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Subsidence Regulation Under the Surface Mining Control and Reclamation Act of 1977

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INTRODUCTION

Subsidence constitutes one of the most widespread, persistent, and diversified geologic hazards facing man today. Subsidence can be the result of man's extraction of a variety of fluids and solids other than coal from the earth; however, coal mining still stands as the major cause of surface damage from subsidence.

The evolution of subsidence control, prediction, and regulation is far from complete. From a technical standpoint, too many variables and technical uncertainties are associated with the typical subsidence problem to allow a precise prediction of when, how, and to what extent subsidence will occur. These

technical uncertainties necessarily complicate the development and application of rules, laws, and regulations to control subsidence and its impacts.

With a few exceptions, the common law was the chief method of state regulation of subsidence through the 1960's. Under the common law, the rules of subjacent and lateral support established the standards for measuring the liability of the mineral estate owners to surface owners for subsidence damage. During this period subsidence was generally seen as an issue of the relative rights of the two estate owners, with little room or justification for governmental intervention.

Difficulties with early attempts at state regulation were pointed out in 1922 when the United States Supreme Court ruled in *Pennsylvania Coal Co. v. Mahon*[1] that the state's law regulating subsidence constituted a taking of private property in violation of the Fifth and Fourteenth Amendments to the Constitution.[2] Notwithstanding *Mahon*, more recent cases have found few limits on the authority of the state and federal governments to enact a wide variety of legislation governing protection of the environment, safety, and the public welfare.

During the 1970's, a growing environmental awareness increased the pressure for a comprehensive federal response to the environmental problems posed by coal strip mining. This trend toward increased federal involvement in the regulation of coal mining followed the developing trends in other areas of environmental law. Accordingly, comprehensive federal legislation was enacted to control air pollution,[3] water pollution,[4] solid waste disposal,[5] and coastal zone development,[6] and to protect historic,[7] and archeological sites,[8] endangered and threatened spe-

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[1] 260 U.S. 393 (1922).

[2] *Id.*

[3] Clean Air Act of 1977, Pub. L. No. 95-95, 91 Stat. 685 (codified as amended at 42 U.S.C. §§ 7401-7616 (1982)).

[4] Clean Water Act, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1251-1376 (1982)).

[5] Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (codified as amended at 42 U.S.C. §§ 6901-6987 (1982)).

[6] The Coastal Zone Management Act of 1972, Pub. L. No. 92-583, 86 Stat. 1280 (codified as amended at 16 U.S.C. §§ 1451-1464 (1982)).

[7] National Historic Preservation Act Amendments of 1980, Pub. L. No. 96-515, Title I, 94 Stat. 2987 (codified at 16 U.S.C. § 470 (1982)).

[8] *Id.*

cies,[9] eagles,[10] and wetlands,[11] among others.

In most cases, the regulatory programs developed for each area of environmental protection had many similarities, including the development of minimum guidelines or standards by the federal government. Many of these laws also included provisions which allowed the states to assume primary enforcement authority, provided the state program included standards which were as stringent as those found in the federal program.

The development of this comprehensive federal system of laws and regulations governing environmental protection was a result of the recognition that the common law theories had become too cumbersome, isolated, and insensitive to economic externalities to effectively deal with the complex issues. The ineffectiveness of the common law remedies often allowed serious environmental abuses to continue unchecked. As public awareness of the environment increased, the cry for strict regulation of the abusers intensified. Thus, the time was right to shift the balance of protection from industrial development to the protection of people and their property and the preservation of natural resources. The line of reasoning popular at the time of the *Mahon* decision gave way to the new forces in favor of greater environmental protection.

The solution to environmental pollution posed by the environmental movement of the 1960's and 1970's seemed straightforward: require industry to stop polluting and to internalize the costs of pollution control. The assumptions inherent in this school of thought were, first that it was possible to develop an effective method of controlling environmental impacts, and second, that the regulated industries and the national economy would be able to bear the weight of the costs associated with pollution control.

The Surface Mining Control and Reclamation Act of 1977[12]

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[9] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. §§ 1531-1543 (1982)).

[10] The Bald Eagle Protection Act Amendments of 1972, Pub. L. No. 92-535, 86 Stat. 1064 (codified at 16 U.S.C. § 668 (1982)).

[11] Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1575 (codified at 33 U.S.C. § 1342 & 1344 (1982)).

[12] Surface Mining Control & Reclamation Act of 1977, Pub. L. No. 95-87, 91 Stat. 445 (codified at 30 U.S.C. §§ 1201-1328 (1982)).

[hereinafter SMCRA or the Act] is considered by many observers to have come at the high water mark in the evolution of federal environmental legislation. Passed by the 95th Congress and signed into law by President Carter on August 3, 1977, Public Law 95-87 was the culmination of more than six years of Congressional debate involving seven bills, three House and Senate conference reports, numerous hearings, and two presidential vetoes.

The purpose of the earliest bills preceding SMCRA was to regulate the environmental impacts of strip mining, not underground mining. However, as subsequent bills underwent the process of revision, the debate intensified as to whether the surface impacts of underground mining should be addressed in the bill. Finally, the proponents of underground regulation were successful, and the surface impacts of underground mining, including subsidence, were included. Upon the enactment of SMCRA, the Secretary of the Interior was authorized to regulate both surface mining and the surface impacts from underground mining—including subsidence.

Almost immediately after becoming law, SMCRA came under judicial scrutiny. In a major challenge to the constitutionality of SMCRA on its face, the Supreme Court held that the statute was a valid exercise of the Congress' Commerce power[13] and that it did not infringe on the powers reserved to the states to regulate land use.[14] Specific provisions of the Act pertaining to steep slope mining,[15] immediate cessation of mining when imminent harm is threatened,[16] prime farmland, and return of the land to the approximate original contour were also upheld by the Court.[17]

As the issue of subsidence regulation moved from the halls of Congress to the administrative and regulatory agencies, controversy over the subsidence regulation provisions continued. The federal regulations implementing SMCRA were challenged on many grounds in the case of *In re: Permanent Surface Mining*

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[13] Hodel v. Virginia Surface Mining and Reclamation Ass'n., 452 U.S. 264 (1981).

[14] *Id.* at 293.

[15] *Id.* at 283-93.

[16] *Id.* at 298-303.

[17] *See generally* Comment, Hodel v. Virginia Surface Mining & Reclamation Ass'n and Hodel v. Indiana: *A Re-examination of Environmental Legislation Under the Tenth Amendment and Commerce Clause*, 1 VA. J. NAT. RES. L. 329 (1981).

Regulation Litigation.[18] These challenges have been resolved on some grounds, but other regulatory issues of substantive importance continue to be the subject of litigation. Furthermore, significant issues relating to the site specific application of these rules remain unresolved.

Consideration of SMCRA is central to any discussion of subsidence regulation because of the generally accepted position of the U.S. Office of Surface Mining [hereinafter OSM], the agency charged with implementation of the Act, that SMCRA's requirements preempt all prior state laws and regulations. Thus, the legislative and regulatory histories of subsidence regulations under SMCRA are significant in that they provide the framework within which remaining issues must be resolved.

The basic requirements applicable to subsidence control are found in Section 516 of the Act.[19] In simplified form, Section 516(b)(1) requires that underground mining operations "be designed to prevent subsidence from causing material damage to the extent technologically and economically feasible, except if planned subsidence is involved."[20] Further, Section 516(c) authorizes the regulatory authority to suspend underground mining under urbanized areas, cities, towns, and communities and adjacent to industrial or commercial buildings, major impoundments or permanent streams if an imminent danger is posed to inhabitants.[21] The application of these requirements to specific underground mines, as well as the application of other general environmental protection standards to subsidence impacts, however, raises a number of difficult issues not clearly resolved by the Act's provisions alone.

This Article explores SMCRA's regulation of subsidence impacts from underground coal mining and traces the legislative history of the subsidence control provisions in Public Law 95-87. To aid the reader in better understanding SMCRA's requirements, Part I first provides a brief discussion of the technical aspects of subsidence. Part II provides a review of the historical development of regulatory measures to control subsidence. Part III addresses the legislative history of the subsidence control and

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[18] *See infra* notes 184-212 and accompanying text.

[19] SMCRA § 516, 30 U.S.C. § 1266 (1982).

[20] SMCRA § 516(b)(1), 30 U.S.C. § 1266(b)(1) (1982).

[21] SMCRA § 516(c), 30 U.S.C. § 1266(c) (1982).

underground mining provisions in the Act. Part IV traces the development of the subsidence regulations by the OSM.[22] Parts V and VI address the permitting and bonding requirements of the OSM regulations and their impact on subsidence control. Finally, Part VII discusses the possible application of Section 522(e) of SMCRA to underground mining.

I. TECHNICAL ASPECTS OF SUBSIDENCE

A. Introduction

Subsidence, simply defined, is a downward movement of the earth's surface over a mined-out void. This downward movement may be accompanied by horizontal movement, strain, tilt and even locally upward movement of the surface. In fact, it is frequently the horizontal strains which accompany the downward movement which may cause the most damage to man-made surface structures.

The mine-voids create strong imbalanced stresses in the surrounding and overlying rock strata. As the rock mass readjusts in response to the stress created, it generally causes a failure of the mine roof, mine floor, or pillars. This rock failure is manifested on the surface by surface depressions, step fractures, and cracks.

Mining subsidence has been the subject of extensive historical reviews[23] and technical presentations.[24] The first recorded theory

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[22] This paper concentrates on the federal regulations applicable to subsidence control and does not address other aspects of the surface mining regulatory program, such as general permit requirements or performance standards, hydrologic information requirements, mine abandonment plans, water replacement, etc. It does not address aspects of state regulatory programs as authorized under Section 503 of SMCRA. 30 U.S.C. § 1253 (1982). States must have rules in their regulatory programs which are consistent with the federal regulations. SMCRA § 503(a)(6), 30 U.S.C. § 1253(a)(6) (1982).

[23] *E.g.*, J. Zwartendyk, Economic Aspects of Surface Subsidence Resulting from Underground Mineral Exploitation (1971) (Ph.D. Thesis, Pennsylvania State University) (Open File Report 7-71, Bureau of Mines); C.H. Shadbolt, Mining Subsidence Historical Review and State of the Art (1978) (Conference on Large Ground Movements and Structures) (Cardiff, Wales).

[24] *See* F.D.C. HENRY, THE DESIGN AND CONSTRUCTION OF ENGINEERING FOUNDATIONS (1956); M. HALL & R. J. ORCHARD, SUBSIDENCE PROFILE CHARACTERISTICS (1936) (Chart. Surv., Vol. 95 (8)); SME MINING ENGINEERING HANDBOOK (A.B. Cummins & I. A. Given ed. 1973); PRODUCTION DEPT., NATIONAL COAL BOARD, SUBSIDENCE ENGINEER'S HANDBOOK (1975).

of surface subsidence due to underground mining (undermining) was stated by a French engineer, Toillez, in 1838 and formulated by a Belgian engineer, Gonot, in 1839.[25] Over the years, comprehensive studies have been performed in Great Britain, the continental European countries and more recently in the United States in an effort to devise methods to predict the magnitude and extent of subsidence.

During the early years of underground mining in the United States, subsidence was not considered a pressing problem because most mining took place in unpopulated areas.[26] However, when a school in Scranton, Pennsylvania, was seriously damaged by subsidence in 1909, the problem received national attention.[27] A major investigation of the Scranton incident provided suggestions aimed at minimizing subsidence.[28] Several other studies in the early 1900's monitored and described subsidence-related problems in the eastern United States. The earlier studies merely cataloged effects and incidents of subsidence. More recent studies have allowed researchers to make significant improvements in subsidence engineering.[29]

The ability to predict mining subsidence is of vital importance in evaluating regulatory approaches to control and/or mitigate subsidence impacts. Technical research in subsidence prediction has focused on construction of models[30] to simulate

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[25] *See* Zwartendyk, *supra* note 23.

[26] Interview with Dr. K. Unrug, Professor of Mining Engineering, University of Kentucky, in Lexington, Kentucky (Nov. 5, 1986) [hereinafter Unrug Interview].

[27] Zwartendyk, *supra* note 23.

[28] *Id.*

[29] *See* Unrug Interview, *supra* note 26. Although headway has been made, the science of subsidence prediction is still very new. *Id.* Other countries have more thorough subsidence studies and had varying success with developing prediction models. Different models have been developed for each of the major European mining areas. *Id.* The most commonly used subsidence prediction model is one developed by England's National Coal Board (NCB). *See* H.D. Dahl, *Subsidence - Its Causes and Effects*, 1985 E. MIN. L. FOUND. SPECIAL INST. ON COAL MINE SUBSIDENCE 1.11. Unfortunately, coal fields in the United States have different geologic conditions and use different mining methods from those found in Great Britain. As a result, the NCB model is not particularly successful when applied to coal fields in the United States. Unrug Interview, *supra* note 26; Dahl, *supra*, at 1.11; *see also* Hunt & Jones, *Federal Legislation and OSM Regulation of Subsidence*, 1985 E. MIN. L. FOUND. SPECIAL INST. ON COAL MINE SUBSIDENCE 4.02.

[30] These are generally categorized as either empirical or mechanistic models. Empirical models are based on analysis of existing data and are analyzed from a statistical viewpoint. Through data analysis, empirical models then

the occurrence of subsidence and subsidence effects. These predictive models are in large part dependent upon mining methods used.

