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A Mine Is a Terrible Thing to Waste: Past, Present and Future Reclamation Efforts to Correct the Environmentally Damaging Effects of Coal Mines

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**A MINE IS A TERRIBLE THING TO WASTE:
PAST, PRESENT AND FUTURE RECLAMATION EFFORTS
TO CORRECT THE ENVIRONMENTALLY DAMAGING
EFFECTS OF COAL MINES**

I. INTRODUCTION

Formed 300 million years ago from the remains of vegetation, coal is one of the earliest energy sources known to man.¹ Though initially discovered in 1679, commercial coal mining did not begin until 1750.² Mined in twenty-seven states but found in many more, coal is the most abundant and most used energy source in the United States.³ Given the current consumption rate, estimates show sufficient amounts of coal exist for use in the United States for another 250 to 300 years.⁴

Today, coal remains an important energy source. Because of the significant adverse effects to both miners and the surrounding environment, however, coal mining is one of the most heavily regulated industries in the United States.⁵ Since the mining site must

1. See American Coal Foundation, *COAL: Ancient Gift Serving Modern Man, Introduction*, at <http://www.ket.org/Trips/Coal/AGSMM/agsmmintro.html> (last modified Aug. 1, 2001) (stating China mined coal over 3,000 years ago); see also American Coal Foundation, *FAQ and Coal Quiz*, at <http://www.acf-coal.org/pages/FAQ.html> (last visited Oct. 1, 2001) (describing coal formation). Scientists believe that millions of years ago, vegetation and other organic matter collected and slowly decomposed, forming peat mainly in swamps and lagoons. See *id.* The peat was buried underground and compacted by heat and pressure. See *id.* Over time, the compacted peat eventually converted to coal. See *id.*

2. See American Coal Foundation, *COAL: Ancient Gift Serving Modern Man, Introduction*, at <http://www.ket.org/Trips/Coal/AGSMM/agsmmintro.html> (last modified Aug. 1, 2001) (noting French explorers discovered coal on Illinois River in 1679 and that commercial mining in United States first took place in Richmond, Virginia in 1750).

3. See American Coal Foundation, *FAQ and Coal Quiz*, at <http://www.acf-coal.org/pages/FAQ.html> (last visited Oct. 1, 2001). Coal accounts for ninety-five percent of the United States' fossil energy reserves. See *id.*; see also National Mining Association, Mining Statistics, *Fast Facts about Coal and Minerals*, at <http://www.nma.org/fastfacts.html> (last visited Oct. 1, 2001) (discussing importance of coal in United States as fossil energy).

4. See American Coal Foundation, *FAQ and Coal Quiz*, at <http://www.acf-coal.org/pages/FAQ.html> (explaining estimated total United States coal reserves are at four trillion tons). The known coal reserves that are recoverable with current technology are estimated to be 296 billion tons. See *id.* This amount is enough to last another three hundred years at current consumption levels. See *id.*

5. See American Coal Foundation, *COAL: Ancient Gift Serving Modern Man, Strict Regulations Govern Coal Mining*, at <http://www.ket.org/Trips/Coal/AGSMM/agsmmregs.html> (last visited Aug. 1, 2001) (noting it can take ten years to go from

be returned to the same or better condition it possessed prior to mining once mining ceases, mining companies must take current site conditions into consideration throughout their work.⁶

Historically, environmental concerns were not a high priority for coal operators. As a result, abandoned mines litter the country.⁷ These abandoned mines create a variety of safety, health and environmental problems. This Comment addresses acid mine drainage (AMD), one of the many hazards that abandoned mines produce. While surface and underground mining cause a variety of environmental problems, this Comment concentrates on mining's contribution to water pollution, particularly AMD.⁸ Part II of this Comment provides a background of the mining industry and its effects on the environment. Part III covers the legislative efforts to regulate the environmental impacts of coal mining, while Part IV examines the successes and failures of these efforts. Part V discusses modern efforts to ameliorate the effects of AMD that abandoned mines cause. Part VI offers suggestions to continue and to improve the amelioration efforts of those individuals and organizations seeking to combat the effects of AMD.

II. THE MINING OF COAL IN AMERICA

A. Mining Generally

"Dubbed the 'Saudi Arabia of coal,' the United States possesses thirty-five percent of the world's recoverable coal."⁹ The most com-

planning a mine to actually digging for coal due to complex regulatory requirements). Coal mining companies must provide the government with detailed information about the mine's environmental impact and the land reclamation. *See id.*

6. *See id.* (stating land must be returned to equal or better than pre-mining condition). Under the Surface Mining Control and Reclamation Act [hereinafter SMCRA], mine operators must meet twenty-five reclamation requirements, including public hearings and procedures for obtaining permits. *See id.* In addition, the law requires companies to post bonds, as high as \$10,000 per acre, to ensure land restoration. *See id.*

7. *See id.* (noting today's coal producers pay special tax supporting Abandoned Mine Lands Fund providing financing to state agencies which eliminate unsightly and unsafe conditions in and around abandoned mines).

8. For a brief recitation of some structural problems mining causes, *see* Bass, *infra* note 9, at 10159.

9. Susan P. Bass, *Tools for Regulating the Environmental Impact of Mining in the United States*, 26 ENVTL. L. REP. 10159 (1996). As of 1990, there were an estimated 494 billion tons of demonstrated coal reserves in the United States. *See* American Coal Foundation, *FAQ and Coal Quiz*, at <http://www.acf-coal.org/pages/FAQ.html> (last modified Aug. 1, 2001); *see also* LARRY MCBRIDE AND JOHN PENDERGRASS, *Coal, in SUSTAINABLE ENVIRONMENTAL LAW* 993, 996 (Celia Campbell-Mohn et al. eds., 1993). Only 296 billion tons of coal in the United States' reserves is estimated recoverable. *See* American Coal Foundation, *FAQ and Coal Quiz*, at <http://www.acf-coal.org/pages/FAQ.html> (last visited Aug. 1, 2001). This accounts for twenty-

mon form of coal, bituminous coal, is used primarily for generating electricity and making coke for use in steel production.¹⁰ Because electrical utilities consume the majority of United States coal, levels of coal consumption continue to rise.¹¹

In the United States, mining occurs on both public and private lands.¹² Private entities generally own mineral and coal rights throughout the eastern United States.¹³ Conversely, in the western United States, the federal government generally retained both surface and mineral rights to certain lands even as federal territories became states.¹⁴ In 1991, the Bureau of Land Management controlled more than 750 working mines in eleven western states.¹⁵ Currently, the federal government owns approximately thirty to forty percent of the nation's coal reserves.¹⁶

Mining alters the landscape and underground structure of the land, simultaneously releasing pollutants into the air, water and soil.¹⁷ When certain minerals are exposed to atmospheric oxygen and water, they pollute the water with high levels of acid, sulfates

nine percent of the world's recoverable coal. *See id.* Of the world's bituminous and anthracite coal reserves, the former Soviet Union accounts for approximately twenty percent and China another thirteen percent. *See* National Mining Association, Mining Statistics, *Facts about Coal, Major Holders of World Bituminous and Anthracite Coal Reserves*, at <http://www.nma.org/Bit%20%26%20Ant%20Reserves99.PDF> (last modified May 2000). For a further discussion of bituminous and anthracite coal, *see infra* note 23 and accompanying text.

10. *See* Bass, *supra* note 9, at 10159. Other types of coal include subbituminous, found in Wyoming and Montana and used heavily for electrical power generation, anthracite coal, found in eastern Pennsylvania, and lignite coal, found primarily in Texas and North Dakota. *See id.*

11. *See id.*; *see also* National Mining Association, *Facts about Coal, Facts at a Glance*, at <http://www.nma.org/Sta.%20Facts2000.PDF> (last modified July 2001). Coal production in the United States increased from 997.5 million short tons in 1992 to 1100.4 million short tons in 1999. *See id.* United States' coal consumption rose from 907.4 million short tons in 1992 to 1044.5 million short tons in 1999. *See id.* In 1999, electrical utilities accounted for 894.1 million short tons of the 1044.5 million short tons consumed. *See id.*

12. *See* Bass, *supra* note 9, at 10159 (asserting property owners control surface of land and all that extends below surface). Owners may divide and separately sell mining and surface rights. *See id.* This fragmented ownership "[c]an raise complex questions of legal responsibilities." *Id.*

13. *See id.* (illustrating differences in ownership of mineral and coal rights between eastern and western United States).

14. *See id.* (reporting federal government also retained only mineral rights for certain other lands).

15. *See id.* (citing BARRY BREEN & CELIA CAMPBELL-MOHN, *Metals, in SUSTAINABLE ENVIRONMENTAL LAW* 1197, 1200 (Celia Campbell-Mohn, et al. eds., 1993)) (noting this figure excludes mining claims and exploration projects).

16. *See id.* (noting mining occurs on government owned lands under mineral leases to private parties).

