

ABANDONED MINES AND MERCURY IN CALIFORNIA

OVERSIGHT FIELD HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND
MINERAL RESOURCES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

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OVERSIGHT HEARING ON “ABANDONED MINES AND MERCURY IN CALIFORNIA.”

**November 23, 2009
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Sacramento, California**

The Subcommittee met, pursuant to call, at 10:00 a.m., in Room 4202 at the State Capitol in Sacramento, California, Hon. Jim Costa, [Chairman of the Subcommittee] presiding.

Present: Representative Costa.

Also Present: Representative McClintock.

STATEMENT OF HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. COSTA. The Subcommittee on Energy and Mineral Resources will now come to order on this Monday morning, the 23rd of November.

The subject of today's oversight field hearing is abandoned mines and mercury in California and its impact, not just on the watersheds and the waters of California, but its application as it relates to abandoned mines throughout the entire country. It is a challenge that we face based upon norms and conditions that existed in the 19th Century and early on in the 20th Century. Many of these abandoned mines have been left in various conditions, which in many cases have seriously created an environmental nightmare for the watersheds in those areas, not only for our drinking water but a host of other issues that are important as well.

Chairman Rahall has a measure that attempts to address this issue. He introduced it in the last Congress, and he reintroduced it in this Congress. It would, for the first time, re-examine the whole framework of hardrock mining in this country.

Often we are accused of writing too much law in our Nation's Capitol. This is a law that was introduced in 1872, I believe, and signed by President Grant, and it has not changed since that time. Obviously, a lot of other factors have changed in this country. Whether or not we are able to get any action on this that would provide additional remedies, remedies to deal with not only the case of the abandoned mines that we will see in the testimony here this morning as we look at a snapshot of the picture in California, but also as we apply it throughout the country, especially in the West where a great deal of extraction of minerals took place in the 19th and early 20th Century.

But I can say that, for me, it is a pleasure to be here, and I suspect Congressman Tom McClintock feels the same.

I actually need to ask unanimous consent that Congressman Tom McClintock serve as the Ranking Member for today's Subcommittee hearing. Since it is just he and I, I suspect we will get unanimous consent.

Mr. McCLINTOCK. No objection.

Mr. COSTA. Actually, Congressman McClintock serves as the Ranking Member on the Subcommittee on Water and Power in the Natural Resources Committee, but his district obviously is close by, and he is interested in the subject, and we are glad that you are here this morning as we look at moving on with this hearing. So without objection, so ordered.

For some of you out there or those of you who do not know me, I am Congressman Jim Costa, and for both Tom and I, as I noted when we walked in here, it is *deja vu* all over again. I had the wonderful opportunity and privilege to serve the people of California in the State Legislature for 24 years—16 years in the Assembly and 8 years in the State Senate, as did Tom. It is nice to walk around here, Tom, this morning and see staff. Members do not know you because of term limits, but staff people still do, and they refer to you as “Senator,” a real title. But it is great to be here and just see Marvin Unruh.

I used to say “Ways and Means” Committee room, but now I am dating myself. It is now the “Appropriations Committee” room, I guess. They have changed the title, but it shows the breadth and the width of our wonderful State of California and the challenges, of course, that we face.

Jess Unruh was one of my mentors, and it obviously gives me double pleasure to be here this morning.

We have three panels that will, I think, give us a good descriptive on the subject of today’s hearing, people that combine expertise at the Federal, State and local levels, people with experience and background on the potential contamination risk, in this case, of abandoned mines. We will, I suspect, hear primarily about mercury contamination, but there are other types of contamination, as well, as a result of these abandoned mines. There are other stressors that impact the waters of the State of California.

The Legislature, I think courageously, with the Governor acted on a water package just a couple of weeks ago. A lot of the debate is how you restore the Sacramento-San Joaquin River Delta system. I maintain that there are a host of factors that really have not been examined that are contributing to the decline of the fishery, as well as the impacts of water quality. They are not examined at the same level of scrutiny and importance, in my view, as we look at these two biological opinions that are creating great, great challenges, as we look at trying to allow California’s water system to operate in these below-average rainfall years the last three years.

When you look at the over 26 million pounds of mercury that were used, it is believed that 16 million pounds are still within the sediments of the Sacramento River systems, along with Cache Creek and other tributaries and streams. You look at the impacts of 120,000 gallons of ammonia being emitted into the Sacramento-San Joaquin River systems monthly, 120,000 gallons. Fish do not like to swim in ammonia, I don’t think. When you look at all of the other contributing stressors as it relates to runoff from streets and roads in an area that has quadrupled in population in the last two decades and, of course, non-native species, there are a lot of factors

that are contributing to the decline of our waters and our fisheries in California.

Today's subject of abandoned mines will highlight the impacts of a number of those areas that are impacting the waters. But before we get into that, let me first do a couple of thank-you's. Congresswoman Matsui wanted to be here today. We thank her staff for her generous support and her concern about the water quality in the Sacramento-American River Systems and their watersheds. Clearly, many of her constituents are among the first to be impacted.

Also, Assemblywoman Cathleen Galgiani and her staff, Darin Walsh, for helping put this together. We really appreciate that.

We want to thank Mr. Payne and his Staff of Sergeants and Brent. Did he come in? He went back out.

Mr. Pawnee, come over. We want to thank the Assembly Sergeants, Mr. Payne, and thank Brent and all of them for their support in making this happen. Before you walked in, I said this is like *deja vu* all over again. So we appreciate the good work you have always done.

When was the last time you were recognized by any of the legislative staff or legislators?

Mr. PAWNEE. A long time.

Mr. COSTA. All right. See, some of us never forget.

Anyway, let me just briefly give my statement, and then I will allow the Ranking Member to make his statement, and we will hear our witnesses. How does that sound?

Obviously, mercury can be harmful. It can be harmful to the body functions, whether it be our brain, our kidneys, our hearts, or our lungs. Exposure to its most toxic form, methylmercury, can also have devastating impacts on women who are pregnant and their babies.

Earlier this month, the Environmental Protection Agency warned that about half of the 500 lakes and reservoirs it sampled throughout the country contained fish with potentially harmful levels of mercury for those who are eating average amounts of fish.

As we will hear from the witnesses today, many of these waters in California sadly contain fish with potentially harmful levels of mercury content. While we have made efforts in California and elsewhere around the country to reduce those levels, we also need to know that at home we have our own responsibilities. Many of us have purged our old mercury thermometers in our bathroom cabinet. Dentists today, I think, have almost given up the use of mercury in fillings.

But there is bad news for Californians, as there is for the rest of the country. As I noted in my earlier comment, 26 million pounds of mercury were used to extract gold in the State during the gold rush. Those were the '49er days. And mercury pollution from those mines in the Sierra and the coastal range sadly continue today.

This hearing is an opportunity to learn about the fate of the mercury used a century ago—as well as mercury in old mines that still discharge—and, more importantly, what sort of strategies the State, working with local government and the Federal agencies, can collaborate on, in effect, to remedy much of this runoff.

According to the Department of Conservation, and they will be testifying here, there are 47,000 abandoned mines in California. Sixty-seven percent are on Federal lands. We have a number of these maps here and in your booklets which demonstrate that.

Not all sites, obviously, are causing toxic problems. A lot of them are contained within areas that limit their impacts. So how do we prioritize those that are creating the greatest amount of problems? And how we protect the water and the people is a huge challenge.

I expect most of us will agree that we do need to provide funding and, of course, the State faces difficult challenges these days as it relates to its own budget problems. In Washington, we have tremendous deficits as well. So how we in the most cost effective way are able to prioritize and target is really part of the subject of this morning's hearing.

In the House of Representatives, I am a co-sponsor of Chairman Rahall's bill, H.R. 699. It is the Hardrock Mining and Reclamation Act of 2009. It would create a reclamation fund from a royalty on hardrock mining for public lands. Some of us who have been in Nevada and elsewhere, to the gold mines and the incredible amount of activity that is taking place there and in talking with many of the people in the gold mining industry believe that you could raise a modest amount from that royalty as a source of funding to clean up abandoned mines. That is the proposal in Chairman Rahall's measure.

Whether or not there will be any action taken in this Congress still remains to be seen.

We will also hear from Federal and State agencies involved in the management of these abandoned mines and water, and other organizations from the private sector, some of them are here this morning, who are trying to help solve these problems.

There are three questions that I want all of you to think about that I will continue to ask in different ways. First of all, how much mercury is coming from the abandoned mines? What are the impacts of the mercury? How do we fix the problem?

And a fourth question that I am really looking at is what is the overall level of contribution to the mercury problems, stressing the Sacramento-San Joaquin River systems through those mines that we see listed there, to the other stressors I mentioned, i.e., the discharge of ammonia from tertiary treatment, i.e., the runoff from streets and roads on cities that now have quadrupled their population in the area, i.e., the impacts of the plumbing system of the State and Federal water projects, i.e., the non-native species that are all stressing the waters of the state.

We have not done any sort of qualitative review to really examine from a biological standpoint how all of these contributions are contributing to the decline of fisheries and to the water quality of the Sacramento-San Joaquin River systems.

So those are the questions that I am going to be asking in a host of different ways. I look forward to everybody's input. Today the Subcommittee will try to shine a light on this issue in its larger context, not only its impacts to the State of California, but its impact as it relates to abandoned mines throughout the country.

I would now like to recognize the Ranking Member, Mr. McClinck. He and I, as I said, both had the wonderful opportunity to

serve in the State Legislature and now we are both in Congress and we are both pleased to be here.

Congressman McClintock.

[The prepared statement of Mr. Costa follows:]

**Statement of The Honorable Jim Costa, Chairman,
Subcommittee on Energy and Mineral Resources**

At the outset of this hearing, I want to take a moment to thank Congresswoman Matsui, whose wonderful district we are in, and the generous support of her staff.

I also want to express our gratitude to Assemblywoman Cathleen Galgiani, and her staffer, Darin Walsh, for helping our Committee staff to put this hearing together.

There is a growing awareness of the dangers of mercury. Mercury can harm the brain, kidney, heart, and lungs, and can accumulate in the tissues of fish and wildlife. Exposure to its most toxic form, methylmercury, can have devastating impacts on pregnant women and their babies. Earlier this month the EPA warned that about half of the 500 lakes and reservoirs it sampled contained fish with potentially harmful levels of mercury for those eating average amounts of fish.

Some sources of mercury have been reduced. Many of us have purged the old mercury thermometer in our bathroom cabinet. Batteries and paints are now typically mercury free. Many dentists have given up the use of mercury in fillings.

But for Californians, there is bad news. 26 million pounds of mercury were used to extract gold in this state during the Gold Rush. The legacy of mercury pollution from both gold mines in the Sierra Nevada and mercury mines in the Coastal Range continues today.

This hearing is an opportunity to learn about the fate of the mercury used a century ago, the mercury that old mines are still contributing, and strategies for remediation.

According to the Department of Conservation, there are 47,000 abandoned mines in California, 67% on federal lands. Not all sites are causing toxic mercury problems, but getting a handle on which sites are—and how to prioritize and clean them up to protect water and people—is a huge challenge.

I expect most of us will agree that we need more funding for abandoned mine cleanup. In the House of Representatives, I am a co-sponsor of H.R. 699, the Hardrock Mining and Reclamation Act of 2009, which would create an abandoned mine reclamation fund from a royalty on hardrock mining on public lands.

Today, we will hear from federal and state agencies involved in managing mines and water, as well as people and organizations directly impacted by or involved in trying to solve the mercury and historic mining problem.

From my perspective, I hope they can help answer three questions:

- How much mercury is coming from abandoned mines?
- What are the impacts of that mercury?
- How do we fix this problem?

I look forward to their input on this serious and long-neglected issue.

**STATEMENT OF HON. TOM McCLINTOCK, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF CALIFORNIA**

Mr. McCLINTOCK. Thank you, Mr. Chairman.

It is, indeed, a pleasure to be here in such familiar surroundings with such familiar company, and it was a particularly wonderful surprise to enter the building and realize it has not been boarded shut yet and the lights are still on. So I guess it is something to be grateful for.

And it is a pleasure to join you on behalf of Congressman Doug Lamborn, who is the Ranking Member of the Subcommittee who was unable to be here today.

But, Mr. Chairman, as we address water quality issues that date back 160 years, I would be remiss in not raising the concern that I know that you share over the immediate water quantity crisis caused by the deliberate diversion of 200 billion gallons of water from the Central Valley. This manmade drought has resulted in

40,000 unemployed San Joaquin Valley workers who have urgently pleaded with Congress to turn the Delta pumps back on.

I just want to note that I requested the Natural Resources Committee a month ago to hold a field hearing on that crucial subject, a crisis that cannot wait 160 years or even 160 days for redress, and I have not yet received an answer from the Committee.

That said, I welcome the opportunity to sit on the Subcommittee today since many of the gold mines that gave birth to California's prosperity are in my Fourth Congressional District. In fact, I just came from a speech in Placerville, California, which began with the name "Dry Diggins." Indeed, Sutter's Mill, where the gold rush started, is not far from there.

Today we are discovering that the legacy of California's gold rush came with a price, that of mercury contamination of our streams and watersheds. Unfortunately, so many years have passed since the closure of these mines that the owners responsible are no longer alive to clean up their long abandoned sites. Indeed, most of the abandoned mine lands found throughout the western United States were operated in the 1800s and early 1900s.

I hope that today's testimony follows a formula that Abraham Lincoln laid down in 1858 when he observed, "If we could first know where we are and whither we are tending, we could best judge what to do and how to do it."

With respect to where we are and whither we are tending, I hope that the testimony today can give us a clear and dispassionate perspective of the actual scale and complexity of the problem we face.

We are fortunate that the practices that caused this contamination were halted many decades ago. So I presume that the problem is at least not worsening.

Next, I hope that we will receive guidance on how the residue of these mines compares with the natural mercury contamination, which should give us some perspective on the magnitude of the manmade portion of that equation.

And, finally, since the contamination has been with us for over a century and is only now being assessed, it is important to ask what damage has already been done, either to human health or to the animal population. For example, have we recorded fish die-offs or high mortality rates among natural predators whose diet includes significant amounts of those fish?

With respect to what to do and how to do it, I believe that we must be mindful of cost-benefit issues as well as opportunities that may exist for natural remediation. For example, one of the best legislative initiatives in our Committee's jurisdiction is H.R. 3203, the Cleanup of Inactive and Abandoned Mines Act, also known as the Good Samaritan Act, sponsored by the Subcommittee's Ranking Member, Mr. Lamborn. This bill establishes provisions to encourage the partial or complete remediation of inactive and abandoned mine sites for the public good by Good Samaritans.

H.R. 3203 is designed to limit Clean Water Act liability for entities that voluntarily clean up these abandoned sites. The specific authority would allow a Good Samaritan program for a mine remediation project if it is determined that it will improve the environment to a significant degree. Now, this may prove particularly use-

ful in promoting clean-up of sites in conjunction with mine re-openings as the demand for gold increases.

I hope we will also examine what activities and mandates may be threatening a new round of mercury contamination. An example would be the Federal and state mandates for fluorescent light bulbs which threaten tons of new mercury contamination each year. It would be a pity if while addressing mercury contamination dating back a century or more, we ignored new sources of mercury contamination prompted by our own actions.

So, Mr. Chairman, I want to thank you again for the opportunity to participate in today's hearing, and I look forward to hearing from our witnesses.

[The prepared statement of Mr. McClintock follows:]

**Statement of The Honorable Tom McClintock, a Representative
in Congress from the State of California**

Mr. Chairman:

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That said, I welcome the opportunity to sit on the committee today since many of the gold mines that gave birth to California's prosperity are in my district. I just came from a speech in Placerville, which began with the name, "Dry Diggins." Indeed, Sutter's Mill, where the Gold Rush started, is not far from there.

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Finally, since the contamination has been with us for over a century and is only now being assessed, it is important to ask what damage has it already done, either to human health or to the animal population. For example, have we recorded fish die-offs or high mortality rates among natural predators whose diet includes significant amounts of fish.

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Samaritan Program for a mine remediation project if it is determined that it will improve the environment to a significant degree. This may prove particularly useful in promoting cleanup of sites in conjunction with mine re-openings as the demand for gold increases.

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Mr. Chairman, I want to thank you again for the opportunity to participate in today's hearing and I look forward to hearing from our witnesses.

Mr. COSTA. Thank you very much, Congressman McClintock, and I look forward to hearing the testimony as well.

I appreciate your noting the challenges that we are facing with the current regulatory drought and the three years of below-average rainfall and its impact on the state. Just as we are looking at financial challenges impacting the state, the drought crisis clearly is now impacting the San Joaquin Valley. If it, God forbid, continues a fourth year, it will impact Southern California as well as the Bay Area, and as you know, my constituency is kind of ground zero where the unemployment is taking place, and every day I am trying to do everything I possibly can to find various remedies both at the Federal as well as state level, and I appreciate your concern and interest and will continue to work very hard on that front.

Let's begin with the witnesses. We have Mr. Jim Abbott, the Acting Director of the California Office of the Bureau of Land Management within the Department of the Interior. Mr. Abbott will present a joint testimony with Dr. Alpers, a research chemist for the U.S. Geological Survey, also part of the Department of the Interior. It is my understanding, Mr. Abbott, that you will present the PowerPoint, and both you and Dr. Alpers will be available for questions as we pursue your testimony when we get to the Q&A part.

Mr. Randy Moore, from Region 5, is a Forester of the U.S. Forest Service under the Department of Agriculture, and you will have your testimony and then we will follow with Mr. Daniel Meer, the Assistant Superfund Division Director of Region 9 for the United States Environmental Protection Agency.

I think all of you are familiar with the Federal tradition in hearings. Any lengthy testimony will be submitted for the record, without objection. Your testimony will be guided by the five-minute rule. I do not know if some of you can see, but right beyond that laptop computer, and we will have to bend it down after your PowerPoint presentations so that the other witnesses can see it, but the green light stays on for four minutes, and then when you hit your fifth minute the yellow light goes on, and then when it turns red, then there is an ejection seat where you are sitting, and you disappear.

Not really, but the Chair does appreciate if you stay within the five minutes. It is helpful.

So without further ado, Mr. Abbott, Director of the California Office of Bureau of Land Management within the Department of the Interior, you have a PowerPoint; is that correct?

Mr. ABBOTT. No, I do not have a PowerPoint.

Mr. COSTA. Oh, then who has the PowerPoint? Oh, the next panel. OK. Well, why don't we bend that lid there? There we go; perfect. See if I had listened more carefully to my staff, I would know that you did not have a PowerPoint.

Mr. Abbott, please begin.

STATEMENT OF JIM ABBOTT, ACTING STATE DIRECTOR OF THE CALIFORNIA STATE OFFICE, BUREAU OF LAND MANAGEMENT, U.S. DEPARTMENT OF THE INTERIOR, WITH DR. CHARLES ALPERS, RESEARCH CHEMIST, U.S. GEOLOGICAL SURVEY, U.S. DEPARTMENT OF THE INTERIOR

Mr. ABBOTT. Good morning, Mr. Chairman and Mr. Congressman and Committee staff. My name is Jim Abbott. I am the Acting State Director for the Bureau of Land Management, and I am pleased to be joined this morning by my colleague, Dr. Charles Alpers, representing our sibling Interior agency, USGS.

I would like to especially thank you for holding this hearing and especially thank you for holding it here in Sacramento this morning. Sacramento is a geographic area well known and commonly associated with the discovery of gold in California and the ensuing changes in history that that discovery led to.

A little less known were the unexpected consequences and the unexpected costly impacts associated with remediation of the ensuing 160 years of history where mining activity across not only California, but the West has left a legacy for us to address in terms of remediating human health hazards.

I have submitted to you written testimony, but I would like to briefly summarize from that for you the size and scope of the problem that we face on BLM land here in California, the progress we are making, and to summarize for you some prognosis for the future in terms of what we face.

As you mentioned, there are estimated to be 47,000 abandoned mines here in the State of California. Twenty thousand of those are estimated to be on the 15 million acres of public land that we in the Bureau of Land Management administer.

Of that 20,000, to date we have identified over 1,000 mine sites that have environmental hazards. Those are the hazards associated with, as you have mentioned, mercury and some of the other chemical workings that were used in mining activity, and over 3,000 mines that create serious physical safety hazards as a result of tunnels added and mine working that all too often lure unsuspecting public to explore a very dangerous physical setting causing injury and sometime death.

Despite the fact that we have this large number of sites, we are making progress. We are currently working in eight watersheds to address environmental safety hazards, including the watersheds of the American and Sacramento River. In the testimony that I have submitted, I have provided you and there are some on the board overhead, some examples of before and afterward for the progress that we have been making.

In addition to the eight watersheds that we are currently working in, we are characterizing other mine sites in the 17 priority watersheds throughout the State of California to continue to evaluate where best to make our next investments.

In addition, over the past two years, we have remediated over 300 physical safety hazard risks and continue to expect this year to be adding significantly to that number.

The prognosis for the future, the size of the task and cost of the task is, indeed, daunting, but we have to date established a network of partnerships here in the State between Federal agencies, State agencies, local agencies, and nonprofits who have been working shoulder to shoulder to evaluate how best to address the various resources, issues that we face, and decide upon a joint deployment of how to begin and where to invest to address the highest priority issues.

We are thankful to Senator Dianne Feinstein for two years ago she asked that partnership to come up with a joint priority list of projects, and that joint list, which was developed cooperatively by the partnership agencies, has been an invaluable tool in terms of helping us to direct where our resources should be best spent.

To date, we have seen increases in our budget here in California, doubling up to \$4 million to address physical and environmental hazards. Here in California we are benefiting from \$8.75 million in stimulus funding this year to address the risks that we face.

We are continuing to work in the highest priority areas to continue to inventory and characterize the risks that remain to ensure that we are leaving behind us a legacy, a proud history, not just of the importance of the discovery of gold in California, but the work that successive generations are doing to ensure that that discovery is not leaving a legacy of chemical and physical dangers for the future.

Thank you.

[The prepared statement of Mr. Abbott follows:]

**Statement of Jim Abbott, Acting California State Director,
Bureau of Land Management, U.S. Department of the Interior**

Introduction

Mr. Chairman, members of the subcommittee and guests, welcome to California and thank you for the opportunity to appear here today. I am Jim Abbott, Acting State Director for the Bureau of Land Management (BLM) in California and am pleased to be here to discuss the BLM's Abandoned Mine Lands (AML) program.

Nationally, the AML program is one of the BLM's most challenging due to the sheer number of AML sites, their associated safety and environmental hazards, and uncertainties surrounding these estimates. However, the agency is committed to continuing to address these hazardous sites. It has taken a number of steps to build a comprehensive and aggressive AML program, including a substantive effort in identifying sites. Together with the collaborative efforts of the agency's AML partners, the BLM is making progress to remove these hazards left from the nation's mining legacy.

BLM's AML Program

To date, the BLM's AML inventory contains over 25,000 sites across the country with approximately 66,000 "AML features" such as portals (mine entrances) or rock dumps (piles of rock dumped by miners digging the mine). The inventory number will increase as BLM updates the inventory with field data that is continuously collected about additional sites and features. A majority of these sites pose safety hazards while 5 to 10 percent pose environmental hazards. Environmental and human health hazards include mercury contamination in discharge from placer gold mines and mercury mines, and sediment from asbestos mines; arsenic and lead contamination from mine tailings; deadly gases within the mines; and acidic mine drainage from large sulfide mines. AML sites also contain physical hazards, such as open mine shafts and pits; unstable rock and decayed support beams; and explosive and toxic chemicals. We would like to emphasize that the sites with the highest poten-

tial for harm to public health and safety have already been identified by the various Federal, State, and Tribal partners and are being addressed with existing resources.

The BLM AML funding comes from a variety of funding streams, such as the AML Program appropriations, DOI's Central Hazardous Material Fund, the Special Clean Up Fund, and Natural Resource Damage Assessment program. The BLM prioritizes which sites receive funding based upon AML National Level Evaluation Criteria found in the BLM AML Program's Strategic Plan, which weighs several different criteria for both environmental and physical safety sites.

Currently, 20 percent of the identified AML sites have been remediated, or are undergoing remediation. BLM is in the process of updating its AML Strategic Plan with a projected completion date of 2010. The Strategic Plan will provide additional, long-term direction for the AML remediation program.

The BLM environmental cleanup or remediation activities cover a broad spectrum, and are guided by important public laws such as: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Federal Land Policy and Management Act (FLPMA), and the National Environmental Policy Act (NEPA). AML environmental sites can include those adversely affected by poor water quality and by substances such as arsenic, mercury, and base metals. AML environmental sites include tunnels that may discharge contaminated water, or tailing piles that may discharge various hazardous materials or substances. Through the application of those laws, the agency addresses the impacts from the associated hazards along with the proposed mitigation work necessary to remediate a site.

The Office of the Inspector General (OIG) found in a 2008 report entitled, Abandoned Mine Lands in the Department of Interior, that "...BLM and NPS are putting the public's health and safety at risk by not addressing hazards posed by abandoned mines on their lands." The OIG audit concluded, "As it stands, public safety is at risk because physical and environmental hazards at abandoned mine lands have been ignored by DOI for decades. Abandoned mine lands programs in DOI are in need of a firm commitment to protect the public, sustained funding, and dedicated staff."

The BLM takes seriously the findings and recommendations of the OIG, along with its responsibility to protect both public health and safety, as well as the environment. As a result, the agency has taken a number of steps to build a comprehensive and aggressive AML program that include: initiating a revision of the BLM AML Strategic Plan; initiating an AML Inventory Feasibility Study; implementing the "Fix a Shaft Today" program to encourage volunteers to participate in inventory and safety closure projects; and developing guidance to encourage increased stakeholder involvement and improved coordination with AML partners at the Federal, state and local level.

California's Mining Legacy

In California, the BLM faces a particularly challenging situation due not only to its historic mining legacy, but also to its growing population, which now stands at 38 million. Gold was discovered not far from here at Coloma, starting the famous California Gold Rush. For over a century and a half, miners scoured hillsides and mountains, dug mines, and subsequently abandoned them with little or no reclamation, creating the pollution and public safety issues we face today. Over one hundred years of mining have left thousands of dangerous shafts, portals, and other hazards. Most of these hazards are located in the Sierra Nevada Mountain and Klamath Mountain Provinces of Northern California and the Mojave and Colorado Desert Regions in Southern California. The historic use of mercury in gold mining operations has led to the pollution we see today in scores of watersheds and even in some of our major waterways in the Sierra Nevada Range, the Central Valley, and even the San Francisco Bay Delta. Abandoned mercury mines in the Coast Range are also a significant source of mercury contamination. The Sacramento watershed is the BLM's highest priority for clean-up, followed by the American, Bear, Nacimiento, Salinas, Trinity, Yuba, and Russian River watersheds. AML remediation work is either underway or proposed for all eight areas.

The BLM and the California Department of Conservation's Office of Reclamation estimate there are approximately 47,000 abandoned mines in California, two-thirds of them on Federal lands. The BLM-administered public lands in California have an estimated 20,000 abandoned mines, of which 1,000 likely affect water quality, and over 3,000 contain hazardous mine openings. However, much of the data comprises legacy records which are often incomplete. BLM-California has not completed its AML inventory; many of these estimated sites are not included in the national AML inventory total. Of the 20,000 estimated abandoned mines, BLM-California has characterized or evaluated 1,820 abandoned mine sites, including 60 mines affecting water resources within 17 priority watersheds, and over 120 mining districts

with physical safety hazards. BLM AML program funding is being used to further efforts at identifying AML sites, and addressing the highest priority remediation work.

The problem of physical hazards is equally important given California's large population. Urban sprawl and increased recreation on public lands have put more people at risk from AML hazards. The sites with the highest potential for harm to public health and safety have already been identified by the various Federal, State, and Tribal partners and are being addressed with existing resources. In California during 2009, there have been at least two AML-related deaths on the public lands. However, significant progress is being made to address physical hazards as well. Nearly 300 priority physical safety hazard sites in California have been secured in the past few years, and dozens more are scheduled to be closed in 2010.

USGS Study of Mining-Related Mercury Contamination in California

The principal types of abandoned mines responsible for mercury contamination in California are mercury mines and gold mines.

California's Coast Range was the location of several of the most productive mercury mines in North America. Mercury mining took place in California between 1846 and 1981, resulting in production of about 75% of the total mercury production in North America.

The processing of gold ores by mercury amalgamation prior to 1920, when cyanide treatment became the dominant method used for gold extraction, led to the release of additional millions of pounds of mercury to the environment.

A key aspect of mercury geochemistry is the formation of methylmercury, a potent neurotoxin. Methylmercury concentrations tend to increase systematically as one moves up the food chain. A potentially harmful pathway of mercury exposure for people and wildlife is through consumption of top predator fish, such as freshwater bass species.

A major focus of the research done by USGS on mercury in California and elsewhere in the United States in the past decade has been determining the environmental factors that control the methylation of mercury in various environments. Wetland environments are well known to be important places for mercury methylation, and the USGS, in cooperation with State partners, has studied this phenomenon. A theme that has emerged from these studies and related work elsewhere is that methylmercury concentrations tend to be higher in seasonal wetlands, such as floodplains and high marsh areas that are only wetted a few times per year, compared with permanent wetlands and low marsh areas that do not dry out completely. Additional research is needed to improve understanding of mercury cycling in wetlands, which should help resource managers to manage mercury in the context of wetland restoration efforts in sensitive ecosystems.

California's Partnerships

The BLM and other public agencies recognize that AMLs create numerous hazards and the BLM is working cooperatively with our partners to address them. BLM-California collaborates with more than 20 Federal, state and local agencies, as well as private organizations and industry to address AML hazards. One of our primary partners is the California Department of Conservation's Office of Reclamation. As part of the BLM's 2009 National Reclamation and Sustainable Mineral Development Awards, the Department of Conservation's efforts were recognized by BLM Director Robert Abbey recently in Washington, D.C. as a recipient of the BLM's 2009 "Fix a Shaft Today" award.

Through partnerships such as these, the BLM has achieved several successes in California. For example, the remediation of the Boston Mine's sluice tunnel in Northern California, identified by the U.S. Geological Survey as a mercury contamination site, was recognized with an "Environmental Achievement Award" from the U.S. Department of the Interior's Office of Environmental Policy and Compliance. Agency efforts to identify and mitigate physical safety hazards at Red Mountain in Kern County have progressed significantly over the past two years. With the help of an industry partner, the BLM has completed fencing, backfilling, and building covers to secure over 80 mine shafts and deep trench sites near this populated and high-use recreational area.

The BLM meets frequently with the State Water Board, the Department of Conservation AML Unit, the U.S. Forest Service AML Program, the California Department of Toxic Substance Control, and others to discuss, collaborate on, and rank AML sites. In addition, the BLM has worked with Federal and State partners, as well as locally based organizations, to hold public workshops to promote AML awareness.

Conclusion

Mr. Chairman, the challenges presented by abandoned mines are immense, both here in California and across the nation. The BLM recognizes and understands these challenges and has made it a priority to continue to improve its AML program. With the help of our partners in California, who are known for innovative solutions, we are making progress and are committed to making the AML program in California a success. Thank you and I am happy to answer any questions.



