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Testimony on "Implications and environmental impacts of the Office of Surface Mining's proposed Stream Protection Rule as it relates to the Endangered Species Act and Clean Water Act"

**Senate Committee on Environment and Public Works**

**February 3, 2016**

Thank you Chairman Inhofe, Ranking Member Boxer and members of the committee for the opportunity to testify about the implications and environmental impacts of the Stream Protection Rule (SPR). I hope my testimony today will impress upon this committee the high cost the people, wildlife and landscapes of Appalachia will pay for any delay in finalizing rules that could rein in the damage caused by mountaintop removal coal mining. I also hope to counter some of the alarmist claims about potential coal industry job losses that have surrounded the debate about the SPR since it was first announced in 2009.

I am the Director of Programs at Appalachian Voices, a non-profit organization dedicated to protecting the land, air, water and people of the Southern and Central Appalachian region. Beginning with my doctoral research at Cornell University on the impacts of acid rain on birds, I have spent much of the last 20 years involved in research on the mining, processing and combustion of coal. Appalachian Voices is a member of the Alliance for Appalachia, a coalition of 15 organizations working to end mountaintop removal coal mining and bring a just and sustainable future to Central Appalachia. The collective membership of Appalachian Voices and other Alliance for Appalachia partners spans the coalfield region and beyond and is comprised of individuals from all walks of life, including former coal-miners and Appalachian families with roots six or more generations back on the same piece of land.

I want to be clear that I am not here to support every detail of OSMRE's draft rule or every decision the agency made in drafting it. Appalachian Voices believes the proposed rule represents, at best, two steps forward and one step back. But any discussion of the "Implications and environmental impacts of the Office of Surface Mining's proposed Stream Protection Rule" needs to start with one basic fact: the permitting and enforcement regime that has been in effect since 1983 is not working, and indeed has never worked to protect the health of streams, communities and wildlife in Central Appalachia.

We support this rulemaking because we agree with OSMRE that existing rules are failing to prevent serious and unmitigated environmental harm from occurring. The rule is an update of the 1983 Stream Buffer Zone Rule, based on over 30 years of updated science and local knowledge of the impacts of mountaintop removal. Among other things, this new rule will:

- Define "material damage to the hydrologic balance" a term previously used but never clearly defined, and therefore difficult to enforce,
- Require improved collection of chemical and biological data before and during mining, and
- Ensure protection and restoration of streams, including hydrologic form and ecological function, and related resources.

Despite grave concerns that the rule does not go far enough to protect Appalachian streams and communities, and in some ways may even be a step back, our approach has been to provide input to OSMRE on how the rule should be improved. We believe that productive participation in the rulemaking process, rather than intimidation and obstruction, is the appropriate route for state regulatory agencies and Congress to take as well.

As OSMRE states in its preamble, an important impetus for issuing this rule is that it helps fulfill the agency's responsibilities under a multi-agency memorandum of understanding (MOU) designed to "significantly reduce the harmful environmental consequences of surface coal mining operations in six Appalachian states." Thus, while the agency decided to fulfill its obligation by issuing a rule with nationwide applicability, there should be no mistake that a goal of this rule must be to reduce the damage caused by mountaintop removal and related forms of large-scale surface coal mining in Appalachia.

Mountaintop removal, as the term has long been used in the communities where it occurs, refers to the practice of large-scale surface coal mining in the steep terrain of the Central Appalachian coalfields. In conventional usage, the meaning of mountaintop removal is broader than the narrow definitions often used by state agencies and defined in the definitions section of the SPR. Regardless of what terminology regulators use to classify them, these extremely destructive types of surface coal mining devastate both the natural ecosystems of the Appalachian Mountains and the communities and families who have lived on their land for generations. Mountaintop removal is responsible for the destruction of over 500 mountains and approximately 2000 miles of stream channels across Central Appalachia.

Appalachian Voices has members, staff, and board members who are from and who currently live in areas that are impacted by mountaintop removal coal mining. In our work, we strive to listen closely to those who know first-hand the inadequacies and consequences of the existing regulatory regime, as these perspectives are essential in informing decisions about whether and how to improve it. To ensure that those voices are heard in this hearing today, I have summarized the testimony of dozens of residents of Appalachian mining communities who submitted comments to OSMRE in support of a strong Stream Protection Rule last fall. Other than a universal sense of urgency for federal agencies to finally halt the practice of mountaintop removal, there were five major themes that showed up in the comments of local residents. Those themes were that a strong Stream Protection Rule is necessary because of:

- 1. Unacceptable damage to streams and wildlife:** under the existing rules, people have witnessed the streams and springs where they used to swim, fish and drink water be polluted or destroyed on a massive scale over the last three decades since the SMCRA's rules on mining near streams were last (legally) updated;

- 2. Significant threats to human health:** people are concerned about high rates of cancer and other diseases that are strongly correlated with living near coal mines in Appalachia and want stronger rules to reduce air and water pollution that can threaten their health;

**3. Need to support citizen involvement and enforcement:** people do not believe that state agencies that enforce SMCRA and the Clean Water Act will ever enforce the law adequately without strong new rules for water quality monitoring and citizen enforcement;

**4. Need to support economic diversification:** as the coal industry in Appalachia declines, many local people believe that economic growth depends on diversifying their economy and protecting the natural resources like clean water and wildlife that could underpin future economic development - and they believe that continuing to sacrifice their natural capital to benefit coal companies' bottom lines is a poor long-term investment for their communities;

**5. Need to update rules on bonding:** as coal markets remain stuck in the doldrums and more and more companies are declaring bankruptcy, people believe it is necessary to increase bonding requirements to ensure that companies will meet their environmental cleanup obligations, particularly as bankrupt companies have clearly demonstrated their intent to prioritize large bonuses for executives over meeting responsibilities to their workers and the environment.

Following are examples of specific complaints voiced by local residents exemplifying each of these themes, and an evaluation of those concerns in the light of recent scientific research, energy market trends and actions of state regulatory agencies.

