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THE MINING BURDEN:

States Would Shoulder Significant Costs of Cleaning Up Abandoned Mines if They Take Over American Lands

Center for Western Priorities

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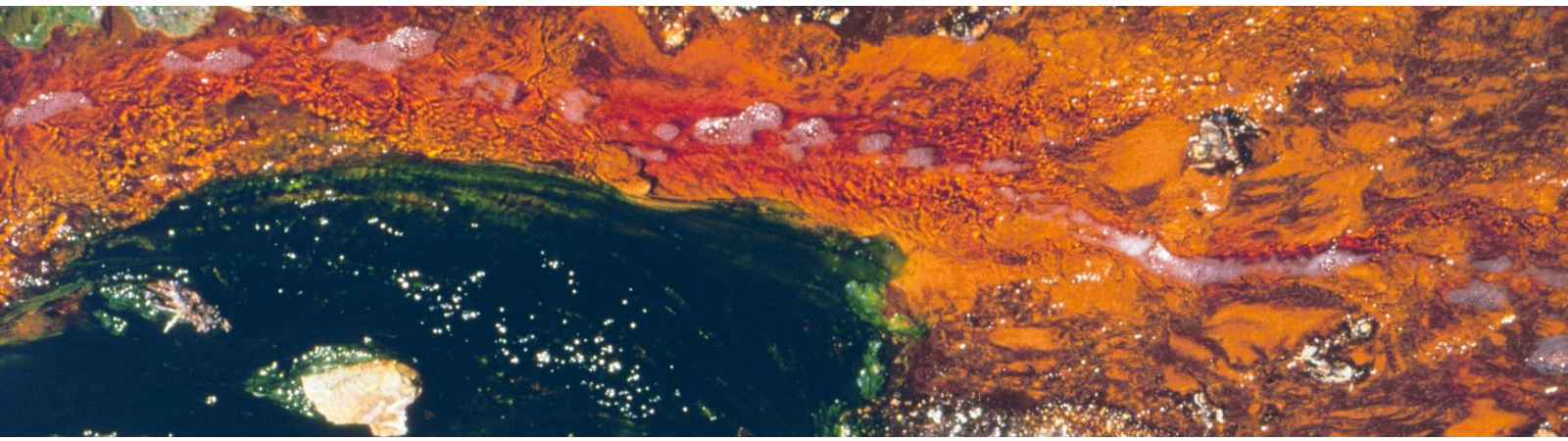

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INTRODUCTION

In August 2015, viewers across the world watched in horror as three million gallons of contaminated water poured into the Animas River in southern Colorado, turning the water a bright amber color.[1] The source of the toxic sludge was the Gold King Mine, abandoned decades ago by its original owner. Contractors with the Environmental Protection Agency (EPA) working to clean up the mine accidentally released the toxic chemicals into the river.

Channeling Winston Churchill, some politicians did not let a good crisis go to waste, and were quick to blame EPA and "federal overreach" for the accident. A handful went even further, claiming that the incident was evidence that states would be better managers of American public lands than the federal government. For example:

> "This mistake and lack of transparency by the federal EPA is yet another egregious example of why states and local entities are much better managers of our own land and natural resources."
>
> — Utah State Senator Margaret Dayton[2]

Statements like these are an attempt to bolster a movement by some Western politicians to compel the U.S. government to hand over hundreds of millions of acres of American public lands to the states. These proposals have led to serious concerns, with experts doubting their constitutionality,[3] public opinion research indicating their deep unpopularity,[4] and economic experts questioning how states could afford the costs of managing public lands.[5]

The Gold King Mine catastrophe highlighted one of the major costs of public lands management: remediating America's mining legacy, which left toxic abandoned mines scattered across the Western U.S. There are tens of thousands of abandoned mines—just like the Gold King—on national public lands. So, any state taking over management of American lands within its borders would not only receive the benefits offered by those lands, but also their costs and liabilities such as abandoned mines.