17. *See* Bass, *supra* note 9, at 10159 (providing explanation for heavy regulations in mining industry).

and metals.¹⁸ AMD can occur at the time of coal extraction and continue for many years after the cessation of mining operations.¹⁹ “[AMD] . . . impairs, degrades and destroys thousands of miles of streams and waterways in the United States.”²⁰

B. Mining in Pennsylvania

Beginning with the fueling of the Industrial Revolution in the middle of the eighteenth century, Pennsylvania has had a long history of coal mining activities.²¹ Pennsylvania coal producers have supported various industries over the last 300 years, including the colonial iron industry, the steel mills of the 1800s, and modern electric power plants.²² The fourth largest coal producer as of 2000, Pennsylvania mines generate approximately seven percent of the nation’s total coal production.²³

18. *See id.* (explaining how mine drainage pollutes water).

19. *See id.* (quoting JAMES M. McELFISH, JR. & ANN E. BEIER, ENVIRONMENTAL REGULATION OF COAL MINING, SMCRA’S SECOND DECADE 257, 263-64 (Environmental Law Institute ed. 1990)) [hereinafter SMCRA’S SECOND DECADE] (explaining long term effects of acid mine drainage [hereinafter AMD]); *see also* Commonwealth v. Barnes & Tucker Co., 371 A.2d 461, 465-66 (Pa. 1977) (holding it reasonable exercise of state police power to require coal mine owner to operate pumping facility to prevent discharge of untreated AMD even though evidence demonstrated some water drained from mines other than that of Defendant).

[AMD] is primarily the result of acid and iron pollutants formed when the pyrite and mascalite (iron desulfides) present in coalbeds are exposed to the atmosphere and water. When coal is extracted, the pyrites in the mine are exposed to air and water. A chemical reaction occurs and the pyrite is oxidized to form ferrous sulfate and sulfuric acid. The ferrous sulfate and sulfuric acid thus formed are washed off the coal mine walls into the ground water flowing through the mine, where further hydrolyzing or oxidizing occurs and ferric iron and additional acids are formed. The ferrous sulfate is then hydrolyzed forming ferrous iron. Next the ferrous iron is oxidized to the ferric state and additional acidity results. The end result is that the receiving streams are loaded with sulfates, acid and iron hydroxides, as well as such dissolved minerals as aluminum, calcium, magnesium, manganese and ferrous iron.

Id. at 465-66 n.9. Pyrites are common minerals that consist of iron desulfide and have a pale brass-yellow color and metallic luster. *See* MIRIAM WEBSTER COLLEGIATE DICTIONARY 1853 (3d ed. 1986). Furthermore, pyrites are burned in making sulfur dioxide and sulfuric acid. *See id.* By contrast, mascalites are iron desulfides. *See id.* at 1387.

20. Brian Peterson, Note, *Confusion in Regulating Coal Mine Water Pollution: Regulatory Overlap in SMCRA and the CWA*, 99 W. VA. L. REV. 595, 595 (1997) (citing 59 Fed. Reg. 28, 164 (1994)).

21. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/depurate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2001) (recognizing Pennsylvania’s role in coal mining activities).

22. *See id.* (recognizing importance of coal mines upon Pennsylvania’s economy over time).

23. *See id.* (characterizing Wyoming, West Virginia and Kentucky as three leading coal producers). Pennsylvania mines two types of coal, anthracite and bi-

Though coal production is vital to the financial stability of Pennsylvania communities, it nonetheless creates hazardous physical and environmental effects.²⁴ As of January 2000, roughly 878 active mining operations existed in Pennsylvania, employing an estimated 10,165 people.²⁵ Since 1870, Pennsylvania's Annual Report on Mining Activities has recorded 51,483 mining-related deaths.²⁶ Today, the number of coal-mining accidents is equivalent to the number of agricultural or construction accidents.²⁷ The concern for human safety is a major contributing factor in efforts to improve the quality of mines.²⁸

Unfortunately, no such efforts were made to remedy the harmful environmental effects of mining over the years.²⁹ Accordingly,

tuminous. Bituminous, a softer coal, is mined approximately eight times more than anthracite, a hard coal. *See id.* With a total of 69.5 million tons of coal mined in Pennsylvania in 1995, 60.8 million tons were bituminous and 8.7 million tons were anthracite. *See id.*

24. *See id.* (discussing coal mining history in Pennsylvania and recognizing its related hazards).

25. *See id.* (discussing coal mining operations in Pennsylvania).

26. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2000). According to *Pennsylvania's Annual Report on Mining Activities*, 31,113 of these deaths occurred in anthracite mines, while 20,370 occurred in bituminous mines. *See id.* Deaths, in any type of mine, are a result of either great disasters or minor accidents. *See Anthracite Coal Mines and Mining*, at <http://www.history.ohio-state.edu/projects/coal/AnthraciteDescription/AnthraciteRhone.htm> (last visited July 26, 2001). As noted:

There are two classes of fatalities; the great disasters, in which a large number of men lose their lives; and the minor accidents, which occur day after day, of which the public takes no notice, but whose aggregate number is far greater than the former. In the thirty-two years since the anthracite mine law was passed[,] more than ten thousand persons have lost their lives in and about the mines; but there have been few great disasters

Id.

27. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2000) (characterizing safety training and inspections as vital components of mining industry's safety improvements).

28. *See id.* (explaining physical hazards associated with coal mining).

29. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2000) (discussing unsuccessful restoration attempts); *but see Pennsylvania Department of Environmental Protection*, at <http://www.dep.state.pa.us/dep/deputate/minres/bamr/complan1.htm> (last visited Feb. 26, 2001) (highlighting Pennsylvania's reclamation efforts). There is a history of mine restoration in Pennsylvania:

Pennsylvania [has long] been [a] leader in reclaiming abandoned mine lands. In the mid [19]60's, a bond issue authorized \$200M to solve the problems of the past. Operation Scarlift, as it was known, completed over 500 stream pollution abatement projects to the tune of \$75,000,000. Seventy five underground mine fires were extinguished at a cost of

AMD continues to be Pennsylvania's single largest source of water pollution.³⁰ "[O]ver 2,400 miles of Pennsylvania's 54,000 miles of streams [have been] polluted by [AMD] from old mining operations."³¹

Since 1967, Pennsylvania and the federal government implemented mining reclamation efforts and invested nearly \$500 million toward the clean-up process.³² In an effort to treat AMD, thirteen AMD treatment plants were built across the state at a cost of \$20.7 million.³³ Additionally, the state legislature enacted several environmental laws regulating coal mining operations.³⁴ Though Pennsylvania relies heavily on its coal mining producers, the Pennsylvania Department of Environmental Protection has estimated that \$15 billion must still be invested on reclamation.³⁵

C. Acid Mine Drainage

The United States Environmental Protection Agency (EPA) has identified AMD as the "most pervasive water quality problem in the [Appalachian] region."³⁶ AMD has been described as:

\$24,000,000 and over 150 areas subjected to mine subsidence were stabilized at a cost of \$26,000,000. Air pollution at 30 burning refuse banks was controlled for a cost of \$16,000,000.

Id.; but cf. *A Status Report on the Environmental Legacy of Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/DEPUTATE/MINRES/BAMR/Documents/status_report_1.htm (last modified Jan. 27, 2000) (explaining environmental destruction mining causes). Thus, AMD has polluted almost half of Pennsylvania's streams. *Id.*

30. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2001) (recognizing mines currently cannot be created if there is possibility environmental harm could result).

31. *Id.* (discussing "environmental legacy" of Pennsylvania coal mining).

32. *See id.* Efforts are "funded by a 35 cent per ton federal fee on coal being mined today, state reclamation funds from fees and reclamation bonds that have been forfeited." *Id.*

33. *See id.* (observing reclamation efforts distribution).

34. *See id.* (recognizing legislative attempts at reclamation efforts).

35. *See Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/coalmine/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2000) (recognizing additional environmental problems such as mine fire in Centralia, Columbia County, Pennsylvania). "Economically, mining contributes about 1 percent of Pennsylvania's gross state economic product through over \$1.5 billion of direct coal sales, a payroll of nearly \$350 million, a support service industry with a payroll of nearly \$200 million, [and] business tax revenues of over \$1.5 million." *Id.*

36. DEPARTMENT OF THE INTERIOR, INTERIOR'S DEPUTY SECRETARY AND SURFACE MINING DIRECTOR JOIN IN PROMOTING CLEAN STREAMS PROJECT IN PENNSYLVANIA, 1996 WL 113340 (Mar. 11, 1996). The Clinton administration sponsored the Appalachian Clean Streams Initiative, intending to restore AMD damage. *See id.*

[W]ater polluted with high acidity, sulfates, and metals. [AMD] forms when iron sulfides . . . in the overburden are exposed to the atmosphere and oxidize in the presence of oxygen and water. The chemical reaction produces ferrous iron, sulfates, and acidity. In other words, water passing through acid-producing material in the mine can generate and pick up large quantities of acidity.³⁷

Hazardous results occur when AMD seeps from abandoned coal mines into lakes and streams, causing contaminated streams to turn red or yellow.³⁸ This algae-textured acidic substance causes a consistent acidic toxicity in the water, affecting the health and economies of local communities.³⁹

Courts have continually recognized the need to correct the damage AMD causes.⁴⁰ In *N. Cambria Fuel Co. v. Dep't of Envtl. Res.*,⁴¹ the Pennsylvania Commonwealth Court recognized the danger of AMD discharge and held a mine operator liable for AMD cleanup under the Pennsylvania Clean Streams Law.⁴² If not sufficiently corrected, AMD remaining in the water becomes highly acidic, forming high levels of sediment that continue for years or even decades after a mine is abandoned.⁴³ Additionally, high levels of AMD may pollute streams, ultimately affecting the aquatic envi-

37. Caroline Henrich, *Acid Mine Drainage: Common Law, SMCRA, and the Clean Water Act*, 10 J. NAT. RESOURCES & ENVTL. L. 235, 235-36 (1994-95) (discussing AMD formation).

