since 2007, and was hired as staff in 2010. Since 2011 she has served as adjunct professor at CSU, Chico.

Jason Muir, GE, QSD, is a Project Manager and Principal at H&K's Nevada City corporate headquarters, is a registered Civil Engineer and Geotechnical Engineer, and holds a Master's degree in Environmental Engineering from the University of California at Berkeley. He manages H&K's Environmental Division, and has overseen the assessment of more than 3,000 acres of abandoned mine land. Mr. Muir has obtained Cal/EPA approval for over two dozen site investigations and engineering evaluations under the expedited CERCLA process, including hydrocarbon releases, pesticide residuals and unpermitted waste disposal sites.

Perry Myers, P.E. has worked as an engineer for the Department of Toxic Substances Control since 2000, including six years with the Brownfields and Environmental Restoration Program as a site cleanup project manager. The mission of the DTSC is to provide the highest level of safety, and to protect public health and the environment from toxic harm. He currently works

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Speakers

Biographies M - P

in the Special Projects Office providing engineering support to DTSC project managers. Mr. Myers is the manager for DTSC's study of health risks posed by arsenic at mine scarred lands, which is funded by an U.S. Environmental Protection Agency grant, and has worked on the cleanup of several former mine sites, including the Empire Mine State Historic Park.



Mark Nechodom is the Director of California's Department of Conservation (DOC). Mark has dedicated his professional life to integrating conservation, regulation and development right where it matters the most: on the land, on the farm, and in the forest. His mission has been to inspire sustainable production and practices while maintaining a sensible balance between economic opportunities, environmental health and human well-being. Mark's background serves the Department well as he leads DOC's four divisions, unified by the mission of *Managing California's Working Lands*. Mark earned his doctorate in political science and environmental policy from the University of California, Santa Cruz, where he taught for several years.

Sherri Norris has eleven years of experience working as a tribal health and environmental advocate with California Tribes at the local level and at international European Union and United Nations forums. Sherri has given hundreds of presentations and trainings on the cycle and health effects of mercury on environmental health, risk-reduction strategies and the development of solutions that promote the continuation of eating traditional fish while avoiding toxins. As Executive Director of the California Indian Environmental Alliance (CIEA) Sherri's work supports California Tribes by providing technical support and increasing opportunities for Tribes to guide cleanup, restoration and partner in the collaborative work required to reduce toxins in the environment. Sherri is a member Osage Nation, grew up in Northern California and as a mother herself has been dedicated to the environmental health and connections between our environment and the health of our families. She is a member of The Sierra Fund's Mining Toxins Working Group, a recipient of the Davis-Putter Scholarship Award for young activists, Mills College Brave Hearted Women Award for dedication to environmental issues and The Sierra Fund's "Sierra Crest" award in 2010.

James S. Pompy currently heads up the Department of Conservation's Office of Mine Reclamation, and previously managed the Office of Mine Reclamation's Mine Reclamation Program for over 24 years. He has provided technical assistance in the review of environmental impact reports and reclamation plans for hundreds of mines in California and has supervised the development of remediation strategies for the several abandoned mine sites, and performed pit design, ore reserve estimation, and reclamation planning. Mr. Pompy holds a Bachelor's of Science in biology from the University of South Dakota, a Master's of Science in mining engineering from the South Dakota School of Mines and Technology, and an MBA from Rice University.

Chauncey B. Poston has been a practicing realtor in Nevada County since 1984. He is a past President of the Nevada County Association of Realtors as well as past Chairman of the Legislative Committee for the Association. He is the recipient of numerous service awards throughout our community for resource conservation and collaborative leadership. Mr. Poston will give a brief history of Disclosure Law and what the obligations of real estate agents and sellers are to potential buyers.



Speakers

Biographies R

Greg Reller is a geologist at Burleson Consulting. Mr. Reller is a registered Professional Geologist in California and received his graduate degree at the Western Washington University, Bellingham. He has 25 years of consulting experience at contaminated sites in the western U.S. with a focus on abandoned mine lands, and mercury in the environment.

Patrick Reynolds, M.S. is an Associate Restoration Ecologist in H.T. Harvey & Associates' Sacramento Office and has more than 20 years of habitat restoration experience. He works on all aspects of the habitat restoration process including conceptual restoration planning, detailed restoration plans and specifications, restoration construction and long-term restoration monitoring. Pat has restoration experience in numerous habitat types including riparian, wetland, oak woodland and grassland habitats, among many others. He particularly enjoys complex restoration projects including harsh sites associated with mine reclamation.

Stephen Reynolds, CEG, CHG, is currently working as a Senior Engineering Geologist in the Forestry and Watershed Geology Group of the California Geological Survey. He has over 30 years experience in water resources and environmental clean-up and restoration. Projects include water supply – water rights involving surface – ground water interaction, soil and ground-water contamination remediation, abandoned mine assessment and reclamation, stream restoration, and erosion and sedimentation assessment and remediation.



