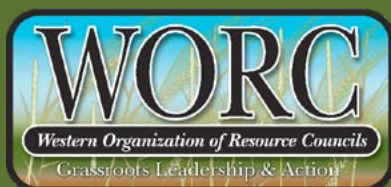




PLANNING FOR COAL'S DECLINE

The need to prioritize coal mine reclamation in the western United States



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ABOUT WORC

WORC is a regional network of grassroots community organizations that include 18,132 members and 39 local chapters. WORC's network includes: Dakota Resource Council (North Dakota); Dakota Rural Action (South Dakota); Idaho Organization of Resource Councils; Northern Plains Resource Council (Montana); Powder River Basin Resource Council (Wyoming); Western Colorado Alliance for Community Action; and Western Native Voice. WORC's mission is to advance the vision of a democratic, sustainable, and just society through community action.

ABOUT THIS REPORT

The western coal industry's twilight years are upon us. To help understand the extent of the reclamation obligations that remain, this report updates our previous reports on coal mine reclamation with an accounting of the status of reclamation across the western U.S. through the end of 2018.

This report also investigates the legal requirement for "contemporaneous" reclamation. We do not purport to offer a comprehensive or historical analysis but instead offer our current understanding of how the concept is enforced – or not enforced – today.

The report focuses on coal mining and reclamation in Montana, New Mexico, North Dakota, Wyoming, and on Navajo and Hopi land in northeastern Arizona, referred to here as Black Mesa. Mining in Colorado and Utah is considered less thoroughly, as underground mining is more prevalent in these states and has less surface impact than does strip mining. Thus, where historical data are considered, they are considered only for those states and regions whose coal industries are predominated by strip mines rather than underground mines.

ACKNOWLEDGEMENTS

We are grateful to staff with the Office of Surface Mining Reclamation and Enforcement and the Montana Department of Environmental Quality for their willingness to meet with us and discuss coal mine reclamation. We hope this report furthers that conversation.

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All views and opinions expressed in this report are those of WORC and do not necessarily reflect the views of WORC's funders.



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INTRODUCTION

The Surface Mining Control and Reclamation Act of 1977 (“SMCRA”) established the rules under which surface coal mining is conducted in the American West. Perhaps the most critical aspect of the Act is the requirement that mine sites be cleaned up (“reclaimed”) concurrently with mining, and that the cost of and responsibility for reclamation be borne by mining companies.

SMCRA’s stated purposes are, in part, to:

- “Establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations,”
- “Assure that surface mining operations are not conducted where reclamation as required by this Act is not feasible,” and
- “Assure that adequate procedures are undertaken to reclaim surface areas as contemporaneously as possible with the surface coal mining operations.”¹

The intent of SMCRA regarding reclamation was clear when it was enacted, but thousands of incremental regulatory decisions made in the intervening 42 years by dozens of states and many federal administrations have eroded the law’s efficacy. Loopholes have developed and grown, and generations of interpretations and guidelines have combined to weaken the assurances of reclamation initially provided. Today, there are hundreds of square miles of mined land that are not required by regulators to be reclaimed until the end of mine life.

In the past decade, demand for thermal coal has shrunk in the United States, and with estimates of coal’s share of U.S. power shrinking to 11% by 2030,² closure of coal mines in the West is inevitable – and just around the corner. The specter of “orphan” coal mines – shut-down mines with thousands of acres unreclaimed and insufficient financial resources to pay for reclamation – looms in the near future.

This report analyzes the state of coal mine reclamation and makes six recommendations to state and federal regulators to mitigate the financial, social, and environmental injury that might otherwise occur.

Why reclamation is critical

The United States western coal industry today faces financial pressure unparalleled in its history. Coal production has fallen by nearly a third from its 2008 peak, and continues to decline. Coal output is projected to shrink further as natural gas prices remain low and prices for renewable energy continue to drop. Given the rapid pace of closures of power plants that burn coal from Wyoming, Montana, and other western states, some western coal mines will close much sooner than expected.

Communities and states dependent on coal revenue will be challenged by mine closures if credible plans are not put in place to deal with the impacts. Households will lose income from the primary breadwinner. Families facing monthly bills and debt payments will be turned upside down. In rural areas where jobs that pay as well as coal mining are rare, coming mine closures will be disproportionately significant. Some workers and families will move away while many others will be stuck with underwater home mortgages.

Local governments could suffer funding shortfalls that restrict provision of services and expose property owners to higher taxes. Education, school construction, highway maintenance, and library operation are at least partially funded by coal revenue in many western states, and those states are already dealing with diminished funds as coal production declines. Some states are already in budget crises due to overreliance on dwindling fossil fuel revenue. These crises will only worsen if state revenue streams are not diversified, but prompt action by regulatory agencies and state policymakers can help shield state budgets from some of the worst impacts of the coal industry's decline.

The cleanup and decommissioning work involved in mine closure requires a sizeable workforce that can mitigate the impact of layoffs from mine closures. Properly regulated and funded, reclamation jobs can mitigate layoffs and be a bridge to future employment, retirement, or retraining for workers. Miners whose mining jobs end with mine closure should be the primary beneficiaries of reclamation jobs.

Reclamation also provides additional benefits. Strip mining for coal has a big impact on the land and water from vegetation clearing, groundwater aquifer severing, topsoil compaction, air pollution from dust and explosives, and water pollution. In the West, this environmental destruction often affects nearby farm and ranch operations, which rely on clean air and reliable clean water supplies. Prompt reclamation minimizes impacts on agricultural producers, whose operations will continue beyond the end of the coal industry.

Thorough cleanup will also alleviate the drag that legacy pollution can place on economic diversification in rural communities. Coal-mined lands should be restored for agriculture and wildlife habitat, which restores valuable natural capital to an area. Thorough and timely remediation supports local agricultural and outdoor recreation economies, which are often critical to building sustainable post-coal economies of the western coalfields.

The coal industry has no viable end game but bond default

A dilemma threatens proper reclamation. On the one hand, much of the land mined for coal since the passage of SMCRA is not required to be fully reclaimed until the end of mine life because it includes facilities that coal companies claim are necessary for continued mining. On the other hand, mine closure ends coal sales revenue, which funds ongoing reclamation. No coal revenue is deposited into sinking funds to match accumulating reclamation liabilities. Upon mine closure, mine operators must begin significant cash outlays to finish reclamation at precisely the moment that the primary source of revenue has ended and they are facing the largest area ever needing to be reclaimed at their mine.

In anticipation of this problem, SMCRA requires reclamation bonds in an amount sufficient for state and federal regulators to complete coal mine reclamation should the operator abandon a mine without doing so. Several problems must be fixed to ensure sufficient funds will be available to every coal mine regulator in every case of bond forfeiture.

Relatively few large-scale western strip mines have permanently closed operations since wide-scale mining began during the 1960s and 1970s.³ Those that have closed have completed reclamation without bond forfeiture. There has not yet been a bond forfeiture for a large-scale strip mine to our knowledge, but recent bankruptcies and industry consolidations have raised the specter that forfeitures are likely not far off in the future.

Some mine operators will fail to complete reclamation and state and federal regulatory authorities will become responsible for completing reclamation with the proceeds of bond forfeitures. If bond forfeiture yields insufficient funds to complete reclamation, governments will be left with the choice of skimping on reclamation or tapping public funds to complete it. The latter path would exacerbate a state's fiscal situation that is likely already compromised by the decline of coal tax and royalty revenues. Thus, we advocate that local and state government officials and state and federal regulators adopt a cautious and proactive approach to planning for the end of the coal industry.

Recommendations

- State and federal policymakers should require detailed closure plans for mines and ensure transparency regarding timing of mine closure and company resources available to fund closure.
 - State and federal regulators should require coal mine operators to establish sinking funds now to fully fund post-closure reclamation.
 - Federal and state regulators should strive to reduce active mining areas and long-term facilities as much as possible and as early as possible prior to mine closure.
 - OSMRE should request additional information when compiling Reclamation Status Tables used in the Western Region in order to more accurately capture the contemporaneity of reclamation and alert state regulators to growing inability to fully reclaim.
 - All self-bonding should be eliminated at both state and federal levels.
 - Regulators should reject surety bonds written by inadequately capitalized firms, and require that they be replaced.
 - State regulatory authorities should develop detailed bond forfeiture contingency plans and emergency response plans.
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FINDINGS

1. More than a third of all mined area in the western U.S. remains unreclaimed, despite nearly five decades of active mining. This area comprises nearly 150,000 acres (234 square miles). Approximately half of this area is classified as long-term reclamation and mining facilities, such as haulroads, spoil stockpiles, impoundments, and other mine facilities that coal companies claim are necessary until the end of mine life. The other half is still being actively mined.

2. Regulators and state legislatures in Wyoming, North Dakota, and Montana face the greatest risk that their states will become responsible for completing coal mine reclamation. They have the most significant amounts of unreclaimed land in the West. Because today's coal industry is undiversified and at great financial risk, there is a significant risk that regulators will be forced to seize bond money and complete reclamation. It is imperative that state and federal regulators begin to prepare now to manage reclamation in these states especially.

3. Unreclaimed areas will continue to expand until the end of mine life. Active mining areas have grown by 30% since 2001, and this growth will continue because of the general pattern of mining coal that is progressively deeper and farther from rail infrastructure. When a mine closes, it requires reclamation of the largest disturbed area ever existing at that mine. The end of mine life is also the time at which a company is least able to finance reclamation.