38. See Henrich, *supra* note 37, at 235-36

39. See *id.* at 236 (noting continuous cycle of AMD reactions in waterways); see also Kevin Springob, *Stream Restoration in Appalachia*, at <http://www.hort.agri.umn.edu/h5015/98papers/springob.html> (last visited July 26, 2001) (noting importance of citizen participation in integrated process). Communities rely on waterways for numerous activities, including tourism and fishing. See *id.*

40. See *West Virginia Highlands Conservancy, Inc. v. Babbitt*, 161 F.3d 797, 799-801 (4th Cir. 1998) (addressing ripeness issue relating to coal mining effects); see also *Comm. To Save Mokolumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 308-09 (9th Cir. 1993) (subjecting AMD dam to CWA permit requirements); *In Re Mountain Laurel Res. Co.*, No. CIV. A. 5:00-0610, 2001 WL 166388, at *1 (S.D.W. Va. Feb. 16, 2001) (noting lack of National Pollution Discharge Elimination System [hereinafter NPDES] permits authorizing AMD discharge).

41. 621 A.2d 1155, 1157 (Pa. Commw. Ct. 1993).

42. See *id.* at 1157 (citing P.L. 1987, as amended, 35 P.S. §§ 691.1-691.702) (dealing with pollution liability for AMD discharge) (reviewing order requiring abatement of AMD discharges).

43. See Michael D. Bryan, *Toward Strict Liability for Abandoned Mine Drainage*, 71 Ky. L.J. 193, 193 (1983) (discussing liability for AMD pollution).

ronment far downstream.⁴⁴ Finally, AMD can pollute groundwater, endangering residential drinking water.⁴⁵ The greatest obstacle to cleaning up AMD discharge is that “shutting down production does not cease the polluting discharge.”⁴⁶ Unfortunately, corrective measures must be effective and timely in order to prevent and reduce the long term affects of AMD.

Although coal is a vital energy resource for this country and a major economic factor in many local communities, ameliorating the effects of coal mining is equally as important as producing coal.⁴⁷ Because coal has played a major part in the economic history of this country, the effort to alleviate the environmental effects of coal mining is a vital, albeit slow, process.⁴⁸ This process not only corrects past consequences, but also protects against present and future effects of a coal mining industry that will continue to operate for years to come.⁴⁹

III. LEGISLATIVE ATTEMPTS TO PROTECT OUR ENVIRONMENT FROM THE EFFECTS OF COAL MINING AND AMD

A. Clean Water Act

In 1972, in an effort “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters,” Congress enacted the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA).⁵⁰ This “joint federal and state program” protects lakes, rivers and coastal areas, while it seeks both to eliminate the discharge of pollutants into the nation’s waters and to achieve fishable and swimmable water quality levels.⁵¹ CWA section

44. See Courtney W. Shea, *Regulating for the Long Term: SMCRA and Acid Mine Drainage*, 10 J. NAT. RESOURCES & ENVTL. L. 193, 194-95 (1994-95) (discussing hazardous effects of AMD discharge).

45. See *id.* at 195 (explaining ultimate dangers from AMD discharge).

46. *Id.* (noting extreme repercussions from AMD discharge).

47. See *Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/depurate/enved/go_with_inspector/Coal_Mining_in_Pennsylvania.htm (last modified Jan. 27, 2000) (recognizing importance of coal mining on local economy and describing efforts to clean-up environmental damage caused by coal mining); see also American Coal Foundation, *Introduction*, at <http://www.ket.org/Trips/Coal/AGSMM/agsmmintro.html> (last modified Aug. 1, 2001) (discussing coal’s importance).

48. See *id.* (recognizing effects of hundreds of years of coal mining upon environment).

49. See *id.* (describing past and future AMD reclamation efforts).

50. See David S. Baron, *Water Quality Standards for Rivers and Lakes: Emerging Issues*, 27 ARIZ. ST. L.J. 559, 559 (1995) (citing 33 U.S.C. § 1251-401 (1988)).

51. See *Clean Water Act: A Brief History*, at <http://www.epa.gov/owow/cwa/history.htm> (last visited July 26, 2001) (recognizing national goals of CWA); see also

1311(a) makes it unlawful for any person to discharge any pollutant into the waters of the United States, unless otherwise provided elsewhere in CWA.⁵²

EPA's initial efforts to implement CWA focused on preventing industries from further disturbing the nation's waters by requiring technology-based effluent standards.⁵³ Setting treatment standards, such as the provision of grants to assist cities with CWA compliance and the implementation of National Pollutant Discharge Elimination Systems (NPDES) requiring federal government permits for all point source discharges into rivers and lakes, have produced substantial pollution reduction benefits.⁵⁴ Accordingly, the quality of United States' waters improved considerably as a result of federal, state and local cooperative efforts.⁵⁵

Unfortunately, the quality of this nation's waters continues to suffer tremendously each year.⁵⁶ In 1995, approximately "38% of river miles and 44% of lake acres [were] too contaminated to fully support designated uses, such as fishing and swimming."⁵⁷ The permits issued for point source discharges are limited, contentious and expensive.⁵⁸ These permits neither address technology-based

Baron, *supra* note 50, at 561 (establishing federal and state programs for fighting pollution).

52. See 33 U.S.C. § 1311(a) (1994) (establishing illegality of pollutant discharges). A discharge is "any addition of any pollutant to navigable waters from any point source." 33 U.S.C. § 1362(12) (1994) (defining "discharge of pollutant."). A point source is defined as any "discernable, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362(14) (1994) (defining "point source."). CWA also regulates non-point source pollution. See *id.*

53. See Baron, *supra* note 50, at 559 (noting dischargers had to apply pollution control technology required for their industrial category and provide whatever additional treatment was necessary to meet water quality standards).

54. See *id.* at 560 (recounting CWA evolution and implementation); see also Amy E. Fortenberry, *Moving Violations: Violations of the Clean Water Act and Implications for CERCLA's Federally Permitted Release Exception*, 24 B.C. ENVTL. AFF. L. REV. 821, 824 n.20 (1996-97) (citing 33 U.S.C. § 1342(a)(1) (1994)). NPDES permits are issued upon compliance with various CWA provisions, including "all applicable requirements under [§§] 1311, 1312, 1316, 1317, 1318, and 1343 of [chapter 1342(a)(1)]" or such conditions the EPA "determines are necessary to carry out the provisions of this chapter." *Id.* at 824 n.20.

55. See *Clean Water Act: A Brief History*, at <http://www.epa.gov/owow/cwa/history.htm> (last visited July 26, 2001) (noting two-thirds of nation's waters are currently safe for fishing and swimming).

56. See Baron, *supra* note 50, at 560 (recognizing high contamination levels in United States' water).

57. *Id.* In 1993, for example, 370,000 Milwaukee residents became ill after drinking contaminated water from Lake Michigan. *Id.*

58. See *id.* (discussing complaints and limitations surrounding permits issued for point source discharges).

problems, nor adapt to modern developments.⁵⁹ As a consequence, pollution standards apply to entire bodies of water, rather than specific point sources.⁶⁰ In addition to technology-based permit standards, CWA section 303(a) requires each state to develop and promulgate its own water quality standards to protect the designated uses of state waters to ultimately achieve fishable, swimmable waters.⁶¹ In 1987, Congress strengthened CWA standards and EPA followed suit by publishing numerous rules and guidance documents.⁶²

Although there has been great effort to improve United States' waters, the solution to the problem is replete with difficulties; "[c]lean water is an issue that is fraught with controversy."⁶³ CWA attempts to remedy AMD effects seeping into United States' waters from various abandoned mines.⁶⁴ Mining plaintiffs have argued that mining activities are exempt from NPDES permit requirements as nonpoint sources under CWA section 304(f).⁶⁵ However, "[s]everal courts have adopted the [position] that 'the broadest possible definition of any identifiable conveyance from which pollutants may enter the waters of the United States' should be employed in determining whether something is a point source."⁶⁶ Congress specifically drafted 33 U.S.C. § 1257(a) to address mine-

59. See *id.* (discussing NPDES permit efficiency and explaining EPA is likely unable to implement regular updates considering amount of time EPA took to establish initial effluent limitations).

60. See *id.* (noting limitations of NPDES permits). CWA § 402 provides for NPDES permits. See Peterson, *supra* note 20, at 602 (1996-97). Water quality standards can force improvements in technology in order to meet pollution standards. See Baron, *supra* note 50 at 561.

61. See Alison Barry, *Mining and Water Quality Under the Clean Water Act*, 25 COLO. LAW. 93, 94 (Sept. 1996) (discussing CWA requirements for state water quality standards).

