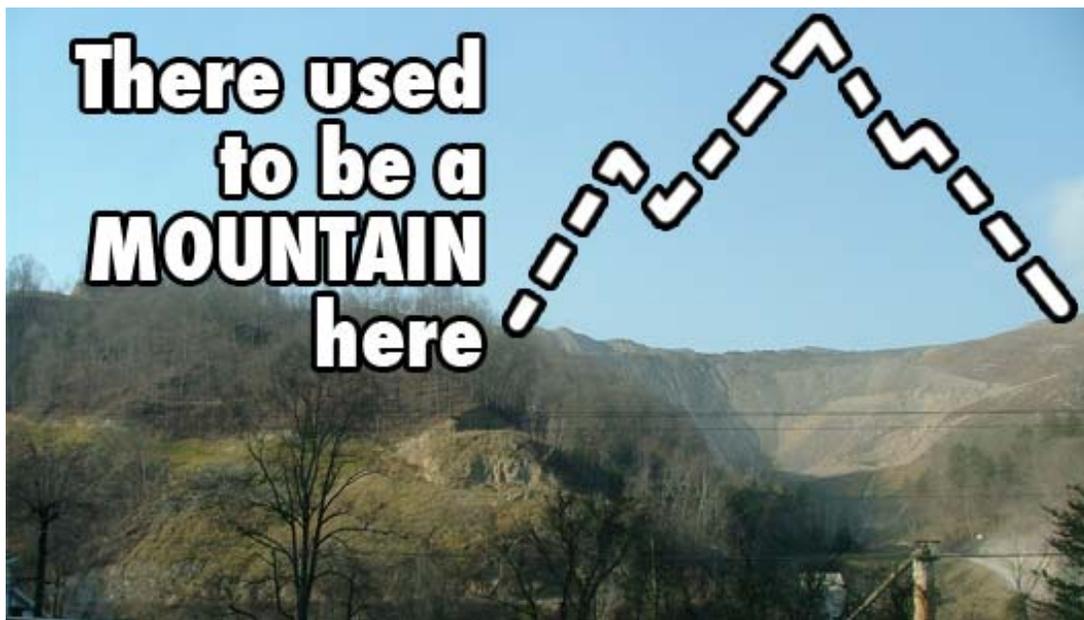


Mountaintop Removal Coal Mining in West Virginia



Monique Maher

Spring 2011

CIEP 457 Workshop – Teaching with Primary Sources Course

Contents Introduction

Mini-Unit Description: Students will complete a series of 3 lessons about mining practices and the culture of mining towns in West Virginia. Through these lessons, they will familiarize themselves with the geography of West Virginia, the evolving practices of coal mining, and the environmental effects of mountaintop removal mining. The lessons will be focused upon practices and people from the past 30 years.

Background Knowledge: Students should have historical knowledge about the use of coal as a source of energy. Students should be able to locate West Virginia and the Appalachian Mountains. Knowledge about the practice of underground mining will be beneficial. No previous knowledge about mountaintop removal mining is required.

Main Goal: Students will be able to explain the practice of mountaintop removal mining and its effects on the surrounding environment. Students will also be able to discuss the culture and challenges faced by families living in coal mining towns of West Virginia.

Top Investigative Question: Is mountaintop removal mining detrimental or beneficial to West Virginia's coal mining communities?

Recommended Subject: Contemporary American History **Sub-subject:** Current Environmental Concerns

Age group / grade level: Designed for 11th grade students

Lesson Titles:

- Lesson 1: Introduction to Coal Mining in West Virginia – page 3
- Lesson 2: The Culture and Economic System of Coal Miners, their Families, and Towns – page 14
- Lesson 3: The History, Practice, and Effects of Mountaintop Removal Mining – page 20

LESSON 1

1. Title: “Introduction to Coal Mining in West Virginia”

2. Overview: During this 1st lesson in a unit on Coal Mining in West Virginia, students will become aware of the geography of West Virginia and the natural coal deposits that have been discovered throughout the state and in the Appalachian region. Students will begin to examine the shift in practice from traditional mining to mountaintop mining. Coal will be identified as an energy source and will examine underground coal mining.

3. Goal: Students will also be able to explain the geography of West Virginia and the traditional forms of coal mining.

4. Objectives:

- Discuss the geography of West Virginia and the existence of coal below the earth’s surface.
- Examine the use of coal for producing energy.
- Understand the practice, dangers, and economics of traditional underground mining.

5. Investigative Question: How has mining shaped the culture of coal mining towns in West Virginia over the past 30 years?

6. Time required: 2 class periods, 45 minutes each

7a. Recommended Grade Range: 11th Grade

7b. Differentiated Instruction: Students who need extra time for completion will be allowed an extended period of time. Students will be given opportunities to assist others and answer questions during discussion.

8. Subject: Contemporary American History students. **Sub-subject:** Issues from the 1990s to today.

9. Standards:

National Council for the Social Studies (NCSS) Standards:

- Science, Technology, and Society
- Production, Distribution, and Consumption

College Readiness Standards:

- 20-23: Meaning of Words – Use context to determine meaning of words
- 20-23: Generalizations and Conclusions – Draw simple generalizations and conclusions about people and ideas in uncomplicated passages

ISBE Standards:

- Economics: 15.C.1b. Identify limitations in resources that force producers to make choices about what to produce.
- Social Systems: 18.A.5. Compare ways in which social systems are affected by political, environmental, economic and technological changes.
- Social Systems: 18.B.3b. Explain how social institutions contribute to the development and transmission of culture.
- Geography: 17.B.4a. Explain the dynamic interactions within and among the Earth’s physical systems including variation, productivity and constructive and destructive processes.

10. Credits: Monique Maher has designed the lesson. Most primary documents are from the Library of Congress website.

11. Materials Used: Power Points slides, handouts with pictures maps, literature about West Virginia from the Library of Congress website and from the West Virginia Geological and Economic Survey.