Appendix: Mercury Contamination in California Watersheds Affected by Abandoned Mine Lands—Reference Cited and Publications by the U.S. Geological Survey, 1999-2009

Outline:

- A. General Reports on Mercury and Abandoned Mine Lands in California
- B. Abandoned Mercury Mines—California Coast Ranges and Trinity Mountains

- 1) Upper Cache Creek watershed (Clear Lake and Sulphur Bank Mercury Mine)
 - 2) Lower Cache Creek watershed (Yolo County)
 - 3) Other North Coast watersheds (Lake, Napa, Solano, and Trinity Counties)
 - 4) Central Coast watersheds (including New Idria Mine)
- C. Abandoned Gold Mines—Sierra Nevada and Klamath Mountains
- 1) American River watershed (Sierra Nevada)
 - 2) Bear River watershed (Sierra Nevada)
 - 3) Yuba River watershed (Sierra Nevada)
 - 4) Clear Creek watershed (western Shasta County)
- D. Downstream Environments—Mercury Loads, Methylation, and Toxicity to Wildlife
- 1) Sacramento River
 - 2) Sacramento-San Joaquin Delta and Yolo Bypass
 - 3) San Francisco Bay
- E. General USGS Publications on Mercury Geochemistry, Speciation, Bioaccumulation, and Ecotoxicology
- F. USGS Web Sites with Information on Mercury and Abandoned Mine Lands

A. General Reports on Mercury and Abandoned Mine Lands in California

- Alpers, C.N., Eagles-Smith, C., Foe, C., Klasing, S., Marvin-DiPasquale, M.C., Slotton, D.G., and Windham-Myers, L., 2008, Mercury conceptual model. Sacramento, Calif.: Delta Regional Ecosystem Restoration Implementation Plan, 62 p.: http://www.science.calwater.ca.gov/pdf/drerip/DRERIP_mercury_conceptual_model_final_012408.pdf
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B. Abandoned Mercury Mines—California Coast Ranges and Trinity Mountains

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F. USGS Web Sites with Information on Mercury and Abandoned Mine Lands

Mercury

USGS Mercury Research: <http://www.usgs.gov/mercury>

Mercury in Stream Ecosystems: USGS National Water-Quality Assessment (NAWQA) Program: <http://water.usgs.gov/nawqa/mercury/>

Mercury Toxicity and Bioaccumulation in Fish and Wildlife: <http://biology.usgs.gov/contaminant/mercury.html>

Mercury Research, USGS California Water Science Center: <http://ca.water.usgs.gov/mercury>

USGS Mercury Studies Team: <http://wi.water.usgs.gov/mercury/index.html>

USGS Mercury Research Laboratory: <http://wi.water.usgs.gov/mercury-lab/>

Abandoned Mines

USGS Abandoned Mine Lands Initiative: <http://amli.usgs.gov>

Mineral Resources Data System (MRDS): <http://tin.er.usgs.gov/mrds/>

Mr. COSTA. Thank you. Almost within the time constraints. I do appreciate your reflection of the collaboration.

Senator Feinstein did tell me that she wanted to be here. She has also, beyond her involvement that you noted, introduced legislation that would attempt to address part of this. She has a statement that, without objection, I would like to submit for the record to the Subcommittee that indicates her views on the challenges facing these abandoned mines and her efforts to try to remedy them through her legislation. We thank Senator Feinstein for her leadership on this and many other issues that she is very involved with. So I appreciate your noting that.

[The prepared statement of The Honorable Dianne Feinstein follows:]

Statement of The Honorable Dianne Feinstein, a U.S. Senator from the State of California

Chairman Costa, thank you for holding this hearing on mercury contamination caused by abandoned hardrock mines. This is a serious problem of which few people are aware. Much more needs to be done to understand the scope of the impacts to public health and the environment—and this hearing is an important part of that effort.

In total, there are 47,000 abandoned mines in California and approximately 550 are old mercury mines—more than in any other state.

These hazardous mines pose a serious threat to public safety with deep holes, unstable ground, and dilapidated structures.

But equally serious is the threat to environmental health and groundwater pollution.

Environmental impact studies have shown that important watersheds are being polluted by high levels of mercury and toxic runoff. Reports have found that mercury from historic mining is a primary source of contamination in the Sacramento-San Joaquin Delta and San Francisco Bay, where people regularly fish.

A recent study conducted by Dr. Fraser Shilling of U.C. Davis reported a disturbing statistic. It found that approximately 100,000 anglers and fisherman in the Central Valley regularly eat fish tainted with unsafe levels of mercury.

This problem is vast in scope with serious consequences. I believe a comprehensive strategy must be developed to clean up the hazards and contamination caused by hundreds of thousands of abandoned hard rock mines.

Funding for cleanup programs is only one part of the puzzle—but it's an essential part. As our country faces record budget deficits, it's clear that we will not be able to simply appropriate the necessary funds.

I've authored a bill to establish a dedicated funding source to clean up abandoned hardrock mines.

Abandoned Mine Reclamation Act (S. 140)

The legislation that I have introduced would:

Create a hardrock abandoned mine fund that would be supported by fees and royalties on the hardrock mining industry.

The bill would create a reclamation fee of 0.3 percent on the gross value of all hardrock mining on Federal, State, tribal, local and private lands. This fee could raise approximately \$50 million annually for cleanup.

The legislation would also establish an 8 percent royalty on new mining operations located on Federal lands, and a 4 percent royalty for existing operations. The Congressional Budget Office estimates that these new royalties could generate \$160 million over four years. All of this goes to mine cleanup.

In order to fund the new program, the bill would increase certain hardrock mining fees that are already in place. The fee increases will pay for administration and any excess money will be deposited in the cleanup fund.

The legislation would also establish priorities for the cleanup fund based on the severity of risk to public health and safety and the impact on natural resources.

Finally, the bill would direct the Secretary of the Interior to create an inventory of all abandoned mines on Federal, State, tribal, local, and private land.

The condition of abandoned coal mines has greatly improved since the Surface Mining Control and Reclamation Act of 1977 established a fee to finance restoration of land abandoned or inadequately restored by coal mining companies.

This fund has been able to raise billions of dollars for coal mine reclamation—and I believe that a similar program could be part of the solution to the hardrock abandoned mine cleanup.

I continue to urge my colleagues in Congress to move hardrock mining legislation that addresses abandoned mines—before more damage is done.

Impacts of Abandoned Mines

Now I would like to take a moment to talk more about why abandoned mines are so problematic.

First, members of the public are in danger of getting seriously hurt or killed by falling down old mine shafts or crushed by decaying structures.

Abandoned mines have caused at least 37 deaths between 1999-2007 throughout the United States. In the past two years, eight accidents at abandoned mine sites were reported in California.

Earlier this month, a woman died while exploring the historical Tungsten Peak mine in Kern County. The lock on the gate had been broken, and officials report that the abandoned site was a popular location for youth to explore. The woman entered an underground tunnel, the unstable ground gave way, and tragically she fell at least 50 feet to her death.

Thousands of abandoned sites like Tungsten Peak can be found in popular recreation areas, off highways, and increasingly near populations as communities expand. These physical hazards must be secured to prevent more accidents.

Another great threat comes from the danger of groundwater pollution.

The Bureau of Land Management reports that abandoned mines have contaminated 17 major watersheds in California, which supply water for millions of people or provide habitat for species like salmon and other fish that are caught and consumed by the public.

Although mercury mining ended in 1990, this metal continues to enter rivers and streams from the tailings and waste of historic sites. Mercury contamination also occurs at former gold mining operations. It was used to extract gold from sediment or rock and much of it was lost to the environment in the process, resulting in highly contaminated sediments. Storm flows and other runoff carry the sediment downstream.

In turn, people who drink this water are exposed to dangerous chemicals like mercury and acid in drinking water—and the fish that swim in streams fed by these waters are likewise contaminated.

Mercury, a potent neurotoxin, can cause permanent damage to the brain and harm the skin, kidneys and cardiovascular system. The most toxic form of mercury, methylmercury, poses the greatest risk to pregnant women and children. Consumption of contaminated fish is the primary route of exposure to methylmercury for people in the United States.

Fisherman and anglers, who live off what they catch in the rivers, often do not know that their daily catch may be harmful to themselves and their families.

Comprehensive studies and public education on the long term health effects of consuming tainted fish are necessary.

Conclusion

The fact is that abandoned mines are public hazards and they need to be addressed.

As Chairman of the Senate Appropriations Subcommittee on the Interior, Environment, and Related Agencies, I will continue to seek resources at the Federal level to address abandoned mines.

For Fiscal Year 2008, I added \$1.9 million into the Department of the Interior's budget to identify and remediate hazardous abandoned mines in California. For Fiscal Year 2009, I added \$8.1 million, and under the American Recovery and Reinvestment Act, the Department was allocated a total of \$52 million for mine clean-up.

I acknowledge the ongoing efforts carried out by Federal agencies including the U.S. Forest Service, National Park Service, Bureau of Land Management, U.S. Geological Survey, and U.S. Environmental Protection Agency; State Agencies such as the California Department of Conservation and California Environmental Protection Agency; local governments; and nonprofit organizations to inventory and cleanup abandoned mines.

I look forward to working with these Federal, State, and local agencies; and with my colleagues in Congress, to continue our efforts to protect the public from hazardous sites and to find a solution to this long outstanding public safety issue.

Thank you.

Mr. COSTA. We will move on to our next witness, Mr. Randy Moore from the U.S. Forest Service, under the Department of Agriculture. Mr. Moore, please begin your testimony.

**STATEMENT OF RANDY MOORE, REGIONAL FORESTER,
REGION 5, PACIFIC SOUTHWEST, U.S. FOREST SERVICE, U.S.,
DEPARTMENT OF AGRICULTURE**

Mr. MOORE. Mr. Chairman, Congressman McClintock, thank you for the opportunity to testify on the Abandoned Mine Lands reclamation program and mercury contamination in California.

As you have indicated, my name is Randy Moore. I am the Regional Forester of the Pacific Southwest Region. This includes California, Hawaii and affiliated Pacific Islands.

California has 18 national forests. Much of these lands are in areas that have experienced significant historic mining activities, including hardrock, and also pit mines of gold, mercury, copper and asbestos. Many of these mines were opened, operated and abandoned before any environmental regulations were in place to ensure sustainable operations.

The State of California estimates that approximately 47,000 abandoned mine sites exist statewide. There are approximately 7,500 abandoned mine sites located on national forests in California.

Since the early 1900s, the Forest Service has implemented programs to mitigate abandoned mine hazards, restore land and water contaminated or disturbed by abandoned mines, and enhanced fish and wildlife habitat through reclamation of abandoned mines.

Mr. COSTA. Mr. Moore, you might speak a little more directly into your microphone there. I want everybody to hear you.

Mr. MOORE. Thank you, Chairman.

The sheer quantity of historic abandoned mine lands crossing multiple jurisdictional boundaries make addressing and solving the impacts of these mines difficult, expensive, and complex. Mercury, lead, arsenic and other contaminants from abandoned mine sites are impacting drinking water and other water resources throughout the state.

Drainage from acid rock is causing fish kill and it is degrading critical habitat and high concentration of toxic metals. Visitors

camping, fishing or hiking on our public lands are being exposed to contaminated mill tailings and waste rocks from abandoned mines on Federal and state lands and with historic mining communities.

Mercury contamination from historic mining activities differ from other abandoned mine lands' contamination issues. Historic gold mining activities released approximately 13 million pounds of mercury into the environment in California. Much of the mercury used in the former hydraulic mine sites during the gold rush era has traveled from the original mines to contaminate downstream sediment, river gravels, and water bodies.

No longer confined to the historic mining sites, mercury contamination issues now cross many jurisdictional boundaries on Federal, State, and private lands. Federal and State agencies and private partners must continue to cooperate to effectively address the hazards posed by mercury released throughout the various sites and ecosystems in the state.

Solutions to the health, safety, and environmental impacts of abandoned mine lands lie in our cooperation and partnership with other Federal and State agencies, as well as private land owners. We have closed 193 mine openings on 12 national forests throughout California since the 1990s in partnership with the State Abandoned Mine Lands Unit.

Mr. COSTA. Repeat that number once again.

Mr. MOORE. One hundred and ninety-three hazard mine openings on 12 national forests, and this has been since the 1990s, and we have done that in partnership with the state.

From 2004 to 2005, the Forest Service partnered with EPA and the Bureau of Land Management. Approximately 4,770 tons of contaminated mercury material was sent offsite for disposal. The abandoned Altoona mercury mine was one of the primary sources of mercury to Trinity Lake. Site remediation work was completed in 2009, and combined EPA and Forest Service site costs to date are in excess of \$7 million.

I commend my fellow agencies and other partners for their hard work in addressing the human health and environmental hazards created by historic mining operations, and while we have made progress, there is still much work to do ahead of us.

We see this as a long term commitment in a coordinated statewide program as consisting of three key parts. First, we need to consolidate and reconcile the abandoned mine land inventories maintained by various agencies into a statewide abandoned mine land site inventory.

Second, we need a common site screening and ranking process and a common protocol for site investigations, characterization and remediation.

And, finally, we need to establish and implement a process for improving and maintaining data transfer, communications and coordination among Federal and State agencies.

Mr. Chairman, the Forest Service stands ready to assist and participate in a more coordinated approach. I thank you for the opportunity to talk about abandoned land mines and mercury poisoning in California, and I would be happy to answer any questions now or later.

[The prepared statement of Mr. Moore follows:]

**Statement of Randy Moore, Pacific Southwest Regional Forester,
Forest Service, U.S. Department of Agriculture**

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify on the Abandoned Mine Land (AML) reclamation program and mercury contamination in California. I am Randy Moore, Regional Forester of the Pacific Southwest Region of the Forest Service which includes California, Hawaii, and the Pacific Islands. I am pleased to be here with you today.

Since the early 1990s the Forest Service has implemented programs to address the safety, human health and environmental hazards posed by abandoned mine lands throughout the nation and state. Key elements of these programs include protecting human health and safety by mitigating abandoned mine hazards; restoring land and water contaminated or disturbed by abandoned mines; and enhancing fish and wildlife habitat through reclamation of abandoned mines.

The human health and environmental impacts caused by abandoned mine lands cross many jurisdictional boundaries and affect federal, state and private lands across the nation and state. Despite the effort of federal and state agencies and other parties, abandoned mine lands continue to pose both physical safety hazards to the public and threats to human health and the environment from hazardous contaminants.

According to the State of California Department of Conservation, Abandoned Mine Lands Unit (AMLU) at least 15 adults have died and 23 adults and children have been injured in abandoned mines in California since 2000¹. Contaminants from AML sites such as mercury and lead continue to affect drinking water and other water resources throughout the state. Acid rock drainage has caused fish kills and continues to degrade habitat and contribute to high concentrations of toxic metals to many streams in California. The recreating public is exposed to contaminated mill tailings and waste rock from AML sites on federal and state public lands and within historical mining communities².

Abandoned Mines on National Forest System Lands in California

The eighteen (18) national forests in California cover approximately 20 million acres of land. Much of the lands managed by the Forest Service in California are in areas that have had significant historic activities such as hard rock and open pit gold, mercury, copper, and asbestos mining.

The California AMLU estimates that more than 47,000 abandoned mine sites exist statewide; that 84 percent of these sites present some form of physical safety hazards to the public and approximately 11 percent present human health and environmental hazards from contaminants³. The state also estimates that federal lands contain approximately 67 percent of the abandoned mines in the state (primarily on lands managed by the Bureau of Land Management (BLM), National Park Service (NPS), and Forest Service).

As shown on the attached statewide AML map, every National Forest in California has abandoned mine sites. Based on the Department of Conservation's abandoned mine database, there are approximately 7,500 abandoned mine sites located on the National Forests in California, with the number of sites per National Forest ranging from 14 on the Lake Tahoe Basin Management Unit to over 1,780 on the Inyo National Forest.

The Forest Service estimates that approximately 65-70 percent of the abandoned mine sites on National Forest System lands in the State of California pose some form of physical safety hazard to the public from hazardous mine openings (adits and shafts), and decaying structures and equipment⁴. It is also estimated that approximately 20 percent pose some level of human health and environmental hazard and threat from hazardous substances associated with abandoned chemicals and

¹"California's Abandoned Mine Lands Program Fact Sheet, November 2009". California Department of Conservation Office of Mine Reclamation, Abandoned Mine Lands Unit

²"California's Abandoned Mines—A Report on the Magnitude and Scope of the Issue in the State, 2007 Update", and "The Abandoned Mine Lands Unit (AMLU) Frequently Asked Questions, March 2009" California Department Of Conservation Office of Mine Reclamation, Abandoned Mine Lands Unit

³Ibid.

⁴Forest Service estimates are based on the professional experiences and knowledge of the agency AML staff and On-Scene coordinators in dealing with AML sites on NFS lands in California.

explosives, acid mine drainage, and heavy metal (lead, mercury, etc.) contamination in mine waste rock and tailings.

Mercury impacts from historic gold mining operations are only one of the human health and environmental threats being addressed by the Forest Service's abandoned mine program. Visitor and wildlife exposure to heavy metals related to hazardous levels of other contaminants such as lead in waste rock and tailings piles is a key concern for the agency. Acid mine drainage and heavy metal discharges into surface water bodies and drinking water sources is another key concern as are the significant hazards posed by abandoned chemicals and explosives at AML sites. For example, on the Sierra National Forest, near Yosemite National Park the Forest Service discovered over 3,200 pounds of ammonium nitrate and 660 pounds of dynamite abandoned at one site that was routinely visited by the public.

Forest Service's Regional and National Abandoned Mine Program

The Forest Service addresses AML hazards primarily through two programs; the AML Safety program which focuses on the mitigation of safety hazards posed by abandoned and/or inactive mines on National Forest System lands, and the Environmental Compliance and Protection program which utilizes authorities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address human health and environmental hazards posed by hazardous substances and contaminants such as mercury⁵.

In the implementation of its CERCLA program, the Forest Service must comply with, and follow, the requirements of the National Contingency Plan as well as established Environmental Protection Agency CERCLA policy and guidance. A key first step in this process is conducting initial site characterization to determine if a site has contamination and poses a threat to human health and the environment. To date, the Forest Service has completed the initial site characterization work on less than 5 percent of the AML sites on National Forest System lands in California. The Forest Service estimates that the cost to conduct initial site characterization work at an AML site ranges from approximately \$20,000 to \$45,000 depending on the site complexity (number and type of mine features, type of historic operations, contaminants of concern, accessibility, etc.)⁶.

USDA and Forest Service policy requires that, before appropriated funds are spent on the remediation of a site, a "potentially responsible party" (PRP) search must be performed to identify whether a viable responsible entity exists to fund the site clean-up in lieu of the government. As the Forest Service has moved forward with its PRP searches in California it has found that many of the abandoned mine sites on the national forests in the state are old, with the majority of the mining activities occurring from the 1800s through the early 1900s. Very few of these sites have resulted in the identification of a viable responsible party. These include many, if not most of the historic hydraulic mine sites in the Sierra Nevada which are the source of much of the mercury contamination concerns. The Forest Service has not found a viable responsible party at any of the mercury contamination AML sites investigated to date in California.

After the Forest Service and USDA legal counsel have determined that no viable responsible party exists at a site, the agency may then proceed with using appropriated funds to complete the CERCLA site investigation and remedy selection and implementation process. In California we have found that the cost to complete this component of the CERCLA process varies greatly depending on the site and the environmental issues needing to be addressed.

- Less complex sites, where the issue is typically a small waste rock/tailings pile with hazardous levels of metals that can be hauled off for disposal or capped in place, can cost from \$250,000 to \$450,000. While sites with larger volumes of waste rock/tailings can cost much higher. Example, the Juniper Uranium Mine on the Stanislaus National Forest, is projected to cost between \$4.5 million to \$5 million to construct, implement and maintain the site remedy.
- More complex sites with water quality issues such as acid mine drainage cost significantly more to address. For example, at the Golinsky Mine on the Shasta-Trinity National Forest abating the release of copper into Lake Shasta, will cost 7.0 million dollars to install and operate a passive treatment system for up to 30 years.

A key factor in AML site remediation costs is site accessibility. The Forest Service has remediated several sites like the La Trinidad Mill site on the Tahoe National

⁵Executive Order 12580 provided federal agencies like USDA lead agency authority under CERCLA to investigate and remediate contaminated sites on federal lands.

⁶Cost estimates based on Forest Service's regional experience in conducting CERCLA site characterization work at AML sites in California.

Forest and the Black Bob Mine on the Los Padres where helicopters had to be utilized to bring out contaminated equipment and material.

The Forest Service annual budget to address contaminated site remediation and AML safety mitigation has ranged from approximately \$14 million to \$19 million. This funding also funds remediation activities at abandoned landfills and dump sites and at Forest Service administrative sites. As part of the funding, each Forest Service region is allotted \$500,000 of “base program” funding to pay for initial site characterization work and “potentially responsible party” searches. To obtain funding beyond this “base program” for site remediation and restoration efforts, each region must submit their highest priority projects and compete nationally for funding. Projects in California are competed against projects from other regions with a national emphasis to fund the “worst first”. Nationally competed projects are evaluated and ranked based on the following factors:

- Human health and safety;
- Environmental factors such as water quality, threatened and endangered species, etc.;
- Economic and social factors including partnerships, public interest and overall cost.

AML safety mitigation projects go through a similar, but separate, competition process for funding. Costs to mitigate abandoned mine safety hazards vary and are also affected greatly by a site’s accessibility and complexity (type and number of mine features, abandoned equipment, structures, etc.), with typical costs to close a single hazardous mine opening with a bat gate range from \$8,000 to \$15,000, while hazardous mine opening closures using foam can range from \$2,000 to \$4,000.

In 2009, additional funding for the reclamation and remediation of abandoned mine sites on National Forest System lands was appropriated through the American Recovery and Reinvestment Act (ARRA) (Public Law # 111-5). ARRA directed the Forest Service to use a portion of the \$650 million in funding authorized for Capital Improvement and Maintenance for mitigation of safety, human health and environmental hazards at abandoned mine sites on National Forest System lands. The Forest Service has disbursed \$22.704 million of its ARRA funds for 17 abandoned mine land projects in seven states across the country, of which, sites in California have received \$11.339 million. The mitigation activities to be undertaken as part of these projects in California include closing hazardous mine openings and vertical shafts; removing or stabilizing abandoned buildings and equipment, removing contaminated mine wastes from waterways, and the construction of treatment systems to address acid mine drainage.

The Forest Service is continually looking at ways to maximize the effectiveness of its AML safety and cleanup programs. These efforts include partnering with other federal and state agencies, such as the Environmental Protection Agency (EPA), Bureau of Land Management, and the California Department of Conservation, to identify priority sites and combine resources to mitigate safety and environmental hazards. Since the 1990s, the Forest Service has partnered with the California Department of Conservation Abandoned Mine Lands Unit to successfully close 193 hazardous mine openings on 12 national forests throughout California. Other partnership efforts include:

- **Rinconada Mercury Mine:** From 2004-2005 the Forest Service partnered with EPA and BLM to conduct a CERCLA response action at the Rinconada Mercury Mine located within the Los Padres National Forest on BLM, Forest Service and private lands. The Rinconada Mercury Mine is a popular recreation spot for local teens and college students. The site was also featured in an August 19, 2007 San Francisco Chronicle article on “The Art of Urban Exploration”. Because of the mixed ownership of the site, the Forest Service requested that EPA take the lead on the CERCLA response which resulted in approximately 4,770 tons of contaminated mercury material being sent off-site for disposal. The Forest Service has continued efforts to mitigate the safety hazards posed by the mine features and to date we have closed nine hazardous mine openings.
- **Altoona Mercury Mine:** The abandoned Altoona Mercury Mine is located within the boundaries of the Shasta-Trinity National Forest on both private and Forest Service lands. Studies conducted by USGS in the Trinity River Watershed indicated the Altoona Mercury Mine was one of the primary sources of mercury to Trinity Lake. In October 2005, the California Office of Environmental Health Hazard Assessment issued a fish consumption advisory for Trinity Lake and the East Fork of the Trinity River. Site remediation work was recently completed in 2009. Combined EPA and Forest Service Site costs to date are in excess of \$7 million.
- The Forest Service partnered with USGS to conduct mercury studies in several watersheds in California. These included the Trinity River Watershed within

the Shasta-Trinity National Forest and the Bear and Yuba River Watersheds within the Tahoe National Forest.

- The Forest Service also partnered with the California Department of Toxic Substance Control (DTSC) on their grant application to the Sierra Nevada Conservancy to conduct assessments of abandoned mines within the north and middle Yuba River Watersheds.

Addressing Mercury Contamination

It is estimated that thirteen million pounds of mercury were released in to the environment from historic gold mining activities in California⁷. While many of the historic hydraulic mines which utilized much of the mercury during the Gold Rush era are on Forest Service and BLM administered lands, areas impacted by mercury contamination cross many jurisdictional boundaries and federal, state and private lands.

To date the Forest Service has completed remediation work and started investigation work on a variety of AML sites in California with mercury contamination. These include:

- **Gibraltar Mercury Mine, Los Padres National Forest:** Completed CERCLA removal action to address mercury contamination in abandoned mine buildings. CERCLA action involved removal of structures and the creation of an interpretive exhibit by preserving the mill building and equipment.
- **Deertrail Mercury Mine, Los Padres National Forest:** Completed CERCLA removal action to address mercury contamination in abandoned mercury processing equipment. CERCLA action involved removal of contaminated soil and equipment from the site.
- **Sailor Flat Hydraulic Mine, Tahoe National Forest:** Completed CERCLA removal action to address mercury contamination present in the site sluice tunnel. CERCLA action involved the obliteration of the tunnel and encapsulation of the mercury contamination to prevent offsite migration.
- **Rinconada Mercury Mine, Los Padres National Forest:** Joint CERCLA removal action with EPA and BLM to address mercury contamination present throughout the site. CERCLA action involved the off-site disposal of approximately 4,770 tons of mercury contaminated wastes, and the on-site encapsulation of ore to prevent downstream migration.
- **Alpha Diggings Hydraulic Mine, Tahoe National Forest:** Completed CERCLA removal action to prevent off-site migration of mercury contamination present in the waste rock at the site.

Addressing the impacts of mercury contamination from historic mining activities is a complex issue and is different from other AML contamination issues. While mercury is still present in the sluice tunnels and pit lakes at former hydraulic mine sites, much of it has already been released from these sites and is already present in the downstream sediments, river gravels and water bodies. USGS estimates that up to 30 percent of the mercury used in the gold mining operations was released into the downstream environment⁸. A key factor in addressing and preventing mercury poisoning is preventing elemental mercury from being converted into methylmercury, an organic form of mercury that accumulates and biomagnifies in the food chain. Methylmercury is a potent neurotoxin that impairs the nervous system and is especially detrimental to developing fetuses and young children⁹. While mercury methylation is a complex process and is still being investigated, it has been found to typically occur in the environments and ecosystems (example wetlands) downstream of the actual mining sites where conditions exist for methylation to occur.

Focusing solely on AML sites, while a step in the right direction, will not solve the mercury contamination problems facing California. The Forest Service has observed that while federal and state programs work to address contamination at AML sites, other programs implement projects, such as wetland restoration projects, which are environments where mercury methylation occurs. To effectively address the hazards posed by mercury releases requires the cooperation of multiple federal and state agencies and programs and private partners.

⁷“Mercury Contamination from Historic Gold Mining in California”, USGS Fact Sheet 2005-3014 Version 1.1 Revised October 2005

⁸“Mercury Contamination from Historic Gold Mining in California”, USGS Fact Sheet 2005-3014 Version 1.1 Revised October 2005

⁹Ibid.

Impacts from Abandoned Mine Lands a Growing Concern

Over the past decade the Forest Service has observed that impacts of abandoned mine lands on public safety, health and the environment is an ever growing concern. The risks posed by abandoned mine lands in the state is increasing each year as a result of many factors, including:

- California's population growth and the associated urban development and encroachment on the national forests resulting in more and more people moving from the cities into areas of historic mining activities like the Sierra foothills and Southern California. This creates a great attraction to "explore." In 2002, two brothers died while exploring the Blue Light Mine on the Cleveland National Forest.
- Increased public demand for recreation and the increased recreational use of the forests is resulting in greater access to once remote areas of the national forest where historic mining activities occurred. Many remote sites now have evidence of public visitation (vehicle and motorcycle tracks on contaminated mine and mill waste piles, vandalism of abandoned structures, etc.) and some sites are being used for popular recreational activities such as geo-caching. Recently Forest Service staff found that the associated website for one AML site being used for geo caching has photographs showing children and Girl Scout troops down in the site mine adits.
- Off Highway Vehicle (OHV) use on California's national forests is increasing. Many remote sites now have evidence of OHV use (vehicle and motorcycle tracks on tailings piles, vandalism of abandoned structures, etc.). In 2004, a man died on the Six-Rivers National Forest when a 4x4 vehicle he was in fell into a vertical mine shaft.
- Many "urban explorer" internet websites prominently feature abandoned mine lands and sites on federal, state and private lands. These sites routinely show pictures of families inside hazardous mine openings and in structures contaminated with asbestos and heavy metals like mercury.

Looking to the Future

Multiple federal and state agencies and private entities are implementing programs throughout the state to address the human health and environmental impacts from historic mining operations. While progress has been made in addressing the hazards posed by abandoned mine lands in the state, much more work is needed. Human health and environmental impacts from abandoned mine lands affects federal, state and private lands and cross federal and state jurisdictional boundaries. Continued success of these efforts in California depends on ensuring that cleanup costs are first borne by potentially responsible parties, where possible, and on the partnering of State and Federal Agencies, public interest groups, the mining industry and other interested third parties.

The Forest Service believes that many of the AML reclamation and remediation efforts being implemented by federal and state agencies and private entities could be improved. Many of the parties use different protocol for investigating, ranking and remediating sites. In order to make progress on mitigating the safety, health and environmental impacts associated with abandoned mine sites, the Forest Service believes a long term commitment and coordinated program is required. While we have not yet discussed this with other parties represented here today, we believe such a long-term commitment would involve:

- Development and implementation of a common site screening and ranking process and common protocol for site investigation, characterization, and remediation. This effort would help state and federal agencies focus efforts and funding on the highest priority environmental and physical hazard projects.
- Establishment and implementation of a process for improving and maintaining data transfer, communication and coordination among federal and state agencies.

Some of the key benefits to the State from these efforts would be:

- Improved public safety and a healthier environment.
- Improved coordination among federal and state agencies on AML restoration and remediation projects.
- Improvement of interagency communication and technical exchange on abandoned mine restoration and remediation projects.

The Forest Service stands ready to assist and participate in a more coordinated approach.

Finally, preventing future AML sites is also a crucial goal of any land management agency's AML program. Responsible mining practices, environmentally protective mine closure planning, optimal permitting requirements and financial assurances are all tools that land management agencies are using to ensure mining com-

panies operate under a sustainable business model that follows a mine's life from startup to clean closure.

Mr. Chairman, thank you for the opportunity to talk about the Abandoned Mine Lands and Mercury poisoning in California. I would be happy to answer any questions.

Mr. COSTA. Well, thank you very much, Mr. Moore, and we appreciate your testimony and look forward to the questions about the collaboration and the work that you've done.

How long have you been working in your current position with this?

Mr. MOORE. Well, here in this region, almost two years.

Mr. COSTA. OK. Our next witness, our last witness on this panel and then we will get to the question and answers, is Mr. Meer with the United States Environmental Protection Agency.

Mr. Meer, would you please begin your testimony?

**STATEMENT OF DANIEL MEER, ASSISTANT SUPERFUND
DIVISION DIRECTOR, REGION 9, PACIFIC SOUTHWEST, U.S.
ENVIRONMENTAL PROTECTION AGENCY**

Mr. MEER. Thank you, Mr. Chairman.

Mr. Chairman and Congressman McClintock, I am Daniel Meer, Assistant Superfund Division Director for the U.S. Environmental Protection Agency's Region 9, serving Arizona, California, Hawaii, Nevada and the Pacific Islands that are subject to U.S. law, and approximately 146 tribal nations.

Thank you for the opportunity to testify about EPA Region 9 activities to address the environmental legacy from abandoned mercury mine activities. As noted, we have submitted written testimony, and I just want to supplement that material with some brief remarks.

