U.S. House of Representatives Committee on Natural Resources
Subcommittee on Energy and Mineral Resources
March 18, 2021 Oversight Hearing: "Restoring Abandoned Mine Lands, Local Economies, and the Environment"

Questions for the Record Submitted to Mr. Todd Parfitt,
Director of the Wyoming Department of Environmental Quality

Questions from Representative Tiffany

1. ***In H.R. 1146, the Community Reclamation Partnerships Act, under Section 3 "Community Reclaimer Defined" we see the definition of what kind of third-party NGO's would be allowed to participate in these cleanup projects. This definition appears to exclude current owners or operators of any site with ongoing reclamation obligations. Wouldn't it be helpful and more effective to allow any party who volunteers to assist with reclamation? Wouldn't the reclamation process benefit from the experience and knowledge that owners or operators would have regarding these sites?***

Response:

Wyoming supports Good Samaritan legislation. It presents an opportunity to leverage existing AML funding through partnerships with NGOs who contribute their time and finances. Consequently, the AML programs can focus their efforts and funding on high priority AML reclamation.

Wyoming has not had the opportunity to partner with NGOs to conduct AML reclamation. However, the Wyoming AML program has partnered with NGOs on other activities that benefit AML reclamation. For example, Wyoming AML has partnered with several agencies and organizations to conduct cutting-edge research to improve seed technology to increase the success of revegetation efforts. Partners in this effort are The Nature Conservancy, Institute for Applied Ecology, Office of Surface Mining Reclamation and Enforcement, Bureau of Land Management (BLM), Wyoming Department of Corrections, and the Wyoming Mining Natural Resource Foundation. The development of these new seed technologies are expected to provide value for AML programs nationwide.

Wyoming agrees that AML reclamation work would benefit from the experience and expertise of former mine operators. Relative to the question of who would be eligible to conduct reclamation as Good Samaritans, eligible parties are those who do not have a regulatory requirement to reclaim an abandoned mine. Current owners and operators are therefore not considered eligible.

Questions from Representative Stauber

1. ***As a government-run program, continued oversight of the program is important to make sure the funds are going to fix the hole in the ground, with minimal expenditures for overhead and administrative costs.***

   A. Can you describe the types of expenditures needed to staff your states' AML program and conduct reclamation work? Specifically, what types of costs are considered administrative or overhead and what costs are necessary to incur for construction and cleanup?

Response:

Wyoming AML expends available AML funding in a manner that minimizes administrative costs and maximizes the funding expended on the ground. Wyoming AML administrative costs includes salaries and benefits, office space, shared expenses such as printers and office supplies, vehicle expenses, and other general overhead. All costs associated with designing, permitting and reclamation are considered projects costs associated with AML reclamation. These costs include NEPA review and preparation, cultural and wildlife clearances, design, construction and construction management, and post-reclamation monitoring. Wyoming contracts with consultants to perform all work associated with the field investigations relating to inventory updates. Those costs are also considered part of pre-design work and therefore are part of the AML reclamation expense.

B. How much do each of your state AML programs spend on administrative costs annually and what are your states doing to ensure the maximum amount possible is spent directly on the rehabilitation of priority AML sites?

Response:

The total Fiscal Year 2019 Wyoming AML grant request was $87,833,889 of which $2,099,867 (2.4%) was earmarked for administrative expenditures. However, the actual administrative expenditures under that grant were $1,632,726 (1.9%). The remainder was committed to AML reclamation and subsidence insurance.

For the total national administrative cost expenditures for AML programs, please refer to the information provided on the Office of Surface Mining Reclamation and Enforcement (OSMRE). OSMRE tracks all expenditures and summarizes them in a pie chart. https://www.osmre.gov/programs/AML.shtm

C. Do you have any recommendations for program improvements to help safeguard fiscal responsibility going forward?

Response:

Wyoming AML carefully tracks all expenditures under the program to ensure fiscal responsibility. This includes detailed review by AML staff prior to submitting invoices and billings to the Department of Environmental Quality (DEQ) accounting staff who review that information and log the information into a detailed accounting tracking program. The DEQ is transitioning to a digital cost tracking process to better and more timely track expenditures. AML is also subject to annual external audits of program records. Finally, Wyoming AML records are available for review by OSMRE staff.