12. Resources Used:

- Library of Congress website. Photographs, recordings, and letters from the collection *Tending the Commons: Folklife and Landscape in Southern West Virginia*. This collection incorporates original primary documents from the American Folklife Center's Coal River Folklife Project (1992-99) documenting traditional use of the mountains in Southern West Virginia's Big Coal River Valley. (www.loc.gov)
- Material from the West Virginia Geological and Economic Survey (www.wvgs.wvnet.edu)

13. Procedures:

- **Connect:** Analyze what students know about the use of coal and the practices of coal mining. Discuss situations in which coal miners have become trapped.
- **Wonder:** Students will hypothesize about the nature of coal mining and the methods used in the mountainous regions of West Virginia to extract coal. They will complete the first two columns of the "KWL Chart".
- **Investigate:** Students will conduct guided research using primary source photographs, literature, and maps. They will identify the basic facts about the coal mining and the birth of the practice of mountaintop removal mining.
- **Construct:** Students will complete a short essay in their notebooks to explain what they have learned about mining and the geography of West Virginia.
- **Express:** Students will apply what they have learned to complete the final column of their KWL chart. We will have a class discuss to analyze what students have learned over the past two class periods.
- **Reflect:** Students will list questions that they still have on the topic for further discussion tomorrow.

14. Extensions: We will continue this unit by examining the culture of coal mining towns and the concerns surrounding the practice of mountaintop mining.

15. Evaluation:

- Analyze student understanding through discussion and interview/response.
- Read students' short essays in journals to determine if they have grasped main topics and objectives.
- Grade and analyze the completion of KWL charts.
- Prepare several questions from the unit to be included in the next formal assessment.

Name: _____ Date: _____ Period: _____

KWL Chart: Coal Mining in West Virginia

K <i>I already KNOW a few things about coal and/or West Virginia...</i>	W <i>I WANT to learn the following details about coal mining ...</i>	L <i>I have LEARNED a great deal about West Virginia mining.</i>

Coal Mining Quick Facts

Source: West Virginia Geological and Economic Survey

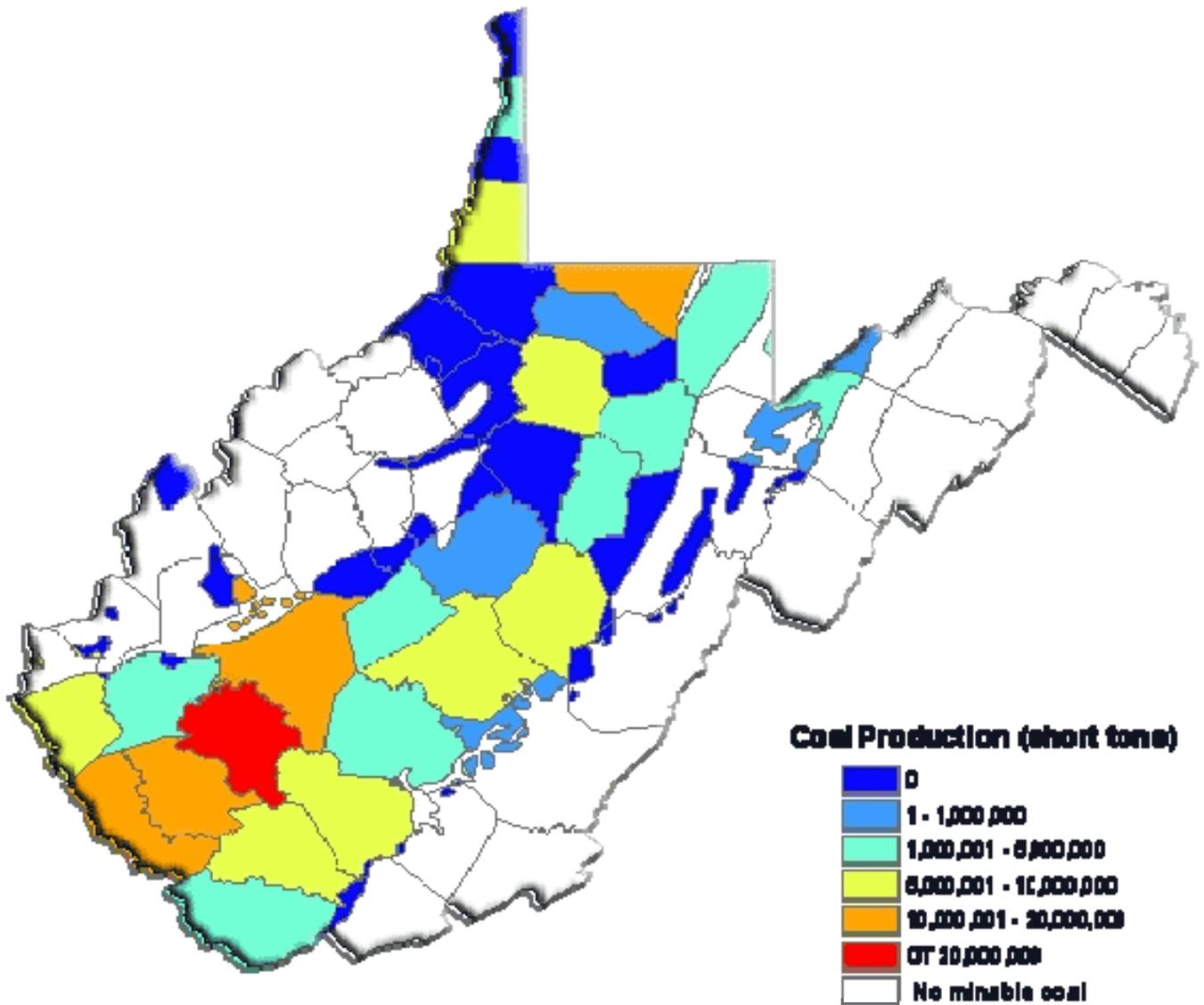
Where does most of the coal mined in West Virginia go? Was it any different in the past?