As my colleagues have noted, the historical mining legacy is truly a daunting problem in the great American West. At EPA Region 9, we have several fundamental principles that we use to guide us in how we address this problem, and I would like to describe those for you.

The first principle that we use we refer to sort of commonly as worst first, and by that we mean that we make an attempt to evaluate mine sites and address the worst environmental problems first because, given our budgetary constraints, we just have to make certain decisions about which sites to address.

Typically we use human health and ecological risk as our guides and, again, we try to deal with what we believe are the worst problems first.

The second principle is that the polluter should pay for the contamination that they have caused, and we have an enforcement first policy, which means that we look for responsible parties and seek to get them to pay for their clean-ups, and we have a pretty sophisticated system for looking for responsible parties, trying to pierce corporate veils, and looking for successor companies to try to see if we can come up with folks that have the money to pay for these clean-ups.

The third principle is collaboration with our state and Federal partners. We take that very seriously, and we really value the part-

nerships that we've established in the course of doing these clean-ups.

We often are asked when does EPA get involved in a site, and there are a variety of things that could bring us in. One of the primary things is referrals from either our state and Federal partners, if there are sites that are too complicated or are multi-jurisdictional, or where there appears to be the need for Federal involvement. We can get a referral from a state if there are complex liability cases, mixed ownership where sometimes we have primary mining that is occurring on private land, but the tailings piles or the waste is spilling onto Forest Service or BLM or other Federal land manager land, and then we have what we call mixed use, mixed ownership situations. That is an area where we may get called in by one of our partners and, of course, just requests from other Federal agencies.

In terms of how we prioritize, we have a number of criteria that we apply. It really is pretty site specific. Clearly human exposure and the types of pathways in terms of drinking water or dust or other exposure pathways are one of the primary things that we look at. The stability of a site, whether we can take some physical measures that would help stabilize and address the situation, the contaminant characteristics, how mobile they are, how toxic they are, the ecological risk that's represented by the site and, of course, there are certain program management issues that we have to consider in terms of funding, community interest, environmental justice, whether there's tribal impacts, all of those things get factored into how we prioritize what sites to address.

So, again, we remain firmly committed to protecting public health and the environment by addressing the environmental effects of abandoned mines. We will continue to work closely with our other Federal, state, tribal and local partners on this important matter. I hope this information has been useful to the Committee, and I would be happy to answer any questions.

[The prepared statement of Mr. Meer follows:]

**Statement of Daniel Meer, Assistant Superfund Division Director, Region 9,
U.S. Environmental Protection Agency**

Mr. Chairman and Members of the Subcommittee, I am Daniel Meer, Assistant Superfund Division Director for the U.S. Environmental Protection Agency's ("EPA") Region 9 serving Arizona, California, Hawaii, Nevada, the Pacific Islands subject to U.S. law, and approximately 146 Tribal Nations. Thank you for the opportunity to testify about EPA Region 9 activities to address the environmental legacy from abandoned mercury mine activities in California. I will also provide a few examples of abandoned California mercury mine sites that EPA Region 9 has addressed or is in the process of addressing.

The historical mining legacy is a daunting problem in the West. According to the State of California, there are estimates of between 550 and 2000 abandoned mercury mines in California alone, which includes very small mines and extensive, fully developed mines. Mercury was widely used to extract gold and silver, and thus many other abandoned California mines have mercury contamination issues. Many of these sites contain contaminants such as mercury or arsenic that pose a threat to human health or the environment and require federal or state attention. EPA, the State, and other federal agencies, including the Department of Interior and Forest Service, who are also here today, have been addressing the sites that pose immediate risk first using their respective authorities.

The Superfund Program was established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which Congress passed in December 1980 to respond to citizen concerns over Love Canal and other toxic waste sites. Through the Superfund Program, the EPA and its partners ad-

dress abandoned, accidentally spilled, illegally dumped or intentionally released hazardous substances that pose current or future threats to human health and the environment.

BACKGROUND

According to the California Department of Conservation, Abandoned Mines Unit, the State currently has 47,000 abandoned mines, of which 11% pose a moderate potential for environmental harm and 266 mines are listed as having documented environmental harm. Mercury mines make up only a subset of these environmentally hazardous sites. EPA's strategy for addressing environmental hazards at abandoned mines is to identify the universe of mine sites and evaluate them for cleanup action, and when necessary, use Superfund authorities to immediately address the most imminent threats. Under EPA's "Enforcement First" Policy, we look for the parties responsible for contamination and negotiate with them to perform and pay for the clean up in order to save the taxpayers from paying. EPA Region 9 has assessed 77 abandoned mines and 18 abandoned mercury mines in California. Six of these abandoned mines have been placed on the Superfund National Priorities List (NPL) and of those, two—Sulphur Bank and Buena Vista/Klau Mine—are mercury mines. In other cases, EPA has responded to imminent threats to human health and/or the environment using our Superfund Removal Program. In California, EPA Region 9 has conducted removals at 15 abandoned mines, including 7 mercury mines. These include the Altoona Mine, Abbott/Turkey Run Mine, Buena Vista/Klau Mine, Gambonini Mine, Mt. Diablo Mine, Rinconada Mine and Sulphur Bank Mine.

EPA and its Federal and state partners are continuing to investigate and clean up abandoned mercury mines. EPA Region 9 and the State of California have developed abandoned mine coordination groups which are tasked to specifically focus on issues posed by abandoned mines. EPA is also drafting financial assurance regulations for the hardrock mining industry which will help prevent taxpayer-funded cleanups. EPA plans to propose a rule for financial assurance regulations in the spring of 2011. In addition, both California and EPA have developed Good Samaritan administrative tools to encourage cleanup of abandoned mines. EPA's Good Samaritan tool is a model Administrative Order on Consent under CERCLA, or Superfund. Additionally, two American Recovery and Reinvestment Act projects in EPA Region 9 are located at mine sites.

EPA MINE CLEANUP ACTIVITIES

Altoona Mine—This site was prioritized for cleanup after the United States Geological Survey (USGS) identified it as the primary source contributor to the mercury contamination found downstream in Trinity Lake. Concentrations of mercury were found in Trinity Lake and in its fish at levels of concern. In October 2005, the California Office of Environmental Health Hazard Assessment issued a fish consumption advisory for Trinity Lake and the East Fork of the Trinity River. EPA, in coordination with the U.S. Forest Service, developed a remedy for the mine. EPA and the Forest Service have spent \$7 million to clean up the site and monitoring and maintenance is ongoing.

Abbott/Turkey Run Mine—This site became an EPA priority in 2007 after discussions with the California Water Quality Control Board indicated that the site was one of the largest mercury contamination contributors to the Cache Creek watershed and that this watershed had the highest proportion of mercury discharges (60%) to the Delta. The State requested EPA's assistance in identifying a responsible party and helping provide oversight of the cleanup. This is a good example of how EPA is partnering with the State.

Gambonini Mine—This mine was prioritized in 1999 after it was realized that drainage from the mine ended up in Tomales Bay near Pt. Reyes, an area with extensive sensitive wildlife and fish habitat. It was the major mercury contamination input into the Bay and cleaning up this one source resulted in a large benefit to the environment. An additional removal action was conducted in 2004.

Sulphur Bank Mine—EPA has completed a number of removal actions at this site that have: 1) stopped the erosion of mine waste into Clear Lake; 2) stopped contaminated surface water runoff into Clear Lake; 3) diverted clean surface water around the mine to prevent flooding the open pit mine lake spilling contaminated water into Clear Lake; 4) sealed old abandoned geothermal wells; 5) removed all mine waste from the residential area of the Elem Indian Colony; and 6) removed mine waste from a residential area to the south of the mine property.

EPA has allocated American Recovery and Reinvestment Act funding to initiate a removal action to address contaminated mine wastes that were used in the 1970s to construct the primary access road to the Elem Indian Colony. EPA has completed extensive studies, developed cleanup alternatives, and is working with Lake County

and the State of California to select a cleanup plan to stop contaminated ground-water discharges from the mine to Clear Lake. We will also address the cleanup of over 3,000,000 cubic yards of mine waste that were left in several large piles on the mine property. In addition, EPA is continuing to study the complex science and impact of mercury in the Clear Lake environment and food web, and we are evaluating potential cleanup plans to address mercury contaminated sediments.

Cache Creek Watershed—This watershed includes the Abbott/Turkey Run mine discussed above—The Department of Toxic Substances Control (DTSC) initiated an Abandoned Mine Site Discovery Project to investigate sources of contamination in this watershed using funding from a Cooperative Agreement between DTSC and the EPA. DTSC is identifying mines within Cache Creek Watershed that are not currently being addressed by regulatory agencies, and have known or potential threats to public health, the environment, or water quality. USEPA will then evaluate the results and determine if further federal involvement is need. This effort should be complete by June 2010.

New Idria Mine—This mine is a source of mercury contamination of sediments and of acid mine drainage in Silver and Panoche Creeks, with levels of methylmercury detected in surface water at concentrations significantly above background levels up to 4.5 miles from the site. EPA is currently planning assessments by both the Superfund Removal Program and the Site Assessment Program to further evaluate the eligibility of the site for quick action and/or inclusion on the NPL. This assessment work started on November 12, 2009, and is expected to be completed within a year.

EPA Region 9 remains firmly committed to protecting public health and the environment by addressing the environmental effects of abandoned mines. We will continue to work closely with our other Federal, state, tribal, and local partners on this important matter. I hope this information is helpful to the Subcommittee and I welcome any questions you might have.

Mr. COSTA. Thank you very much, Mr. Meer, and thank you for staying within the five minutes, and for those of you in the audience, we want you to know that Members of the Committee hold themselves, at least when I Chair the Committee, to the same five-minute rule.

Let me begin first, and we may go a couple rounds here with Congressman McClintock and myself.

Mr. Meer, what about the criteria that EPA uses in your prioritization process?

Mr. MEER. I am sorry. What are those or—

Mr. COSTA. Right.

Mr. MEER. Well, the main ones that I just talked about, the human exposure, the stability of a site.

Mr. COSTA. Is the presence of mercury a consideration?

Mr. MEER. Well, of course, the contaminant, the type of contaminant.

Mr. COSTA. And its level of toxicity.

Mr. MEER. Exactly, the toxicity of a contaminant.

Mr. COSTA. You do a risk management assessment in terms of the risk assessment versus the impact of it coming into contact with the public or the waters of the state?

Mr. MEER. Yes. There is a very comprehensive risk assessment procedure and policy that we have at the agency that we can use to estimate what the risk would be.

Mr. COSTA. Does the destination of the mercury or the scope of the watershed impacted by mercury factor in as a part of your prioritization process?

Mr. MEER. Absolutely. In fact, the Altoona mine that was mentioned by Mr. Moore, that mine was identified in several studies as one of the primary loaders to the Trinity watershed, and there was

a fish advisory that was issued by the State for the Trinity Lake, and those were a couple of the driving factors that we looked at.

Mr. COSTA. Dr. Alpers, from the U.S. Geological Survey, you indicate that 13 million pounds of mercury were released in the environment from gold mining in California. Do you know where the mercury is today? Do we have an inventory as to where it has been located in the sediment and how much is continuing to come from those watersheds?

Dr. ALPERS. Well, Mr. Chairman, we do have a few pieces of the puzzle where we have determined quantitatively how much mercury is in different parts of the system, but there is still a lot of uncertainty and unknowns there.

For example, approximately half of the hydraulic mining historically took place in the Yuba River watershed.

Mr. COSTA. Half of the what?

Dr. ALPERS. Half of the hydraulic mining. Let me back up and say out of the 13 million pounds, the estimate is about three million pounds were lost from hardrock mining, the stamp mills and gold quartz veins, and about ten million pounds was lost in hydraulic mining, which was, of course, the water cannons that led to deposits.

Mr. COSTA. Could you tell us which of the watersheds are the biggest sources of new mercury contamination to the Delta, the San Joaquin Delta?

Dr. ALPERS. Again, based on work by the State Water Board, Regional Water Board and USGS, the Sacramento River contributes approximately 80 percent of the mercury, 80 to 90 percent, and about half of that comes from Cache Creek watershed, which drains mercury mines in the coast ranges.

The Sacramento River also has major tributary of the Feather River, which includes the Yuba that I just mentioned where a lot of the hydraulic mining took place, but the Feather River and its tributaries, the Yuba and the Bear, contribute approximately 17 percent of the mercury to the Delta, and those are largely historic hydraulic mining sources.

Mr. COSTA. And am I correct to understand that the sediment that gets trapped, the mercury that gets trapped in the sediment based upon flows of the river moves over the course of time?

Dr. ALPERS. Yes, a lot of the inorganic mercury moves as particulates in suspended sediment, and so as the flow of the river increases, you get more suspended sediment and higher mercury concentrations. Reservoirs trap a fair amount of that mercury, but at very high flows then mercury gets through, and then the finest grain fractions of mercury can pass through the reservoirs as well.

Mr. COSTA. Has the U.S. Geological Survey attempted to collaborate with U.S. Fish and Wildlife Service and the State agencies to determine the impact of that mercury on contamination of fisheries?

Dr. ALPERS. There has been a lot of collaboration, particularly in San Francisco Bay on wildlife effects, and I believe Fish and Wildlife Service is one of the agencies we have worked with on that. Particularly the effects on birds have been studied down there. There is a lot still unknown about effects on fish as far as wildlife effects.

Mr. COSTA. None that you are aware of that have been done here in the Sacramento-San Joaquin River systems as it relates to U.S. Fish and Wildlife Service?

Dr. ALPERS. I am not aware of any direct collaboration with Fish and Wildlife Service.

Mr. COSTA. Yes. Could you check into that?

Dr. ALPERS. Yes, I certainly will since we work with a lot of the agencies.

Mr. COSTA. I would be interested to know since that has become a significant issue recently.

Dr. ALPERS. Yes.

Mr. COSTA. Do you know if the restoration efforts are, in your opinion, working or do we think a longer term scientific follow-up is necessary on the sites?

Dr. ALPERS. Yes, many of the mine sites that have been remediated do have post remediation monitoring, and from what I have seen, most of them have worked fairly well. Some of the sites, unfortunately, have not had any monitoring or very little, and we do not know how well those are working.

Mr. COSTA. All right. My time has expired, and I will defer to the Ranking Member, the gentleman from the Sierra—how do you describe your district? Tahoe and around?

Mr. MCCLINTOCK. Tahoe is a really good way to describe it.

Mr. COSTA. Mr. McClintock for five minutes.

Mr. MCCLINTOCK. The heart of the gold rush would work for the purpose of this hearing.

Mr. COSTA. All right.

Mr. MCCLINTOCK. Dr. Alpers, may I just follow up on a quick point? Did you say that you had determined that 17 percent of the mercury contamination is coming from abandoned mines? Did I hear that correctly?

Dr. ALPERS. No, that is not exactly what I meant to say anyway. Again, looking at data from the Regional Water Board's TMDL report, they identified 17 percent as the contribution from the Feather River of total mercury loads toward the Delta.

Mr. MCCLINTOCK. And Feather River is contributing 17 percent of the mercury contamination downstream in the bay?

Dr. ALPERS. Yes.

Mr. MCCLINTOCK. What I am trying to get a handle on is, first of all, how much of this is coming from mine contamination dating back 160 years and how much of it is background mercury just existing in nature or, for that matter, other sources.

Dr. ALPERS. Yes, that is definitely an interesting question. In the Sierra Nevada, the background mercury levels are quite low, and so it is a reasonable assumption that just about all of the mercury we see in the Sierra Nevada streams is anthropogenic.

Mr. MCCLINTOCK. Have we actually studied that?

Dr. ALPERS. Yes.

Mr. MCCLINTOCK. Or what do you base that on?

Dr. ALPERS. There are several studies by USGS and others. When you go upstream of the mines you see much lower concentrations in sediment and fish, as it turns out. Cores done in lakes also show that when you get down to layers older than 1850 you see approximately four or five times lower mercury concentration.

Mr. MCCLINTOCK. I am trying to get a handle on just how serious is this problem. Again, when we look at contamination going back more than a century, and as I understand it, most of the really heavy use of mercury occurred in the late 19th and very early 20th Centuries. I would assume that as the mercury was being lost through the sluice process, you had very high levels of contamination in these river systems that has declined as the practice abated, stopped, and we are dealing with the residual.

What I am trying to get a handle on is, OK, what is the actual damage out there. Have we seen in recent years huge fish kills, you know? Are we seeing brain damaged bears that have been dining on contaminated fish? Just how serious is the problem?

Dr. ALPERS. Well, the way the agencies have looked at that and particularly EPA has guidelines for mercury in fish, for human health issues and wildlife exposures are also based on these tissue levels that are measured, and there are numerous studies that show that there has been harm, particularly to birds that eat fish. They are a little more sensitive than some of the other species.

There has been very little study of mammals eating fish. That is a real information gap right now as far as bears or otters or mink, for example, which in some areas have been shown to have toxic effects in other areas.

Mr. MCCLINTOCK. Now, do we have a trend yet? At what rate is this problem abating? Again, it has been many, many years since mercury was introduced into those mines. I have to assume that a lot of that has already been washed out. How much is left and what is the trend line?

In other words, is this something where if we pretty much just left it alone, it would go away by itself?

Dr. ALPERS. I think it would take perhaps hundreds of years probably before we would see that effect, but there is really no data to base that on. Just on the amount of sediment that remains in the mined areas, the mining sediment is still there, and there are still oxidized forms of mercury that continue to come into—

Mr. MCCLINTOCK. How do we get that data? There has not been a study on that?

Dr. ALPERS. Well, there are limited studies of that, but I think more work needs to be done on just how much mercury is coming from the mines into the rivers. There are some loading studies, but we do not know specifically which mines they are coming from.

Mr. MCCLINTOCK. Thank you.

If I could go to Mr. Meer for just a moment, Mr. Meer, the EPA, I understand, has a regulatory process for granting Good Samaritan liability relief. How often has this regulatory process been used? And has it ever been granted to a mining company or have any mining companies made an effort to utilize this regulatory process to voluntarily clean up mines.

Mr. MEER. We do have a process, and the tool is a model administrative order on consent, is what we call it. I would describe the program as in its early phases in terms of its application. We have had a few discussions with potential Good Samaritans. I am not aware that we have offered Good Samaritan status to any large mining companies at this time, but it is one of the tools in the tool

box, and one that we offer up when there are bona fide Good Samaritans that appear.

Mr. MCCLINTOCK. We have a mine in Nevada County, the Idaho-Maryland Mine, a very famous mine dating back many, many decades, now in the process possibly of reopening, and it seems to me that would be one tool to use that would not cost us anything and would add to the solution.

Mr. MEER. We would be delighted to talk to people that might want to avail themselves of that.

Mr. COSTA. To take a second round here, my focus is Mr. Abbott and Mr. Moore, and talk in more detail about the collaboration between the Bureau of Land Management and the U.S. Forest Service.

This year you received extra funds in your budgets under the stimulus package to deal with abandoned mine clean-up around the country and in California. How were these monies invested on the mine clean-up? And can you point to any efforts as it relates to remediation, as it relates to the mercury impacts?

Mr. Abbott.

Mr. ABBOTT. The additional capacity that we have acquired this year through the stimulus funds was utilized and invested according to the priority list that I mentioned previously in my testimony where the State partners have identified the lists of known sites around the State and evaluated the highest priorities for investment in terms of remediation based on a number of the factors that have been mentioned here this morning in terms of exposure.

Mr. COSTA. And how much was that?

Mr. ABBOTT. We received \$8.75 million of that, and about \$6 million of that is being invested in environmental contaminant issues related to the Sacramento and Cache Creek drainages; about \$2 million on other physical safety hazards around the state.

Mr. COSTA. Mr. Moore, you talked about the inventories that had been done. Are all of you folks at least from the Federal agency, and maybe I will ask the question with the next panel with the State agencies, as it relates to your areas that you are covering on the same page? In other words, are you collaborating as it relates to agreeing on the prioritization process? I mean, whether it is Cache Creek or the Sacramento River, which mines are creating the most amount of toxic potential, and having an agreement as to how you go forth to deal with that remediation?

Mr. MOORE. Well, yes, we are cooperating, but like with most things, I mean, it can continue to get better. I will give you one example which I mentioned where I thought we had great cooperation, and that was when the State had issued a fish advisory, fish consumption advisory on Trinity Lake, and working with EPA to remediate the point source of that mercury, and as we had mentioned, we had spent to date about \$7 million remediating that one site.

The other area in terms of some of the stimulus funds, nationally the Forest Service has received about \$22 million for the AML types of projects, and we received about 50 percent of the total nationally here in California.

Mr. COSTA. Half.

Mr. MOORE. About \$11.2 million of the 22.3.

Mr. COSTA. And you are collaborating with BLM on this effort here?

Mr. MOORE. Well, as I mentioned in an earlier report, where I think we could continue to improve, we all have lands that we are responsible for managing, and we have different priorities on those different pieces of land. What I am suggesting is that perhaps we can look across the State and decide from a human and environmental contaminants standpoint which of those projects, regardless of the land base, would be the most important for us to tackle first.

Mr. COSTA. Well, it gets back to risk assessment versus risk management, and I think that any well thought out plan has got to have a balance between what poses the greatest threat vis-a-vis risk assessment, and then based upon that, how you apply the risk management tools available to you.

On your inventory sites each year, how many can you do based on budget? I mean, we are talking about these thousands of abandoned mine sites. Do you have any basis on the last two, three years that you are inventorying?

Mr. MOORE. Yes. Over the last three years, we have investigated about five or six sites and cleaned up perhaps two or three, based on the funding level.

Mr. COSTA. That is not very many when we look at the larger picture.

Mr. MOORE. No, it is not. In fact, the 47,000 sites we have across the state, 7,500 of those are on national forest system lands, and of that 7,500, 20 percent of those, approximately 20 percent, pose environmental contaminant kinds of hazards, and about 65 to 70 percent of those sites pose some level of public safety hazard.

Mr. COSTA. And do you have a listing that talks about the potential exposure or risk?

Mr. MOORE. Well, we have a list of all of the sites that have been located to date.

Mr. COSTA. And you do that in cooperation both with the State and the local agencies?

Mr. MOORE. Yes. In fact, we are looking at making the State the kind of repository of the inventory, and so we use the same list that they use for consistency.

Mr. COSTA. All right. My time has expired. Mr. McClintock.

Mr. MCCLINTOCK. Thank you, Mr. Chairman.

Let me continue with Mr. Meer on the question of Good Samaritan liability relief. If I understand the EPA, the Office of Surface Mining in the State of Pennsylvania developed their own Good Samaritan process to help expedite the cleaning of coal abandoned sites. What can you advise Californians on that cooperative process?

Mr. MEER. Well, I cannot speak to that process in detail because I am not that familiar with the Pennsylvania Region 3 process, but I will say that the more dialogue that there is between the state regulators and EPA the better, and if there are Good Samaritans out there that are not looking to derive a financial benefit from the agreements that we reach and are really—

Mr. MCCLINTOCK. Well, suppose they do want to derive a financial benefit. So what?

Mr. MEER. I do not believe that they would be eligible for this particular tool. Now, there may be other tools available.

Mr. MCCLINTOCK. Well, why wouldn't they? I mean, the whole objective is to clean up the contamination. Who cares what their motive is?

Mr. MEER. I cannot really speak to that, Congressman, because I did not develop the policy, but my understanding is that that is one of the criteria.

Mr. MCCLINTOCK. Again, that also may explain you had indicated this is a tool in your tool box, but you do not know of a single instance where a mining company has been granted this liability relief so that they can actually go and clean it up. Is this an ideological aversion to profit that is causing it?

Mr. MEER. Not at all. It is more where the company or the individual would have to come forward and indicate an interest. I am not aware that we have had such interest to date.

Mr. MCCLINTOCK. If I could get back to the bigger question, I guess, Dr. Alpers or anybody who wants to chime in on this, again, I am still trying to get a handle on just how serious the problem is. There is mercury out there that is a very bad thing, but how much mercury is out there and how is that affecting the health of human or animal populations, so far all I have heard is, well, we are seeing some elevated levels in some birds and fish.

To what extent is that creating a health problem?

Dr. ALPERS. Well, the reason that fish tissue is an issue is that it is the pathway to human exposure.

Mr. MCCLINTOCK. Right, but at what levels? I mean, are they lethal levels? Are we seeing fish kill-offs?

Dr. ALPERS. The way EPA gives guidance to the state, and you can probably ask the State panel about this, but the Office of Environmental Health Hazard Assessment sets the fish advisories for the State of California, and they interpret the regulations such that at a certain concentration they advise no consumption for anyone, and then they have a more restrictive rule for women of child-bearing age or children who are more sensitive.

And so that concentration, I believe, for do not eat any fish at all for anyone, I believe, is .92 parts per million on a wet weight basis, and there are a number of lakes and streams where, for example, the bass exceed that, and then there are a larger number of reservoirs and water bodies where women and children are advised not to eat any. Then there are less restrictive rules.

Mr. MCCLINTOCK. Right, but let me ask: how much is directly related to abandoned mines?

Dr. ALPERS. That is a very good question. In the Sierra Nevada we think just about all of it because we have, again, studied upstream and recognize that the mercury is largely anthropogenic.

In the coastal range, there is a higher natural background—for example around the active hot springs—to put out mercury that is in a reactive form that probably does bioaccumulate.

Mr. MCCLINTOCK. As I was going back through this Committee's old reports on the subject, I noted one that said that most of the mercury existing in the environment is released through natural processes. These natural processes include surface volcanic eruptions, deep sea vents, and volcanic activity, hot springs such as the

geyser basins in Yellowstone National Park, and those at the bottom of Clear Lake in California, evaporation from the ocean basins, other water bodies and soils, and erosion. The ocean alone contains millions of tons of naturally occurring mercury. These natural emissions contribute approximately 61 percent of the annual emissions that make up the world mercury budget.

And, again, I am just trying to get an accurate sense, and it sounds like maybe no report has yet been issued on this and maybe that is the first step, is to assess just how much of this is coming directly from mercury contamination from abandoned mines and what is the trend line. Is this a matter that is naturally abating or is it—

Dr. ALPERS. Part of the difficulty is you can track total mercury loads fairly well, but methylmercury, which is the form that bio-accumulates and is most toxic, is spatially variable and temporally variable. And so it is harder to pin it down, and for example, atmospheric deposition, which is a global problem, and on the West Coast here, we may get contributions from burning coal in China, for example. That does come in in atmospheric deposition. That may be more reactive than the mercury coming from mines. So even though it is only less than one percent of the load to the Delta, the dump of the atmospheric deposition could be important in terms of what is getting to the fish, but it is still a great unknown and scientifically with a lot of uncertainty right now.

Mr. MCCLINTOCK. It sounds to me like we have quite a ways to go just in defining and assessing the problem.

Dr. ALPERS. Yes, I would definitely agree.

Mr. COSTA. The time of the gentleman has expired. I want to move on to the next panel, but I would like to ask a question that you would respond back in written form to the Subcommittee and the Members, and that is: what is your protocol for establishing your priorities? And it just seems to me that your protocols, within reason, ought to be the same.

If you are working well together, I mean, it is cost effective, and it is a lot more efficient if, in fact, Federal agencies use the same protocol based on risk assessment and risk management, similar to the point of Mr. McClintock's questions about the level of the severity that we are dealing with. It seems to me that in a hand-in-glove working relationship that that protocol ought to be very similar between the feds, the State and local agencies if we are doing our jobs properly and working together.

So please submit that in the form of a written answer, and we will move to the next panel. Thank you very much.

Well, we have our next panel here, our esteemed group of witnesses, and talk about *deja vu* all over again, good morning, Ms. Adams, Mr. Baggett.

Ms. Luther, I do not know you as well, but you are hanging with a very—yes, I just want to give you forewarning.

Anyway, I am very pleased that the Secretary of the State of California's Environmental Protection Agency, Ms. Linda Adams, could be here this morning. I know that you have been busy with a lot of other efforts on behalf of the Governor and the state, and I do appreciate that.

For those of you who are not aware, in a previous life Ms. Linda Adams and I had the pleasure—or at least I did; I am not so sure she did—but to work together for many years when I used to be here.

So you have two of your agencies that are here today, and we will recognize the Secretary for opening comments.

**STATEMENT OF HON. LINDA ADAMS, SECRETARY,
STATE OF CALIFORNIA ENVIRONMENTAL PROTECTION
AGENCY**

Ms. ADAMS. Good morning, Mr. Chairman and Congressman McClintock. And I have to say, Mr. Chairman, you were a great boss and I assume you still are. So it is very nice to see you this morning.

Mr. COSTA. Good to see you, Linda.

Ms. ADAMS. I am Linda Adams, Secretary of the California Environmental Protection Agency.

It is our mission to protect and enhance the environment. Our boards and departments monitor and regulate air quality, water quality, pesticide use, waste reduction, and hazardous substances throughout California.

As you know, one of the ongoing issues we deal with is the toxic chemicals that come from California's 47,000 abandoned mine land sites, 121 of which pose a substantial threat to public health because of their discharges into California waterways. These mines leak mercury and other metals into our waterways and threaten our water quality and the safety of vulnerable populations.

Mercury travels up the food chain and is most harmful in fish. Major sources of mercury in the environment are runoff from former gold mining sites where mercury was used; emissions from coal burning power plants; and the weathering of mercury-containing rocks.

Mercury accumulates in river sediment and is converted to bacteria, to the more toxic methylmercury, which fish take in from their diet. Women can pass methylmercury on to their fetuses. Excessive exposure to methylmercury may affect the developing nervous system in children, leading to subtle decreases in learning ability, language skills, attention or memory. These effects may occur through adolescence, as the nervous system continues to develop. It is the reason why my Office of Environmental Health Hazard Assessment issues safe fish eating guidelines and warnings when mercury levels are too high for human consumption.

And for the Committee, I have samples of those public health warnings for Sacramento River, Folsom Lake, and Lake Natoma for the Committee.

Mr. COSTA. Without objection, we will submit them for the record.

[NOTE: The public health warnings have been retained in the Committee's official files.]

Ms. ADAMS. Thank you.

For instance, mercury mines are the biggest sources of the pollution in San Francisco Bay and the Sacramento-San Joaquin River Delta, the largest estuary on the Pacific Coast. In all, this metal

has contaminated thousands of square miles of water and land in the northern half of the state.

For example, Iron Mountain Mine in Redding is considered one of the worst polluted places in the world. It is so bad that its toxic brew of chemicals eats through workers' clothes and dissolves equipment. It has killed off living organisms and seeps into the local waterways, including the Sacramento River.

While Iron Mountain received more than \$20 million in Federal economic stimulus money for clean-up, the situation is so bad that it, of course, requires much more money and resources than we have. There are situations like this throughout the State in water and streams that run through people's backyards.

Many people have reported the ill health effects, and some, including those from Clear Lake, have shown significantly high levels of metals in their bodies. Those that are especially susceptible are the vulnerable populations that rely on local waterways for fish and those that live on or near these contaminated waterways.

These mines once offered a dream to many making their way out of California, but now these toxic legacies are leaving us with public health and environmental problems. It is an issue that requires the partnership of mine owners, the Federal government, and the State of California to work together to fund the clean-up of these toxic threats.

With that, I would like to introduce a member of our State Water Resources Control Board who works to protect, preserve, and restore beneficial uses of California's water. Mr. Art Baggett, Jr. serves as the attorney, member, and former Chair of the State Water Board. He has been instrumental in achieving stakeholder agreement on such difficult issues as Imperial Valley water and Klamath River Dam removal. And his testimony will provide a much more in depth discussion about California's abandoned mines.

Thank you, Mr. Chairman.

Mr. COSTA. Thank you very much, Secretary Adams.

Ms. ADAMS. You are very welcome.