4. Regulators have allowed coal companies to postpone reclamation of parcels that are nevertheless available for reclamation. We have participated in discussions where state-level coal mine regulators described allowing a mine operator to postpone reclamation on certain parcels that were available for reclamation in order to focus the company's available resources on other parcels, rather than require companies to expand the resources allocated to reclamation. This is allowed because federal rules governing contemporaneous reclamation were suspended indefinitely in 1992 in response to coal industry pressure in the years following the passage of SMCRA. They were replaced by a loose standard that allows state regulators to defer to a mining company's reclamation plan. The federal Office of Surface Mining Reclamation and Enforcement (OSMRE) does not track how much unreclaimed land is available for reclamation.

5. Bond release has failed as an incentive to complete reclamation contemporaneously. Bond release is the sole financial incentive for contemporaneous reclamation built into SMCRA, but data reveal that release of reclamation bonds has apparently been unimportant to many mining companies. Bond release has been outpaced by reclamation activity. In fact, multiple economic factors dis-incentivize coal companies' pursuit of bond release, even when companies have purchased surety bonds.

6. Today's coal industry is largely undiversified, with few revenues other than from coal mining. This increases the risk that regulators will be forced to seize bond money and complete reclamation. Thermal coal mining companies have one primary line of business: selling coal to power plants. As coal-fired power plants close, coal companies will be forced to close coal mines. Without customers, a coal company will have no funds to complete mine reclamation and no chance to sell its mines to a new owner and recover sunk capital. In short order, regulators will be forced to seize reclamation bonds and complete reclamation themselves.

7. The economically challenged mines formerly owned by Cloud Peak Energy and Contura Energy have the highest proportion of unreclaimed acreage among major western coal mining companies. Both companies have reclaimed less than half of mined area. Cloud Peak filed for bankruptcy in 2019, as did Blackjewel LLC, to which Contura sold its Wyoming mines in 2017 but never finalized permit transfer. This is the second bankruptcy that Contura’s mines have gone through in four years’ time. During the bankruptcies, these mines were sold to companies that have limited operational history: Navajo Transitional Energy Company (NTEC) and Eagle Specialty Materials (ESM). Neither has operated mines of this size before, and have acquired them as demand for western coal is steeply declining.

[More than a third of disturbed land is not reclaimed](#)

As of 2018, there are 401,315 acres of land, or 627 square miles, that have been mined for coal across the western U.S. since SMCRA’s passage in 1977. This area is referred to throughout this report as disturbed acreage or disturbed area. For comparison, the total number of acres disturbed by coal mining in the western U.S. is 50% larger than the combined acreages of Denver, Salt Lake City, and Seattle.

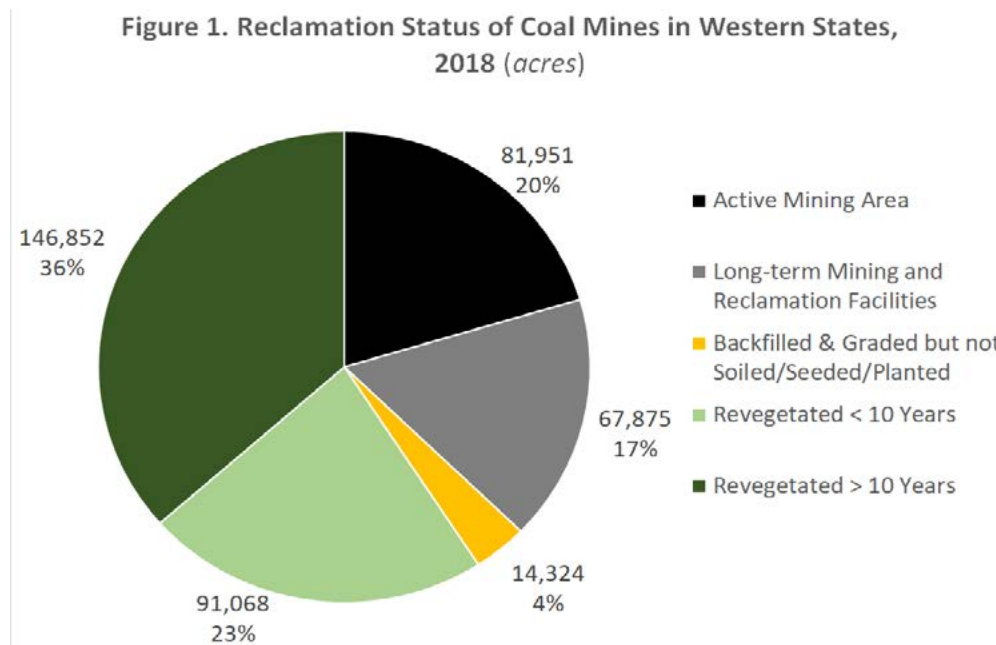


Figure 1 displays the reclamation status of coal mines in western states. The green and yellow slices represent reclaimed land. The black and grey sections represent unreclaimed land.

As Figure 1 demonstrates, 37% all area mined for coal since 1977 remains unreclaimed. This area is split almost evenly between long-term reclamation and mining facilities, such as haul roads and stockpiles (gray section, 17% of disturbed area), and active mining area (20% of disturbed area). This area comprises nearly 150,000 acres (234 square miles). It has not been reclaimed at all, and is ostensibly required for continued mining.

The three sections of Figure 1 representing disturbed area that has been at least partially reclaimed (green and yellow sections) sum to nearly two-thirds of mined area (63%). Land represented in all three sections has been backfilled and re-graded. The two green sections show that most backfilled and graded land has also been re-vegetated. More than a third of disturbed area (36%) has been re-vegetated for 10 years or longer (dark green section) and an additional 23% has been re-vegetated for less than 10 years (light green section). A small portion of land has been backfilled and graded but not yet re-vegetated (4%, yellow section).

On parcels that have been backfilled, graded, and replanted (green sections), it is possible that vegetation will not become successfully re-established. Successful re-establishment of vegetation is proven by field measurements taken to support Phase 2 and Phase 3 bond release applications. Additionally, depending on mine operations, some land that has already been partially reclaimed could be re-disturbed. Although Figure 1 suggests only 37% of mined area remains to be reclaimed, it does not account for nominally re-vegetated parcels that will need replanting and reseeding.⁴ Thus, these data likely understate the full scope of reclamation that must still be completed.

New land is disturbed faster than disturbed land is reclaimed

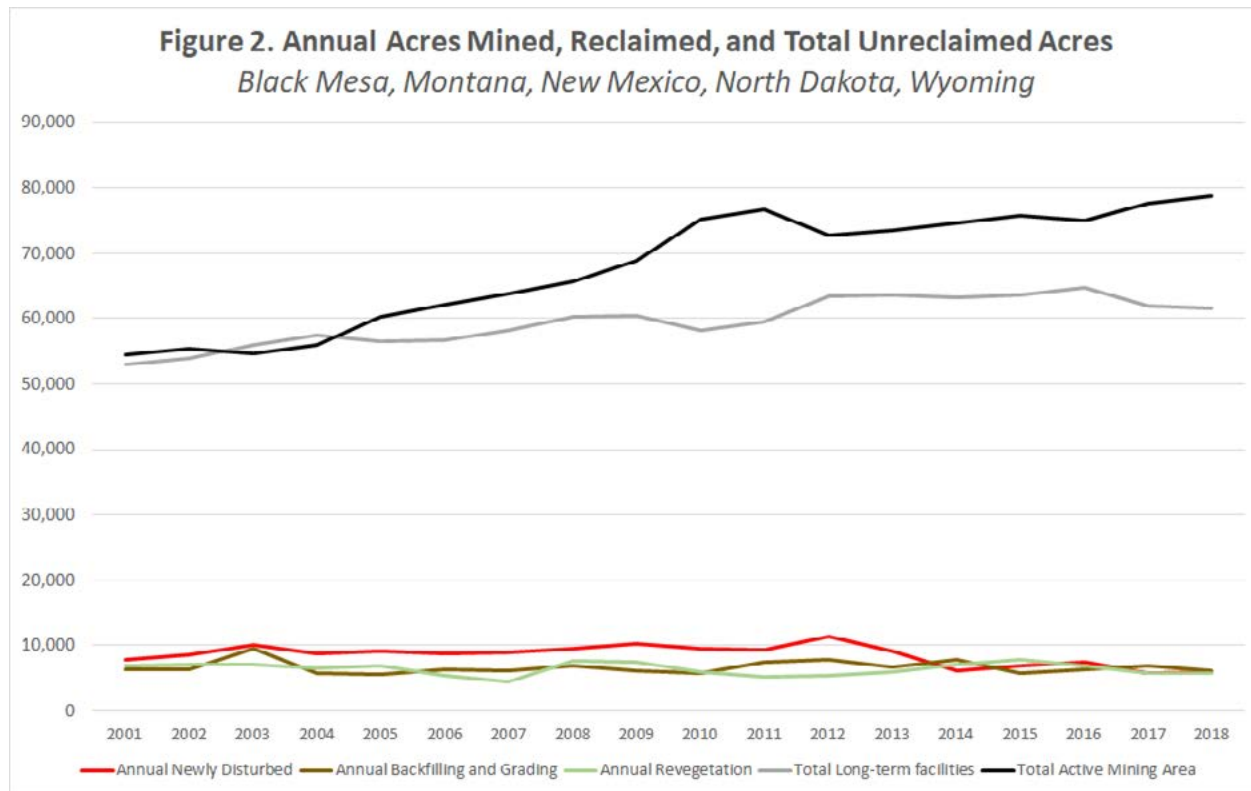


Figure 2 displays reclamation data for the five western jurisdictions whose coal industries are predominated by strip-mining.⁵ It compares annual acreage backfilled and graded (brown) and top-soiled, seeded, and planted (green) with acreage newly mined that year (red) and each year's total area in active mining (black) and long-term facilities (grey).