### **Theme 1: Unacceptable damage to streams and wildlife**

*“It’s gone! What once was a gathering spot for many locals is no longer and will never be again. The cold, crystal clear, mountain water that brought many folks with empty water jugs in hand to fill to a small mountain stream which once flowed down “Old Standard Hill,” in the Clairfield area of Claiborne County, Tennessee, is now covered up. A priceless non-renewable resource is gone forever! The stream that supplied many with drinking water and many other uses has been destroyed, covered up, and will never be what it once was.”*

- Gary Garrett, Clairfield, TN.

*“From the time I was a child, I can remember swimming, fishing, and camping on the Powell River. I can also remember times when those activities were not possible due to mining runoff and accidents in the Powell River’s watershed that had devastated the ecosystem, wiping out fish populations and polluting the water to the point that it was unhealthy to swim in. My hope is that the Stream Protection Rule will ensure our rivers and streams are healthy for all the life that depends on them – including us, and for the enjoyment and economic resiliency of our region’s people for years to come.”*

- Adam Malle, Big Stone Gap, VA

Given how comprehensively OSMRE conducted its literature review of scientific studies around the impacts of mining on streams, there is little need to add more here to illustrate that the concerns of these residents are well founded. As OSMRE stated in the rule:

“Coal mining operations continue to have adverse impacts on streams, fish, and wildlife despite the enactment of SMCRA and the adoption of federal regulations implementing that law more than 30 years ago. Those impacts include loss of headwater streams, long-term degradation of water quality in streams downstream of a mine, displacement of pollution-sensitive species of fish and insects by pollution-tolerant species, fragmentation of large blocks of mature hardwood forests, replacement of native species by highly competitive non-native species that inhibit reestablishment of native plant communities, and compaction and improper construction of postmining soils that result in a reduction of site productivity and adverse impacts on watershed hydrology.”

According to one of the studies OSMRE reviewed, a groundbreaking study published by 13 leading aquatic ecologists in 2010 in *Science*, the nation's premier scientific journal, “Clearly, current attempts to regulate [mountaintop removal mining] practices are inadequate. Mining permits are being issued despite the preponderance of scientific evidence that impacts are pervasive and irreversible and that mitigation cannot compensate for losses.”<sup>1</sup>

The important question raised by the findings of this and many other studies is whether the proposed Stream Protection Rule goes nearly far enough to fulfill its stated goal of “Minimiz[ing] the adverse impacts of surface coal mining operations on surface water, groundwater, fish, wildlife, and related environmental values, with particular emphasis on protecting or restoring streams and aquatic ecosystems.”

Our concern is that this rule is overly reliant on mitigation measures like stream replacement that have been shown to almost always fail to restore stream function. For instance, researchers at the University of Maryland published a peer-reviewed study in 2014 that synthesized information from 434 stream mitigation projects from 117 permits for surface mining in Appalachia<sup>2</sup>. The study evaluated the success of both stream restoration and stream creation projects and concluded that “the data show that mitigation efforts being implemented in southern Appalachia for coal mining are not meeting the objectives of the Clean Water Act to replace lost or degraded streams ecosystems and their functions.” Astoundingly, the study found that, “97% of the projects reported suboptimal or marginal habitat even after 5 years of monitoring.”

Because the proposed SPR allows for mining activities, including waste disposal, in streams, it is actually less stringent than the 1983 rule it replaces in this regard. The 1983 rule prohibited mining disturbances within 100 feet of streams and prohibited damage to streams by mountaintop removal mining. In practice, however, states have routinely granted variances to the 1983 Stream Buffer Zone rule, allowing valley fill construction and other mining impacts to streams on a regular basis. This is often done by allowing companies to remediate other areas of streams that have already been degraded as a substitution for the stream miles they will bury or otherwise damage.

While it does not include a stream buffer zone requirement, the SPR does provide a number of needed protections for streams in Appalachia - assuming OSMRE selects one of the more restrictive alternatives it proposed in the draft. New requirements include enhanced baseline monitoring data for both surface and groundwater. The availability of such data will make it easier to identify damage caused by mining.

Under existing regulations, coal companies too often escape liability for damage to waterways because there is no baseline data to prove pollutants were not present before mining began. The draft rule also includes a definition of “material damage to the hydrologic balance”, which was never previously defined. Clarifying language like this is an important part of making sure that rules are enforceable on the ground.

The protections to streams and wildlife provided by the rule could be strengthened in several ways. First, the SPR could reinstate two key provisions of the 1983 rule: first, mining within 100 feet a stream should be prohibited if it will adversely affect the stream, and second, that mines receiving a variance from approximate original contour are prohibited from damaging natural watercourses. The enhanced monitoring requirements could be further strengthened by requiring monitoring directly at wastewater outfalls, which would better allow determination of which mine operator is responsible for pollution. The definition of material damage to the hydrologic balance should be made consistent with the Clean Water Act by stating that to “preclude any designated surface-water use” means to “partially or completely eliminate or significantly degrade” those uses.

## **Theme 2: Significant threats to human health**

*“Far too many studies have shown the detrimental effects of mining pollution and sedimentation on wildlife. In fact, many recent emerging studies have linked the process of mountaintop removal coal mining with negative health impacts, like birth defects. This Stream Protection Rule would reduce coal mining’s impact on the environment, and would reduce its impact on human health.”*

- Roy Crawford, Whitesburg, KY

Local residents have good reason to worry about the impacts of nearby mines on their health. Evidence of pervasive impacts on the health, well-being and life-expectancy of people living near mountaintop removal and other types of coal mines in Appalachia has been published over the last ten years in more than 20 different scientific studies authored by more than 40 different researchers.<sup>1, 3-21</sup>

What is so notable about the science linking mountaintop removal to elevated death rates and poor health outcomes is not the strength of any individual study, but rather the enormous quantity of data from independent sources that all point toward dramatic increases in rates of disease and decreases in life expectancy and physical well-being.

Recent studies have associated mountaintop removal and other forms of coal mining in Appalachia with increased rates of:

- Chronic respiratory and kidney disease,
- Low birth weight,
- Deaths from cardiopulmonary disease,
- Hypertension,
- Lung cancer,
- Hospitalizations
- Unhealthy days (poor physical or mental health or activity limitation)

The net result of these health impacts is illustrated in an analysis of data published by the Institute for Health Metrics and Evaluation in 2011. Life expectancy for both men and women actually declined between 1997 and 2007 in Appalachian counties with the most strip mining, even as life expectancy in the U.S. as a whole increased by more than a year. In 2007, life expectancy in the five Appalachian counties with the most strip mining was comparable to that in developing countries like Iran, Syria, El Salvador and Vietnam (see chart below).