2. ***Have the states or IMCC developed any projections about the cost of future AML work? How much progress can be made to address the AML inventory in a given year?***

Response:

The Interstate Mining Compact Commission and the National Association of Abandoned Mine Land Programs prepared a statistically-based analysis of potential remaining construction costs using current e-AMLIS estimates in 2019. A copy of that report is attached.

The states' and tribes' progress in reclaiming AML sites on the inventory is dependent on two things: 1) the amount of traditional AML work versus the amount of emergencies in any given year and 2) the amount of funding provided to the states and tribes to accomplish this work.

Questions from Representative DeGette

1. ***A. Prior to 1977, was there any kind of bonding required to make sure companies who opened those mines would set aside enough money, in event of their bankruptcy, to cap the mines and keep them from presenting such safety and environmental hazards?***

Response:

Prior to 1977 there were no federal bonding requirements for the mining of coal. Bonding requirements were established for active coal mining under the Surface Mining Control and Reclamation Act of 1977 (SMCRA).

1. ***B. What are bonding requirements for coal mines today?***

Response:

SMCRA requires full bonding for the reclamation of disturbance caused by active coal mining (Section 509, SMCRA 30 U.S.C. 1259). DEQ completed a detailed bonding review in 2019, updating state coal mine bonding requirements to reflect the changing conditions and economics of the coal industry and to ensure that adequate funds are available for reclamation.

1. ***C. I am concerned that we're seeing the history of abandoned coal mines, and the associated safety and environmental damage, being repeated with abandoned oil and gas wells and the associated release of methane. We aren't requiring oil and gas operators to bond themselves adequately against their failure to cap their own wells in the event of bankruptcy. Additionally, certain financial institutions are providing low-interest loans to these operators, regardless of what we know about the risk that they will go bankrupt, leaving wells uncapped and releasing large amounts of methane.***

1. ***D. What concerns do you have about this in terms of oil and gas operators, and would it concern you if coal companies were currently able to operate without a strong financial commitment that they would reclaim their mines?***

Response:

As noted previously, Wyoming is confident that coal companies are operating in Wyoming with a strong financial commitment for mine reclamation. This is evidenced by compliance

with DEQ's recently updated financial assurance rules and updates to the guidelines for establishing requisite bonding amounts for mining facilities.

With respect to oil and gas bonding, the Wyoming Oil and Gas Conservation Commission (WOGCC) is the state agency with jurisdiction and oversight. I am confident in the ability of the WOGCC to appropriately manage their programs and have no reason to believe otherwise.

Per the WOGCC, in Wyoming, operators are required to post a $100,000 blanket bond for all producing wells. Wells that are shut in for greater than one year are bonded at $10/ft. of depth, which covers all plugging costs. In the event that plugging costs exceed the bond amount, the WOGCC can use its conservation tax funding, which is paid by the oil & gas industry.

Neither the DEQ nor the WOGCC can comment on financing issues because we do not regulate operator financing. However, wells from operators who go bankrupt (for fee or state minerals) are the responsibility of the WOGCC and are plugged in a manner that protects groundwater and prevents the release of methane.

1. ***E. What is the state of Wyoming doing to address this risk for oil and gas?***

Response:

With respect to oil and gas bonding, the WOGCC is the state agency with jurisdiction and oversight. I am confident in the ability of the WOGCC to appropriately manage their programs and have no reason to believe otherwise.

Per the WOGCC Supervisor, the WOGCC increased bonding amounts in 2016 and also strengthened rules with regards to assets sold from one operator to another. The WOGCC plugged over 1,000 orphan wells in 2020 and has the funding and expertise to continue plugging orphan wells in the future.

1. ***F. What should the federal government be doing to address this risk for oil and gas?***

Response:

With respect to oil and gas bonding, the WOGCC is the state agency with jurisdiction and oversight. I am confident in the ability of the WOGCC to appropriately manage their programs and have no reason to believe otherwise.

Per the WOGCC Supervisor, the BLM has the ability to hold previous operators of wells responsible to plug and abandon wells should the current operator go bankrupt. However, the BLM should review its rules with regards to orphan wells to make sure taxpayers are not left with financing plugging operations on federal minerals.