The rate of new mining (red) outpaced reclamation (brown and green) for most of the last two decades as the rate of reclamation remained steady, resulting in dramatic growth of active mining area. Land in active mining area and long-term facilities in 2018 totaled 149,826 acres, or 234 square miles. This is 37% higher than in 2001 (109,542 acres or 171 square miles). Active mining area constitutes most of this growth. It is clear that one trend has continued throughout all of this time: the natural tendency of coal companies is to focus on revenues, i.e. mining, over reclamation work that creates expenses.

Risks of incomplete reclamation vary by jurisdiction and mining company

Coal mining in each state is regulated by a state agency with primacy to enforce SMCRA. These agencies are overseen by OSMRE. However, on Black Mesa (located on land that is part of the Navajo Nation), OSMRE is the regulatory authority under SMCRA. State and federal regulators will likely be required to manage the completion of reclamation, but the potential impact to each regulatory agency varies and the risk from different companies varies.

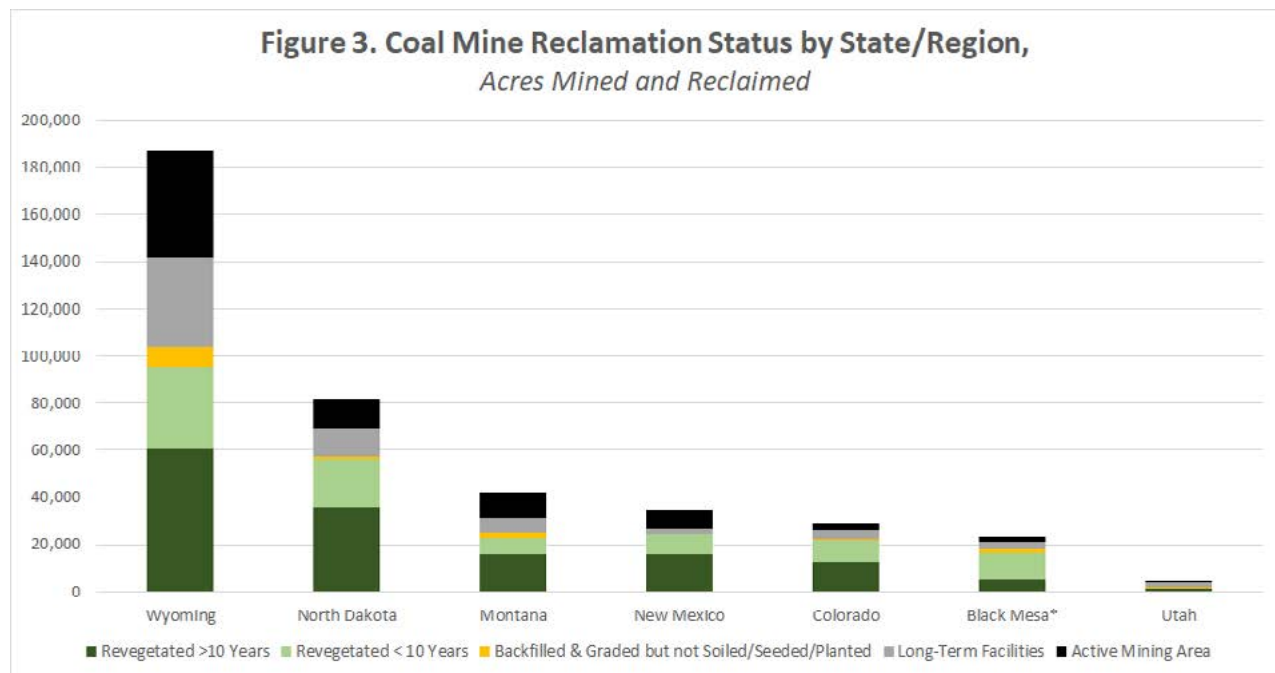
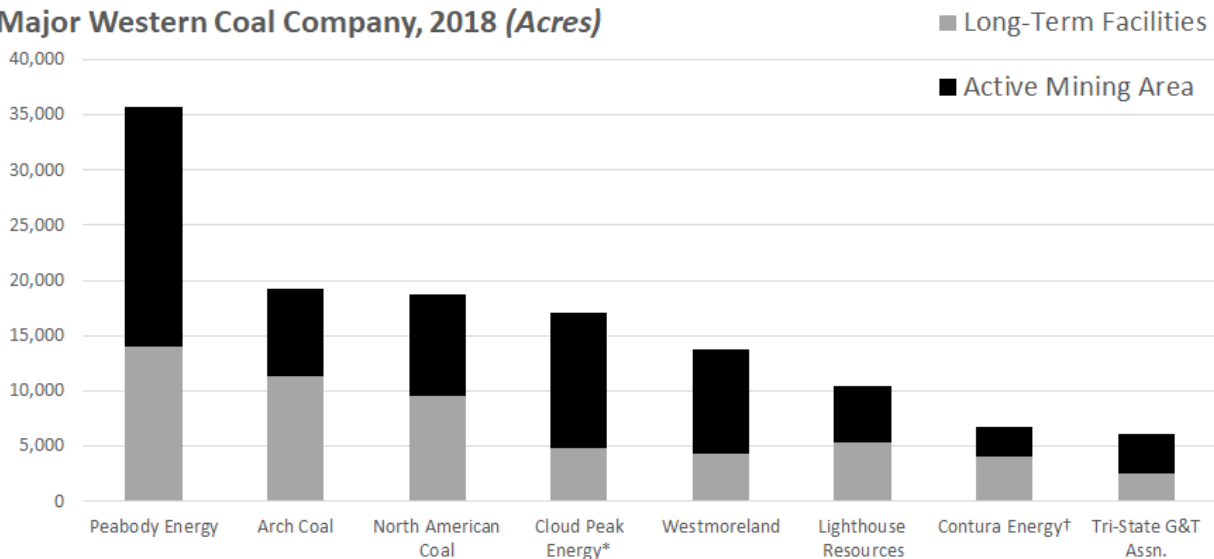


Figure 3 shows stark differences in the magnitude of disturbed acreage between jurisdictions. Each column sums to the total disturbed area in that jurisdiction (e.g., 187,000 acres in Wyoming), and is disaggregated by reclamation status of the mined land.

The states with the greatest acreage of mined lands left unreclaimed are Wyoming, with just over 83,000 acres in long-term facilities and active mining, North Dakota with nearly 25,000 acres, and Montana with just over 17,000 acres. These are also the states where strip mining is more prevalent. In Colorado and Utah, underground mining is more common.

Figure 4. Unreclaimed Coal Mine Area by Major Western Coal Company, 2018 (Acres)

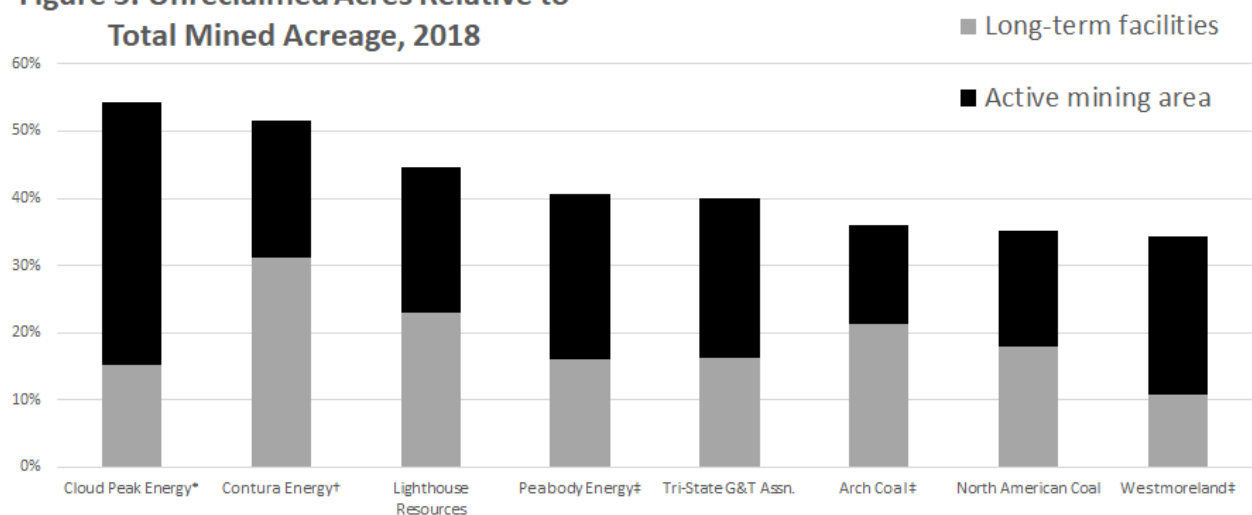


* *Cloud Peak Energy* closed the sale of the company's mines during the production of this report to the Navajo Transitional Energy Company. This chart refers to the former owners as they retain responsibility for reclamation until mining permit transfers are approved.

† *Contura Energy* never finalized transfer of the mining permits for its Powder River Basin mines after selling them to Blackjewel LLC. Following Blackjewel's bankruptcy filing, Blackjewel sold the mines to a company named Eagle Specialty Materials. This chart refers to Contura Energy as they retain responsibility for reclamation until mining permit transfers are approved.

Figure 4 displays the acreage of unreclaimed land that each major coal mining company is responsible for reclaiming in western states as of 2018. The companies displayed here account for 91% of the West's total unreclaimed acreage in long-term facilities and active mining area. Figure 4 clarifies that a small number of companies are responsible for most reclamation required in western states. In the years to come, a very few executives and directors of these companies will make decisions about mining and reclamation that will greatly affect the future of coal communities.

Figure 5. Unreclaimed Acres Relative to Total Mined Acreage, 2018



*Company in bankruptcy during production of this report. Cloud Peak Energy closed the sale of the company's mines during the production of this report to the Navajo Transitional Energy Company. This chart refers to the former owners as they retain responsibility for reclamation until mining permit transfers are approved.

