

**Statement of Michael L. Connor, Commissioner
Bureau of Reclamation
U.S. Department of the Interior
Before the
Energy and Natural Resources Committee
Subcommittee on Water and Power
U.S. Senate**

**S. 3387, Ruedi Reservoir Marketable Yield Pool
June 9, 2010**

Madam Chairwoman and Members of the Subcommittee, I am Michael Connor, Commissioner of the Bureau of Reclamation (Reclamation). I am pleased to be here today to present the views of the Department of the Interior (Department) on S. 3387, a bill to provide for release of water from the Marketable Yield pool of Ruedi Reservoir for the benefit of endangered fish habitat in the Colorado River, and for other purposes. The Department has concerns with the language of S. 3387 which I will describe below.

Reclamation recognizes the public interest in the Upper Colorado River Recovery Program and the Programmatic Biological Opinion (PBO) issued to Reclamation on operations affecting the 15-Mile Reach of the Colorado River, and supports the efforts of water users in Colorado to find permanent water supply requirements as negotiated under the PBO. Reclamation, the Fish and Wildlife Service (Service) and our other Federal partners have a long, positive history with the Recovery Program. Based on survival and propagation rates tracked by the Service, these recovery programs have promoted recovery of endangered fish species in the River.

The Department's contribution of water for fish habitat in the 15-Mile Reach Upper Colorado River has been substantial. From 1990 to 1999, Reclamation provided at least 90% of the water every year under prior biological opinions for the four fish species, all on a non-reimbursable basis. This averaged just under 35,000 acre-feet during the 1990s. Since adoption of the PBO in 1999, Reclamation's annual contribution of water has ranged from 20,825 acre-feet up to 50,825 acre feet. Today, Reclamation's non-reimbursable contribution of water to this Program provides roughly 75% of the water available to the Service for the 15-Mile Reach, which comes from various Reclamation facilities including Ruedi Reservoir.

Beginning in 2013, S. 3387 would authorize the annual release of 5,412.5 acre feet of water from Ruedi Reservoir. The legislation further provides that this annual release can be executed without a contract between the Federal government and the non-Federal parties. The absence of a contract is problematic for operational and financial reasons.

In a September 16, 1998, letter to the Service, Colorado West Slope and transmountain diverter water interests agreed to each "... provide or secure funding to buy or build ..." 5412.5 acre-feet of permanent water after the interim period which ends in 2012, with the water users assuming responsibility for the 5412.5 acre-feet as of January 1, 2013. In light of this, the Department believes more discussion needs to take place between our agency, the State of Colorado, and west slope water users on S. 3387. The Department believes that the bill as written is inconsistent with this cost-share arrangement which was a fundamental aspect of the 1999 PBO.

Associated with this issue, the Department is concerned that the bill will impact the Federal treasury due to potential lost revenues that would result by removing 5412.5 acre-feet of water from the Marketable Yield pool (51,500 acre feet) of water from Ruedi Reservoir without a repayment contract.

In 1999, the Service issued a PBO to Reclamation on operations affecting the 15-Mile Reach of the Colorado River. In addition to the 10,825 acre-feet of water Reclamation was to provide annually until 2012, the PBO, in recognition of the September 1998 letter, called for east and west slope water users to have permanent agreements in place to provide 10,825 acre-feet of water per year by 2012. The “10825 Stakeholders” as they became known began meeting in 2007 to review possible alternatives and have now selected a preferred alternative, which involves the west slope water users providing their commitment through the continued release of water from Ruedi Reservoir.

Ruedi Reservoir was constructed to provide storage for replacement of out-of-priority diversions to the east slope, which is known as the replacement capacity, and to provide water for municipal and industrial development on the west slope. Ruedi Reservoir’s largest pool of water is referred to as the Regulatory Capacity. The Regulatory Capacity (73,278 acre-feet) is divided into three smaller pools, one of which is the Marketable Yield pool. The Marketable Yield pool is 51,500 acre-feet, of which 16,373 acre-feet remains available for contracting. The S. 3387 language would remove 5,412.5 acre-feet of the water available for future contracts and set it aside for the purposes of the bill without any repayment for construction, operation, or maintenance costs that are associated with this water, and incurred by the United States. Under the 1958 Water Supply Act (Public Law 85-500), and the 1962 authorization for the Fryingpan-Arkansas Project (Public Law 87-590), these costs are reimbursable.

