Statement of Dan Randolph

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I thank the Chair and Subcommittee Members for inviting me to testify on this important matter. Also, I thank you for coming out to Nevada, to the heart of mining country, to hear how we in Nevada see this issue.

Great Basin Mine Watch is a non-profit organization, founded in 1994. Our mission is to protect the land, air, water and wildlife of the Great Basin and the people and communities that depend on them from the adverse impacts of mining. We have been involved with the federal land management agencies, the various state agencies with oversight of mining issues, and the mining industry extensively. I am here representing Great Basin Mine Watch. My statement will focus on Nevada issues.

The question of if and how to reform the Mining Law of 1872 is of great importance throughout the western states, but especially here in northern Nevada. While on a west-wide level, the mining industry may be relatively minor economically, in our area it is clearly the largest industry. We believe that the Hardrock Mining and Reclamation Act of 2007 would bring necessary reforms that will help protect the people and lands of Nevada, while helping this important industry thrive.

The Need for Reform

The need for mining reform is evident in Nevada. While mining practices have generally improved since the days of historic mining, modern mines (1976 or later) still pose significant environmental and health consequences. Great Basin Mine Watch will outline the most prominent of these that occur here in Nevada, which include mercury emissions, dewatering activities, long-term open pit management, and water resource degradation.

Mercury

Mercury is emitted into the air from processing equipment and sites at many precious metal mines. Mercury often occurs naturally in the rocks that are being mined for gold or silver.[1] In the latest EPA Toxics Release Inventory (TRI) released to the public in March 2007, Nevada precious mines reported releasing 4,682 pounds of mercury into the air.[2] Based on recent tests, and recent corporate revisions to TRI reports, the actual total may be much larger. This airborne mercury can be deposited near the mine site or be carried hundreds or even thousands of miles before settling.

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[1] Jones, Greg, and Glenn Miller; October 24, 2005, Mercury and Modern Gold Mining in Nevada, .
[2] http://www.epa.gov/triexplorer/

Mercury not released to the air is either captured as by-product, and sold, or becomes part of the waste rock or tailings.[3] According to the 2005 TRI 3,567,801 pounds of mercury were stored on site at mines in Nevada. The 2005 TRI confirms that mercury that is emitted from gold mines in northern Nevada constitutes the largest source of mercury pollution in the region.[4]

Mercury is a highly toxic and highly mobile element. It is a neurotoxin associated with a variety of health ailments including loss of vision, loss of memory, temporary or permanent brain damage, tremors and deafness. Mercury is easily converted to organic methylymercury when it comes into contact with microorganisms. Methylmercury persists in biological systems causing accumulation up the food chain. Most mercury exposure in human comes from eating fish contaminated with methylmercury. Larger, older and predatory fish are more likely to contain larger amounts of mercury. As a result the EPA has made recommendations to limit the amount of fish that people consume especially pregnant women and young children. The effect of mercury poisoning can be particularly devastating while development of the nervous system is still occurring.

The Nevada State Health Division issued fish consumption advisories for six water bodies in the state in March 2007 in response to data gathered from samples of fish tissue with high levels of mercury. Some fish from other waters showed levels of mercury that according to EPA guidelines would support the release of additional fish consumption advisories.

Last year the state of Idaho issued fish consumption advisories for several water bodies. Idaho officials were concerned that the source of the mercury was mining activity of Northern Nevada.[5] This illustrates that the effects of mining are not isolated, that environmental contamination and ecosystem disruption have the potential to span states.

Mining in Nevada and other states releases a large amount of mercury into the environment. Companies allowed to mine on public lands need to be aware of how much mercury they are releasing, and plan for abatement of the circulation of mercury in the environment while the mining continues and after it ends. The provisions of the Hardrock Mining and Reclamation Act of 2007 would facilitate this practice.

Mercury can be isolated and used industrially, but at a minimum it must be contained and disposed of properly. Also mines must use the best emissions reduction technology that is available. Recently the Nevada Division of Environmental Protection began a mercury air emissions testing campaign to determine the types (species) of airborne mercury released from ore possessing equipment. The species of mercury released is a large determining factor in how far the particles will travel before being deposited.