Additionally, it is Wyoming's position that the federal government should recognize the states' role and responsibilities in the context of cooperative federalism.

2. ***A. In 2012, Aspen Skiing Co. partnered with a coal plant in Somerset, Colorado to convert waste methane from a coal mine into usable electricity – reducing greenhouse gas emissions and generating financial return. Because this project has been so successful it will likely soon be replicated at other coal mines. While this isn't a comprehensive solution to climate change, it is a great example of what companies can do to help.***

   Is it common for coal AML sites to leak methane into the air similar to how abandoned oil and gas wells can leak methane?

Response:

No. Our experience in Wyoming is that methane at abandoned mines has not been an issue. Prior to closing shafts and adits, air monitoring is conducted to ensure the safety of the construction crews and potential for sparking a fire. The same testing is done when holes are drilled for grouting. DEQ's monitoring shows that the methane emitted from AML sites is at extremely low concentrations and does not present a safety hazard. The potential for methane emissions is further reduced by AML's work to fill underground voids and shafts, preventing the emission of methane.

I agree that the Aspen Skiing Co. project is a great example of innovation vs. regulation. This type of innovation can be transferred to other facilities where it is proven to be beneficial.

2. ***B. What is the scope of the problem of methane emissions from abandoned coal mines?***

Response:

Methane at abandoned mines in Wyoming has not been an issue.

2. ***C. What kind of research is needed on methane emissions from abandoned coal mines?***

Response:

Methane at abandoned mines in Wyoming has not been an issue, therefore no research is needed for Wyoming.

2. ***D. Have you considered trying to regulate methane emissions from abandoned coal mines?***

Response:

No. Wyoming has not identified a need to regulate methane emissions from abandoned coal mines.

2. ***E. In 2017, the Obama administration implemented, and the last administration rescinded, a policy that encouraged voluntary capture of waste mine methane for productive use at coal mines on Federal lands. Typically, waste mine methane is vented into the atmosphere. Would reinstating something similar to the Obama era Waste Mine Methane Policy be helpful for incentivizing methane capture?***

Response:

Our experience in Wyoming is that methane at abandoned mines has not been an issue. Therefore, it seems unlikely that voluntarily capturing methane from mine waste would be economically feasible at AML sites within Wyoming.

Report on

Projecting Costs for Future AML Reclamation Through statistical analysis of rolling 5-year completion cost data from e-AMLIS

Interstate Mining Compact Commission
National Association of Abandoned Mine Land Programs
September 2019

The purpose of this report is to advance a method to increase the accuracy of projections of remaining high-priority (Priority 1 and 2) AML reclamation costs based on existing e-AMLIS[1] inventory data, and to address the concern that the current inventory is considerably out-of-date and in need of enhanced cost data.

Background

There is concern voiced by various stakeholders that the existing AML inventory data in e-AMLIS for unfunded AML sites (i.e. where reclamation is yet to be conducted) significantly underestimates real remaining reclamation construction costs due to several factors, most importantly outdated cost estimates and degradation of AML sites over time. Many AML sites were inventoried during the initial years of the AML program (the early to mid-1980s) and many of those initial inventory estimates have not been updated since then. The belief is that, if these cost estimates were updated to account for inflation in prices, improved methods and science used in reclaiming these sites, and the natural degradation of these sites over time, they would be significantly higher than the current data indicates.

Manually updating the entries for each AML site by revisiting each with boots on the ground in the field and performing new cost estimates is one commonly cited option for addressing the apparent underestimation in the current inventory. However, the amount of time and additional cost required for state/tribal AML programs to revisit and

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[1] e-AMLIS is not a comprehensive database of all AML features or all AML grant activities. e-AMLIS is a national inventory that provides information about known abandoned mine land (AML) features including polluted waters. The majority of the data in e-AMLIS provides information about known coal AML features for the 25 states and 3 tribal SMCRA-approved AML Programs. e-AMLIS also provides limited information on non-coal AML features, and, non-coal reclamation projects as well as AML features for states and tribes that do not have an approved AML Program. **Additionally, e-AMLIS only accounts for the direct construction cost to reclaim each AML feature that has been identified by states and Tribes. Other project costs such as planning, design, permitting, and construction oversight are not tracked in e-AMLIS.**