†Company's western mines in bankruptcy within past 5 years. Contura Energy never finalized transfer of the mining permits for its Powder River Basin mines after selling them to Blackjewel LLC. Following Blackjewel's bankruptcy filing, Blackjewel sold the mines to a company named Eagle Specialty Materials. This chart refers to Contura Energy as they retain responsibility for reclamation until mining permit transfers are approved.

‡Company in bankruptcy within past 5 years.

Figure 5 ranks major western coal mine operators by the acreage of unreclaimed area as a fraction of the company's total area mined. A worrying overlap emerges between companies whose mines have substantial unreclaimed area and companies in financial distress. Cloud Peak Energy and Contura Energy are notable in this regard. Each company's western mines entered bankruptcy in 2019 and were sold to new owners during the production of this report: Navajo Transitional Energy Company and Eagle Specialty Materials, respectively. The mines in question had backfilled and graded less than 50% of disturbed area as of 2018, despite four decades of mining. Cloud Peak's mines also stand out for the largest relative area under active mining, and Contura's for the largest relative acreage in long-term facilities of any major western coal company.

WHY HASN'T SMCRA LED TO MORE COMPLETE RECLAMATION?

Even though Congress and SMCRA's supporters expected the new law would result in reclamation activity close on the heels of active mining, a gap in timing has developed over the decades, and unreclaimed acreage continues to grow. This is partially the result of some unavoidable characteristics of large strip mines, but also because of varying interpretations of SMCRA's dictates and the fact that self-bonding tended to remove an intended incentive for timely reclamation. The results are visible at strip mines across the West: rows of spoil ridges stand ungraded and are often covered with mature vegetation that reveals years without reclamation.



Figure 6 Aerial photograph of multiple rows of spoil ridges at Cloud Peak's Cordero Rojo Mine in Wyoming's Campbell County in July 2018. View is to the northeast. In the background, the spoil ridges are vegetated. This denotes the occurrence of one or more growing seasons since that land was mined, and it was not yet reclaimed at the time of the photo.



Figure 7 Aerial photograph of multiple rows of spoil ridges at Arch Coal's Coal Creek Mine in Campbell County, Wyoming, in July 2018. View is to the northeast. Note vegetation on old spoil ridges and regraded areas in the mid-ground.

Strip mining causes more surface disturbance as deeper coal is mined

When pressed in meetings with staff and leaders of WORC, state and federal coal mining regulators and coal company staff generally attribute the significant amount of active mining area and its growth through time to operational demands and coal geology.⁶ First, the largest strip mines operate multiple pits to access varying qualities of coal for blending to customer specifications.⁷

Second, decades of strip mining have led into progressively deeper coal that requires expanded surface impact to ensure mine safety. This view is supported by an understanding of coal geology and strip mine safety considerations.

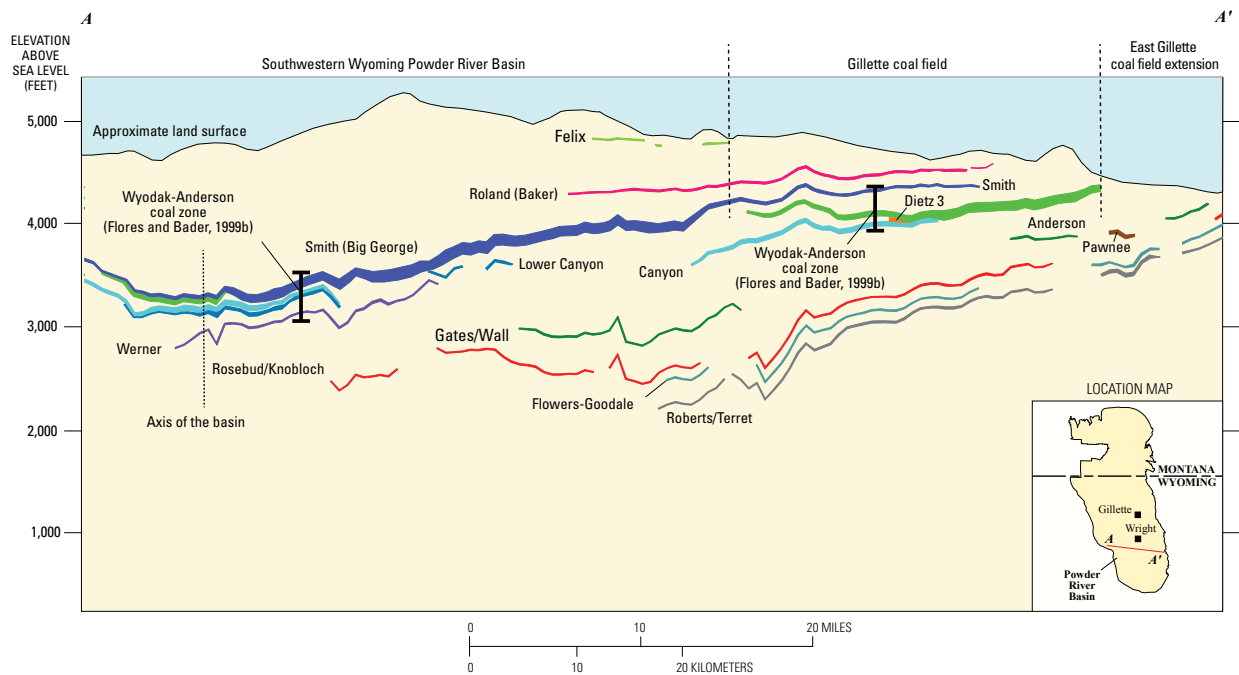


Figure 8 Powder River Basin coal seams in Wyoming are pictured in profile. Each line represents a seam of coal. Image courtesy of Luppens et al., 2015, accessible online: <https://pubs.usgs.gov/pp/1809/>

Mines are generally sequenced to extract the shallowest and cheapest coal first and proceed into progressively deeper coal and thicker overburden. This pattern is easily recognizable in the Gillette coal field in the Wyoming Powder River Basin, where the coal seams dip to the west at between 2 and 5 degrees: mining operations generally began near the coal seams' eastern outcrop and progressed in a westerly direction.

As mine pits follow coal deeper into the ground, surface disturbance becomes more extensive. This is due to the need to preserve stability of highwalls and mine benches. Highwalls are the unexcavated face of exposed overburden and coal in a surface mine, and benches are broad, flat surfaces created from spoil in the process of regrading. Highwalls and the face of mine benches must be maintained at specific angles and heights to prevent collapse. Deeper pits require additional benches, which widen the area between the edge of surface disturbance and the edge of available coal. Thus, mining deeper coal requires more extensive surface disturbance. This increased surface disturbance, of course, increases the area needing reclamation.

Because coal processing and rail loadout infrastructure is typically built near the earliest and most shallow coal mined, coal from deeper seams requires longer and more expensive haul distances. As mining progresses over the years, later tons of coal require removal of more overburden, longer haul distances, and more acres of reclamation. This pattern will continue for the life of nearly every strip mine.

For all these reasons, when the last ton of coal is mined, retiring a mine will require reclamation of the largest disturbed area ever existing at that mine. Reclamation is funded from coal sales revenue, so it is problematic that the time when a company has least revenue to finance reclamation is the time when the need for reclamation is greatest.

Some state regulators have allowed mine operators to postpone reclamation

Accumulation of unreclaimed areas as mine life progresses is also controlled by policy. Regulators have allowed mine operators to prioritize reclamation of larger parcels and postpone reclamation of smaller parcels that are already available for reclamation. The result is parcels that have not been backfilled and graded for years following mining, evidenced by the existence of vegetation in some areas. Clearly, regulatory pressure has been insufficient to force truly contemporaneous reclamation as required by SMCRA.

One particular example illustrates the slippery slope created by the lack of a national standard for contemporaneous reclamation. Regulators at the Montana Department of Environmental Quality have explained that they have in the past given permission for mine operators to postpone backfilling and grading particular parcels for several years even though they were suitable for reclamation at the time. This was done in order to free up the company's resources to focus on reclaiming a large area in another part of the permit area.⁸ They expressed a preference for allowing mine operators to reclaim larger parcels in one fell swoop rather than split up available equipment and staffing to simultaneously reclaim multiple areas. This forbearance allowed the mine to avoid the expense of making more equipment and labor available, but led to an increase in unreclaimed surface as the years went by.

In this instance, the rationale to prioritize reclamation in this way related to the particulars of the mine permit, in that the prioritized parcel affected an additional drainage. Two additional reasons were also given that would apply to other mines. First, revegetation of larger parcels would be more successful than if that same parcel had been revegetated in smaller units, because the larger area progressing through ecological succession would be self-reinforcing in a way that a smaller area would not be. Second, reclaiming a larger parcel would make it more likely that mine operators would move the parcel through bond release sooner than if the same area was reclaimed over multiple seasons. We also observe that reclamation of fewer, larger parcels would be easier to oversee and manage than simultaneous reclamation of many small parcels.

However, postponing reclamation may set-back the progress of reclamation or increase the effort required to achieve bond release. Parcels whose reclamation is postponed may miss a good year of precipitation, which could set back establishment of post-mine vegetation. Unvegetated area can also result in soil sterilization, the establishment of weeds that will have to be dealt with eventually, and serious soil erosion under heavy rain. Although it may be profitable in some instances for a mining company to prioritize reclamation of larger parcels, rather than fund more contemporaneous reclamation, postponed reclamation increases the risk to the public. It leads to growth in the inventory of unreclaimed disturbed area, and makes it more likely that regulators will ultimately become responsible for completing reclamation over a vast area as the coal industry's financial decline and the threat of bond forfeiture loom large.