62. See Baron, *supra* note 50, at 560-61. CWA's increased standards will positively effect agriculture, industrial, and urban development. See *id.* at 561 (noting advantages and disadvantages of CWA).

63. Fortenberry, *supra* note 54, at 823 (discussing controversy over clean water issue). "The needs of an industrialized nation are not necessarily in concert with the people's aesthetic preferences for fishable, swimmable waters." *Id.*

64. See *id.*

65. See *United States v. Earth Sciences, Inc.*, 599 F.2d 368, 368-70 (10th Cir. 1979) (holding mining activities from both point and nonpoint sources are not exempt from NPDES permit requirements under CWA). Under 33 U.S.C. § 1314(f), EPA must issue "guidelines for identifying and evaluating the nature and extent of nonpoint sources of pollutants . . . from . . . mining activities, including runoff and siltation from new, currently operating, and abandoned surface and underground mines." 33 U.S.C. § 1314(f) (1994).

66. Barry, *supra* note 61, at 95 (quoting *Earth Sciences*, 599 F.2d at 373) (determining whether activity uses point source).

water pollution control.⁶⁷ Under section 1257(a), EPA “is authorized to establish projects with a comprehensive approach to the elimination or control of acid or other mine water pollution resulting from both active and abandoned mines.”⁶⁸

Despite this CWA provision, AMD is still considered a “pollutant.”⁶⁹ Pennsylvania’s largest water pollution problem continues to be an inability to control the environmental effects of AMD.⁷⁰ Thus, achieving CWA goals remains an uphill battle for Pennsylvania.

B. Surface Mining Control and Reclamation Act

Although some states promulgated reclamation laws as early as the 1930’s, the Surface Mining Control and Reclamation Act (SMCRA) was the first comprehensive federal law to regulate mining.⁷¹ Congress passed SMCRA in 1977 to regulate the coal industry’s “environmentally destructive practices,” and to clean up areas coal mining previously damaged.⁷² Therefore, SMCRA’s necessity was twofold.⁷³ First, the physical and environmental damage surface

67. See 33 U.S.C. § 1257(a) (1994) (describing congressional approaches to eliminate or control mine water pollution).

68. 33 U.S.C. § 1257(a) (1994). Title 33 U.S.C. § 1257(a) provides: The Administrator in cooperation with the Appalachian Regional Commission and other Federal agencies is authorized to conduct, to make grants for, or to contract for, projects to demonstrate comprehensive approaches to the elimination or control of acid or other mine water pollution resulting from active or abandoned mining operations and other environmental pollution affecting water quality within all or part of a watershed or river basin, including siltation from surface mining.

Id.

69. See *Comm. to Save Mokolumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 309 (9th Cir. 1993) (noting AMD, discharged by defendants, qualifies as “pollutant” within meaning of CWA).

70. See *Coal Mining in Pennsylvania*, at http://www.dep.state.pa.us/dep/deputate/enved/go_with_inspector/Coal_Mining_in_Pennsylvania.htm (last visited July 26, 2001) (noting AMD effects upon Pennsylvania).

71. See American Coal Foundation, *Strict Regulations Govern Coal Mining*, at <http://www.ket.org/Trips/Coal/AGSMM/agsmmintro.html> (last modified Aug. 1, 2001) (explaining federal law gives states primary responsibility to enforce mining regulations within their jurisdictions, but Federal Office of Surface Mining Reclamation and Enforcement can implement program when state has not).

72. See SMCRA’s SECOND DECADE, *supra* note 19, at 263-64; see also Edward M. Green, *State and Federal Roles Under the Surface Mining Control and Reclamation Act of 1977*, 21 S. ILL. U. L.J. 531, 531 (1996-97). As a part of his campaign against former President Ford, President Carter promised to sign the SMCRA legislation Ford rejected. See *id.* at 534. President Jimmy Carter signed the SMCRA law on Aug. 3, 1977 after much “turbulen[ce]” and “debate.” See *id.* at 531.

73. See Green, *supra* note 72, at 532 (discussing how drafters of SMCRA sought to establish coal production as concomitant with environmental protection).

mining caused was devastating.⁷⁴ Second, individual states were “reluctant to pass effective surface mining regulations” for fear of creating a disadvantaged market place for their coal producers.⁷⁵

Although SMCRA is a federal regulation, Congress did not permit the federal government to have complete preemption over the environmental regulation of coal mining.⁷⁶

In SMCRA, Congress provided for (1) minimum standards to be applied nationwide which allowed a state to enact more stringent regulations; (2) a state to take over administration and enforcement of the federal law if the state demonstrated that it was capable of carrying out the Act and meeting its purposes; and (3) federal oversight once a state obtained federal approval to administer and enforce a state program.⁷⁷

Once a state program is approved, both the program and the state become the regulatory authority, having exclusive jurisdiction “over the regulation of surface coal mining and reclamation operations.”⁷⁸ Under SMCRA, states require mine operators to receive permits, file bonds to pay for unperformed reclamation work and meet environmental performance standards.⁷⁹

In addition, SMCRA contains an Abandoned Mine Lands (AML) program to clean up previously abandoned coal mines.⁸⁰ SMCRA also created the Abandoned Mine Reclamation Fund, a program administered by the Office of Surface Mining (OSM) within the Department of the Interior and funded by a tax on coal

74. *See id.* at 532-34 (discussing adverse impacts of surface mining, especially to mountainsides, water and air).

75. *Id.* at 533 (revealing individual states’ fear of losing coal purchasers to less-regulated neighboring states).

76. *See* Robert E. Beck, *The Federal Role Under the Surface Mining Control and Reclamation Act of 1977 (SMCRA) on Nonfederal Lands After State Primacy*, 31 TULSA L.J. 677, 678 (1996) (recognizing federal enforcement when states lack administration and enforcement approval).

77. *Id.* at 679 (noting federal limitations of environmental regulation of coal mining operations).

78. *Id.* (citing 30 U.S.C. §§ 1291(22), 1253(a) (1994)). Exceptions to a state’s exclusivity exist as provided in SMCRA sections 521, 523 and subchapter IV. *See id.* (citing 30 U.S.C. §§ 1271, 1253(a), 1273 (1994) and SMCRA § 503(a) (1994)).

79. *See* 30 U.S.C. §§ 1256-64 (1994) (setting forth state requirements for mine operators).

80. *See* Paul Stokstad, Comment, *Structuring A Reclamation Program for Abandoned Noncoal Mines*, 25 ECOLOGY L.Q. 121, 138 (1998) (citing 30 U.S.C. §§ 1231-43 (1996)). States cannot receive AML funds until their regulatory laws conform with SMCRA. *See* John Davison Collins, *The Abandoned Mine Reclamation Fund — A View from the West*, 20 LAND & WATER L. REV. 67, 73 (1985).

production.⁸¹ Although states may use the allocated funds for a broad range of reclamation-related activities, AML spending must reflect the six priorities set forth in the Act.⁸² According to OSM's policy, priority one and two reclamation work, involving public health, safety and welfare, takes precedence over all other work, resulting in low funding for environmental problems such as AMD.⁸³

In order to receive AML funding from the federal government, a state must submit a state reclamation plan to OSM describing areas needing reclamation as well as criteria identifying and ranking these projects.⁸⁴ Because state proposals need not include complete plans and specifications, states retain wide discretion in choosing implementation methods.⁸⁵ OSM must approve a state reclamation plan if the Secretary finds that the state has the ability

81. See 30 U.S.C. §§ 1231-32 (1994) (establishing Abandoned Mine Reclamation Fund [hereinafter Fund] and accompanying fee structure). Operators of coal mines subject to the provisions of the Act are subject to a reclamation fee of thirty-five cents per ton of coal produced by surface mining and fifteen cents per ton of coal produced by underground mining. See 30 U.S.C. 1232(a) (1994).

82. See 30 U.S.C. §§ 1231, 1253 (1994). States may use the money for "land acquisition, administrative expenses and all other necessary expenses to accomplish the purposes of the Act." Stokstad, *supra* note 80, at 138, n.14. The top priority is "protection of public health, safety and general welfare from extreme danger of adverse effects of coal mining." 30 U.S.C. § 1233(1) (1994). The second priority is the "protection of public health, safety and general welfare from adverse effects of coal mining practices." 30 U.S.C. § 1233(2) (1994). In reality, there is little distinction between these two priorities. See Collins, *supra* note 80, at 86. Environmental restoration is the third priority. See 30 U.S.C. § 1233(3) (1994). The fourth priority is to conduct research relating to surface mining reclamation and water quality control methods and techniques. See 30 U.S.C. § 1233(4) (1994). The fifth and sixth priorities are the protection and repair of public facilities adversely affected by coal mining and the development of publicly-owned land adversely affected by coal mining. See 30 U.S.C. §§ 1233(5),(6) (1994) (describing public facilities to include utilities, roads, recreation and conservation facilities and revealing publicly owned lands as including land acquired for recreation, historic, conservation and reclamation purposes as well as open space benefits).