In general, the Department views the principle of a reasonable non-Federal cost-share contribution as an important one to maintain. Water development, despite its benefits, has had an impact on aquatic ecosystems. In this case, non-federal water development has contributed to certain species being listed under the ESA. The beneficiaries of that development need to contribute to the mitigation necessary to protect and recover species. We believe that was what was contemplated in the PBO.

As S. 3387 is written, the non-federal cost sharing obligations of the west slope would be shifted to the United States. Not only is this inconsistent with the PBO as it applies to the west slope, it is also inconsistent with the approach taken by the east-slope water users who are meeting their cost-share obligation under the September 1998 letter and the PBO. Also, as alluded to earlier, the United States could lose revenues from the foregone 5,412.5 acre-feet of water that might otherwise be provided under a repayment contract. These revenues total about \$6,800,000 in capital repayment if paid today in a one-time payment. Additionally, the revenues foregone from operation, maintenance, and replacement (OM&R) would annually total over \$18,000, based on the OM&R figures from the previous five years.

A final issue associated with the absence of a repayment contract concerns how releases of water will be made from Ruedi Reservoir. At a minimum, the language in the bill should articulate the need to coordinate releases with Reclamation and other interested parties, and that measures need

to be taken to ensure that such releases of water are protected to ensure benefits to endangered species.

In summary, I'd like to stress the importance of maintaining the 1999 PBO for the benefit of aquatic resources and water users in Colorado. Accordingly the Department is prepared to work closely with non-Federal parties to identify reasonable alternatives to the bill's present language.

This concludes my written remarks. I would be pleased to answer any questions from the Subcommittee.

**Statement of Michael L. Connor, Commissioner
Bureau of Reclamation
U.S. Department of the Interior
before the
Committee on Natural Resources
Subcommittee on Water and Power
United States Senate
S. 3404, The Leadville Mine Drainage Tunnel Act of 2010
June 9, 2010**

Madam Chairwoman and Members of the Subcommittee, I am Michael Connor, Commissioner of the Bureau of Reclamation (Reclamation). I am pleased to provide the views of the Department of the Interior (Department) on S. 3404, the Leadville Mine Drainage Tunnel Act of 2010. The Administration supports the sponsors' intent with this bill to ensure that the Leadville Mine Drainage Tunnel (LMDT) poses no threat to public safety and the environment, and to facilitate the clean up of a Superfund site in the vicinity. For reasons described below, however, the Administration has both policy and technical concerns about this bill and does not believe that legislation is warranted at this time. We will continue to work with Federal, State, and non-Federal parties on water resource issues at the Leadville Mine Drainage Tunnel (LMDT).

The Department last testified before this Subcommittee on legislation pertaining to the Leadville Mine Drainage Tunnel (LMDT) on April 24, 2008. Since that time, Reclamation completed a Risk Assessment analyzing potential dangers posed by water blockages inside the tunnel, and worked cooperatively with the U.S. Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) to install additional drainage capability into the LMDT. We have also held several public meetings with residents living near the Leadville area to convey Reclamation's findings that the LMDT is safe, and have continued an active dialogue with the EPA as it revises the proposed remedy for Operable Unit 6 of the California Gulch National Priority List (Superfund) Site, which lies above the LMDT. We have also had very productive interactions with Senator Udall's office on this legislation, and we appreciate those discussions.