Mr. COSTA. And, Mr. Baggett, your previous experience from local government as a county supervisor in Mariposa County and your legal expertise in the years that you have served the State on the California Water Board I think puts you in a good position to provide your expert testimony here as we deal with these challenges, and so we look forward to your comments. The five-minute rule does apply to you though.

**STATEMENT OF ARTHUR G. BAGGETT, JR., BOARD MEMBER,
STATE WATER RESOURCES CONTROL BOARD, STATE OF
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY**

Mr. BAGGETT. Thank you, Chairman Costa and Congressman McClintock, for the opportunity to appear before you today.

I think as the Secretary stated, our responsibility, as you both know, is to enforce the Federal Clean Water Act as a delegated state and also the California Water Codes. To protect the benefit of uses for municipal drinking water applies for swimming and recreational uses, fishing, the natural environment, for agriculture and industrial uses as well, a very complex task.

California mines cause two serious water quality problems: acid drainage and mercury in the waterways. They are both incredibly complex and take generations to address. For example, the Iron Mountain issue that the Secretary talked about today. When I was Chair, we signed a settlement that actually anticipates 2,000 years, a legal settlement of a 2,000 year clean-up plan. That gives you an idea of the magnitude of some of these issues.

Acid mine drainage—I think the real challenge is we have removed the over-burden, and the soils that protected some of these rocks which contain iron sulfide and once those minerals are exposed to air, it is hard to put I would say the genie back in the bottle. So we have exposed a lot of these rocks over decades of mining, as you have heard, and that water discharge from these sites has virtually sterilized streams in the Sierra foothills, the copper belt particularly, from Marysville to Fresno, the East Carson River, Shasta Lake, Lake Davis, Lake Tulloch, and the Delta.

I will try to give you an idea of our regulatory authority and some ideas we would have to move forward.

One, we regulate abandoned mines with acidic discharge under both the Acts mentioned previously. The case of abandoned mines where there are no viable, directly responsible parties and the State has issued orders to property owners who may not have the resources and often do not have an affiliation with the original mining activity is where the challenge lies.

There are two interrelated serious impediments to clean-up of mines by anyone who is not a responsible party. First, the treatment technologies that are currently available for acidic mine discharges are not sufficient to meet water quality standards prescribed by the Clean Water Act and EPA's California Toxics Rule.

The second impediment is the violations of the Clean Water Act. You can have a third party lawsuit filed against you. So, therefore, people who are not responsible parties are very reluctant, I think, to go to some of the previous panel's discussions, to try to take actions to remediate mine discharges because, one, they will become a responsible party under current law if they do so; two, they often will not be able to meet the Federal Clean Water Act requirements due to the limitations of this existing treatment technology; and three, they can be sued by third parties for failure to meet these requirements.

The cost of these clean-ups is extremely high, and hundreds of millions of dollars in some cases. In Penn Mine, which we have submitted information on, it was \$10 million, for example.

Let me jump straight to the recommendations. You have our written testimony.

One, we would ask to recast the Clean Water Act and the California Toxics Rule for abandoned mine discharges so that clean-up requirements rely on the use of best available technologies rather than always having to meet the numeric effluent limitations.

Two, establish an effective Good Samaritan law to ensure that innocent persons, including certain landowners who do not participate in or benefit from historical mining activities and who undertake activities to improve the environment at or downstream from an abandoned mine site will be shielded from liability for pre-existing discharges of pollutants under the Clean Water Act.

Under the Good Samaritan law, a Good Samaritan's responsibility under the Clean Water Act should focus on improvements in downstream water quality rather than strict compliance with water quality standards.

Three, allow public entities to take, if you will, an abandoned mine property for the purpose of clean-up from a private land owner who cannot afford to clean it up. Cleaned up property could then be put up for sale if appropriate.

And last, provide additional funding, and we notice both the Senate bill and the House bill, which you mentioned in the beginning, are both, I think, really appreciated and a good start at coming toward some of the helping of the money.

Second, mercury. The original sources are from a few mercury mines, but mainly as you have heard from gold mining areas. At this point it is a legacy mercury issue. It has been transported in the rivers and deposited in the San Francisco Bay, the Delta and elsewhere.

In the coastal range, it was primarily from the actual mining of mercury. In the Sierra Nevada, it is from the historic mining, as you heard.

Elemental mercury can methylate as, I think, already the previous panel discussed in the environment, and that is where the challenge lies.

Again, we have the similar regulatory authorities for mercury, although when it is a non-point source we do use the Clean Water Act's total maximum daily load analysis, the TMDL program, to deal with an impaired water body. We have currently just adopted one last week on the Guadalupe and the San Francisco Bay, and we are still working on the Delta TMDL.

We likewise have many recommendations for how to deal with some of the mercury issues and to continue to clean up the abandoned mines, but I see my clock is ticking down.

Mr. COSTA. Yes.

Mr. BAGGETT. You have them in writing. So I would just like to conclude. As you both know, the California Water Boards take our mandate very seriously to protect these beneficial uses for the people and the environment of the state, and we stand ready to work with the Congress and with the administration, the Obama Administration, to help craft a comprehensive and scientific based strategy for addressing these mines and the mercury issues.

[The prepared statement of Mr. Baggett follows:]

**Statement of Arthur G. Baggett, Jr., Board Member,
State Water Resources Control Board, State of California**

Chairman Costa and members of the Subcommittee, thank you for the opportunity to appear today to discuss our experience with abandoned mines and mercury in California. California has a long history of mining and its environmental impacts, which dates back to the California Gold Rush, which began in Coloma just east of Sacramento in 1848. People from across the nation are drawn to our rivers and streams throughout California, from the rugged Coastal mountains and Sierra Nevadas to the extensive Sacramento and San Joaquin river systems and the Delta. We have many federal, state, and local parks and their lakes and rivers are a focal point for recreation. People journey to California to enjoy the outdoors, to swim and to fish, among other water sports. It is the responsibility of the State Water Resources Control Board to protect beneficial uses of water under both the Clean Water Act and under the California Water Code. These beneficial uses include

drinking, swimming, fishing, and many other uses that are the foundation of peoples' enjoyment of California's vast natural resources.

California's mines cause two serious water quality problems—acid mine drainage and mercury in waterways—which are both complex and will take generations to address effectively. Acid mine drainage has resulted in miles of streams that can no longer sustain aquatic life. Mercury poses one of the highest human health threats of all the water quality problems the Water Boards face.

Based on information acquired from state and federal agencies in 2007, there are an estimated 47,000 Abandoned Mine Land (AML) sites in California. Approximately 50% of AML sites are located on private lands, 48% are located on federal lands and 2% on state lands and they are widely distributed across the state. We have identified 121 of these abandoned mines as posing a substantial threat to public health and the environment by potential direct exposure to toxic constituents (e.g., arsenic, mercury, lead); by acid mine discharges to waters of the state; or by discharges of mercury and mercury mine waste into waters of the state.

ACID MINE DISCHARGES

The Problem: Of the 121 abandoned mines in California that have been identified as posing a significant threat, over 50% of the sites are abandoned mines that generate acid via a natural process of iron sulfide oxidation. The process is referred to as acid mine drainage. Mining initiated the natural process by exposing rock that contains iron sulfide minerals to air and water. Once initiated, acid generation is for all practical purposes impossible to stop. Therefore, acid mine drainage is the continuous and almost uncontrollable discharge of very acidic, metal-rich water from mines that enters streams and rivers resulting in miles of waterways barren of aquatic life. Acidic mine water discharges from such sites has virtually sterilized streams in the Sierra foothill copper belt (from Marysville to Fresno) and the East Carson River, and pollutes Shasta Lake, Lake Nacimiento, Lake Davis, Lake Tulloch, and the Delta. In fact the lowest acidity ever measured was at a Superfund/CERCLA site, Iron Mountain Mine near Redding, which had a negative pH.

Regulatory Authority: We regulate abandoned mines with acidic discharges under the authority of the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act, but it is often a challenge to find a financially viable responsible party. In the case of abandoned mines where there are no viable, directly responsible parties, the state has issued orders to property owners who may not have resources and who often have no affiliation with the original mining activities. At times, the only option for reducing the adverse environmental impacts of acid mine drainage is for a public agency, such as the Water Boards, to take actions to reduce and treat the acid mine discharges. Although the Water Boards have remediated some sites, such as Penn Mine and Leviathan Mine, and significantly reduced the environmental impacts of acid mine discharges from these mines, there are two interrelated serious impediments to the cleanup of mines by anyone who is not the responsible party. First, the treatment technologies that are currently available for acid mine discharges are not sufficient to meet water quality standards prescribed by the Clean Water Act (and specifically U.S. EPA's "California Toxics Rule") and the second impediment is that violators of the Clean Water Act can be sued by third parties. Therefore, entities, such as the Water Boards, who are not responsible parties are VERY reluctant to try to take actions to remediate acid mine discharges because 1) they will become responsible parties under current law, 2) they often will not be able to meet federal Clean Water Act requirements due to the limitations of existing treatment technologies, and 3) they can be sued by third parties for failure to meet the federal regulatory requirements. These aspects of the Clean Water Act create strong disincentives for the Water Boards or other public or private agencies to cleanup abandoned mines.

Cleanup: The cost of acid mine drainage cleanups is extremely high. Not only is the existing cleanup technology expensive, but cleanup usually requires permanent operation and maintenance (O&M) which must be funded almost literally forever. Therefore it is left to state and federal agencies to pursue these cleanups. Mine cleanup costs can be over \$100 million for large sites such as Iron Mountain, Leviathan, and Sulfur Bank Mines. Cleaning up medium-sized sites like Spenceville and Penn Mines have cost over \$10 million. Luckily, we probably won't be "discovering" any more "large" Iron Mountains or "medium" Spencevilles. Unfortunately, we will likely continue to discover many more "small" acid generating sites that will typically cost up to \$1 million to clean up.

Abandoned mines are found on both public and private land. Abandoned mines on federal land can be addressed under the existing federal Superfund (CERCLA) program, although obtaining funding is always an issue. It is much more difficult to clean up abandoned mines on private land. Cleanup would be a costly burden for

a current private land owner, whether or not they were the responsible party. There has been discussion that non-governmental organizations or individuals would voluntarily choose to fund abandoned mine cleanups. From this discussion it seems possible these parties might want to fund some of the very small mine cleanups. However with the aforementioned disincentives, it is highly doubtful that non-governmental parties will take up the necessary cleanup activities.

Recommendations:

1. Recast the Clean Water Act and California Toxics Rule for abandoned mine discharges so that cleanup requirements rely on the use of Best Available Technologies, rather than meeting numeric effluent limitations.
2. Establish an effective good Samaritan law to ensure that innocent persons, including certain landowners who did not participate in or benefit from historical mining activities, who undertake activities to improve the environment at or downstream from an abandoned mine site will be shielded from liability for pre-existing discharges of pollutants under the Clean Water Act. Under a good Samaritan law, a good Samaritan's responsibilities under the Clean Water Act should focus on improvements in downstream water quality, rather than strict compliance with water quality standards.
3. Allow public entities to "take" an abandoned mine property for purposes of cleanup from a private land owner who cannot afford cleanup. Cleaned up property could be put up for sale if appropriate.
4. Provide a funding source (e.g., royalties on mines on federal land).

MERCURY

The Problem: In many water bodies, mercury levels in fish tissues are unsafe for human consumption. Although mercury is a natural element, mining activities primarily related to gold extraction have greatly increased its distribution in the environment. The original sources are a few mercury mines and many gold mining areas. However, at this point most "legacy" mercury has been transported into river sediments throughout Northern California and the San Francisco Bay and Bay Delta. There it persists and poses the greatest threat to the environment and human health. Primary areas affected by mining are Coast Range watersheds where mercury mining occurred and many small abandoned mercury mines exist; the Sierra Nevada watersheds where mercury used for historic gold mining was lost, and the San Francisco Bay and Bay Delta where mercury mine waste and mercury has been deposited from abandoned mercury mines in the Coast Range and abandoned gold mines in the Sierra Nevada.

Elemental mercury can become methylated in the environment. Methylated mercury is bioavailable and is a potent neurotoxin. Fish consume plants with elevated methylmercury, which is then concentrated throughout the food chain. The greatest risk to humans is eating fish with mercury toxins. Unfortunately, environmental conditions conducive to the natural methylation process coincide with the wide distribution of mercury in California. Moreover, as evidenced by the recent San Francisco Estuary Institute Lakes Report, the more we investigate, the more we find water bodies that contain mercury-enriched fish. There is no easy fix to the mercury contaminated fish issue.

Another aspect of California's water quality problems associated with mercury is the disturbances caused by suction dredging. Suction dredging is the use of motorized floating equipment to literally vacuum up stream and river bottoms in order to recover gold. Use of this equipment not only disturbs sediments, which can adversely affect fish and fish habitat, but also re-mobilizes legacy mercury that is already present in the sediments in our waterways.

Regulatory Authority: Under the California Water Code, the Water Boards have the authority to regulate or prohibit discharges of waste including mercury, and to issue cleanup orders. In addition, under the federal Clean Water Act, states are required to list water bodies that are impaired by pollutants, then to require cleanup of the impaired water bodies through establishment of Total Maximum Daily Loads (TMDLs). Appendix I shows the numbers of mercury-impaired water bodies and TMDLs approved thus far to address mercury impaired water bodies in California. TMDL development and implementation is a resource-intensive approach, but it is allowing the Water Boards to begin to address our legacy mercury sites.

Cleanup and Other Actions: Cleaning up abandoned mercury mines (except for a few acid generating abandoned mercury mines) and cleaning up mercury at abandoned gold mines is straightforward and relatively inexpensive compared to cleaning up acid generating sites. Furthermore, these cleanups do not result in federal Clean Water Act liability. However, even though such cleanups do reduce human exposure

to mercury, and mercury discharges to surface water bodies, they do not cause measurable reductions in fish tissue mercury levels either near or far from a mercury source site. This is due to the widespread distribution of mercury in sediment of Coastal and Sierran streams. Such sediment is continually transported into aquatic environments where it is methylated and biologically concentrated in fish. Cleanup through dredging of sediment is problematic because dredging churns up the mercury-laden sediment making it available to natural methylation.

Regarding the issue of suction dredging, the state is taking several actions to address water quality concerns associated with suction dredging. Earlier this year, the Legislature passed, and the Governor signed, Senate Bill 670 (Wiggins, Ch. 62, Statutes of 2009), which prohibits suction dredging until the California Department of Fish and Game (DFG) updates its suction dredge regulations. The State Water Board is working closely with DFG on this regulatory update. Earlier this year, the State Water Board provided \$500,000 in funding to DFG to ensure that water quality issues are fully addressed in the environmental documents associated with the regulation update. An Initial Study was released on November 2, 2009. The state is in the process of holding public meetings to obtain input on the regulation update effort. DFG anticipates finalizing their regulation update by the end of 2011.

Recommendations:

1. Continue to clean up abandoned mercury mines when human exposure benefits are clear or mercury loading to surface water can be substantially reduced.
2. Continue to clean up mercury from abandoned gold mines to prevent human exposure and off site transport by recreational miners.
3. Continue assessing fish for mercury in water bodies contaminated by mercury (target the Sierra Nevada) so that affected water bodies can be listed as impaired for mercury and TMDLs are developed and implemented.
4. Continue funding studies aimed at developing land use management techniques that reduce mercury transformation into the biologically available methyl mercury.
5. Provide a funding source (e.g., royalties on mines on federal land).
6. Greatly expand efforts to issue and post consumption advisories so that the public knows the risk of eating contaminated fish.

CONCLUSION

The California Water Boards take seriously our mandate to protect beneficial uses. However, as I have just described, addressing abandoned mines is resource intensive, and as we have seen, the very nature of abandoned mines makes it impossible to protect beneficial uses perfectly. Acid mine drainage from abandoned mines will continue to plague us at some sites for thousands of years according to the best scientific estimates. Mercury lost to surface water bodies over a hundred years ago from gold and mercury mines continues to contaminate fish that people eat. This is a beneficial use but it is also a public health issue. Let me conclude by saying that California stands ready to work with Congress and the Obama Administration to help craft a comprehensive and science based strategy for addressing abandoned mines and mercury issues. We believe such an approach should be developed with a look toward all of our options including cleanup and prevention in concert with Clean Water Act amendments that would allow regulatory agencies to clean up abandoned sites without incurring liability.

APPENDIX I**WATER BODIES LISTED AS IMPAIRED FOR MERCURY [303(d)]**Number of Mercury listings from the 2006 Final List

Water	24
Tissue	105
Sediment	15

Total Number of Mercury listings expected for the 2008/2010 Integrated Report:

Water	106
Tissue	169
Sediment	92

**TOTAL MAXIMUM DAILY LOADS (TMDLs)
ADDRESSING WATER BODIES LISTED AS IMPAIRED FOR MERCURY**

APPROVED:

Regional Board	TMDL	Number of listings
2 – San Francisco Bay	San Francisco Bay	16
2 – San Francisco Bay	Walker Creek	1
5 – Central Valley	Clear Lake	1
5 – Central Valley	Cache Creek	4

IN PROGRESS:

Regional Board	TMDL	Number of listings
2 – San Francisco Bay	Guadalupe	5
2 – San Francisco Bay	Tomales Bay	1
3 – Central Coast	Clear Creek and Hernandez Bay	2
5 – Central Valley	San Francisco Bay Delta	8
5 – Central Valley	Lower American River	1
7 – Colorado River Basin	New River	1
8 – Santa Ana	Big Bear	1

Mr. COSTA. Well, thank you very much, Mr. Baggett, and in the question and answer portion we can get to some of your recommendations. I appreciate your very precise testimony on an area that obviously you have a great deal of knowledge.

Our last witness, does the Secretary want to introduce the Director or do you want me to do that?

Ms. ADAMS. I will be happy to introduce Director Bridgett Luther, California Department of Conservation.

Mr. COSTA. Very good. Ms. Luther, five minutes.

**STATEMENT OF BRIDGETT LUTHER, DIRECTOR, DEPARTMENT
OF CONSERVATION, STATE OF CALIFORNIA NATURAL
RESOURCES AGENCY**

Ms. LUTHER. I would love to have Linda as my boss, but I also love working for Secretary Chrisman at the Natural Resources Agency.

Mr. COSTA. Well, I called Mr. Chrisman, and you tell Mr. Chrisman he owes me a phone call back. OK?

Ms. LUTHER. I will. I will tell him that.

Mr. COSTA. But I am glad that you are here.

Ms. LUTHER. I am here.

I want to thank you for putting together this meeting today and highlighting this important problem, and I also want to thank the California Legislature for creating the Office of Mine Reclamation in 1991 that oversees the State Surface Mining and Reclamation Act, acronym SMARA. If we had SMARA in effect back during the gold mining days, we would not have the problems that we have now because now if you are going to mine in the State of California, you have to have a bond, and you have to have a plan for what you are going to do when you are finished mining.

So SMARA is a very effective rule, and it does speak to many of the issues that we are talking about today.

In 2000, the Abandoned Mine Lands Unit completed a report that many of you have been citing with the 4,000 abandoned mines in the State of California. Forty thousand are physical hazards, and 5,000 are environmental hazards. We know many of those environmental hazards. We have worked mostly with BLM in closing many of those and keeping people from getting hurt. Since our report in 2000, 15 people have died in accidents in many of your areas.

Earlier this month, a 30 year old woman died when she fell 100 feet into a mine shaft in Kern County, and four months ago a 22 year old man died when he fell into an abandoned tungsten mine in Inyo County.

So I do want to highlight not only the environmental hazards, but also those physical hazards and dangers which will no doubt increase as more people move into and recreate in areas where there has been historic mining activity.

The Abandoned Mine Lands Unit has worked with more than 44 state, local and private partners to remediate many of these features, including wire fencing, backfilling, polyurethane foam plugs, seal plugs, caps, and installation of culverts and bat-friendly gates. Their work was actually featured on Discovery Channel's "Dirty Jobs."

As part of the Abandoned Mine Lands Forum, which the Abandoned Mine Lands Unit holds, and one of the things you have been talking a lot about is coordination because there are many people, including state and Federal agencies, who get together and we actually took 117 abandoned mines as high priority environmental hazards. So there has been some initial work done on characterization and priority, and 100 high priority sites for physical safety hazards.

We have estimated we will need approximately 528 million to remediate the physical hazards. The environmental hazards will probably cost in the billions.

In order to continue to make significant progress on these efforts that we have already started in coordination with our partners, we suggest a full, wide, and I heard this previously, inventory because before you know how to solve the problem, you are going to have to know what it is.

We are going to need site assessment, characterization and prioritization, a common screening process, and ranking criteria. This will require substantial funding, sustainable funding. Currently much of the work that we have been doing is coming from the California State Legislature through the State gold and silver mining fees. Most of the Federal funding is coming through budget appropriations, and it is not stable enough.

We need to restore many of the mines, and we need to partner on research. I believe there are innovative approaches that we can find, and we need to partner with universities and the private sector.

Finally, I would just like to speak to the picture over there, which is of Bodie Mine because it was just such a wonderful partnership. It was done cost effectively, and it was also done timely.

Mr. COSTA. Which picture are you referring to?

Ms. LUTHER. The one on the far left with the pictures.

What we did with our partners there is radon extraction.

Mr. COSTA. Over at Bodie?

Ms. LUTHER. Yes, at Bodie. There was diversion ditch construction where we actually took old mine tailings, and put in a very large, deep ditch so that when there is a big rain, the mercury actually fills in that swale instead of running into the creek.

There was remediation of contaminated sites around all of the assay buildings where the gold tailings and stuff and the lead and the mercury just poured outside those buildings. So there was a lot of brownfield clean-up, and we also fixed many public safety hazards.

I would invite you to visit Bodie, but I would say one thing that we learned is that the problem is complicated, but there are solutions, given the right partners.

Thank you, and I will take any questions you have later.

[The prepared statement of Ms. Luther follows:]

**Statement of Bridgett Luther, Director,
California Department of Conservation**

Good morning Chairman Costa and Subcommittee members. Thank you for the opportunity to testify before you today. My name is Bridgett Luther, and I am the Director of the California Department of Conservation, which includes the Director's Office of Mine Reclamation (OMR).

OMR was created in 1991 to oversee California's Surface Mining and Reclamation Act (SMARA) of 1975 (Public Resources Code, Division 2, Chapter 9, section 2710 et seq.). This act represents some of the best regulatory legislation in the state. Through SMARA, the State of California ensures that miners must plan AND pay for the future—what will happen after their mine no longer exists—BEFORE they mine. In 1996, the California Legislature created the Abandoned Mine Lands Unit (AMLU) within OMR to document California's historic abandoned (no-longer-mined) mine problem. These findings were published in the Department's June 2000 report entitled California's Abandoned Mines: A Report on the Magnitude and Scope of the Issue in the State (see www.consrv.ca.gov/omr/abandoned_mine_lands/)

AML_Report/Pages/Index.aspx). The AMLU currently implements a field program to inventory and assess these former mines AND remediates legacy mining hazards on public lands in order to protect human life and safety and any associated wildlife and cultural values.

Unfortunately, neither SMARA nor our Abandoned Mine Lands (AML) program existed during and for a century after the Gold Rush of the mid-1800s. Years of mining later, California faces a legacy of abandoned mines that threaten public safety and health, pollute our surface and ground water, land, and air with mercury, lead, and other chemicals, and endanger our wildlife. The industry not only left a toxic legacy, the focus of your hearing today, but it also left lots of open mines that range from small horizontal openings called adits, to pits, steep highwalls, and vertical shafts where ore was pulled from more than 1,000 feet below the ground surface. And, from the high Sierras to the desert, thousands of acres of mined lands today are wastelands, unable to support vegetation or wildlife.

The presence of mercury in thousands of miles of Sierra waterways, the Delta, and San Francisco Bay is another environmental impact related to centuries-old gold mining in California. The historic practice of charging sluice boxes with mercury may have been efficient at capturing gold; however, an estimated 6,000 tons of mercury was lost to the environment from Sierra gold mines, in addition to the approximately 33,000 tons of mercury that was lost from Coast Range mercury mines.

My goal today is to briefly describe California's historic AML problem, and to highlight some key challenges facing the agencies and organizations that are tackling the legacy of an unregulated industry. Here is what we know.

- **Extent and Nature of the Problem.** California's federal and state AML agencies estimate that there are about 47,000 abandoned mine sites located throughout the State. These mine sites contain approximately 165,000 individual mine features (such as vertical shafts and horizontal adits). Gold was the main commodity mined at nearly half of California's abandoned mines. Gold accounts only for approximately 2.5 percent of total mining production in the state (2008 data based on total value of minerals mined).
- **Both Physical and Environmental (Chemical) Hazards.** Nearly 40,000 abandoned mines (84 percent) are physical safety hazards and more than 5,000 (11 percent) are environmental hazards. An estimated 62,000 of the State's 165,000 mine features present hazardous openings that could present a threat to human life.
- **A Statewide Issue.** California's abandoned mines can be found in every county except San Francisco. Approximately 47 percent of these mines are located in San Bernardino and Inyo Counties and 12 percent are located in the "Mother Lode" area in the Sierra. About 67 percent are located on federal lands, 2 percent on State or local lands, and 31 percent on private lands.
- **Increasing exposure.** In recent years, the number of people migrating to regions of the State with high densities of AML sites has increased significantly. Examples include the "Mother Lode", a historical gold mining region in the Sierra Nevada that stretches for 300 miles along historic Highway 49, where communities such as Grass Valley, Nevada City, Sutter Creek, and Jackson are undergoing rapid growth. Population increases in these areas have resulted in the development of properties for residential, recreational, and commercial uses on or near AML sites. Recreational use of public lands is also increasing in the desert regions and other areas of the State that contain hazardous AML sites.
- **A Critical Priority.** In each of the past four years, Governor Schwarzenegger has identified federal funding for abandoned mine restoration as a critical priority to California and the nation. Key benefits to the people of California from sustained new funding for a long-term AML remediation program would include:
 - Improved public safety and a healthier environment.
 - Enhanced coordination among federal and state agencies on AML restoration and remediation projects throughout the State.
 - Enhanced enforcement capabilities on sites with potentially responsible parties.

What Impacts are Associated with Abandoned Mines?

Abandoned mine lands present two general types of hazards: physical hazards and environmental or chemical hazards.

Physical hazards

Physical hazards include the mine workings themselves, derelict structures, and mining-related equipment. Some of the time, these hazards can be classified as at-

tractive nuisances, as they are not only easy for an observant person to recognize, but their recognizable features cause people to approach and even enter the hazard instead of following our motto of “Stay Out-Stay Alive.”

Open shafts descending tens to thousands of feet are particularly hazardous, and they have injured and killed both children and adults that were hiking or riding on bicycles, road bikes, or off-highway vehicles throughout the state. Many people are less aware of the potential hazards of adits, abandoned quarries, and highwalls, which can include hidden vertical openings, bad air, risk of drowning, or falling rock.

Since 2000, 44 accidents involving 47 people and 13 animals, and resulting in 15 people dying, were reported at abandoned mines in California. This includes an accident earlier this month, when a 30-year-old woman died after falling 100 feet into a vertical abandoned mine opening in Kern County. Other recent notable accidents include the following.

- In July 2009, a 22-year-old man died after falling off a highwall at the abandoned Tungsten Blue Mine (Inyo County).
- In May 2008, three men in their 20s died from carbon monoxide poisoning in an abandoned gold mine they had dewatered (Madera County).
- In June 2007, a 41-year-old man died after he was thrown from his motorcycle on a rocky trail at an abandoned quarry (Plumas County).
- In April 2006, a 41-year-old man out riding an off-highway vehicle with his six-year-old son died after walking into an adit and falling 50 feet down an internal shaft (San Bernardino County). The son made his way alone to try to obtain help. This accident was the subject of a “Stay Out-Stay Alive” DVD that the Department collaborated with the federal Mine Safety and Health Administration (MSHA) to produce (see www.msha.gov/streaming/wvx/sosa/Rusty.wvx). One week later, a rescue team pulled a 34-year-old man out of the same abandoned mine.

Several of these accidents and other “near misses” occurred on federal- and state-owned lands. It is likely that many more incidents occurred that were not reported.

Collapsing underground abandoned mine workings represent another physical hazard that can occur at any time. If the mine workings are near the ground surface, subsidence may occur. Although the potential for this type of physical hazard can be more difficult to predict, several instances of abandoned mine-related subsidence have occurred in recent years, turning once valuable property into a liability. As California’s growing population moves into formerly mined lands, the risk of additional occurrences, and for injury or death, increases.

Environmental and chemical hazards

Chemical or environmental hazards presented by abandoned mine lands include increased stream sediment, mercury pollution, acid mine drainage, asbestos problems, and other negative impacts on water and soil quality. These hazards can be subdivided into acute and chronic.

Acute environmental hazards can contain old explosives, drums of chemicals, or direct exposure to highly toxic tailings. Poisonous gases or low oxygen environments can also develop in underground workings; the adventurous spelunker may be caught unaware and asphyxiate. This is a case where the environmental hazard becomes a physical hazard.

More often, abandoned mines may present chronic exposure hazards that can affect the environment miles away. Often the pathway to exposure is through our waters. Contaminants in mine wastes impair drinking water and other water resources by natural leaching processes and sediment transport. Mines in areas of high-sulfide rock may create acid-generating conditions. Low-pH (acidic) waters may carry high levels of heavy metals, which present a health hazard both to humans and wildlife. This “acid rock drainage” has caused numerous fish kills and continues to degrade habitat and contribute high concentrations of toxic metals to many streams in California.

Other chronic exposure pathways are through the soil and air. People are exposed to contaminated mill tailings and waste rock from AML sites on public lands and within historical mining communities. Asbestos is of high concern particularly in areas where mining occurred in high serpentinite-bearing rocks (serpentine is California’s state rock), and is the subject of ongoing studies. Dust or sediment from historic tailings or waste rock may contain naturally-occurring contaminants such as arsenic or chromium, which have become exposed to the environment due to physical disturbance such as land development or off highway vehicle use, weathering, or runoff. Additionally, mining wastes have reportedly been exported offsite and used as fill and in road construction projects. The possible harmful effects of these exposures have not yet been evaluated.

Many abandoned mines in California are home to, or within the habitat of, threatened and endangered species, including bats, raptors, and desert tortoise. According to Bat Conservation International, Inc., many threatened bat species depend on abandoned mines at one time or another during the year for roosting and hibernation. Threatened and endangered species are affected by mining-related contaminants present in soil and water, such as heavy metals, mercury, and methyl-mercury (MeHg), a toxic form of mercury that biomagnifies in the food web and is most toxic to wildlife and humans.

The New Idria Mercury Mine, located on private land in San Benito County, and the Mount Diablo Mercury Mine, located on private land in Contra Costa County, are just a few examples of the challenges posed by mercury from abandoned mines. Due primarily to concerns over potential liability and the significant costs of remediation and post-remediation operation and maintenance, remediation has not begun at these sites.

Another California abandoned mine, the Iron Mountain Mine in Shasta County, contains the most acidic acid mine drainage in the world. Before cleanup began at this Superfund site, the mine discharged an average of a ton a day of toxic metals into nearby streams and then into the Sacramento River, a major source of drinking water as well as critical salmon spawning habitat. After more than 20 years of cleanup and treatment, 95 percent of the historic quantities of metals discharged from Iron Mountain are intercepted and the associated acidity is neutralized. However, an estimated \$4.5 million per year is spent on operation and maintenance costs, and treatment will be needed for a long time. The U.S. Geological Survey (USGS) estimates that Iron Mountain could continue to produce acid mine drainage for 2,500 to 3,000 years.

What Are Some of the Challenges that California Faces to Address the Legacy of Abandoned Mines?

Which brings us to a few of the challenges faced by California's state and federal Abandoned Mine Lands programs.