In 2002, 163,347,203 tons of coal were mined in West Virginia. West Virginia coal is used nationally and internationally. In 1997, 38,450,000 tons were exported to foreign ports, representing about 46 percent of the total coal exports from the United States. Much of the exported coal from West Virginia is used for steel manufacturing. Of the remaining production, 37,142,000 tons were consumed in West Virginia, mainly for electrical power generation, while 106,322,000 tons were shipped to other states, where electric utilities consumed 79 percent, steel makers used 16 percent, and others consumed the remaining 5%. In recent decades, use of West Virginia coal for electrical power generation has increased, while use in coke production for steel manufacturing has decreased. Earlier in the 1900s, West Virginia coal was used extensively as fuel for steamships and steam locomotives.

When did large-scale coal mining begin in southern West Virginia?

Large-scale coal mining began in southern West Virginia after the Civil War. It was dependent on the completion of a railroad transportation link to get the coal to markets.

Top West Virginia Counties by Coal Production Volume		
Rank	County	Volume
1	Boone	33,398,376 tons
2	Logan	14,578,586 tons
3	Kanawha	12,157,122 tons
4	Marion	12,135,722 tons
5	Mingo	12,085,029 tons



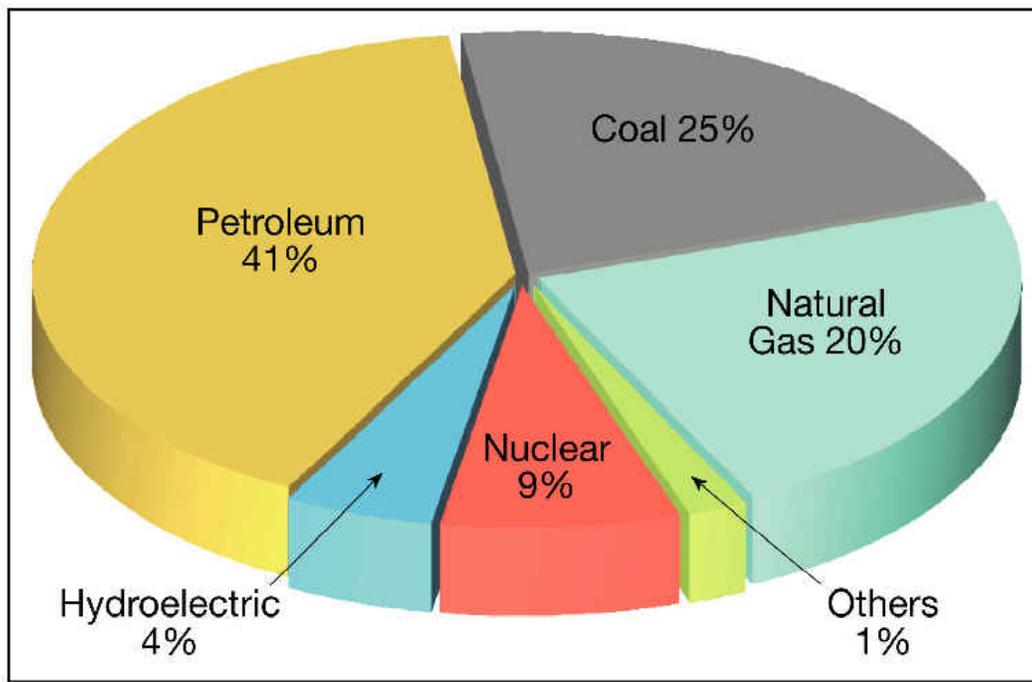


Miners loading into the mantrip.

Author/Creator Photographer: [Eiler, Lyntha Scott](#) Created/Published June 27, 1996

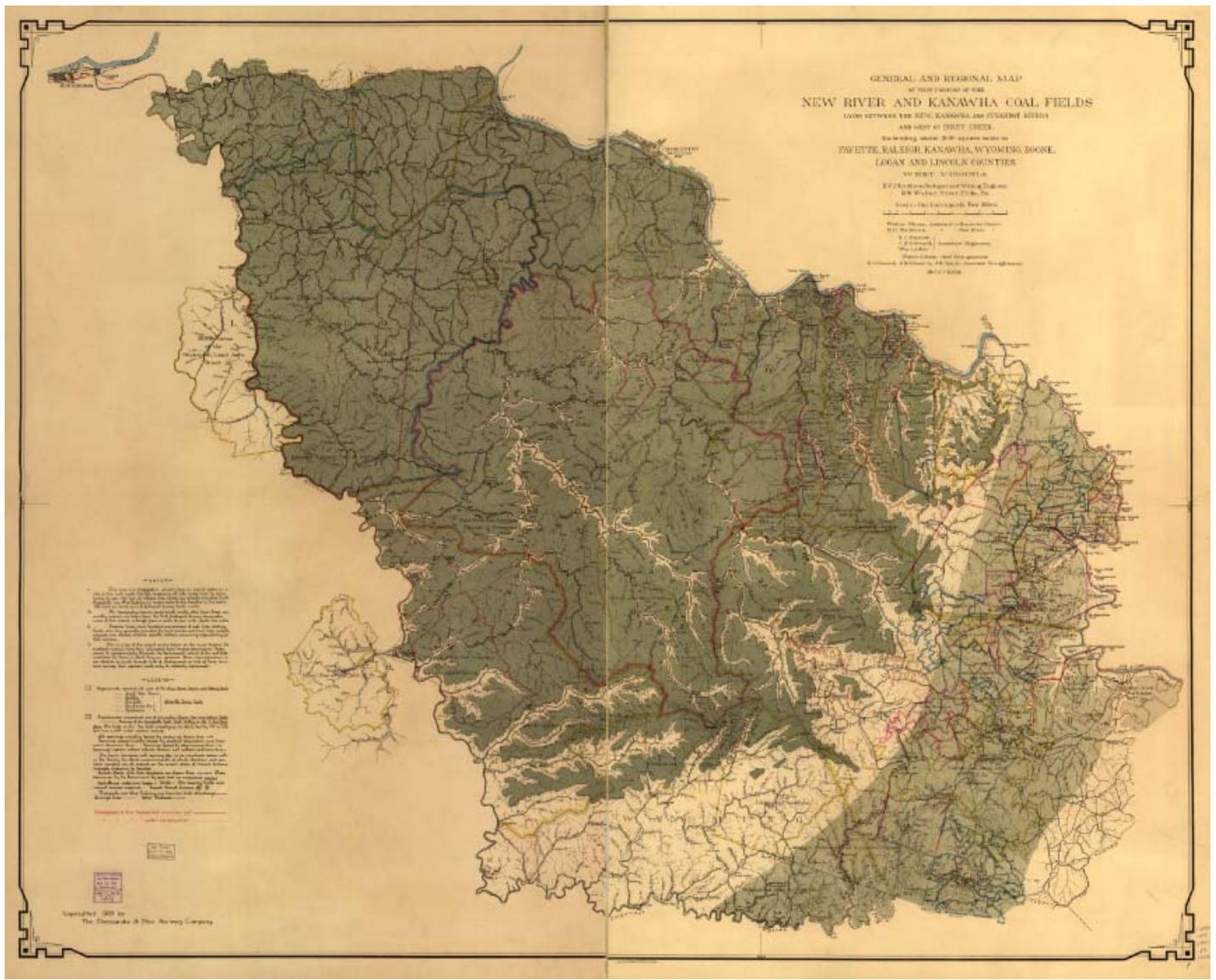
Notes: The mantrip is a battery-powered vehicle used, in this case, to transport miners.