The Department has three principal concerns with the language in S. 3404. First, we do not believe that the requirement in Section 2 of the bill, which calls on the Secretary of the Interior to take "such steps to repair and maintain the structural integrity of the LMDT as may be necessary," takes into consideration Reclamation's 2008 Risk Assessment. The Risk Assessment, completed in the Fall of 2008, is described in greater detail below. Second, a determination by the EPA and CDPHE was made in June of 2009 that portions of the current remedy for Operable Unit 6 of the California Gulch Superfund site are not efficient or sustainable, and the agencies are proposing to change that remedy this year. EPA and CDPHE jointly concluded that "using the mine workings and the [LMDT] to convey water cannot be relied on for the long-term." In view of this ongoing process, the Department also does not believe that Section 3 of the bill, which contemplates new responsibilities for the Secretary of the Interior to treat additional flows of water diverted from the surface of Operable Unit 6 into the Leadville Mine Drainage Tunnel, is appropriate. Finally, Section 3 of the bill amends Section 708(a) of Public Law 102-575 in a manner that could be construed as conferring responsibility on the Secretary for facilities which have been listed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or are subject to the Resource

Conservation and Recovery Act (RCRA). Reclamation is not a Potentially Responsible Party for contamination at the Leadville Superfund site, and believes that this language serves to create that impression and could be construed as creating liability where none currently exists.

The LMDT is located in Lake County, Colorado, and was originally constructed by the Bureau of Mines from 1943 to 1952. It was intended to remove water from portions of the Leadville Mining District to facilitate the extraction of lead and zinc ore for the WWII and Korean War efforts. Reclamation acquired the LMDT in 1959 with the intention of using the tunnel as a source of water for what was then the proposed Fryingpan-Arkansas project. Due to more senior existing claims on the water, no water rights for the discharge were ever obtained by Reclamation. The LMDT drainage discharges into the East Fork of the Arkansas River.

In 1983, EPA listed the California Gulch Site on the National Priorities List of Superfund sites. The 18-square-mile area was divided into 12 areas called Operable Units (OU). The LMDT is located beneath a portion of a surface unit, OU6 that covers approximately 3.4 square miles in the northeastern quadrant of the Site. Groundwater in the California Gulch area is within a separate operable unit -- designated OU12. Reclamation holds title to the LMDT on behalf of the United States, but does not own or operate any sources of contamination on the surface of OU6 (i.e., waste rock or tailings), or any portion of the surface itself.

As part of the implementation of an OU6 remedy proposed in 2003, EPA has been collecting surface runoff from mine waste piles and discharging that surface runoff into the Marion Shaft, where it moves through the mine workings to the LMDT. This water is seasonal and totals approximately 3 to 5 million gallons a year. It has proven to be possible for the Reclamation plant to treat limited amounts of waters from OU6 for EPA pursuant to agreement and EPA's reimbursement. After reviewing technical data suggesting that the remedy proposed in 2003 was neither effective nor sustainable, EPA in June 2009 announced that, in 2010, it planned to revise this proposed 2003 remedy, a process that is nearing completion today.

The new data sheds additional light on the complex site hydrogeology, and suggests that the collection of water at the surface and the diversion of portions of the water into existing shafts, and to the LMDT, is not effective in the long term. Seasonally, groundwater levels fluctuate near the LMDT. Groundwater flows into the LMDT at numerous locations, and flows out of the LMDT at the portal and also into surrounding rock formations. In addition, EPA and CDPHE have determined that the new remedy should prevent the generation of contaminated surface waters in the first instance, thereby alleviating the additional 3 to 5 million gallons of contaminated surface water that is currently diverted through shafts into the LMDT.

These characteristics also heavily influenced the findings of Reclamation's 2008 Risk Assessment. The assessment's purpose was to evaluate the stability and assess the risk associated with the LMDT. Reclamation began its scientific Risk Assessment in 2007, and when initial findings were available, they were independently peer reviewed. The Risk Assessment utilized a similar process to the one Reclamation uses to assess risk at its dams, a model that is an international standard for conducting risk assessments. The independent peer review confirmed Reclamation's analysis that it is highly unlikely that a sudden release of water could occur from either a blockage in the LMDT, or through the bulkheads installed in the tunnel. Moreover, the

assessment concluded that even if an existing natural blockage in the upper part of the LMDT failed rapidly, a sudden release of water through the lower blockage and bulkheads is unlikely. When the Risk Assessment was published in the early Fall of 2008, it was posted on the Internet and distributed to the media. Reclamation conducted three public meetings and sought public comment on the findings. We remain confident in the value of the Risk Assessment and the validity of its findings.

