

Mountaintop Mining Fact Book

National Mining Association

March 2009



OVERVIEW

Mountaintop mining (MTM) is a surface mining technique that is used to safely and efficiently extract coal reserves near the surface in the steep terrain conditions characteristic of Central Appalachia. During MTM, multiple coal seams are uncovered by removing the overburden and interburden (the rock situated above and between seams), which are then placed on previously mined areas or within engineered fill areas.

After the coal is removed, the entire site is restored through mine land reclamation as required in permit specifications. Each MTM site is uniquely designed, engineered, permitted, operated and reclaimed in accordance with standards that are defined and regulated under local, state, and federal laws and regulations, including the 1977 Surface Mining Control and Reclamation Act (SMCRA), which requires final reclamation of the site to create “a level plateau or gently rolling contour with no highwalls remaining.”

MTM Economic Impact: <i>At a glance</i>	
Jobs	
Direct	14,000
Indirect	60,000
Average Salary	\$66,000
Compared to Average Industrial Salary	57% higher
Value of Economic Activity	
Direct	\$5 billion
Indirect	\$7.5 billion

MTM is frequently applied to areas where previous mining activities took place using methods that achieved only partial recovery of the coal reserves. MTM can mitigate previous environmental problems associated with past mining such as acidic drainage and

un-reclaimed highwalls that were created prior to implementation of today's more stringent mining and environmental regulations.

Mountaintop mining generally references all types of surface mining in the Appalachian region, including mountaintop removal, contour mining and area mining. Accordingly, this document will refer to “mountaintop mining” as including all of the types of surface mining in this region.

Nonetheless, the economics of MTM and underground mining are inter-related, and one mining technique cannot replace the other. A study conducted by Marshall University in West Virginia found that “... there are linkages between surface quantities and the cost of underground mining. These linkages are attributable to several factors... Thus [a decision to end MTM] will almost certainly affect both surface and underground production...” One cannot simply assume that a property that is well suited to MTM can be designed and developed using alternative production methods. Other mining methods may or may not be technically and/or economically feasible. Mines and mining properties are unique, and the viability of any mine or reserve can only be determined based on site-specific geological models and engineered mining plans. The only certainty of alternative methods is that overall coal reserve recovery will be lower than with MTM methods, thus permanently sterilizing coal that could have been mined.

Coal produced from the Appalachian region has a significant impact on our nation's economy and social well being. The Appalachian region contains more than 50 billion tons of coal reserves. Mountaintop mining operations alone produce more than 126 million tons of coal per year, providing enough energy to power more than 25 million American homes.

Economic Impact

Mountaintop mining operations produce desirable, high-wage jobs that are the economic engine of local communities, states and the region in which they operate. The average mining wage is more than \$66,000/year, excluding overtime – 57 percent higher than the average for industrial jobs. Mountaintop mining accounts for approximately 45 percent of the entire state's coal production in West Virginia.

There are more than 14,000 surface coal miners in the Appalachian region, and for every mining job an additional 3.5 jobs are created through mining services, sales, and other related business. Accordingly, mountaintop mining provides almost 60,000 jobs in Appalachia.

Eliminating MTM will have a devastating economic impact on the communities where these mines are located. A 2004 study conducted by the Center for Business and Economic Research found that that “the impact on State and local tax revenues will be precipitous” if MTM is eliminated. The authors concluded that placing serious restrictions on this efficient mining technique would result in a loss equaling “nearly nine percent” of West Virginia's tax revenue impacting a variety of state services including K-12 education.

Value of Shipments

Investment in these projects creates production value of more than \$5 billion from the value of the coal alone. In addition, such operations pump billions of dollars more into the local economy through the purchase of equipment and supplies, payments for transportation on railroads and barges, hiring consultants and engineers, and payment of taxes. Mountaintop mining is also a source of American exports. In 2007, the U.S. exported more than 13 million tons of surface-mined coal from the region, worth almost \$1 billion.

The U.S. annually mines more than 1 billion tons of coal. About 90 percent of this output is the fuel source for more than half of our nation's electricity generation. The remaining 100 million tons of U.S. production is utilized for coke-making, industrial uses or sold in the export market. About 70 percent of U.S. coal production is mined using surface mining methods, including MTM. Underground mining methods account for the remaining coal output.