<http://hdl.loc.gov/loc.afc/afcmns.lec12819>



2008 Power Sources for the U.S.

Source: *The Environmental Protection Agency*



General and regional map of that portion of the New River and Kanawha coal fields lying between the New, Kanawha and Guyandot Rivers and west of Piney Creek.

CREATED/PUBLISHED New York : Julius Bien & Co., c1905.

NOTES Shows coal company boundaries.

<http://hdl.loc.gov/loc.gmd/g3892k.ct000595>

EXERPT FROM ESSAY: **Landscape and History at the Headwaters of the Big Coal River Valley** by Mary Hufford

Mary Hufford, former field project director and curator for the American Folklife Center's Coal River Folklife Project, is director of the Center for Folklore and Ethnography at the University of Pennsylvania.

1980 - 2001: Global Economic Restructuring, Union-busting, and Environmental Battles

Voices in Place

"Back in the early 1900s, people in the industry said, 'What do we do when the nine-foot seams are gone?' Then it was, 'What do we do when the five- and six-foot seams are gone? Now we're saying, 'What do we do when the four-foot seams are gone?' Mountaintop removal helps get those little seams." -- Land company official, October 1995

"Edwight was a really beautiful community. And sometimes we pass and say, 'We used to live right up there where all those trees are.'" -- Daisy Ross, Newark, N.J., May 27, 1995

"Who Needs You? I've Got Mexico." -- U.S. Coal Review, July 30, 2001

Steps in History

1980 – In response to mounting concerns over the effects of acid rain on U.S. forests, Congress inaugurates the 10-year National Acid Precipitation Assessment Program (NAPAP).

1981 – A. T. Massey Coal Company opens a non-union mine at Elk Run. Union miners respond with violent demonstrations.

1983 – The Appalachia Landownership Task Force publishes *Who Owns Appalachia?*, a study of the region's land-ownership and land-use patterns. It shows that nearly 90 percent of the land in southern West Virginia is owned by absentee corporations.

1984 – A. T. Massey Coal Company breaks an industry-wide agreement with the UMWA, announcing that it will no longer negotiate as A. T. Massey but will instead work through each of its subcontractors: Goals, Performance, Independence, Elk Run, United, Progressive, and Marfork. Massey's insistence that its subsidiaries be treated as independent companies undermines a union "panel" convention, whereby laid-off union miners could be placed on panels to receive preferential hiring as jobs become available. In protest, union miners blow up a bridge and stage a selective strike against

1985 – In December, a forest fire burns Pond Knob, threatening the lives of several local fire volunteers, including Jim Michael Wills.

1986 – The National Academy of Sciences posits a relationship between airborne sulphur and nitrogen and the acidification of fresh water.

1986-87 – Armco terminates its lease. Peabody leases Montcoal and closes a number of union mines. To spur economic activity in their area and improve access to distant jobs, communities on Coal River petition the state legislature for connector roads to Interstate 77.

1987 – The community on Shumate’s Branch is evacuated and the Peabody Coal Company moves the Clay family cemetery to the Pine View Cemetery at Orgas, 10 miles away.⁵¹

1987 – The Citizens Coal Summit meets in Lexington, Kentucky. Out of this meeting emerges the Citizens Coal Council, a national coalition of community organizations from coalfields throughout the country with an office in Washington, D.C.

1988 – UMWA wins panel rights among Massey subsidiaries. In exchange, Massey is allowed to reduce its royalty payments to the 1950 Pension Fund. Rowland Land Company celebrates its centennial.

1989 – UMWA strikes against Pittston and the Beckley Mines. The Broad Form Deed is outlawed in Kentucky.

1990s – State-sponsored heritage projects and areas proliferate, including Coal Heritage Area and Trail in southern West Virginia and the Tamarack arts and crafts emporium at the Beckley interchange. Off the tourist track, people sustain public space and celebrate community through reunions, music making, quilting and other crafts, ridgetop and riverside cookouts, and various other forms of recreation.

1990 – Congress passes amendments to the Clean Air Act intended to cut sulphur emissions in half by the year 2000, and introduces the practice of pollution trading credits. The act heightens the demand in the United States for West Virginia’s low-sulphur bituminous coal, which a number of companies plan to extract through mountaintop-removal mining. The West Virginia Education Association goes on a teacher strike, demanding corporate tax-structure reform and tax increases on absentee landowners holding more than 1,000 acres in order to support education in the state.

1991 – Clear Fork High School is closed and consolidated with Marsh Fork High School. NAPAP publishes a study claiming that acid rain has no significant effects; it is greeted with torrents of scientific criticism.⁵²

1992 – UMWA hires the Institute of the History of Technology and Industrial Archaeology (Morgantown) to document Blair Mountain as a historic landmark. Though the project is originally “to include a Battle of Blair Mountain multiple property National Register of Historic Places nomination for significant areas,” the plan to make such a nomination is abandoned because the principal landowners do not grant permission.