Through the years, then, coal mine owners have been unwilling to fund reclamation programs to the level required to reclaim all available acreage contemporaneously as required by SMCRA, and regulators have not forced them to do so. Instead, it seems that mine operators and regulators have prioritized reclamation based on the equipment and staffing provided at the discretion of the mining company's upper management. This appears to have imposed constraints on contemporaneous reclamation while enhancing mining companies' cash flow.

Regulators should not accept these artificial constraints on the progress of reclamation. Today's coal market has increased the incentive for operators to minimize reclamation. Coal operations in the West are under severe financial pressure, whether mine operators admit it or not. The decline in demand for coal and the unwillingness of competing companies to reduce their own coal production create a low-price environment where no company thrives.⁹ Meanwhile, reclamation operations cost money rather than bring it in. Fielding a larger reclamation crew with more equipment costs more money than fielding the smallest reclamation crew necessary to perform the minimum reclamation required by regulators. It is in the financial interests of coal mine owners to put as little money into reclamation as possible. Regulators should demand additional machinery and staffing as required to ensure coal companies do not unnecessarily postpone reclamation.

OSMRE does not measure and track how much land is available for reclamation

Another reason active mining area may have grown over time is that OSMRE does not track land that is available for reclamation but not yet reclaimed.

Employees of the Western Region of OSMRE track reclamation progress with a spreadsheet tool known as Reclamation Status Tables (for more information, see Appendix 1). OSMRE's reclamation status tables presume land categorized as long-term facilities or active mining areas is unavailable for reclamation until after the end of coal production. However, as we have explained, some of this acreage is, in fact, available for reclamation and simply has not yet been reclaimed. We strongly suggest that a new category be added for parcels that are no longer actively being mined but where reclamation has not yet begun.

The reclamation status tables define long-term facilities and active mining area by listing relevant mine features and facilities:¹⁰

Active Mining Area	<ul style="list-style-type: none">• Areas in advance of the pits stripped of topsoil• Active pit area• Ramps• Active spoil areas• Any backfill areas not yet to final grade
Long-term mining or reclamation facilities	<ul style="list-style-type: none">• Haul and access roads• Temporary dams and impoundments• Permanent dams and impoundments• Diversion and collector ditches• Water and air monitoring sites• Topsoil stockpiles• Overburden stockpiles• Offices• Repair, storage, and construction areas

<p>Long-term mining or reclamation facilities (Continued)</p>	<ul style="list-style-type: none"> • Coal stockpile, loading, and processing areas • Railroads • Coal conveyors • Refuse piles and coal mine waste impoundments • Head-of-hollow fills and valley fills • Ventilation shafts and entryways • Non-coal waste disposal areas (garbage dumps and coal combustion by-products disposal areas) • Temporary cessation of operation areas
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It is logical to categorize pits, ramps, topsoil removal areas, and any area actively receiving spoil as “active mining.” Continued mining precludes full reclamation of those areas until mining is completed.

However, the inclusion of “backfill areas not yet to final grade” in the definition of active mining area is overly broad. This assumes that parcels “not yet to final grade” are being actively backfilled and graded, but this is often not the case: as described above, backfilling and grading has in the past been postponed – sometimes for years – on smaller parcels no longer actively being mined and thus available for reclamation.

Mine operators provide the data that are compiled in the reclamation status tables. To adhere to OSMRE’s definitions, they must classify parcels that are available for reclamation but not yet undergoing reclamation as “active mining area.” This is misleading when these parcels are manifestly no longer mined and are, in fact, available for reclamation.

There is no separate category for these parcels in the reclamation status tables. OSMRE uses these tables as one method to determine whether state regulatory programs with enforcement primacy are meeting SMCRA’s environmental protection goals. One of the key factors OSMRE considers is whether state programs result in contemporaneous reclamation.

OSMRE’s analysis of contemporaneous reclamation ignores parcels that are available for reclamation but have not yet begun reclamation because they are not distinguished from active mining area that truly is unavailable for reclamation. Thus, OSMRE’s overbroad definition of “active mining area” creates a loophole for mined land that is unreclaimed but nevertheless available for reclamation.

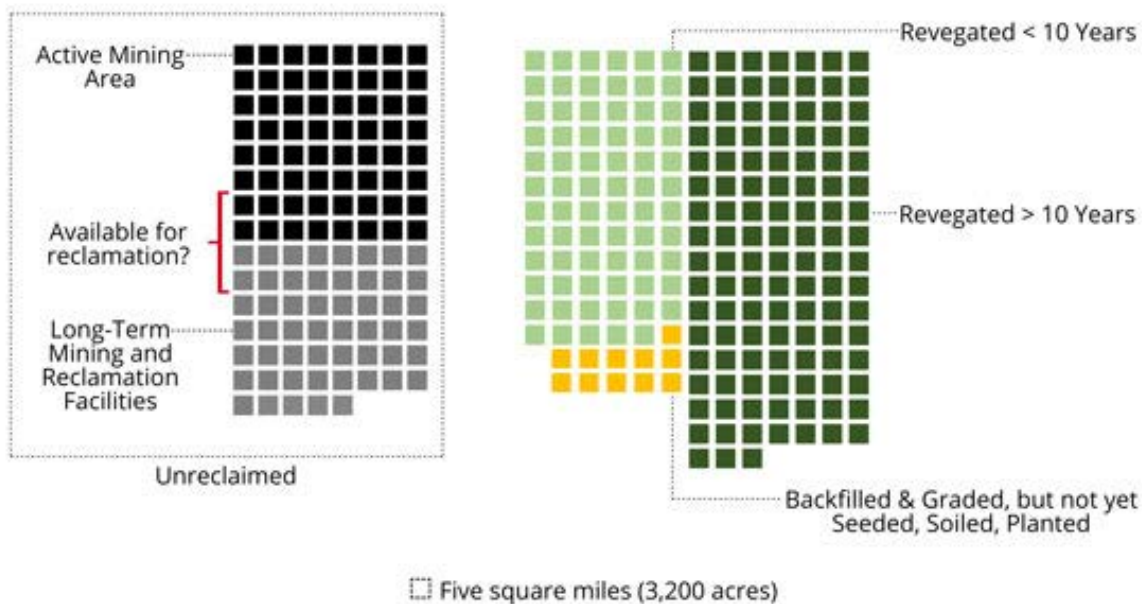
OSMRE’s definition of long-term facilities provides a second loophole. Not every facility listed in the definition is necessary for a mine’s operation through the end of mining. Certain water impoundments, exhausted scoria mines, and other features could be backfilled, graded, and revegetated sooner than the end of mine life. Regulators could enforce this without a change to how OSMRE collects data.

Because OSMRE’s definitions contain loopholes, its calculations do not accurately measure contemporaneity of strip mine reclamation. This could be easily remedied if OSMRE were to request data on how much disturbed area is available for reclamation but has not yet undergone any backfilling and grading. This data would be no more difficult to collect from states than that what is already collected for the reclamation status tables.

The reclamation status of western coal mines is displayed below in Figure 9. The red bracket identifies the category missing from OSMRE’s Reclamation Status Tables – unreclaimed land that is available for reclamation – and suggests that such a category would encompass land currently classified as “Active Mining Area” and “Long-Term Facilities.” Please note that this figure is not intended to suggest the total acreage of such a category.

Figure 9: Status of Reclamation at Western Coal Mines

WORC’s investigation suggests a portion of unreclaimed area is available for reclamation but has not begun to be reclaimed.



By measuring this category, regulators could identify areas that could be reclaimed sooner, during the period a mine earns sufficient free cash flow. If these areas are not reclaimed before the end of mine life, regulators may find themselves responsible for completing this reclamation. In the meantime, they are missing an opportunity to minimize the amount of reclamation that will become their ultimate responsibility and the public is led to assume unreclaimed areas do not exist.

[National standards for contemporaneous backfilling and grading were rescinded under pressure from the coal industry and have never been replaced](#)

Regulators do not measure the categories of mine land that are unreclaimed but nevertheless available for reclamation because they are not required to do so. The only federal rule that could have required collection of this data on contemporaneous reclamation was suspended following years of coal industry pressure and litigation.

The permanent federal regulatory program established under SMCRA in 1980 included “time and distance” standards to re-establish approximate original contour.¹¹ Achievement of approximate original contour requires the general surface configuration of mined land to closely resemble the land surface prior to mining and to blend into and complement the drainage pattern of surrounding terrain. Backfilling and grading must reconstruct the post-mine surface to its approximate original contour, with appropriate drainage patterns, before topsoil may be replaced and seeds sown.