- As noted earlier, risks to public health and safety are increasing as more people are moving into, and recreating in, areas of historic mining activity. The remote areas of the Sierra and desert that miners once worked in hundreds of years ago are not as remote today.
- Liability concerns can discourage agencies, nonprofits, and the private sector from taking actions to even try to clean up environmental hazards at abandoned mine sites, particularly on private lands. More research is also needed to identify the parties that are historically and/or potentially responsible for cleaning up these sites.
- Historically, there are few dedicated federal funding sources to address California's abandoned mines, the majority of which lie on federal lands. Should California receive dedicated funds, the challenge becomes identifying and prioritizing the projects to implement.
- California has begun the effort to prioritize sites for remediation should funding become available. In March 2007, the Department and 14 other State and federal agencies identified 117 abandoned mines that all agencies agreed remained high priority environmental hazards to address. The 15 agencies also agreed on more than 100 high priority sites that contain physical safety hazards. Remediation of these hazards is estimated to cost billions of dollars.

Does California Receive Any Fees or Royalties to Fund Abandoned Mine Related Activities in the State?

Until recently, California received little or no direct federal funding to help remediate the State's abandoned mine sites, including abandoned mines located on federal lands. The Federal Surface Mining Control and Reclamation Act of 1977 (SMCRA) (30 U.S.C. 1201 et seq.), which assesses fees for surface- and underground-mined coal, is the primary funding source for many state abandoned mine reclamation programs. Many of these coal states have significantly reduced their hard-rock abandoned mine land problems using SMCRA funds. Since California is not a coal-producing state, it is not currently eligible to receive SMCRA funds. Recent federal appropriations and stimulus funding to California's federal agencies are just beginning to address the multitude of abandoned mine hazards on federal lands.

In 2001, the Department's Abandoned Mine Land Unit (AMLU) helped close a hazardous abandoned mine shaft as a public safety demonstration project. In 2002, the Department's AMLU began its program to remediate physical hazards associated with abandoned mines on state, local, AND federal lands using approximately \$125,000, or one-half, of its existing annual appropriation, with the remaining bal-

ance used to continue to conduct the State Abandoned Mine Inventory. In 2003, the State passed Senate Bill 649 (Kuehl, Chapter 794, Statutes of 2003; Public Resources Code section 2207(d)(4)(B)), which provides for a fee of \$5.00 per ounce of gold and \$0.10 per ounce of silver produced in California. Upon appropriation by the Legislature, the Department may expend these monies to remediate physical hazards at abandoned mines. The FY 2004/05 Budget Act appropriated \$409,000 for AMLU remediation activities. As of January 2006, gold and silver fees are now being used to remediate hazards at historic abandoned mines throughout California.

The Department has also recently funded and completed two significant abandoned mine projects. The 2006/07 Budget Act appropriated \$1 million for the Department to conduct a focused, two-year effort to complete an inventory and assessment of physical and chemical hazards associated with abandoned mines on State-owned land. The 2006/07 Budget Act also appropriated \$2 million for the Department to remediate specified chemical hazards over an estimated three-year time-frame. This funding enabled the Department to partner with the State Department of Parks and Recreation and U.S. Environmental Protection Agency (USEPA) to complete a chemical remediation project at Bodie State Historic Park (SHP) in Mono County in June 2009.

What Funding does California Need to Address the Public Health and Safety and Environmental Impacts of Abandoned Mines?

Estimated costs to complete AML physical hazard remediation in California

In its June 2000 Report on the magnitude and scope of the abandoned mine land issue in California, the Department estimated that the cost to remediate just physical hazards in the State—not chemical hazards or site reclamation—was approximately \$528 million.

From 2001 through 2009 to date, the AMLU has helped to remediate more than 625 hazardous abandoned mine features, in partnership with more than 44 federal, state, local, nonprofit, and private partners. This includes more than 460 features since 2006, using Gold and Silver fees and federal award monies. Remediation techniques used include: wire fencing; backfills; polyurethane foam (PUF) closures; bat-compatible gates, cupolas, and culvert gates; fitting with concrete plugs and steel caps; and demolition and/or removal of unstable structures and trash. All work is conducted in accordance with California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA) reviews completed by the land-owning agencies.

Since 2002, the AMLU has provided more than \$750,000 to its landowning agency partners to remediate physical hazards on their lands. The average cost of a closure ranges from \$200 for a small wire fence around a vertical shaft to \$500 for a minor backfill project to tens of thousands of dollars to build more complex, bat-friendly gates, cupolas, and culvert gates. The Department estimates that the cost to remediate the state's remaining hazardous abandoned mine openings would exceed \$470 million.

Estimated costs to complete AML chemical hazard remediation in California

The Department has not recently attempted to estimate the cost to remediate all chemical hazards associated with abandoned mines in California.

In its June 2000 Report on the magnitude and scope of the abandoned mine land issue in California, the Department estimated that the cost to remediate chemical abandoned mines in the State that presented chemical (environmental) hazards at a level of Category 3 (moderate potential for a chemical risk) or above was approximately \$4.1 billion. This total excluded the cost to remediate the Iron Mountain Mine, which at the time had cost approximately \$150 million and was not fully remediated. In October 2000, the USEPA estimated that total cleanup costs for the Iron Mountain Mine could approach \$1 billion.

Environmental remediation costs vary widely. Remediation approaches depend on the extent, volume, and concentration of each contaminant, the affected media and pathway, the threat to humans and the environment based on current land uses (e.g., residents, recreational users, or trespassers), and site conditions. Typical remedies to mitigate environmental hazards can include source removal, encapsulation, and treatment. Some remedies, such as those involving water treatment or encapsulation, can require long-term, often indefinite operation and maintenance (O & M). Uncertainties in determining remediation costs include the following:

- Many abandoned mine sites in California have not been adequately characterized. This is also the case with offsite impacts associated with the transport of

contaminants in sediments, surface water, or groundwater, and the export of mill tailings or waste rock for construction.

- O & M costs can vary depending on the type of remedy selected.
- Costs for restoration of impacted natural resources are often not addressed.

Long-Term AML Program Efforts and Needs

In order to make greater and consistent progress on mitigating the safety hazards and human health and environmental impacts and threats associated with AML sites in California, a long-term commitment and coordinated AML program is required on the part of federal and state agencies and private parties. Long-term needs for a coordinated California AML program are identified below.

- **AML inventory.** The Department's research confirms that a field visit is necessary for "ground-truthing" and assessment of physical hazards. Similarly, the prioritization of AML sites for remediation will ultimately require a complete statewide inventory. At this time, state and federal agency staffs have inventoried only about 3,000 of California's estimated 47,000 AML sites (5 percent). Coordinating the inventory efforts of multiple agencies and maintaining a consolidated statewide inventory of AML sites are important long-term needs and will greatly assist in the prioritization of sites and interagency coordination efforts. Based on the time required by Department staff to inventory abandoned mine lands to date, staff estimates the cost to complete an inventory of all abandoned mines in California to be approximately \$58.5 million.
- **Site assessment, characterization, and prioritization.** This work includes field verification, sampling, and analysis of contaminants. Initial characterization is needed to determine if a site is releasing hazardous substances and whether a cleanup action is required. Development and implementation of a common screening and ranking process and a common protocol for site investigation, characterization, and remediation would help state and federal AML agencies to focus efforts on the highest priority environmental and physical hazard projects.
- **Continuous and sustainable funding for environmental and physical hazard remediation activities, including operation and maintenance.** The problem of abandoned mines in California is widespread. Short-term, stop-gap funding will produce only limited results. The success of any long-term AML program remediation program will depend on stable funding for AML remediation projects and subsequent monitoring of clean up and mitigation effort effectiveness.
- **Restoration.** Separate from remediation activities, Natural Resource Damage Assessment and Restoration activities conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at AML environmental hazard priority sites, such as Iron Mountain Mine and New Almaden Mine, have cost millions of dollars. Without a viable responsible party for an AML site, restoration of natural resources generally does not take place. Natural resource trustees have already faced this situation at several AML sites in California.
- **Research.** Further research is needed on contaminants such as mercury and arsenic with regard to their effects on human health and ecosystems, and on innovative approaches to remediation. Partnerships on research involving public agencies, universities, and the private sector could ultimately reduce remediation costs borne by public agencies.

What Agencies Work on Abandoned Mine Issues in California?

A large number of federal, State, and local agencies and nonprofit groups are working on addressing both physical hazards and the legacy of contamination associated with abandoned mine lands in California. The Department's AML Program has partnered with a network of agencies and organizations, including those listed below, to remediate abandoned mine sites.

State and Local

California Department of Conservation's California Geological Survey
 California Department of Fish and Game
 California Department of Parks and Recreation
 California Department of Toxic Substances Control
 California State Lands Commission
 Department of Toxic Substances Control
 Regional Water Quality Control Boards (RWQCBs)
 State Water Resources Control Board
 Local agency partners

Federal

National Park Service
 U.S. Bureau of Land Management, California State, Desert District, and Field Offices
 U.S. Bureau of Reclamation (Auburn and Folsom State Recreation Areas)
 U.S. Environmental Protection Agency
 U.S. Fish and Wildlife Service
 U.S. Forest Service
 U.S. Geological Survey
 U.S. Army Corps of Engineers (Restoration of Abandoned Mine Sites Program)
 Nonprofit and/or private partners, such as Bat Conservation International.

Success Stories

Now, I would like to provide you with an overview of some of California's mercury-related abandoned mine remediation success stories. At last week's meeting of the State's Abandoned Mine Lands Forum, which provides a venue for discussion and coordination on water quality, safety and environmental hazard issues that agencies and other groups face with AML remediation projects (see www.consrv.ca.gov/omr/abandoned_mine_lands/Pages/amlu_forum.aspx for details), Forum members identified 12 AML sites in California with mercury contamination where investigation work had been started and remediation completed, including the following mines (listed by county).

- Abbott and Turkey Run Mines (Lake County)
- Sulphur Bank Mercury Mine (Lake County)
- Gambonini Mercury Mine (Marin County)
- Bodie State Historic Park (Mono County)
- Alpha Diggings Hydraulic Mine (Nevada County)
- Boston Mine (Nevada County)
- Sailor Flat Hydraulic Mine (Nevada County)
- Deer Trail Mercury Mine (San Luis Obispo County)
- Rinconada Mercury Mine (San Luis Obispo County)
- Gibraltar Mercury Mine (Santa Barbara County)
- New Almaden Mercury Mine (Santa Clara County)
- Altoona Mercury Mine (Trinity County)

You will likely hear details about one or more of these projects and other success stories today. Details of the projects that OMR partnered on are provided below.

Bodie SHP remediation project, Mono County

In the late 1800s to early 1900s, the town of Bodie was part of a major gold mining district. In 1962, the town and adjacent area became Bodie SHP, which is owned and managed by the Department of Parks and Recreation (State Parks). The park is preserved in a state of "arrested decay," and a critical priority for State Parks is to maintain the appearance and historical setting of mining, including structures, artifacts, tailings, and other cultural resources.

As a consequence of mining and gold processing, however, Bodie was contaminated by mercury, lead, and arsenic. Mercury was used as amalgamate with gold to enhance recovery. Lead was used in the assay process (which allows for measurement of the amount of gold in an ore sample). Arsenic is commonly associated with gold deposits and occurs naturally in the area. In 2006, the State Legislature appropriated funds from OMR's Surface Mining and Reclamation Account to "remediate specified chemical hazards" (Assembly Bill 1801, Item 3480-001-0035). Using these funds, OMR coordinated with State Parks and the USEPA Region 9 Superfund Technical Assessment and Response Team to investigate and remediate chemical hazards at Bodie SHP to protect human health and safety. The USEPA conducted the sampling and remediation work assisted by specialists from the U.S. Coast Guard (locations and procedures were designed to fully characterize and remediate any contaminants and protect cultural resources and artifacts), which was monitored by State Parks' archaeologists and OMR staff.

Both employee and visitor exposure to contaminants in the soil and air and the possibility of rainwater carrying contaminants from tailings piles into Bodie Creek and downstream to the Walker River and Walker Lake in Nevada were concerns.

The AMLU inventoried the entire site, while OMR's Reclamation Unit provided some technical input—particularly about revegetation work on the "tailings piles" (mine waste), as did the Department of Toxic Substances Control. State Parks provided archaeologists to ensure that artifacts were handled well and the original state of the park was preserved, as well as a botanist to help in the revegetation efforts, while the Park Superintendent and other staff ensured that the public was informed, but at a safe distance, when any work was being conducted.

The project, which was completed in June 2009, included the following tasks.

- Installation of a modified radon extraction system to reduce mercury vapor concentrations inside Bodie's Standard Mill.
- Control of erosion of mercury-laden mine tailings adjacent to Bodie Creek by building a rocky diversion channel, with rocks collected onsite to preserve the Park's visual character, to carry runoff away from the tailings and Bodie Creek.
- Composting and reseedling the tailings to promote growth of native plants to further reduce runoff from the tailings.
- Remediation of lead-contaminated soil from outside several historic assay buildings and removal of lead-contaminated dust from building interiors.
- Construction of new fences and repair of existing fences to protect public safety.

Gambonini Mercury Mine, Marin County

During historic mining at the Gambonini Mercury Mine, mine wastes were placed in a steep canyon covering an area of about 11 acres. Consequently, large quantities of mercury-laden sediment would discharge each year into Salmon Creek—a tributary to Walker Creek and Tomales Bay. Threats to the beneficial uses of these waters included degradation of coho salmon spawning areas in Walker Creek and bioaccumulation of mercury by wildlife and fish in Tomales Bay. Under contract with the San Francisco Bay Regional Water Quality Control Board, OMR conducted the following tasks:

- Collected seed and cuttings from the mine area and obtained nursery services to cultivate plants for revegetation test plots and full-scale implementation.
- Designed and planted revegetation test plots and monitored plots to evaluate success.
- Reviewed the existing geological, chemical, soil, and physical data pertinent to the design of a remediation plan.
- Conducted surveys for listed species on the mine site, surveyed site vegetation, inventoried the types of native plant species growing on site, and assessed which species were most likely to succeed in a revegetation project.
- Prepared and implemented field sampling plan to evaluate soil types, nutrient content, and organic matter content of mine area soils to determine what types of soil additives or clean soil cover were necessary for revegetation to succeed.
- Prepared grading plan to excavate portions of the mine waste rock dump and fill the existing open pit; the goal was to establish a final grade for the waste rock dump that would be stable and could be revegetated.
- Documented the relative success of various revegetation treatments.
- Helped to determine treatment options to remediate impacted creek.
- Provided construction monitoring and oversight for site grading, resoiling, erosion control and revegetation during full implementation of the remediation plan.
- After full-scale implementation, monitored soil nutrient availability, erosion potential, and revegetation of the remediated slope.

Other Successes

Some of the Department's AML-related accomplishments are listed below.

- Between 1997 and October 2009, the AMLU has collected inventory data on more than 2,800 abandoned mine sites and nearly 27,000 features. This included an inventory of all known State-owned AML properties.
- Similar to the reclamation planning work on the Gambonini Mine, AMLU provided reclamation work on the USEPA's Leviathan, Sulphur Bank and Atlas Mine sites, and the California Department of Fish and Game's Spenceville Mine site.
- From 2006 to date, the AMLU has used gold and silver fees and collaborated with numerous landowning agencies and other partners to make safe more than 465 hazardous abandoned mine features, which is nearly three times the number of remediations than had been completed in the previous four years.
- In June 2009, the AMLU funded the successful completion of a two-year characterization and remediation project at Bodie State Historic Park in Mono County in partnership with State Parks and the USEPA.
- In October 2009, the AMLU was recognized for its participation in the Bureau of Land Management's (BLM) "Fix A Shaft Today!" ("FAST!") Campaign—a partnership initiative aimed at eradicating unsafe abandoned mine land features, especially open mine shafts—when the unit was a co-recipient of the BLM's first Reclamation and Sustainable Development "FAST!" Award.
- As California's representative to the National Association of Abandoned Mine Land Programs (NAAML), the AMLU was recently selected to co-host, with Nevada, the 2011 NAAML Annual Conference (the first hardrock, non-coal

states to serve as host) providing further opportunities to highlight California's AML issues and successes and raise awareness of AML hazards.

In addition, recent Federal Budget Acts and the American Recovery and Reinvestment Act of 2009 have provided the BLM, National Park Service, and U.S. Forest Service with funding to remediate abandoned mines on California federal lands, the results of which should be seen in the immediate future. Although small compared to the amount of funding needed to address the multitude of legacy environmental and physical problems associated with abandoned mines in California, the State has rarely received federal funds designated specifically for abandoned mine remediation and we are eager to show you what we can accomplish.

The challenge of addressing hazards associated with California's 47,000 historic abandoned mines is enormous. It is a challenge that we in the Department of Conservation and today's other speakers are committed to continue to undertake.

I appreciate previous efforts to provide federal funding to the Department of Conservation for our Abandoned Mine program. And I respectfully ask that you consider the tremendous public health and environmental benefit this program provides in future funding cycles. Simply put, the more Congress allocates, the more we can alleviate this serious problem.

Thank you.

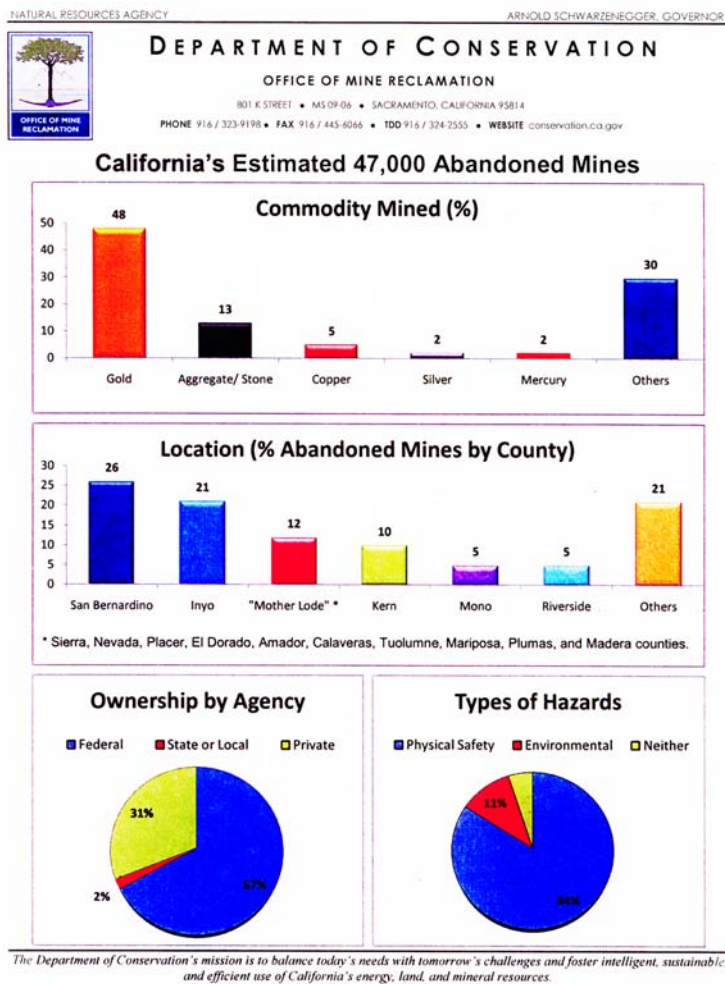


Table 1. OMR Contracted Mine Reclamation Tasks

		Gambonini Mercury Mine	Leviathan Mine	Sulphur Bank Mercury Mine
		San Francisco Bay RWQCB	Lahontan RWQCB	USEPA
TASKS	CONTRACTOR:			
Plant Propagation	Collected seed and cuttings from the mine area and obtained nursery services to cultivate plants for revegetation test plots and full-scale implementation.	x	x	x
Test Plot Design & Construction	Designed and planted revegetation test plots.	x	x	x
	Monitored test plots to evaluate success.	x (2 years)	x (5 years)	x (5 years)
Review of Existing Data	Reviewed the existing geological, chemical, soil, and physical data pertinent to the design of a remediation plan.	x	x	x
Evaluation of Existing Site Conditions	Conducted surveys for listed species on the mine site, surveyed site vegetation, inventoried the types of native plant species growing on site, and assessed which species were most likely to succeed in a revegetation project.	x	x	x
	Prepared and implemented field sampling plan to evaluate soil types, nutrient content, and organic matter content of mine area soils to determine what types of soil additives or clean soil cover were necessary for revegetation to succeed.	x	-	-
Waste Pile Stabilization or Revegetation Plan	Prepared grading plan to excavate portions of the mine waste rock dump and fill the existing open pit; the goal was to establish a final grade for the waste rock dump that would be stable and could be revegetated.	x	-	-
	Performed statistical analysis on data to determine if the trends identified were supported by statistical analyses.	-	x	x
	Conducted geophysical surveys documenting the use of new technologies for discerning underground seeps and voids.	-	x	-
	Prepared a final report documenting the relative success of various revegetation treatments and submitted a proposal for the overall waste stabilization strategy for entire mine area.	x	x	x
Provision of Botanical Expertise	Established permanent seed collection locations.	-	x	-
	Provided input on weed control strategies.	-	x	x
	Provided remedial measures for revegetation.	-	x	x
Creek Remediation	Coordinated with contractor to determine treatment options to remediate impacted creek.	x	-	-
Construction Monitoring	Provided construction monitoring and oversight for site grading, resoiling, erosion control and revegetation during the full implementation phase of the remediation plan.	x	-	-
Short-term Monitoring	After full-scale implementation, monitored soil nutrient availability, erosion potential, and revegetation of the remediated slope.	x	-	-

(July 2009)





Mr. COSTA. Thank you.

I think this completes the testimony, and now we get to the fun part, the questions that we get to ask and the answers you can provide.

Ms. Luther, since you were just speaking, you have testified that the conservation research confirms that field visits are necessary for ground truthing and prioritizing sites. What do you think the ultimate cost is going to be for all of that inventory?

You made a distinction between those that create a physical hazard and those that constitute a risk hazard from contamination. The cost you estimated, I guess, in your submitted testimony was 58 million-plus; is that right?

Ms. LUTHER. The cost for inventory on the state-owned lands, which is only a small percentage of what we are talking about, two percent, was \$2 million, and that was sort of an original assessment. We need to go back and from that we came up with the high priority sites for the State to start tackling.

Is there a big Empire Mine in our future? You know, was there a lot out there that we needed? What we found out was, no, we did not have another big toxic site, but we also are going to need to do quite a bit more characterization of those sites, and I believe that is the \$50 million number, if we are going to actually clean those up, and that is just, like I say, a small percentage of the abandoned mine land sites. Most of it is on Federal lands. The problem is on Federal lands.

Mr. COSTA. And much more there than on state or privately held lands?

Ms. LUTHER. Right. About 30 percent is on private, and then this small percentage on the state-owned, and then the bulk of it is going to be on the BLM and National Parks' land. Most of it is BLM.

But we have a process that we have been able to develop that we have used over the last couple of years, and it has been pretty successful, and we did quickly.

Mr. COSTA. The State derives an amount of money on a remediation fund, does it not?

Ms. LUTHER. I'm sorry? They do what?

Mr. COSTA. On a remediation fund.

Ms. LUTHER. Yes, we get gold and silver fees, but also the amount of gold and silver mining in California.

Mr. COSTA. It has declined dramatically.

Ms. LUTHER. Declined dramatically.

Mr. COSTA. So how much money does that provide the state?

Ms. LUTHER. It provides \$2 million, about \$400,000 a year. So it is not very much.

Mr. COSTA. I do not know how long you have been in your position. Have you collaborated in terms of the points I was making with the previous panel on a common protocol with the Federal agencies?

Ms. LUTHER. Sir, what I was speaking to earlier was the Abandoned Mine Lands Forum, which is actually a working group that meets every month to talk about these issues. They bring in speakers. They bring in solutions. They bring in joint problems.

We actually have contracted with the Bureau of Land Management for many of the physical closures. So we are sort of—

Mr. COSTA. So you do coordinate.

Ms. LUTHER. Yes, we coordinate. That is all we do.

Mr. COSTA. OK. Mr. Baggett, your testimony recommends a funding source, and you commented on the two Federal pieces of legislation. Obviously from your experience and one of the examples you listed, as we look at the prioritization of these abandoned mines, it is a big job.

Mr. BAGGETT. Yes.

Mr. COSTA. And the money simply is not there. You did point out that the Good Samaritan rule could be used in a way that is much more effective than it has been.

Mr. BAGGETT. Well, I think we need legislation and the Clean Water Act. It is my understanding there is a bill in the Senate, as I recall, again, to try to. There have been several over the last ten years I have been involved at the national level with other clean water agencies. We have been trying for at least ten years, along with Western Governors who have endorsed numerous Good Samaritan amendments to the Clean Water Act. None have yet to be adopted.

We have a state equivalent, but you know, the challenge is a company or party is not going to take on a Good Samaritan act without Federal protection.

Mr. COSTA. Quickly, before my time expires, 24 bodies were listed in the 2006 listing by Californians impaired by mercury.

Mr. BAGGETT. Right.

Mr. COSTA. That number is supposed to increase in the 2008-2010 list to what, something over 106 or something?

Mr. BAGGETT. I do not know the numbers, but it is likely to increase, yes.

Mr. COSTA. A comparative analysis. You and I have discussed the stressors impacting the Sacramento-San Joaquin River Delta System as being numerous. Has there been any qualitative comparisons between the mercury contamination and the others? I cited as an example 120,000 gallons of mercury each month being in the river systems.

Mr. BAGGETT. Right. Our board adopted a Bay Delta Work Plan last summer, and as part of that work plan, mercury was identified as one of the issues we should look at, mainly to our regional boards. We are, in fact, doing the TMDL program, and we just implemented, I think I mentioned last week, the Almaden Mine, Guadalupe Creek and the Bay area. That TMDL was just approved by our board.

The real challenge though with mercury is human health, not fish health. So as far as we know, it does not have a significant detrimental effect on the fish living in the Delta, but just the people that are eating them.

But it is in our work plan, along with ammonia, salinity, stormwater runoff, and pesticides. All of those issues are part of our work plan, and we are working at our regional boards through our water rights component in addressing those now.

Mr. COSTA. OK. My time has expired. Mr. McClintock.

Mr. MCCLINTOCK. Mr. Baggett, you mentioned the whole legacy problem that nobody wants to touch. Again, the folks that did this are long gone. Nobody wants to touch those sites today because that immediately brings upon them the legacy for clean-up of all of the past sins of past and deceased owners, and so nothing gets done.

I am going to go out on a limb here and make the assumption that the biggest contamination is generally at the biggest mines, and that the biggest mines generally have the greatest potential for

reopening. There is still a lot of gold in them there hills, and we are seeing a renewed interest in bringing it out.

My question is this. Shouldn't we be looking at ways to encourage businesses to take over these mine sites, without incurring the liability to clean them up completely? But it seems to me they can reopen them, reduce the contamination, maybe not to zero, but at least reduce what would have been there if those sites had simply been left alone. We would be way ahead in a number of areas, not the least of which is environmental clean-up.

What are your thoughts on that?

Mr. BAGGETT. No, I think that is one of the intents of the Good Samaritan language, which has been attempting to amend the Clean Water Act to allow some of that ability.

Second, and EPA could probably address this much better than I since they had the permitting authority in the State of Arizona, it was not a delegated state. It has been at least six or eight years since a mine owner did just that. As a condition for their NPDES, their waste discharge permit for the new mine, they cleaned up an abandoned downstream site, an incredible offset. It was like 10,000 to one or 100,000 to one offset, and that was a condition of their permit terms from the Federal EPA, who then ran the Arizona program.

In California that has been a real challenge to use offsets in that way, and we have yet to really accomplish that because of a lot of legal issues and disagreement among different sectors we deal with.

The Good Samaritan amendment at the Federal level would help, in my opinion, allow a mechanism to have a new developer, if you will, safely be able to say, OK, in exchange for doing this, I will go clean up something that is tens of thousands of times worse as long as I do not buy the liability for it, and that is the concern, once they open that can of worms because you know they have got it.

Mr. MCCLINTOCK. And, of course, it is not just the Clean Water Act. It is also the Toxic Substances Control Act, the Federal Water Pollution Control Act, the Solid Waste Disposal Act, the Comprehensive Environmental Response Compensation and Liability Act, et cetera, et cetera.

Mr. BAGGETT. Right.

Mr. MCCLINTOCK. I mean, it seems to me that we have bureaucratized this to the point where we have now paralyzed our ability to take common sense actions that do not even require the government to do anything except to get out of the way and say, "Yes, do you want to bring back this mine? Go ahead. We only ask that you leave it cleaner than when you took it over."

Mr. BAGGETT. I think it is being discussed. I believe that Senator Udall has the bill in the Senate on the Good Samaritan language, again, and it is something I would strongly encourage the Committee to look at.

Mr. MCCLINTOCK. And Mr. Lamborn in the House, and that legislation is still pending in the Natural Resources Committee the last time I checked. You think that is a good way to go.

Mr. BAGGETT. I think it is essential.

Mr. MCCLINTOCK. Let me ask you another question on that because I think it came up. If I understood Mr. Meer's testimony from the last panel correctly, a profit is not allowed to be a motive in these clean-up agreements. Maybe I heard him wrong.

Mr. BAGGETT. In California, our laws, to my knowledge, we do not have any. I have a mercury expert here but no counsel to collaborate with. I could get back to you if you like.

Mr. MCCLINTOCK. It seems to me if clean-up is the objective, the motive is really irrelevant.

Mr. BAGGETT. To the best of my knowledge, that does not exist in this state.

Mr. MCCLINTOCK. One final question. It was a question I asked of the last panel, and I am still trying to nail this down. Do we have any kind of data that gives us a trend line on contamination in the various watersheds? I mean, do we know what was the level of contamination 50 years ago, 25 years ago today so that we can then project what to expect for it to take for a natural—

Mr. BAGGETT. For mercury specifically?

Mr. MCCLINTOCK.—degradation of these pollutants? Yes, specifically for mercury, correct.

Mr. BAGGETT. No.

Mr. MCCLINTOCK. I mean, is it possible to obtain that data? I mean, do we have historical records that we can go back to and begin to extrapolate?

Mr. BAGGETT. If you would like, we will provide analysis and get it back to the Committee.

Mr. MCCLINTOCK. Again, when we are dealing with a problem that goes back that many years, one wonders, OK, it is not getting any worse. It is naturally abating. At what rate and to what extent? Is this something that we need to intervene on, and how much of it is just to be left alone and it is going to go away anyway?

Mr. BAGGETT. To some extent when we develop a TMDL, a regulatory program for non-point source in water, it is usually watershed based. On that particular TMDL a lot of that information will be available. I can provide you a copy of the one we just adopted, but that was actually a mercury mine caused problem.

In the Sierra, we are still working with the Region 5, our Central Valley Board, but we usually will do an analysis of what is available, what is missing, how do we develop a plan to clean up a watershed and a particular pollutant.

Mr. COSTA. I think the Congressman's question is a good one as it relates to the trend lines, and if you could provide the information to the Subcommittee from the Water Board, I think we would appreciate that.

Mr. Baggett, you noted in your comments about the regulatory authority under the California Water Resources Control Board and the permit process that the Board can provide as it relates to discharges and to the waters of the State of California. You were making some distinctions as it related to risk assessment, risk management versus mercury.

I guess I would like to understand better how that jurisdiction operates with other potential discharges into the waters of the State of California. I keep going back to the impacts of the stresses

caused by the Sacramento-San Joaquin River Systems because of the challenges we are facing on the drought conditions that both Mr. McClintock and I raised in our opening comments and the regulatory impacts of the operations of the Federal projects as it related to the biological opinions. And, of course, part of that is now being tested in court.