There are three sources of LMDT water currently entering the treatment plant. First, the natural rate of drainage from the tunnel portal is 500 gallons per minute (gpm), or 1.1 cubic feet per second (cfs). Second, there is a well in the LMDT about 1000 feet in from the portal that pumps about 500 gpm or 1.1 cfs directly to the treatment plant. And third, since June of 2008, Reclamation has been receiving another 700 gpm or 1.6 cfs, accommodating the additional drainage capability via another well installed by EPA about 4,700 feet in from the portal. This well was installed in response to public concern about rising water levels in the vicinity of the LMDT.

Reclamation has a maximum treatment plant capability to process water at a rate of nearly 2,100 gpm from the LMDT or 4.8 cubic feet per second cfs. The NPDES permit for the facility states that the 30-day Average LMDT discharge cannot exceed 1,736 gpm or 3.89 cfs with a Daily Maximum ceiling of 2,313 gpm or 5.2 cfs.

As these actions illustrate, Reclamation is currently managing safely all waters discharged to the LMDT. Nevertheless, Reclamation has an Emergency Action Plan for the LMDT and water treatment facility that has been in place since 2001 and is regularly updated. Water level indicators and other warning systems near the LMDT are tied into the water treatment plant's auto-dialer for employees, and an audible warning system was installed in 2002 to alert the Village at East Fork residents in the event of an emergency. The system plays an alert message in Spanish and English.

We understand the concern of some in Colorado that Reclamation may one day "walk away" from the work at Leadville. I would like to affirm that Reclamation is committed to assuring that the treatment plant, pumps and pipelines are operated in a manner so as to protect public safety at the LMDT. In addition to these actions, we support the process of CDPHE and EPA to determine a water management portion of the remedy at OU6 that is more effective than actions the agency proposed in 2003. Recent studies conducted by EPA conclude that using the mine workings and the LMDT to convey water cannot be relied on for the long term, and that it is neither cost effective nor efficient to treat diluted acid rock drainage this way in perpetuity. Reclamation is awaiting the publication by EPA of a revised Record of Decision, and believes no legislation should be enacted until that process is complete. As such, the Administration does not believe that S. 3404 is warranted at this time.

At a minimum, if any legislation were to proceed, it should be amended to address the issues raised herein.

This concludes my written statement. I am pleased to answer any questions from the Subcommittee.

Statement for the Record
U.S. Geological Survey
U.S. Department of the Interior
before the
Subcommittee on Water and Power
Senate Committee on Energy and Natural Resources
on
S. 2779
June 9, 2010

Madam Chairwoman and Members of the Subcommittee, the Department of the Interior appreciates the opportunity to provide its views on S. 2779, the “Upper Mississippi River Basin Protection Act.”

The Department considers sediment and nutrient loss in the Upper Mississippi River Basin to be a real threat to the health of the ecosystem and appreciates the efforts of the sponsors of S. 2779 to address this important issue. We especially value the emphasis within the bill on the need for reliance on sound science to inform wise management of nutrients and sediments in the Upper Mississippi River Basin. However, we have concerns about the financial resources that would be required for the U.S. Geological Survey (USGS) to carry out the full scope of activities described in this bill. Carrying out these activities would mean diverting resources away from other priority programs. The Department of the Interior supports the goals of S. 2779, although we note that the activities called for in this bill are well within the scope of existing Department of the Interior authorities and activities already underway by the Department that are aimed at addressing the same problems addressed in this bill.