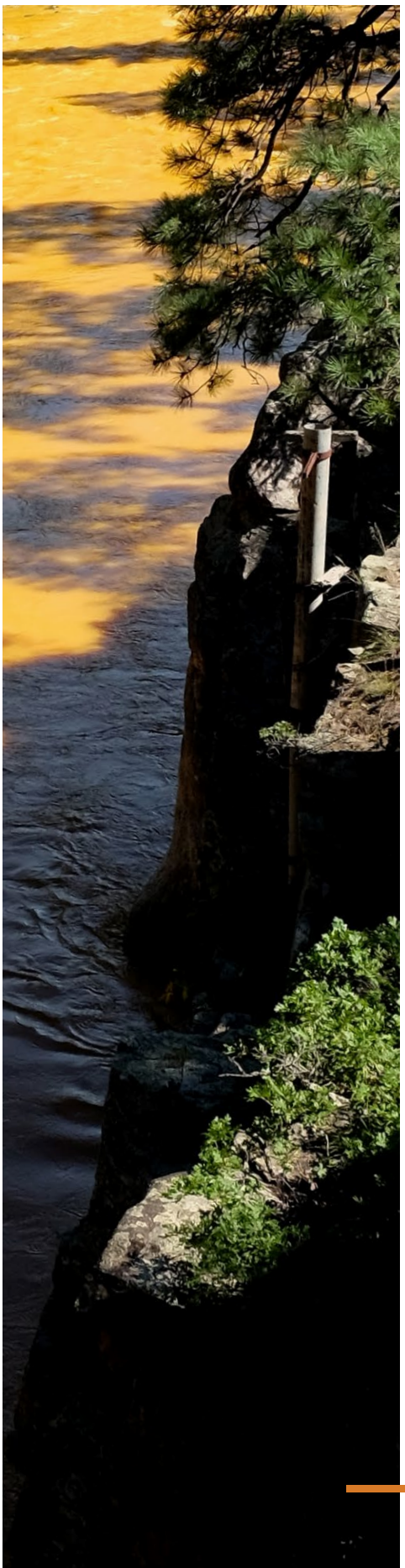

Photo: The 2015 Animas River spill
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In this new analysis we examine the costs that states would take onto their books from all abandoned mines, and put a price tag on those cleanup responsibilities that would be transferred to the states. We estimate that should state land takeover efforts move forward, 13 Western states would be saddled with between **$9.6 and $21 billion in costs** of cleaning up the approximately **100,000 abandoned mines that exist on public lands** today.

This multi-billion dollar price tag is one that states, which must operate under balanced budgets, would be careless to take on. Proponents of turning American lands over to the states have not explained how states could afford the costs of cleaning up abandoned hardrock mines, or the liabilities that would occur should an accident like the Animas River spill occur, without raising taxes or selling off large tracts of public lands to private entities.

BACKGROUND: THE ABANDONED MINE CRISIS

The American West is pockmarked with abandoned mines, a legacy of policies like the 1862 Homestead Act and 1872 Mining Law that enabled the settling of the region and triggered a free-for-all development of resources.

While the West's gold, silver, and other metal booms brought prosperity to some and contributed to the region's cultural heritage, it also resulted in a sorry legacy: the mines that companies and individuals abandoned after extracting the precious minerals. By some estimates, there are up to 500,000 abandoned mines across the country.[6] A more conservative estimate, which standardized the definition of what constitutes an abandoned mine, puts the number at more than 160,000 in Western states.[7]

There are many dangers of abandoned mines, including hidden shafts, undetonated explosives, and damage to lands.[8]

But by far the most concerning situation created by abandoned mines is their threat to water resources, namely acid mine drainage—highly acidic wastewater that is toxic to fish and other aquatic species and can pose major threats to human health.[9] The EPA estimates that 40 percent of the West's headwater watersheds have been polluted by mining.[10]

Despite the legacy of abandoned mines, it was not until 2001 that the Bureau of Land Management (BLM), the federal land management agency with the most abandoned mines, required mining companies to post a bond before mining to cover the costs of cleanup should they go bankrupt.[11] This means that tens of thousands of mines dug before 2001 are abandoned and lack a responsible party, and therefore a source of cleanup funds.

Threats to water and health:
ACID MINE DRAINAGE

Acid mine drainage occurs when sulfides in the rock are exposed to oxygen and water during mining. The result of the chemical reaction is sulfuric acid, which can drain from the mine, sometimes dissolving other heavy metals like cadmium, arsenic, and mercury.

Acid drainage can end up in rivers and streams, polluting drinking water, killing fish, and threatening recreational economies.

In cases where a company cannot be identified to clean up an abandoned mine, the costs fall to American taxpayers. The EPA often takes on these costs, but if the mines are on public lands managed by agencies like the BLM and the Forest Service (USFS), the liability and costs of cleanup fall to those agencies.