The tests revealed that in a few cases more mercury was being released than was reported by the mines in a voluntary program. But more to the point for the purpose of HR2262 it revealed that emission control technology being used are not as effective as they are engineered to be and that emissions are highly variable.

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[3] Jones and Miller, 2005.

[4] http://www.epa.gov/triexplorer/

[5] Barker, Rocky, November 5, 2005, *The Idaho Statesman*; High mercury levels found in Idaho reservoir.

Mercury pollution is one of the most persistent problems that mining produces during operations and into the future. The problem needs to be addressed from the outset of any new mining operation. New legislation like HR2262 can help keep mercury pollution to a minimum through careful planning, engineering and consistent monitoring.

Water

Nevada is the driest state in the union. Water quality and quantity are both critical to the future of the state.

As many of the mines are in rural areas, away from the primary population centers, there used to be an "out of sight, out of mind" attitude towards the impacts of mining on the state's waters. However, that is clearly no longer the case. Currently, there are at least seven proposals before the State Engineer to allow trans-basin water transfers, from rural areas to the metropolitan areas. Some of these involve pumping groundwater in remote basins and piping it hundreds of miles.[6] Clearly, all water in the state is a resource that should be protected.

Water Quality

Great Basin Mine Watch will address three major water quality issues of modern mines with specific examples, which are: 1) pit lake consequences, 2) waste rock pile drainage, 3) heap leach seepage. All of these mines are modern mines that have been in operation since 1980.

Brief background on specific mines cited here

Mule Canyon Mine: is an open pit gold mine located in the central portion of the Argenta Mining district, approximately 15 mines southeast of Battle Mountain Nevada and 10 miles west of Beowawe. The modern mining began in 1989 with the eventual creation of six pits with associated waste rock dumps, a heap leach facility, and a mill. Mining was completed in 2005, with activity in the South Pit ending in December 1999.

Big Springs Mine**:** is an open pit gold mine located along the North Fork Humboldt River at the north end of the Independence Range, Elko County Nevada. Mining of the disseminated gold deposits began in the late 1980s and stopped in 1993. Reclamation commenced in 1993 and has been declared complete. The mine also had a mill and tailings impoundment.

Sleeper Mine**:** is an open pit gold mine located in Desert Valley on the western flank of the Slumbering Hills in Humboldt County, Nevada, approximately 30 miles northwest of Winnemucca. Active mining was conducted between March 1986 and October 1997 with three open pits with associated waste rock piles, five heap leach pads with associated solution ponds, and a tailings facility.

Pit Lake Consequences

Modern mining often involves the displacement of large volumes of rock and ore. Particularly, with the use of heap leach cyanide gold extraction large open pit mining has proven cost

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[6] Nevada Division of Water Resources, http://water.nv.gov/

effective. As a result lower grade gold ore is being pursued creating enormous opens pits often well below the regional water table. In order to mine the deep pits groundwater must be pumped to create a "cone of depression" in the water table to keep the pit dry (dewatering will be discussed later.)

Often when mining activities cease in the pit, and hence dewatering ceases, water begins filling in the pit forming a "pit lake." It is also common that rock exposed during mining in the pit has a "reactive" component, meaning that with exposure to air, water, and microbes it will undergo oxidation; typically elevating the levels of sulfate and Total Dissolved Solids in the pit lake. In historic mines this oxidation has caused severe acidification of water draining from the mine and into the ground and surface water, often called "acid mine drainage."[7] Therefore, reactive rock in a pit can cause the pit lake water to become acidic (low pH), which in turn tends to leach metals out of the rock in the pit further degrading the water making it unsuitable for humans and wildlife.

Once the pit lake water becomes degraded there exists the potential for this water to infiltrate and contaminate the groundwater. Measures to improve pit water such as adding lime to neutralize the acid can be effective in the short-term, but the pit water often degrades again over a period of years.[8] In order to maintain acceptable water quality treatment maybe required for hundreds of years as the exposed reactive rock is consumed. In effect, pit lakes can turn out to be site of perpetually contaminated water.