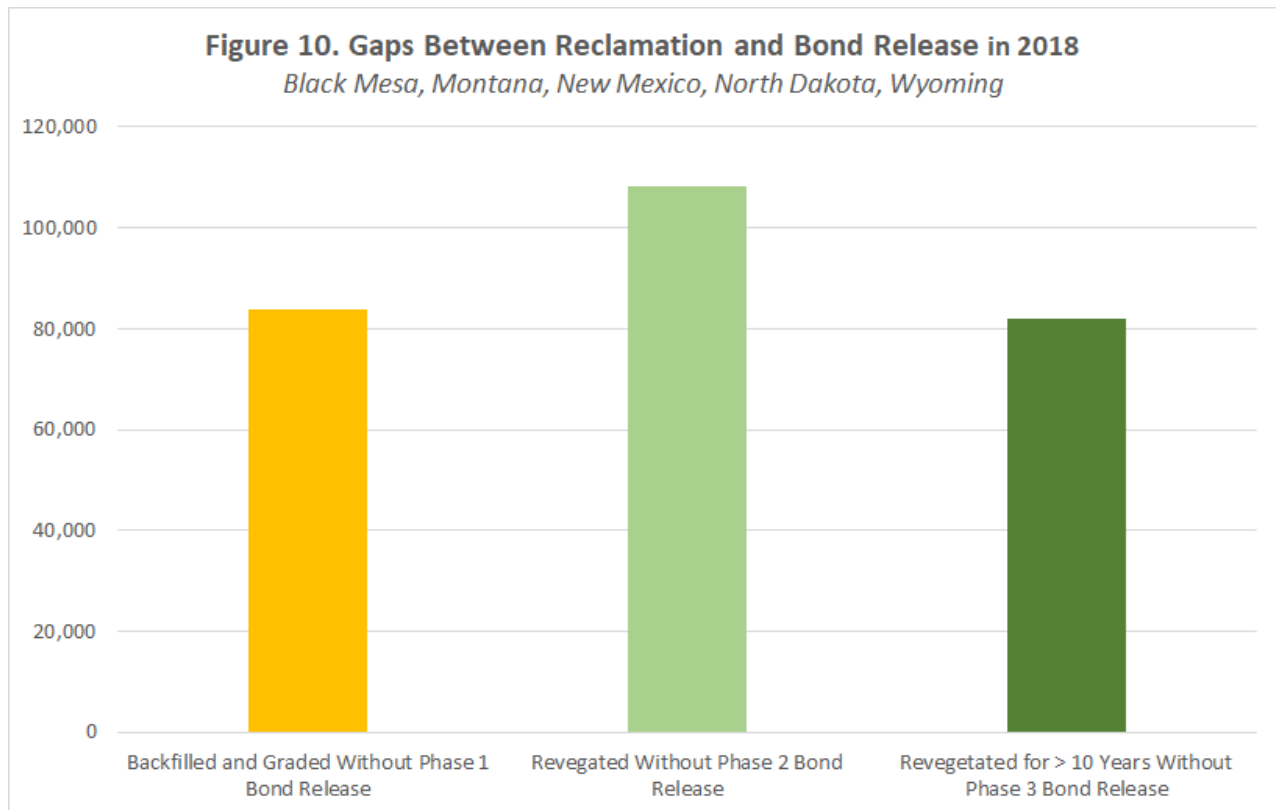
Under the 1980 time and distance standards, backfilling and grading were to follow strip mining within 180 days and mines were not to exceed more than four spoil ridges of distance from the active pit. These standards were suspended indefinitely following a series of lawsuits brought by industry and settlements entered by the Office of Surface Mining in the late 1980s and early 1990s.¹²

The loss of unambiguous standards removed all regulatory and legal basis for consistent enforcement of how “contemporaneous” any operator’s reclamation must be. There was suddenly no specific measurable basis for measuring whether all mine land that is available for reclamation is being actively reclaimed. Instead, different regulatory authorities are now authorized to set differing standards for contemporaneous reclamation and to make exceptions for certain operators. They are basically not required enforce the contemporaneity concept stringently. For example, North Dakota’s coal mining law requires that “all reclamation through the initial planting on any land within the permit area must be completed by the operator ***no later than three years*** from completion of surface coal mining operations on such lands” (emphasis supplied).¹³ This is a significantly longer period than provided for in the now-suspended federal rule.

In the absence of a measurable national or state standard for contemporaneous reclamation, reclamation is controlled by the terms of a mine’s permit. Coal mine permits include several maps that indicate the sequence of mining and reclamation, and additional permit terms may be specified by the regulatory authority. Permit terms may limit the number of dragline spoil ridges allowed, but may also allow postponement of reclamation when opening up new pits. With consistent standards replaced by this piece-meal approach, the public cannot be assured that final reclamation will be achieved contemporaneously, as intended by SMCRA.

[Mining companies often do not seek bond release in a timely manner after reclamation](#)

Bond release is the only financial incentive SMCRA provided to perform reclamation. However, bond release does not appear to be a significant motivator for coal companies to complete reclamation. Figure 10 shows that, in the aggregate, each phase of bond release lags its associated phase of reclamation by a significant margin (for more information about reclamation bond release, see Appendix 1).



As **Figure 10** shows, about 84,000 more acres have been backfilled and graded than have received Phase 1 bond release, even though backfilling and grading is the main milestone that makes parcels eligible for Phase 1 bond release. Similarly, there are 108,000 fewer acres of Phase 2 bond release than soiled, seeded, and planted land that is presumably eligible for Phase 2 bond release. There are about 82,000 fewer acres of final bond release than re-vegetated land that has passed through the 10-year operator responsibility period, as required for final bond release.

Because reclamation status is measured based on a mine operator’s reporting of reclamation activities completed, mine operators get informal credit with regulators for having completed reclamation without having to submit the reclamation to the quality assurance scrutiny required for bond release. Although some regulators do urge mine operators to submit bond release applications, a mine operator does so based on the company’s sole discretion.

Bond release fails as a financial incentive for three reasons. First, when mines are self-bonded, bond release does not return an asset to the mine operator or save it money because self-bonds do not entail surrender of collateral or payment of premiums in the first place. When a reclamation bond is secured by real property, the mine operator does not receive funds following bond release. In this case, there is little financial incentive to achieve bond release.

Secondly, in addition to paying for reclamation operations, the mine operator must invest in staff time to monitor reclaimed parcels and prepare the paperwork required for a bond release application. Coal companies often submit applications for bond release only for large parcels in order to minimize these costs. Paying for field monitoring and desk work inhibits frequent applications for bond release.

Finally, mine operators' collateral is often held with surety companies rather than with regulators. For a mine operator to receive a return of their collateral following bond release, the mine operator must process the paperwork with a surety provider to lower the outstanding bond amount and release collateral. Our review of annual bond amounts for particular mines suggests that a mine's reclamation bond amount usually grows each year. This limits the utility of reducing a surety company's bond coverage, as any return of collateral is only temporary.

It is our impression that coal companies have accommodated themselves to the perpetual surrender of reclamation bond collateral. Based on a review of investor disclosures from publicly traded coal companies, the collateral held by surety companies is rarely cash, but instead is comprised of letters of credit written against a company's credit line from a syndicate of banks. Although reclamation bonds can amount to hundreds of millions of dollars, the amount of collateral held is very often a small fraction of the overall bond amount.¹⁴ Most coal companies have significant lines of credit that are not overly encumbered by outstanding letters of credit written to secure reclamation bonds.

These factors all undermine bond release as an effective motivator of reclamation even where coal companies have surrendered collateral for reclamation bonds. Nevertheless, the only objective measure of whether successful reclamation has been completed in line with legal standards and the intent of SMCRA comes with bond release.

FORECASTING THE FUTURE

The current decline of the western coal industry is unprecedented. It forces us to take stock of the industry's unfolding legacy issues, chief among them the ravaged landscapes left behind by decades of strip mining and the probability that many mining companies will be unable to completely reclaim shut-down mines.

As this report shows, strip mining operations in the western U.S. create a significant and growing amount of disturbed acreage where reclamation will not be possible until the end of mine life. Making matters worse, the coal industry has evaded timely reclamation of additional acreage that is available for reclamation. Finally, the sole financial incentive to ensure timely reclamation—bond release—has proven inadequate to the task. Regulators and the public face nearly 150,000 acres of unreclaimed area – and financially shaky coal mine permit holders – at western coal mines.

The end of mine life is the time in which coal mine operators are least capable of paying for reclamation, as coal sales revenues from the mine have necessarily ceased. We strongly doubt the coal industry is on a trajectory toward full reclamation financed by its own resources. More likely, state and federal coal regulators will be required to assume responsibility for full and final coal mine cleanup.

To best mitigate these risks, mining regulators must begin to require mine operators to accelerate reclamation by adequately staffing and resourcing reclamation crews and must more vigorously urge and enforce contemporaneous reclamation standards.

Coal companies are undiversified and are unlikely to complete final reclamation

There are two options for who manages and pays for reclamation of unreclaimed land: coal companies using coal sales revenue, or government agencies using money seized from reclamation bonds, and supplemented by public funding if necessary.

If western coal companies were generally involved in multiple lines of business or multiple markets, they could feasibly finance from non-coal mining revenues full reclamation following the end of coal production. However, the U.S. domestic coal industry is largely undiversified. This fact puts state and federal regulators in a very vulnerable position: as the coal industry continues to decline, the risk increases that regulators will be stuck with responsibility for reclaiming hundreds of square miles of mined land.

Today, most U.S. coal companies have only one line of business: mining coal. They sell coal to two primary groups of customers: domestic power plants and foreign steelmakers.¹⁵ Some western coal companies, such as Peabody Energy and Arch Coal, have mines in other regions or across the globe and sell coal into both markets. Most companies do not. Fewer still are the coal companies that have sources of revenue outside coal sales with which to finance reclamation.¹⁶

Figure 11. Western Coal Companies Sorted by Lines of Business		
Thermal Coal Only	Thermal Coal & Electric Power Sales	Thermal & Metallurgical Coal
Eagle Spec. Materials ¹⁷ Lighthouse Resources NTEC ¹⁸ North American Coal Westmoreland Mining	Tri-State G&T Assn. Bridger ¹⁹	Arch Coal Peabody Energy

As mine closures begin, coal sales revenue from other mines in a company's portfolio can be expected to cover reclamation costs for a time, as in Peabody Energy's ongoing closure of the Kayenta and Black Mesa mines. This revenue stream is limited, however, by the end of mining at a significant portion of the company's mines. At some point, reclamation costs will overwhelm cash generated from dwindling coal sales. With rising costs and declining revenues, coal companies will likely again file for bankruptcy sometime during this process.

Banks and private equity firms are already hesitant to invest in the shrinking US coal sector.²⁰ It is highly unlikely that new investors will recapitalize the industry given the significant long-term reclamation obligations to which coal mines are subject. The results of the mine sale in Cloud Peak Energy's bankruptcy proceedings confirm this. Cloud Peak's bankruptcy auction resulted in three bids, none of which entailed cash consideration or debt-financing that even comes close to a full return of investors' money.