83. See SMCRA's SECOND DECADE, *supra* note 19, at 263-64 (discussing reclamation priorities).

84. See 30 U.S.C. § 1235(e) (1994). Title 30 U.S.C. § 1235(e) provides: Each State Reclamation Plan shall generally identify the areas to be reclaimed, the purposes for which the reclamation is proposed, the relationship of the lands to be reclaimed and the proposed reclamation to surrounding areas, the specific criteria for ranking and identifying projects to be funded, and the legal authority and programmatic capability to perform such work in conformance with the provisions of this subchapter.

Id.

85. See 30 U.S.C. 1235(i) (1994) (discussing state reclamation program monitoring).

and necessary legislation to implement AML provisions.⁸⁶ After OSM approves a state plan, the state is solely responsible for its implementation.⁸⁷

C. Criticism of SMCRA

Much of SMCRA's criticism is aimed at the Act's actual allocation of funding to the states.⁸⁸ Most abandoned mines are located in the eastern United States, while most current coal mining is performed in the West.⁸⁹ Since the levy of a tax on coal production to support the AML fund, many western states have worried that their current coal production profits would be used to finance clean-up projects and associated jobs in the east.⁹⁰ Due to this inequality, a compromise allowing fifty percent of the tax revenues generated by a particular state to be allocated to remediation projects within that state followed.⁹¹ The other half of the revenue generated was divided between funding for smaller reclamation programs and discretionary funds for allocation wherever OSM determined the need was greatest.⁹²

In order to gauge the severity of the abandoned mine damage, OSM needed first to determine and assess the extent of the problem. However, creating a national inventory of abandoned mine sites has presented many difficulties.⁹³ The extent of the abandoned coal mine problem was unclear at the time Congress enacted SMCRA because few states had begun to inventory their

86. See 30 U.S.C. 1235(d) (1994) (discussing Secretary of Interior's rights and obligations with respect to state reclamation program approval). Currently, twenty-three states and three Indian tribes have received approval for their Reclamation Plans. See *Abandoned Mine Land Program*, at <http://www.osmre.gov/aml/prog/zovervw.htm#> (last visited July 26, 2001).

87. See 30 U.S.C. 1235(d) (1994) (discussing Secretary's rights and obligations with respect to state reclamation program approval).

88. See SMCRA'S SECOND DECADE, *supra* note 19, at 263-64 (discussing controversy surrounding allocation of funding to states despite priority system).

89. See *id.* (discussing geographic distribution of abandoned mines).

90. See Stokstad, *supra* note 80, at 140; see also Collins, *supra* note 80, at 72 n.31 (citing House Report on SMCRA as demonstrating that Colorado, Montana, New Mexico, North Dakota, Utah and Wyoming account for fifty-eight percent of available coal reserves and three percent of land disturbed by surface coal mining).

91. See Collins, *supra* note 80, at 72 (discussing state generated tax revenue fund allocation to state remediation projects).

92. See 30 U.S.C. § 1232(g) (1994) (providing for funding for smaller reclamation programs and discretionary funds); see also, SMCRA'S SECOND DECADE, *supra* note 19, at 256. The two programs are the Small Operators Assistance Program [hereinafter SOAP], 30 U.S.C. § 1257(c) and the Rural Abandoned Mine Land Program [hereinafter RMP], 30 U.S.C. § 1236. *Id.*

93. See Stokstad, *supra* note 80, at 141 (revealing SMCRA required all states to inventory their abandoned coal mine sites in order to receive AML funding).

abandoned coal mine sites.⁹⁴ Furthermore, while SMCRA required states to inventory their abandoned coal mines, the federal government's compilation of that inventory was criticized.⁹⁵ One criticism was that the database generally contains only priority one and two sites, leaving OSM unaware of other sites and resulting in an underestimation of the abandoned coal mine problem.⁹⁶ As a result, the initial inventory may have severely underestimated the abandoned coal mine problem.⁹⁷

Another controversy involved the use of the federal inventory to make decisions regarding the use of discretionary share funds.⁹⁸ Complaints arose that inadequate and inconsistent information possibly resulted in the misallocation of funds.⁹⁹ States claimed their mines were not included in the national inventory and, as a result, they did not receive their fair share of funding.¹⁰⁰ Furthermore, SMCRA did not define "lands to be reclaimed," resulting in inconsistent determinations from one state to the next.¹⁰¹ Thus, OSM had no clear idea of the relative reclamation needs of one state as opposed to another.¹⁰² States had a financial interest to create a negative view of their own situations since they would be

94. See Stokstad, *supra* note 80, at 141 (stating lack of sufficient state inventories lead to underestimation of problem).

95. See *id.* at 140 (noting federal government compiles and standardizes abandoned coal mine inventories into national database).

96. See *id.* at 141 (noting although sites other than priority one or two pose no threat to human health, safety or welfare, they threaten environment).

97. See SMCRA's SECOND DECADE, *supra* note 19, at 257-58. Changes in inventory methodology substantially increased priority one and two needs. See *id.*

98. See Stokstad, *supra* note 80, at 140 (quoting U.S. GENERAL ACCOUNTING OFFICE, INTERIOR MAY HAVE APPROVED STATE SHIFTS TO NONCOAL PROJECTS PREMATURELY, GAO/RCED-91-162, at 2 (1991)). "Until 1991, each state's share of the discretionary funds was calculated 'by a formula based on the state's historic coal production and abandoned mine land reclamation needs, as shown in the national inventory.'" *Id.*

99. See SMCRA's SECOND DECADE, *supra* note 19, at 257-58. Inventory information was collected by the individual states and analyzed by the Oak Ridge National Laboratory. See *id.*

100. See Collins, *supra* note 80, at 82. For example, Utah officials claimed that data from counties with known abandoned mines were omitted from the inventory. See *id.*

101. See Stokstad, *supra* note 80, at 142 (citing U.S. GENERAL ACCOUNTING OFFICE, SURFACE MINING: COMPLETE RECONCILIATION OF THE ABANDONED MINE LAND FUND NEEDED, GAO/RCED 89-35 (1988) and U.S. GENERAL ACCOUNTING OFFICE, SURFACE MINING: INFORMATION ON THE UPDATED ABANDONED MINE LAND INVENTORY, GAO/RCED 88-196BR (1988)).

102. See Stokstad, *supra* note 80, at 141-42. (explaining charges were filed alleging intentional misclassification to increase funding).

more likely to receive funding.¹⁰³ In an effort to alleviate these problems, the allocation rules were changed to grant discretionary shares based solely on historical coal production.¹⁰⁴

SMCRA funding was also criticized because it is not a dedicated fund.¹⁰⁵ AML funds can be dispersed to other OSM programs in the Department of Interior budget.¹⁰⁶ Therefore, the total amount spent was less than the total amount raised, while funding levels varied annually.¹⁰⁷

In allocating past funding, OSM strictly adhered to the rule that health and safety reclamation receives priority over environmental priorities.¹⁰⁸ Such an interpretation has resulted in increased funding to eastern and midwestern states, areas containing the largest number of priority one and two sites.¹⁰⁹

Pennsylvania, specifically, has benefited from this scheme.¹¹⁰ OSM estimated that it would cost Pennsylvania four and one-half billion dollars to stabilize urban areas having subsidence potential.¹¹¹ In 1983, OSM announced its first projection of how the Secretary of Interior's discretionary share should be used and projected one billion dollars of funding would be distributed over the next ten years.¹¹² Based on these projections, Pennsylvania would receive \$587 million for reclamation projects.¹¹³ All other coal-producing states were dissatisfied with this allocation; Congress

103. See SMCRA's SECOND DECADE, *supra* note 19, at 258. States were allowed to include sites on their inventory without documenting the related safety risks. See *id.*

104. See 30 U.S.C. § 1232(g)(5) (1994). Allocation is based on a formula using amounts of coal produced in the designated area prior to Aug. 3, 1977. See *id.*

105. See Stokstad, *supra* note 80, at 142 (discussing funding problems under 30 U.S.C. § 1232(g)(5) (1994)).

106. See Collins, *supra* note 80, at 79 (noting OSM's Director James Harris' recognition of competition for funding).

107. See Stokstad, *supra* note 80, at 142. "As of 1997, \$1.1 billion more has been collected than spent." *Id.* (citing OSM, at <http://www.osmre.gov/zovervw.htm> (last visited Feb. 12, 1998)).

108. See *id.* (stating ninety-three percent of projects funded from 1977 to 1990 were priority one or two); *but see* Collins, *supra* note 80, at 86. A General Accounting Office report found that OSM allowed lower priority projects to proceed when doing so was more efficient. See *id.*

109. See Collins, *supra* note 80, at 86 (noting priority one and two sites tend to be both technically difficult and expensive to correct).

110. See *id.* at 83 (observing in initial projection of secretarial share division of AML funding, Pennsylvania was scheduled to receive \$587 million of estimated \$1 billion fund).