The bill directs the Secretary of the Interior, acting through the USGS, to provide a scientific basis for the management of sediment and nutrient loss in the Upper Mississippi River Basin. This would be accomplished through

- establishing a sediment and nutrient monitoring network that builds on existing monitoring activities;
- conducting research and modeling that relate sediment and nutrient gains and losses to landscape, land-use, and land-management characteristics;
- providing technical assistance regarding use of consistent and reliable methods for data collection; and
- instituting a program to disseminate new information to managers, scientists and the public.

The role identified for the Department in this bill is consistent with the USGS’s leadership role in monitoring, interpretation, research, and assessment of the health and status of the water and biological resources of the Nation. Since its beginning, the USGS has been the primary federal agency responsible for assessing the quantity and quality of the nation’s surface water and

groundwater. The USGS has been active in a number of programs and investigations that involve the Upper Mississippi River Basin specifically.

The USGS participates in the Mississippi River Gulf of Mexico Watershed Nutrient Task Force. The role of the Task Force is to provide executive level direction and support for coordinating the actions of participating organizations working on nutrient management within the Mississippi River/Gulf of Mexico Watershed. It is chaired by the Environmental Protection Agency and has representation from four additional Federal agencies, ten State governments, and Tribal governments in the basin. A key goal of the Task Force is to implement the *Gulf Hypoxia Action Plan 2008*, which provides an overview of how federal agencies, states, and tribes are working together to take action to reduce the size of the hypoxic zone in the Gulf of Mexico while protecting and restoring the human and natural resources of the Mississippi River Basin.

The *Action Plan* in 2008 identified USGS to lead or co-lead two activities. The USGS has the lead role to "...reduce the scientific uncertainties regarding the source, fate, and transport of nitrogen and phosphorus in the surface waters of the Mississippi/Atchafalaya River Basin and to improve the accuracy of management tools and efficacy of management strategies for nutrient reduction." As a co-lead with the U.S. Environmental Protection Agency and the National Oceanic and Atmospheric Administration, the USGS is tasked "to coordinate, consolidate, and improve access to data collected by State and Federal agencies on Gulf Hypoxia and Mississippi/Atchafalaya River Basin program activities and results."

To accomplish these tasks, the USGS has used its water-quality models and a broad suite of USGS and other Federal and non-Federal monitoring data from 31 basin States to identify the most important sources of nutrients and the sub-watersheds delivering the majority of those nutrients from the Mississippi River Basin to the Gulf of Mexico. Partners and stakeholders such as the U.S. Department of Agriculture and the U.S. Environmental Protection Agency in coordination with State and local agencies are using USGS information to target their resources in priority watersheds to manage nutrient runoff to rivers and streams.

Specifically, the models estimate the amounts of nutrients delivered from key nutrient sources and landscapes in the Mississippi River watershed. Delivery of nutrients from more than 800 watersheds to local rivers, streams, and lakes, and to more distant receiving waters such the northern Gulf of Mexico are estimated. Key nutrient sources assessed in the model include chemical fertilizers, animal manure, human wastewater, urban stormwater, and atmospheric deposition. A nationally scaled model for the Mississippi/Atchafalaya River Basin was published in 2008, and a regional model for the Upper Mississippi River watershed is planned for release this year.

The USGS has offices in each of the five Upper Mississippi River Basin states. These offices have a long history of conducting water-quantity and water-quality monitoring and assessment activities within the basin. Existing USGS programs include the Hydrologic Networks and Analysis Program, the National Water-Quality Assessment Program, the National Stream Quality Accounting Network, the National Streamflow Information Program, the Toxic Substances Hydrology Program, the Water Resources Research Act Program, and the Cooperative Water Program, as well as cooperative efforts such as the Long-Term Resource Monitoring Program funded by the U.S. Army Corps of Engineers. These programs currently

provide information on nutrients and sediment in rivers, streams, and groundwater within the basin.