B. Methods of Mining

Underground coal mining methods can roughly be divided into two broad classes: those that result in full extraction of the coal seam, and those that include only partial extraction of the seam. Most of underground coal mining in the United States has involved the partial extraction of the coal seam using the room and pillar method of mining. With the room and pillar method of mining, blocks of coal known as pillars are left in place during excavation.[31] These pillars are used to provide roof support while the coal is extracted.

In the early days of underground mining in the United States, the spacing, size and pattern in which the pillars were left was haphazard.[32] By the late 19th century, the mining industry began to use a systematic, checkerboard arrangement of rooms and pillars; however, the uniform block system of pillar mining did not become the industry standard until the middle of the 20th century.

As the steel industry expanded, coal became more valuable, and the mining industry increased production by using high and/or total extraction mining methods. The first high extraction mines did not actually remove the pillars; rather, the rooms were

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> predict the subsidence profile and subsequent strains according to the independent factors. Subsidence is usually expressed graphically, or through profile or influence functions. The profile and influence functions are merely mathematical representations of the observed subsidence. Empirical prediction methods differ according to the availability and interpretation of the data. The standard for empirical prediction modeling had in the past been the method developed by the National Coal Board (NCB) of Great Britain.

Dahl, *supra* note 29, at 1.11. "Mechanistic models use mathematical idealizations based on rock mechanics principles to define the deformation of the rock mass. Models differ according to the mechanical behavior desired. Past mechanistic models have treated the subsurface rock mass as elastic, viscoelastic, elastic-plastic and elastic-elastoplastic mediums [citation omitted]." *Id.* at 1.12. Some experts feel that relying on field measurements to develop subsidence prediction methods is a more accurate and practical course than relying on highly theoretical methods. Unrug Interview, *supra* note 26.

[31] *Cf.* Dahl, *supra* note 29, at 1.02.

[32] *Cf. id.*

widened and very narrow pillars were left in place.[33] Later, miners began using a safer and more efficient, two step extraction process. First, room and pillar mining, leaving sizable pillars, is used as the mine workings advance underground. Next, secondary extraction (also known as pillaring) takes place and the pillars are either partially or completely removed.[34]

Another type of high extraction mining is longwall mining.[35] Although this mining technique has most commonly been used in Europe, its use has gained recent acceptance in the United States. Longwall mining uses room and pillar methods to develop long parallel "entries" on both sides of a solid coal block or "panel". Special longwall mining equipment, which temporarily supports the mine roof with hydraulic jacks, is used to remove the coal in the panel completely. As the hydraulic jacks advance with the cutting equipment, the mine roof is allowed to collapse in the void created behind the support jacks.[36]

The timing of the resulting subsidence differs according to the mining method used. Where longwall mining methods are used, subsidence follows shortly after extraction.[37] Where partial mining is used and pillars are left for support, subsidence is less predictable and may not occur for several decades.[38]

C. *Factors Influencing Subsidence*

Subsidence is influenced by a variety of geologic, natural, and man-induced factors. Subsidence prediction for any type of mine is extremely complex due to the large number of variables involved. Nevertheless, reasonably accurate models have been developed to predict subsidence from longwall mines. For partial

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[33] *Cf. id.* at 1.04.

[34] *Id.* at 1.02.

[35] Unrug Interview, *supra* note 26.

[36] Entry panel development includes the driving or mining of parallel tunnels around the perimeter of a large, rectangular block or longwall "panel" of coal. A typical panel may measure 500 feet wide by one-half mile long or larger. The longwall panel is mined by plows or shearers resulting in 100 percent panel extraction.

S. PENG & H. S. CHIANG, LONGWALL MINING ch. 1,7, & 8 (1984); *see also* Dahl, *supra* note 29, at 1.02 - 1.03.

[37] Unrug Interview, *supra* note 26.

[38] Dahl, *supra* note 29, at 1.04; Unrug Interview, *supra* note 26.

extraction room and pillar mines, subsidence prediction is so difficult that virtually any model has only limited usage.

Based upon some known facts and generally accepted theories of subsidence caused by underground mining, the following factors have been documented as affecting the extent and magnitude of surface subsidence.

1. Method of Mining and Extraction Ratio

The specific method of mining used is important in subsidence prediction. Even more important is the extraction ratio used with the mining method.[39] High extraction (longwall and pillar removal) methods give rise to different subsidence concerns than do partial extraction methods.[40]

2. Seam Thickness

The magnitude of surface subsidence is almost always less than the thickness of the coal seam removed.[41] In general, the "total extraction" methods of coal removal can result in subsidence effects ranging up to 70 percent of the thickness of the coal seam removed.[42] Partial extraction methods yield less predictable subsidence effects.[43]

3. Width and Length of Extraction Area

Subsidence is affected by the width and length of the area of extraction. To cause the maximum subsidence, extraction

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[39] "The maximum subsidence that occurs after panel mining strongly depends on the percentage of extraction: the larger is the percentage, the higher is the maximum subsidence." Unrug Interview, *supra* note 26.

[40] If the ratio of coal removed to coal left in place is low and the depth of cover is great, the subsidence effect at the surface may be negligible. On the other hand if these factors are reversed, i.e., the ratio is high and the depth of cover is minimal, the surface subsidence can be significant. Cummins and Given, *supra* note 24, at ch. 13; PENG AND CHIANG, *supra* note 36, at ch. 12; S. PENG, COAL MINE GROUND CONTROL ch. 9 (1978); *see also* Dahl, *supra* note 29, at 1.02.

[41] Where multiple panels are mined using longwall mining, the extraction of an adjacent panel may contribute up to 23% of the final subsidence. Unrug Interview, *supra* note 26.

[42] Dahl, *supra* note 29, at 1.03, 1.06.

[43] Unrug Interview, *supra* note 26.

width must exceed a "critical value."[44] If the extraction area exceeds the critical width, the larger the surface area that will be subject to maximum subsidence.[45]

4. Depth of Seam

Opinions differ about the effect of the depth of the coal seam.[46] It is generally accepted that the further beneath the surface the seam lies, the less subsidence will affect the surface.[47] Also, the depth of the seam may affect the type of subsidence (i.e., sinkhole vs. trough).[48]

5. Geologic Faults

The existence of geologic faults in the rock strata can have a sizeable impact on resulting subsidence. The rock mass found in the overburden will move at an accelerated rate along a geologic fault or discontinuity.

6. Nature of Overlying and Underlying Strata

The strength and characteristics of the overlying and underlying strata will affect the way they respond to the stresses

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[44] Maximum subsidence will be reached at the center of the width of the opening. As the opening width increases, so does the maximum subsidence, until the opening reaches or exceeds "critical" width. At critical width, maximum possible subsidence is reached at the center of the opening. When the width of the opening exceeds critical width, a greater area at the center of the opening is affected by maximum possible subsidence. *See id.*; Dahl, *supra* note 29, at 1.06. Critical widths range from 1.0 to 1.4 times the depth of the overburden. Dahl, *supra* note 29, at 1.06 (citing G. J. HASENFUS, THE PREDICTION OF SURFACE SUBSIDENCE DUE TO ROOM AND PILLAR MINING IN THE APPALACHIAN COALFIELD (1984) (MS Theses, VPI and SU. 327)).

[45] When width exceeds the critical value, and the subsidence profile flattens in the center due to a greater area experiencing maximum subsidence, the subsidence profile is said to be supercritical. Conversely, when the width is less than the critical value, the subsidence profile is said to be subcritical. Dahl, *supra* note 29, at 1.06.

[46] *See* Unrug Interview, *supra* note 26. "For full extraction, [the subsidence factor] was found to be independent of depth. But there is a trend in the Eastern coalfields in that the subsidence factor increases with seam depth whereas the opposite is true for room-and-pillar mining without pillar extraction." *Id. But see supra* note 40.

[47] *See supra* note 40; *see also* Unrug Interview, *supra* note 26.

[48] Trough subsidence is most commonly associated with deep, high extraction mining methods. Dahl, *supra* note 29, at 1.04-1.05. Sinkholes are more typically associated with shallow room and pillar mines. *Id.* at 1.03. See discussion *infra* notes 61-69 and accompanying text.

created by mine voids. Subsidence may be delayed or reduced where the coal seams are surrounded by layers of hard rock because of the rock's self-supporting action.[49] On the other hand, soft material such as clay in the roof and floor rock may accelerate subsidence.

7. Old Workings Above the Seam and Multiple Seam Mining

Subsidence may be greater than normal where the strata above the mine has been disturbed by previous seam workings. Although the majority of subsidence in the United States is attributable to single seam mining, multiple seam mining is becoming more common and will require additional research to enable a meaningful prediction of subsidence effects.[50]

8. Dip of Seam or Seam Inclination

When the coal seam inclines or dips, rather than forming a horizontal strata, the surface subsidence may be asymmetrical. The total surface area affected in such cases will be greater on the dipping side of the seam than on the rising side.[51]

9. Pillar Geometry and Artificial Support

Understandably, the coal left in place (pillars), or any artificial means of support, will affect the amount and type of subsidence. Both the dimensions of pillars and the pattern in which the pillars are left affect subsidence.[52] Similarly, artificial supports left in place or added after mining may delay or reduce subsidence at some mines.[53]

10. Time Effects

Subsidence occurs over varying periods of time.[54] Subsidence

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[49] Unrug Interview, *supra* note 26. "The differences in subsidence characteristics found so far in New Mexico, Illinois, and the Northern Appalachian Coalfield . . . have all been attributed to difference in geology." *Id.*

[50] *Cf.* Dahl, *supra* note 29, at 1.11, 1.12-1.13.

[51] Unrug Interview, *supra* note 26; Dahl, *supra* note 29, at 1.05.

[52] *See* Dahl, *supra* note 29, at 1.07; Unrug Interview, *supra* note 26.

[53] Dahl, *supra* note 29, at 1.08.

[54] Unrug Interview, *supra* note 26. The time that passes before a pillar will fail spans from a few minutes to hundreds of years.

over abandoned partial extraction mines has occurred as early as a decade, and as late as a century, after mining.[55] The rate of deterioration of rock strata and pillars affects the timing of subsidence.[56] However, where total extraction mining is used, subsidence is essentially contemporaneous with mining.[57]

11. Rate of Advance of Mine Face

The mine face is the part of the coal seam currently being mined.[58] When the face of a longwall mine advances at an even pace, the rate of subsidence varies the least. However, a halting or slowing of the face advance can result in large differential subsidence.[59] The overall rate of advance of the face will also affect the type of subsidence impacts that will occur.[60]

12. Hydrologic Effects

Hydrologic conditions can have the effect of either helping to stabilize a mine or to accelerate pillar deterioration. Fluctuations in the water table and large amounts of precipitation appear to be factors in some types of subsidence.

D. Types of Subsidence

Although many factors affect the extent and magnitude of subsidence, subsidence manifestations on the surface are commonly broadly categorized as either sinkholes or troughs.[61] Which

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[55] Dahl, *supra* note 29, at 1.04.

[56] Dahl, *supra* note 29, at 1.04-1.05. "The pillar deteriorates with time due either to weathering or creep, or both. Weathering includes the consistent penetration of air moisture into rock. . . . Creep refers to the continuous incremental deformation of the pillar under constant load." Unrug Interview, *supra* note 26.

[57] Dahl, *supra* note 29, at 1.03, 1.05; Unrug Interview, *supra* note 26.

[58] This term is defined by Dr. K. Unrug as follows:

1. Strictly, any surface exposed by excavation for development or for the getting of the mineral.

2. More generally, the supported area in the vicinity of the place at which mineral is worked.

Unrug Interview, *supra* note 26.

[59] " 'Subsidence,' the vertical drop in a profile, is the most striking feature [of ground damage] . . . But uniform drop between points will not cause any ground or structural damage. It is the differential slope between two points that causes structural damage." Unrug Interview, *supra* note 26.

[60] *Id.*

[61] Dahl, *supra* note 29, at 1.03-1.04. Some experts prefer to categorize subsidence

mode of subsidence will occur is closely related to the mining method used and seam depth, although seam thickness, overburden composition and other factors will also play important roles indictating the type of subsidence.[62]

Sinkholes (also known as "pits" or "caves") are discrete, often dramatic depressions in the ground surface.[63] The diameter of the hole often increases with the depth of the depression, so that the entire depression often resembles an open bottle or an hourglass with the apex at surface level.[64] Over time the soil around a sinkhole may erode, increasing the diameter of the surface opening.

Sinkholes most frequently occur in conjunction with shallow room and pillar mining.[65] However, in areas where the soil is very thick and there is little supportive rock strata, sinkholes have developed from mining that is 150 feet or more beneath the surface. The sinkhole occurs when the overburden collapses into an open space in the mine, such as an entry or a room between pillars, and the collapse travels upward until the shift in the overburden reaches the surface.[66]

A trough (also known as a "sag," "swale," or "let-down") is a more gentle, sloping dish-shaped depression that often covers a large surface area.[67] The trough is usually a shallow, broad, elliptical depression which develops when the overburden drops downward into a mine void in response to roof collapse, the crushing of mine pillars, or the punching of pillars into the mine floor.

Typically, trough subsidence occurs in connection with deep mines using either high or total extraction mining methods.[68] As a result, trough subsidence is most commonly associated with longwall mining practices,[69] but it also occurs in connection with room and pillar mining, particularly where pillar removal mining methods are used.