Where does the Water Resources Board intersect as it relates to the potential contamination that takes place not just from the standpoint of the impacts of mercury in terms of health and safety and the watersheds, but other stressors that impact the quality and the degradation of the water systems?

Mr. BAGGETT. Specifically at the Delta?

Mr. COSTA. Yes.

Mr. BAGGETT. OK. Like I mentioned previously, we developed a work plan that is 80 pages, and we would be glad to provide the Committee a copy of that. That work plan identified for the Delta all of the different regulatory issues which the State Board and our regional boards have jurisdiction or some control over.

One of those was mercury, and I think I mentioned that it is more of a human health issue, but it is still part of the work plan. We are still analyzing that and working mainly through the TMDL program.

We are also looking at ammonia. Our regional board has the direct authority to issue the national pollutant discharge elimination system permits, the NPDES permits for waste water plants.

Mr. COSTA. So, for example, the ammonia that is being emitted in there, they have a permit to release that ammonia in there?

Mr. BAGGETT. On the waste water plants they certainly do, and as part of those conditions, what we have done is the regional board is requiring some fairly extensive monitoring, extensive studies to be done to get exactly the issue which I think you raised. What impact is this level of mercury having at this numeric standard?

We have a number in the permit. That number, should it be lower? And that is a whole other process of changing those numeric numbers in permits.

Mr. COSTA. Under the law, any of these contaminants, is dilution considered a solution?

Mr. BAGGETT. When its numeric effluent limit by concentration, yes, when it is a number, and so that gets into the other challenge.

Mr. COSTA. And each potential contamination there is a de minimis level that is determined by the board?

Mr. BAGGETT. Well, it is whatever the California Toxics Rule, which was set—

Mr. COSTA. Well, I mean, it sets a number.

Mr. BAGGETT. Yes.

Mr. COSTA. But the numbers oftentimes change. We have gone from a parts per million to parts per billion to parts per trillion.

Mr. BAGGETT. Right.

Mr. COSTA. Based upon just our ability to make those determinations, but you know, there is no zero risk to the point of a lot of our conversation here this morning, right?

Mr. BAGGETT. Right, right.

Mr. COSTA. But yet you are asked to make a determination under the law of a number that would imply a zero risk.

Mr. BAGGETT. Well, I do not know that it would be a zero risk, but those numbers are developed, and it depends on the number, whether it is a public health goal and whether we work with OEHHA to develop detailed numbers. On some of these studies if it is a human carcinogen, those issues, it all depends on what the pollutant is, but what we are doing on the Delta specifically is directing, and the regional board is requiring more study so we can actually get if we have to fine tune the number to find out what contribution; we are working on that, as well as salinity, the stormwater issues you mentioned. Those are huge issues. They are all huge.

Mr. COSTA. I am curious. Have the Federal agencies inquired or cooperated or collaborated to any degree with the Water Board as it relates to the two biological opinions that are in question right now?

Mr. BAGGETT. We have no authority over the—

Mr. COSTA. No, I am not saying you had authority. My question to you is have they collaborated with you on any of these other impacts as it relates to their findings on their biological opinions.

Mr. BAGGETT. No. That is a separate set of statutes under the ESA. No, I think that is the simple, short answer. No, they are not.

Now, where we would be involved is if the water rights were modified to incorporate those requirements. Then it would come before us, but we are now re-examining, I think, as you may be aware of the San Joaquin River Flows Objective, which that would then be the precursor to a water right proceeding to amend water rights to take into account those new flows, and those new flows will obviously take into account data from Fish and Wildlife, Fish and Game, NOAA, from all of those parties. But our flows are separate. Our water rights authority is separate from Endangered Species issues.

Mr. COSTA. All right. Well, we have gone past my time. I thank the indulgence of my colleague. Do you have any further questions? Yes, and then we will go to the last panel.

Mr. MCCLINTOCK. Just to walk through the chemistry real quickly, mercury is the element that is not absorbed into the food chain. It first must be converted into compound methylmercury in order to enter the food chain.

Mr. BAGGETT. Yes.

Mr. MCCLINTOCK. The first question I would have is what processes may be exacerbating that conversion from mercury to methylmercury? For example, I understand that in the Everglades National Park they discovered a considerable amount of the conversion to methylmercury being caused by agricultural runoff. Do we have any studies from these regions? What natural or manmade activities may be converting the mercury to methylmercury?

Ms. LUTHER. We found methylmercury. There was a great project over in Marin County, the Gambonini Project, where basically we were able to use wetlands to mitigate that conversion.

Mr. MCCLINTOCK. The question that I would have is are there human activities or, for that matter, natural activities, that are accelerating the conversion of mercury to methylmercury?

Mr. HUMPHREYS. Yes, good morning. My name is Rick Humphreys, and I work for the State Water Board.

We are funding studies just to that question. We found out already that there are areas and activities that seem to promote methylation. For instance, if you look at the reservoirs in the Sierra foothills where they catch the Sierra runoff and the contaminated sediment, you see that methylation occurs in those reservoirs, and it may be tied to some of the discharges of nutrients from the upland land use and some of the nutrients from sewage treatment plants.

We are also investigating mercury methylation with the USGS in the rice lands down below the rim reservoirs.

Mr. MCCLINTOCK. Are we differentiating in all of the senses that we are doing on mercury contamination; are we differentiating between those regions where there is a high rate of methylation and where there is a very low rate of methylation and, therefore, not a significant health risk?

Mr. HUMPHREYS. Yes, we are trying to identify those. It turns out that we just had a report on lakes in California published, and it seems like wherever you look in certain areas you find lakes with contaminated fish. A lot of them are on-stream reservoirs that have caught contaminated sediment either from the coast ranges or the Sierra.

So we are working on that. Typically what we do is try to get advisories posted for water bodies that contain contaminated fish, and then we try to work on this question of how you could control methylation to prevent methylation from occurring because, as you said before, there is so much mercury in the system that it is going to be there for a long time and will not just wash its way out.

Mr. MCCLINTOCK. Well, again, I think one of the concerns is we do not really know how much. We are trying to get better data than just the anecdotal information that we get.

Mr. HUMPHREYS. Well, I can tell you that practically any stream that was heavily mined for gold in the Sierra or used as a conduit for mining waste, it is very easy to find elemental mercury.

Mr. MCCLINTOCK. Oh, I have no doubt of that. The question is to what extent does that become a danger.

Let me move on for just a second because I have time here. Again, I need to go on.

For example, to what extent is sequestration of mercury in timber ameliorating the situation? I understand a significant source of aerosol pollution or mercury pollution is forest fires, for example.

Mr. HUMPHREYS. That is correct.

Mr. BAGGETT. That would be along with their deposition. I know where I reside is, as your colleague knows, up in the Yosemite Sierra, we are finding mercury in high Sierra lakes that have always been a long way from any mining activity.

Mr. MCCLINTOCK. The concern I have is we not only have an awful lot of abandoned gold mines in my region. We also have a great deal of timber, and the question I am trying to answer is to what extent does that timber sequester methylmercury over time.

Mr. BAGGETT. If the Committee would like, we could provide a written summary of what studies are out there, what we are doing

to answer your methylation question and where we are in the process, and answer that question also about sequestration.

Mr. MCCLINTOCK. One of the problems we have, of course, is that the timber industry has pretty much been shut down now, and the only way we get rid of excess timber these days is forest fires, which not only releases that mercury back into the atmosphere and makes a mockery of all of our air pollution laws. It also raises the question, well, if this timber was being harvested, how much of that mercury would be harmlessly sequestered in timber.

Mr. BAGGETT. We will get back to the Committee that information.

Mr. COSTA. All right. We have had two rounds with this panel. I want to thank all of you at the State level for your efforts and your collaboration with the Federal agencies and wish you, like our previous panel, a wonderful Thanksgiving. If you are around here a little bit, we may have a follow-up.

On that other item, Mr. Baggett, I do want to touch base with you here.

Our last panel, but certainly not the least, really kind of rounds off our hearing this morning. We have a number of folks that are involved at the local and the private sector level.

The County Supervisor from Calaveras, Supervisor Steve Wilensky. Board Member and Senior Policy Director from—help me with the pronunciation. Tuleyome?

Mr. SCHNEIDER. Tuleyome.

Mr. COSTA. Tuleyome.

Mr. SCHNEIDER. It is Tuleyome.

Mr. COSTA. Tuleyome. It is a Lake Miwok word from the—

I know it is an Indian word. I am very familiar with Tuolumne, but I am looking at this and if it is a misspelling—

Mr. SCHNEIDER. There is no relationship other than they are both tribal names.

Mr. COSTA. No, I understand that, but I just want to make sure it was not a misspelling.

Mr. SCHNEIDER. It is not. Thank you very much.

Mr. COSTA. I am familiar with Tuolumne, but Tuleyome.

Mr. SCHNEIDER. Thank you.

Mr. COSTA. Mr. Schneider, and then we have Julian Isham, who is Geology Manager from Shaw Environmental, Inc., testifying on behalf of the Northwest Mining Association. We appreciate your being here.

And Ms. Elizabeth Martin, Chief Executive Officer for the Sierra Fund.

So that rounds off our third panel, and why don't we begin with Supervisor Steve Wilensky? And I assume you are the one with the PowerPoint.

STATEMENT OF STEVE WILENSKY, SUPERVISOR, SECOND DISTRICT, CALAVERAS COUNTY BOARD OF SUPERVISORS, STATE OF CALIFORNIA

Mr. WILENSKY. Yes, I think I am.

Mr. COSTA. No, you need to activate the mic. It works better that way because we all want to hear you.

Mr. WILENSKY. Yes, I actually do. I had a PowerPoint. The hazards of being in the third panel is that virtually everything on it has already been covered. So my prepared remarks are now converting to some unprepared remarks, which pictures have nothing to do with.

Mr. COSTA. Well, I am sure you will do well. We enjoy the pictures. A colleague of mine once said in a similar situation, it has all been said, but not everyone has said it. So with that, we will give you an opportunity here.

Mr. WILENSKY. Well, thank you.

I am pleased to speak with you and the Committee about the topic of abandoned mines and mercury in California. In Calaveras County, we have over 2,400 gold mines abandoned, 62 copper mines, zinc, chromium and we also feature the state's largest asbestos—

Mr. COSTA. You are talking about Calaveras County?

Mr. WILENSKY. Calaveras County. That is correct.

Mr. COSTA. Home of the jumping frog.

Mr. WILENSKY. Yes, home of the jumping frog.

If you look at this slide here, each dot is an abandoned mine, and if you take a look at the areas where people live, we live on, around, and our streams run through abandoned mines in great number.

This is a matter of great concern to both our county at large and my district for a number of reasons. There are little ones, like for instance the time where we were thrilled to get \$1.2 million of Prop 40 money to build parks. So we thought we would build a ball park in Sandy Gulch, a flat area, one of the few flat areas in my district. After two years of planning and a little bit of work, we found, unfortunately, that we had 100-and-some times the safe levels of arsenic and we would then wind up sliding into second base in a toxic dust.

That is a small issue, but when you look at planning issues, which county supervisors are responsible for with the general plan, land use, and zoning, we have paid very little attention to all of this. So as a result, the largest and fastest growing town in our county, Copperopolis, is built on four old copper mines. I will try to get you to that.

There is Copperopolis at the top. You have the mines down below. You would think that is just an up-country issue, but if you take a look down below here, there is a pond. That pond gets down here to Lake Tulloch at the bottom of the area. So what we wind up with—

Mr. COSTA. Point out Lake Tulloch there.

Mr. WILENSKY. Let's go back.

Mr. COSTA. There, you get your pointer. No, the red dot.

Mr. WILENSKY. All right. The next one should show Lake Tulloch. I am sorry about this. It is not moving. I will give up on this.

Mr. COSTA. That is all right.

Mr. WILENSKY. Lake Tulloch is just a few miles below the mines themselves, and we are sending all kinds of things into that lake. Farmers, many downstream users wind up relying on their water supply for that.

We also have a significant amount of poverty in my district in particular. So 86 percent of the children at Railroad Flat Elementary are eligible for school lunch subsidy. That is a common sign of poverty. That means lots of people are fishing in these waters not just for recreation, but for their sustenance.

Amazingly, almost nobody knows the hazards involved. There is very little public awareness of this in my district, and I would suggest probably most other places.

The Gwin Mine down near Paloma was one of the biggest mines in Calaveras County, and in the middle of its biggest moment, it managed to flood with millions of gallons of water. This water now in the geological formations that are quite porous sits right near the Mokelumne watershed. The Mokelumne River is just about a mile away from that. All the way up the Mokelumne watershed, which is my district, you have hundreds of mines, and we find little beads of mercury in the waters we swim in. We find all kinds of examples of the hazard.

The fact that this all goes into the waters that more than two million people rely on for their drinking water means it is not just an issue for the population that I represent, but many downstream users as well. So, for instance, every time we continue to do dredging or we think about moving some of the sediment out of our dams, behind our dams which are filling up with sediment, we risk considerable stirring up of a witch's brew of toxic chemicals. It is something that is of extreme concern to the people, again, who fish there.

This morning, for instance, there were about 20 people fishing from the Middle Bar Bridge just above Pardee Reservoir. Those are all people, Native Americans and people who are subsistence fishing, and those are the kinds of places that we continue to stir up.

So what to do is my main point here, and a lot of people have made some pretty good suggestions this morning. I would like to concentrate on just a few. First, it strikes me that we have to change the relationship between upstream denizens. We are ready to do things. We want to clean this up. We have shown over and over again, the people of my district, that they can clean up all sorts of things. We have taken 550 abandoned vehicles out of waterways, 7,800 tires. People are capable. They are volunteering. They are most anxious to do this.

But we are only in the Sierra—two percent of the state's population. We have 65 percent of the water. Most of it is timber resources, and a great deal of natural resources as well. Until there is a new kind of relationship between downstream users and upstream denizens that should be the best stewards of this area and have the highest interest in doing that, we are never going to get anywhere economically.

We keep asking the Federal government or the broke state government for the resources for this. It is time we took a look at what the real price of water or timber or any other resource is and make sure that included in that is some form of stewardship and restoration. Only when that equation begins to develop will we have any hope of resolving this in a way that is economically viable.

Last, make an investment in the people who live here, and you will solve some of the poverty issues that have been a result of the

boom and bust cycle, and you will also find downstream life gets better.

[The prepared statement of Mr. Wilensky follows:]

**Statement of The Honorable Steve Wilensky,
Calaveras County Supervisor, 2nd District**

I am pleased to be invited to speak to you and the Committee about the topic of Abandoned Mines and Mercury in California. This issue is of deep importance to the people that I have served as a County Supervisor of Calaveras County since 2003. It is also significant to my family, including my wife Patricia Noll and our two daughters, as well as my small business (Humbug Creek Farm and Cider Mill), because of the longer term impacts of legacy mining on our region's water quality, economy and overall quality of life.

Some background on Mining in Calaveras County

Located in the heart of California's Gold Country, our county was highlighted in Mark Twain's first published novel, a collection of short stories titled "The Celebrated Jumping Frog of Calaveras County" written in 1867. Calaveras County has nearly 3,000 known former mine sites according to state maps. Looking at abandoned mines mapped over the county, you cannot see the map for the dots. (Map Attached) Several types of industrial scale mining, including placer, hydraulic, and hard rock mining, occurred in the County

Gold mines were most common in Calaveras County with 2,499 known mines, but there are numerous other heavy metal mines, such as copper (62 mines), chromium, and zinc. Calaveras County is also home to the largest asbestos mine on the West Coast. When gold ore was mined, naturally occurring arsenic, lead and asbestos were brought to the surface, pulverized, and distributed on the surface where they are now much more widely available for human exposure and pollution of water quality. In the course of gold ore processing, large amounts of mercury were added to crushed ore, and half of it was lost to the water system. Massive waste rock piles containing these toxins were left along water courses, to wash unwanted material off-site. Finally, sulfur-rich geology in the region has resulted in several known cases of acid mine drainage.

As a result of industrial mining activities, Calaveras County's legacy mining problems include:

1. Mine workings with physical hazards such as open mine shafts, explosives, equipment yards, or deteriorating buildings;
2. Contaminated mine waste rock containing heavy metals, extending a great distance from historic mine workings, including in downtown areas such as Copperopolis, and existing and planned residential developments; and
3. Waterways contaminated by acid mine drainage and mercury.

The population of Calaveras County has grown 15% since 2000, nearly twice California's average. As a result, mine-scarred lands that were once remote are now being developed, more of the population is traveling through these areas to get to their homes, and more families are living and playing there.

Exposure to Mercury

An estimated 23 million pounds of elemental mercury were imported to the Sierra Nevada mountains for use in gold processing, and half of it was lost in that process (USGS Fact Sheet 2005-30214). Today, pools of elemental mercury can still be found on the river bottoms in Calaveras County.

According to a new study by CA Department of Water Resources, mercury is the #1 contaminant of fish in California. In Calaveras County, fishing is more than just a recreational activity—in many cases, like in New Hogan Reservoir and the striped bass fishery, local residents catch and eat fish to feed their families. In tough economic times when jobs are scarce instances of subsistence fishing are much more frequent. According to the U.S. Census Bureau (2000), in Calaveras County nearly 20% of families with children under 5 are below the poverty line. Calaveras County ranks 41st out of 58 counties in California in poverty and 41st in child poverty (CA Food Policy Advocates). Local knowledge of the danger of mercury from eating fish, especially among sensitive populations, is shockingly low.

Supporting Solutions

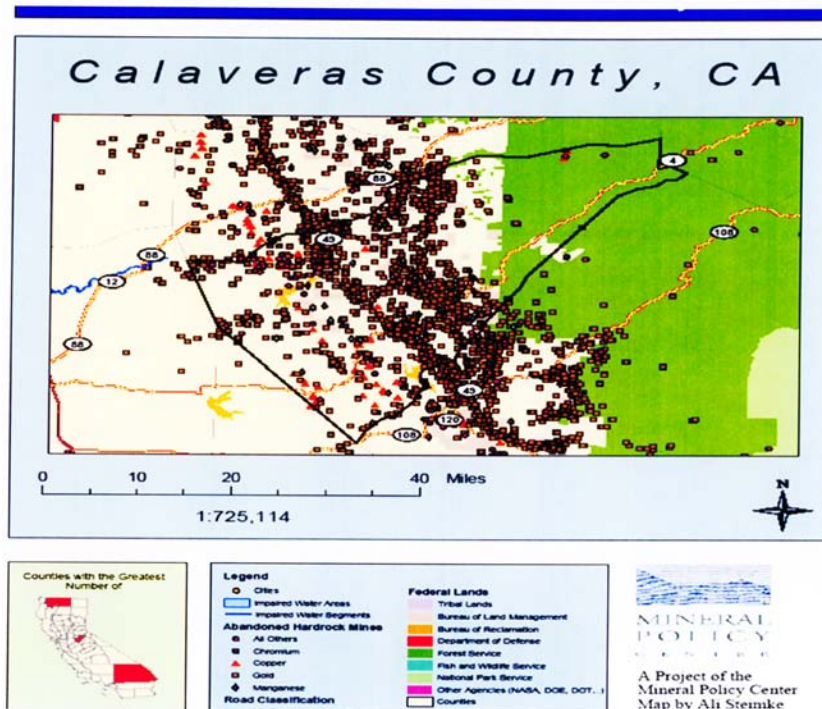
The people of Calaveras County and the Sierra Nevada are looking for ways of cleaning up our communities, both to protect our own health and the health of the watershed that serves all Californians. I believe that there are several actions that

could be taken that will help local government put solutions on the ground to this problem, including:

1. Support local government programs to assess abandoned mines in their regions, and to prioritize remediation efforts;
2. Support improved coordination between local, tribal, state and federal efforts to address and remediate mining impacts;
3. Provide funds for job training for local residents to learn how to both assess mines and perform the technical and physical labor needed for decades of jobs doing the necessary remediation; and
4. Support broader public education about the importance of restoring stewarding rural resources such as clean air and water, and the communities that provide these crucial resources.

Thank you for holding this hearing and providing the people of Calaveras County an opportunity to be heard. I look forward to any questions you may have about this topic.

Attached: Map of Abandoned Mines in Calaveras County



Mr. COSTA. Thank you very much, Mr. Wilensky. I allowed you to go a little bit further because I kind of got in the middle of your presentation and kind of sidetracked you, I think.

Mr. WILENSKY. Well, thank you. I appreciate the time.

Mr. COSTA. Yes. So our next witness is Mr. Bob Schneider, who is part of the effort with Tuleyome.

STATEMENT OF BOB SCHNEIDER, BOARD MEMBER AND SENIOR POLICY DIRECTOR, TULEYOME

Mr. SCHNEIDER. Yes. I am Bob Schneider. Thank you for the opportunity to testify this morning. I am a Board Member and Senior Policy Director of Tuleyome, which is a regional conservation orga-

nization based in Woodland in the Cache Creek watershed, and I did serve for five years as the Chair of Central Valley Water Board and attend the Delta Tributary Mercury Council and sit on the Delta Methylmercury TMDL Stakeholder Group. So I have some different perspectives on this issue.

The key points that I want to talk about today—and how did I get there? Because I skipped a couple of slides, but that is OK—the key points are that Cache Creek contributes one-half of the mercury loading to the Sacramento River system, 520 pounds annually. This is ongoing every year, and other studies in the last five years that had some wet periods on Cache Creek show even more. So this might be a conservative estimate.

Downstream mercury contamination must be a component of abandoned mine clean-up, and we are not just talking about the mines. We are talking about the sediments, the methylation that occurs, the human health impacts, the wildlife impacts, the habitat issues downstream. So we have to consider all of this as a part of the abandoned mine clean-up.

And we look at H.R. 699 real positively. We support this. It will provide needed, desperately needed, funds to help in this actively ongoing process.

The mercury mines are in this area. This is Clear Lake here, Lake Berryessa, Putah Creek and Cache Creek drainages. Cache Creek flows down through the Cache Creek Settling Basin and then into the Yolo Bypass and into the Sacramento River system. It is about 1,000—

Mr. COSTA. For everybody's edification you might—

Mr. SCHNEIDER. Yes, Sacramento is right here.

Mr. COSTA. The Sacramento goes all the way up there to Shasta.

Mr. SCHNEIDER. Right. This is the whole area.

Mr. COSTA. It is basically the Sacramento Valley with the Sierra and part of the Coastal Range is what that map reflects.

Mr. SCHNEIDER. So it is the entire Sacramento drainage, and I am sorry everybody in the audience cannot see this.

So those are my key points, and I want to say the real push for me personally in working this is the human health impacts, and we have in the Delta probably 15,000—I have Dr. Fraser Shilling with me today who has done some of these studies—an estimated 15,000 subsistence anglers. Their families are about 75,000 people and mothers and kids that are probably eating fish with mercury laden levels that can cause human health impacts in this area. So that is a real concern here.

Again, the Cache Creek drainage, Indian Valley Reservoir, which is just going to be listed for mercury; Clear Lake, which has the Sulphur Bank Mine; Sulphur Creek and Bear Creek; the Abbott-Turkey Run Mine going down to the Cache Creek Settling Basin and the Yolo Bypass; and again, the Sacramento area is right in here.

The Rathburn-Petray is an active site. You can see all of the tailings and even on the roads which are filled with tailings, and the Bureau of Land Management has prioritized this, and they have \$1.2 million committed to this. It will need another probably million dollars to complete the clean-up.

Mr. COSTA. By an active site, you mean it is being mined currently?

Mr. SCHNEIDER. No, no, I am sorry. I did not mean to say that. They are actively working to clean up this site.

Mr. COSTA. And what was it?

Mr. SCHNEIDER. An abandoned mine on BLM lands that drains into the Bear Creek.

Mr. COSTA. What kind of mine was it?

Mr. SCHNEIDER. That was mercury.

Mr. COSTA. OK.

Mr. SCHNEIDER. Mercury ore. This is the Clyde Mine, which was both gold and mercury, and I cannot tell you what is in that water, but I can tell you I am not drinking it.

The Abbott-Turkey Run Mine, this is the before. It is just north of Highway 20 between Williams and Clear Lake. All of these tailings here and these mining stuff. We're leaching mercury into Harley Gulch, methylating and wandering down to Cache Creek. This is the clean-up.

Mr. COSTA. What kind of mine was that?

Mr. SCHNEIDER. These are also mercury mines, Abbott and Turkey Run Mines. It is a complex, and what you end up with here is some contour. You get sealed mercury sediments or the tailings in another location. You vegetate and contour this, and you run rodder around it to seal it up into the future.

The Cache Creek settling basin, I call this ground zero. About 520 pounds of mercury flow into here every year; 260 pounds flow out into the Yolo Bypass. Working on improvements to this sediment capture can actively in our time help with mercury clean-up. Water goes into the Yolo Bypass. It was mentioned rice farming can methylate it. Wetlands can methylate it. This is the difficulty of this. It is a multi-media solution. We want more wetlands. We need rice farming, but we need to minimize the methylation that occurs in these areas.

This area is further complex because you have riparian forests in this area, and you have rare species. Also, when they enlarged this before, it exacerbated the woodland flood control issue. So you have to deal with all of these issues at the same time.

There are solutions. I think actually there has been prioritization that has been happening. The Tetra Tech report that came out last year looked at some of these issues and what the cost might be and what the prioritization on this might be. We do have to have better stakeholder communication, not just between the Federal and the State agencies, but between the people infected and impacted by these ecological and health impacts.

TMDLs that we are doing move slowly. We do not have adequate staff to work on that.

My time is up, too. So there are other issues, but thank you for the opportunity to testify, and I am happy to answer questions.

[The prepared statement of Mr. Schneider follows:]

**Statement of Bob Schneider, Board Member and
Senior Policy Director, Tuleyome**

Introduction:

My name is Bob Schneider. I am a Board member and the Senior Policy Director of Tuleyome, a regional conservation organization based in Woodland. Tuleyome is

a Lake Miwok word meaning Deep Home Place. Our mission is to protect our wild heritage and our agricultural heritage in the Northern Inner Coast Range and Western Sacramento Valley. Tuleyome is deeply involved in many of the environmental, water quality, and equity issues concerned with mercury in the region.

I served for 5 years (2002-2006) as the Chair of the Central Valley Regional Water Quality Control Board (the primary state regulatory agency in this region implementing the state Porter-Cologne Act and the federal Clean Water Act), during which time we developed the Clear Lake Mercury Total Maximum Daily Load (TMDL) plan setting requirements for the Sulphur Bank Mercury Mine and other sources, and the Cache Creek-Harley Gulch-Bear Creek mercury TMDL. I currently attend the Delta Tributary Mercury Council meetings and am a member of the Delta Methyl Mercury TMDL Stakeholder Group. I work with community, non-governmental organizations, other groups, and agencies throughout the region and have contacts with Tribes in the region.

I want to focus my testimony primarily on the Cache Creek watershed west of Sacramento, which encompasses approximately 1,095 square miles and drains the Coast Range mountains on the western edge of the Sacramento Valley. It flows out of Clear Lake and Indian Valley Reservoir and includes the Bear Creek and Sulphur Creek drainages.

The geology of the Coast Range here is vastly different from that of the granitic Sierra and is a case study for plate tectonics. Currently, the Pacific plate is grinding northward along the edge of the North American plate, but formerly the San Andreas transform fault system was a subduction zone that resulted in the deposition of seafloor crustal materials along the continental margin, some of which mixed with water and became serpentine. Ancestral springs associated with these myriad fault systems in the serpentine areas deposited mercury ore in the Inner Coast Range. The region was extensively mined for mercury that was used in the gold mines of the Sierra.

The region is also an area of incredible biological diversity and is enjoyed by hikers, birders, hunters, ranchers, horse riders, anglers, boaters and others.

Background:

The pathways that link abandoned mines, mercury, and mercury methylation to public and wildlife health are complex. Remediation of mercury impacts and clean-up involves consideration of source reduction or remediation on both public and private lands, efforts to prevent or reduce mercury methylation, public health, wetland restoration, flood management, Delta restoration, ongoing monitoring feedback, and the Bay Delta Conservation Plan. Methylation is a process in which mercury becomes biologically active and is then caught up in the ecological food chain, resulting in contaminated fish. A myriad of state and federal agencies are involved and a balancing is required of sometimes conflicting goals, including, for example, the necessity to limit mercury methylation while also having a need to restore wetlands and riparian habitat in the Central Valley. Culture and economic issues are of concern in regards to Tribes throughout the region; and subsistence fishers and their families estimated at upwards of 75,000 people in the Delta region who are eating fish with mercury levels that may result in health problems.

There are an estimated 40 abandoned mercury mines in the upper Cache Creek watershed, and another 40 in the upper Putah Creek watershed. Mercury from the Putah Creek watershed flows into Lake Berryessa. Abandoned mines occur on both publicly owned and private land. Other mercury sources in the region include natural springs (such as the Fountain of Life geyser on Sulphur Creek), soil erosion, and erosion from poorly constructed roads that often contain mine waste or mercury laden soil.

Mercury from the mine tailings, waste rock, mine cuts, road cuts, and contaminated soils is leached and eroded at these sources; flows downstream to the Cache Creek Settling Basin; and though the Yolo Bypass to the Delta. One-half of the mercury that moves into the Sacramento River system comes from the headwaters of Cache Creek. The Delta Total Maximum Daily Load Report estimated a 20-year average of 520 pounds of mercury per year flowing down Cache Creek. Of this amount, about one-half settles out in the Cache Creek Settling Basin east of Woodland. The other 260 pounds flows through the Yolo Bypass to the Sacramento River. (The 5-year average discussed in the Cache Creek TMDL shows twice this amount of mercury loading from the Cache Creek watershed.) This load comes from a watershed that provides 2 % of the water and is 4.3 % of the acreage in the Sacramento River Basin, illustrating the seriousness of mercury contamination in the Cache Creek basin.

The Central Valley Water Board has set Cache Creek as a priority by adopting the Clear Lake Mercury TMDL, including the Sulphur Bank mine; the Cache Creek-

Harley Gulch-Bear Creek TMDL; and, the Sulphur Creek TMDL and Basin Plan Amendment. Water Board staff are currently working on the Delta Methyl Mercury (MeHg) TMDL, which is focused on controlling elemental mercury as well as limiting the mercury methylation process. It is anticipated that TMDL plans will also be developed for the Upper Putah Creek Watershed, Stony Creek, Black Butte Reservoir, and Indian Valley Reservoir.

Development of the Delta MeHg TMDL has focused additional attention on the Cache Creek Watershed as a primary mercury and methyl mercury source. An estimated 15,000 subsistence fishers and their families (an estimated 75,000 folks) in the Delta region are eating mercury-laden fish with levels that may result in health problems. In the Cache Creek watershed attention has been focused on developing methods to limit the methylation process in the Yolo Bypass, as well as to capture as much mercury as possible in the Cache Creek Settling Basin (CCSB).

The CCSB is a 4 square mile leveed structure designed to capture sediment before it is transported into the Yolo Bypass. It is an efficient trap for mercury that has already left the actual mine sites, contaminated creek beds and banks, and is continuing to erode. Contamination of stream beds and banks by mercury is common to most areas downstream of inactive gold and mercury mines. Structures like the CCSB might be the most efficient, least disruptive way to remove the mercury and as such should be recognized for the direct role it plays in remediating the impacts of abandoned mercury mines.

This is complicated in that the U.S. Army Corp of Engineers, CA Department of Water Resources, and the Central Valley Flood Protection Board share authority over various aspects of the Basin. This context is further complicated because past expansion of the Basin has exacerbated the flood potential in Woodland; and, now riparian habitat has developed in the Basin important to rare species in the context of federal and state conservation planning.

EPA and BLM Clean-Up Efforts in the Inner Coast Region:

Significant clean-up efforts have begun in the Cache Creek watershed and demonstrates the potential for remediation.