111. See *id.* at 86 n.143 (relying upon information from Environmental Policy Center).

112. See *id.* at 81. OSM hoped by announcing their projections, it would allow states to begin long-range planning of reclamation projects. See *id.*

113. See *id.* at 83. (noting in comparison, Ohio received \$113 million).

subsequently called the proposed division “premature,” advising OSM not to make a ten year allocation until the inventory was updated.¹¹⁴ Nonetheless, western states, industry organizations and environmental groups challenged the strict interpretation of priorities, arguing that OSM could interpret the language to include serious environmental problems such as AMD since those problems posed the eventual risk of adversely affecting human health.¹¹⁵ These adverse effects, although not currently measurable, might prove to cause greater harm to human health than the hazards found in priorities number one and number two.¹¹⁶

In addition, OSM established a “coal before non-coal” priority structure for reclamation projects.¹¹⁷ This priority structure, however, was not as strictly enforced as the health and safety priority structure.¹¹⁸ While OSM required that all priority one and two sites be reclaimed before a state undertook non-coal projects, it has not strictly ensured that priority three through six sites be reclaimed before non-coal projects are undertaken.¹¹⁹ Non-coal projects that do not relate to public health and safety can only be funded by the state’s fifty percent share of the fund.¹²⁰

114. See Collins, *supra* note 80, at 83 (quoting H.R. REP. NO. 98-21, at 399 (1983)).

115. See Stokstad, *supra* note 80, at 143. Challenges to these interpretations are also good public policy in light of possible future harm. See *id.*

116. See *id.* (contending “extreme danger” language found in priority one could reasonably be interpreted to support decisions addressing environmental contamination problems under priority one).

117. See *id.* at 143-44; see also Collins, *supra* note 80, at 86 (proposing coal related projects have priority over non-coal reclamation projects that do not relate to protection of public health and safety).

118. See Stokstad, *supra* note 80, at 143 (explaining General Accounting Office found OSM procedures failed to ensure priority three through six coal sites were completed before non-coal sites).

119. See *id.* at 143-44; see also, Collins, *supra* note 80, at 86-87. OSM required non-coal reclamation projects relate to public health and safety. See *id.* OSM narrowly defined public health or safety as follows: “1) There must be a clearly definable threat to public health or safety; 2) The threat must present a danger that results in a high probability of serious physical harm to the health or safety of people; 3) The threat cannot await resolution until all coal projects have been completed” *Id.* (quoting Memorandum on Noncoal Reclamation from William B. Schmidt, Assistant Director, OSM Program Operations and Inspection, to Field Office Directors (April 4, 1983)).

120. See Collins, *supra* note 80, at 87. Unless there are unusual circumstances, such projects will only be funded to the extent necessary to abate, control or prevent a threat. See *id.*

Some interest groups have urged OSM toward flexibility when implementing the coal before non-coal structure.¹²¹ Western states, which contain more non-coal sites than coal sites, favor a more liberal interpretation.¹²² Environmental groups favor the flexibility to clean-up non-coal sites with serious environmental impairment before relatively benign coal sites.¹²³ However, coal producers who pay the taxes to fund the AML program argue that reclamation of non-coal sites is unfair insofar as non-coal producers pay no similar taxes.¹²⁴

IV. THE COMPLEXITIES OF MINING RECLAMATION LEGISLATION¹²⁵

A. CWA Meets SMCRA in the Fight Against AMD

CWA overlaps SMCRA in controlling AMD discharges.¹²⁶ Because AMD is classified as a pollutant, it is subject to CWA effluent limitations established by EPA for active mines.¹²⁷ Enacted five years after CWA, SMCRA was designed to complement, not conflict with CWA water pollution remediation goals.¹²⁸ SMCRA states, "nothing in this chapter shall be construed as superceding, amending, modifying and repealing . . . [CWA] . . . the state laws enacted pursuant thereto, or other federal laws relating to the preservation of water quality."¹²⁹ In addition, SMCRA includes by cross-reference the water quality standards contained in CWA.¹³⁰ CWA imposes effluent standards for coal mines and requires state programs to obtain EPA consent before water quality standards are modified.¹³¹

121. *See id.* at 87, 90. Congress and environmental groups have joined western states in an effort to persuade OSM to interpret AML objectives and priorities more broadly. *See id.*

122. *See* Stokstad, *supra* note 80, at 144 (explaining that looser interpretation would result in funneling more money into non-coal reclamation).

123. *See id.* (arguing from environmental perspective, looser interpretation will result in maximum benefit from each clean-up dollar).

124. *See id.* (considering equitable support for OSM's current approach).

125. The following section relies heavily upon Peterson, *supra* note 20.

126. *See id.* at 602.

127. *See id.* at 602-03 (qualifying AMD as pollutant because it is partly composed of copper and zinc).

128. *See id.* (citing 30 U.S.C. § 1292(a) (1994)) (setting forth regulations to control AMD discharges).

129. 30 U.S.C. § 1292(a)(3) (1994) (implying SMCRA attempts to increase effectiveness of previously enacted environmental legislation).

130. *See* Peterson, *supra* note 20, at 603 (citing 40 C.F.R. § 434.10-434.65 (1996)).

131. *See id.* at 604 (citing 30 C.F.R. § 732.13(b) (1996)).

B. CWA Storm Water Program

EPA's point source permitting authority does not control water pollution that originates from sources other than "discernable, confined and discreet conveyance[s]."¹³² Nevertheless, EPA's authority is not limited to point sources.¹³³ In 1987, Congress passed the Water Quality Act (WQA) to amend CWA and to establish specific deadlines for EPA's regulation of storm water discharge.¹³⁴ In 1990, EPA issued the final storm water discharge rule, defining "discharges" to include contaminated discharges from both active and inactive mines but excluded discharges from inactive mines reclaimed under SMCRA.¹³⁵

The coal industry expressed concern that this new storm water rule confused the extent of landowner liability for reclamation of lands with abandoned mines on them.¹³⁶ Although it excludes reclaimed mines, the storm water rule covers inactive mines that are eligible for AML funding under SMCRA.¹³⁷ This results in confusion over responsibility for the reclamation of inactive mines.¹³⁸ Under SMCRA, the government funds the clean-up, while under the storm water rule, the landowner is responsible for clean-up efforts.¹³⁹

The rationale behind the exclusion of fully reclaimed mines from the storm water rule is that reclaimed lands minimize the opportunity for additional pollution resulting from industrial activ-

132. *Appalachian Power Co. v. Train*, 545 F.2d 1351, 1373 (4th Cir. 1976) (finding Congress consciously distinguished between point source and nonpoint source discharges and gave EPA authority only over former).

133. *See Peterson, supra* note 20, at 603-04 (citing *Sierra Club v. Abston Constr. Co. Inc.*, 602 F.2d 41 (5th Cir. 1980) (stating EPA has jurisdiction over channels created by erosion from storm waters); *see also generally* 33 U.S.C. §§ 1311-1330 (1994)).

134. *See Peterson, supra* note 20, at 603-04 (asserting Congress passed WQA in response to EPA's failure to regulate storm water discharge).

135. *See id.* at 604 n.74. "Inactive" mines are those that "are not being actively mined, but which have an identifiable owner/operator." *Id.*

136. *See Am. Mining Cong. v. EPA*, 965 F.2d 759, 769 (9th Cir. 1992). AMC argued that the storm water rule imposed retroactive liability on owners and operators of inactive mines. *See id.* The Ninth Circuit held EPA's rule did not penalize inactive mine owners for past activities, but regulated future discharge from those inactive mines. *See id.* at 770.

137. *See Peterson, supra* note 20, at 605. The regulations do not exclude inactive mining sites that are eligible for AML funding. *See id.*

138. *See id.* "SMCRA and [] CWA approach the liability issue in two distinct ways: [] CWA focuses on the offender while SMCRA focuses on the actual cleanup." *Id.*

139. *See id.* (asking who should be responsible for reclamation efforts).

ity.¹⁴⁰ Unreclaimed lands, on the other hand, may still be discharging AMD.¹⁴¹

Nothing in SMCRA regulates the discharge of pollutants from abandoned mines until the reclamation process begins.¹⁴² Because the cost of clean-up is spread across the industry, there is no retroactive liability for the individual landowner.¹⁴³ AML is designed to ensure that current landowners, who are not responsible for AMD discharges of past owners or operators, are not held accountable.¹⁴⁴ The AML fund was established to eliminate the effects of pollution, not to punish those responsible for AMD on abandoned sites.¹⁴⁵

By contrast, CWA and the storm water rule particularly, regulate discharges from abandoned mines.¹⁴⁶ Unlike SMCRA, CWA can impose civil and criminal penalties against landowners.¹⁴⁷ In *American Mining Congress v. EPA*,¹⁴⁸ the plaintiff argued that the storm water rule imposed retroactive liability on the landowner for AMD by requiring NPDES permits for discharges from inactive mines.¹⁴⁹ The Ninth Circuit Court of Appeals disagreed, asserting that the storm water rule did not impose liability for mining that occurred in the past but regulated future discharges of storm water.¹⁵⁰ The *American Mining* court determined that “[t]he fact

140. See *id.* at 604-05 (quoting 55 Fed. Reg. at 48,033 (1990)) (explaining mines that have undergone reclamation pursuant to such laws ceased all industrial activity).