This lack of new capital, combined with the steady deterioration of demand for western U.S. coal, is hastening an inevitable reckoning. Financing coal mine reclamation will become increasingly difficult for coal companies as the mining industry winds down, and it will become nearly impossible once one or more of a company's coal mines closes. In addition, the coal industry will be left at that moment with the most extensive mined and unreclaimed area for which it has ever been responsible.

Regulators can take at least two significant actions to mitigate this risk: (a) eliminate the backlog of unreclaimed mine land that is available for reclamation, by forcing coal companies to fully staff reclamation crews and complete this work ahead of mine closure, and (b) ensure that only the most secure, liquid, and reliable bond instruments are used to guarantee reclamation.

Reclamation bonds must be secure, liquid, and reliable

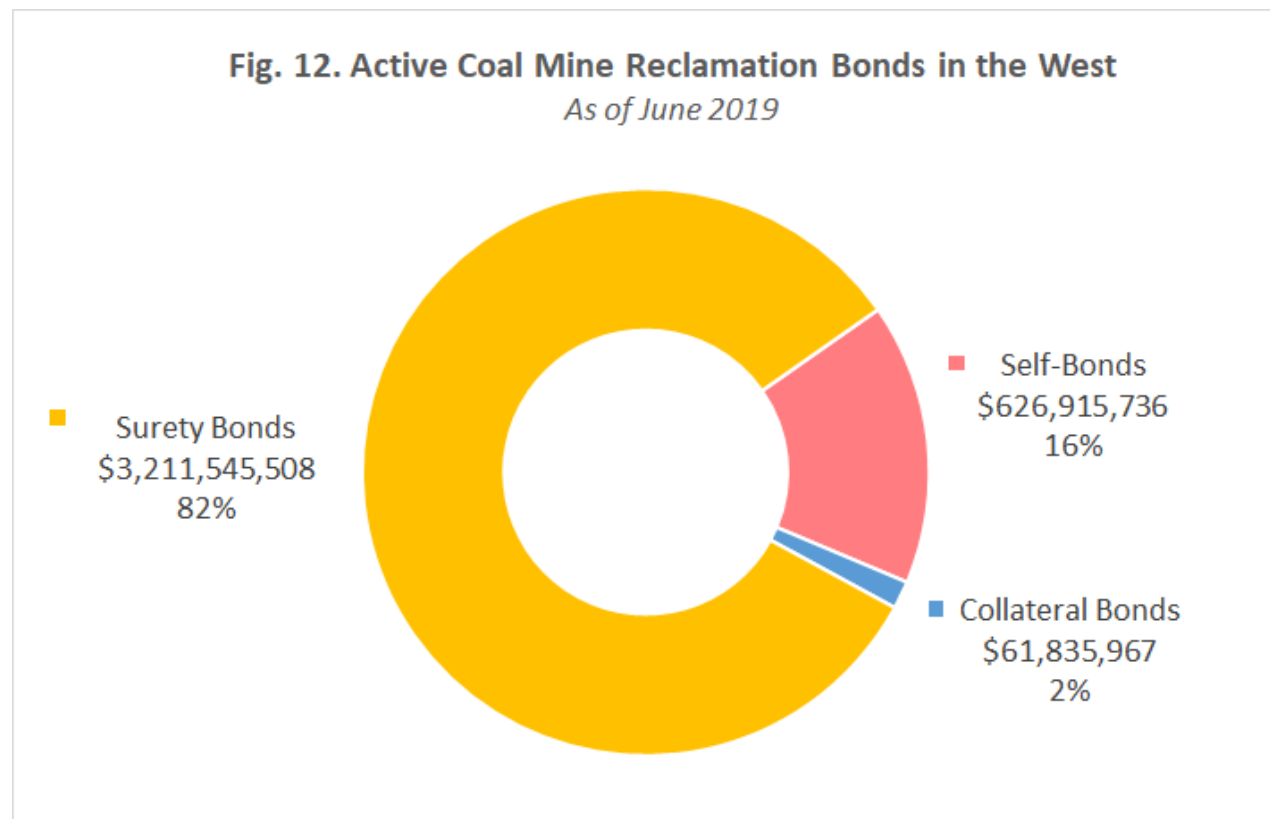
When coal mining companies become unable to pay for remaining reclamation of closed mines, reclamation bonds must fill the breach. Reclamation bonds are an emergency fund the law requires a mine operator to provide to state regulators as collateral for its performance of successful mine reclamation. Sufficient bonds to finance reclamation of all disturbed land at a mine must be maintained throughout the life of a coal mine. If a mine operator goes out of business and abandons its unreclaimed coal mines, regulators are authorized to seize bonds and use the proceeds to fund reclamation. Tapping a reclamation bond is known as bond “forfeiture.”

Unfortunately, not all bonds are equally secure. Some bonds, known as “self-bonds,” are merely a promise from a coal company to fulfill its reclamation obligations. In some coal mining states, state regulators have determined some mining companies are “too big to fail,”²¹ allowing the operator to forego posting meaningful or valuable collateral. These “self-bonds” are not reliable for a company that goes bankrupt: there is no money or assets pledged to fund reclamation. After reviewing coal mine reclamation bonds, the Government Accountability Office recommended amending SMCRA to eliminate self-bonding.²² Based on a WORC review of active reclamation bonds, self-bonds account for about 16% of active bonds in western states.

Another type of bond is a collateral bond, where a coal company puts up real property to cover an amount of bond equal to the property’s appraised value. If the appraised value is higher than the price for which the property actually can be sold, bond forfeiture will not yield sufficient funds to complete reclamation. Collateral bonds account for about 2% of active bonds in western states.

The vast majority of bonds are in the form of legal promises issued by a third-party, known as a surety company. Surety bonds are intended to be unbreakable legal promises of payment should the mining company not complete reclamation. If a mine operator does not fully reclaim, the surety company will pay regulators the amount required to reclaim and the company will pursue the mining company for its losses. Given that nearly four billion dollars of reclamation remain to be completed at western surface mines, the total value of many surety companies' underwritten bonds is dozens or hundreds of millions of dollars. We are not aware of a forfeiture of a surety bond with such a substantial value. Surety bonds account for about 82% of active bonds in western states and total \$3.2 billion, according to WORC's review of active reclamation bonds.

If a coal company abandons a mine where reclamation is self-bonded, backed by an overvalued collateral bond, or guaranteed by a surety company that contests full payment of the bond amount or collapses under a wave of bankruptcies and bond forfeitures, there will not be enough money available for regulators to complete reclamation.



RECOMMENDATIONS



1. State and federal policymakers should require detailed closure plans for mines and ensure transparency regarding timing of mine closure and company resources available to fund closure.

In 2019, Blackjewel’s messy bankruptcy process demonstrated that a mine operator’s obligations to its workers are easily sacrificed in bankruptcy, with a number of its workers suddenly laid off and not receiving final paychecks or employee contributions to 401(k) or Health Savings Accounts. States should implement bonding programs similar in intent to the State of Kentucky’s program,²³ which requires certain construction and mining companies to carry surety bonds in an amount sufficient to cover four weeks of employee payroll for the company’s maximum workforce.

Closure plans for coal mines should be required starting now, and should address at least the following:

- the anticipated timing of closure and conditions leading to closure;
- the amount and source of funds for pre- and post-closure reclamation;
- post-closure labor requirements for coal mine reclamation, a hiring preference for local workers, and a program for current workers to opt-into reclamation jobs;
- a schedule for reclamation that does not allow reclamation to be drawn out for decades and requires a sizeable workforce;

- the disposition of mine lands and anticipated post-mine land use;
- evidence that adequate payroll surety bonds have been filed with states;
- public notification of executive compensation during the pre- and post-closure periods; and
- other elements that are common to retirement plans for facilities such as power plants.

State regulators should create public participation opportunities, including stakeholder meetings, to review and comment on the form of the closure plans as well as closure plans for specific facilities.

Using information in the closure plans, policymakers at the state and federal levels should design and fund worker retraining programs, grant programs to facilitate buyouts of underwater mortgages, and other support for displaced coal mine workers in order to support workers in their preferred path: seeking new employment, continue doing reclamation at the mine, or relocating and receiving new training. Such programs should also backfill declining local tax collections so that local governments can approach the new fiscal conditions wrought by mine closure smoothly instead of abruptly.

2. Regulators should require coal mine operators to establish sinking funds now to fully fund post-closure reclamation.

Reclamation must eventually be funded by revenue that does not come from ongoing mining, and a sinking fund is a tool that companies often use to set aside current revenue in order to pay future expenses. Saving revenue from ongoing coal sales would be a reliable method for coal companies to pay future reclamation expenses. Because a company's sinking fund might not be legally obligated to pay for reclamation in the event of bankruptcy, a sinking fund is no replacement for SMCRA's current system of reclamation bonding.

3. Federal and state regulators should strive to reduce active mining areas and long-term facilities as much as possible and as early as possible prior to mine closure.

In the event of bond forfeiture, responsibility for reclamation passes to the regulatory authorities to complete cleanup with reclamation bond funds. Regulators should minimize the scope of their potential responsibility for mine cleanup by requiring un-reclaimed acreage to be reclaimed by mine operators as soon as it becomes available. It may be necessary to require coal companies to increase staffing and resources for reclamation crews to levels adequate to complete this work ahead of mine closure.

4. OSMRE should request additional information when compiling Reclamation Status Tables used in the Western Region in order to more accurately capture the contemporaneity of reclamation and alert state regulators to growing inability to fully reclaim.