The Department of Energy predicts that coal use will steadily grow over the next 20 years because it is the nation's most abundant and affordable energy resource. There are nearly 125,000 coal miners in the United States today.

GENERAL BACKGROUND



MTM is confined to those areas with relatively steep terrain and multiple seams that are located above natural drainage formations that intermittently carry water or serve as ephemeral streams. The earth and rock overlying the coal seams are shot (blasted) and removed to expose coal seams for recovery. The overburden is either returned to its original location or placed in designed fill areas. The site is reclaimed in accordance with permit requirements.



During the mining process, the general appearance of MTM sites is comparable to other big civil projects in this region that involve moving substantial volumes of material and large earth-moving equipment. Because MTM mining is conducted in rugged terrain where slope instability generally prohibits replacing all of the excavated rock back onto the mountaintop for safety reasons, excess rock in a MTM operation is placed in a designated valley fill area that is engineered to meet regulatory compliance and ensure slope stability. Upon completion of final placement of rock onto previously mined areas and valley fill areas, the area is rough graded and shaped. A final layer of topsoil (growth medium) is placed onto the reclaimed area as part of the final grading application. The affected areas are then re-seeded with vegetation conducive to the surrounding environment and wildlife, planted with seedlings for reforestation, used as farmland, or prepared for development, depending on the final land use requirements as described in the permit.

MTM site in southern W.Va., before and after reclamation.

This entire process is regulated and bonded to ensure compliance. Final reclamation as required by regulation is monitored by federal and state agencies. Release of the reclamation bonds takes place only after these agencies have been satisfied that final reclamation requirements have been met.



photo by Dan Crank, Ky. Dept. of Fish & Wildlife Resources

MINE LAND RESTORATION



Reclaimed MTM site.

SMCRA not only regulates the mining process, it also requires that before mining ever begins the mine operator must submit and regulators must approve a comprehensive mine land restoration and reclamation plan. To develop the plan the mining company, in consultation with landowners and regulators, will design a plan for the mine site that requires the company to restore the land to support an approved “post-mining land use,” that will restore the land to a valuable use or purpose after mining. Examples of this could include reclaiming the land to support forests,

pastureland, cropland, or an economic use for the public such as a golf course, an airport or industrial park, or a wind farm. In addition to the legal requirements to restore the land, financial bonds are required by federal law as an insurance policy to ensure the land will be fully reclaimed according to the reclamation plan, regardless of the financial condition of the company after mining operations are complete.

Wildlife Habitat and Reforestation

Mining companies have a unique opportunity to tailor their post mining land uses to accomplish a variety of environmental and economic objectives through the reclamation process. For example, mining operations, in conjunction with state government partners and the Rocky Mountain Elk Foundation,

reintroduced a total of 1,500 elk in eastern Kentucky between 1997 and 2002. According to the Rocky Mountain Elk Foundation, when mines are properly reclaimed according to government standards, the elk actually prefer such sites to other areas. In 90 percent of the cases where the animals are radio tracked, the elk are living in and around reclaimed surface mines. The elk herd in Kentucky has flourished and now numbers over 10,000 animals, which represents more than a 600 percent increase in the size of the herd.



Demonstrating the correct way to plant American Chestnut seedlings; Photos by Paul Rothman of Kentucky DNR

In addition, research conducted by Virginia Polytechnic and State University and the University of Kentucky has demonstrated that forest communities can be successfully re-established on reclaimed mine sites. This success is promoted through efforts such as the Appalachian Regional Reforestation Initiative (ARRI), a partnership of federal and state regulators, private industry and conservation groups dedicated to promoting and encouraging the restoration of high-value, hardwood forests on coal mined lands in Appalachia using the forestry reclamation approach. The forestry reclamation approach requires using advanced techniques to ensure availability and depth of proper topsoil, avoiding compaction of the soil, using the appropriate groundcover and tree species selections, and applying the correct tree planting techniques. Using this approach, mountaintop mining operations can successfully replant and restore the forest after mining operations are complete.