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Speakers

Biographies R - T

Elyssa Rosen, Pew Environment Group, Pew Campaign for Responsible Mining

Don Ryberg has served as Executive Director of the Tsi-Akim Maidu non-profit corporation, and Chair of the Tsi-Akim Maidu Tribe, since 1997. Over that time he has led the Tribe in important accomplishments that have contributed to re-vitalizing his tribe, devastated over 150 years ago by the gold rush on their traditional lands in the Sierra. Born third in a family of seven children in Quincy, the family moved to Nevada City in the mid-1950s. Don has made his living as a timber feller and logger, running a successful business for more than 30 years.

Robert Shibatani is a snowmelt hydrologist with almost 30 years of experience in empirical hydrology, watershed resource management, and systems/reservoir operations. He is a noted expert in long-range California water supply development and an acknowledged international practitioner in climate change hydrology. Mr. Shibatani is the CEO of THE SHIBATANI GROUP, Inc., a hydrology specialty firm, working with public/private water interests, international banking institutions, and local/national governments in SE Asia, Central Asia, EU, and western U.S.

Fraser Shilling, Ph.D., is a researcher at the Department of Environmental Science and Policy, University of California Davis. Fraser's three main areas of research are: environmental pollution and policy, transportation & landscape ecology, and indicator system for whole system condition reporting. He is Co-Director of the Road Ecology Center and member of the Environmental Justice Project and of the Information Center for the Environment.

Ralph Silberstein is president of Grass Valley organization CLAIM-GV (Citizens Looking at Impacts of Mining) and is also a former Board member of Wolf Creek Community Alliance and strong supporter of local environmental causes. Ralph lives Grass Valley where he served on the Planning Commission for two years. He is a software engineer by profession—and owns a local software consulting business.

Timothy Tsukamoto, Ph.D., has a B.S. in Biology and a Ph.D. in Environmental Chemistry from the University of Nevada, Reno where he was also a Research Professor. Tim is currently manager of TKT Consulting, and Director of Technology at Ionic Water Technologies. He has worked in mining over 24 years and has presented and published over 40 technical papers



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Speakers

Biographies W - Z

and presentations. He currently provides consulting and design to private and public clients throughout North America and develops AMD treatment and prevention technologies.

Rick Weaver is a hydrologist for the U.S. Forest Service on the Tahoe National Forest (TNF), where he is the leader of the Minerals, Geology and Abandoned Mine Lands Programs. Rick is also the TNF's On Scene Coordinator (OSC) and is responsible for the oversight of environmental site assessments and mine cleanups that are conducted under the Forest Service's authority as a "lead agency" under CERCLA. Rick has a BS degree in Physical Science with an emphasis in hydrology and a minor in geology from Chico State University.

Gregory Weisswasser, N.D., holds a B.S. in Psychology from Michigan State University and a Naturopathic Doctorate from Bastyr University. He completed training and board certification as a primary care Naturopathic Doctor. Dr. Weisswasser became licensed in California in 2005 and opened a clinic, Whitewater Naturopathic Medicine, in Grass Valley where he practices today with his wife with a focus on primary care and physical medicine. He is a sitting state board member appointed by Governor Schwarzenegger to the California Naturopathic Medicine Committee.

Justin Wood graduated from Indiana University in 2007, with a degree in Geography and a concentration in atmospheric science and hydrology. He worked for two years as an undergraduate researcher in rainfall surface hydrology, and after graduation worked at Eastern Illinois University as a stream technician. Justin took an AmeriCorps River Scientist position with Sierra Streams Institute in 2008, and has been a staff scientist since 2010 leading salmon habitat restoration projects, hydrological monitoring, and field assessments.

Kendra Zamzow, Ph.D., is an environmental geochemist and the Alaska representative for the Center for Science in Public Participation. She has a Ph.D. in Environmental Chemistry from the University of Nevada, Reno and a B.A. in Molecular and Cellular Biology from Humboldt State University, California. At UNR she operated a sulfate-reducing field bioreactor treating mine water discharge at an abandoned copper mine Superfund site, and provided the laboratory water chemistry analysis for sulfate, metals, and alkalinity. Bioreactor research examined utilization of industrial waste as feed for bacteria, sulfide toxicity in bacteria, and biological removal of sulfate and metals to MCL guidelines.