The Mule Canyon mine provides a striking example of a modern mine pit lake problem. The 1995 Environmental Impact Statement (EIS) for Mule Canyon predicted that only pit lakes would form in the South and West Pits. The South Pit lake was expected to be approximately 110 feet deep, and the West Pit with two "ponds" less than 20 feet deep. Seasonal temporary ponds were predicted in the other pits as well.[9] Pit lake water quality was predicted to be poor initially but in the very long-term (~40 years after filling) improve substantially.[10] These water level predictions were considerably off the mark,[11] where all the pits currently have substantial pit lakes with the South Pit expected to overflow the rim.[12] As a result a potentially serious water contamination situation has arisen since the South Pit lake water is of poor quality with low pH, and elevated levels of Total Dissolved Solids, sulfate, magnesium, and manganese (over 10 times acceptable levels).[13] Newmont Mining Inc. has initiated interim procedures, and has

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[7] One such example of severe acid mine drainage is the Rio Tinto mine in Northeastern Nevada, which contaminates a portion of the Owhyee River. For further information see; Duckwater Reservation, Shoshone–Paiute Tribes, *Rio Tinto Mine/Mill Reclamation Audit*, February 2000.

[8] Nevada Department of Environmental Protection, "Hollister Mine Fact Sheet," permit number NEV0088022, January 16, 2007; Nevada Department of Environmental Protection, "Tonopah Mine Fact Sheet," permit number NEV0088029, January 16, 2007 and Equitorial Tonopah Inc., "Fourth Quarter 2006 Water Pollution Control Permit," NEV88029, January 8, 2007.

[9] US BLM, Final Mule Canyon Environmental Impact Statement, (NV-060 1793/3809 N64-92-001P, September 1996, pg 4-9.

[10] ibid, pg. 4-14.

[11] According to the EIS the water level in the South Pit would have only risen to about 5690 feet AMSL. Currently, the level is at the rim or about 5940 AMSL, so about 250 feet higher than predicted.

[12] US Bureau of Land Management, Environmental Assessment Mule Canyon Mine Interim Water Management Plan, NV063-EA07-084, June 2007.

[13] ibid, appendix B.

proposed further interim procedures to evaporate the "excess" water to prevent contamination of surface drainages. It is not clear whether this degraded water may have already infiltrated into the groundwater. In general, this is a long-term problem with no current solution, since the source of acidification has not been identified and water levels continue to rise.

The Department of the Interior U.S. Fish and Wildlife Service in Nevada, concerned about contaminated pit lake water, has been examining the potential for pit lakes to impact wildlife. A preliminary study resulted in the following statement:

> "In 2000, the US Fish and Wildlife Service identified 18 existing pit lakes in Nevada. Water quality data was obtained for 12 of the existing lakes. Of the pit lakes for which data was available, four were slightly acidic. All pit lakes for which water quality data was obtained contained at least one trace element at concentrations that are potentially toxic to aquatic life or wildlife. Aquatic life effect concentrations were exceeded for arsenic, cadmium, and chromium in 2 of the 12 pit lakes for which water quality data were available. Copper concentrations exceeded an aquatic life effect level in at least six pit lakes. Mercury was detected in four pit lakes. All concentrations exceeded aquatic life and wildlife effect concentrations. However, detection levels used for mercury in the remaining pit lakes were greater than wildlife effect concentrations. Selenium exceeded a wildlife effect concentration in six pit lakes. Zinc exceeded an aquatic life effect concentration in six pit lakes."[14]

The Big Springs mine also underscores concerns related to pit lakes. The 2005 SWX pit lake data shows elevated levels of Total Dissolved Solids, sulfate, manganese, and magnesium,[15]and seepage from this pit lake has been implicated in contributing to contamination of Sammy Creek, which feeds the North Fork Humboldt River.[16] Recently, July 10, 2007, the US forest Service released a scoping notice regarding continue exploration in the Big Springs area. It notes that the pit lakes at Big Springs have drained, "In late October 2006, two lakes that had formed in existing mine pits (pit lakes) and the surrounding aquifer began draining. The pit lakes are now dry and the aquifer level has dropped about 150 feet below previous levels measured prior to October 2006. It is unknown where the aquifer is draining to or what the impacts, if any, would be to water quality and surface and groundwater resources."[17] To the extent that the lake water quality was poorer than that in the groundwater, draining the lakes into the groundwater would have degraded the groundwater. In general, contaminated pit lake water is a legacy of modern surface pit mining with varying potential to degrade the waters of Nevada.