Mountaintop mines also can improve the environment through reintroduction of plant species. For example, the American chestnut tree was largely eliminated from eastern forests of the United States several decades ago by a blight that destroyed almost the entire species. Through a partnership with the American Chestnut Foundation (TACF), mining companies are planting a blight-resistant version of the chestnut across 1.2 million acres in Kentucky. These plantings are part of the Appalachian Regional Reforestation Initiative mentioned above, which promotes the reforestation of coal-mined lands using high-value, native hardwood trees, includ-

Post Mine Land Use Projects

Mingo County, W.Va.

Project Description Number of Jobs

Mingo County Fish Hatchery	2
Twisted Gun Golf Course	15
McCoy Hatfield Trails	30
Unilin Flooring	275
Quality Metal Roof Manufacturing	25
Weatherford Fracturing Technology	40
Air Transportation Park	25
4H Youth Camp	15
Total Jobs	427

source: Mingo County, W.Va., Redevelopment Authority



Twisted Gun Golf Course in Mingo County, W.Va., was built on a MTM site.

ing the American chestnut. In addition the ARRI has joined with the United Nations Environment Programme (UNEP) Seven Billion Tree Campaign and has pledged to plant 38 million trees over three years. Reforesting this land with trees, especially fast-growing hardwoods like the American chestnut, on reclaimed mines will also benefit landowners by providing them with a tree crop that can be periodically harvested.

Commercial Development

Mountaintop mining operations can sometimes be designed to create significant commercial development opportunities in steep-sloped areas of Appalachia. These areas are naturally unsuitable for large-scale development due to the rough topography, but mining operations provide an opportunity to create economically valuable level land for such projects following the completion of the mining and reclamation operations.



Mixed-use development in W.Va. on a former mine site.

Working with state regulators and local groups such as the Mingo County Redevelopment Authority in Mingo County, West Virginia, mining companies have integrated the costs of making a site suitable for development as part of their planning and execution of mine land reclamation, creating attractive investment opportunities that have led to a wide variety of sustainable economic development projects. These projects provide permanent jobs and services for residents in local communities and have included a wood products industrial park, an agricultural demonstration project, an 18-hole championship golf course, and an airport facility.

COMMUNITY INVOLVEMENT



Students at a W.Va. elementary school are rewarded by a local coal company for good performance.

Coal companies and their employees play an important role in improving the life of communities where they operate and where their families live. Whether providing a grant to the local youth organization, gathering employees to help build a playground or serving as members of the volunteer

fire department, they recognize the importance of being active participants in the social fabric of the communities in which they operate. Recent activities in Appalachia include:

- providing equipment and supplies to rebuild infrastructure services for local communities;
- establishing and underwrite family wellness centers;
- funding scholarships to bring quality medical providers to remote communities;
- partnering to provide volunteers and financial assistance to primary and secondary schools;
- providing scholarships and recognition programs for outstanding teachers;
- funding and assist in constructing playgrounds for school children;
- participating and provide resources for local volunteer fire departments; and
- supporting holiday events for underprivileged children.

Such activities are annually recognized by the Office of Surface Mining's "Good Neighbor Awards" and other state and local programs. These awards annually recognize mine operators for successfully working with surrounding land owners and the community.

TRANSPARENCY AND PUBLIC PARTICIPATION

SMCRA contains numerous protections to ensure transparency and public involvement to ensure that the performance standards and other requirements of the statute and regulations are being met. The law requires at least one complete inspection of the actual mine site every quarter and one partial inspection each month. SMCRA requires mine operators to notify the public of the proposed surface coal mining operation and provides the public a right to file written objections with the regulator regarding any mining company permit applications with which they disagree. In addition, any person can request an inspection of an operation where they believe is not complying with the law. SMCRA also provides for citizens to file a lawsuit against the federal or state government if they believe that there has been a violation of SMCRA or any of its implementing regulations that the government has not adequately addressed. Compliance with environmental standards is assured through diligent oversight by state and federal regulators in conjunction with significant opportunities for public involvement.



Boy Scout Troop constructing and installing duck nest boxes at a reclaimed mine site in Belfry, Ky.



Arch Coal Teacher Recognition Awards



Ball field constructed by mining company for the residents of Chapmanville, W.Va.