1993 – UMWA wages a selective strike against the National Bituminous Coal Association, and picket shacks are built near entrances to coal company properties. Robert Schenkkan’s *Kentucky Cycle* is performed at the Kennedy Center in Washington, D.C. Appalachian scholars take exception to its reliance on the outdated premise that a subculture of poverty is responsible for the region’s woes, but it wins a Pulitzer prize.⁵³ The Lucy Braun Association for the Mixed Mesophytic Forest holds its first meeting in Beckley.

1994 – Under the direction of ecologist Orie Loucks and science writer John Flynn (from Rock Creek), the Lucy Braun Association’s Appalachia Forest Action Project (AFAP) begins documenting the decline of forest species. In tandem with this effort, the American Folklife Center’s multi-year Coal River Folklife Project documents the role of forest and landscape in the social life and history of the Coal River Valley. In the same year, Georgia-Pacific opens a chip mill at Mount Hope, on the New River. The community of Packsville is largely evacuated and dismantled. Packsville residents establish picket line in protest.

1997 – The Coal River Mountain Watch and the Blair Mountain Historical Organization form as community-based organizations, with membership in the Citizens Coal Council. The Lucy Braun Association publishes the AFAP report, which concludes that forest mortality rates have increased by three to five times historic rates, with particular impact on hickories and oaks. In the same year more than 2,000 economists publish a statement on climate change, warning that the carbon dioxide released through fossil fuel combustion contributes to global warming.

1998 – One hundred seventy million tons of coal are produced by 14,854 West Virginia miners. “The union is like a giant that’s had its throat slit,” comments Tony Rich, of Jarrold’s Valley. Protests mount against mountaintop removal. At rallies, demonstrations, and organizational meetings, “Almost Level, West Virginia,” a parody of the John Denver song by Secretary of State Ken Hechler, becomes thematic. Flooding on Clear Fork kills two people.

1999 – The Mountaintop Removal Summit is held at the Appalachian Folklife Center in Pipestem. Reenactors retrace the route taken in the March on Blair Mountain. The American Rivers Council designates Coal River the ninth most endangered river in the United States. In a ruling on a suit filed by citizens and the West Virginia Highlands Conservancy, Federal District Judge Charles Haden declares that filling streams (except those that are intermittent) with mine waste is illegal; he suspends his ruling, pending studies and appeals.

The Library of Congress | American Memory Tending the Commons: Folklife and Landscape in Southern West Virginia 32

2000 – The American Rivers Council names Coal River the sixth most endangered river in the United States. In Kentucky, a slurry pond collapses on Tug Fork, sending 2 million gallons of coal waste into the Ohio River. The National Academy of Sciences, subsequently appointed to study the issue, holds a town meeting concerning the Brushy Fork Sludge Pond on Coal River, a 500-million-gallon impoundment.

2001 – A. T. Massey subsidiaries file permits to strip Bailey Mountain, Bradley Mountain, and Montcoal Mountain, with proposed discharges and valley-fill impoundments to affect tributaries on Hazy Creek and Drew's Creek. A study ordered by Judge Haden in his 1998 decision is completed by the Office of Surface Mining and the Corps of Engineers but not released. The study points out that a surface mine on the Cabin Creek Plateau could increase peak storm runoff by up to 10 percent.⁵⁴ Massive flooding following heavy rains devastates homes in six southern West Virginia counties, causing severe damage to communities at Sycamore, Colcord, Dorothy, and Twilight. More than 300 citizens file suit against 20 coal companies.

Patterns on the Land

During the 1980s and 1990s a struggle over community space and environmental resources centered on the impact of mountaintop removal on nearby communities: cemetery removal; flooding; union busting; undevelopment; and the enclosure of lands heretofore treated as commons for hunting, gathering, fishing, and other communal use. The liberalization of international trade under the North Atlantic Free Trade Agreement (NAFTA) in 1993 and the General Agreement on Trade and Tariffs (GATT) in 1994 broadened the coal industry's access to markets, labor, and resources worldwide.

The effects of mountaintop removal on environmental resources entwined with other national and international concerns, such as air pollution, water quality, and forest decline precipitated by fossil-fuel combustion. Tourism and initiatives such as the Coal Heritage Area and Trail gathered impetus as economic strategies for building a post-coal economy around the state's scenic resources and cultural and historic landmarks, and plans to develop New River Gorge National River as a tourist destination took shape. Meanwhile, however, beyond the tourist areas, the evolving technology of an earth-moving industry carved the mountains into postindustrial landform complexes. On Coal River, a new "Three r's" was coined: "Remove, remove, reclaim."

Concern mounted over the disposition of water in the mountains--not only the effect of acid mine drainage on water quality, but the build-up of water in underground mines and the accumulation of coal-waste water behind massive impoundments. In response, new citizens' associations sprang up, building regional and national coalitions to publicize their concerns and to plan for the future. Cemeteries, protected by federal law, became rallying points as emblems of community life in the protests of the 1990s.

LESSON 2

1. Title: “The Culture and Economic System of Coal Miners, their Families, and Towns”

2. Overview: During this 2nd lesson in a unit on Coal Mining in West Virginia, students will focus upon the people and culture of coal mining towns over the past 30 years. They will then analyze the economic & environmental effects of coal mining in West Virginia. The lessons will be focused upon practices and people from the past 30 years.

3. Goal: Students will also be able to discuss the culture and challenges faced by families living in coal mining towns of West Virginia.

4. Objectives:

- Analyze procedures used for mountaintop removal mining and the ensuing effects on the natural environment surrounding the mountaintop mine.
- Discuss the process of “land reclamation” after mountaintop mining.
- Make predictions about the future and suggestions for improvements in coal mining.

5. Investigative Question: How has mining shaped the culture of coal mining towns in West Virginia over the past 30 years?