## Status and Trends in Life Expectancy among the Five Appalachian Counties with the Most Strip Mining

	County	life expectancy in 2007 (years)	Change: 1997 to 2007 (years)	Percentile rank of U.S. Counties	Closest ranked countries
<b>Men</b>	Boone, WV	69.9	-0.8	95%	Iran, Paraguay, Lebanon
	Perry, KY	68.4	-1.5	99%	Indonesia, Morocco, Egypt
	Logan, WV	68.9	-0.8	98%	Romania, Indonesia, Samoa
	Pike, KY	68.7	-0.9	98%	Colombia, Hungary, Indonesia
	Mingo, WV	68.7	-0.4	98%	Colombia, Hungary, Indonesia
	<b>U.S. Average</b>	<b>74.2</b>	<b>1.5</b>		<b>Denmark, Portugal, Kuwait</b>
<b>Women</b>	Boone, WV	76.7	-1.5	95%	Latvia, Qatar, Armenia
	Perry, KY	76.6	-0.5	95%	Armenia, Venezuela, Malaysia
	Logan, WV	76.4	-0.8	97%	Colombia, Syria, Viet Nam
	Pike, KY	76.3	-0.9	97%	Bulgaria, Syria, Viet Nam
	Mingo, WV	75.9	-0.8	98%	El Salvador, Nicaragua, Syria
	<b>U.S. Average</b>	<b>79.7</b>	<b>0.5</b>		<b>Portugal, Puerto Rico, Kuwait</b>

Despite this overwhelming amount of peer-reviewed scientific data, however, regulatory agencies in Appalachian states have so far refused to consider these new studies in assessing the impact that permitting new mountaintop removal mines could have on the health of nearby residents.

### Theme 3: Need to support citizen involvement and enforcement

*“I am in support of a strong federal rule due to the negligence of our state enforcement. For example, in Kentucky, Frasure Creek Mining submitted more than 100 false water data monitoring reports to the Energy and Environment Cabinet. They were only held accountable for these violations once citizen groups became engaged in a lawsuit against the company.”*

- Ada Smith, Pound, VA

*“The coal companies need to monitor their impacts to the water more closely. These companies that come out and do water sampling for the mines are not truthful. It was reported in the Williamson Daily News that a water testing company had altered the water monitoring data.”*

- Donna and Charlie Branham, Lenore, Mingo County, WV

A pervasive sentiment in the comments of citizens of mine impacted communities was a distrust in the ability and willingness of state agencies to enforce regulations opposed by the industry they regulate. It is this frustration that has led hundreds of residents of coal mining communities to participate in citizen water monitoring and enforcement programs like the Appalachian Citizens Enforcement (ACE) Project, a project of the Alliance for Appalachia that equips everyday people with the knowledge, instruments, and

professional support to monitor local waterways and protect them by pursuing enforcement actions under the Clean Water Act.

One of the important things the proposed SPR does (that leads many local citizens to support the rule despite its many drawbacks) is that it improves the prospects for citizen enforcement of SMCRA regulations by:

- Requiring more extensive monitoring of stream flow and chemical parameters, including total dissolved solids, major anions and cations, selenium, aluminum, and conductivity (information that is essential to establish baseline conditions and monitor adverse impacts after mining begins);
- Requiring biological monitoring of benthic macroinvertebrates to the genus level, including annual use of a multimetric bioassessment protocol and stream condition index score to determine whether mines are causing harm to stream uses.

To better understand why provisions that support citizen enforcement are so important to residents of mine-impacted communities in Appalachia, it helps to look at the recent history of Clean Water Act enforcement in the region. Appalachian Voices and our allies were inspired to develop the ACE project in 2010 when we discovered two significant barriers to our efforts to protect citizens and communities from water pollution and other impacts of mountaintop removal coal mining in Kentucky. After beginning a project to document Clean Water Act violations by coal companies we realized that the state routinely declined to take enforcement actions against coal companies who reported violations of permitted effluent limits in their discharge monitoring reports (DMRs). We uncovered thousands of exceedances by the state's largest mining companies for which the Kentucky Environment and Energy Cabinet had failed to issue violations.

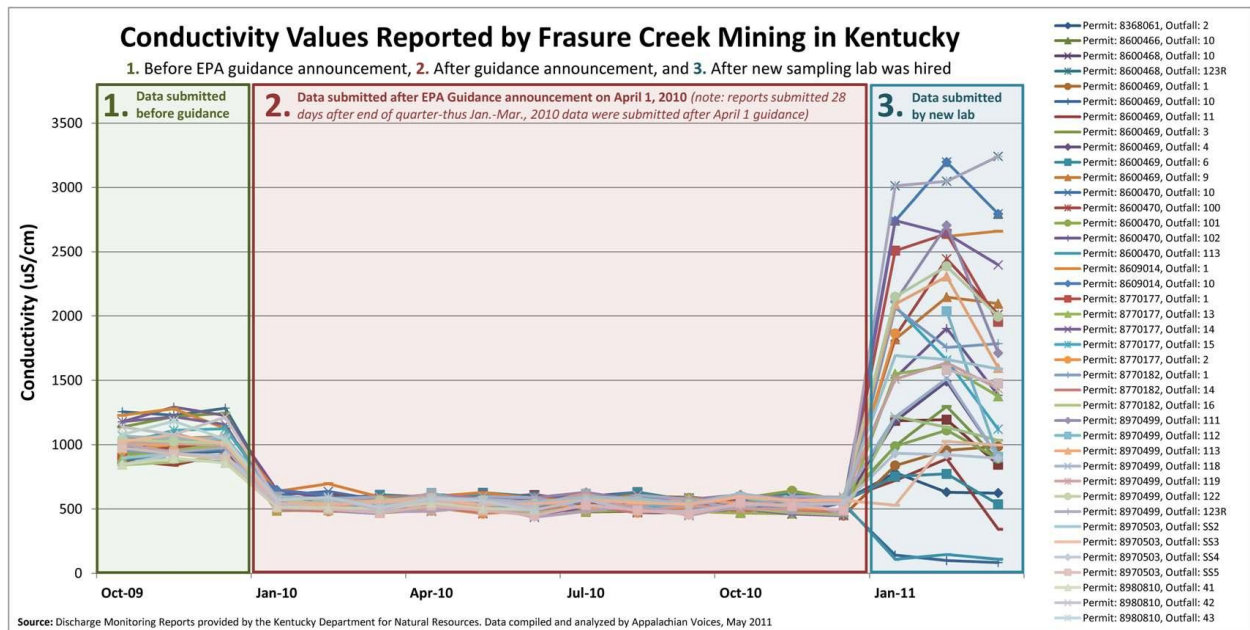
To make matters worse, while reviewing DMRs from the three largest surface coal mining companies in Kentucky at that time, we found evidence that all three companies were submitting false data to the Kentucky Energy & Environment Cabinet. The falsifications largely consisted of large amounts of data duplicated from one reporting quarter to the next. In some cases, the falsifications were so brazen that entire reporting sheets were re-submitted with only the monitoring dates changed and the signature date for the company management was crossed out and hand-corrected. An editorial in the Lexington Herald-Leader summed up the story in December, 2009:

“The environmental groups uncovered a massive failure by the industry to file accurate water discharge monitoring reports. They filed an intent to sue which triggered the investigation by the state’s Energy and Environment Cabinet. Also revealed was the cabinet’s failure to oversee a credible water monitoring program by the coal industry.

“In some cases, state regulators allowed the companies to go for as long as three years without filing required quarterly water-monitoring reports. In other instances, the companies repeatedly filed the same highly detailed data, without even changing the dates. So complete was the lack of state oversight it’s impossible to say whether the mines were violating their water pollution permits or not.”<sup>22</sup>

As a result of our lawsuit, the state ultimately imposed fines on these two coal companies for violations that ranged from "Failure to maintain required records" to "Degrading the waters of the Commonwealth."

However, the companies have never been held accountable (or seriously investigated) for a remarkably suspicious pattern of water monitoring results reported to the state. In April 2010, the EPA released a new conductivity guidance for Central Appalachian streams. Conductivity is a useful measurement for stream health, indicating a relative amount of metals and salts present in a stream. In January 2010, both ICG and Frasure Creek Mining's reported conductivity values dropped suddenly and precipitously by more than half, coincidentally bringing them into compliance with the new guidance (see chart below).



Once these problems were brought to light, the companies began submitting more truthful data. Consequently, their rate of permit limit violations for pollutants such as manganese and iron, once almost non-existent, rose substantially. This clearly shows that the false data submissions were covering up real on-the-ground pollution being discharged into public waterways.

As we suspected, those paltry fines were not sufficient to deter future similar violations. Last year, we discovered that Frasure Creek had once again begun duplicating their DMRs. Shielded by bankruptcy proceedings in 2013, we were only able to bring a case for duplications and other violations from 2014 and 2015. This time, the state pursued enforcement more aggressively, and welcomed our input during settlement discussions. A settlement, which included up to \$6 million in fines, was reached on the last day of former Governor Beshear's administration. Shortly after, the new Kentucky Governor, Matt Bevin, appointed Charles Snavelly, a form ICG vice president during the time ICG was falsifying CWA reporting, as the new head of the Energy and Environment Cabinet.

Unfortunately, this is not an isolated experience. In 2014, an employee at a state certified wastewater monitoring laboratory in West Virginia pleaded guilty to conspiracy to violate the Clean Water Act. The employee worked at Appalachian Labs, which monitored wastewater outfalls at over 100 mines across the



state. The employee admitted to diluting samples, among other measures taken, to bring samples into compliance with the CWA. Through the court proceedings, it became clear that the employee did not act alone and stated that coal companies pressured laboratories to provide compliant samples. When this story broke, Appalachian Voices was contacted by several West Virginia residents claiming, through their own experiences, that such practices were commonplace within the coal industry in West Virginia.

As a means to address the inadequacy of state enforcement of existing mining regulations, Appalachian Voices and other citizens' groups have pursued petitions to withdraw state authority over mining laws. In 2014, Appalachian Voices signed onto a 733 petition, requesting that the Department of the Interior withdraw West Virginia's approved SMCRA program. Among the various issues listed, the petition includes:

“[West Virginia Department of Environmental Protection] regularly issues permits that fail to list outstanding SMCRA and Clean Water Act (CWA) violations. SMCRA makes plain that permits may not be issued to applicants with outstanding violations except in certain limited circumstances. . . an applicant is explicitly blocked from receiving and additional permit if one of its existing operations is in violation of environmental laws unless the operator submits proof that it has either abated or is currently abating the problem. WVDEP routinely issues SMCRA permits to companies with outstanding SMCRA violations. According to WVDEP's own records, since 1990 418 new permits have been issued to companies whose subsidiaries have outstanding SMCRA violations.”

Similar petitions exist for the removal of state National Pollutant Discharge Elimination System (NPDES) programs in West Virginia, Kentucky and Virginia. Along with the data falsification cases mentioned previously, other CWA compliance issues highlighted include:

- failure to require NPDES permits for point-sources pollutant discharges at bond released mines, bond forfeited mines, and abandoned mines;
- failure to use numeric effluent limits for mines actively discharging into impaired waterways;
- failure to consider existing water quality when reissuing NPDES permits;
- failure to issue permits protective of narrative water quality standards.

The Stream Protection Rule could help to address agency inaction, and improve the relationship between Central Appalachian residents and the agencies that are supposed to be serving those communities, but several additional improvements to the SPR are necessary. The SPR should clarify that coal mining operations must comply with water quality standards and that these standards are directly enforceable under SMCRA. Furthermore, the SPR should clarify that citizens can enforce this requirement. Citizen enforcement of the CWA has been crucial to protecting public water from coal mining pollution in Central Appalachia. That ability should be strengthened.