LAWS & REGULATIONS

Mining is carefully regulated throughout the United States. There are several laws that specifically regulate mining, and many other general laws are applicable to mining operations. Some of the most significant federal laws include the Surface Mining Control and Reclamation Act (SMCRA), the Clean Water Act (CWA), the Clean Air Act, the Endangered Species Act (ESA), and the Federal Mine Safety and Health Act. This document will focus primarily on the first two statutes, SMCRA and the CWA. It should be noted, however, that in addition to these, there are also thousands of pages of federal and state regulations providing environmental protection, protection of public health and safety, as well as opportunity for public input during permitting activities.

Mountaintop mining was specifically authorized by Congress when it enacted SMCRA in 1977. Section 515(c) provides an exception for restoring the approximate original contour requirements for mountaintop removal operations under certain conditions, and section 515(b)(22) allows excess rock and dirt to be placed in streams so long as lateral drains and under drains are constructed to avoid water filtration through the fill material. These provisions are further reinforced by the courts, which have ruled that: "SMCRA does not prohibit the discharge of surface coal mining excess spoil [dirt and rock] in waters of the United States...it is beyond dispute that SMCRA recognized the possibility of placing excess spoil material [dirt and rock] in waters of the United States..." See *Kentuckians for the Commonwealth v. Rivenburgh*, 317 F.3d 425, 442-443 (4th Cir. 2003).

Most recently, the Office of Surface Mining and Reclamation (OSM) added new regulations that provide additional protections to streams and the environment by requiring companies to minimize the amount of excess "spoil" material (dirt and rock) generated at mountaintop mining and other mine sites. The new regulations require mining companies to demonstrate that the operation has been designed to minimize the volume of excess dirt and rock and ensure that as much of this material is returned to the mountain as possible. Mines must avoid placing such material in perennial or intermittent streams to the extent possible. They must also perform an "alternatives analysis" to consider options for fill placement that take into account different numbers, sizes, locations and configurations to minimize the impact on fish, wildlife and related environmental values.

The Surface Mining Control and Reclamation Act (SMCRA)

The Surface Mining Control and Reclamation Act ("SMCRA") is a comprehensive federal environmental statute for regulating surface coal mining operations. Under this legislation, Congress created the Office of Surface Mining Reclamation and Enforcement (OSM) in 1977 and charged the agency with establishing a nationwide program to protect society from the adverse effects of surface coal mining, yet striking a balance between environmental protection and the nation's need for coal as an essential source of energy.

Performance Standards: SMCRA established comprehensive environmental performance standards for coal mining operations. These standards reflect Congress's understanding that there is a balance to be struck between environmental protection and meeting the nation's energy needs through coal production. All coal mining, including mountaintop mining, must be done consistent with these environmental performance standards. These standards are comprehensive in nature and provide "cradle to grave" coverage throughout the life-cycle of a surface coal mining operation – from the earliest aspects of exploration and planning of the operation, throughout all of the "active" mining operations, and concluding with reclamation of the project.

To accomplish this, SMCRA requires all mining operations to comply with dozens of specific performance standards to protect the environment. Examples of these standards include requirements for companies to maximize and conserve the coal resource, stabilize and protect surface areas to control erosion and water pollution, conserve topsoil for use after mining, and minimize the disturbance to waters. Miners must also minimize impacts of their operations on fish, wildlife, and related environmental values and enhance such resources when practicable. SMCRA and its implementing regulations address every aspect of the mining operation, including regulation of air and water quality, blasting, soil preservation and handling, protection of fish and wildlife, and re-vegetation requirements.

Permits: No mining activity may occur without first obtaining a permit. Mining companies must submit a comprehensive and detailed permit application containing information about the company and the proposed mining operation, including a detailed environmental analysis of how the mining will be conducted to ensure compliance with all of the required environmental standards. Mining companies

must also include detailed information about their operations and whether they have any outstanding environmental violations. Companies that have an outstanding environmental violation are prohibited by law from receiving new mining permits. In addition, no mining company may receive a permit until they have provided a bond to ensure that sufficient funds are available to assure the completion of the reclamation plan if the work had to be performed by the government.

Safety: Although safety of miners is primarily regulated through the Federal Mine Safety and Health Act of 1977, SMCRA also requires stability and engineering controls to ensure not only environmental protection, but safety of the miners and the public. Mountaintop mining operations engineer and construct valley fills to contain the excess dirt and rock generated from mountaintop mining operations. Federal regulations require careful planning, placement and construction of these structures to ensure their long-term stability and safety.