perform updated estimates for every known AML site[2] would be extreme. Incurring substantial new non-reclamation (i.e. administrative) cost obligations in the form of increased inventorying efforts might also be especially problematic in the current political environment surrounding AML, which could pressure the AML programs to constrain administrative costs above and beyond what they are already attempting to do. Finally, spending limited AML moneys on new or enhanced inventory efforts would be an inefficient and likely ineffective use of these moneys given all of the known AML sites on the current inventory that are awaiting reclamation as states and tribes receive their annual AML grants. For these reasons, alternative methods of acquiring or determining more accurate projections of remaining reclamation costs bear consideration, especially if an option can be identified that would avoid the need for a labor-intensive and likely cost-prohibitive overhaul of the inventory.

Analysis and Findings

The AML programs have developed a methodology whereby certain remaining (unfunded) reclamation construction costs can be produced, and refreshed periodically, using a representative unit construction cost (median value) of the completed AML projects during the preceding 5-year period.

While the accuracy of e-AMLIS data on cost estimates for unreclaimed AML sites (aka "unfunded") is subject to concern for the reasons noted above, the e-AMLIS data (construction costs) on already reclaimed AML sites (aka "completed"), especially for the most recently conducted projects, is considerably more accurate. This data is entered into e-AMLIS directly by state/tribal AML programs whenever an AML project is completed. Construction cost data for completed projects is typically more accurate than construction cost estimates for unreclaimed sites because the data for unreclaimed sites are merely estimates of what a project will likely cost based on OSMRE's AML Inventory Manual (AML-1), whereas completed cost data represents actual construction costs. Focusing on the previous 5 years of completed cost data has the further benefit of reflecting the most contemporary cost data available. In summary, 5-year completed cost data in e-AMLIS provides an opportunity for highly accurate and up-to-date information on reclamation costs.

Under this approach to projecting future reclamation costs, recent completed project construction cost data is used to compute the representative cost per unit (dollars per foot, acre, or mile, etc.) of performing each category of reclamation work (e.g. Dangerous Highwalls, Subsidence, Piles and Embankments, Landslides, etc.). These cost per unit values, based on the sample of projects completed in the past 5

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[2] This report assumes that any new or enhanced inventory effort would ***not*** be focused on searching for and adding new AML sites to e-AMLIS. Our view is that there is already an effective, efficient and accurate approach for doing so based on direction from Congress, as set forth in Section 403 of SMCRA. States and tribes are continually updating entries to e-AMLIS based on input received from citizens, local governments and their own efforts and these entries must be approved by OSMRE before being added to the inventory. Again, any effort to initiate a major, new investigatory effort beyond what is already in place would be cost prohibitive and, in most cases, unnecessary.

years, are then applied to the e-AMLIS data on the quantity (Unfunded Units) of AML hazards remaining of each type in order to produce a projection of the current construction cost to complete reclamation of all known remaining hazards of each problem type. When added together the updated cost projections provide a more accurate total construction cost to reclaim the remaining high priority AML features inventoried in e-AMLIS. Additional information and detailed descriptions of the AML problem types tracked in e-AMLIS are available on OSMRE's website at www.osmre.gov/programs/AMLIS.shtm.

The state and tribal AML programs evaluated the construction costs for all problem types completed between October 1, 2013 and September 30, 2018 and concluded that the median value is a representative cost-per-unit for most of the Priority 1 and Priority 2 (P1/P2) problem types completed during the period. Table 1 shows the 5-year completed unit costs that have been determined to be representative of the corresponding P1/P2 problem types. Many problem types (mostly Priority 3) were identified where neither the median nor the average of the data resulted in a cost-per-unit that was considered to be representative of the problem type based on the professional judgement of AML Program Managers involved in the evaluation.

In preparing this report, a statistical methodology was utilized to confirm the most accurate possible representative cost/unit for each problem type. The first step was to calculate the cost/unit for each completed problem type, zero values were eliminated from analysis. Descriptive statistics were calculated for the cost/unit by problem type dataset. Descriptive statistics include: maximum, minimum, count, mean, median, variance, standard deviation and the 95% confidence intervals. Analysis of the descriptive statistics noted that some datasets (problem types) were large and some were small, there were extreme values in both maximum and minimum cost/unit and that the cost/unit data did not fall into a normal distribution. Using the mean as a predictor of realistic cost/unit was not appropriate due to the influence of outliers large and small and based on the professional judgement of AML Program Managers experienced in construction cost estimation. In evaluating a non-normal dataset to reduce the influence of extreme values in skewing the results, the median value is used as the best approximation of the cost/unit. The median values are typically used to represent a data set with a skewed interval or ratio variable such as in real-estate prices in a region or city.