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related ground damage as discontinuous and continuous. *See* Unrug Interview, *supra* note 26.

[62] Dahl, *supra* note 29, at 1.03-1.04.

[63] Unrug Interview, *supra* note 26.

[64] *See* Dahl, *supra* note 29, at 1.03.

[65] *See supra* note 48.

[66] Dahl, *supra* note 29, at 1.03.

[67] *Id.* at 1.04.

[68] *Id.*

[69] *Id.* at 1.05.

E. Surface, Structural and Economic Effects

Each type of subsidence creates several different surface effects, including vertical subsidence, tilt (differential subsidence), curvature (differential tilt), horizontal displacement, and strain (differential horizontal displacement).[70] These individual elements of ground movement have different surface effects and varying degrees of importance. For example, vertical subsidence may be particularly important in low-lying areas susceptible to flooding and drainage problems. Tilt may damage drainage systems and create problems with structures such as highways, canals, railroad tracks, and buildings. Differential horizontal movement generally damages conventional buildings and structures by compression and extension of the structures.

Ground subsidence can also have adverse effects on the natural environment, including the destruction of wildlife and natural habitats and the alteration of drainage patterns. These adverse effects of subsidence have been widely documented, in terms of both environmental and economic effects.[71]

Because subsidence from partial extraction mining is time dependent, subsidence from long since abandoned mines may only be beginning. A U.S. Bureau of Mines (BOM) estimate indicates that over 8 million acres have been undermined in the United States by all types of metal and non-metal mining and that underground coal mining will eventually take place under some 40 million acres of land.[72] To date, subsidence is estimated to have affected over 2 million acres with over 99% of the damage attributed to underground coal mining.[73]

Areas which were undeveloped or used for agricultural pur-

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[70] Unrug Interview, *supra* note 26.

[71] NATIONAL COAL BOARD, MINING PRODUCTION DEPARTMENT, SUBSIDENCE ENGINEERS HANDBOOK (1975); *GAI Consultants, Study and Analysis of Surface Subsidence Over The Mined Pittsburgh Coal Bed Prepared For U.S. Dept. Of The Interior*, (Bureau of Mines, U.S. Bureau of Mines Open File Report 25-78); *HRB-Singer, The Nature and Distribution of Subsidence Problems Affecting Hud and Urban Areas, Task A*, (prepared for U.S. Dept. of Housing and Urban Development) (1977); *Comptroller General of the U. S., Alternatives To Protect Property Owners From Damage Caused By Mine Subsidence* (1979) (U.S. G.A.O.).

[72] U.S. Bureau of Mines, 1979, *cited in* Comptroller General of the United States, 1979, *Alternatives To Protect Property Owners From Damage Caused By Mine Subisdence*, (available at U.S. General Accounting Office, Washington, D.C.).

[73] *Id.*

poses at the time of mining may now have become urbanized and populated.[74] In fact, almost 400,000 acres of urban development already lie over abandoned mines which are subject to subsidence.[75] Nationwide subsidence damage to structures alone is projected to be approximately $30 million per year.[76] Subsidence due to past and projected future mining may ultimately affect property with a value in excess of 133 billion dollars.[77]

F. Subsidence Control and Impact Mitigation

Unless underground resources are not mined, some degree of surface subsidence is often inevitable. For the most part, even the most well designed subsidence control and abatement measures do not completely eliminate the potential for future subsidence. On the other hand, all deformations of the ground surface do not necessarily cause appreciable damage to structures or other surface features.

The methods of controlling subsidence or mitigating subsidence impacts are as varied as the range of potential impacts themselves. The most common and widespread method of minimizing potential subsidence resulting from room and pillar mining has been to leave mine roof support pillars. In the past, pillars were designed primarily for the safety of the miner rather than for surface support. More recent emphasis on controlling surface subsidence impacts as well as on providing increased miner safety has added to the interest in the ability of pillars to provide long term surface support. Factors such as the geology, the characteristics of the coal seam, overburden, and floor rock, the extraction ratio, and the configuration of the pillars can be important influences on the capability of the pillars to prevent or minimize subsidence.

Because of the large number of factors involved, it is difficult if not impossible to accurately predict what subsidence will result

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[74] Unrug Interview, *supra* note 26.

[75] In the Hill subdivision of Scranton, Pennsylvania, 2000 homes, 50 commercial and office buildings, two hospitals and several schools may be damaged by subsidence. The estimated cost of preventing subsidence using hydraulic mine backfill is in excess of $8 million. Unrug Interview, *supra* note 26, (referencing U.S. Bureau of Mines Written Communication (February 5 and April 10, 1973)).

[76] HRB-Singer, *supra* note 71.

[77] *Id.*

from a particular room and pillar mining operation. As a result, consideration may also be given to other measures designed to control subsidence and to minimize surface damage. Such measures may include: (1) preventive measures incorporated into new and existing structures or other surface features to increase their resistance to subsidence stresses and strains; (2) mine design incorporating special underground layouts or other features included in the design of the underground workings; (3) backstowing or flushing of the mine workings to minimize void spaces underground; (4) leaving coal in place under sensitive structures or surface features; (5) construction of artificial pillars underground; or (6) any combination of the above.

Even when incorporated in the mine design, however, the long term effectiveness of the subsidence control measures for traditional room and pillar mines remains in doubt. The alternative is either to correct any surface damage once it does occur or to use full extraction mining methods with concurrent mine roof collapse. With full extraction mining, subsidence occurs shortly after mining, and surface development can take place sooner with less fear of future subsidence damage.

Full extraction mining methods that use "planned subsidence" are not without their difficulties. Except for some limited successes, such as those of the National Coal Board in England, the variations in geologic and mining conditions have inhibited the development of a meaningful subsidence control formula. In the United States, predictive methodologies have not been demonstrated to be uniformly effective in all areas. Further, the psychological impacts to surface owners and occupants, as well as the physical impacts to existing surface features, can be difficult to resolve. In the end, the differences between geologic regions and between full extraction and room and pillar mining methods make subsidence control and regulation a massive and complex undertaking for both industry and the regulating agencies.

II. HISTORICAL VIEW OF REGULATORY MEASURES TO CONTROL SUBSIDENCE

A. Early European Approach

One of the most troublesome aspects of subsidence is that

abandoned mines give rise to a type of "orphan" liability for subsidence damages. Since subsidence may not occur until many years after mining, the injured landowners often were not parties to the original mining agreement and have no reasonable means of obtaining compensation for their injuries. This subsidence liability issue in the United States is historically based on European legal approaches to surface and mineral rights.

The early European approach towards subsidence was an outgrowth of legal regimes that encouraged mineral development either for the benefit of the state or for the private property owner. Based on these objectives, European countries developed three major systems of mineral ownership.

Established in 1783, the Spanish version of the regalian system vested ownership of the mineral estate in the sovereign. The surface owner had no voice in the decision to develop the estate and derived no compensation from the mine. However, private rights were recognized in discoveries of minerals.[78]

The French system, established by the Napoleonic Code of 1810, recognized ownership of the minerals in the surface titleholder, but gave the sovereign the right to develop them by granting a concession to a third party. The minerals did not constitute an independent estate that could be separated from the surface, and the concession to develop the minerals was generally for a set number of years.[79] The surface owner was entitled to compensation and a preferential right to obtain the concession.[80]

In Great Britain, the owner of the fee property acquired all the rights to the subsurface estate unless they were reserved in a previous conveyance.[81] Development of the minerals was the fee owner's prerogative. However, the owner could convey the mineral in place and thereby separate the mineral and surface estates, thus transferring the development decision to another party.

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[78] 1 C.H. LINDLEY, AMERICAN LAW RELATING TO MINES AND MINERAL LANDS 5-7, 20-29 (3rd ed. 1914).

[79] *Id.* at 22-27.

[80] J. Zwartendyk, Economic Aspects of Surface Subsidence Resulting from Underground Mineral Exploitation (1971) (Ph.D. Thesis, Pennsylvania State University) (Open File Report 7-71, Bureau of Mines).

[81] LINDLEY, *supra* note 78.

Under each of the three legal systems, the owner of the surface estate was generally entitled to physical support of the surface by and from the subjacent estate. While there were some earlier cases dealing with subsidence,[82] the leading legal opinion creating a right to subjacent support in England was the 1850 case of *Humphries v. Brogan*.[83]

B. Rule of Subjacent and Lateral Support

As in other areas of the common law, the United States, with the exception of Louisiana,[84] followed the English common law rules of subjacent and lateral support. Generally stated, this rule provided that when the mineral estate was severed from the surface estate, the owner of the surface estate had a right to subjacent and lateral support of the surface. The owner of the mineral estate was entitled to remove only as much of the mineral as he could without injury to the surface, unless otherwise authorized by contract.[85]

The Pennsylvania Supreme Court applied this rule to a typical subsidence case in *Noonan v. Pardee*.[86] In *Noonan*, the defendant coal company mined coal beneath the plaintiff's dwelling, causing subsidence damage. In ruling for the plaintiff, the court stated the prevailing rule as follows:

> Where there has been a horizontal division of the land, the owner of the subjacent estate, coal or other mineral, owes to the superincumbent owner a right of support. This is an absolute right arising out of the ownership of the surface. Good or bad mining in no way affects the responsibility. What the surface owner has a right to demand is sufficient support, even, if to that end, it be necessary to leave every pound of coal untouched under his land.[87]

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[82] Harris v. Ryding, 151 Eng. Rep. 27 (1839) cited in Comment, *Island Creek v. Rodgers and Mine Subsidence Liability*, 1 J. MIN. L. & POL'Y 127, 128 (1985).

[83] 116 Eng. Rep. 1048 (1850).

[84] Louisiana largely operates under the French legal system established by the Napoleonic Code. *See supra* note 78 and accompanying text.

[85] Beck & Sigwerth, *Illinois Coal Mine Subsidence Law*, 29 DE PAUL L. REV. 383 (1980); 54 AM. JUR. 2D *Mines and Minerals* § 33 (1971).

[86] 50 A. 255 (Pa. 1901).

[87] *Id.* at 256.

Most jurisdictions are in accord with this position, although there is some variation with respect to the question of whether the mine operator will be found liable without proof of negligence.[88] After some equivocation as to the effect of waivers, state courts now agree that the right to support may be waived by the owner of the surface estate. Such a waiver, however, must be clearly expressed. A mere reservation of the right to do those things necessary or convenient to remove the minerals will not be sufficient.[89]

It was not equally clear that buildings or structures on the surface are also entitled to support. At first, liability for subsidence only applied to land in its "natural state."[90] The term "natural state" originally did not include buildings or improvements, but eventually the "natural state" doctrine came to include buildings "in existence or in contemplation at the time the estates were severed."[91] Because this theory still did not allow recovery for damage to structures which were not contemplated at the time of severance, the courts were often asked to apply other theories of liability such as negligence to allow recovery by adversely affected surface owners.[92]

C. Early Legislation

Around the mid-nineteenth century, the principles governing the law of surface support under the various legal regimes began to be modified by legislation. The need for further refinement of the law was necessitated by the expansion of industrial development and by the difficulty of enforcing a remedy for the loss of subjacent support against mineral developers who were no longer available when damage occurred. As urban areas

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[88] *See, e.g.*, Woodward Iron Co. v. Mumpower, 28 So.2d 625 (Ala. 1947); Paris Purity Coal Co. v. Pendergras, 104 S.W.2d 455 (Ark. 1937); Colorado Fuel and Iron Corp. v. Salardino, 245 P.2d 461 (Colo. 1952), *rev'd*, 575 P.2d 418 (Colo. 1978); West Kentucky Coal Co. v. Dilback, 294 S.W. 478 (Ky. 1927); Lloyd v. Catlin Coal Co., 71 N.E. 335 (Ill. 1904).

[89] *Compare* Mason v. Peabody Coal Co., 51 N.E 2d 285 (Ill. App. Ct. 1943) (upholding a waiver) *with* Dignan v. Altoona Coal and Coke Co., 71 A. 845 (Pa. 1909) (where a waiver was not upheld).

[90] *See* Comment, *Island Creek v. Rodgers and Mine Subsidence Liability*, 1 J. MIN. L. & POL'Y 127, 128-129 (1985).

[91] *Id.*

[92] *Id.*

developed near mines and as railroads were built to connect mines with factories and shipping points, complex problems arose with regard to surface support. These problems were better dealt with by legislatures than by leaving the duty of determining the rights of the parties after development occurred to courts. Statutory law reordering existing legal relationships manifested the government's desire to protect, if not promote, certain interests at the expense of others.

In the nineteenth century, the English Parliament instituted several acts[93] which gave public works the right to establish buffer zones if they paid compensation to the mine owner for the coal lost to development.[94] At about the same time, French law began requiring notice to surface owners 30 days in advance of opening a mine within 50 meters of a building. The surface owner then had the right to demand security for possible damage and could even force the concessionaire to buy the surface if the surface owner was prevented from using the land for more than a year or if the land was rendered unsuitable for future use.[95]

During the same period, the law in the United States placed greater emphasis on the development of the mineral estate. Arkansas seems to have been the first state to pass a law directly regulating subsidence. Enacted in 1907, the Arkansas law forbade mining underneath a cemetery.[96] Over the next few years, several other states enacted laws requiring mine owners to give some form of security to the surface owner to cover subsidence damage.[97]

Pennsylvania was faced with more extensive problems than most states, especially in the area around Wilkes-Barre and Scranton. The Pennsylvania legislature responded to these problems in 1913 with the David Mine Cave Law.[98] The law applied to anthracite mines and required surface support for highways and streets. It also gave municipalities some limited power to regulate subsidence. In 1921, the law was expanded in the Kohler

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[93] *See, e.g.*, The Railway Clauses Consolidation Act of 1845, referenced in N. Smedley, *Subsidence Management in the North Derbyshire Area*, 136 THE MINING ENGINEER 185, 186 (1977).