For more than 20 years, the USGS Upper Midwest Environmental Sciences Center (UMESC) in La Crosse, Wisconsin, has provided research support in the Upper Mississippi River Basin to Department of the Interior agencies and the U.S. Army Corps of Engineers to address complex issues of navigation, contaminants, and other natural-resource concerns. More recently, this Center has developed an active partnership with the Department of Agriculture, Natural Resources Conservation Service, on sediment and nutrient concerns of the agencies. For over 15 years, UMESC has provided scientific and management leadership for the Long-term Resource Monitoring Program component of the U.S. Army Corps of Engineers' Upper Mississippi Restoration-Environmental Management Program. This monitoring program of water quality, fisheries, vegetation, land use, and other critical indicators of river health is the largest mainstem river assessment program in the Nation.

The USGS conducts monitoring activities in cooperation with many States and local governments in the Upper Mississippi River Basin. The USGS is also active in hydrologic and water-quality studies in the Lower Mississippi River Basin. The continuity of research is important from the standpoint of developing a complete assessment of the entire Mississippi River basin. To this end, the USGS has begun a partnership with the Long-term Estuary Assessment Group, centered at Tulane University. The USGS also supports EPA and states in their implementation of the National Aquatic Resource Surveys, particularly those focused on rivers and streams. These surveys are producing assessments of the condition of rivers and streams throughout the Mississippi River basin and across the nation. By focusing on periodic assessments of the resource at large, these surveys provide an important complement to the continuous sampling at selected locations proposed in the USGS sediment and nutrient monitoring network.

S. 2779 acknowledges the need to use all existing monitoring and science programs of the USGS and those of other entities while identifying information needs in the Upper Mississippi River Basin. Existing monitoring and assessment programs and models are tools for defining how water-quality conditions are affected by human activities and natural climatic variations and how management actions may best improve water-quality conditions at a wide range of scales from small watersheds to the Mississippi River Basin. In 1995, the USGS had more than 200 locations for long-term sampling in the Basin; now, the network consists of about 74 locations, many of which are only sampled one year out of every four making it challenging to verify model outputs. Within the last 10 years, there also has been a reduction in the number of locations that are sampled by States. DOI is in the process of developing a plan to determine how many sampling stations are needed to provide needed data.; the report is expected to be published in 2011.

The bill would also authorize integration of activities conducted in cooperation with other Federal partners and would emphasize and expand the existing USGS coordination and assistance to State monitoring programs. For example, the U.S. Fish and Wildlife Service's (Service) Partners for Fish and Wildlife Program restores wetland habitat in watersheds across the country, including the Upper Mississippi River Basin. . The Service applies its expertise to the management of sediment and nutrients in the basin through participation in demonstration

projects, technical assistance, and working groups. We recognize the need to ensure that future monitoring activities complement and do not duplicate State or other Federal monitoring activities.

Section 106 of the bill provides for the National Academy of Sciences (NAS) to conduct a comprehensive assessment of water resources of the Upper Mississippi River Basin. As drafted, funding for such a study would come from USGS resources and could have the effect of reducing funding available for other USGS monitoring and assessment work in the basin. If the NAS study remains in the bill, additional direction as to the goals and uses of the study should be provided.

In summary, the proposed legislation describes a program consistent with current USGS activities to support protection of the Upper Mississippi River Basin and the Gulf of Mexico Watershed Nutrient Task Force and the recommendations of the 2008 *Action Plan*. We note that some of these conservation activities are being addressed by other ongoing programs. Funding for the activities in S. 2779 is not included in the fiscal year 2011 President's Budget proposal and would remain subject to available resources.

Thank you, Madam Chairwoman, for providing the Department with the opportunity to present this statement.

Statement for the Record
U.S. Geological Survey
U.S. Department of the Interior
before the
Subcommittee on Water and Power
Senate Committee on Energy and Natural Resources
on
Inland Empire Perchlorate Ground Water Plume Assessment
Act of 2010 (HR 4252)
June 9, 2010

Madam Chairwoman and members of the Subcommittee, I appreciate the opportunity to provide the Department of the Interior's views regarding U.S. Geological Survey (USGS) scientific capability relevant to the Inland Empire Perchlorate Ground Water Plume Assessment Act of 2009 (H.R. 4252).