Other considerations in developing the representative cost/unit included the following:

- Reducing the influence of outliers in the e-AMLIS data;
- Accounting for regional/state-to-state differences in reclamation costs;
- Ensuring adequate sample size, especially for uncommon/low volume project types by grouping priority 1 and priority 2 problem types; and
- Accounting for e-AMLIS categories with multiple project types included, e.g. polluted water

Table 2 illustrates how the 5-year completed unit cost can be used to evaluate the national unfunded costs that are currently entered in e-AMLIS without the need for

making individual inventory updates. This is accomplished by applying the completed unit cost, determined from the 5-year sample of completed projects, to the current e-AMLIS unfunded units to calculate an updated construction cost estimate for each problem type. Compared side by side with the current e-AMLIS unfunded construction cost the calculated construction cost for some problem types increase dramatically while some decrease. Overall, using this method for the applicable P1/P2 problem types and using the current e-AMLIS unfunded construction estimated costs for the problem types where the data wasn't suitable for this approach results in the current unfunded AML inventory cost of nearly $10.5 Billion being increased to a current construction cost of $12.6 Billion[3].

Due to wide variations in the data for several problem types this method was found to be not applicable without further evaluation of both the Completed and Unfunded records in these problem types. Table 2 indicates the problem types that would require additional evaluation to categorize the broad range of methodologies and cost to address them, AMD water pollution projects as an example. A new indicator, built into e-AMLIS, for differentiating construction costs from annual operation and maintenance costs (on AMD projects); follow-up maintenance costs; and, Priority 3 reclamation work completed in conjunction with P1/P2 problems would be useful in categorizing these problem types.

With the 5-Year Median Completed Unit Cost provided in Table 1, OSMRE can now produce reports in e-AMLIS that show the unfunded cost as it is stored in the database and additionally the calculated cost projection based on the actual cost of similar completed projects. Table 2 prepared by IMCC and NAAMLP illustrates one possible format to compare the current unfunded AML inventory to update cost projections based on actual costs from recently completed construction projects.

While this report is intended to provide a national picture of future AML costs, it does not represent the status of individual state or regional inventory costs. By necessity, the latter figures will reflect geographical, geological and climatological differences. In this regard, states and tribes update their own inventory submissions (and any adjustments thereto) with regard to AML problems contained in e-AMLIS. An analysis focused on state or regional inventory information will produce better indicators of both the nature, type and cost of AML problems within a single state or region. Additionally, the report does not reflect the unanticipated costs associated with suddenly occurring emergency problems, which are seldom reflected in any inventory and which can often be very costly and thereby skew actual inventory costs.

For questions regarding this report, please contact Greg Conrad at geconrad01@gmail.com or (703) 772-2132.

[3] It should be emphasized that the cost information from e-AMLIS and the calculated cost updates cover only the cost of construction. The true funding needs must consider the necessary cost to administer, plan, design, obtain permits and inspect/monitor the construction project. Based on published data from OSMRE, these costs would increase the total by an additional 25-30%.

Table 1

Median construction costs for problems completed in the 5-year period October 1, 2013 through September 30, 2018			
Problem Type Description	**eAMLIS Problem Type Keyword**	**Units**	**Completed Unit Construction Cost (5-Year Median)**
Clogged Streams	CS	Miles	$333,117.52
Clogged Stream Lands	CSL	Acres	$20,598.82
Dangerous Highwalls	DH	Feet	$147.49
Dangerous Impoundments	DI	Count	$24,324.23
Dangerous Piles and Embankments	DPE	Acres	$25,332.20
Dangerous Slides	DS	Acres	$163,331.43
Gases: Hazardous/Explosive	GHE	Count	$19,547.30
Hazardous Equipment and Facilities	HEF	Count	$5,000.00
Hazardous Water Bodies	HWB	Count	$46,656.98
Industrial/Residential Waste	IRW	Acres	$15,216.50
Portals	P	Count	$6,107.90
Polluted Water: Agricultural and Industrial	PWAI	Count	$20,791.00
Subsidence	S	Acres	$42,215.00
Surface Burning	SB	Acres	$52,739.12
Underground Mine Fires	UMF	Acres	$112,945.64
Vertical Openings	VO	Count	$3,288.50