[94] Smedley, *supra* note 93.

[95] Zwartendyk, *supra* note 80.

[96] *Id.*

[97] LINDLEY, *supra* note 78.

[98] Zwartendyk, *supra* note 80.

Act to protect other public facilities, businesses and homes by requiring mine operators to "prevent" damage to such structures caused by mine subsidence.[99]

Questions concerning the application of the Kohler Act reached the United States Supreme Court on the issues of the police power and the taking clauses of the Fifth and Fourteenth Amendments. In *Pennsylvania Coal Co. v. Mahon*,[100] the Supreme Court declared the Kohler Act unconstitutional. In its decision, the Court echoed the prevailing view of the period—that the ownership of coal includes the right to mine it with profit.[101] While never directly overruled by the Court, the efficacy of the *Mahon* decision has been limited by later Court rulings upholding state and federal authority to enact a wide variety of legislation governing protection of the environment, safety, and public welfare.[102]

D. The Keystone Case

More recently, Pennsylvania established a comprehensive

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[99] *Id.* Pennsylvania common law prior to the Kohler Act recognized the right to subjacent support as a property right. Sometimes referred to as a "third estate," the right to support could accordingly be transferred with the mineral estate. The Kohler Act statutorily revised the relationship between the parties in regard to this "third estate." *Id.*

[100] 260 U.S. 393 (1922).

[101] In declaring the Kohler Act unconstitutional, the *Mahon* Court reasoned that:

> For practical purposes, the right to coal consists of the right to mine it. . . . What makes the right to mine coal valuable is that it can be exercised with profit. To make it commercially impracticable to mine certain coal has very nearly the same effect for constitutional purposes as appropriating or destroying it. Thus, we think that we are warranted in assuming that the statute does.
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> The protection of private property in the 5th Amendment presupposes that it is wanted for public use, but provides that it shall not be taken for such use without compensation. A similar assumption is made in the decisions upon the 14th Amendment. When this seemingly absolute protection is found to be qualified by the police power, the natural tendency of human nature is to extend the qualification more and more until at last private property disappears. But that cannot be accomplished under the Constitution of the United States.

Id. at 414-15.

[102] The constitutionality of SMCRA was challenged on grounds similar to those in *Mahon* and upheld in *Hodel v. Virginia Surface Mining Reclamation Association*. 452 U.S. 264 (1981). For a discussion of the Court's evolving position on the "taking" issue, see Pfeiffer, *Kentucky's New Broad Form Deed Law - Is it Constitutional?*, 1 J. MIN. L. & POL'Y 57, 72-80 (1985).

scheme for regulating subsidence attributable to bituminous coal mines. The Bituminous Mine Subsidence and Land Conservation Act of 1966[103] requires notice to purchasers of surface lands from which the coal has been severed that they may not be obtaining rights to protection from subsidence; expands the areas in which the mine operator is required to protect the surface to include public buildings and public facilities such as churches, dwellings and cemeteries, if they were in existence on the date of enactment; and, provides an opportunity for surface owners who had previously waived the common law right of support to purchase support coal.[104]

After the state modified its regulations under the Bituminous Mine Subsidence and Land Conservation Act to gain regulatory program approval from OSM,[105] five coal companies and an industry association in the state challenged the 1966 Act on four grounds: 1) that the statutory and regulatory requirements of leaving coal in place to support surface structures where the operator owns the surface support right amounted to a taking of property in violation of the Fifth Amendment to the Constitution, as made applicable to states through the Fourteenth Amendment, and *Pennsylvania Coal Co. v. Mahon*; 2) that the statutory requirement to pay compensation for damage to certain structures was a violation of the Contract Clause of Art. I, Sec. 10. and the Fifth Amendment taking provision; 3) that the regulatory requirement to restore any damage to surface lands to the extent technically feasible was a violation of the Contract Clause; and 4) that the statutory provision conferring the right on surface owners to purchase support coal is an unconstitutional delegation of the power of eminent domain.[106]

In *Keystone Bituminous Coal Association v. DeBenedictus*, the District Court responded to this industry challenge by granting the defendant state official's motion for summary judgement.[107] While holding that the plaintiffs had proven that the statute and regulations had substantially impaired the parties'

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[103] PA. CONS. STAT. ANN. tit. 52, § 1406.1 (Purdon 1966).

[104] PA. CONS. STAT. ANN. tit. 52, § 1406.5 (Purdon 1966).

[105] *See infra* note 163.

[106] Keystone Bituminous Coal Ass'n. v. DeBenedictus, 581 F.Supp. 511 (W. D. Pa. 1984). It should be noted that the industry has seemingly tried to avoid raising any issues concerning SMCRA. *See infra* note 112 and accompanying text.

[107] *DeBenedictus*, 581 F.Supp. at 515.

contracts where they owned the right to surface support, the court nevertheless found that there was a significant public purpose in such restrictions and that the restrictions were reasonably related to the public purpose served. Thus, "the incidental adjustment of the private contractual relationships . . . do not render the legislation unconstitutional under the Contract Clause."[108]

The District Court distinguished the holding in *Mahon* on the ground that the 1966 Act was aimed at protecting broad public interests in the integrity of surface structures and features, whereas the Kohler Act was aimed at protecting private parties' interests.[109] The District Court went on to hold that the 1966 Act and regulations were a legitimate exercise of the state's police power and did not go so far as to amount to a taking since all of the operator's property rights were not destroyed by the restrictions.[110] Nor did the court find that the restrictions amounted to a taking of property for a private purpose since the state had found a public purpose in granting to certain surface owners the right to purchase support coal.[111]

The plaintiffs sought review of the District Court decision on all four issues after the court certified certain issues and stayed further proceedings.[112] The Court of Appeals affirmed the decision of the District Court on all issues. In addition, it held that the support estate is just one strand in the bundle of rights the operator may own, since it cannot be used independently either by the surface or subsurface owner.[113] Destruction, or a limitation on the use, of one strand in a bundle of property rights, the Court of Appeals reasoned, does not amount to a taking.[114] With respect to the Contract Clause issues, the Court of Appeals deferred to the state legislature's judgement that the law was a reasonable measure with a legitimate public purpose.[115]

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[108] *Id.*

[109] *Id.* at 516-17.

[110] *Id.* at 518.

[111] *Id.* at 519-20.

[112] Keystone Bituminous Coal Ass'n v. Duncan, 771 F.2d 707, 710 (3d Cir. 1985), *cert. granted*, 54 U.S.L.W. 3623 (U.S. March 24, 1986) (No. 85-1092).

[113] *Id.* at 715-16.

[114] *Id.* at 716 (citing Andrus v. Allard, 444 U.S. 51 (1979) and Penn Central Transportation Co. v. New York City, 438 U.S. 104 (1978)).

[115] *Id.* at 716.

The Supreme Court has granted review of the certiorari petition filed by the Association and other industry representatives.[116] The petitioners contend that the Court of Appeals has, in effect, disregarded the Supreme Court's decision in *Pennsylvania Coal Co. v. Mahon* - a case on all fours with the *Keystone* decision.[117] They also contend that in previous decisions dealing with takings, the focus has been on the effect of the governmental action on the property owners' interests, but that the lower courts' decisions incorrectly balanced the property owner's interests against the governmental interests involved.[118] In addition to disagreeing with the Court of Appeals on other taking issues, the petitioners contend that the appeals court used an incorrect Contract Clause test.[119] In their view, in order to survive a Contract Clause challenge, a statute which substantially impairs contract rights must be both reasonable and necessary to the legislative ends sought to be achieved.[120] The state must not only show that events unforeseen at the time the contract was entered into have arisen - a test difficult to meet in this case in light of the earlier *Mahon* decision - but also that the legislation is necessary and that the result sought by the state could not be achieved in another way less injurious to their property rights.[121] The Supreme Court heard the *Keystone* case during the October, 1986, term. As of November, 1986, a decision had yet to be handed down.

III. THE LEGISLATIVE HISTORY OF SMCRA

A. The Statutory Framework

SMCRA evolved at a time when coal production appeared to have a lucrative future in the United States. The emphasis on the development of coal as a national energy resource was reflected in President Carter's April 18, 1977 Address to the Na-

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[116] Keystone Bituminous Coal Ass'n v. Duncan, 771 F.2d 707 (3rd Cir. 1985), *cert. granted*, 54 U.S.L.W. 3623 (U.S. March 24, 1986) (No. 85-1092).

[117] Petition for a Writ of Certiorari at 10-15, Keystone Bituminous Coal Ass'n v. Duncan, 771 F.2d 707 (3rd Cir. 1985), *cert. granted*, 54 U.S.L.W. 3623 (U.S. March 24, 1986) (No. 85-1092).

[118] Petition for a Writ of Certiorari at 10-15.

[119] *Id.* at 19-21.

[120] *Id.*

[121] *Id.*

tion, in which he called for a two-thirds increase in coal production by 1985.[122] President Carter felt that greater emphasis should be placed on the utilization of domestic coal resources and, particularly, on the development of underground coal mining.

The desire of Congress and President Carter to provide a regulatory framework that would accommodate the expansion of the underground coal mining industry is emphasized in the Act's findings. Section 101(b) provides that: "[T]he overwhelming percentage of the Nation's coal reserves can only be extracted by underground mining methods, and it is , therefore, essential to the national interest to insure the existence of an expanding and economically healthy underground coal mining industry."[123] The Act also provides that one of its purposes is to: "[e]ncourage the full utilization of coal resources through the development and application of underground extraction technologies."[124]

Given the Act's title, SMCRA would seem to be aimed primarily at regulation of surface and not underground coal mining. Nevertheless, there can be no reasonable dispute that the Act's provisions do apply to certain aspects of underground mining. This conclusion follows necessarily from paragraph (A) of Section 701(28) which defines a surface coal mining operation to include the "surface impacts incident to an underground coal mine."[125]

A review of SMCRA's legislative history reveals the degree of regulation Congress intended to extend to underground mining. Specifically, three major alternatives were considered prior to final enactment of SMCRA: (1) to regulate only surface mining, (2) to regulate surface and underground mining, or (3) to regulate surface mining and only the surface operations and surface impacts of underground mining.[126]

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[122] SENATE COMM. ON ENERGY AND NATURAL RESOURCES, 95th CONG., 1ST SESS. THE PRESIDENT'S ENERGY PROGRAM 4 (Comm. Print 1977).

[123] SMCRA § 101(b), 30 U.S.C. § 1201(b) (1982).

[124] SMCRA § 101(k), 30 U.S.C. § 1201(k) (1982).

[125] SMCRA § 701(28), 30 U.S.C. § 1291(28) (1982).

[126] Early legislative proposals would have banned any new surface coal mines or the expansion of existing ones. *See* S. 1498, 92nd Cong., 1st Sess. (1972); *see also* Dunlap, *An Analysis of the Legislative History of the SMCRA of 1975*, 21 ROCKY MTN. MIN. L. INST. 11 (1975).

B. The 93rd Congress

The first bills Congress considered reflected the three alternatives. H.R. 3 and H.R. 5651 dealt only with surface coal mining, while H.R. 1000 and H.R. 11500 were directed toward both surface and underground coal mining.[127] In the debate before Congress, the coal mining industry [hereinafter Industry] argued that underground mines should be completely excluded from regulation.[128]

The Nixon administration, on the other hand, argued for regulation of subsidence and severely criticized bills that failed to "confront the growing environmental threats caused by acid seepage, which threatens underground water, by unintentional subsidence, and by the growing inventory of mine fires."[129]

Industry backed the original version of S. 425, which did not regulate subsidence effects and contained only one subsection on performance standards for underground mining.[130] The other leading bill under consideration, H.R. 11500, separated performance standards for the surface effects of underground mining from surface mining performance standards.[131] H.R.

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[127] H.R. 11500, for example, defined "mining operation" to mean, among other things, "*activities conducted on the surface or underground* for the exploration for, development of, or extraction of minerals, organic or inorganic, from their natural occurrences. . . ." H.R. 11500, 93rd Cong., 2d Sess. § 101(b) (1974) (emphasis added).

[128] Industry representatives felt that the regulation of underground mines should be left exclusively to MESA (now MSHA). *See Surface Mining Control and Reclamation Act of 1977: Hearings on H.R. 2 Before the Subcomm. on Energy and the Environment of the House Comm. on Interior and Insular Affairs*, 95th Cong., 1st Sess. 105 (1977) (statement of Mr. R. E. Samples, Consolidation Coal Co.); *Surface Mining Control and Reclamation Act of 1977: Hearings on S. 7 Before the Senate Subcomm. on Public Lands and Resources of the Committee on Energy and Natural Resources*, 95th Cong., 1st Sess. 369 (1977) (statement of Mr. Stephen Young, Consolidation Coal Co.).