Waste Rock Drainage

[14] US Fish and Wildlife Service, "Assessment of Wildlife Hazards Associated with Mine Pit Lakes," www.fws.gov/pacific/ecoservices/envicon/pim/reports/Reno/PitMines.htm.

[15] Nevada Department of Environmental Protection, Water Monitoring Report for 10/4/2005, Water Pollution control Permit #NEV87001.

[16] Myers, Tom, *Expert Report, Nevada State Environmental Commission, Appeal hearing, Water Pollution control Permit Renewal, NEV0087001, Big Springs Mine, Technical Report 2005-07-GBMW*, September 14, 2005, pg. 28.

[17] Notice of Intent for the Big Springs Environmental Impact Statement, Federal Register, vol. 72, No. 130, page 37182.

Enormous amounts of "waste rock," which surround ore bodies, are mounded in high piles called waste rock dumps, present potential water contamination problems. If these rock piles contain reactive rock, then water infiltrating through them from precipitation can become degraded, and if not captured contribute to groundwater contamination.

The Big Springs area (mine) is drained by the North Fork Humboldt River (NFHR) and its tributaries; including Dry Creek, Sammy Creek, and Water Canyon Creek. All of these waterways are on Nevada's 303d list of impaired waters.[18] The listing noted that the impairment was due to mining activities. Myers[19] conducted a detailed review of waterflow and constituent concentrations from the various monitoring stations located on the tributaries of the NFHR. His analysis provides clear evidence of contamination from waste rock dumps into these waterways. Particularly striking is the data for Sammy Creek, where sampling upstream from the waste rock dump shows sulfate concentration median of 8.16 milligrams per liter (mg/L) with a maximum of 24.30 mg/L, and downstream of the waste rock dump the sulfate concentration median measurement was 320.0 mg/L with a maximum of 557.0 mg/L. Myers used the sulfate concentrations as a trend marker[20] that showed an increasing trend in sulfate concentration as mining proceeded with a jump upward around 1990 when mining first began in earnest. Myers concluded regarding waste rock seepage at Big Springs that:

> Analysis of monitoring data completed for this report and other studies have found that the tributaries to the NFHR that drain the Big Springs mine have added substantial sulfate and metals loading to the river. The most likely source of contamination is the waste rock that has been dumped in each of the tributaries; in all three drainages, the waste rock has been piled over the stream or on top of springs. The final closure plan indicates the lower Sammy Creek, Dry Canyon, and both Water Canyon dumps "were developed using the cross-valley method of construction" (IMC, 1996, page 14). These all had "[u]nder-dump drainage systems [which] were developed beneath the cross-valley type dumps through natural gravity segregation of waste rock that occurs during dumping operations. The under-dump drainage systems are intended to allow surface runoff from the contributing watersheds to flow through the base of the dumps" (IMC, 1996, page 14). This basically means that the dumps were designed to be within the drainages with coarser rock naturally segregating from the bulk of the rock during the dumping. They were designed to convey drainage water from above the dump through the dump and to downstream channels. There is no provision made to separate or segregate the drainage from the waste rock. It would be useful to identify whether this waste rock could leach high sulfate concentrations and some metals to the river. High sulfate would be caused by pyrite oxidation followed by carbonate neutralization; high sulfate but neutral pH and not high metals

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[18] Nevada Division of Environmental Protection Bureau of Water Quality Planning, "Nevada's 2004 303(d) Impaired Waters List," November 2005.
[19] reference 10.
[20] ibid, pg. 4; Myers connected trends in sulfate concentrations with Total Dissolved Solids (known to violate standards on the NFHR, and also to examine the hydrology of the basin, in general.

concentration would be the result. There are several studies that address the leaching from waste rock; this section reviews these studies.[21]

Solving the problem that generates the degraded water is often infeasible from the mine company's perspective, since it may require extensive excavation of the waste rock dump itself. The long-term solution is often the eventual disintegration of the reactive components within the waste rock dump. However, that "natural attenuation" could require many years and perhaps centuries.