#### **Theme 4: Need to support economic diversification**

*“We need clean streams to encourage businesses, including those associated with tourism, to come to our area to provide the jobs that will give us a better overall quality of life. No one wants to bring his or her family to a place where the water is contaminated.”*

- Roy Crawford, Whitesburg, KY

*“Southwest Virginia is increasingly and now very rapidly realizing that it cannot depend on coal for its economic future. We’ve got to find a diverse number of economic alternatives. One of those alternatives is recreation. In order for our waterways to be this economic resource, they must be protected against the irreversible impacts of mountaintop removal coal mining, valley fills and other associated impacts of the mining industry.*

- David Rouse, Wise, VA

It is true that the coal industry in Central Appalachia is facing a particularly difficult time. Unlike previous boom and bust cycles, this downturn looks to be permanent. This is exactly why additional safeguards are necessary to protect public water. Companies desperate to turn a profit in a more competitive energy market may be more inclined to bend rules or ignore regulations all together. But as many local citizens who testified in support of the SPR have said, protecting the communities and the natural assets of the region is an integral part of making a successful economic transition.

Protecting those natural assets begins with reining in (and ideally eliminating altogether) mountaintop removal coal mining, which is associated just as strongly with poor socioeconomic conditions in communities near where mines operate as it is with reduced life expectancy and poor health. Not only do the Central Appalachian counties where mountaintop removal occurs have among the highest poverty rates in the country, but a study of "persistent economic distress" published by the Appalachian Regional Commission in 2005 showed that those counties are far more likely to remain economically distressed compared to nearby counties where mining is less prevalent. According to the ARC study:

"Of all the regions in this analysis, Central Appalachia has been one of the poorest performers in relation to the ARC's economic distress measure over time. Furthermore, and unlike all other regions in the U.S., current and persistent economic distress within the Central Appalachian Region has been associated with employment in the mining industry, particularly coal mining."<sup>23</sup>

Ironically, the high poverty rates in Appalachian counties are frequently cited by mining interests as reasons for streamlining the permitting of mountaintop removal mines, despite the fact that more than 50 years of poorly regulated strip mining has failed to improve the economic situation. A study published in 2011 in the Annals of the Association of American Geographers took on the question of the relationship between mountaintop removal (MTR) and unemployment rates directly. Based on their analysis, the authors of the study concluded:

"Although policymakers are aware of the negative environmental effects of MTR, its continued use is primarily rationalized using the argument that it contributes to local economies, especially job retention and development... Contrary to pro-MTR arguments, we found no supporting evidence suggesting MTR contributed positively to nearby communities' employment."<sup>24</sup>

To make matters worse, a series of new studies that quantify coal-related revenues and expenditures to state treasuries have shown that the coal industries in West Virginia, Kentucky, Tennessee and Virginia operate at a net loss to taxpayers, even accounting for the indirect impacts of coal mine employment while ignoring the "externalized costs" of the industry on the health and environment of communities where coal is mined<sup>25-27</sup>. According to the West Virginia study:

"While every job and every dollar of revenue generated by the coal industry provides an economic benefit for the state of West Virginia and the counties where the coal is produced, the net impact of the West Virginia coal industry, when taking all revenues and expenditures into account, amounted to a net cost to the state of \$97.5 million in Fiscal Year 2009."<sup>26</sup>

Of course, the studies that demonstrate steep economic costs of coal in Appalachia are not what have been grabbing headlines and been distilled down into soundbites and talking points for coal industry supporters. Rather, it's a study that purports to be an economic impact analysis of the Stream Protection Rule, commissioned by the National Mining Association and written by Ramboll Environ (which is itself a member of the NMA) that has been grabbing the headlines. Unsurprisingly, that analysis predicts that the Stream Protection Rule will all but deal a lethal blow to the American coal industry, destroying between 50 and 95 percent of the nation's current coal jobs. Its predictions for Appalachia are even grimmer, predicting that 30,000 to 52,000 workers (representing between 60 to 105 percent of the current Appalachian coal workforce) will be cut.

To bring a sense of proportion back into the debate, Appalachian Voices asked Jonathan Halpern, a former economist at the World Bank Group and a current professor of energy and infrastructure economics at Georgetown University, to investigate the NMA study and draft a memo with his findings. Unsurprisingly, he found the study's methodology and assumptions to be both bizarre and indefensible, revealing NMA's job loss projections to be as unfounded as they are misleading.

A complete copy of Halpern's memo has been added to these comments as an appendix, so I will just briefly summarize how NMA was able to come up with such far-fetched results..

First, Ramboll Environ chose a curious methodology for estimating the Stream Protection Rule's impact on future coal production. They sat down with 18 unnamed mining companies and asked them how they thought the Stream Protection Rule would impact their bottom lines. It probably doesn't have to be pointed out that there is nothing scientific or objective about this approach, particularly as most of those companies, like Ramboll Environ, are likely members of the NMA.

Second, the study relied on unrealistically high projections for future coal production as a baseline. The projections NMA used do not take into account how factors such as natural gas production, coal seam access and availability, and national policies such as the Clean Power Plan will impact future production. More credible analyses assume that the production will fall between 2020 and 2040 by as much as 50%, even in the absence of a Stream Protection Rule.

A third flaw of the report is that it rejects any cost-benefit framework and simply provides a cost analysis. According to Halpern, we would likely see billions of dollars in benefits in the form of safety and health improvements for communities as a result of the Stream Protection Rule.

But perhaps the most perplexing flaw in this report is its claim that the Stream Protection Rule will replace the industry-friendly 2008 Stream Buffer Zone Rule, rather than the 1983 rule which is what is actually in effect. The 1983 rule is considerably more restrictive than the 2008 rule and, in some ways, the proposed SPR as well.

### **Theme 5: Need to update rules on bonding**

*“For decades, I have seen coal companies avoid responsibility. They don’t pay benefits they owe miners. They don’t pay fines. They change names and go into bankruptcy to avoid taking responsibility.”*

- Norman Sloan, Foster, WV (former coal miner).