141. See *id.* at 605 (noting AML program does not regulate discharge of AMD prior to reclamation).

142. See *Am. Mining Cong. v. EPA*, 965 F.2d 759, 767 (9th Cir. 1992) (finding AML program does nothing to regulate discharge of pollutants from abandoned mines prior to actual reclamation).

143. See Peterson, *supra* note 20, at 606 (noting SMCRA does not permit actions against landowners).

144. See *id.* (discussing 30 U.S.C. § 1202(b) (1994) and recognizing operators and permittees alone bear reclamation costs). Landowners do not bear reclamation costs. See *id.*

145. See *id.* (remarking operators and permittees alone must bear costs of reclamation).

146. See *Am. Mining Cong.*, 965 F.2d at 767 (stating NDPES program of CWA regulates point source discharges of pollutants from inactive mines).

147. See Peterson, *supra* note 20, at 605 (arguing SMCRA focuses upon reclamation, while CWA focuses upon offender's liability).

148. 965 F.2d at 759 (relying upon *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988)) (explaining agencies generally have no authority to issue rules with retroactive effects).

149. See *id.* at 769. AMC argued that the storm water discharge rule was impermissible because it imposed liability on mine owners where mining activities were conducted only in the past. See *id.*

150. See *id.* at 769-70 (citing *Bowen*, 488 U.S. at 219-20 (Scalia, J., concurring)). “A rule with exclusively future effect . . . is not made retroactive by the fact that it will unquestionably effect past transactions.” *Id.*

that the present contamination is the result of past mining activities does not make EPA's rule retroactive."¹⁵¹

In *United States v. Law*,¹⁵² the defendant challenged a criminal conviction for knowingly discharging a pollutant from a point source into navigable waters of the United States without an NPDES permit.¹⁵³ On appeal, Law argued that the landowner must have generated the pollution in order to be held liable for a discharge.¹⁵⁴ Defendant Law further asserted that no liability exists for discharging pollutants that originate beyond one's own property.¹⁵⁵ Nonetheless, the Fourth Circuit Court of Appeals held that a person may be held criminally liable for knowingly discharging pollution without an NPDES permit regardless of where AMD is generated.¹⁵⁶

In a similar Pennsylvania case, the state Department of Environmental Resources ordered a mine operator to develop an abatement plan for AMD discharge from its property.¹⁵⁷ The operator challenged the order, contending, in part, that it was not the source of the contamination.¹⁵⁸ The court upheld the order, holding that "neither fault nor causation is necessary to impose liability."¹⁵⁹

151. *Am. Mining Cong.*, 965 F.2d at 770 (concluding that EPA's rule regulates only future discharges of contaminated storm water).

152. 979 F.2d 977 (4th Cir. 1992).

153. *See id.* at 978. The defendant purchased property that included an existing mining operation that was discharging AMD. *See id.*

154. *See id.* at 979. Law argued that CWA does not impose liability upon persons over whose property preexisting pollutants merely passed along to later flow into navigable waters. *See id.*

155. *See id.*

156. *See id.* at 978. The prior owner of the property installed a water treatment system to decrease the acidity of runoff from the property. *See id.* Furthermore, prior owners were subject to an NPDES permit when Law purchased the property. *See id.* Despite repeated notices, Law never applied for an NPDES permit. *See id.* Due to the failure to operate the treatment system effectively, AMD discharged into nearby waters on at least sixteen occasions over a four-year period. *See id.*

157. *See N. Cambria Fuel Co. v. Dep't of Envtl. Res.*, 621 A.2d 1155 (Pa. Commw. Ct. 1993) (requiring appellant to implement abatement discharges from its mine site, despite appellant's responsibility for generating discharges).

158. *See id.* at 1158. The operator contended that the source of the discharge was an adjacent surface mine and coal processing plant. *See id.* at 1157.

159. *Id.* at 1163 (noting General Assembly's use of word "related" buttresses argument that "cause" is not required element to find liability).

V. MODERN APPROACHES TO THE RECLAMATION OF
ABANDONED COAL MINES

A. Appalachian Clean Streams Initiative

Recently, there have been greater strides toward the reclamation of abandoned coal mines.¹⁶⁰ The most innovative approach has been the Appalachian Clean Streams Initiative (ACSI), created in 1994 under OSM.¹⁶¹ Implemented on the twentieth anniversary of SMCRA's enactment, ACSI was a complete effort to eliminate acid drainage from numerous abandoned mines in order to eliminate or reduce the ever-expanding deadly effects of AMD.¹⁶² ACSI projects are limited to the Appalachian area and nearby states.¹⁶³ In 1999, eleven states were eligible for ACSI funding.¹⁶⁴

ACSI's innovative approach to the reclamation process relies on integration. ACSI's "key component" is the Statement of Mutual Intent, based upon the concept that governmental, industrial and public parties are all interested in correcting damage to water quality and will thus combine their resources to achieve this common goal.¹⁶⁵ An integrated approach of this nature had never been adopted by any other OSM restoration program.¹⁶⁶ The initiative's integration included an "expanded effort to include as many of the parties, both private and governmental, and to uphold the underlying belief that a more integrated management approach will benefit not only the streams but also the residents and all agencies involved."¹⁶⁷ Many local communities participate in the clean-up

160. See Springob, *supra* note 39 (addressing ACSI implementation).

161. See *id.* (explaining ACSI background). AMD "has severely affected many streams" in the Appalachian region, an area with a long history of coalmining. *Id.*

162. See *id.* (recognizing ACSI as "broad-based" program); see also DEPARTMENT OF THE INTERIOR, *1998 Surface Mining Budget Adds \$1 Million for Appalachian Clean Streams*, 1997 WL 53769 (Feb. 6, 1997) (noting purpose of ACSI program).

163. See OSM Report Lists Actions to Prevent, Control Acid Mine Drainage, INSIDE ENERGY WITH FEDERAL LANDS, available at 2000 WL 14124905 (Jan. 10, 2000) (addressing issue of ACSI funding).

164. See *Enhancing Our Water Resources*, at http://www.livablecommunities.gov/toolsandresources/wr_appalachian.html (Feb. 12, 2001) (naming Alabama, Illinois, Indiana, Iowa, Kentucky, Maryland, Missouri, Ohio, Pennsylvania, Virginia and West Virginia as eligible states and explaining details of ACSI program).

165. See Springob, *supra* note 39 (noting over one hundred industry leaders, local watershed groups, state and federal agencies signed Statement of Mutual Intent). The integrated approach may lead to the accomplishment of goals that individual organizations or community groups could not reach alone. See *id.*

166. See *id.* (noting ACSI's innovation).

167. *Id.* (recognizing focus of ACSI created integration).

initiative because of their economic reliance on the waterways.¹⁶⁸ ACSI's goal was simply "to provide leadership and to facilitate the efforts of states, local governments, industry, and citizens to clean up streams polluted by [AMD]."¹⁶⁹

ACSI is funded by a variety of sources.¹⁷⁰ Upon request by OSM, the federal government provides the majority of ACSI funding.¹⁷¹ In the fiscal year 2000, ACSI received \$8 million from Congress and, in 2001, Congress earmarked a total of \$10 million for ACSI federal funding.¹⁷² Additional ACSI funding flowed from private foundations and other federal and state governmental agencies.¹⁷³ As of January 2000, Pennsylvania received approximately \$1.7 million each year for clean streams funding, an amount greater than any other state.¹⁷⁴ Although various groups and governments support ACSI, there is still a great deal of administrative and financial backing required in order for the initiative to be suc-

168. See Springob, *supra* note 39 (noting importance of citizen participation in integration process). Communities rely on waterways for such activities as tourism and fishing. See *id.*

169. *Id.* (citing *Clean Streams Initiative*, <http://www.osmre.gov/acsihome.htm> (last visited Sep. 16, 2001)) (recognizing innovative approach of ACSI).

170. See "Abandoned Mine Reclamation", 2000 WL 19303814 (May 17, 2000) (testimony of Katherine Henry, Acting Director of OSM, before House Subcommittee on Energy and Mineral Resources) (testifying to ACSI's basis of funding). The Watershed Cooperative Agreement [hereinafter Watershed], for example, began in 1999 to work with local organizations in an effort to improve water quality in their communities. According to Watershed:

The program allows OSM to award AML funds to private, not-for-profit groups, such as local watershed organizations, for local [AMD] reclamation projects. These groups work with the states to identify reclamation sites and other funding sources. The response to the program has been tremendous throughout the Nation's coalfields. These funds have supported projects that yield immediate improvement in land and water quality and the general quality of life in our Nation's coal fields. As examples, these agreements are helping to . . . reduce [AMD] in the Shamokin Creek watershed in Pennsylvania.

Id.

171. See *id.*; see also *Frequently Asked Questions About OSM's Appalachian Clean Streams Initiative (ACSI) Funding*, at <http://www.osmre.gov/acsiq&a.txt> (last visited Sep. 16, 2001) (describing ACSI funding from federal government).

172. See *OSM Report Lists Actions to Prevent, Control Acid Mine Drainage*, INSIDE ENERGY WITH FED. LANDS, Jan. 10, 2000, at 16, available at 2000 WL 14124905 (recognizing that ACSI started with \$750,000 budget); see also *OSM Acting Chief Asks Congress for More Money to Reclaim Mines*, MINE REC. REP., May 29, 2000, at 11, available at 2000 WL 8758423 (explaining ACSI received increased federal funding). "The total [fiscal year] 2001 request for abandoned mine lands is \$211.2 million."