Heap Leach Seepage

The third major long-term water contamination issue with modern mines is the fate of the heap-leach piles. These piles contain various grades of "depleted" ore, which in the case of gold mining have been leached with sodium cyanide solution to extract the microscopic gold. Once mining has discontinued the leach piles are rinsed until the "drain down" water (the water that is collected at the bottom of the pile after passing through the pile from the top) is of acceptable quality to begin active reclamation. The heap leach piles have liners underneath to catch the gold laden solution during extraction, so once the heaps are out of use the liners will continue to catch the drain down water for monitoring. The liners are considered a safeguard against future groundwater contamination assuming that they retain their integrity through the point when seepage water is no longer degraded. The liners collect seepage and convey it to a single point from which it discharges from under the heap. The disposal of this seepage is a long-term problem.

In March 2003, New Sleeper Gold LLC submitted a final Closure Plan to the Nevada Department of Environmental Protection and the Bureau of Land Management. In this closure plan, New Sleeper expressed the need for the heap leach ponds (into which the heap leach piles drain) to remain in place to serve as evapotranspiration basins[22] for the long-term seepage. The previous Reclamation Plan of 1993 required these ponds to be decommissioned, so the current proposal is to maintain the ponds in perpetuity. The reason for this is evident in the current water monitoring data for the Sleeper mine that shows the heap leach drain down water of very poor quality with pH's between 2 and 3, very acidic, and high levels of a number of constituents such as TOTAL DISSOLVED SOLIDS, sulfate, manganese (over 10 times the standard), selenium (about 10 times the standard), magnesium, etc.[23] If the ponds were reclaimed and the heap leach piles were effectively allowed to drain uncontrolled the resulting contamination of area water resources would be very high.[24] This puts the public in a untenable situation of either allowing potentially substantial water contamination or try to maintain a facility virtually forever.

In each of the cases outlined above, modern mines have created a situation that pose long-term environmental impacts, which to date do not have a clear solution. In the case of Mule Canyon

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[21] ibid, pp 14-15.

[22] An evapotranspiration basin is a partially vegetative field to where excess fluids are directed to eliminate the water by evaporation and plant transpiration; in this case with liners.

[23] New Sleeper Gold LLC, "Sleeper Mine Water control Permit #NEV50006; 2005 Annual Report." and "4th Quarter, 2006 report."

[24] US Bureau of Land Management, "Preliminary Environmental Assessment, Sleeper Closure Project," Winnemucca Field Office, October 2006.

early predictions led the public to believe that the pits would not create a potentially unmanageable situation. Environmental analyses often do not anticipate these problems, and sometimes are just wrong about the level of toxicity that will ultimately result from the various aspects of the mine. Kuipers and Maest have presented a detailed analysis of the predictability of water quality in hardrock mining.[25] Below are two comparison tables from this report.[26]

Table 6.23. Florida Canyon, NV, Potential, Predicted and Actual Impacts

Resource	Source	Potential Impacts	Mitigation	Predicted Impacts	Actual Impacts
Groundwater	Leach Pads	1997 EIS: • Seepage from the heap leach facility. • Background water quality indicates natural exceedences.	1997 EIS: Facility design to prevent groundwater impacts (zero discharge with leak detection with pumpback of leaks if detected	1997 EIS: No impacts to groundwater predicted	WQ Monitoring: Contamination of groundwater with cyanide and other constituents noted and partially mitigated with leak pumpback system
	Waste Rock, Open Pit, or baseline conditions	1997 EIS: Water quality would be same as pre-mining (background water quality indicates natural exceedences).	1997 EIS: • Backfill pit to prevent formation of pit lake. • Segregation/disposal of PAG rock in the waste rock dumps	1997 EIS: No impacts to groundwater predicted.	WQ Monitoring: Exceedences of drinking water standards noted in various monitoring wells, which could be attributed to waste rock and open pit leachate or baseline conditions.