As described in further detail below, there are nearly 100,000 abandoned mines on BLM and USFS lands, meaning that should these lands be turned over to the states, the liabilities and costs of cleanup would also be turned over.

NUMBER OF ABANDONED MINES ON PUBLIC LANDS

The data on abandoned mines is notoriously thin, and estimates of their number and cleanup costs vary greatly.[12] As the U.S. Government Accountability Office (GAO) put it, "there are no definitive estimates of the number of abandoned hardrock mines on federal and other lands,"[13] in large part because there is no agreed-upon definition of what constitutes an abandoned mine.

Despite limitations in the data, the GAO made its best attempt to gather the number of abandoned mines on national public lands from BLM and USFS data sources in 2009. The researchers reported that there are approximately 100,000 abandoned mines on BLM and USFS land in 13 Western states.[14] The state breakdown can be seen in the chart below:

Table 1: Abandoned Mines on Public Lands in the Western U.S.

State	Estimated number of abandoned mines on BLM land	Estimated number of abandoned mines on USFS land	Total
Alaska	6,000	830	6,830
Arizona	22,000	2,183	24,183
California	11,500	6,248	17,748
Colorado	2,500	2,605	5,105
Idaho	400	4,635	5,035
Montana	1,016	3,899	4,915
Nevada	9,000	1,613	10,613
New Mexico	3,000	989	3,989
Oregon	3,400	2,427	5,827
South Dakota	Not reported	503	503
Utah	10,000	697	10,697
Washington	Not reported	1,956	1,956
Wyoming	2,000	336	2,336
Total	70,816	28,921	99,737

Source: Government Accountability Office reporting BLM and USFS data

COST OF ABANDONED MINE CLEANUP

Just as estimating the number of abandoned mines is challenging, estimating the costs of cleanup is an inexact task. The EPA explains that "estimates of cleanup costs are…tentative and incomplete,"[15] while the GAO further notes that "cleanup costs for these abandoned mines vary by type and size of the operation."[16]

With that said, there are some general estimates of abandoned mine cleanup costs. What one expert terms "the only attempt to combine all the disparate pieces of data into a single number"[17] is a report from the Mineral Policy Center (now known as Earthworks), which breaks down the costs of cleaning up abandoned mines by the extent of contamination.[18] The contamination categories and the approximate number of mines that fit them can be seen in the table below:

Table 2: Average Cleanup Costs by Type of Abandoned Mine

Type of contamination	Average cleanup cost	Number of sites	Percentage of Sites
Reclaimed and/or benign	$0	194,500	34.88%
Landscape disturbance	$7,245	231,900	41.59%
Safety hazard	$32,110	116,300	20.86%
Surface water contamination	$1,646,678 – $4,940,035	14,400	2.58%
Groundwater contamination	$8,233,391 – $24,700,173	500	0.09%
Superfund	$411,669,550 – $576,337,370	50	0.01%
Nationwide total		557,650	100%

Source: Mineral Policy Center, data adjusted for inflation from 1993 to 2015 dollars by CWP

Photo: An abandoned mine in Colorado
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ANALYSIS

To determine the cost of cleaning up abandoned mines on public lands should Western states take over their liability, we employed two data sets: approximations from the GAO on the number of abandoned mines on BLM and USFS lands per state (Table 1) and data from the Mineral Policy Center to calculate the percentage of mines that are contaminated to various degrees and the costs to clean them up (Table 2).

By combining these datasets, we calculated the percentage of different types of abandoned mines in each Western state. For example, in Arizona there are a total of 24,183 abandoned mines on BLM and USFS lands, 33.88 percent (8,435) of which are "reclaimed and/or benign," 41.59 percent (10,057) of which are "landscape disturbance," 20.86 percent (5,043) of which are "safety hazard," 2.58 percent (624) of which are "surface water contamination," 0.09 percent (22) of which are "groundwater contamination," and 0.01 percent (2) of which are "Superfund."

We approximated the costs of cleaning up theses mines in each state by multiplying the number of different types of abandoned mines by their average cleanup costs.