[129] *Regulation of Surface Mining, 1973: Hearings on S. 425 Before the Senate Comm. on Interior and Insular Affairs*, 93rd Cong., 1st Sess. 193 (1973) (statement of Mr. John C. Whitaker, Undersecretary of the Interior).

[130] *See* S. 425, § 213(b)(8) in S. REP. No. 402, 93rd Cong., 1st Sess. 15 (1973) (The term "surface mining operations" was defined in § 501(5)(A) of the bill to include only surface operations incident to an underground coal mine and not impacts incident to an underground mine.).

[131] *See* H.R. 11500, §§ 211 & 212, in H.R. REP. No. 402, 93rd Cong., 2d Sess. 15-20 (1974). The definition of "surface mining operations" in § 705(4)(A) included both "surface operations and *impacts incident to an underground coal mine*. . . ." (emphasis added). Addition of the two words "and impacts" provides the basis for the argument that the Act covers not just the preventive but the remedial measures for subsidence. Furthermore, an earlier version of H.R. 11500, in addition to requiring adequate permanent support for the surface, would have required new underground mines to backfill

11500's subsidence provisions required adequate permanent support for the surface, but contained an exception for subsidence which could occur in a predictable and controlled manner.[132]

Those who felt underground mining should be exempt from regulation were perhaps more vocal in their opposition to H.R. 11500 than in their support for alternate bills. Among their objections, dissenters claimed the bill imposed arbitrary and unreasonable procedural and environmental standards.[133] Worse yet, the opposition felt the bill's subsidence provisions could have potentially devastating effects on the development of coal reserves at a time when coal was taking on greater importance in achieving the nations' energy self-sufficiency.[134] Industry's substitute to H.R. 11500, H.R. 12898, imposed no controls on subsidence and failed to gain support.[135]

In a compromise of sorts, Section 212(b)(8) of H.R. 11500, which required adequate support for the surface, was changed to instead require the adoption of known technology to prevent subsidence.[136] A proviso insuring that the room and pillar method of mining would be allowed by the Act was also added.[137] In

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all mine and coal processing wastes "to the extent physically, economically and technologically possible. . . ." H.R. 11500, § 211(b)(1) in H.R. REP. No. 1072, 93rd Cong., 2d Sess. 54 (1974).

[132] The purpose of the subsidence control provisions was to give "the Secretary [of the Interior] . . . the authority to require the design and conduct of underground mining methods to control subsidence . . . in order to protect the value and use of surface lands." H.R. REP. No. 1072, 93rd Cong., 2d Sess. 108-09 (1974). The opposition, however, considered H.R. 11500 as having a "single minded focus on environmental values." Id. at 199. The exception for planned subsidence which occurs in a predictable and controlled manner was in H.R. 11500 from the time the House Subcommittee on the Environment and Mines and Mining reported a completely revised bill on November 12, 1973. *See* Draft Bill No. 3, § 211(b)(2) *cited in* Dunlop, *supra* note 118, at 19.

[133] H.R. REP. No. 1072, 93rd Cong., 2d Sess. 200-01 (1974).

[134] Opponents of H.R. 11500 feared that more than 40% of production by conventional and continuous mining methods would be precluded under the bill, that the impact of the bill would effectively cripple the coal industry, and that the economic viability of even the remaining portion of the underground mining industry would be threatened. *Id.* at 223.

[135] *See* H.R. 12898, § 214(c) in H.R. REP. No. 1072, 93rd Cong., 2d Sess. 267 (1974).

[136] Representative Hayes proposed the amendment to include a technology based standard for subsidence control. See 120 CONG. REC. 24,619 (1974) (statement of Rep. Hayes). This same amendment added the qualifying language to § 212(a) of the bill, now § 516(a), that the Secretary is to promulgate rules "directed toward the surface affected by such underground coal mining operations." *Id.*

[137] *See* S. 425, § 516(b)(1) found in H.R. REP. No. 1522, 93d Cong., 2d Sess., 41

1974, the underground mining performance standards of H.R. 11500 were grafted onto S. 425.[138] The revised version of S. 425 was passed by Congress, but President Ford pocket vetoed the bill in December 1974.[139]

C. *The 94th Congress*

During the debate leading up to the 94th Congress, a generally preferred approach emerged which restricted application of the Act to "surface operations and surface impacts incident to an underground mine."[140] Thus, despite strident industry opposition to the legislation with standards as stringent as H.R. 11500, a compromise bill, H.R. 25, passed both houses in the 94th Congress. This bill was also vetoed by President Ford.[141] The President cited the loss of jobs and reduction in coal production that the bill would cause as a basis for the veto. Congress failed to override the veto by a narrow margin.[142]

(1974). The proviso specifically authorizing room and pillar mining was added to H.R. 11500 on the House floor shortly after the substitution of the measures consistent with known technology language. 120 CONG. REC. 25, 219 (1974). Current § 516(b)(1) of the Act provides:

> (b) Each permit . . . shall require the operator to-
>
> (1) adopt measures consistent with known technology in order to prevent subsidence causing material damage to the extent technologically and economically feasible . . . and maintain the value and reasonably foreseeable use of such surface lands, except in those instances where the mining technology used requires planned subsidence in a predictable and controlled manner: *Provided*, That nothing in this subsection shall be construed to prohibit the standard method of room and pillar mining (emphasis in original).

[138] Most of the other provisions found in the current § 516 of the Act were also added to S. 425 from H.R. 11500.

[139] Dunlap, *supra* note 126, at 11-28.

[140] The intended effect of the provision regulating only the surface effects of underground mining is set out in S. REP. NO. 28, 94th Cong., 1st Sess. (1975) as follows:

> Surface mining operations' is so defined to include not only traditionally regarded coal surface mining activities but also surface operations incident to underground coal mining, and exploration activities. The effect of this definition is that only coal surface mining is subject to regulation under the Act . . . [It] includes all areas upon which occur surface mining activities and surface activities incident to underground mining. It also includes all roads, facilities structures, property, and materials on the surface resulting from or incident to such activities, such as refuse banks, dumps, culm banks, impoundments and processing wastes.

Id. at 224-25.

[141] Dunlap, *supra* note 126, at 11-28.

[142] *Id.*

D. The 95th Congress

With the change in administrations in 1977, new bills were immediately introduced. H.R. 2 and S. 7, which largely repeated the provisions of the previously vetoed legislation, gained impetus under the new administration. The provisions underwent so few changes that the final House Report on H.R. 2 merely repeated verbatim many of the statements made in the earlier House reports on H.R. 11500 and H.R. 25.[143]

Although the decision to regulate the surface impacts of underground mining was made fairly late in the Act's development, the bills considered during the 95th Congress generally made it clear that, at least under some circumstances, Congress considered subsidence a surface impact incident to underground mining subject to regulation under the Act.[144] Accordingly, Section 516 of SMCRA provides performance standards specifically addressing subsidence impacts from underground mining.[145]

Although there was little change in the 1974 and 1977 House and Senate reports' discussion of the bills, substantive changes had been made in the subsidence provisions. The most important change required the operator to adopt measures consistent with known technology to prevent material damage from subsidence.

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[143] *Compare* H.R. REP. No. 218, 95th Cong., 1st Sess. 126 (1977); H.R. REP. No. 1445, 94th Cong., 2d Sess. 71-72 (1976); H.R. REP. No. 896, 94th Cong., 1st Sess. 73-74 (1975); H.R. REP. No. 45, 94th Cong., 1st Sess. 115-16 (1975); *with* H.R. REP. No. 1072, 93d Cong., 2d Sess. 108 (1974) (The identical language in each report indicates that one measure of subsidence control is to cause subsidence to occur at a predictable time and in a relatively uniform and predictable manner. Both reports state that this includes longwall and other full extraction methods.).

[144] The Act's legislative history in the 95th Congress buttresses the conclusion that subsidence is a surface impact incident to an underground mine. The 1977 House Report on H.R. 2 contains the following passage describing the regulation of the surface impacts of underground mines:

> Since the Act covers surface impacts of underground coal mining concurrently with those of surface mining, underground coal operators will be bound by permit requirements of the Act. They are required to apply for permits, the terms of which include standards relating to minimizing surface subsidence, sealing portals and openings, disposing of mine wastes, constructing impoundments for mine wastes, revegetating disturbed areas, preventing off-site damages, and discharge of waterborne pollutants.
>
> The Secretary is required to review the basic environmental protection standards of the act and to make those necessary adjustments in the regulations reflecting the inherent difference between surface and underground operations.

H.R. REP. No. 218, 95th Cong., 1st Sess. 93 (1977).

[145] SMCRA § 516, 30 U.S.C. § 1266 (1982).

This change replaced earlier language which simply required permanent support for the surface. Additionally, H.R. 2 clarified that the standard method of room and pillar mining would be allowed.[146]

The Committees of the 95th Congress also expressed concern that the differences between surface and underground mining were not fully accounted for in the standards included in the bills being considered, which had been primarily designed for application to surface mining operations.[147] Therefore, provisions were added to H.R. 2 and S. 7 directing that the Secretary of the Interior consider the distinct differences between surface and underground mines in developing implementing regulations under the Act.[148]

The final significant revision was made in Section 516(b)(1) of SMCRA. This change was made prior to final conference agreement on the language which was eventually adopted. The House Committee on Interior and Insular Affairs amended H.R. 2 to limit the subsidence provision's applicability to areas with land uses which could be materially damaged. Both existing and reasonably foreseeable land uses were to be included.[149]

E. Planned Subsidence Debate

In addition to the battle waged over whether to regulate

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[146] See H.R. REP. No. 218, 95th Cong., 1st Sess. 93 (1977).

[147] SMCRA § 516(b)(10), 30 U.S.C. § 1266(b)(10) (1982), in part provides that with respect to surface impacts not specified in § 516(b), the performance standards of § 515 shall be made applicable, but with a recognition of the distinct differences between surface and underground mining. This provision was added to H.R. 25, a bill introduced early in the 94th Cong. 1st Sess.. Its addition was explained in H.R. REP. No. 45, 94th Cong., 1st Sess., 202 (1975).

[148] *See* SMCRA § 516(a), 30 U.S.C. § 1266(a) (1982), which provides, "The Secretary shall promulgate rules and regulations directed toward the surface effects of underground coal mining operations . . . *Provided, however*, that . . . the Secretary shall consider the distinct difference between surface coal mining and underground coal mining." Senate Report 95-128 indicates the significance Congress placed upon this matter: "During the course of markup the committee adopted approximately 200 amendments . . . The most significant are outlined below.— Surface effects of underground mining. - This amendment requires the Secretary to consider the "distinct difference" between surface and underground coal mining in his promulgation of regulations . . . ." S. REP. No. 128, 95th Cong., 1st Sess. 61-62 (1977) (discussing the addition of what is §516 (d) of the current Act).

[149] H.R. REP. No. 218, 95th Cong., 1st Sess. 67 (1977). Thus the material damage standard was established as the benchmark for subsidence prevention.

underground mining at all, a parallel issue was debated pertaining to the regulation of mining operations designed to intentionally cause subsidence. A distinction between "planned" and "uncontrolled"[150] subsidence was recognized during the initial stages of the Congressional debate on underground mining.[151]

Because of the differences between the two methods, the Ford administration supported bills[152] which would have required regulations to control or prevent "*accidental* subsidence of mined areas."[153] Faced with criticism of H.R. 11500,[154] which at the

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[150] As early as 1971, the Department of the Interior described "uncontrolled subsidence" as follows:

> Uncontrolled subsidence occurs when underground mine workings are not sufficiently supported, or when artificial or natural supports deteriorate in abandoned mines. Collapse of the mine workings causes deformation of the overlying rocks which propagates upward until the ground surface subsides.
>
> . . .
>
> An alternative to supporting the overburden is the complete systematic caving of the overlying rock, as is done in longwall mining.
>
> By inducing the rock to cave immediately after mining, the danger of a later sudden collapse is eliminated. Under induced caving, where applicable, the surface will stabilize over a relatively short period of time. But subsidence prevention is still often costly, and much further research is necessary to develop economical means of preventing or reducing subsidence damage.

Hearing Before the Subcomm. on Mines and Mining of the House Comm. on Interior and Insular Affairs, 92nd Cong., 1st Sess. 206 (1971) (statement of Hon. Hollis M. Dole, Assistant Secretary, Mineral Resources, Department of the Interior).

[151] *See supra* note 124 (with respect to the exception for planned and controlled subsidence).

[152] Those bills were S. 630, 92d Cong., 2d Sess. (1972) and S. 923 in the 93rd Congress.

[153] *See supra* note 139, at 54 (statement of the Office of the Secretary, Department of the Interior); S. REP. No. 1162, 92d Cong., 2d Sess. 50 (1972); S. REP. No. 402, 93d Cong., 1st Sess. 87 (1973). Note, however, that the exact language from the administration supported bills did not make clear that the primary concern was solely with "accidental" or "unintentional subsidence." For example, S. 630 provided that each applicant for a permit must submit a reclamation plan that includes "provisions to insure the control of surface operations incident to underground mining to protect the surface area, control of mine refuse, slag and gob piles and the proper sealing of shafts, tunnels, and entry ways and the filling of exploratory holes no longer necessary in the mining operation." S. 630, 92d Cong., 2d Sess. § 203(b)(5) (1972).