Table 2

Problem Types covered in the 5-year Completed Cost Analysis						
Problem Type Description	**eAMLIS Problem Type Keyword**	**Units**	**eAMLIS Unfunded Units**	**Completed Unit Construction Cost (5-Year Median)**	**Current eAMLIS Unfunded Construction Cost**	**Calculated Construction Cost based on 5-Year Median Cost**
Clogged Streams	CS	Miles	5,933.49	$333,117.52	$77,494,090.00	$1,976,549,473.74
Clogged Stream Lands	CSL	Acres	29,414.84	$20,598.82	$230,443,130.00	$605,911,104.79
Dangerous Highwalls	DH	Feet	6,567,070.90	$147.49	$1,214,500,397.68	$968,546,383.18
Dangerous Impoundments	DI	Count	1,291.00	$24,324.23	$33,213,747.70	$31,402,574.48
Dangerous Piles and Embankments	DPE	Acres	21,147.82	$25,332.20	$365,798,778.74	$535,720,805.80
Dangerous Slides	DS	Acres	2,425.36	$163,331.43	$105,298,753.30	$396,137,513.60
Gases: Hazardous/Explosive	GHE	Count	11.00	$19,547.30	$2,349,001.00	$215,020.30
Hazardous Equipment and Facilities	HEF	Count	3,187.30	$5,000.00	$33,180,601.00	$15,936,500.00
Hazardous Water Bodies	HWB	Count	1,530.62	$46,656.98	$94,828,248.38	$71,414,099.07
Industrial/Residential Waste	IRW	Acres	1,068.51	$15,216.50	$57,920,212.00	$16,258,982.42
Portals	P	Count	32,003.60	$6,107.90	$69,401,564.41	$195,474,788.44
Polluted Water: Agricultural and Industrial	PWAI	Count	2,505.00	$20,791.00	$82,616,771.00	$52,081,455.00
Subsidence	S	Acres	16,735.60	$42,215.00	$618,403,722.60	$706,493,354.00
Surface Burning	SB	Acres	445.56	$52,739.12	$22,698,776.00	$23,498,443.20
Underground Mine Fires	UMF	Acres	3,691.10	$112,945.64	$852,267,441.00	$416,893,648.42
Vertical Openings	VO	Count	7,994.60	$3,288.50	$76,875,539.62	$26,290,242.10
				Subtotal:	**$3,937,290,774.43**	**$6,038,824,388.55**
Problem Types not Suited for the 5-year Completion Cost Method (without additional evaluation)						
Polluted Water: Human Consumption	PWHC	Count	37,570.00		$3,017,089,807.00	
Bench	BE	Acres	6,106.90		$17,915,742.00	
Equipment Facility	EF	Count	1,400.20		$5,892,470.00	
Gobs	GO	Acres	6,779.97		$93,006,862.00	
Haul Road	HR	Acres	886.09		$5,851,742.00	
High Wall	H	Feet	8,260,041.30		$1,310,376,450.80	
Industrial/Residential Waste	DP	Acres	200.36		$816,544.00	
Mine Opening	MO	Count	2,985.00		$15,811,860.00	
Other	O		13,620.30		$24,968,767.00	
Pits	PI	Acres	5,845.39		$51,741,557.00	
Slump	SP	Acres	2,269.76		$102,466,073.00	
Slurry	SL	Acres	829.55		$8,353,946.00	
Spoil Area	SA	Acres	137,791.28		$932,590,638.43	
Water Problems	WA	Gallons	304,167.11		$971,858,676.99	
				Subtotal:	**$6,558,741,136.22**	***$6,558,741,136.22***
				Current eAMLIS Unfunded Inventory Cost:	**$10,496,031,910.65**	
				Calculated Unfunded Inventory using 5-Year Median Construction Cost (where appropriate):		***$12,597,565,524.77***
Note: eAMLIS data as of September 30, 2018.						