Id.

173. See Springob, *supra* note 39 (noting additional sources of ACSI funding).

174. See *Reclamation of Pennsylvania Mining Lands*, 2000 WL 11067486 (Jan. 24, 2000) (testimony of Mary Josie Blanchard, Assistant Director of OSM, before House Committee on Resources) (recognizing Pennsylvania's environmental damage caused by abandoned mines).

cessful.¹⁷⁵ “[ACSI] . . . needs to have local programs that can organize funds and receive recognition and financial support from state governments. . . . [ACSI] requires local groups to match funds provided by the ACSI in a one-to-one ratio.”¹⁷⁶

ACSI restoration sites are selected in a specific fashion. Each site must be an abandoned coal mine that is eligible as a restoration area under Title IV of SMCRA.¹⁷⁷ Additionally, the coal mine was abandoned prior to August 3, 1977.¹⁷⁸ When the initiative began, ACSI selected smaller sites because of their easy restoration process.¹⁷⁹ However, with the growth of ACSI, individual participating states now select their own restoration sites.¹⁸⁰ The process of site selection by the program’s participating states and Indian tribes is based on an individual site’s historical background and a present need for restoration of the area:

Individual states establish a list of projects through a formula of historic coal production or by the request of local watershed groups. To qualify for funding, the cause of the polluted stream must be [from] acid drainage from mining operations. When the cause of the pollution has been verified as being a mining site, funds are allocated and a treatment plan is devised.¹⁸¹

Generally, state or tribe funding is used for direct, construction-related purposes.¹⁸² Specific construction requirements are advantageous because they help achieve success in a timely manner and ultimately aid in generating future funding from various sources.¹⁸³

175. See Springob, *supra* note 39 (discussing necessity of recognition and financial backing from state government).

176. See *id.* (recognizing ACSI “integration” process).

177. See *Frequently Asked Questions About OSM’s Appalachian Clean Streams Initiative (ACSI) Funding*, at <http://www.osmre.gov/acsiq&a.txt> (last visited Sep. 16, 2001) (explaining eligibility for ACSI restoration funding).

178. See *Enhancing Our Water Resources*, at http://www.livablecommunities.gov/toolsandresources/wr_appalachian.html (last visited Feb. 12, 2001) (revealing site eligibility for ACSI restoration). “Projects proposed by local groups should use proven or innovative technology that has a high probability of success and must produce tangible results, e.g. fishery restored, stream miles improved, educational and community benefits, pollutants removed from the streams.” *Id.*

179. See Springob, *supra* note 39 (focusing on site selection process).

180. See *id.* (recognizing improvements of ACSI restoration selection).

181. *Id.* (describing site selection requirements, specifically AMD pollution).

182. See *Frequently Asked Questions About OSM’s Appalachian Clean Streams Initiative (ACSI) Funding*, at <http://www.osmre.gov/acsiq&a.txt> (last visited Feb. 12, 2001) (explaining funds can be used for maintenance if appropriate application is made).

183. See *id.* (contending funds for construction lead to “on-the-ground successes.”). “The Clean Streams funds are ‘challenge grants,’ providing seed money

Although funding is granted annually, the funds received may be spent by the states or tribes even after the year in which they were granted.¹⁸⁴

Due to the program's youth and its varied measuring systems, the success of ACSI has not yet been evaluated.¹⁸⁵ To calculate the success of eliminating AMD from the environment, the number of "pounds of acid removed at the source for particular sites" is measured.¹⁸⁶ Another method for determining success "is to use the drinking water standards established by the [EPA]."¹⁸⁷ These testing methods require both time and money.¹⁸⁸ Unfortunately, because ACSI is in its developmental stages, it lacks these two essential elements.¹⁸⁹ Nevertheless, ACSI plans to observe sites for three years and then use gauging stations to continue monitoring the streams.¹⁹⁰ To facilitate the evaluation process, ACSI is collaborating with the United States Geological Survey to use their monitoring stations but eventually will build its own stations.¹⁹¹ Over time, it seems apparent that ACSI will be a successful program and an innovative approach for future environmental restoration projects:

[ACSI] provides a crucial first step towards restoration with an underlying collaborative philosophy of uniting individual groups together based on their common goal. The role of facilitator allows for a combined effort that eliminates redundancy between agencies and organizations, while providing a stronger knowledge and economic base. The innovative approach that this program has adopted provides an example to other agencies and inter-

that can be used to attract additional financial support from other public and private sources." *Id.*

184. *See id.* (recognizing states and tribes need to work quickly).

185. *See Springob, supra* note 39 (remarking that evaluation of success measurements currently under development).

186. *Id.* (discussing systems for measuring AMD).

187. *Id.* ACSI also tests for aluminum, iron, magnesium and drinking water pH. *See id.*

188. *See id.* (recognizing limitations upon monitoring and evaluation due to low funding).

189. *See id.* (reporting that observing sites is essential to evaluate success).

190. *See Springob, supra* note 39 (establishing future plans for ACSI's evaluation process).

191. *See id.* ACSI understands that the program may need to build its own monitoring stations as not all United States Geological Survey monitoring stations are positioned in ACSI compatible locations. *See id.*

est groups for how to accomplish goals that may have previously seemed unattainable.¹⁹²

The future for ACSI looks promising with outside funding for the program anticipated to reach sixty percent.¹⁹³ As of 2001, ACSI had “more than one hundred state and federal agencies, local soil and water conservation districts, national conservation organizations, and private foundations working together formally to clean up [AMD] and to improve the aquatic environment and the quality of life for coal field citizens.”¹⁹⁴ In addition, forty-six new projects are expected to begin in 2001, which is nearly equal to the entire number of projects established since ACSI began in 1997.¹⁹⁵ The present realities and future projections of ACSI are both reinforcing accurate indications of the possibilities for implementing successful reclamation programs and efforts.

VI. CONCLUSION

Coal is and continues to be an important source of energy in the United States.¹⁹⁶ Coal-mining, however, causes severe damage to the environment.¹⁹⁷ Under current legislation, state and federal regulators have attempted to control these effects, including the adverse effects of AMD.¹⁹⁸ The harmful effects of AMD and the migratory nature of the AMD polluted waters warrant federal government involvement in the remediation process and ongoing prevention of AMD.¹⁹⁹ SMCRA’s permitting process forces the coal mining applicant to anticipate and prevent water pollution.²⁰⁰

192. *Id.* (noting although ACSI is in its infancy, it can serve as role model of cooperation for other agencies and programs).

193. *See Abandoned Mine Reclamation*, May 17, 2000 available at 2000 WL 19303814 (testimony of Katherine Henry, Acting Director of OSM, before House Subcommittee on Energy and Mineral Resources) (recognizing potential of ACSI’s future).

194. *Id.* (noting that “leveraging funds” is “core” of ACSI program).

195. *See id.* (recognizing ACSI expansion).

196. *See American Coal Foundation, Introduction*, at <http://www.ket.org/trips/coal/agsmm/agsmmintro.html> (last modified Aug. 1, 2001) (noting at current consumption rates, coal reserves will last another 250 to 300 years).

197. For a general discussion of coal mining impacts on the environment, see *supra* notes 17-20 and accompanying text.

198. For a general discussion of regulations regarding water pollution due to coal mining, see *supra* notes 61-82 and accompanying text. For a discussion of coal mining regulation, see *supra* notes 71-124 and accompanying text.

199. *See Peterson, supra* note 20, at 615 (contending AMD threat to environment cannot be overcome without governmental power).

200. *See Shea, supra* note 44, at 214 (contending that industry and regulatory expertise is critical to process of anticipating and protecting against water pollution).

These requirements do not lessen the environmental impact of previously released AMD. It has been suggested that the only way to completely reclaim abandoned mines is to pursue landowners and force them to pay costs by seeking sanctions under CWA.²⁰¹ At this point, however, the best approach seems to be an ACSI program.²⁰² However, due to the program's newness, it is difficult to judge its relative success.²⁰³ Nevertheless, the integrative approach of joining industry, government and public parties allows communities to combine their resources to achieve this common goal of reclaiming polluted waters.²⁰⁴ If the entire community recognizes the problem and supports the joint resolution, all of the involved parties are more likely to work toward its success.

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201. See Peterson, *supra* note 20, at 615 (arguing SMCRA regulators must increase their coordination with EPA state counterparts in order to successfully complete reclamation process). AML fund has proven insufficient to cover the costs of clean-up. See *id.* In addition, SMCRA prohibits holding landowners liable for reclamation costs. See *id.*

202. For a general discussion of ACSI and the Watershed program, see *supra* notes 159-94 and accompanying text.

203. See *Frequently Asked Questions About OSM's Appalachian Clean Streams Initiative (ACSI) Funding*, at <http://www.osmre.gov/acsiq&a.txt> (last visited Sep. 16, 2001) (reporting evaluation process is currently under development).

204. See Springob, *supra* note 39 (revealing ACSI integration approach).