[154] Criticism came particularly from Mr. Rogers Morton, then Secretary of the Interior, *see* H.R. REP. No. 1072, 93d Cong., 2d Sess. 236 (1974). Typical of the criticism of H.R. 11500 was that entered into the Congressional Record on May 30, 1974, by Congressman Hosmer of California. Congressman Hosmer stated:

> Our consistent position has been that measures taken to control land surface subsidence, resulting from underground mining are proper . . . H.R. 11500, as amended, does not adequately cover the overall subject of

time did not specifically address the differences between planned and uncontrolled subsidence, Congressman Udall and members of the House Interior and Insular Affairs Committee sought to clarify the provisions pertaining to longwall mining and other mining methods that use planned subsidence.

On July 10th, 1974, Congressman Udall took the floor to respond to criticism of H.R. 11500. The Congressman stated that mining which utilized planned subsidence would not be "outlawed" by H.R. 11500, and indeed, that controlled subsidence was "ecologically preferable" and "explicitly endorsed."[155]

> applicable underground mining technology to minimize the problem of surface subsidence. § 212(b)(1) leaves unclear the intent of [the provision] 'to prevent subsidence to the extent technologically and economically feasible.' This provision, if interpreted to prohibit induced subsidence in a controlled manner where possible and appropriate, could result in serious production losses. The coal losses in 1975 from adopting such an interpretation, could result in lower overall resource recovery. We urge you to have your committee study this provision in detail for it may have the profound effect of disallowing recovery of vitally needed coal in certain areas by either surface or underground mining methods.

120 CONG. REC. 17,086 (1974). Congressman Hosmer's remarks followed the issuance of a memorandum from the U.S. Bureau of Mines, of May 27, 1974, estimating production losses due to H.R. 11500. The Bureau of Mines report indicated that the probable production loss due to subsidence would be from 5 to 25 percent of the maximum possible production. *See Hearing Before the Subcomm. on Energy and the Environment and the Subcomm. on Mines and Mining of the House Comm. on Interior and Insular Affairs*, 94th Cong., 1st Sess. 170-92 (1975).

[155] Citing a *Wall Street Journal* editorial in support of H.R. 11500, Udall entered the following rebuttal in the Congressional Record:

> Longwall mining takes place in underground mines, and is done by huge machines that remove most coal in the deposit. After the machine passes, the underground passage is allowed to collapse, and the surface above the mine sinks, or subsides, in a rapid but controlled manner. The traditional room-and-pillar method leaves pillars supporting the mine room, and subsidence often occurs when these collapse, after long and unpredictable periods of time.
>
> The House bill contemplates rules 'to prevent subsidence to the extent technologically and economically feasible.' The word 'prevent' led to fears, expressed by Secretary of the Interior Morton, that the effect would be to outlaw longwall mining, with its obvious subsidence. The Secretary estimated that if the bill passes, it would possibly cut coal production by 187 million tons; of this 117 million resulted from the assumption of a prohibition of longwall mining.
>
> *In fact the bill's sponsors consider longwall mining ecologically preferable, and it and other methods of controlled subsidence are explicitly endorsed.* So there is no disagreement as to what the bill ought to say, and a few changes in wording would take care of the great bulk of Secretary Morton's worries about coal production.

Although the 94th Congress generally followed the approaches of the 93rd Congress, S. 7 and H.R. 25 went one step further and followed up on Congressman Udall's suggestion that language changes be made to clarify that the longwall method was allowed.[156] Thus, the 94th Congress included specific language on the relationship between underground operations which are designed to prevent subsidence by supporting the surface and those designed to cause subsidence. Senate Report No. 28 explained the distinction:

> Underground mining is to be conducted in such a way as to assure appropriate permanent support to prevent surface subsidence of land and the value and use of surface lands, *except in those instances where the mining technology approved by the regulatory authority at the outset results in planned subsidence. Thus, operators may use underground mining techniques, such as long-wall mining, which completely extract the coal and which result in predictable and controllable subsidence.*[157]

> Now, we are sure the House bill can be badly administered. But even understanding all of that, the strip mining bill strikes us as a reasonable attempt to reconcile environmental and energy needs.

120 CONG. REC. 22,731 (1974) (emphasis added).

[156] On July 17th Congressman Owens also took the floor of The House of Representatives to clarify the Committee's intent with respect to longwall mining:

> The administration's opposition to H.R. 11500 is supposedly rooted in the losses in coal production which it expects to occur. . . .
>
> The administration took the worst possible interpretation of each of the major provisions of H.R. 11500 in order to arrive at their estimates. Some of the assumptions made bordered on deliberate misinterpretation.
>
> For example, the bill allows longwall underground mining where the required technology is available. This technique controls the subsidence of the land surface while permitting much more coal to be extracted from underground mines because there is no need to leave pillars of coal to hold up the mine roof. For some reason the administration interpreted this as a prohibition against longwall mining and estimated that a minimum of 17 million tons of coal would be eliminated from production. The fact is that the sponsors of the bill accepted an amendment to make it absolutely clear that long-wall mining is allowed. This cuts the administration's estimated overall production losses in half.

120 CONG. REC. 23,687 (1974).

[157] S. REP. No. 28, 94th Cong., 1st Sess. 215 (1975) (emphasis added). Similar language in H.R. 25, 94th Congress, is explained in House Report No. 896 as follows:

> The environmental problems associated with underground mining for coal which are directly manifested on the land surface are addressed in § 212 and such other sections which may have application. These problems

In light of the assurances of Congressmen Udall and Owens that longwall mining was not only permitted, but endorsed, and of the revised language of H.R. 25 and S. 7, the U.S. Bureau of Mines issued a revised memorandum reassessing the impact of the subsidence provisions on underground mining on August 9, 1974. In its revised assessment, the Bureau of Mines found that the subsidence provisions of the bills would cause no loss of production.[158]

The current Section 516(b)(1) of SMCRA provides that the operator must "adopt measures consistent with known technology in order to prevent subsidence causing material damage to the extent technologically and economically feasible, maximize mine stability, and maintain the value and reasonably foreseeable use of such surface lands, *except in those instances where the mining technology used requires planned subsidence in a predictable and controlled manner.*"[159]

While making it relatively clear that subsidence falls within

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include surface subsidence, surface disposal of mine wastes, disposal of coal processing wastes, sealing of portals, entry ways or other mine openings, and the control of acid and other toxic mine drainage. . . .

It is the intent of this section to provide the Secretary with the authority to require the design and conduct of underground mining methods to control subsidence to the extent technologically and economically feasible in order to protect the value and use of surface lands. Some of the measures available for subsidence control include:

(1) leaving sufficient original mineral for support;

(2) refraining from mining under certain areas except allowing headings to be driven for access to adjacent mining areas; or

(3) causing subsidence to occur at a predictable time and in a relatively uniform and predictable manner. This specifically allows for the uses of longwall and other mining techniques which completely remove the coal.

(4) Backstowing or returning mine wastes underground to provide some measure of direct roof support and shoring up pillars left for support.

H.R. REP. No. 896, 94th Cong., 2d Sess. 73-74 (1976). For a similar statement, *see* S. REP. No. 128, 95th Cong., 1st Sess. 84 (1977).

[158] Under the revised language the U.S. Bureau of Mines Director indicated that: "It is the consensus of the staff that several areas which concerned the Bureau have now been corrected by changes in the language of the bill. We no longer expect coal production losses from provisions pertaining to . . . subsidence from underground mining." *See Hearing Before the Subcomm. on Energy and the Environment and the Subcomm. on Mines and Mining of the House Comm. on Interior and Insular Affairs*, 94th Cong., 1st Sess. 170-92 (1975).

[159] SMCRA § 516(b)(1), 30 U.S.C. § 1266(b)(1) (1982) (emphasis added); *see also supra* note 138.

the intended scope of SMCRA, the legislative history leaves room for dispute on several other aspects of subsidence regulation. In a simplistic sense, the determination of how to apply the program requirements to "surface effects" is left to the discretion of the Secretary of the Interior. Nevertheless, the Secretary may not act contrary to the statutory language or the legislative history in the exercise of this discretion.

IV. THE REGULATORY FRAMEWORK

A. Background

To assist the Secretary of the Interior in administering SMCRA's requirements, Congress created the Office of Surface Mining Reclamation and Enforcement (OSM). The Act requires OSM to use a two stage process to phase in the environmental protection standards for existing and new mining operations. First, an initial or interim regulatory program was created which included only a portion of the standards and procedures required under SMCRA.[160] Secondly, a permanent regulatory program was to be established including the full range of requirements delineated by the Act. While the permanent program regulations have been subject to numerous court challenges and revisions by the OSM, they nevertheless form the basis for subsidence regulation throughout the United States and the framework within which the programs developed for each state must function.[161]

The interim regulatory program was made applicable to some surface effects of underground mining, but did not include either the permitting or the subsidence control requirements of the

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[160] The initial regulatory program (also known as the interim regulatory program) regulations were issued on December 13, 1977. 42 Fed. Reg. 62,639 (1977) (codified at 30 C.F.R. §§ 710-725 (1978)).

[161] Of 27 states identified as having active coal mining, 25 submitted proprams for approval. Georgia and Washington did not submit state programs. A federal program for Georgia was implemented in March, 1982. 47 Fed. Reg. 36,399 (1982) (to be codified at 30 C.F.R. pt. 910). A federal program was instituted in Washington in February, 1983. 48 Fed. Reg. 7,883 (1983) (to be codified at 30 C.F.R. pt. 947). After a study, Alaska submitted a program which was approved in March, 1983. 48 Fed. Reg. 12,889 (1985) (to be codifed at 30 C.F.R. pt. 902). Tennessee repealed its program effective October 1, 1984 and a Federal program was implemented at 49 Fed. Reg. 38,892 (1984) (to be codified at 30 C.F.R. pt. 942).

Act.[162] Thus, federal regulations for subsidence control were not issued until the regulations for the permanent regulatory program were promulgated on March 13, 1979.[163] These regulations include performance standards for subsidence control and requirements that each underground mining operation submit a subsidence control plan to the regulatory authority.[164] The subsidence control plan is to be approved before a permanent program permit is issued for the mine.[165]

Significantly perhaps, the final regulations issued in 1979 did not include a prohibition against mining where subsidence would occur. Rather, OSM specifically rejected a suggestion that underground mining be prohibited in areas where subsidence cannot be prevented by known technology in the development of the subsidence regulations. OSM found that such a prohibition would "far exceed the intent and plain meaning of the language of the Act," which "recognizes that subsidence cannot always be prevented, but attempts to lessen the effects of subsidence, through planning."[166]

B. The 1979 OSM Regulations

In 1979, OSM determined that Sections 501(b) and Section

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[162] SMCRA §§ 501 & 502, 30 U.S.C. §§ 1251 & 1252 (1982) (requirements of the interim regulatory program).

[163] 44 Fed. Reg. 14,903 (1979) (codified at 30 C.F.R. ch. VII (1979)). Although the Secretary of the Department of Interior is responsible for promulgating regulations applicable to coal mining operations nationwide, Congress still felt that, because of the diverse terrain, climate, biological, chemical, and other physical conditions in areas subject to mining operations, each state should be given the option of assuming primary responsibility for enforcing surface coal mining regulations and developing programs appropriate to their own environment and circumstances. SMCRA § 101, 30 U.S.C. § 1201 (1982). Thus, under the permanent regulatory program, states are allowed to enact their own reclamation law and establish a regulatory program to assume "primacy" for carrying out the Act's requirements. SMCRA § 503, 30 U.S.C. §1253 (1982). The state program must be "no less effective than" the Federal permanent regulatory program, and contain enforcement provisions which are "no less stringent than" the Federal standards. 30 C.F.R. §§ 730.5 & 732.15(b) (1985). If a state does not submit or obtain approval of a state program, then the OSM must implement a Federal program for that state. 30 C.F.R. § 736 (1985).

[164] 30 C.F.R. § 784.20 (1985).

[165] 30 C.F.R. § 773.15 (1985). The permitting requirements are discussed further in Part V, *infra*.

[166] 44 Fed. Reg. 15,275 (1979).

516(b)(1) of SMCRA mandate that regulations applicable to subsidence control be included in the federal regulations for the permanent regulatory program and that "minimum national standards are appropriate to fulfill the statutory goals of protection against subsidence damage and to prevent operators in one State from having unfair competitive advantages."[167] Accordingly, OSM promulgated regulations at 30 C.F.R. Sections 817.121-817.126 establishing subsidence performance standards, and Section 784.20 establishing subsidence permitting requirements under the permanent regulatory program.[168] The intent of the regulations was to:

> [E]nsure that underground mining is conducted so as to protect health and safety of the public, minimize damage to the environment, and protect the rights of landowners. [OSM further noted that:] The subsidence control regulations will reduce subsidence-caused material damage to the land surface by improving mining methods, as well as by maintaining the value and potential of the land.[169]

The subsidence performance standards of the 1979 regulations were separated into four different sections: (1) Section 817.121, Subsidence Control: General Requirements; (2) Section 817.122, Public Notice; (3) Section 817.124, Surface Owner Protection; and (4) Section 817.126, Buffer Zones. The requirements under each of these sections are summarized below.

1. General Requirements

Underground mining operations must be planned and conducted to prevent subsidence from causing material damage to the surface, to the extent technologically and economically feasible, and to maintain the value and reasonably foreseeable use of the affected surface lands. This may be accomplished by using measures designed to support the surface, including leaving adequate coal in place, backfilling, or by conducting under-

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[167] 44 Fed. Reg. 15,273 (1979).