The Clean Water Act (CWA)

All mining operations, including mountaintop mines, must obtain permits and comply with regulations under the CWA designed to avoid degradation of streams and other waters from impacts associated with mining activities. The states also have an oversight role through certifying that no mining activity authorized by a federally issued permit will violate state water quality standards.

Section 401: Under CWA Section 401, no Federal permit or license may be issued that may result in a discharge to waters of the United States, unless the authorized Tribe or state where the discharge would occur has certified that the permit or license is consistent with water quality objectives or has waived certification. Among factors a state or authorized Tribe considers are whether the discharge would be consistent with applicable water quality standards, effluent limitations, new source performance standards, toxic pollutant control requirements and relevant requirements of Tribal and state law. The 401 certification may, and most often does, include conditions, that must become an enforceable term or condition of the permit.

Section 402: The National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Most states have primacy “permitting” authority within their borders. The U.S. Environmental Protection Agency (EPA) issues permits where states have not obtained primacy. Under this program, mining operations must obtain permits for all discharges directly to waters and for all discharges associated with stormwater runoff from the mining site. A few minor exceptions exist for stormwater runoff that does not come into contact with the active mining areas.

Thus, in addition to SMCRA protections explained above, the CWA provides another layer of environmental protections for streams and other waters by making it an enforceable violation of a CWA permit should any water quality standard be violated.

Section 404: The Section 404 permit program, administered by the Army Corps of Engineers (the Corps), provides that a permit may be issued for the discharge of dredged or fill material into the navigable waters. The Section 404 program is administered through a set of guidelines promulgated by EPA, and EPA participates as a commenting agency in the permitting process. EPA may prohibit issuance of a 404 permit where it determines the impacts will have an unacceptable effect on municipal water supplies, fish and wildlife or recreational areas.

In making determinations about whether to issue a 404 permit, the Corps requires the applicant to submit data and information illustrating the effects of the project on the aquatic ecosystem as a whole, as well as an evaluation of alternatives to the discharge and measures that were taken to avoid, minimize and mitigate or compensate for unavoidable adverse effects. A complete mitigation plan is required along with an opportunity for public review and comment in the case of individual permit authorizations.

The Corps typically requires mitigation at a 1:1 ratio, and in the case of mining permits, the ratio is often higher. This means that any segments of streams impacted by mining activities are mitigated by replacing the stream, creating new streams in other locations or improving other degraded streams. In addition, the Corps has authority to require, and often does require, conservation easements to preserve the mitigation for perpetuity. Mitigation bonds may also be required on a case-by-case basis. All mitigation requirements are incorporated as enforceable conditions on the 404 permit and additional monitoring and reporting requirements attach for a minimum period of five years.

STUDIES OF MOUNTAINTOP MINING



Restored stream at a MTM site

There have been several reports and environmental impact statements on the practice of mountaintop mining over the past 30 years. The most comprehensive of those was a programmatic environmental impact statement co-sponsored by the Environmental Protection Agency, the Fish & Wildlife Service, the Office of Surface Mining, the U.S. Army Corps of Engineers, and the State of West Virginia. This 5,000 page report includes 30 studies on all different aspects of mountaintop mining. Mountaintop Mining/Valley Fills in Appalachia, Draft Programmatic Environmental Impact Statement (June 2003).

According to this study, surface mining has disturbed only about 3 percent of the land in the study area over the past 10 years. The EIS study area (which includes parts of Virginia, West Virginia, Kentucky and Tennessee) accounts for about 25 percent of the nation's coal production.

Mountaintop Mining and Streams: During the ten-year period examined in the June 2003 study, mountaintop mining was viewed as impacting only 2 percent of the streams in the study area, which does not take into account avoidance, minimization and mitigation requirements imposed under regulations of the Clean Water Act. The statistics on impacts to streams include not only bodies of flowing water, but also on intermittent streams that contain flowing water for only part of the year and ephemeral streams which contain no water at all except as a result of rain or runoff events.

To learn more about mountaintop mining visit the National Mining Association web site, www.nma.org, or contact Carol Raulston at (202) 463-2600.



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