Self-bonding has long been an allowable practice within the coal industry, as well as a looming problem. Through self-bonding, large companies have been able to avoid costs, but claiming the strength of their own business as assurance that mines would not be abandoned without money available for reclamation. As many of even the largest coal companies slide into bankruptcy, there is little security in self-bonding. States have not adjusted bond amounts adequately to account for effective reclamation, including the cost of long-term treatment for long-term water pollution issues such as selenium discharge, acid mine drainage and elevated conductivity. The state of Virginia is currently taking steps to eliminate self-bonding in the face of economic uncertainty, but more must be done on a federal level.

OSM proposes many important improvements to bonding provisions that we support. Among the most important of these are provisions to:

- Require financial assurances for treatment of long-term pollution discharges consisting of trust funds or annuities held by the regulator or accessible to the regulator;
- Prohibit the use of alternative bonding schemes for long-term treatment or for restoration of the ecological function of a stream;
- Ensure that regulators consider the biological conditions of perennial and intermittent streams when setting bond amounts;
- Require regulators to consider monitoring of groundwater and surface water, including biological parameters, when deciding whether to release any part of a reclamation bond;
- Specify criteria for bond release that would prohibit a regulator from releasing a bond if, among other things, monitoring reveals “adverse trends” that may result in material damage or if long-term treatment of pollution is not demonstrably financed.

There are several steps OSMRE should still pursue to strengthen the section of the SPR regarding self-bonding and reduce the ability of coal companies to outmaneuver regulators by using subsidiaries and shell companies to avoid their environmental commitments and liabilities. In particular, the SPR should provide that if any part of a corporation, including a single subsidiary, does not meet the self-bonding requirements, no part of that corporation may qualify for a self-bond.

## **Conclusion:**

The current draft of the Stream Protection Rule is far from perfect. However, the draft does represent an honest effort to improve upon three decades of poor regulation that has allowed mountaintop removal coal mining to endanger Appalachian communities and devastate wildlife and aquatic ecosystems.

For too long, people have suffered the consequences of poor enforcement and regulations that allow for state regulators in states like Kentucky to continue to fail. OSMRE has provided an opportunity to tackle some of those problems, and further delay will only lead to further damage.

Congress and state agencies should disregard bogus job reports and focus on strengthening the Stream Protection Rule so that it will better protect people, streams, and wildlife in Appalachia and across the country.

Coal's decline is a reality, especially in large parts of Central Appalachia where mining has been a major employer for generations. In order for local economies to transition away from coal, we must prevent companies from continuing to destroy the natural resources essential to a healthy and brighter future.

## **Citations**

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## **APPENDIX I: REVIEW OF ECONOMIC ANALYSIS OF PROPOSED STREAM PROTECTION RULE COMMISSIONED BY THE NATIONAL MINING ASSOCIATION**

### **OBJECTIVE AND BACKGROUND:**

This note provides a critique of the National Mining Association's assessment of the economic impact of the proposed Stream Protection Rule (SPR). Such a review is warranted at this time as the findings of the NMA'S assessment indicate large scale mine closures, layoffs and economic dislocation, particularly in Appalachia. This dire scenario has been widely publicized by mining interests as part of efforts to garner public support for voiding implementation of the SPR.

Pursuant to issuance of the draft SPR, the Bureau of Land Management (BLM), the agency responsible for drafting and the consultation process, commissioned the consulting firm, IEC to undertake a regulatory impact study of the SPR<sup>1</sup>. Concurrently, the National Mining Association (NMA) contracted Ramboll Environ to undertake a similar, but not identical exercise in 2014-2015<sup>2</sup>. Both studies took a long term view, using the same forecasting horizon of 2020-2040. However, the two studies came to starkly different conclusions regarding the economic impact of the SPR, with the NMA study positing much larger negative impacts than the BLM study. This reflects differing approaches, methods, models, definitions and assumptions utilized by each.

This note reviews methods and assumptions NMA/Ramboll utilized in reaching its conclusions and identifies shortcomings which bring into question the likelihood of such a scenario materializing. This finding is based solely on review of the Ramboll report and the IEC report. Those documents do not provide comprehensive background documentation on important assumptions, model structures and information used as inputs in the models. The lack of complete documentation leaves a high degree of opacity for both NMA's and BLM's economic impact analysis. A hallmark of sound impact assessment is the ability of objective third parties to reproduce the results obtained and that is not the case here.

Before turning to the NMA's study's findings, a word about the basic approach: estimating economic impacts of the SPR involves the following major steps:

- *Defining the "base case":* (ie without the SPR): This involves forecasting what would transpire in the coal industry over the next 25 years (ie during the 2020-2040 forecast period) in the absence of the SPR in terms of relevant economic indicators such as coal production, employment, economic activity etc.
- *Projecting coal production under the SPR:* This requires defining operational parameters of the SPR with sufficient precision to make credible judgments as to their impact on the behavior of mining companies. in terms of future coal production. That in turn requires forecasting important contextual factors, including future behavior of broader energy markets of which coal is a part, and future economic conditions more generally. There is a high degree of uncertainty in predicting developments in each of these areas under both the base case and with the SPR

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<sup>1</sup> *Regulatory Impact Analysis of the Stream Protection Rule*, Industrial Economics Inc., July 2015

<sup>2</sup> *Economic Analysis of Proposed Stream Protection Rule, Final Report*, Ramboll Environ, October 2015



- *Estimating direct economic impacts:* These concern changes in employment and investment in the coal industry over the next 25 years that are *directly attributable* to the SPR. It keys off of forecast changes in coal production and this is why coal production forecasts are crucial to this impact analysis. Note: These impacts represent *costs* of implementing the SPR. They should not only be compared against the base case, but also to the *benefits* accruing from enactment of the SPR. It is often difficult to assign monetary values to improved hydrological, biological and ecological conditions.
- *Estimating indirect economic impacts:* Direct impacts give rise to 2<sup>nd</sup> and 3<sup>rd</sup> round effects. For example, reductions in labor, in purchases from enterprises which supply coal mining companies, and in payment of taxes to various levels of government may reduce earnings and spending by these actors until they are able to sell their services to others

## PRINCIPAL FINDINGS

The principal results and drivers of those results of the NMA study are presented below

### COAL PRODUCTION IMPACTS

As mentioned above, the 25 year forecast of coal production, under the SPR and without it, drives the economic impact assessment. To estimate changes in future coal production, NMA and its consultants queried 18 mining companies on how the provisions of the SPR (as interpreted by them), would affect access to their coal reserves and to the reserves they do not currently control (eg. federal, state and Indian lands). Inclusion of the latter exaggerates the size of the economic resource base and the consequent ‘loss’ which the study posits. Not surprisingly, the mining companies opined that many mines would either shut down or curtail future expansions and would not seek permits for new areas on private or public lands. They also indicated the expected impact of their curtailing production on their suppliers and freight services (mainly rail). Those responses were scaled up to ‘approximate’ the entire coal mining sector, weighting (scaling) by current production levels of each state/type of mine. This procedure may exaggerate the overall reduction in future coal production as current production shares are not reflective of future conditions, even under the baseline scenario (ie without the SPR).