[25] Kuipers, James R., Maest, A.S., MacHardy, K.A., and Lawson, G. 2006 *Comparision of Predicted and Actual Water Quality at Hardrock Mines: The reliability of predictions in Environmental Impact Statements.*
[26] ibid, pg 149 and pg 152.

Table 6.24. Jerritt Canyon, NV, Potential, Predicted and Actual Impacts

Resource	Source	Potential Impacts	Mitigation	Predicted Impacts	Actual Impacts
Groundwater and Surface Water	Tailings	• 1980 EIS: No information provided for groundwater. Possibility of release of toxic materials to streams due to breakage of the tailings pipeline.	• 1980 EIS: Tailings located in headwaters of small water shed will protect water quality • 1980 EIS: Facility design to prevent groundwater impacts ○ Tailings disposal pond will be lined ○ Horizontal seepage controlled by embankment design.	• 1980 EIS: No impacts predicted • 1991 EA: Six pumpback wells are not effective at preventing migration of plume from impoundment	Water Quality Monitoring • 1991: Cyanide plume detected from tailings pond and seepage collection installed • 1993-2004: Groundwater monitoring wells downgradient of the tailing impoundment show exceedences for Cl and TDS consistently from 1993 –2004
	Waste Rock	• 1980 EIS: Minimum potential for some leaching of some heavy metals and other toxic substances in the waste rock into surface and ground water • 1994 EIS: Groundwater and surface water quality may be affected by acid drainage and other constituents in waste rock	• 1980 EIS: No information provided • 1994 EIS: Waste rock mitigation include: ○ Segregation and blending of PAG waste rock. ○ 1994 EIS: Capping, contouring and drainage controls ○ 1994 EIS: Waste rock characterization and handling (segregation, cap, contour, drainage) program	• 1980 EIS: Minimum impacts predicted • 1994 EIS: No impacts to groundwater or surface water predicted	Water Quality Monitoring • 2001-2004: Surface monitoring shows a steady increase in TDS and SO_4 concentrations downstream from waste rock piles from 2001-2004 with most recent data indicating exceedences of standards by 10 times
	Open Pit	• 1980 EIS: No information • 1994 EIS: Groundwater and surface water quality may be affected by acid drainage and other constituents in pit walls	1980 EIS: Divert surface water flow around pit and groundwater from pit used for dust control or discharged	• 1980 EIS: No impacts predicted • 1994 EIS: No pit lakes predicted to form	

Notice that under the "Predicted Impacts" column in both examples no impacts are typically predicted, and under "Potential Impacts" many water quality issues are listed. In general, and this is concluded in the report, the various EIS analyses recognize that water quality may be compromised, but are overly optimistic in the effectiveness of the mitigating procedures, which is summarized by the authors, "…as with surface water, the predictions made about groundwater quality impacts without considering the effects of mitigation were somewhat more accurate than those made taking the effects of mitigation into account. Again, the ameliorating effect of mitigation on groundwater quality was overestimated in the majority of the case study mines."[27] Reform of the 1872 mining law needs to take into account the limitation of modeling used to predict the future environmental consequences of mines.

Mine Dewatering

Mine dewatering is the process of removing groundwater to keep mines from filling with water. In the Carlin Trend, the highest dewatering rate occurs at the Betze Pit. In 1998, it pumped approximately 100,000 af (acre-feet)[28]. In 2000, the BLM published a cumulative impacts

[27] ibid, pg ES-8.
[28] One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot, = 43,560 cubic feet, approximately 325,829 U.S. gallons (approximately 1233.48 cubic meters).

analysis of this dewatering showing that extensive drawdown would occur throughout the area and that base flow in about six streams would be decreased or eliminated.[29]