6. Time required: 2 class periods, 45 minutes each

7a. Recommended Grade Range: 11th Grade

7b. Differentiated Instruction: Students who need extra time for completion will be allowed an extended period of time. Students will be given opportunities to assist others and answer questions during discussion.

8. Subject: Contemporary American History students. **Sub-subject:** Issues from the 1990s to today.

9. Standards:

National Council for the Social Studies (NCSS) Standards:

- Science, Technology, and Society
- Production, Distribution, and Consumption

College Readiness Standards:

- 20-23: Meaning of Words – Use context to determine meaning of words
- 20-23: Generalizations and Conclusions – Draw simple generalizations and conclusions about people and ideas in uncomplicated passages

ISBE Standards:

- Economics: 15.C.1b. Identify limitations in resources that force producers to make choices about what to produce.
- Social Systems: 18.A.5. Compare ways in which social systems are affected by political, environmental, economic and technological changes.
- Social Systems: 18.B.3b. Explain how social institutions contribute to the development and transmission of culture.
- Geography: 17.B.4a. Explain the dynamic interactions within and among the Earth’s physical systems including variation, productivity and constructive and destructive processes.

10. Credits: Monique Maher has designed the lesson. Most primary documents are from the Library of Congress website.

11. Materials Used: Internet, Power Points slides, handouts with pictures, diagrams, and maps, literature about the culture of West Virginia and the practice of mountaintop removal mining.

12. Resources Used:

- Library of Congress website. Photographs, recordings, and letters from the collection *Tending the Commons: Folklife and Landscape in Southern West Virginia*. This collection incorporates original primary documents from the American Folklife Center's Coal River Folklife Project (1992-99) documenting traditional use of the mountains in Southern West Virginia's Big Coal River Valley. (www.loc.gov)
- Material from the American Coal Foundation website. (www.teachcoal.org)
- Video: *Common Ground*
This video, produced by Caterpillar, Inc., takes a look at the role of mining in our society and discusses how important it is to our quality of life. Issues like exploration rights on public lands and success stories of how the industry practices responsible environmentalism are addressed.

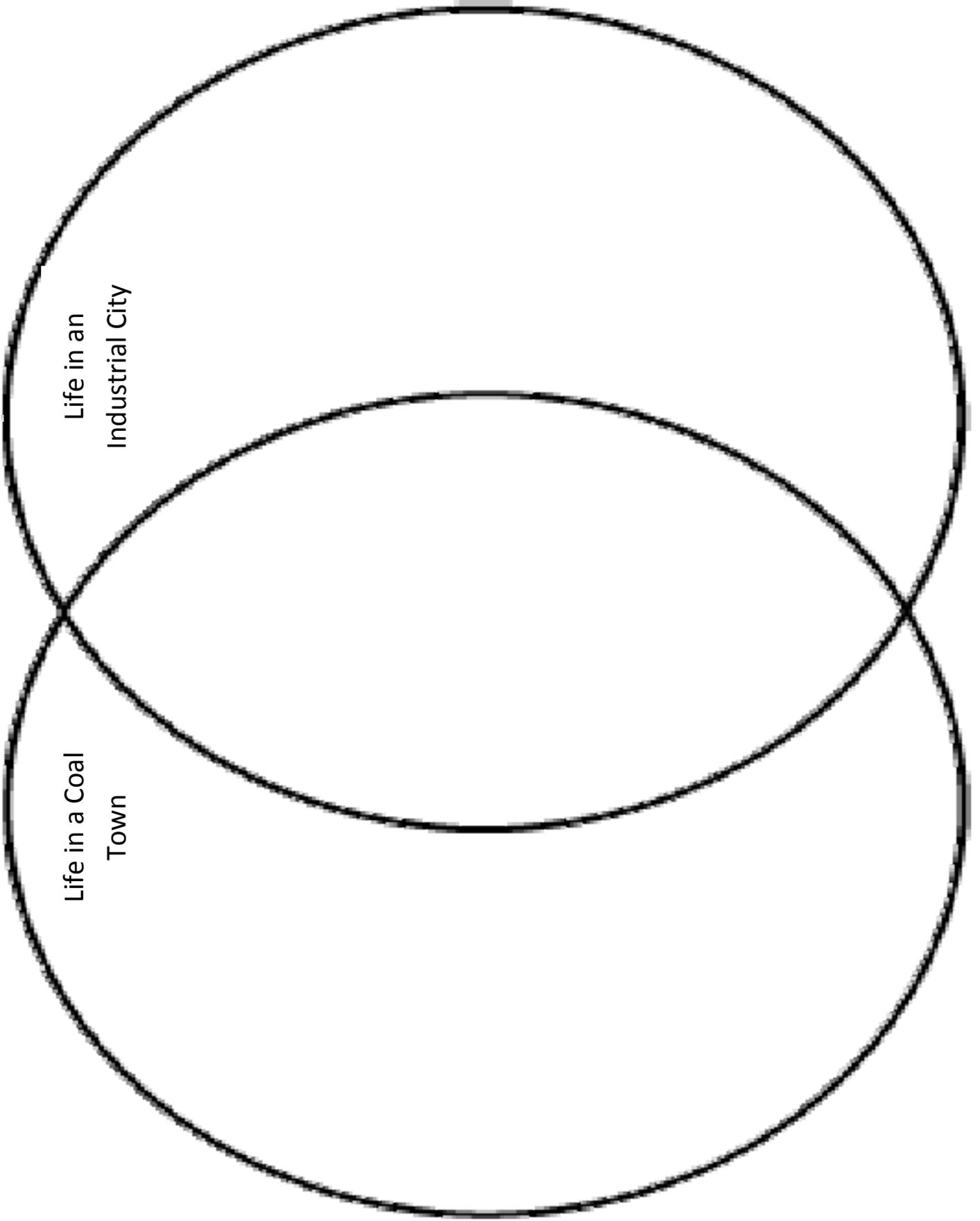
13. Procedures:

- **Connect:** Analyze what has been discussed prior to this lesson in regard to the economic and cultural situations in coal mining towns. Begin the lesson by having students use what they have learned about West Virginia geography to brainstorm what living in West Virginia or being a coal miner would be like.
- **Wonder:** Students will hypothesize about the current conditions of coal mining towns, the culture of West Virginians, and concerns about coal mining.
- **Investigate:** Students will conduct guided research using a plethora of primary source photographs, memoirs, and diagrams. They will identify the concerns for coal mining families, the controversial practices of mountaintop removal mining, and the changes in terrain that have emerged in West Virginia.
- **Construct:** Students will record responses to guided questions about coal mining and culture in West Virginia. They will hold discussion with the class as a whole and with small groups to assess one another's understanding and conclusions about coal mining practices and culture.
- **Express:** Students will apply what they have learned all week to answer the investigative question: *How is life in a West Virginia coal town unique in comparison to many other U.S. cities?* Students will support their response to the question using material and knowledge obtained over the previous classes.
- **Reflect:** Students will list questions that they still have on the topic for further discussion next week.

14. Extensions: Next week we will briefly discuss political activism surrounding mountaintop mining.

15. Evaluation:

- Analyze student understanding throughout the week through discussion and interview/response.
- Complete a Venn diagram to compare and contrast growing up in "coal town" to growing up in an industrial area like Gary, Indiana or the Southwest side of Chicago.
- Collect, read, analyze, and grade all response questions throughout the week. Provide students with feedback.
- Prepare several questions from the unit to be included in the next formal assessment.



Audio Material:

Item Title: Mountaintop removal and flooding. [Audio]

Author/Creator: Interviewer: [Flynn, John](#)

Created/Published: June 28, 1995

<http://hdl.loc.gov/loc.afc/afccmns.061007>

Item Title: Mountaintop removal, valley fill, and the environmental community. [Audio]

Created/Published: October 25, 1995

<http://hdl.loc.gov/loc.afc/afccmns.072005>



Residents brainstorming on goals for Coal River Mountain Watch; Lowell Dodge is writing at the board.

Author/Creator Photographer: [Hufford, Mary](#)

Created/Published: November 22, 1997

http://hdl.loc.gov/loc.afc/afccmns.mhc06107



House in Montcoal, West Virginia. [Photo]

Author/Creator: Photographer: [Eiler, Lyntha Scott](#)

Created/Published: January 31, 1996

<http://hdl.loc.gov/loc.afc/afccmns.lec06310>



Clothes hung out to dry in the backyard of Dorothy and Dewey Gunnoe. [Photo]

Author/Creator Photographer: [Eiler, Terry](#)

Created/Published July 04, 1996

<http://hdl.loc.gov/loc.afc/afccmns.tec03607>



Miners loading into the mantrip.

Author/Creator Photographer: [Eiler, Lyntha Scott](#)

Created/Published June 27, 1996

Notes: The mantrip is a battery-powered vehicle used, in this case, to transport miners.

<http://hdl.loc.gov/loc.afc/afccmns.lec12819>



"Mountain Top Cemetery," spread out on field in front of Appalachian Folklife Center, created by Carol Jackson, an artist from Hinton, West Virginia. Included in this shot is a tombstone for an "unnamed tributary of Horse Creek of the Big Coal River."

Author/Creator Photographer: [Hufford, Mary](#)

Created/Published August 26, 1999

Notes

The Mountain Top Cemetery comprises more than a thousand tombstones made of cardboard. Each is inscribed with the name of a stream buried under valley fill. Jackson has also created protest puppets and costumes for King Coal and Mother Jones. She is wearing a t-shirt she designed, featuring the title of a protest song written by Ken Hecherland and George Dougherty, "Almost Level: West Virginia." Depicted on the t-shirt is Arch Mineral Corporation's dragline, "Big John."

Event: Mountaintop Removal Summit.

<http://hdl.loc.gov/loc.afc/afccmns.mhc09907>

LESSON 3

1. Title: The History, Practice, and Effects of Mountaintop Removal Mining

2. Overview: During this 3rd lesson in a unit on Coal Mining in West Virginia, students will become familiar with the history of coal mining and the usage of coal today. They will examine recent trends in alternative mining practices, particularly mountaintop removal mining, and will examine the effects of such mining practices.

3. Goal: Students will be able to understand the usage of coal, the economics of coal mining, and the environmental effects of mountaintop removal.

4. Objectives:

- Analyze procedures used for mountaintop removal mining and the ensuing effects on the natural environment surrounding the mountaintop mine.
- Discuss the process of “land reclamation” after mountaintop mining.
- Make predictions about the future and suggestions for improvements in coal mining.

5. Investigative Question: Is mountaintop mining beneficial or detrimental to the economy, the environment, and/or the surrounding mining towns?

6. Time required: 2 class periods, 45 minutes each

7a. Recommended Grade Range: 11th Grade

7b. Differentiated Instruction: Students who need extra time for completion will be allowed an extended period of time. Students will be given opportunities to assist others and answer questions during discussion.

8. Subject: Contemporary American History students. **Sub-subject:** Issues from the 1990s to today.

9. Standards:

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College Readiness Standards:

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- Social Systems: 18.B.3b. Explain how social institutions contribute to the development and transmission of culture.
- Geography: 17.B.4a. Explain the dynamic interactions within and among the Earth’s physical systems including variation, productivity and constructive and destructive processes.

10. Credits: Monique Maher has designed the lesson. Most primary documents are from the Library of Congress website.

11. Materials Used: Internet, Power Points slides, handouts with pictures, diagrams, and maps, literature about the culture of West Virginia and the practice of mountaintop removal mining.