Our analysis indicates that should BLM and USFS lands (and then abandoned mines located on them) be turned over to Western states, together states could face between **$9.6 and $21 billion in cleanup costs**. The breakdown by state is in the chart below:

Table 3: Costs of Cleaning Up Abandoned Mines on Public Lands in 13 Western States

State	Number of abandoned mines on BLM and USFS lands	Low end of cleanup costs	High end of cleanup costs
Alaska	6,830	$659,261,812	$1,411,789,147
Arizona	24,183	$2,334,250,131	$5,104,946,845
California	17,748	$1,713,115,466	$3,746,540,818
Colorado	5,105	$492,757,181	$1,077,647,672
Idaho	5,035	$486,000,472	$1,062,870,916
Montana	4,915	$474,417,541	$1,037,539,335
Nevada	10,613	$1,024,413,705	$2,240,367,236
New Mexico	3,989	$385,035,925	$842,063,969
Oregon	5,827	$562,447,815	$1,207,841,218
South Dakota	503	$48,551,785	$106,181,543
Utah	10,697	$1,032,521,757	$2,258,099,343
Washington	1,956	$188,801,772	$412,904,769
Wyoming	2,336	$225,481,053	$493,121,442
Total	99,737	$9,627,056,415	$21,031,914,253

Source: CWP calculations using data reported by Government Accountability Office and Mineral Policy Center data, adjusted for inflation from 1993 to 2015 dollars

ABANDONED MINE CLEANUP CASE STUDIES

LEAD QUEEN MINE, Arizona

The Lead Queen Mine is an abandoned lead, silver, zinc, copper and gold mine that operated in the late 19th century and was abandoned sometime after 1940. It is located in the Coronado National Forest outside Patagonia, Arizona, approximately an hour south of Tucson.

Local residents discovered sludge leaking from the mine in September 2014 and alerted authorities. Because the mine is located on Forest Service lands, the agency is responsible for its cleanup. Along with the United States Geological Survey, the Forest Service conducted a survey of the site and discovered materials that could harm human health. Cleanup of the site began in October 2015, which is being undertaken by a private remediation company at a cost to American taxpayers of nearly $362,000.

COMET MINE, Montana

The Comet Mine is an abandoned silver, lead, zinc, and gold mine located south of Helena, Montana. Most of the minerals were extracted between 1883 and 1893, although intermittent mining occurred into the 1970s.

The Comet Mine cleanup was part of a multi-agency effort to clean up the Boulder River Watershed in the late 1990s. The mine is located on Bureau of Land Management lands, and the agency partnered with the Montana Department of Environmental Quality in the cleanup efforts. Cleanup was completed in June 2000, and the BLM spent approximately $2 million in taxpayer money on the effort.

MONARCH MILL, Idaho

This former mill and mining site near Atlanta, Idaho was primarily used to crush and grind ore of various minerals. After the mill shut down in the 1950s, large amounts of tailings were left. Some of these tailings washed directly into the Middle Fork Boise River, causing significant amounts of damage to fish and the ecosystem.

Although the mill is located on Forest Service land, the agency worked with the Environmental Protection Agency and Trout Unlimited to clean up the site. The agencies paid approximately $730,000 to remediate the area, although more efforts are needed for full reclamation of the river.

FURTHER DETAILS ABOUT THE RISKS TO STATES

One of the laws governing abandoned mine cleanup is the Superfund law, formally known as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). A key reason CERCLA was enacted was to address "orphan" polluted sites like abandoned mines.

Under CERCLA, federal land management agencies can be considered to be "potentially responsible parties" and can be held liable for responding to disasters at and cleaning up abandoned mines, even if they did not engage in mining activities.[19] States can also be considered potentially responsible parties under CERCLA, and therefore liable for the abandoned mines located on the lands that they manage.[20]

Thus, both the federal and state governments can be liable for cleanup of abandoned mines under the Superfund law. If states were to come into ownership of federal public lands and the approximately 100,000 abandoned mines on them, they could be liable for the damage and cleanup associated with those mines.

This risk has not gone unnoticed by leaders in Western states. Indeed, when studying the feasibility of transferring Idaho's federal public lands to the state, the Idaho Department of Lands warned that:

> "...there could be thousands of abandoned mines on the lands eligible for transfer under legislation with assumptions similar to Utah [House Bill] 148. This would probably include many sites with dangerous mine openings or soil and water contamination. The State's potential liability for these sites would increase significantly.[21]

And as the state of Utah wrote in its analysis of the economics of the state taking over public lands:

> "With the land transfer, [Utah State Division of Oil, Gas and Mining] personnel are not certain if BLM funds would still be provided for remediation....Transfer of federal lands to the state could result in the state assuming responsibility for abandoned mine remediation.[22]

While "total state spending on reclamation of hardrock mines is minuscule,"[23] as one scholar put it, this would change and expand greatly should states be saddled with responsibility for tens of thousands of abandoned mines that reside on federal public lands.