USGS Science in Support of Groundwater Management and Contaminants

The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The specific mission of the USGS California Water Science Center is to collect, interpret, and provide unbiased and timely scientific information of the highest quality for the responsible planning, use, and management of California's water resources in cooperation with local, State, and other Federal agencies. Scientific issues related to the occurrence and movement of groundwater and contaminants, such as perchlorate, fall within the scope of the USGS mission.

Perchlorate issues in Rialto Colton and the "Inland Empire"

The Rialto-Colton Basin is located in western San Bernardino County in California, about 60 miles east of Los Angeles in the upper Santa Ana River watershed (the Inland Empire). The Rialto-Colton Basin is bounded on the northeast by the Bunker Hill and Lytle Creek Basins and on the southwest by the Chino and North Riverside Basins. Groundwater presently constitutes about 79 percent of the drinking-water supply in the Inland Empire. Perchlorate has been detected in the main water-producing aquifers within the Rialto-Colton and adjacent basins and has contaminated water in more than 20 production wells that supply the communities within the Rialto-Colton Basin and surrounding area.

Perchlorate (ClO_4^-) has both synthetic and natural sources. Synthetic perchlorate is a residual of the manufacture and use of rocket propellants, fireworks, flares and other pyrotechnic devices. Minor concentrations of natural perchlorate has been measured in mined Chilean nitrate fertilizers. Perchlorate is extremely soluble and is carried in groundwater without retardation or absorption. The two major sources of synthetic perchlorate in the area are San Bernardino County's Mid-Valley Sanitary Landfill and a 160-acre site near the landfill. These two sites were used for storage and destruction of perchlorate-containing compounds such as explosives, propellants, and pyrotechnic devices. Chilean nitrate fertilizer was commonly used in the Basin

in the early part of the 20th century. In addition, imported water from the Colorado River contains measurable perchlorate and also may be a source of perchlorate in the Inland Empire. Recent data collected by the USGS indicates that low levels of perchlorate have accumulated naturally in unsaturated zones in arid and semiarid areas of the southwestern United States, such as the Mojave Desert, likely as a result of atmospheric deposition.

Perchlorate contamination is of concern to water managers because of the importance of groundwater in this region. Water managers need to know the source, fate, and transport of perchlorate within the Rialto-Colton Basin and adjacent basins in order to effectively mitigate the contamination. Major uncertainties facing water managers include: 1) the source(s) of perchlorate in specific wells; 2) the hydrologic and geologic controls on the migration of perchlorate within the Rialto-Colton Basin; 3) the effectiveness of the Rialto-Colton Fault as a barrier to perchlorate migration from the Rialto Colton basin to the adjacent Chino and North Riverside basins; and 4) the potential vertical movement of perchlorate through long-screened wells.

What is the USGS doing in the area?

The USGS has a long history of hydrologic work in the Rialto-Colton area and adjacent areas in the Inland Empire going back as far as the early 1900s. This work has been updated periodically and collectively forms the basis of our scientific understanding of the regional hydrogeologic setting, the movement of water within aquifers pumped for public supply, and water-quality issues in the area. The USGS operates an extensive groundwater-monitoring network providing the public with real-time information on water levels and water quality. The USGS has developed predictive models in the Rialto-Colton Basin (Woolfenden and Kadhim, 1997; Woolfenden and Koczot, 2001) and the adjacent Lytle Creek and Bunker Hill groundwater basins (Danskin and Freckleton, 1989; Danskin and others, 2006) to assist in the management of the water resources in the area. These models are based on the current scientific understanding of the geology and hydrology in the area, including the areal and vertical extent of aquifers, hydraulic properties, recharge and discharge of groundwater, and the interaction between groundwater and surface water. Most of the USGS research done in the Inland Empire has been in cooperation with local water management agencies such as the San Bernardino Valley Municipal Water District under the auspices of the USGS Cooperative Water Program. In the past five years, about 70 percent of the cost of these studies has been borne by local agencies.