12. Resources Used:

- Library of Congress website. Photographs, recordings, and letters from the collection *Tending the Commons: Folklife and Landscape in Southern West Virginia*. This collection incorporates original primary documents from the American Folklife Center's Coal River Folklife Project (1992-99) documenting traditional use of the mountains in Southern West Virginia's Big Coal River Valley. (www.loc.gov)
- Material from the American Coal Foundation website. (www.teachcoal.org)

13. Procedures:

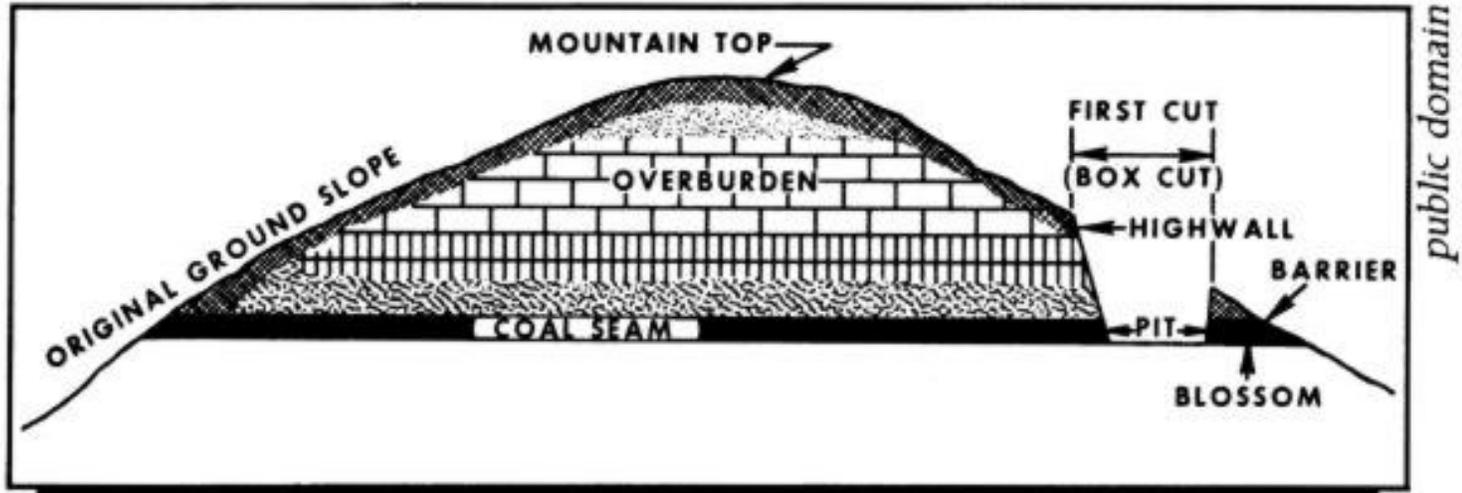
- **Connect:** Analyze what has been discussed prior to this lesson in regard to the economic and cultural situations in coal mining towns. Begin the lesson by having students use what they have learned about West Virginia economics to understand the importance of coal retrieval in the area. Review the geographic and geological structures of West Virginia and the Appalachia region.
- **Wonder:** Students will hypothesize about the current demand for coal retrieval and the measurements that mining companies are willing to take in order to collect coal.
- **Investigate:** Students will conduct guided research using a plethora of primary source photographs, memoirs, and diagrams. They will understand the history behind coal mining, the use of coal as a source of energy, the development of strip mining and the extensive use of mountaintop mining over the past 30 years.
- **Construct:** Students will record responses to guided questions about the process of mountaintop removal mining. They will study diagrams and read an article about valley fills and land reclamations. Students will work with a partner to complete the "Looking at Our Options: The Coal War" diagram. They will examine different options for mining and the benefits and consequences that surround each option.
- **Express:** Students will apply what they have learned all week to answer the investigative question: *Is mountaintop mining beneficial or detrimental to the economy, the environment, and/or the surrounding mining towns?* Students will support their response to the question using material and knowledge obtained over the previous classes.
- **Reflect:** Students will list questions that they still have on the topic for further discussion next week.

14. Extensions: There will be a unit test next week in which students will respond to multiple-choices questions and will write an essay response to a question regarding mountaintop removal mining.

15. Evaluation:

- Analyze student understanding throughout the week through discussion and interview/response.
- Complete the "Looking at Our Options: The Coal War" diagram with a partner. As a class, we will share the various options, benefits, and consequences that surround for coal retrieval in West Virginia.
- Collect, read, analyze, and grade all response questions throughout the week. Provide students with feedback.
- Prepare several questions from the unit to be included in the next formal assessment.

Mountaintop Removal



Mountaintop removal method.

Item Title Diagram of mountaintop removal. [Manuscript]

Notes This graphic illustration of mountaintop removal appears on page 25 of *The Stripmining Handbook: A Coalfield Citizens' Guide to Using the Law to Fight Back Against the Ravages of Strip Mining and Underground Mining*, by Mark Squillace.

<http://hdl.loc.gov/loc.afc/afccmns.ms0002>



Item Title Coal cleaning plant as viewed from the **sludge** dam. The pond is filled with waste from the **coal cleaning** process

Author/Creator Photographer: **Eiler, Lyntha Scott** September 29, 1995

Notes Mountaintop removal and reclamation introduces several new landforms to the **coal** fields. One of the introduced landforms is the "wet refuse impoundment," a structure designed to store the waste from **coal** preparation **plants**. At the Goals Preparation **Plant** in Sundial, an A.T. Massey subsidiary, **coal** from surrounding mines is **cleaned** through a process called "flocculation," which separates ash from **coal**, making the **coal** lighter to ship and **cleaner** to burn. Federal **clean** air and water legislation prohibits the release of waste water from the **cleaning** process into streams. **Coal** companies therefore must store the waste water somewhere for chemical treatment and gradual "dewatering." The solution is to store the "fine refuse" in large hollows behind impoundments made of the coarse refuse. These structures, which are hundreds of feet deep, are known locally as "**sludge** ponds." **Sludge** ponds in the project study area are located at Shumate's Branch, Marfork, and Elk Run. Shumate's Branch was settled in the first half of the 19th century, and was farmed continuously until the mid-1980s, when Peabody relocated several dozen families and a cemetery in order to create the space required for the **sludge** dam. (Bone, 1994)

<http://hdl.loc.gov/loc.afc/afccmns.lec02020>

Looking at Our Options: The Coal War