<b>Estimates of Cumulative Production Forgone 2020-2040 due to SPR</b>			
	<b>million tons</b>		
	<b>NMA-Ramboll</b>		<b>BLM-IEC</b>
	<b>low case</b>	<b>high case</b>	
Appalachia	125.8	219.7	17.8
Interior	41.6	125.2	7.5
Western	95.8	284.8	15.7
<b>TOTAL</b>	<b>263.1</b>	<b>629.7</b>	<b>41.1</b>

To estimate production forgone, projections of future coal production under the SPR are compared to baseline production forecasts. If the base case is ‘optimistic’, the magnitude of the difference between the ‘with’ and ‘without SPR’ is much larger. The base case is therefore key. As shown in the table below, the NMA’s base case assumes that the decade long decline in coal production will essentially reverse itself and return to 1100 million tons by 2025 where it will remain until 2040. In contrast, the BLM/IEC study forecast a base case characterized by a gradual decline in coal production. Why the large difference in base cases? The NMA study’s baseline

forecast 2020-2040 does not incorporate interactions among energy markets (eg substitution of coal for gas), power demand and the general economy, nor effects of recently issued regulations which indirectly affect future demand for coal (eg, MATR, Clean Power, current SPR). Failure to account for those leads to overly optimistic base case coal production forecasts. In contrast, the BLM/IEC study forecasts a 15% decline in coal production even in the absence of the SPR, equivalent to 162 million tons. With enactment of the new SPR, production is forecast to decline by an additional 1.9MT/year on average, 4.5M / in 2022, narrowing to .2 million tons in 2040. That represents just 0.4% of forecast production in 2022 and 0.02% in 2040.

<b>Comparison of production forecasts' base cases</b>					
total production (million tons)					
	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
NMA-Ramboll	1070	1120	1120	1130	1130
BLM-IEC	1079	1098	1084	1022	917
EIA ref case	1076	1114	1126	1126	1120
EIA Clean Power case	761	737	665	600	494

**Impact on Appalachia:** Under all forecasts (including baselines, w/o SPR), coal production in Appalachia is forecast to continue declining. This is due to several factors: Given Appalachia’s large share of national coal production, secular declines in national production disproportionately effects Appalachia’s output (mathematically speaking). Higher cost of coal mining relative to other regions (and to other countries vis a vis exports) reduces its competitiveness and the continuing shift from coal to gas fired electricity generation reduces demand for coal. Within the coal market, the shift by coal fired electricity generators to lower cost, less clean (higher SOX), lower quality (lower BTU) coal from other regions has and will continue to accompany retrofitting existing power plants with scrubbers and other pollution control equipment to meet emission requirements, a development which disfavors Appalachia’s high quality, low sulfur sub-bituminous coal. Geography is also a factor: Coal power stations in the Midwest and South Central US will increasingly draw coal from the Illinois and Power River basins to reduce transportation costs, now that they have the means to utilize nearby lower quality coal. NMA predicts large scale reductions in Appalachian coal production (12-25%), with more than 60% of the reductions from underground mines. No clear rationale is given for such large scale reductions in future production which enactment of the SPR is supposed to occasion. Which costs will balloon to such an extent as to warrant large scale shutdowns and a virtual halt to new starts? Haulage, stream restoration, topographical recontouring, reforestation, or merely administrative/reporting requirements? <sup>3</sup> The NMA report does not elucidate how those costs add up.

**DIRECT EMPLOYMENT IMPACTS**

An overriding concern of local communities is potential job losses stemming from the SPR. The NMA study devotes considerable attention to this matter as does the BLM study. For both studies, the primary factor driving estimation of job loss are projections of coal production foregone under the SPR. As discussed above, the NMA study posits large scale curtailment of production in the coal industry as a direct consequence of enactment of

<sup>3</sup> In contrast, the BLM/IEC study forecasts a reduction of 18 million tons over the 2020-40 forecast period. This represents 4% of the baseline which, while much smaller than that claimed by the NMA, is the largest % decline among coal producing regions.

the SPR. Moreover, the NMA study posits a base case i.e., (without SPR) of resumed growth in coal production. Thus, the combination of a rosy baseline production scenario and a dire SPR scenario gives rise to projections of massive quantities of coal not produced. This in turn leads to estimates of many fewer workers in the industry over the forecast period. Below are the studies' estimates of employment loss stemming from the SPR:

<b>Estimated reduction in direct coal industry employment attributed to SPR</b>						
Total for 2020-2040						
	low scenario	high scenario	ref Current Direct Employment	as % of current employment		
<b>NMA-Ramboll</b>						
Appalachia	30115	52566	49855	60%	<b>105%</b>	
Interior	4931	14638	15764	31%	<b>93%</b>	
West	4993	10317	14590	34%	<b>71%</b>	
<b>TOTAL</b>	<b>40039</b>	<b>77521</b>	<b>80209</b>	<b>50%</b>	<b>97%</b>	
<b>BLM-IEC based on ROI calc of average annual reductions 1/</b>						
	ave	low	high	ref Current Employment 3/	as % of current employment	
Appalachia	4410	861	9350	49855	2%	19%
Interior	693	-42	1974	15764	0%	13%
West	462	0	1386	14590	0%	9%
<b>TOTAL 2/</b>	<b>5460</b>	<b>861</b>	<b>12490</b>	<b>80209</b>	<b>1%</b>	<b>16%</b>
1/ low-high = range in possible effects in any given year						
2/ regions do not sum to totals due to rounding						
3/ using NMA estimate at right for comparability						
6						