The BLM predicted in 2000 that dewatering the Carlin Trend would remove approximately 2,000,000 acre-feet of water by 2018. By 2003, there had been 1,125,000 af pumped for from the Gold Quarry and Betze-Post mines.[30] Gold Quarry had pumped a little more than 210,000 af by 2003, therefore Betze-Post pumped about 910,000 af with peaks of 100,000 af/y in 1994 and 1998. Its rate has stabilized at about 45,000 af/y.[31]

The perennial yield of a groundwater basin is the amount of water which can be economically pumped annually without causing a permanently increasing drawdown. Regardless of the source, the dewatering has far exceeded and will continue to exceed the cumulative perennial yield of the Carlin Trend hydrologic basin. The dewatering pumpage of 2,000,000 af, if it is correct, will total approximately 51 years of the entire perennial yield for the six basins. The deficit above the perennial yield will be approximately 950,000 af. Total pumpage to date is 1,135,000 af which equals 37 years of the perennial yield in the basin and is a deficit of 595,000 af or about 20 years of the perennial yield.[32] Pumpage from 1992 to 2007 has totaled about three times that which would be allowed by the Nevada State Engineer if he followed Nevada water law of approving water rights applications up to the perennial yield of a basin.

Water levels near the Humboldt River have dropped up to ten feet in the carbonate and a lesser amount in the siltstone. This is not a huge amount, but is on the edge of the potentially expanding cone. The predictive groundwater model did not simulate this drawdown possibly because it had a boundary at the river which prevented the drawdown from being simulated. The US Geological Survey estimated substantial drawdown occurring northeast of Gold Quarry into the upper Maggie Creek basin; this drawdown extended far beyond the BLM's predicted ten-foot drawdown cone. Similarly, the US Geological Survey plotted a 100-foot drawdown contour under Susie Creek and lower Maggie Creek outside of the predicted ten-foot drawdown. Dewatering has caused significant deficits in the groundwater systems of at least six groundwater basins near the Carlin Trend. Because the local recharge is small compared to the perennial yield, there must naturally be a substantial amount of interbasin inflow. The source of this interbasin flow is yet unknown as is the impact of this flow. Clearly, the reduction or elimination of springs and streams will have a significant impact on wildlife, and potentially impact cultural practice as well,[33] but long-term impacts from dewatering are to date still unclear.

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[29] US Bureau of Land Management, *Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leevile Project*, Elko Field Office, April 2000.

[30] Plume, R.W., 2005. "Changes in Ground-Water Levels in the Carlin Trend Area, North-Central Nevada, 1989 – 2003, Scientific Investigations Report" 2005-5075. U.S. Geological Survey.

[31] Myers, Tom, internal communication on a preliminary draft of "Review of Mine Dewatering on the Carlin Trend; Predictions and Reality," August 2007, Reno Nevadad.

[32] ibid.

[33] The Rock Creek drainage is within the hydrologic region of impact from dewatering of the Carlin-Trend analyzed in the BLM assessment (reference 29), and is of spiritual important to the Western Shoshone people.

HR 2262 Reforms Are Necessary

Clearly, the current regulatory system is not working to protect the water resources put at risk from modern mines. While there are mines which do not pose serious threats to water resources, there are too many mines which have and continue to degrade waters of the state.
The need for the federal land management agencies to have the statutory obligation to ensure a mine will not cause long-term harm is necessary because the current system is clearly not working. The public land agencies are responsible for the proper stewardship of these lands, and they must have the ability and obligation to meet that responsibility.

Mining can be profitably conducted without causing long-term harm, and without leaving a legacy of polluted and dangerous landscapes. Every other type of industry that utilizes the public lands must ensure that they operate in such a manner prior to being allowed access to the public lands. Mining can and should be required to do the same.

Public Discussion of Land Use

One of the most controversial aspects of the proposed reforms is the repeal of the presumption that mining is the best use of an area. Many people fear that if mining loses this completely unique and antiquated status, it will be the end of the industry in the United States. The argument does not hold up on analysis, and the time for allowing public debate is long overdue.