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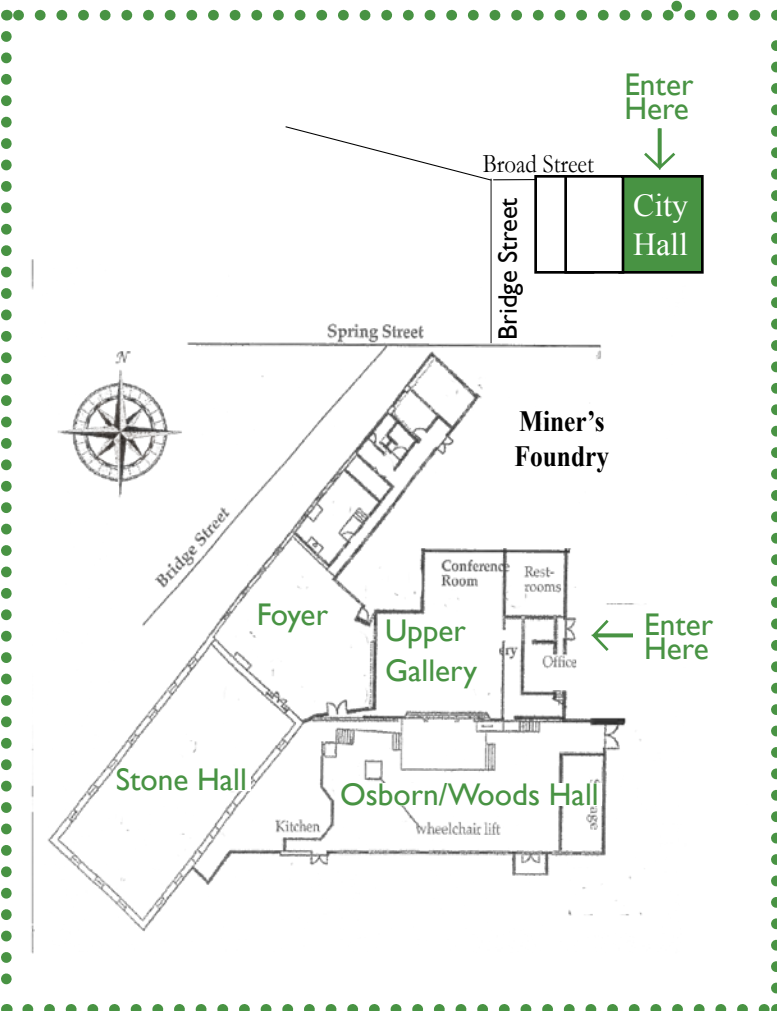
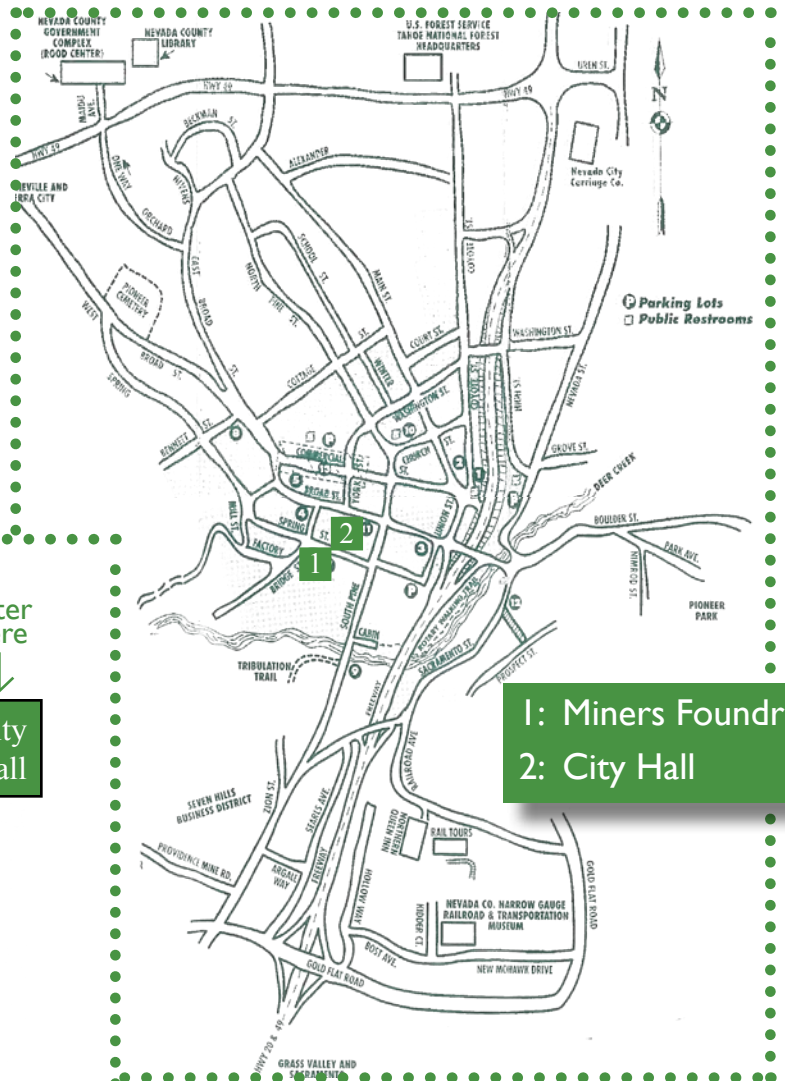
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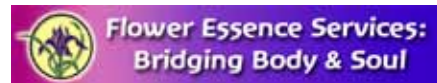
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