Reclamation as originally envisioned in the 1977 SMCRA was to be done as “contemporaneously as possible.” However, as this report explains, there are significant mined areas available for reclamation where reclamation operations have not yet commenced. Revisions to OSMRE’s Reclamation Status Tables could include a new category that identifies acres classified as Active Mining Area but not yet to final grade for more than 180 days following mining. This would assist in identifying acres available for reclamation ahead of mine closure. If this category of mine land is not measured, improvement cannot be assured.

5. All self-bonding should be eliminated at both state and federal levels.

Reclamation bonds will be essential to the completion of reclamation and must be held in secure, reliable, and liquid instruments. State and federal regulators must eliminate the use of self-bonds. Recent years have seen progress at the state-level, with the State of Colorado disallowing new self-bonds as a matter of agency policy and the State of Wyoming finalizing a significant limitation – but not elimination – of self-bonding. On the federal level, OSMRE initiated a rulemaking to reconsider self-bonds in 2016, although that effort appears to have been paused or discontinued.

6. Regulators should reject surety bonds written by inadequately capitalized firms, and require that they be replaced.

Surety bond underwriters guarantee the completion of billions of dollars of coal mine reclamation. Given the coal industry’s unfolding decline, the surety industry must be prepared to fund significant reclamation costs. Regulators would be wise to ensure that all of the surety bond underwriters to whom they are exposed are adequately capitalized. The current standard is whether a surety company is included on the U.S. Department of Treasury’s Circular 570,²⁴ and whether its proposed bond guarantee is below its underwriting limitation. As there has never been a bond forfeiture for a major strip mine in the West, we are hopeful but not certain that all surety bond underwriters are (a) willing to pay upon demand by regulators, and (b) financially able to pay. State regulators should consider engaging colleagues in their states’ respective offices of Attorney General, Insurance Commissioner, Auditor, Commerce, Revenue, public pension management, or other agency with legal and financial expertise to evaluate the solvency of the specific surety companies that have underwritten coal mining bonds to the state.

7. Regulators should develop detailed bond forfeiture contingency plans and emergency response plans.

State and federal regulators should prepare for bond forfeiture of large-scale strip mine bonds by developing unambiguous protocols, including an orderly and standardized process for determining when to seize a bond, clarity about decision-making and roles within the agency, and designation of a lead staff for managing the process. Once such a process is designed and approved, reclamation bonds should be recalculated to cover any additional expenses deemed necessary. We commend OSMRE's Denver Field Division for committing to evaluate state regulators' readiness to respond to bond forfeiture through evaluation of the state programs in Wyoming, North Dakota, and Montana during the 2020 Evaluation Year and look forward to the results of that investigation.

APPENDIX 1: METHODOLOGY: RECLAMATION STATUS TABLES, THE RECLAMATION PROCESS, AND BOND RELEASE

We produced this report through analysis of federal reclamation data, conversations with state and federal staff of coal regulatory authorities, visits to strip mines and conversations with mine staff, and overflights of strip mines.

Federal employees of the Western Region of the Office of Surface Mining Reclamation and Enforcement (OSMRE) track reclamation progress with a spreadsheet tool known as Reclamation Status Tables. OSMRE staff members collect reclamation status data annually from state agencies under the authority of the Government Performance Reporting Act for use in OSMRE's Annual Evaluation Reports of state implementation of SMCRA. The data are sourced from mine operators, and inform annual reports in which OSMRE evaluates the implementation of SMCRA by state programs, which in turn inform the federal agency's view of its own success.

Reclamation status tables (RST) identify the status of each acre of land disturbed within a permit area. The tables distinguish two overarching conceptual categories: acreage that is unavailable for reclamation, and acreage that is reclaimed. Acreage unavailable for reclamation is divided into “active mining area” and “long-term mining and/or reclamation facilities.” Acreage that is reclaimed is categorized by its stage of reclamation: backfilled/graded/contoured, topsoil replaced/seeded/planted, and seeded/planted for 10+ years. The category of “seeded/planted for 10 years” is relevant due to the regulatory requirement that revegetated western land must undergo a 10-year operator responsibility period to ensure the vegetative community has been successfully re-established before mine operators may be released from liability for the success of reclamation.

The RST also denote how many acres have been approved for release of reclamation bonds, distinguishing between Phase I, Phase II, and final bond release. Some states with approved primacy programs to implement SMCRA, such as Montana and North Dakota, have four phases of bond release. In those cases, the RST category of Final Bond Release refers to Phase 4.

Generally speaking, a parcel is eligible for Phase I bond release once the mine operator completes backfilling, re-grading, re-contouring and drainage control, and topsoil replacement. A parcel is eligible for Phase II release once the operator has established vegetation whose species composition is commensurate with that of the seed mix(es) of the approved reclamation plan. A parcel is eligible for final bond release upon completion of all surface coal mining and reclamation activities, including the survival of the re-established vegetative community throughout the 10-year “operator responsibility period” and evidence of a recovering hydrologic balance. Many states also require mine operators to file annual reports that include mine maps that distinguish parcels by the categories of the RST, including both reclamation status and bond release status.

The RST are an immensely valuable tool to the interested public. They facilitate transparency around the status of mining and have allowed for the production of this report. We analyzed the most recent data available to develop this report’s charts, which represent aggregate data from Black Mesa, Colorado, Montana, New Mexico, North Dakota, Utah, and Wyoming unless otherwise specified. For most jurisdictions, the latest data available was for the year ending June 30, 2018. For Black Mesa, the most recent data available at the time of analysis was for the year ending December 31, 2017. Black Mesa is an area that has been strip-mined for coal on Navajo and Hopi land in northeastern Arizona.

REFERENCES

1. See 30 USC §1202.
2. <https://www.spglobal.com/platts/en/market-insights/latest-news/coal/071019-moodys-expects-coals-share-of-us-power-generation-to-fall-to-11-by-2030>
3. Some examples of closed mines include the Black Mesa and Kayenta mines on Black Mesa; Glenharold, Indianhead, and the announced retirement of Beulah in North Dakota; Big Sky in Montana; and Eckman Park and Edna in Colorado.
4. Mines generally submit annual reports to state regulators that assess the status of re-vegetated parcels. Our review of annual reports suggests that some re-vegetated parcels may need replanting.
5. Black Mesa is used here to refer to the landform and region in which mining occurs on Navajo and Hopi land in northeastern Arizona.
6. Personal communication, representatives of Peabody Energy, August 2, 2016. Personal communication, representatives of Montana DEQ and OSMRE Denver Field Division, October 13, 2016, May 2, 2017, August 23, 2018, June 25, 2019.
7. Coal quality generally refers to heat content, sulfur content, ash content, etc.
8. The permit in question was the Rosebud Mine's Area C.
9. <https://www.eenews.net/stories/1060118069>
10. These definitions are taken from the "Directions" tab included in some OSMRE reclamation status tables.
11. "At 57 FR 33875, July 31, 1992, §816.101 was suspended indefinitely, effective Aug. 31, 1992." See Effective Date Note at 30 C.F.R. 816.101.
12. *Supra* at footnote 11.
13. N.D. Cent. Code § 38-14.1-24. <https://www.legis.nd.gov/cencode/t38c14-1.pdf>

14. Cloud Peak Energy boasted to investors that it had secured just 5.5% collateralization of its surety bonds following its replacement of self-bonds in 2017: “As of September 30, 2017, we had \$416.2 million of reclamation and lease bonds backed by collateral of \$22.9 million in the form of letters of credit.” See Cloud Peak Energy Quarterly Report on Form 10-Q filed with U.S. Securities and Exchange Commission: https://www.sec.gov/Archives/edgar/data/1441849/000110465917064072/a17-20581_110q.htm

15. As of 2017, 90% of coal mined in the U.S. was considered “thermal” or “steam” coal fit for power plants. Only 6% of that total was exported overseas, leaving the vast majority of that portion of coal to be shipped to U.S. power plants. The remaining 10% of the country’s coal was metallurgical, i.e., fit for making steel. A full 74% of that coal was exported overseas. See Energy Information Administration’s Annual Coal Report: <https://www.eia.gov/coal/annual/>

16. There are some exceptions. Certain electric utilities own and operate coal mines, such as the Jim Bridger mine (PacifiCorp and Idacorp) in Wyoming and Tri-State’s mines (Colowyo, New Horizon, etc.) in Colorado. Even utility owned mines are vulnerable because they primarily serve a single coal plant customer, many of which are under tremendous financial pressure of their own. At the time of writing, PacifiCorp has proposed to accelerate the closure of a significant portion of its fleet of coal-fired power plants.

17. Contura Energy never finalized transfer of the mining permits for its Powder River Basin mines after selling them to Blackjewel LLC in December 2017. Following Blackjewel’s bankruptcy filing in July 2019 and during the production of this report, Blackjewel sold the mines to a company named Eagle Specialty Materials.

18. Cloud Peak Energy closed the sale of the company’s mines to NTEC (Navajo Transitional Energy Company) during the production of this report.

19. Bridger Coal Co. operates the Jim Bridger mine in Wyoming and is co-owned by electric utilities PacifiCorp and Idaho Power Co.

20. <https://www.spglobal.com/marketintelligence/en/news-insights/trending/VyoD0aJNjXOIVAnZqvlAJA2>

21. The criteria to determine eligibility for self-bonding under 30 C.F.R. 800.23 are seriously flawed. See “Now is the Time to End Self-Bonding,” accessible online: <https://www.worc.org/publication/time-to-end-self-bonding/>

22. "Federal and State Agencies Face Challenges in Managing Billions in Financial Assurances." GAO-18-305: Published: Mar 6, 2018. Publicly Released: Apr 5, 2018. Accessible online: <https://www.gao.gov/products/GAO-18-305>

23. See Kentucky Revised Statute 337.200.

24. See <https://www.fiscal.treasury.gov/surety-bonds/circular-570.html>

JANUARY 2020