The recent Associated Press article about mercury in California focused on the Sulphur Bank Mine and the Elem Tribe. While early EPA Superfund clean-up efforts at Sulphur Bank have not been as timely as one might hope, more recent efforts have succeeded in rectifying problems, in particular the remediation of the Elem Tribe roads and community that were constructed on mercury laden mine tailings. Efforts to prevent mass erosion of mercury-containing rock from the waste rock dam into the lake by regrading and revegetating the dam were successful. But, EPA hasn't addressed the waste rock already in Clear Lake and the seepage of low pH water from the Bradley Pit to Clear Lake that carries dissolved mercury.

Mine tailings and waste rock at the Turkey Run and Abbott Mines, located on Harley Gulch just north of Highway 20, have been relocated and sealed, thus remediating a major mercury and methyl mercury source into Cache Creek.

The BLM is now working to remediate the Contact and Sonoma Mines that are in Sonoma County in the Russian River drainage, and the Helen Mine at the headwaters of Putah Creek in Lake County. Funding is committed and bids are going out. It is expected that contracts will be let by the end of the year.

The Rathburn-Petray Mine in the Bear Creek drainage is "shovel-ready" and \$1.2 million is committed to clean up. But, another \$1 million is needed to complete this project.

Solutions—Moving Forward:

A comprehensive Abandoned Mine and Toxic Mercury Clean-up Plan for the Cache Creek, Putah Creek, and larger Inner Coast Range region is required. The plan should identify overall clean up goals for the region as well as specific annual and 5-year goals. The plan requires a definitive time line, cost estimates, meaningful progress assessments, and adequate funding. Much of the background information on Cache Creek for this effort is contained in the 2008 Tetra Tech report on Regional Mercury Load Reduction Evaluation Central Valley, California.

Good communication between all of the entities involved working on mercury issues in the watershed is needed. The Delta Tributaries Mercury Council could serve as the coordinating stakeholder organization for the plan's development and implementation oversight. Tuleyome will participate in this effort. This would help to remediate the approximate 80 mines in the Putah and Cache Creek watersheds.

We need to prioritize clean up actions based upon likely and measurable ecological and health outcomes. We need to complete the accountability process by demonstrating the effectiveness of the clean up actions in reducing impacts to human and wildlife health. Sensitive biological monitoring techniques have been developed,

with State funding, to accurately track mercury exposure levels—they should be utilized.

We need to expeditiously develop TMDL plans for mercury-impaired water bodies. A small staff at the Water Board is only able to move forward on various plans in a sequential manner because of resource limitations, whereas increased staffing and funding could speed this process, allowing multiple plans to move forward at the same time.

We need to address Good Samaritan efforts to aid work on private lands. This is complex and not an easy issue. Still, there are opportunities to move forward on some mine sites if we can provide the “good-actor” landowners with some assurances with respect to liability.

We need to enable underserved constituency participation including subsistence fishers and Tribes. Impacted communities are the main human stakeholders of concern for mercury clean-up, but rarely have access to research, planning, decision-making, and resource sharing. Fish-eating wildlife have no say in the matter, but also have no choice but to eat fish as their only food.

The development of an offsets program would help to maximize clean up efforts across the landscape. Such an approach involves investments in clean-up actions in high-mercury source areas by regulated agencies lower in the watershed. While an offset program cannot allow “hot-spots” to remain in the lower reaches of the watershed, there are opportunities to combine “hot-spot” downstream remediation (e.g., in the Delta and San Francisco Bay) with improvements further upstream in the watershed. Such an approach will improve overall clean-up efforts for the Sacramento River basin, benefiting many millions of people in this region in a timely way.

We need to focus attention on the Cache Creek Settling Basin to increase mercury capture, resolve flood-management issues, and protect habitat and habitat restoration. Yolo County, the City of Woodland, and the Yolo County Flood Control Water Conservation District are working on solutions to the flooding issue through the FloodSafe Yolo pilot program, and the Central Valley Water Board is actively seeking answers for means to increase sediment capture in the basin. This is a ground-up approach for locally generated solutions, but the USACE must also be actively engaged in this process.

Solutions to mercury and methyl mercury issues in the Yolo Bypass and Delta involve substantial natural and environmental resources concerns. Agriculture (particularly rice farming) and wetlands increase mercury methylation, exacerbating concerns identified above, but we also need increased wetlands and shallow-water fishery habitats to protect the plants, waterfowl, and fish of the region. At the present time many agencies and other interested parties are engaged in habitat planning in the Delta, and these planning efforts must be able to incorporate mercury issues, while still allowing for enhancements and restoration of wetland areas and habitat values in order to address long-term water-supply concerns in the Delta.

We need adequate, ongoing funding to move forward the planning and implementation of programs in the Cache Creek region to clean up mines and to remediate mercury and methyl mercury issues. We need a meaningful fraction of those funds to go to effective feedback monitoring that will guide remediation efforts.

Conclusion:

The Cache Creek watershed is a primary source of mercury that contributes one-half of the mercury in the Sacramento system. We need to clean up the sources at the abandoned mines both on public lands and private lands.

Downstream mercury contamination including sediment contamination, mercury methylation, human health impacts of mercury from eating contaminated fish, and impacts to wildlife and habitat are direct affects of mining and must a component of abandoned mine clean up.

HR 699 will provide an ongoing funding source for abandoned mine and toxic mercury clean up reducing harm to both people and wildlife. We strongly support this bill and thank you, Representative Costa, for your co-sponsorship. Thank you members of this subcommittee and your staff for attention to this important issue here in California. And, we are certainly available to lead a tour of the region if that might be helpful in your work.

Mr. COSTA. Thank you very much, Mr. Schneider.

Our next witness is Mr. Julian Isham on behalf of the Northwest Mining Association. Mr. Isham, please, I am looking forward to your testimony.

STATEMENT OF JULIAN C. ISHAM, GEOLOGY MANAGER, SHAW ENVIRONMENTAL, INC., TESTIFYING ON BEHALF OF THE NORTHWEST MINING ASSOCIATION

Mr. ISHAM. Thank you very much.

The association has asked me to speak. We represent essentially where the rubber meets the road. Our association membership is small mining companies, large mining companies, the service companies that actually do the remediation projects.

I was happy to see the Penn Mine was on there. My company actually did a large closure at the Penn Mine. I have also been doing the environmental monitoring at some of the asbestos mines in Calaveras County. I have done a lot of work in Calaveras County. I have done a lot of work in the Cache Creek watershed. I have collected water samples with some of the staff that sit behind me, and we believe, the association believes that two important aspects are necessary to accelerate these clean-ups, and that is additional Federal funding and the Good Samaritan regulations and the Good Samaritan relief that are sponsored by Lamborn in H.R. 3203.

Some of the questions you have asked other speakers I might try to touch upon. The problems that we are discussing today occurred starting about 170 years ago when the western states were mined by some of these classic mining operations, the mother lode, in association with the mother lode is the mercury mining in the coast ranges.

Unfortunately, environmental regulations to help control the unregulated practices really did not start until the 1960s. So that allowed operations like this to go on unchecked for about 120 years, and it is this 120-year period that has caused these abandoned mines that we are discussing today. The modern day mining companies, the thoughtful, sensitive mining companies of today are covered by the current environmental regulations.

The reclamation bonds that Bridgett Luther talked about following the passage of the SMARA Act of 1975 have essentially prevented the modern day mines to cause these problems. So it is a finite problem. It is a problem created from the 1840s to about the 1960s.

And there are ways to accelerate these clean-ups. The glass is not half empty. The glass is half full. Some of the states are doing some excellent progress. The State of Nevada is using fees collected by the actual operating mines, the mines that are producing not only minerals but good jobs. Those fees are used to reclaim mines in states that have active mining programs. The State of California does not have a very active hardrock program now, but the agencies within the state, such as the Office of Mine Reclamation that was represented by Bridgett Luther, who was one of our speakers, is doing an excellent program to identify the problems within the state.

The Federal funding that we were talking about, my association has strongly recommended a fund, a Federal fund, for hardrock reclamation of abandoned mines that would essentially be funded from the royalties from net profits from new claims.

We have been stating this for many years, and the Good Samaritan regulations, the liability relief is something that we have always discussed. Some of the concerns are the Clean Water Act and

the CERCLA liability, the cradle to grave liability that is hampered, many Good Samaritans in this state and in the western states, virtually every group who have looked at the reclamation of abandoned mines have agreed that Good Samaritan legislation would carry this process a long way.

Many of the mining companies who have considered reclaiming old properties tend to shy away from areas where there are legacy issues because of the cradle to grave liability caused by the Clean Water Act and CERCLA liability concerns. A couple of examples of this are Homestake Mining. Homestake Mining operated the largest gold mine in the State of California, which is the McLaughlin Mine. When the McLaughlin Mine was open, it produced gold plus many good jobs for Lake County.

An interesting aspect about the McLaughlin mine, it was also in an historic mercury mining area. In the process of opening and operating McLaughlin mine, they actually closed some old mercury features, open portals, processing areas and waste pits. Homestake is an example of a company, of other companies, other mining companies, who in the process of accessing new resources have the ability to close these old legacy features. Unfortunately, the cradle to grave concerns for this high liability have limited many of these aspects.

Another example is in the county that I live, Contra Costa County, the Mount Diablo Mercury Mine. The Mount Diablo Mercury Mine pollutes the watershed plus one of the important reservoirs. I spoke with Mitch Avalon just recently. The county would like to proceed much faster with the regulations, but they are concerned with what has happened at the Penn Mine and the legacy issues that have hit upon them.

Thank you for allowing me to speak.

[The prepared statement of Mr. Isham follows:]

Statement of Julian Isham, Northwest Mining Association

Introduction

My name is Julian Isham. I am the Geology Manager at Shaw Environmental in Concord, California. I am testifying today on behalf of the Northwest Mining Association (NWMA) on abandoned mines and mercury in California. NWMA would like to thank you for the opportunity to speak today about reclaiming abandoned mines and to offer our suggestions for policies that will accelerate the pace of this process.

NWMA is a 114-year-old nonprofit mining industry trade association headquartered in Spokane, Washington. Our 1,800 members reside in 35 states and 6 Canadian provinces and are actively involved in exploration, mining, and reclamation operations on BLM- and USFS-administered public lands in every western state. Our broad-based membership includes many small miners and exploration geologists, as well as junior and major mining companies, environmental firms, and suppliers of equipment and services to the domestic and global mining industry. More than 90 percent of our members are small businesses or work for small businesses. Many of our members have extensive knowledge of the scope of the hardrock abandoned mine lands (AML) problem and first-hand experience in remediating AML environmental impacts and abating AML safety hazards.

NWMA asked me to testify because I have extensive experience with AML and mercury issues. In my experience outside of Shaw, I have acted as a regulator of the mining industry (California State Mining & Geology Board), a consultant to both public and private owners of mined lands, and a responsible party (Jamestown Gold Mine), which has allowed me to view all sides of this issue. I was appointed to positions of regulatory responsibility by both Democrat and Republican administrations, which shows that I am politically impartial. I have been involved with mercury issues since 1972 while I was performing research at Michigan State University, which has allowed me to observe changes in science and industry. I was present for

the 1st Earth Day Rally in May 1970 at the University of Wisconsin. I have been solving environmental problems for more than 35 years.

All stakeholders in the dialogue about mining and its impact on the environment agree that cleaning up historic AMLs to eliminate safety hazards and to minimize environmental impacts is an important and necessary public policy goal. The NWMA, along with other members of the hardrock mining industry, have long supported the development of policies to encourage AML cleanup. NWMA presented testimony to this Subcommittee in 2006 and 2007. As we have stressed in previous testimony and as we will emphasize today, the key to expediting cleanup of AMLs is to provide additional funding and to enact Good Samaritan liability relief for voluntary AML cleanup efforts. I will focus my testimony on the following points:

- AML issues predate environmental laws
- AML reclamation can be accelerated
- Need for Federal funding to accelerate cleanups
- Need for Good Samaritan liability relief

120 Years of Mining Precede the Enactment of Environmental Laws

Table 1 shows a temporal history of mining and corresponding regulation in the western U.S. The left side of the table gives the history, and the right side gives the evolution of the environmental laws and regulations that affect mining. As you can see in the yellow top part of Table 1, mining in the western U.S. started almost 170 years ago in about 1840. The enactment of federal and state environmental laws, shown in green, did not start until the 1960s, which is roughly 120 years later. As is readily apparent from Table 1, environmental regulations did not apply to hardrock mines before the 1960s. This unregulated era of mining created the abandoned mines that are the subject of this hearing.

The pre-regulation mining districts shown in the yellow part of Table 1—such as the California Mother Lode Gold Rush and associated coast range mercury mining; the Comstock Lode in Nevada; Central City, Colorado; Butte, Montana; the Black Hills of South Dakota; Socorro, New Mexico; and the Klondike in Alaska—tell the story of the developing West. These and countless other mining districts helped build, settle, and protect America. Although we cherish the history and heritage they represent, we are now left to deal with a difficult legacy of the safety hazards and environmental impacts this history has left behind.

The wastes produced by mining and ore processing were usually deposited adjacent to the operating facilities or directly down-gradient in the nearest valley or low spot. Much as domestic wastes of the time were sent to the nearest moving water body. Gravity was considered the best friend of miners and other industrial waste generators of the time. Once the commercial ore was exhausted or market prices fell below the cost of extraction and processing, operators commonly abandoned sites with little, if any, thought to reclamation or reuse of the land.

While this lack of environmental protection and reclamation measures seems unacceptable when viewed through the prism of our modern-day commitment to protect the environment, it is important to understand that mines of this bygone era were no different than other industries of the time. Environmental protection simply was not on anyone's radar screen, and the long-term consequences of these mining practices were not recognized or understood.

The environmental protection and bonding requirements for modern mines guarantee that today's mines will not become tomorrow's AMLs for two reasons. First, modern mines are designed, built, operated, and closed with the end in mind by using state-of-the-art environmental safeguards that minimize the potential for environmental problems to develop. Second, federal and state regulators require adequate reclamation bond monies in the event a mine operator goes bankrupt or fails to perform the necessary reclamation. The amount of required financial assurance is based on what it would cost BLM, USFS, or a state agency to reclaim the site using third-party contractors to do the work. By law, these reclamation bonds are reviewed and adjusted on a regular basis to make sure they keep pace with inflation and on-the-ground conditions.

In 1975, the Surface Mining and Reclamation Act was passed in California requiring all mining operations and exploration projects that disturb more than one acre to provide a reclamation bond. Nationwide, a combination of reclamation bonds and environmental laws and regulations ensures that the AML problem is a finite and historical problem and not one that will grow in the future.

How Do We Accelerate the Progress of Current AML Reclamation Efforts?

Although the scope of the AML problem is large, state, and federal agencies in cooperation with communities, mining companies, and other private-sector interests are making steady progress in reclaiming AMLs. Thus, as we consider the best ways

to tackle the AML problem, it is important to start from the perspective that the glass is not half empty. Progress is being made. The focus of the AML legislative dialogue should be to create policies that accelerate the pace of AML reclamation so that more sites can be reclaimed sooner rather than later.

It is apparent that some western states have undertaken a number of successful AML reclamation efforts. States with active mining typically have the largest and most productive AML reclamation programs. States like Nevada use mining fees to fund some of their AML reclamation program. States with little or no mining typically have very poorly funded programs. California has a very progressive and effective AML program. However, there is virtually no current hardrock mining in California and the Office of Mine Reclamation has identified thousands of AML sites that need to be reclaimed. My two terms on the California State Mining and Geology Board has given me exposure to AML issues throughout the State.

Federal Funding is Needed to Accelerate AML Cleanups

NWMA and other industry interests have long supported creating a federal hardrock AML fund using revenue generated from a net royalty on new claims to support, augment, and expand existing AML programs. To build the fund more rapidly, the fund should solicit donations from individuals, corporations, associations, and foundations.

NWMA believes that states should to take the lead in administering the AML program. As our research shows, many states already have effective AML programs. We see no need to re-invent the wheel by creating a new federal AML bureaucracy. This bureaucracy would be an inefficient use of the monies collected and would reduce the amount of money available for on-the-ground remediation and reclamation. Because each hardrock AML site has unique geology, geography, terrain and climate, a uniform, one-size-fits-all program will not achieve optimal results. The state AML programs are in the best position to prioritize where federal AML funds should be spent within the state. Bridget Luther, one of the speakers today, represents California's AML program.

Good Samaritan Legislation is Critical to Facilitating Voluntary AML Reclamation

Although more funding is a key component of solving the AML problem, funding alone is not the best way to accelerate the pace of AML reclamation activities. Enacting Good Samaritan liability relief is also essential. Concerns about liability exposure stemming from the Clean Water Act (CWA), Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), and other laws are significantly chilling Good Samaritan AML cleanups.

Under these laws, any mining company, state or federal agency, individuals or other entities that begin to voluntarily remediate an abandoned mine site could incur "cradle-to-grave" liability under the CWA, CERCLA, and other environmental laws, even though they did not cause or contribute to the AML environmental problem.

Virtually every group who has looked at the AML issue has recognized and documented the legal impediments to voluntary cleanup of AMLs. Policymakers and independent researchers including the National Research Council, the Western Governors' Association, and the Center for the American West have urged Congress to eliminate these impediments.

Many public agencies emphasized the importance of Good Samaritan liability relief in enabling them to expand the scope of their AML reclamation programs. In the absence of such relief, most agencies avoid sites with contaminated water, due to concerns about CWA liability exposure.

Several Good Samaritan bills have been introduced in the past. We strongly support the H.R. 3203's approach to Good Samaritan legislation, which would accomplish many of the key Good Samaritan objectives shown in Table 2.

The combined effect of a federal AML reclamation fund and Good Samaritan liability relief is the best way to accelerate the pace of AML reclamation. Good Samaritan liability relief will facilitate public—private sector partnerships, which we know is an important step in solving to the AML problem. I have discussed Good Samaritan liability relief with several public and private entities who have conducted or would like to conduct mercury remediation efforts.

One example is Homestake Mining in Lake County, California. Homestake operated the McLaughlin Gold mine, which was the largest gold mine in California. While this mine was in operation, it yielded gold and many good jobs in Lake County. McLaughlin was operated under modern day environmental laws and has an adequate reclamation bond. This mine has been protective of surface waters or groundwater. However, it is located in a historic mercury mining district. Although,

Homestake did not operate or profit from these legacy mines, it has responsibly reclaimed several historic mercury impacted sites, including mine openings, processing sites, and waste piles.

Good Samaritan liability relief would allow other companies to help resolve the AML issue. It is not uncommon for modern day responsible mining companies to shy away from historic mining districts because of legacy issues. However, in many cases the best solution to an AML problem may be to have a responsible mining company access the remaining reserves and clean up the historic impact. Homestake is an example of a company that has cleaned up historical impact in California.

A second example is the Contra Costa Flood Control District in Contra Costa County, which is where I live. The Mount Diablo Mercury mine has polluted the Marsh Creek watershed and an important reservoir owned by the District. Contra Costa County would like to more actively participate in cleaning up this mine and the watershed. However, they are hampered by the concern over what happened to the East Bay Municipal Utility District (EBMUD) when they tried to reclaim the Penn Mine in Calaveras County. EBMUD is a "poster child" for public agencies trying to do the right thing only to be hit with a huge environmental problem that they had nothing to do with. Although Contra Costa County has received some federal funding through the Army Corps of Engineers, the clean up process has been very slow due to an overpowering liability concern. Counties like Contra Costa need Good Samaritan relief.

In addition to living in a county with AML issues, I am part of the Lac Courte Oreilles band of Ojibwa Indians Indian tribe that has suffered due to mining legacy sites. I have also been in contact with my Tribe. The tribal has legacy mining issues on the reservation and very low employment. Good Samaritan liability relief could prompt mine reclamation, provide good jobs, and restore my tribe's lands.

Conclusion

The NWMA and I very much appreciate this opportunity to testify today and put AMLs into the proper historical perspective, to explain why AMLs are a finite problem and how today's environmental regulations and bonding requirements prevent the creation of new AMLs, to describe some of the progress that is being made in reclaiming AMLs, and to present our recommendations for moving forward. We believe the AML problem is manageable and solvable. We understand the problems that AMLs are creating, and we have the engineering, environmental protection, and reclamation techniques needed to solve these problems. But our AML tool kit is missing two essential tools—adequate funding and Good Samaritan liability relief for voluntary AML cleanup projects.

So we conclude by asking for your help. Please add a federal AML fund and Good Samaritan liability relief to the AML tool kit. These two policies offer the best opportunity to accelerate the progress that is being made in abating AML safety hazards and remediating AML environmental problems. The NWMA stands ready to work with you and to help in any way we can to achieve what we all agree is an important goal—expediting AML reclamation.

I thank you again for this opportunity to testify on this important issue and will be happy to answer any questions.

TABLE 1 Partial Chronology of U.S. Mining versus Enactment Dates for Environmental Laws and Regulations Affecting Hardrock Mining		
Decade	Commencement of Selected Western Mining Activities	Enactment Dates for State & Federal Environmental Laws and Regulations
1840s	CA: Mother Lode—gold WY: Atlantic City—gold NW: Ortiz Mine - gold	
1850s	CO: Cherry Creek, Clear Creek, — gold NV: Comstock Lode - silver & gold WA: Okanogan District — gold	
1860s	CO: Front Range — gold & silver ID: Boise Basin — gold	
1870s	SD: Black Hills - gold CO: Leadville, San Juan Mountains — silver, gold & base metals AZ: - Superior, Morenci - copper NM: Silver City — silver UT: Park City — gold, silver, lead	
1880s	CO: Aspen — silver, lead, zinc MT: Butte — copper ID: Coeur d'Alene District — silver NM: Socorro— silver, copper	
1890s	CO: Cripple Creek — gold WA: Republic District — gold AK: Klondike, Nome — gold WY: Kirwin — copper, silver	
1900s	UT: Bingham Canyon — copper NV: Round Mtn., Tonopah, Goldfields, Ely: — gold, silver copper	
1910s	CO: Climax - molybdenum CO, UT - AZ vanadium, radium	
1930s	NM: Pecos — silver, zinc, lead ID: Stibnite — antimony, tungsten	
1940s	CO, UT, AZ, NM: CO Plateau - uranium	
1950s	NM: Grants — uranium WY Sandstones - uranium NV: Yerington — copper OR: Riddle - nickel	
1960s	NV: Carlin — gold	•National Historic Preservation Act •Air Quality Act •National Environmental Policy Act
1970s	CO: Henderson - molybdenum NV: Round Mountain — gold	•Occupational Safety and Health Act •Clean Air Act •CA Environmental Quality Act •MT Metal Mine Reclamation Act •MT Environmental Policy Act •Federal Water Pollution Control Act/Clean Water Act •Endangered Species Act •U.S. Forest Service 36 CFR 228A regulations •CA Surface Mined Land Reclamation Act •Federal Land Policy and Management Act

TABLE 1 Partial Chronology of U.S. Mining versus Enactment Dates for Environmental Laws and Regulations Affecting Hardrock Mining		
Decade	Commencement of Selected Western Mining Activities	Enactment Dates for State & Federal Environmental Laws and Regulations
1970s (cont.)		<ul style="list-style-type: none"> •Resource Conservation and Recovery Act •Clean Water Act Amendments •CO Mined Land Reclamation Act •Mine Safety and Health Act •Surface Mining Control and Reclamation Act •WI •Metallic Mining Reclamation Act •ID Surface Mining Act •Archaeological Resources Protection Act
1980s	NV: Jerritt Canyon, Sleeper, Gold Quarry, Goldstrike, Chimney Creek – gold ID: Thompson Creek – molybdenum CA: McLaughlin – gold MT: Stillwater – platinum/palladium	<ul style="list-style-type: none"> •Comprehensive Environmental Response, •Compensation, and Liability Act/Superfund •BLM 43 CFR 3809 Regulations •SD Mined Land Reclamation Act •Hazardous and Solid Waste Amendments •Superfund Amendments Reauthorization Act •UT Mined Land Reclamation Act •NV Water Pollution Control Law •NV Mined Land Reclamation Act
1990s	AK: Ft. Knox – gold NV: Pipeline, Lone Tree – gold	<ul style="list-style-type: none"> •Clean Air Act Amendments •NM Mining Act
2000s	NV: Marigold expansion, NV – gold NV: Phoenix Project – gold NM: Copper Mtn. South expansion – copper AZ: Carlota, Safford – copper	<ul style="list-style-type: none"> •BLM updates 43 C.F.R. 3809 regulations to include mandatory bonding requirements for all surface-disturbing activities •USFS updates bonding requirements •NV expands and updates bonding requirements •MT updates bonding requirements

Table 2 Key Components of Good Samaritan Legislation	
<ul style="list-style-type: none"> • Provide both Clean Water Act and CERCLA liability protection. • Create Good Samaritan permits that provide unambiguous and complete legal liability protection against specified federal, state, and local environmental laws for AML cleanup activities that are performed according to the work plan authorized in the permit. • Stimulate greater private-sector involvement in direct cleanup efforts and in making financial and in-kind contributions towards agency-led cleanup projects. • Allow Good Samaritans to maximize the amount of money spent on the ground by streamlining the permitting process and eliminating the requirement to conduct a Potentially Responsible Party (PRP) search at sites that will be reclaimed using private funding. It should not matter whether there might be a PRP. The goal should be environmental improvement, not finding someone to blame. • Allow entities – including mining companies – that have no previous connection to a site and that did not create environmental problems at an AML to qualify as Good Samaritans. • Eliminate liability exposure associated with performing the site work necessary to determine the scope of the AML environmental problems and to develop appropriate remediation plans. • Make federal land management agencies and State AML Programs the lead agency(s) in reviewing and approving Good Samaritan permit applications, with assistance from State environmental permitting authorities for those states where EPA has delegated Clean Water Act authority. • Encourage meaningful public input and collaboration in the permitting process and discourage the misuse of the public involvement process as a vehicle for delaying project cleanups. • The environmental requirements for a Good Samaritan project should be wrapped into a single permit. The permit should be approved only if the project is technically sound and promises overall improvement to the environment and/or securing of safety hazards. • Allow incremental cleanups using technically sound remediation measures that will result in an improvement to the environment – even if they will not result in the complete cleanup of all contaminants at an abandoned mine land site or the attainment of all otherwise applicable environmental standards, such as stringent water quality standards. • Give the permitting authority(ies) discretion to make site-specific adjustments to environmental requirements and standards under state and federal environmental laws that could otherwise thwart Good Samaritan remedial actions. • Recognize that reprocessing is a viable site environmental remediation technique that removes metal contaminants from historic mine wastes and produces a more chemically stable and benign waste product that can then be stored in a properly engineered facility. 	

Mr. COSTA. All right. Thank you. I wanted to allow you to complete your thought, but we try to keep everyone within the same time frame.

Our next witness, actually our last witness for this panel, but we are very pleased that she is here, Ms. Elizabeth Martin with the Sierra Fund, who has worked over the years, and she reminded me we had met a million years ago, and I said it has not been that long since I was here. It just seems like it.

**STATEMENT OF ELIZABETH MARTIN,
CHIEF EXECUTIVE OFFICER, THE SIERRA FUND**

Ms. MARTIN. Maybe it was 25.

Thank you for inviting me to speak today. I represent the Sierra Fund, a community foundation in the Sierra which is working to increase investment in the people and places of the Sierra. For the last several years we have invested in helping to highlight and address what we call mining's toxic legacy.

Much of what I am going to speak about today is in this book. I have brought two copies for each member of the Committee to look at.

As you know, about 160 years ago they found gold in those there hills; previous to that for almost 200 years had been mining mercury on the coast, and you can see this is a map that shows the mercury mines on the coast, the gold mines in the Sierra, and the Klamath-Trinity. As you can see here, almost all of the watershed for the developed water system for the State of California, about 66 percent of the water flows from these areas, which are heavily contaminated from the 47,000 abandoned mines that are in the state, the majority of those on Federal land, the majority of them gold mines, and the majority of them affecting our drinking water.

When the miners came out, they turned over every rock. They pulled up every tree. They used these water cannons. This is a picture of hydraulic mining. You can see how tiny the people are. A huge volume of sediment was wiped out in the county that I serve. I am from Nevada County, where I am a former county supervisor and planning commissioner.

Our gold country towns grew on top of these mines. Nevada County has literally hundreds of miles of abandoned tunnels under the ground. In Grass Valley alone, my house is on top of 362 miles of contaminated tunnel water.

The impact of the gold rush were multitudinous. The most important, most significant, and lasting impact has been the impact on the people of the area. Nearly 99.5 percent of the people that were living in Nevada County at the time the gold rush hit, the Maidu Tribe, were either killed or died of disease.

I have worked closely and the Sierra Fund is proud that one of our top partners is the Maidu Tribe from Nevada County. Chairman Don Ryberg is sitting in the audience behind me and has accompanied me here today as one of the leaders of this effort.

Of course, we live on top of a brownfield. There is arsenic, lead, chromium, asbestos and mercury. This picture shows what people have been talking about, how mercury contaminates the entire food web starting with the sulphur reducing bacteria, moving up through the system, bioaccumulating into the fish affecting not

only the humans that eat the fish, but also the predators, the birds and the other mammals. Some of this has not yet been well studied.

But we do know that almost every water body in our region is heavily contaminated with mercury. Again, none of this is naturally occurring. It is all left over from the mining era.

We have enormous environmental impacts, abandoned mines, mine tailings. It was very common practice to take the gravels and sands that were left over after being crushed and treated with either chlorine, mercury or other sorts of methods. It was very common to take the crushed rock and use it to build gravel roads, schools, hospitals. We do not even know where much of this material is today.

The Sierra Fund has worked with a large collaboration, which I will list at the end, to try to create solutions to address this problem. Our first and most important recommendation to this body is that we believe we need to establish a mining toxins working group.

Many years ago you might remember the Sierra Nevada Ecosystem Project known as SNEP that was coordinated by the University of California, brought Federal and state scientists together to look at our Sierra. We believe a similar working group is needed. It needs to include both state and Federal agencies that do regulation, as well as science, university researchers.

In fact, California State University at Chico has been our partner from the very first moment we began working on this. There needs to be involvement of local community and tribal people as well, multi-disciplinary, including health professionals.

We agree with everyone you have heard from today there is a need for strategic research. We do not need to throw billions of dollars at the research. What we have identified, what we think some of the top priorities for research are, we are very interested in exploring methods for removing the methylmercury from our watershed.

We are not at parts per billion where I am at. We have liquid mercury in our streams you can remove with a turkey baster. I just came back from the EPA Brownfields Conference. Those guys there had never seen this problem or heard of it before. It is quite unique, and it is a very important problem.

We also want to know more about the health impacts of this exposure on our people.

We are interested in seeing the Federal government help support medical education and outreach in our area. Many people do not know that the water is contaminated, and they do not know that the fish is not safe to eat.

Finally, we have some recommendations for Federal programs. We also call for an inventory assessment and prioritization of all the abandoned mine lands. We know that the Federal water projects at Shasta and others, the Central Valley Project, are contaminated with mercury, and we want to see those assessed to figure out how we can operate those reservoirs and wetlands to reduce mercury methylation.

We are supporting the reforms to 1872 Mining Act that have been defined here today, Mr. Rahall's bill as well as Mr. Lamborn's,

and finally, we would like to see full funding of the CALFED mercury strategy, Phase 2.

Here is a picture of our partners. As you can see, we had Federal and state agency people, and lots of people from the community, tribal people, scientists and, of course, California State University researchers.

Thank you.