[168] 44 Fed. Reg. 15,272 & 15,369 (1979). For a discussion of the permitting requirements, see Part V, *infra*.

[169] 44 Fed. Reg. 15,272 (1979).

ground mining in a manner that provides for planned and controlled subsidence. The regulatory requirements are not to be construed as prohibiting the standard method of room and pillar mining.[170]

2. Public Notice

A mining schedule must be distributed by mail to all owners of property and residents within the area above the underground workings and adjacent areas. Each such person is to be notified by mail at least six months prior to the commencement of mining beneath his or her property or residence. The notification must contain, at a minimum: (1) identification of specific areas in which mining will take place; (2) dates of mining activities that could cause subsidence and affect specific structures; and (3) measures to be taken to prevent or control adverse surface effects.[181]

3. Surface Owner Protection

Each underground mine operator must adopt measures approved by the regulatory authority to reduce the likelihood of subsidence, to prevent subsidence causing material damage or reducing the value or reasonably foreseeable use of surface lands, and to mitigate the effects of any such damage or reduction which may occur.

When the underground mining results in subsidence that causes material damage or reduces the value or reasonably foreseeable use of surface lands, the operator must remedy the situation. Specifically, the 1979 regulations required the operator to take one of the following remedial courses:

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[170] 30 C.F.R. § 817.121 (1985); 44 Fed. Reg. 15,440 (1979) (later revised at 48 Fed. Reg. 24,652 (1983)); *see supra* notes 124-151 and accompanying text. Commentators on § 817.121 argued that operators who own the surface above an underground mine as well as the mine, or who have an agreement with the surface owner to accept subsidence and damage to structures either by formal waiver or by an agreement, should be exempt from the subsidence control requirements. OSM rejected this suggestion, noting that § 516(b)(1) of the Act "protects the environment for the present and future, regardless of ownership. The Act does not contemplate that private parties can, by contract or purchase of resources, void the Congressional mandate for environmental and other property protection." 44 Fed. Reg. 15,274 (1979).

[171] 30 C.F.R. § 817.122 (1985); 44 Fed. Reg. 15,440 (1979) (later revised at 48 Fed. Reg. 24,652 (1983)).

(1) The operator must restore, rehabilitate, or remove and replace each damaged structure, feature, or value, promptly after the damage is suffered. The structure or other value must be returned to the condition it would be in if no subsidence had occurred and the land must be restored to a condition capable of supporting reasonably foreseeable uses that it was capable of supporting before subsidence.[172]

(2) Alternatively, the operator may purchase the damaged structure or feature for its fair market, pre-subsidence value, doing so promptly after the damage is suffered. Further, the operator must restore the land surface, to the extent technologically and economically feasible, to a condition capable of and appropriate to supporting the purchased structure and other foreseeable uses it was capable of supporting before mining. However, the purchase option contained in the regulations was not to be considered a grant of authority for the exercise of the power of condemnation or the right of eminent domain by any person engaged in underground mining activities.[173]

(3) The third alternative provided by the 1979 regulations allowed for the purchase of specified insurance. This method stated that the mine operator would compensate the owner of any surface structure in the full amount of the diminution in value resulting from subsidence "by purchase prior to mining" of a non-cancellable, premium prepaid insurance policy (or other means approved by the regulatory authority) to assure, before mining began, that payment would occur. The operator was also required to indemnify every person with an interest in the surface for all damages suffered as a result of the subsidence; and, to the extent technologically and economically feasible, fully restore the land to a condition capable of maintaining reasonably foreseeable uses which it could support before subsidence.[174]

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[172] 30 C.F.R. § 817.124(a)-(b) (1979); 44 Fed. Reg. 15,440 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* note 187.

[173] 30 C.F.R. § 817.124(a)-(b) (1979); 44 Fed. Reg. 15,440 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* note 187.

[174] 30 C.F.R. § 817.124(c) (1979); 44 Fed. Reg. 15,440 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)). A suggestion that operators make available to affected persons insurance against subsidence damage in all cases was rejected, since the OSM "feels that such insurance may prove to be prohibitively expensive in some instances and not readily available in others. Accordingly, insurance [was made] one alternative from which operators [could] choose to meet the requirements of this section, but is not required." 44 Fed. Reg. 15,275 (1979).

4. Buffer Zones

Underground mining activities may not be conducted beneath or adjacent to any perennial stream or impoundment having a storage volume of twenty acre-feet or more, unless the regulatory authority, on the basis of detailed subsurface information, determines that subsidence will not cause material damage to streams, water bodies, and associated structures. If subsidence causes material damage, measures must be taken to the extent technologically and economically feasible to correct the damage and to prevent additional subsidence from occurring.[175]

Underground mining activities beneath any aquifer that serves as a significant source of water supply to any public water system must be conducted so as to avoid disruption of the aquifer and consequent exchange of groundwater between the aquifer and other strata. The regulatory authority may prohibit mining in the vicinity of the aquifer or may limit the percentage of coal extraction to protect the aquifer and water supply.[176]

Underground mining activities may not be conducted beneath or in close proximity to any public buildings, including but not limited to churches, schools, hospitals, courthouses, and government offices, unless the regulatory authority, on the basis of detailed subsurface information, determines that subsidence from those activities will not cause material damage to these structures and specifically authorizes the mining activities.[177] The regulatory authority must suspend underground coal mining under urbanized areas, cities, towns, and communities, and adjacent to industrial or commercial buildings, major impoundments, or permanent streams if imminent danger is found to the inhabitants of the urbanized areas, cities, towns, or communities.[178]

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[175] 30 C.F.R. § 817.126(a) (1979); 44 Fed. Reg. 15,440 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* notes 184-190 and accompanying text.

[176] 30 C.F.R. § 817.126(b) (1979); 44 Fed. Reg. 15,441 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* notes 184-190 and accompanying text.

[177] 30 C.F.R. § 817.126(c) (1979); 44 Fed. Reg. 15,441 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* notes 184-190 and accompanying text.

[178] 30 C.F.R. § 817.126(d) (1979); 44 Fed. Reg. 15,441 (1979) (later removed at 48 Fed. Reg. 24,652 (1983)); *see infra* notes 184-190 and accompanying text. The prohibition applicable to "permanent streams" was not intended to apply to "intermittent streams." OSM noted in response to a comment that:

> The Office has determined that to prohibit all mining under intermittent streams exceeds the intent of the Act . . . and that the cost of implementing

5. Significant Provisions Not Adopted in 1979

While the 1979 OSM regulations provide a comprehensive program for subsidence control, there were additional significant provisions included in the proposed regulations that were deleted or rejected in the development of the final rule. For example, one comment suggested that operators should be required to conform to the same surface restoration standards as surface operators. This suggestion was rejected by OSM, since it was beyond the scope of Section 516(b)(1) of the Act, and "because subsidence from underground mines and surface mining have significantly different effects on the surface. For example, topsoil removal, overburden stripping, and vegetative removal will all occur in surface mining but probably will not accompany subsidence, so that identical restoration measures are inappropriate."[179]

Additionally proposed Section 817.123 would have provided that the regulatory authority would, at the request of an owner of any dwelling or structure within the mine plan area, require the operator to conduct and submit to the regulatory authority a pre-mining survey of the surface features involved. This section would also have required a pre-mining survey of all public buildings and structures in the mine area.[180] They were deleted from the final regulations because it "would be burdensome to the operator without sufficient offsetting environmental or property protection values to warrant the burden."[181]

Proposed Section 817.125 would have required operators to

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measures to prevent disturbance of intermittent streams is contrary to § 516(b)(1) of the Act which requires implementation of measures which are 'technologically and economically feasible.' While the intermittent stream provision which appeared in the proposed regulations has been deleted from this section as too broad (there was no depth beyond which it didn't apply), the operator still must comply with the buffer zone provisions of § 817.57, if applicable to the stream in question."

44 Fed. Reg. 12,576 (1979).

[179] 44 Fed. Reg. 15,274 (1979).

[180] *See* Conrad, *Developments in the Law of Subsidence: Federal and State Subsidence Control and Remedial Standards*, 9 KY. MIN. L. SEMINAR, at M-4.5, M-14.

[181] 44 Fed. Reg. 15,273 (1979). In response to comments, OSM also noted that the survey requirement was "not specifically required by the Act," "was of minimal benefit," and that "an itemization of the probable effects of subsidence on structures would most likely be so speculative or general as not to be useful to the property owner." 44 Fed. Reg. 15,724 (1979).

establish a scheme for monitoring the amount of subsidence caused by underground mining, and would have required certain specified reports of subsidence to be updated periodically and given to the regulatory authority.[182] This section was deleted based on numerous comments and a determination by OSM that monitoring was expensive and burdensome, often does not contribute to the prevention of subsidence, and was not appropriate or necessary in all circumstances to achieve the purposes of the Act.[183]

C. *In Re: I*

Almost as soon as OSM's 1979 permanent program regulations were issued, they were challenged by a variety of interest groups including states, industry, and environmental plaintiffs. The numerous challenges were consolidated by the Federal District Court for the District of Columbia before Judge Flannery in a case entitled: *In re: Permanent Surface Mining Regulation Litigation*, [hereinafter referred to as *In re: I*].[184] Regarding the regulations for subsidence control, the following specific issues were raised:

(1) Whether a subsidence control plan could be required for mining operations using planned subsidence. Industry argued that Section 516(b)(1) of the Act exempted certain mining technologies, especially longwall mining, from the permit application requirements regarding subsidence.

(2) Whether the surface owner protection and land restoration provisions of the final regulations were valid under SMCRA. Industry argued that the surface owner protection provisions were contrary to the Act, and improperly displaced state law and created a federal entitlement program for surface landowners.

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[182] *See* 43 Fed. Reg. 41,662 (1978).

[183] 44 Fed. Reg. 15,273 (1979).

[184] The challenges to OSM's regulations were separated into three separate rounds for purposes of briefings and argument before the court. Accordingly, there were several separate opinions rendered by the court on the various issues raised. Challenges to OSM's 1979 subsidence regulations were consolidated in Round I, of In re: Permanent Surface Mining Regulation Litigation, Civ. No. 79-1144 (D.D.C. February 26, 1980) [hereinafter cited as *In re: I*].

(3) Whether there was adequate statutory authority for the buffer zone provisions applicable to certain streams, aquifers, and buildings included in the final regulations. Industry argued that the OSM regulation was not authorized by the Act, and further that it was an unconstitutional taking contrary to the Fifth Amendment.[185]

Judge Flannery ruled against the industry plaintiffs on virtually every one of the subsidence issues raised in *In re: I.* First, Judge Flannery ruled that the requirement to submit a subsidence control plan was appropriate regardless of the mining technology used, since such a plan "enables the regulatory authority to determine whether the controlled subsidence will protect the values Section 516(b)(1) intended to preserve."[186]

Next, the district court upheld the regulations requiring underground mine operators to restore damaged structures and land capability or to assure surface owners of compensation for the damage they suffer. Industry contended that the regulation, which provided three alternatives to accomplish surface rehabilitation or owner compensation, had no basis in the Act. In rejecting Industry's claim, Judge Flannery found that the land restoration and compensation provisions were "consonant" with Section 515(b)(2) of the Act, and "authorized" by Section 507(f) of the Act.[187]

Finally, the court upheld OSM's regulations allowing underground mining beneath or adjacent to certain streams, impoundments, aquifers and public buildings only where mining would not cause material damage to such lands and structures. The

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[185] *Id.*

[186] *Id.* at 37.

[187] *Id.* at 63-64. The court found § 515(b)(2) of the Act was made applicable to underground mining by virtue of § 516(b)(10) of the Act which directs that "with respect to other surface impacts not specified in" the underground mining performance standards of § 516, to "operate in accordance with the standards established under section 515" of the Act. Thus, § 515(b)(2) which required restoration of "affected lands" to "a condition capable of supporting the uses which it was capable of supporting prior to any mining, or higher or better uses . . ." could properly be made applicable to subsidence damage in surface lands overlying underground mine workings. Section 507(f) includes the Act's insurance requirements and requires permit applicants to submit proof of insurance or self-insurance covering personal injury and "property damage protection in an amount adequate to compensate any person damaged as a result of surface coal mining and reclamation operations . . . and entitled to compensation under the applicable provisions of State law." *Id.*

court further ruled that any challenge to the regulation as an unconstitutional taking was premature, since the promulgation of the regulation alone did not act to deprive anyone of their property interests.[188]

As a necessary corollary to these decisions, Judge Flannery also determined that the surface impacts of underground mining are properly encompassed within the term "surface mining operations" and pointed to the definition of surface mining operations in Section 701(28) in support of his ruling.[189]

Industry appealed Judge Flannery's rulings on subsidence to the U.S. Court of Appeals for the District of Columbia Circuit. However, the Court of Appeals never ruled on the issues since Department of the Interior requested the court to remand the issues on appeal to OSM for reconsideration in light of OSM's then ongoing regulatory reform. Accordingly, the Court of Appeals issued an order remanding the issues under appeal to the Department and directing that the Secretary consider the issues and arguments raised in the appeal as part of the administrative record on the revised rules.[190]

D. OSM's Regulatory Reform

After the election of President Reagan, OSM undertook to revise the permanent regulatory program regulations under Executive Order No. 12291.[191] This "regulatory reform" effort took nearly three years, encompassed over 50 individual rulemakings, and required an over 1200 page environmental impact statement.[192]

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[188] *Id.* at 65, n. 35.