Photo: A mine in Colorado
Scott Ingram, CC BY-NC 2.0

CONCLUSION

The Animas River spill should serve as a wake-up call about the extensiveness of the abandoned mines problem in the American West. While the EPA and its contractor are responsible for releasing pollution in this particular instance, they are not responsible for creating it. Mining companies long ago abandoned approximately 100,000 mines on public lands, leaving massive cleanup costs to American taxpayers.

Luckily, some elected leaders are attempting to modernize the outdated policies governing hardrock mining and abandoned mine cleanup on public lands, including reforms to the 1872 Mining Law, "Good Samaritan" laws, and CERCLA. These efforts are intended to help ensure taxpayers receive a fair return from hardrock minerals mined on public lands, while closing loopholes that leave taxpayers footing the bill for cleanups.

The massive number and costs of cleaning up abandoned mines on public land are facts that proponents of giving away our American lands fail to reckon with. Our analysis shows that the 13 Western states could face between $9.6 and $21 billion in abandoned mine cleanup costs, should they assume liability for the abandoned mines located on BLM and USFS lands across the West.

Turning hundreds of millions of acres of American public lands over to the states would be one of the most far-reaching changes to land management policy in the history of the U.S. Policymakers—and the American people—should be fully informed about the consequences of this proposal.

The costs to clean up abandoned mines on public lands have already given some state researchers and leaders cause for concern. For this and myriad other reasons, the handful of elected officials who are advocating for this policy should cease their efforts and instead focus on real, collaborative solutions for public lands issues facing the American West today.

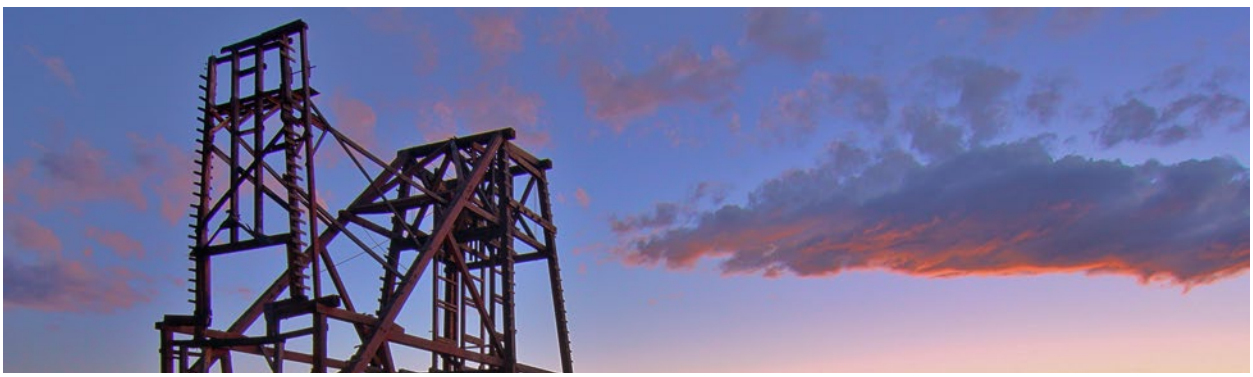

Photo: An abandoned mine in Colorado
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REFERENCES

(1) Farmington Daily News staff. (August 11, 2015). "Gold mine's toxic plume extends to Utah." Farmington Daily News. Last accessed November 25, 2015: http://www.usatoday.com/story/news/nation/2015/08/10/navajo-nation-epa-mine-wastewater-spill/31399517/

(2) Penrod, E. (August 15, 2015). "How the Colorado River mine sludge impacts Utah." Salt Lake Tribune. Last accessed November 25, 2015.