[The prepared statement of Ms. Martin follows:]

**Statement of Elizabeth “Izzy” Martin, Chief Executive Officer,
The Sierra Fund**

My name is Elizabeth “Izzy” Martin, Chief Executive Officer of The Sierra Fund. I am honored to be asked to participate in your Committee’s field oversight hearing about the topic of “Abandoned Mines and Mercury in California.” The Sierra Fund’s Mining’s Toxic Legacy Initiative has developed a strategic approach to identifying the problems associated with legacy mining in California. We have worked with a broad range of stakeholders to build consensus around the policy directions needed to assess and remediate the impacts of the “gold rush” on the Sierra Nevada, in the headwaters of California.

Summary

It is time to address the ongoing impacts of legacy mining in California. We urge your consideration of the following recommendations:

1. Increase Collaboration

- Support development of a Mining Toxins Working group that supports collaboration between tribal, federal, state and local governments and community members in addressing legacy mining issues.

2. Fund Strategic Research

- Support development of pilot research projects that explore methods for reducing methylmercury in the Sierra Nevada watershed.
- Support research into health impacts on Sierra residents of exposure to mining toxins.

3. Outreach and Education on Human Health

- Support regional medical education and outreach on the impacts of legacy mining toxins on public health, including mercury.

4. Direct and Fund Federal Programs

- Inventory, assess, and prioritize for remediation abandoned mines on all lands owned or managed by the federal government.
- Assess water projects, wetlands, reservoirs and other federal projects and put programs into place that ensure best management practices and appropriate technologies to minimize mercury methylation.
- Reform the Federal 1872 Mining Act needs to require meaningful mitigation of cultural and environmental impacts from historic mining, and reform “Good Samaritan” laws to provide incentives for cleanup.
- Support implementation of Phase 2 of the CALFED Mercury Strategy.

The Sierra Fund’s Mining’s Initiative

The Sierra Fund’s Mining’s Toxic Legacy Initiative is rooted in our mission “to increase and organize public and private investment in the people and places of the Sierra Nevada.” Launched in 2006, this Initiative focuses on the impacts of historical gold mining activities. Working with partners from state, federal, and tribal governments as well as from the academic, health, and environmental communities, The Sierra Fund’s report “Mining’s Toxic Legacy,” published in 2008, is the first comprehensive evaluation of what happened during the Gold Rush, including: the cultural, health, and environmental impacts of this era; the obstacles in the way of addressing these impacts; and a strategic plan for taking action on the longest neglected environmental problem in the Golden State of California.

Mining in the Sierra Nevada

The Gold Rush changed California demographics as indigenous people were displaced and mining towns appeared and disappeared across the Sierra Nevada range. A less recognized consequence of the Gold Rush was the massive environmental destruction that took place, which plagues the Sierra to this day. Ever since

gold was discovered in the Sierra Nevada in 1848, mining activities to extract gold, copper, asbestos, lead and other minerals from California's rich deposits have had an impact on the state's human and environmental health.

While it has slowed down dramatically since the days of the Gold Rush, mining has left a lasting legacy of toxic contamination that threatens the health of humans and wildlife throughout California: in the rural areas of the Sierra where gold mining occurred; in the coastal mountain ranges where mercury was mined; and in downstream communities whose water comes from the rivers and streams of the mined region. Rebecca Solnit illustrates the magnitude of this impact in her article "Winged Mercury and the Golden Calf" (Orion Magazine, September 2006)

The California Gold Rush clawed out of the foothills of the Sierra Nevada considerable gold—93 tons or 2.7 million troy ounces in the peak year of 1853 alone... In the course of doing so, everything in the region and much downstream was ravaged. Wildlife was decimated. Trees were cut down to burn for domestic and industrial purposes and to build the huge mining infrastructure that was firmly in place by the 1870s. ...The earth was dug into desolation and later hosed out so that some landscapes—notably the Malakoff Diggins and San Juan Ridge near Nevada City—are still erosive badlands of mostly bare earth.

But most of all, the streams and rivers were devastated. The myriad waterways of the Sierra Nevada were turned into so much plumbing, to be detoured, dammed, redirected into sluices high above the landscape, filled with debris and toxins. Water as an industrial agent was paramount, and water as a source of life for fish, riparian creatures, downstream drinkers, farmers, and future generations was ignored.

Environmental Impacts: The Sierra Nevada is the headwaters for more than 60% of the developed drinking water for the State of California. Using placer, hard rock, and hydraulic mining techniques, millions of ounces of gold were extracted from the Sierra Nevada "Mother Lode" during the 19th century. Mercury, arsenic, lead, acid mine drainage, and other kinds of contamination left behind from mining threaten the water, plants, and people of the entire state.

According to the most recent state estimate, there are 47,000 abandoned mines in California. Abandoned mines have left behind toxic pits and acid mine drainage. Naturally occurring minerals including arsenic, lead, chromium and asbestos were disturbed, crushed, and distributed throughout the region as gravel for road construction. Much of the land impacted by these activities is now publicly owned by the federal government.

Mining practices used substantial amounts of mercury, millions of gallons of which still pollute the Sierra landscape. Mercury was mined in the coast range, and brought to the Sierra Nevada in the form of "quicksilver" specifically for use in gold mining. Gold was extracted through a process that mixed elemental mercury with mined gravel, and mercury has since been found in nearly every stream in Sierra gold country. Mercury also occurs in mill tailings along with other heavy metals.

This mercury is routinely reactivated into the water through development, resource extraction and human activity, and reaches dangerously high concentrations in fish caught in the San Francisco Bay-Delta region and in low-elevation Sierra reservoirs and streams (C.N. Alpers et al, "Mercury Contamination from Historical Gold Mining in California," USGS Fact Sheet 2005-3014, April 2005.) Although the presence of mercury in the Bay and Delta is a significant issue, the impact of exposure on Sierra watersheds is currently unknown, for lack of studies. This year, the Lakes Report from the State Water Resources Control Board Surface Water Ambient Monitoring Program, published May 2009, found mercury to be the most commonly found contaminant of fish in the state's lakes.

Health impact: Since most towns in the Sierra Nevada were founded around productive mine workings, downtown areas, parks, and school sites contain mine waste. Common mining toxins such as mercury, arsenic, lead and asbestos are known to cause severe human health problems with continued exposure.

Mercury is a neurotoxin that accumulates over time in the flesh of fish and the humans and wildlife that eat them. Mercury contamination of fish has caused the State to issue warnings about fish consumption in Sierra water bodies that have been tested. There have been few studies of the impact of eating mercury-contaminated fish from this region, but recent research suggests the presence of observable health impacts in those who eat a lot of fish.

Arsenic, lead and asbestos, naturally occurring in toxic materials crushed during the Gold Rush and left in massive tailings piles, have been found in dangerously high levels throughout the region and can be inhaled as dust particles when working or recreating in these areas. Exposure to arsenic, asbestos and lead in dust from crushed mine waste is a significant and largely unknown hazard for people living in the Sierra. Inhalation of dust is the primary way residents are exposed to toxins

in the mine waste. Sensitive populations include people who work and recreate outdoors, especially young children.

Despite the extensive evidence of potential exposure to these many toxins, human health studies have never been conducted in the Sierra Nevada to learn if there are health impacts resulting from this exposure. A survey of thirteen health clinics throughout the Gold Country documented that none of these clinics currently collect environmental health histories from their patients or provide information about mercury contamination of fish as part of their maternal health program, even though many serve areas where there are recently adopted advisories to limit fish consumption.

Cultural Impact: The Gold Rush devastated the Native Peoples in the region. Forced relocation, disease, and outright murder shattered their villages and tribes. Toxic materials that remain from this era sever Native Californians from their traditional ceremonial activities such as fishing and collection of ceremonial plants, perpetuating the devastation begun over a century ago.

Obstacles to Solving the Problems

A patchwork of government agencies and regulations on the local, state, and federal levels relate to mining toxin problems on both public and private property.

The government is the largest landowner in the Sierra Nevada, and many of the lands affected are owned by public agencies, however, the state and federal governments have not established a clear and consistent plan for assessing and addressing the many problems associated with the impact of gold mining on public land. Public land managers such as regional Forest Service offices and BLM field offices are faced with costly environmental cleanup actions on severely limited budgets. Meanwhile, there are no incentives for voluntary private lands cleanup, and regulations regarding cleanup are not always consistent or understandable.

There are some specific challenges that need to be better understood:

- Mercury contamination behind federally owned on-stream impoundments in mining regions, such as the Shasta Dam (Bureau of Reclamation, Central Valley Project) and Englebright Dam (Army Corps of Engineers), requires thoughtfully designed reservoir management practices to decrease methylation, mercury mobility, and reactivity. Accumulation of sediment contaminated with mercury behind some reservoirs requires dredging out this excess material to maintain water storage capacity. Dangers associated with this procedure include re-suspending and re-mobilizing toxins, and increasing mercury methylation.
- Flooding wetlands with mercury contaminated water can have a dramatic impact on mercury methylation. The design, construction, and management of wetlands to reduce methylation needs to be studied.
- Mine tailings and materials left over from dredging are not tested for arsenic or other heavy metals before being sold for aggregate. Though many of the materials dredged from reservoirs or left over from mining are known to be contaminated, the use of local aggregate fill is not effectively regulated for arsenic, mercury and other contaminants.

Recommendations for Action

A strategic alignment among indigenous tribes, scientists, local landowners, businesses, government representatives, philanthropic, health and conservation organizations, and the community in the Sierra Nevada, based on mutual need and desire to find solutions, is the key to solving this vast problem. The Sierra Fund is calling for a new, strategic investment in research, education, and cleanup. State, federal, business and private philanthropic funding must be directed to the Sierra Nevada mining problem over the next several decades.

The Initiative's Gold Ribbon Panel of tribal leaders, watershed scientists, medical professionals, and community members has identified four activities to begin to address mining toxin issues (see list, attached). Effective implementation of these recommendations requires new institutional relationships and funding. Our Gold Ribbon Panel recommended the following objectives:

1. Increase Collaboration

Improving collaboration among key governmental, academic, and medical institutions to stimulate the implementation of this Initiative is crucial.

Action Recommended: Support formation of a Mining Toxins Working Group including researchers: at the University of California and California State University; state and federal government land managers, regulators and scientists; tribal and local government; community leaders and others to ensure effective information exchange on these issues.

2. Fund Strategic Research: More information is needed on a number of issues in order to inform policy and develop best practices.

Actions Recommended: The federal government should develop grant programs to fund scientific inquiry by government, university and non-profit organizations, into the following topics:

1. To identify the most effective methods for assessing and cleaning up the pollution distributed throughout the region, including better deployment of existing technologies and development of new technologies and best management practices. This should include development of pilot research projects that explore methods for reducing methylmercury in the Sierra Nevada watershed, such as the project proposed by the Nevada Irrigation District to test new technology for removal of legacy “quicksilver” mercury from on-stream impoundments in the region. Pilot projects that include careful monitoring of wetlands restoration are needed to learn about what works on the ground.
2. To study exposure and the human health impacts resulting from exposure to mining toxins and naturally occurring toxic minerals disturbed during the Gold Rush. There needs to be a much better understanding of what, if any, epidemiological impacts this exposure is having on the residents of the Gold Country. Community monitoring of mining toxins using high-quality scientific tools needs to be supported. The public needs access to all testing data in order to effectively participate in decisions about mine remediation.

3. Improve Outreach and Education on Human Health

Awareness of the potential human health hazards associated with mining toxins needs to be increased dramatically.

Action Recommended: The federal government needs to improve regional medical education and outreach on the impacts of legacy mining toxins on public health, including mercury.

4. Reform, Enforce and Fund Government Programs

The complexity of the mining toxin problem requires evaluation of scientific information and policy solutions among a number of agencies. The federal government should assess their publicly owned land for mining toxins and develop plans to clean up or contain these wastes from contaminating the land and water of the state. Additional funding is critically needed to clean up legacy mining contamination.

Solutions to the obstacles to cleanup of private lands must be developed and funding mechanisms for these identified. Legal mechanisms need to be explored to look for ways for downstream urban users to help pay for cleanup upstream in the Gold Country.

Actions Recommended: The following steps need to begin immediately:

1. Inventory, assess, and prioritize for remediation abandoned mines on all federally owned assets including those managed by the U.S. Forest Service and Bureau of Land management. Funding for remediation in the area needs to be increased. Hazardous materials recovered from cleanups need to be carefully disposed. This process needs to work closely with stakeholders to ensure cultural sensitivity and community engagement.
2. Assess water projects, wetlands, reservoirs and other projects of the Bureau of Reclamation, Army Corps of Engineers and other federal agencies, and put programs in place that ensure best management practices and appropriate technologies that address mercury methylation concerns.
3. The Federal 1872 Mining Act needs to be reformed to require meaningful mitigation of cultural and environmental impacts from historic mining. Good Samaritan laws must be reformed to provide incentives for private land cleanup.
4. Support implementation of Phase 2 of the CALFED Mercury Strategy. The CALFED Mercury Strategy Phase I provided useful information, but the strategy has yet to be fully implemented. Follow-up is needed, including convening another panel of experts to revisit the Strategy, and to take a look at scientific and policy lessons learned.

In Conclusion

California gold helped maintain the Union in the Civil War, sustained the nation during the banking “panics” of the late 19th century, and helped fight World Wars I and II. The Gold Rush brought immigrants to this country from all over the world with their strengths and dreams, and the attendant gifts of a culturally rich and diverse state.

This enormous contribution of wealth to the nation should be recognized, as well as the costs that this intensive extraction left in its wake. The nation owes the gold

fields of California, the people displaced from them, and the people who live on the pollution left behind its support in cleaning up mining's toxic legacy.

Thank you for this opportunity to tell you about our concerns about mining's toxic legacy in California.

Attachments:

1. Disclosure Requirement
2. TSF Mining Project Advisors
3. Abandoned Mines in California (Map)
4. *Mining's Toxics Legacy* (Executive Summary Report) **full report can be downloaded from our Website: www.sierrafund.org/campaigns/mining**

TSF Mining Project Advisors

Gold Ribbon Panel: Leaders on this panel include doctors, tribal representatives, environmental scientists, and local leaders who have studied these problems and stand behind this report's findings and recommendations.

Malaika Bishop The Sierra Fund
 Dr. Dave Brown CSU, Chico, Dept. of Geological & Environmental Sciences
 Dr. Kenneth Cutler Nevada County First 5 Commission
 Becky Damazo, RN CSU, Chico, School of Nursing
 Don Flint Cranmer Analytical Lab
 Dr. Hank Foley Plumas County Health Officer
 Roberto Garcia United Native Nations
 Alison Harvey Friends of the North Fork American River
 Dr. Roger Hicks Yubadocs Urgent Care
 Joanne Hild Friends of Deer Creek
 John Lane Chico Environmental Science and Planning, LLC
 Kyle Leach Holdrege & Kull, Consulting Engineers and Geologists
 Julie Leimbach Sierra Nevada Alliance & Foothills Water Network
 Dr. Bill Murphy CSU, Chico, Dept. of Geological & Environmental Sciences
 Sherri Norris California Indian Environmental Alliance
 Michael Ben Ortiz Calling Back the Salmon Committee
 Ren Reynolds Enterprise Rancheria
 Don Ryberg Chair, Tsi-Akim Maidu Tribe

TSF Agency Science and Policy Advisors: The Government Science and Policy Advisors who assisted in this effort provided the authors with a more thorough understanding of the complex issues and problems associated with historic mining in the Sierra, but are not responsible for the report's conclusions.

Dr. Charles Alpers US Geological Survey
 Diane Colborn CA State Assembly Water, Parks & Wildlife Committee
 Rick Humphreys State Water Resources Control Board
 David Lawler US Bureau of Land Management
 Caroll Mortensen CA State Assembly Environmental Safety and Toxic
 Substances Committee
 Cy Oggins CA Dept of Toxics Substance Control
 Kathryn Tobias CA Dept. of State Parks and Recreation
 Alyce Ujihara CA Dept. of Public Health
 Rick Weaver USDA Forest Service

Mr. COSTA. Thank you, Ms. Martin, and for your succinct testimony, a little beyond the time, but it was all worth it, and as a constituent of Mr. McClintock's, I want to make sure you get the appropriate time.

Ms. MARTIN. Thank you.

Mr. COSTA. I am going to try to quickly go through my questions here and see if we can get it all on my first round here.

Do you think all four of you, based upon what you think has been cleaned up, that there are economic benefits to cleaning these up besides the health and safety issues?

You both spoke of a couple of examples of clean-up. I do not know how much that generated in the economy for that clean-up.

Mr. SCHNEIDER. Well, it is certainly going to generate a lot of jobs, and one of the interesting things about clean-up is there is a limit on the number of companies that are able to do this at this point in time. If we have a consistent, ongoing source of funding, we will certainly develop more people to be able to accomplish the work in a more timely manner.

Mr. COSTA. Mr. Isham?

Mr. ISHAM. I have been asked by a large major mining company to review some of the major mines in the Mother Lode District to look for high sulphide tails. High sulphide tails produce drainage here, but high sulphide tails at processing plants in Nevada are considered a fuel. So what is a waste product in California could actually be a fuel.

Mr. COSTA. So you think it could generate jobs and be beneficial to the economy.

Mr. ISHAM. Yes, yes. Actually I would like Mr. Karl Burke to maybe touch on that a little bit.

Mr. COSTA. Quickly identify yourself and answer the question.

Mr. BURKE. Certainly. I am Karl Burke. I am Closure Manager for Homestake Mining Corporation at McLaughlin Mine, and I have worked on the program with J.C. to look at sources of sulphide or sulphur materials that we could export to Nevada and use in our autoclaves because the oxidation of those sulphides or native sulphur actually generates heat, which lowers our electrical needs and produces gold.

We always look at situations where we can manage a source of materials such that we can take on some benefit from either gold or silver that is associated with the sulphides.

Another benefit that we are talking about in this situation is that the Gold Strike Mine, which would be the area that I am most familiar with in our parent company, has state-of-the-art mercury removal equipment so that you are not only taking care of the sulphides that generate acid. You are taking care of the mercury that is associated with the ore, and the company could be providing a profit and more employment to its staff.

Mr. COSTA. Very good. Thank you.

Mr. Schneider, when you showed us that map earlier that showed basically the Sacramento Valley drainage area, I know that was your focus, but do you think the Coast Range that also has a number of these issues gets the same amount of attention or funding for mercury or mine clean-up?

Mr. SCHNEIDER. Well, the easy answer is no. I do not think that is the case, and I think a lot of the iconic areas tend to attract the funding, and I do not want to impinge on—

Mr. COSTA. What do you mean by “iconic areas”?

Mr. SCHNEIDER. Well the Sierra Nevada is pretty important. I mean, I spent a lot of time there, and we need to deal with that, and there are a lot of people living there, but the source of 50 percent of the mercury that is going into the Sacramento system actively now comes out of the Cache Creek drainage, and that just has to have a very high priority.

And as I say, it is not just the mines. It is the sediment in there. There is the settling basin to deal with. It is how we study and implement techniques to stop or slow the methylation process.

Mr. COSTA. Supervisor Wilensky, I saw you nodding your head when Ms. Martin was talking about the lack of knowledge among folks who actually are either hobby fishers or they depend upon fishing to supplement their regular diet. Would you concur with that?

Mr. WILENSKY. Absolutely.

Mr. COSTA. Hit the mic, please. For the record we want to hear you.

Mr. WILENSKY. Absolutely. I think there are all kinds of ways we could.

Mr. COSTA. So you have Native Americans in your constituency there and others that are fishing, and you are saying that the majority of the population does not know about the potential contamination?

Mr. WILENSKY. I would say more than 90 percent are not even aware of this as an issue. There is very little awareness in my district, and the greater the poverty, the less awareness there is and the more need there is for subsistence fishing.

Ms. MARTIN. I would like to point out that we hired Chico State School of Nursing to survey clinics in the Sierra. We found that not one of them was providing any information to their patients about limiting intake of mercury contaminated fish, including wild local fish which we know is contaminated. Not one of them included information in their maternal education program.

So I would say there is a huge ignorance out there. I would also just like to add to your first question to Mr. Schneider about whether there is enough money available on either side of the valley. I would say no.

Mr. COSTA. No, I assume that is the case.

Ms. MARTIN. We are not getting any money either. Most of the focus has been really on the Delta and not on the sources.

Mr. COSTA. Also, I mean, regardless of what happens with legislation, I am intrigued by the notion of two efforts, one, the volunteer effort that Mr. Wilensky talked about in his area and also the Good Samaritan, I think, efforts because, frankly, within either Federal law or state law, I think we need to increase our efforts to use that as a tool.

Let me end up with you, and with the permission of my colleague here I will make this my final questioning. Ms. Martin, you talked about the Working Group on Mining Toxins. I guess, to give us a little more meat on the bone, what would such a group do? Where would you get your funding source? Who would be on it? How would it work in conjunction with the Federal and State agencies and local agencies?

Ms. MARTIN. That is a great question. We just held a three-day meeting bringing all of our partners together to talk about exactly how we would do that.

The first piece is that, of course, any Federal agency folks that are going to be attending these meetings need to have it be part of their portfolio and cover it as part of their time.

We think the University of California's Federal funding could be enhanced, as well as the Cal State system, which have been very, very helpful to us. What we see as the primary product is collaboration. At one of our first sort of informal meetings, we identified the problem with arsenic bioavailability, and that has been pursued by the State of California through EPA funding to understand how the arsenic affects us, especially those of us that are living on the tailings piles.

We have identified the need for mercury research. In fact much of what you have been talking about here today has been people who have been part of our informal working group, including Mr. Humphreys, Dr. Alpers, Cy Oggins from Department of Conservation. But they have been doing this informally, and what I think would be helpful would be to have both the State and Federal government have an agreement on how to fund these two things, have it come out of both pockets, and make sure that the people who live on the tailings piles, including local government and the tribes, are involved in the working group and have an equal playing field.

We believe there are funding sources.

Mr. COSTA. So that would be the basis of the effort there.

Ms. MARTIN. Yes. This is some of it, and since this list was made, we have been working very closely with USDA, Forest Service, BLM, USGS. We have worked very closely with all of the State agencies and now also the Environmental Protection Agency.

Mr. COSTA. OK. I'm going beyond my time. I do not want to test my colleague's patience here, but just very quickly, a short response, and Mr. Isham, you might both want to comment. What is the appropriate role for the mining industry in solving these problems today?

Ms. MARTIN. Another new partner for us has been Tygart Industries who joined us at our working group meeting, and we have also worked with miners in our community. I think that they are critical. Miners know more about removing mercury from sediments than anybody else on the planet. They understand the problem. I think they are fundamental to a solution.

Mr. COSTA. Mr. Isham, you would concur?

Mr. ISHAM. Mining has the technical expertise to actually clean up the legacy issues of miners in the past. I believe they are crucial, and my association supports my opinion.

Mr. COSTA. Good. Well, I have exceeded my time, and Mr. McClintock has been very kind, and I will recognize him for his five minutes plus.

Mr. MCCLINTOCK. Well, as I said, I think I owed you a couple of minutes.

Mr. COSTA. And then at the end of his questioning we will conclude the hearing at that time.

Mr. MCCLINTOCK. Mr. Isham, if we eliminated all of the legacy issues, how much commercial interest would there be in reopening some of these mines, the gold mines?

Mr. ISHAM. Like I believe you once said, there is a lot more gold in them there hills. The State of California is the golden state. The Mother Lode runs over 100 miles long. It is a precious commodity. It is what the caused the State of California to be——

Mr. MCCLINTOCK. So quite a bit then is what you are saying.

Mr. ISHAM. There is a fair amount of hardrock activity.

Mr. MCCLINTOCK. My introduction to this was at the Idaho-Maryland Mine which was closed many years ago. There is a company that now wants to reopen it. Among that company's contributions to the region, in addition to 600 high paying jobs, is a patented process by which they are able to convert the mine tailings into ceramic tiles on a very commercially viable scale.

I assume that that means taking a lot of the residual mercury in those tailings and sequestering them now into tiles that would be harmless. So the question I am trying to zero in on is how much of that remediation would be occurring if we removed the legacy issue and all of the burdens associated with it?

Mr. ISHAM. Actually a fair amount. I am glad you mentioned the ceramics. At a lot of these old mine sites there are what they call the waste rock piles. It is not really waste rock. It is basically crushed rock that did not contain ore. Out of that crushed rock is a very good source of aggregate.

One of the problems that the State of California has is a lack of aggregate for its final recovery. Once the State of California becomes healthy again, they are going to need roads. They are going to need bridges. They are going to need concrete. They are going to need aggregate.

There is a lot of aggregate sitting at a lot of these sites in what is called the waste dumps. So there are the actual ore issues, and then there are the waste products that like the ceramics at the Idaho-Maryland are another valuable resource that the State of California needs.

Mr. MCCLINTOCK. Well, there is an old saying. If you beat a dog you will not know where it is, but you will know where it will not be, and it seems to me the same thing applies. One of the concerns I have is piling all of these additional burdens on companies that are trying to reopen these mines. You end up assuring they will not reopen them, and therefore, they will not be there to remediate the contamination.

That is a concern that I have with H.R. 699, its predecessor. It seems to me that we are adding burdens to companies that we really ought to be encouraging to come in and through the natural process of commercializing these or reopening these mines, to clear away a lot of the contamination.

What are your thoughts on that?

Mr. ISHAM. Many of the members of my association look at some of these older sites in California, and they would like to come in to say they are very concerned with the liability issues of these legacy components. There are abundant resources in the State of California. They would create some very good jobs. They would clean up many of the problems within the state. The Lamborn bill,

H.R. 3203, would be a great help in allowing some of these activities to take place and start.

Mr. McCLINTOCK. But again, the testimony we had earlier was that at least the way the EPA is currently looking at it, if there is a profit motive involved, they are not interested in granting that Good Samaritan relief. That seems to me counterproductive.

Mr. ISHAM. It does take a little money to get things going, and you have to expect industry to make some money to produce these products and create jobs, which is a tax base for many of the communities, many of the states, and the royalty fees. The State of California gets, I believe, a dollar for each ounce of gold reported in the state. The more ounces of gold that are recovered, the more dollars that would go to the Office of Mine Reclamation, which Ms. Luther recently suggested.

Mr. McCLINTOCK. So it may be the more that we relieve these burdens that are impeding the reopening of these mines, the more we are doing to discourage cleaning up the contamination associated with them.

Mr. ISHAM. Somebody could say that.

Mr. McCLINTOCK. I think I just did.

Mr. ISHAM. Thank you.

Mr. COSTA. All right. Thank you very much, Congressman McClintock and Kathy and Wendy and staff, Marcie, for the good work that you have done here.

I want to thank the members of this panel for giving us that local perspective of an issue that I think is very important not only here in California but around the country. Your references toward suggestions on how we can do a better job than we have done in the past as it relates to clean-up of abandoned mines and the impacts of waters of not just California, but waters of other states throughout the Union, I think, will be helpful, and we will look forward to your continued input and advice. The collaboration efforts, I think, I am very focused on, and in terms of how we can do a better job.

I want to thank the second panel as well, the State agencies, and it was good to have folks that we have worked with in the past, and the first panel with the Federal agencies.

I want to thank those of you here in the audience for participating in one fashion or another, and as we plan the rest of this year may each and every one of you have a wonderful Thanksgiving with your family and your friends, and we will just continue to work very hard on behalf of the people of California and our nation. These are challenging times, but what we have going for us is the tremendous resource of American ingenuity and the American spirit, and at the end of the day I put my faith and trust in all of that that you embody and reflect and represent.

So thank you. Thank you very much on behalf of my colleague, Congressman McClintock, and our staff.

This Subcommittee on Energy and Minerals is now adjourned.

[Whereupon, at 12:36 p.m., the Subcommittee meeting was adjourned.]

[Additional material submitted for the record follows:]

[A letter submitted for the record by Sherri Norris, Executive Director, California Indian Environmental Alliance, follows:]



Mr. Jim Costa
Chairman of the Subcommittee on Energy and Mineral Resources
1626 Longworth House Office Bldg
Washington DC 20515

November 19, 2009

Dear Chairman Costa,

CIEA wishes to extend our gratitude to the Subcommittee on Energy and Mineral Resources for holding the oversight field hearing on "Abandoned Mines and Mercury in California" scheduled for Monday, November 23, 2009.

Unfortunately, there are some tribal stakeholders will not be able to attend because the State Water Resources Control Board has scheduled a Methylmercury Total Maximum Daily Load meeting with tribes that the same day. CIEA does not speak on behalf of California Tribes; instead we work to increase tribal self-advocacy. This TMDL is in effect the mining cleanup plan for the San Francisco Bay Delta, from the Sacramento River to the San Joaquin, the artery of the Sierra-Nevada. We have only two months to coordinate comments and it has taken months to set up this meeting. CIEA will do our best to inform tribal members of both meetings on Monday so they can choose.

Mining toxins are a major threat to the cultural continuance of California Indian Tribes. These toxins affect all subsistence fishing communities and for that reason CIEA works not only with tribes but with other community and environmental justice groups, most of which are not being represented by those invited to speak at your hearing on Monday. Noted, the public comment period is open for ten days after this hearing and that these comments will be reflected in the official record. This is very helpful as these groups have been meeting for a number of years with agencies to develop remediation and public education plans. We would appreciate the opportunity to share these with each of you. CIEA will forward this information to our colleagues.

Tribal consultation is required for any proposed regulations, legislative comments, policy statements or actions with a direct effect on one or more Indian tribes, if funded by any federal monies. Because of the huge estimated costs of mining remediation and education, federal funds are likely to be connected. We urge the Subcommittee to involve California tribes in planning processes early. Since many agencies require beneficial uses be restored to protect communities at highest risk, tribes are an important stakeholder in the planning and implementation of remediation of mining toxins. Tribes are also a valuable resource for knowledge of traditional species that signal a healthy watershed and of which sites should be prioritized for cleanup to support tribal use.

Thank you and good luck on Monday!

Sincerely,

Sherri Norris
Executive Director
California Indian Environmental Alliance

[NOTE: The documents listed below have been retained in the Committee's official files.]

- Abbott, Jim, Acting State Director, California State Office, Bureau of Land Management, U.S. Department of the Interior, Map from Department of Conservation: "Abandoned Mines on Bureau of Land Management Lands," including pictures of mine sites
- Alpers, Dr. Charles, Research Chemist, U.S. Geological Survey: U.S. Geological Survey Fact Sheet: "Mercury Contamination from Historical Gold Mining in California," by Charles Alpers, Michael Hunerlach, Jason May and Roger Hothem, October 2005
- Baggett, Arthur, Board Member, State Water Resources Control Board, State of California Environmental Protection Agency:
- Diagram: "Transport and Methylation of Mercury": October 2005 USGS Fact Sheet (Mercury Contamination from Historical Gold Mining in California)
 - PowerPoint Presentation titled "Abandoned Mines and Mercury in California," prepared for the hearing, November 23, 2009
- Luther, Bridgett, Director, Department of Conservation, State of California Natural Resources Agency: Set of documents from the Department of Conservation titled "California's Estimated 47,000 Abandoned Mines;" "California's Abandoned Mine Lands Program Fact Sheet: Abandoned Mine Inventory and Remediation;" "California's Abandoned Mine Lands Program Fact Sheet: Stay Out—Stay Alive!" and "OMR Environmental Hazard Remediation & Reclamation Projects,"
- Martin, Elizabeth, Chief Executive Officer, The Sierra Fund: Executive Summary of the Sierra Fund, "Mining's Toxic Legacy: An Initiative to Address Mining Toxins in the Sierra Nevada," published March 2008
- Schneider, Bob, Board Member and Senior Policy Director, Tuleyome: PowerPoint Presentation titled "Abandoned Mines and Mercury in California," prepared for the hearing, November 23, 2009
- Wilensky, Hon. Steve, Supervisor, Second District, Calaveras County Board of Supervisors, State of California, PowerPoint Presentation titled "Abandoned Mines in Calaveras County" prepared for the hearing, November 23, 2009