In recent years, the USGS has been working with local water agencies to help them understand the sources, distribution, and migration of perchlorate in the Inland Empire. A recent study completed as part of the USGS Groundwater Ambient Monitoring and Assessment (GAMA) Program (Belitz and others, 2003) sampled 99 drinking water wells throughout the Inland Empire and identified perchlorate in about 67 percent of the wells at the reporting level of 0.5 micrograms per liter (ug/L); about 10 percent had perchlorate concentrations in excess of the California maximum contaminant level of 6 ug/L, but no well had concentrations in excess of the EPA health reference level (Kent and Belitz, 2009). Woolfenden (2008) used a particle-tracking model to determine the susceptibility of an aquifer to perchlorate contamination in the Rialto-Colton Basin. Izbicki (2008) collected wellbore flow and depth-dependent water-quality data from a public supply well near Highland, CA located in the northern part of the Inland Empire. Water-quality and isotopic data indicated that the source of perchlorate was Chilean nitrate fertilizer.

The USGS is participating in a 2-year study funded by the Department of Defense Environmental Security Technology Certification Program (ESTCP) to apply state-of-the-art chemical and multiple-isotope techniques to identify the source of perchlorate within the Inland Empire. A total of 25 wells will be sampled and analyzed for perchlorate, perchlorate isotopes, and other tracers in the Rialto-Colton Basin and Chino Basin adjacent to the Rialto-Colton Fault. Data collected in this study are intended to help identify the areal and vertical extent of perchlorate contamination near the margin plumes in areas having high background perchlorate concentrations from fertilizer or other sources. An important component of this new work is to investigate the impact of well-bore flow on the vertical distribution of perchlorate within aquifers.

Rialto Colton Basin, California Water-Resources Study

The key issues of concern identified in H.R. 4252 are:

- A. The delineation, either horizontally or vertically, of the aquifers in the Rialto-Colton Basin within the State, including the quantity of water in the aquifers;
- B. the availability of groundwater resources for human use;
- C. the salinity of groundwater resources;
- D. the identification of a recent surge in perchlorate concentrations in groundwater, whether significant sources are being flushed through the vadose zone, or if perchlorate is being remobilized;
- E. the identification of impacts and extents of all source areas that contribute to the regional plume to be fully characterized;
- F. the potential of the groundwater resources to recharge;
- G. the interaction between groundwater and surface water;
- H. the susceptibility of the aquifers to contamination, including identifying the extent of commingling of plume emanating within surrounding areas in San Bernardino County, California; and
- I. characterization of surface and bedrock geology, including the effect of the geology on groundwater yield and quality.

The USGS has the capability to complete a 2-year study to address the issues of concern presented in H.R. 4252 for the Rialto-Colton Basin. The tasks required are within the scope of the USGS mission and expertise and could be accomplished under existing authorities.

H.R. 4252 focuses on perchlorate issues in the Rialto-Colton Basin; however, perchlorate is a concern throughout the Inland Empire. If requested, the USGS could consider options for studying this issue throughout the region.

Conclusion

The USGS has the scientific capacity to address issues of concern identified in H.R. 4252, a strong working relationship with many of the people currently working on groundwater quality issues in California's Inland Empire, and a reputation for providing unbiased information.

The problem of groundwater quality affecting drinking water supplies is not unique to communities in Rialto-Colton or the Inland Empire. Perchlorate is an issue throughout the southwestern U.S. Therefore, methods developed to understand the perchlorate contamination in the Rialto-Colton could be useful to water managers in other basins.

We note, however, that the activities called for in H.R. 4252 are already authorized by existing authorities. Any study conducted to fulfill the objectives of the bill would need to compete for funding with other Administration priorities.

Thank you, Madam Chairwoman, for the opportunity to present the views of the Department on H.R. 4252. I will be happy to answer any questions you or the other Members may have.

References

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