To put the NMA study's estimates of job loss into perspective, the above table compares those to current levels of employment in the industry, as compiled by DOE/EIA. The NMA posits that the equivalent of 50%-95% of today's coal workers may lose their jobs as a direct result of the SPR. Why such extraordinarily large job losses? For the NMA study, beyond the sharp reduction in future coal production forecast, two other factors drive these questionable estimates of employment loss: (1) the gratuitous inclusion of 20,000 workers not employed by the coal industry in the base case<sup>4</sup> and (2) the assumption from the production forecast (section above) that all cuts are implemented immediately after the SPR goes into effect rather than being phased in gradually, thus leading to massive economic dislocation

<sup>44</sup> These include the freight rail workforce, contractors to the mining companies, and service providers all as 'sector workers' who were included in 'direct effects' to which the employment multiplier was applied, magnifying the resulting estimates of jobs at risk.

**Impact on Appalachia:** As with estimates of production foregone under the SPR, the NMA study posits that the largest share of reduction in the mining workforce will occur in Appalachia. It estimates that 30,000 to 52,000 coal workers will be forced out of work who would otherwise be employed in coal mining absent the SPR. Even on its surface, such figures defy credibility as they represent 60% to 105% of the current workforce (as calculated by DOE/EIA).

Second, these percentages are double those for reductions in coal production in Appalachia during the forecast period, implying massive increases in future worker productivity which are not substantiated.

Third, the majority of workers at risk, according to the NMA study, are those engaged in underground mining. While underground mining is indeed more labor intensive than surface mining, and while Appalachia the largest number of small underground mines of all coal producing regions, the estimated reductions in employment for both longwall and room & pillar mining operations in Appalachia do not appear to reflect the requirements of the SPR (which more profoundly impact costs of surface mining relative to underground mining).

Notwithstanding, even if the likely employment impacts are considerably less than NMA estimates, 1000s of workers, their families and communities are likely to be affected and credible programs for retraining, placement and continuing support should be put in place, on several orders of magnitude greater than those currently available.

## **INDIRECT/REGIONAL ECONOMIC IMPACTS**

As noted reductions in coal production and employment will affect industries that service coal mining and those that service the coal mining workforce. The NMA sought to estimate such indirect effects using an Input-Output (I/O) model which essentially derives multipliers from inter-industry accounts and applies those multipliers to forecasts of direct changes in output and employment in an effort to quantify indirect effects. The multipliers are supposed to reflect the cumulative linkages between coal mining, other industries, households, and government. Use of static I/O models for this purpose have been sharply criticized in the professional/academic literature for overstating actual indirect and induced effects.<sup>56</sup>

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<sup>5</sup> For example, see Bess, R, et al, Input Output models for impact analysis, 2011; Policies for economic multiplier and impact analysis, Hughes 2003; On the use and misuse of input output based impact analysis, Grady B et al 1986

<sup>6</sup> Inter-industry accounts are used to measure how changes in an industry (eg. coal) ripple through the economy by virtue of its linkages with other industries and through changes in wages paid to its workforce. Key shortcomings of relying on I/O matrices to estimate realistic multipliers include the following: (1) reliance on static (fixed) inter industry coefficients throughout the projection period ignores current industry best practice and technological innovation, (2) imposes linearity among all variables which mis-specifies key economic relationships, ie - non linearity, (3) ignores actual macroeconomic feedback loops which dampen economic effects of a change in a given sector (eg price elasticities, demand changes, price formation), (4) ignores productive use of resources idled by a decline in economic activity in the target sector (eg coal), (5) ignores the time dimension, implicitly assuming a single period of adjustment to new economic equilibria). All of these highly restrictive assumptions underscore the need for extreme caution in interpreting the results of I/O modeling .

The results of the I/O analysis are summarized in the table below: the NMA study estimates reductions in GDP over a 21 year period of \$28 to almost \$60 billion (that's a 'b'). There are several factors which underlie these astoundingly large figures of foregone economic activity:

1. The average multiplier (2.10) is large relative to those generated by robust economy-wide general equilibrium models which estimate such multipliers at half of that; 1.25-1.50 (but in line with other I/O models which points to shortcomings of I/O models)
2. The model was run assuming that the full 27% (low case) and 64% (high case) reduction in forecast coal production would occur immediately and in full. This means the multiplier would be applied to unrealistically early and large direct impacts and would persist at the same magnitude over the 21 year forecast period
3. The direct impacts, to which the multiplier is applied, was inexplicably expanded to include indirect services (eg. freight rail, contractors, and industries serving coal mining).
4. The economic model provides no analysis nor estimation of *benefits* accruing from the SPR against which to compare its costs.

These concerns lead to the conclusion that the magnitude of the NMA study's estimate of impact of the SPR on GDP is exaggerated.

NMA-Ramboll Direct & Indirect Impact on GDP 1/ 2/ constant 2014 dollars (\$ million)				BLM-IEC Welfare Losses 2020-2040 /1 constant 2013 dollars (\$ million)			
	direct	indirect	total	total	720.3		
Total Low Case	13870	13830	27700				
Total High Case	28720	30000	58710				
1/ effective multiplier low=2.0, high=2.04				1/ direct impacts only, measured by changes in consumer & producer surplus in interlinked energy markets			
2/ measured by accounting costs in static, closed I/O model							
	total-low	total-high					
Appalachia	17000	31000					
Interior	6000	16000					
Western	4700	11500					
<b>TOTAL</b>	27700	58500					

The BLM/IEC study approached estimating economy-wide impacts using different method and models than NMA, cognizant of the tendency of I/O-based multiplier models to overestimate impacts. Interlinked models of the energy markets and the economy at large were used to assess changes (reductions) in consumer and producer surplus resulting from costs mining companies and govt. would incur in complying with the SPR. What distinguishes this approach is that it incorporates energy market dynamics over the forecast period (2020-2040) and dynamics among different coal producing regions. These models are used to estimate direct effects, not indirect or induced effects. Like the NMA study, the BLM/IEC models do not capture 'benefits' accruing from the SPR, only costs and this is a major shortcoming of both.