What the proposed legislation would allow is public debate similar to that allowed by the laws governing the oil and gas, coal, and industrial minerals extractive industries. The assumption that public debate will result in denial of a mining proposal, implies that the consequences of the mine will be unacceptable. If, indeed, the consequences are similar to what has too often been the case with mines permitted under the current system, then that opposition is understandable and appropriate. If and when, however, the proposal seems unlikely to cause unacceptable harm, or if there are proper environmental safeguards in place to keep the consequences within acceptable bounds, the level of opposition is and will be moderated.

The lack of public confidence in the wisdom of many mine proposals is due to a history of failure, tied to the lack of reform of the regulatory system. Mine proposals that are well designed and managed need not fear having the public be involved in the process.

Nevada Will Continue to be a Mining State

Reform of the Mining Law is often seen as the death-knell of the mining industry.[34] That once current mines are closed, the industry will move completely to other countries. We believe this fear is greatly overstated and simply incorrect.

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[34] Statement of Ted Wilton, Spring Creek, Nevada 89815, Presented to the Energy and Mineral Resources Subcommittee of the U. S. House of Representatives Natural Resources Committee on H. R. 2262: The Hard Rock Mining and Reclamation Act of 2007 July 26, 2007, http://resourcescommittee.house.gov/images/Documents/20070726/testimony_wilton.pdf

The single most important reality of mining is that you mine where the minerals are. The geology of Nevada is well known as very favorable for finding economic deposits of minerals.[35] This is reflected in its history, as well as the continued strong rate of exploration for new deposits.

The most recent information gathered from the mining industry by the Nevada Commission on Mineral Resources shows very strong and positive confidence in Nevada's mining future. The industry "reported employing 228 geologists in Nevada in 2006, up from the 190 reported for 2005. Projections for 2007 show an increase to 236 geologists."[36] "Respondents were asked whether they were optimistic, neutral, or pessimistic about domestic exploration. Overall, 60 percent of the respondents reported being optimistic, 28 percent were neutral, and 12 percent were pessimistic."[37]

Nevada has an excellent base of experienced miners and mining professionals, and there is a well developed mining infrastructure. Lastly, it must be noted, it has a political climate that is favorable to the industry.[38] All of these are well documented, and are reflected in Nevada consistently being recognize by the industry as the most favorable (or nearly so, this past year) jurisdiction in the world for mining by the industry itself.[39]

As the Nevada Bureau of Mines and Geology and the Nevada Division of Minerals put it, the top reason to explore in Nevada is "great geology and mineral potential", and they conclude that "Nevada is a *really great* place to explore for and mine gold."[40] (emphasis in original)

Providing adequate protections for the future and alternate uses of the land will not change this basic reality. Nevada can be protected from the worst harms done by some mines under the one hundred and thirty five year old Mining Law, and still have a healthy and productive mining industry.

Conclusions

The Mining Law of 1872 needs to be brought up to twenty first century standards. The unique status given to the mining industry by this antiquated law is no longer justified or necessary. The long-term and serious harms that are often the result of poor mine planning and management are no longer an acceptable trade for the benefits to the local economies and the precious metals themselves.

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[35] Doug Driesner and Alan R. Coyner, NEVADA EXPLORATION SURVEY 2006, Nevada COMMISSION ON MINERAL RESOURCES and DIVISION OF MINERALS, June, 2007, page 5
[36] Ibid., page 1.
[37] Ibid., page 7.
[38] Ibid.
[39] McMahon, Fred, and Anas Melhem; 2007; Fraser Institute Annual Survey of Mining Companies 2006/2007; http://www.fraserinstitute.ca/admin/books/files/Mining06rv2.pdf
[40] Price, Jonathan G., Alan R.Coyner, John Muntean, and Doug Driesner; 2006; Udate on Production and Exploration Activity in Nevada.

Mining has changed since 1872, it now can be done responsibly. HR 2262 will allow the industry to continue to thrive, while protecting the long-term viability and health of Nevada and the United States.

Thank you, again, for the opportunity to discuss this important issue. I will answer any questions you may have.