(3) Graybill, R. (March 11, 2015). "Public Land Transfer Laws: Not Constitutional Then, Not Constitutional Now." American Constitutional Society. Last accessed November 25: 2015. http://www.acslaw.org/acsblog/public-land-transfer-laws-not-constitutional-then-not-constitutional-now

(4) Center for American Progress. (September 25, 2014). "RELEASE: Bipartisan Poll Finds Western Voters Oppose Transfer of America's Forests and Public Lands to State Ownership." Press release. Last accessed November 25, 2015: https://www.americanprogress.org/press/release/2014/09/25/97816/release-bipartisan-poll-finds-western-voters-oppose-transfer-of-americas-forests-and-public-lands-to-state-ownership/

(5) Goad, J. and Zimmerman, G. (December 9, 2014). "The Three Unreasonable Assumptions Underlying the Notion that Utah Could Afford to Manage Our American Lands." Center for Western Priorities. Last accessed November 25, 2015: http://westernpriorities.org/2014/12/09/the-three-unreasonable-assumptions-underlying-the-notion-that-utah-could-afford-to-manage-our-american-lands/

(6) U.S. Bureau of Land Management. "Abandoned Mine Lands Portal." Last accessed November 25, 2015: http://www.abandonedmines.gov/ep.html

(7) Mittal, A. (July 14, 2011). "Testimony on Abandoned Mines: Information on the Number of Hardrock Mines, Cost of Cleanup, and Value of Financial Assurances." U.S. Government Accountability Office. Last accessed November 25, 2015: http://www.gao.gov/assets/130/126667.pdf

(8) State of Michigan. "Abandoned Mines." Last accessed November 25, 2015: http://www.mg.mtu.edu/abmine/abando.htm

(9) U.S. Forest Service. "Abandoned Mine Sites on Forest Service Lands." Last accessed November 25, 2015: http://www.fs.usda.gov/detail/whitemountain/landmanagement/projects/?cid=stelprdb5209652

(10) U.S. Environmental Protection Agency. "Liquid Assets 2000: Americans Pay for Dirty Water." Last accessed November 25, 2015: http://water.epa.gov/lawsregs/lawsguidance/cwa/economics/liquidassets/dirtywater.cfm

(11) U.S. Government Accountability Office, "Hardrock Mining on Federal Lands." Last accessed November 25, 2015: http://www.gao.gov/key_issues/hardrock_mining_federal_lands/issue_summary

REFERENCES

(12) Seymour, J. (September 2004). "Hardrock Mining and the Environment: Issues of Federal Enforcement and Liability." Ecology Law Quarterly Volume 31, Issue 4. Last accessed November 25, 2015: http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1769&context=elq

(13) Mittal, A.

(14) Nazzaro, R. (March 12, 2008). "Testimony on Hardrock Mining: Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land." U.S. Government Accountability Office. Last accessed November 25, 2015: http://www.gao.gov/assets/120/119391.pdf

(15) U.S. Environmental Protection Agency. "Abandoned Mine Land and Federal Facilities." Last accessed November 25, 2015: http://www2.epa.gov/enforcement/abandoned-mine-land-and-federal-facilities

(16) Mittal, A.

(17) Stokstad, P. (January 1998). "Structuring a Reclamation Program for Abandoned Noncoal Mines." Ecology Law Quarterly Volume 25, Issue 1. Last access November 25, 2015: http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1568&context=elq

(18) Mineral Policy Center. (June 1993). "Burden of Gilt: The legacy of environmental damage from abandoned mines, and what America should do about it." Last accessed November 25, 2015: https://www.earthworksaction.org/files/publications/REPORT-Burden-of-Gilt.pdf

(19) U.S. Environmental Protection Agency. "Abandoned Mine Land and Federal Facilities."

(20) Smith, O. (April 2012). "The Expansive Scope of Liable Parties under CERCLA." St. John's Law Review, Volume 63 Issue 4. Last accessed November 25, 2015: http://scholarship.law.stjohns.edu/cgi/viewcontent.cgi?article=1956&context=lawreview

(21) Schultz, T. (February 13, 2013)."Letter to The Honorable Monty Pearce and The Honorable Lawerence Denney." Idaho Department of Lands. Last accessed November 25, 2015: https://www.idahoconservation.org/blog/files/idaho-department-of-lands-analysis-of-public-lands-takeover/at_download/file

(22) Stambro, J. et al. (November 2014). "An Analysis of a Transfer of Federal Lands to the State of Utah." University of Utah, Utah State University, Weber State University. Last accessed November 25, 2015: http://publiclands.utah.gov/wp-content/uploads/2014/11/1.%20Land%20Transfer%20Analysis%20Final%20Report.pdf

(23) Seymour, J.