[189] "[S]urface mining operations' means - (A) activities conducted on the surface of lands in connection with a surface coal mine . . . and surface impacts incident to an underground coal mine. . . ." SMCRA § 701(28), 30 U.S.C. § 1291(28) (1982).

[190] *In re:* Permanent Surface Mining Regulation Litig., Civ. No. 80-1810 (D.C. Cir. February 1, 1983).

[191] 46 Fed. Reg. 13,193 (1981) (Executive Order No. 12291 required all Federal agencies to reduce the burdens of federal regulations, to minimize duplication and conflict between them, and to ensure that they are well reasoned and that the benefits of new regulations outweigh their costs to society.).

[192] *See* DEPARTMENT OF THE INTERIOR, FINAL ENVIRONMENTAL STATEMENT, PROPOSED REVISIONS TO THE PERMANENT PROGRAM REGULATIONS IMPLEMENTING § 501(b) OF THE SURFACE MINING CONTROL AND RECLAMATION ACT OF 1977, (1983) (OSM-EIS-1: Supplement).

On April 16, 1982, OSM proposed to revise the permanent program regulations applicable to subsidence control and subsidence control plans.[193] After an opportunity for public comment, OSM issued revised regulations for subsidence control on June 1, 1983.[194] The revised regulations made seven significant changes to the 1979 regulations. First, the regulations continued to require a subsidence control plan, although the requirements were revised. They clarified that a general plan for subsidence control must be included in the permit application for all underground mines. Industry's claim raised in *In re: I* that operations using planned subsidence are exempt from the permitting requirements for subsidence control, however, was still rejected by OSM in the revised rule. The revised rule did, on the other hand, exempt planned subsidence operations from the requirement to describe subsidence control measures.[195]

Second, the performance standard regulations were reorganized to remove Sections 817.124 and 817.126 and consolidation of the subsidence control provisions in revised Section 817.121.[196] Third, the regulations were rewritten to clarify the distinction between operations that intend to use planned subsidence and those that intend to use available technology to minimize subsidence. Specifically, Section 817.121(a) was revised to specify that either the mine operator adopt measures consistent with known technology to prevent subsidence causing material damage to the extent technologically and economically feasible, or, as an alternative, the operator could adopt a mining technology which caused planned subsidence to occur in a predictable and controlled manner.[197]

Fourth, the requirements for repairing structures or compensating surface owners for subsidence damage to structures were also revised. The alternative which allowed an operator to purchase the damaged structure, provide an insurance policy, or provide other means for assuring that the payment would occur was deleted. The revised regulation made operators responsible for damage to structures only to the extent required by state

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[193] 47 Fed. Reg. 16,604 (1982).
[194] 48 Fed. Reg. 24,638 (1983).
[195] *Id.*
[196] *Id.*
[197] *Id.*

law. If the operator has no liability under state law, the material damage need not be repaired and compensation need not be paid. Requirements to restore material damage to land that results in a diminution of its value and reasonably foreseeable use were retained.[198]

Fifth, the former buffer zone requirement that the operator make an advance showing of no material damage to perennial streams and underground sources for public water systems in order to mine was deleted.[199] Sixth, a requirement was added to Section 817.121 that operators submit a post-mining detailed plan of the underground workings. The detailed plan may be held as confidential upon the request of the operator.[200] And finally, the notice requirements were revised to limit the required prior notice of underground mining to owners and occupants only above underground workings. The former requirement to notify owners and occupants in adjacent areas was deleted.[201]

E. In Re: II

Industry and environmental plaintiffs challenged the legality of OSM's revised regulations in the United States District Court for the District of Columbia. In *In re: Permanent Surface Mining Regulations Litigation II*, [hereinafter referred to as *In re: II*] many of the issues raised in *In re: I* were again brought before Judge Flannery.[202] Five main issues were raised regarding the subsidence control regulations in *In re: II*:

(1) Industry argued that the land restoration provisions of Section 817.121 were invalid because they were not authorized by the Act.

(2) Industry argued that operations using planned subsidence should be exempt from the land restoration provisions.

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[198] *Id.*

[199] *Id.*

[200] 48 Fed. Reg. 24,638 (1983).

[201] *Id.*

[202] As in *In re: I*, the challenges to OSM's regulations in *In re: II* were separated into three separate rounds for purposes of briefings and argument before the court. Again, there were several separate opinions rendered by the court on the various issues raised. Challenges to OSM's 1983 subsidence regulations were consolidated in Round II of *In re: II*, and a decision was rendered by the Court on October 1, 1984. *In re:* Permanent Surface Mining Regulations Litigation II, Civ. No. 79-1144, (D.D.C. Nov. 1985) (judgment entered against the Dept. of Interior) [hereinafter *In re: II*].

(3) The environmentalists argued that OSM could not limit the repair or compensation requirements for structures to liability imposed by state law, and that the Secretary had not provided adequate rulemaking notice for the change in the rule regarding liability for damage to structures.

(4) Industry argued that the landowner notice provisions of Section 817.122 were invalid because they were not authorized by the Act.

(5) Industry argued that additional requirements in the subsidence control plan pertaining to pre-subsidence surveys and monitoring were not authorized by the Act and were adopted without adequate public notice.

Judge Flannery again upheld the requirement that operations using planned subsidence submit a subsidence control plan and the land restoration requirements. He rejected Industry's arguments that Section 516(b)(1) of the Act only requires the adoption of measures technologically and economically feasible to prevent subsidence of the land, and does not authorize the Secretary to impose additional subsidence control plan requirements on operations using planned subsidence, or to require remedial measures for the restoration of the land beyond the requirements of state common law.[203]

Judge Flannery accepted OSM's interpretation that Section 516(b)(1) of SMCRA addresses the requirement that "industry take all feasible steps to prevent subsidence, but it does not address the question of what happens if subsidence does occur."[204] OSM had further argued that, since no other provision in Section 516(b) deals with remedial requirements once subsidence has occurred, correction of subsidence damage falls under the "catchall" provision of Section 516(b)(10). That provision states that: "with respect to other surface impacts not specified in this subsection . . . [the operator shall] operate in accordance

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[203] The thrust of Industry's argument relied upon the wording of § 516(b)(1) of the Act. That section provides that operators shall adopt measures to prevent subsidence to the extent technologically and economically feasible, "*except* in those instances where the mining technology used requires planned subsidence in a predictable and controlled manner. . . ." SMCRA § 516(b)(1), 30 U.S.C. § 1266(b)(1) (1982). Industry argued that the exception for planned subsidence fully exempted subsidence from longwall mining from the Act's environment performance standards.

[204] *In re: II*, Civ. No. 79-1144, at 5.

with the standards established under Section 515."[205] OSM also argued that since Section 515(b)(2) authorizes restoration of the land "to a condition capable of supporting the uses which it was capable of supporting prior to any mining,"[206] the requirement to restore the land, as opposed to structures, was authorized by the Act. The district court's acceptance of OSM's interpretation is important because it accepts the premise that subsidence prevention and damage restoration are distinct and separable concepts. The difference is particularly relevant in providing for the regulation of longwall mining with its intentional subsidence and almost certain surface impacts.

In view of the practicalities of total extraction mining methods, and the legislative history of SMCRA's subsidence provisions, the court's holding on restoration issues seems to nullify any exemption Congress may have intended for planned subsidence. When applied to individual mine sites, an interpretation that would require operators who use planned subsidence to fully restore land to pre-subsidence conditions may, in some cases, have the same effect as would a prohibition of planned subsidence. Such a result would appear to be contrary to the Congressional intent favoring the "ecologically preferable" and "explicitly endorsed" planned subsidence method of underground mining.[207]

On the issue of limiting repair or compensation requirements for structures under revised Section 817.121(c) to the extent required by state law, Flannery accepted the environmental plaintiffs' claim that the final rule was so different from the proposed rule that inadequate public notice had been given. The proposed regulation would have required repair of subsidence damage or compensation irrespective of state law.[208] Accordingly, the rule was remanded to the agency for reconsideration and to provide an opportunity for additional public notice and comment.[209]

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[205] SMCRA § 516(b)(10), 30 U.S.C. § 1266(b)(10) (1982).

[206] SMCRA § 515(b)(2), 30 U.S.C. § 1265(b)(2) (1982).

[207] *See supra* note 155.

[208] 47 Fed. Reg. 16,604 (1982).

[209] *In re: II*, Civ. No. 79-1144, at 9-11. Because the issue was remanded on procedural grounds, the District Court did not decide the substantive validity of the regulation. Judge Flannery's *In re: I* decision had relied upon § 507(f) of the Act as authority for OSM to include requirements for repair and compensation for damage to

Judge Flannery's *In re: II* opinion also upheld regulations requiring the operator to give notice to surface owners and occupants located above underground workings.[210] Finally, Judge Flannery remanded OSM's revised regulation pertaining to pre-subsidence surveys and monitoring of structures on procedural grounds.[211]

Appeals to the U.S. Court of Appeals are still pending on the *In re: II* challenges to OSM's regulations.[212] However, rather than raise the full range of issues on appeal, Industry has focused its attention on the issue of whether the Act authorizes the restoration requirements applicable to mines using planned subsidence. In their view, Section 516(b)(1) of the Act clearly limits the operator's obligation regarding planned subsidence.

F. Potential Impact of Keystone Case

The Industry in Pennsylvania has sought to avoid directly challenging the Federal subsidence protection provisions in *Keystone Bituminous Association v. Duncan*.[213] However, the Pennsylvania Permanent Regulatory Program provisions[214] on restoration of materially damaged land at issue in that litigation were adopted specifically as a result of the Federal restoration requirement. The Federal regulatory provision[215] is now before the Circuit Court of Appeal for the District of Columbia.[216] Decisions in these cases could be handed down at about the same time — late 1986. Furthermore, OSM may shortly pro-

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structures. In the 1983 revision OSM also relied upon § 507(f), but read it differently to limit compensation to that required under state law. § 507(f) in applicable part reads:

> Each applicant for a permit shall be required to submit to the regulatory authority as part of the permit application [proof of an insurance policy or of self-insurance] . . . Such policy shall provide for personal injury and property damage protection in an amount adequate to compensate any persons . . . *entitled to compensation under the applicable provisions of State law.*

SMCRA § 507(f), 30 U.S.C. §1257(f) (1982) (emphasis added).

[210] *In re: II*, Civ. No. 79-1144, at 8.

[211] *Id.* at 9-11.

[212] *In re*: Permanent Surface Mining Regulations Litigation II, Civ. No. 84-5743 (D.C. Cir.) (consolidated arguments to be heard on Dec. 9, 1986).

[213] *See supra* notes 107 to 121 and accompanying text (for a discussion of the case).

[214] PA. CONS. STAT ANN. tit. 52, § 1406.1-1406.20(a) (Purdon 1966 & Supp. 1986).

[215] *See supra* note 201 and accompanying text.

[216] *See supra* note 212.

mulgate the revised rule on the operator's responsibility for damaged structures, which will likely prompt another round of judicial review at the District Court level.

There are four possible scenarios that could occur with the two pending cases, two of which are problematic. If the Court of Appeals strikes down the land restoration provision as beyond the Act's statutory authorization, and the Supreme Court rules in Industry's favor and overturns the Pennsylvania regulation requiring restoration, it would be fairly clear that Industry need only adopt measures to prevent subsidence. If, on the other hand, the Court of Appeals upholds the Federal restoration requirement and the Supreme Court affirms the lower courts' decision in *Keystone Bituminous*,[217] it would be fairly clear that Industry must restore land materially damaged by subsidence irrespective of their contractual rights.

However, if the Court of Appeals upholds the Federal rule and the Supreme Court strikes down the state's rule, the result would be two inconsistent decisions on two disparate grounds on rules which are similar. If based on constitutional grounds, the Supreme Court's decision would likely control over a court of appeals' decision on statutory or rulemaking grounds. The more difficult dilemma would be presented with the opposite decision - one where the Court of Appeals strikes down the Federal rule, but the Supreme Court upholds the state requirement. The result in this latter case would mean that states such as Pennsylvania, which choose to adopt standards more stringent than Federal requirements, may do so. But where state legislatures have imposed provisions to limit state regulatory standards to ones no more stringent than Federal standards, the state regulatory authorities would not be authorized to adopt restoration requirements.

The final resolution of these issues must still await final action by the Court of Appeals, and additional rulemaking by OSM. In spite of this continuing state of relative uncertainty regarding the OSM subsidence regulations, significant issues relating to the site specific application of the subsidence rules continue to require resolution on a day-to-day basis. The legis-

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[217] Keystone Bitumintous Coal Ass'n v. Duncan, 771 F.2d 707 (3rd Cir. 1985), *cert. granted*, 54 U.S.L.W. 3613 (U.S. March 24, 1986) (No. 85-1092).

lative and regulatory history of the subsidence provisions will continue to provide the framework within which these issues must be interpreted.

G. Repair or Compensation Provisions

On the issue of repair or compensation, OSM is generating mixed signals. In response to Flannery's remand for notice and comment, OSM acted to suspend the "to the extent required under State law" language in 30 C.F.R. 817.121(c)(2) effective March 25, 1985.[218] However, on July 8, 1985, OSM again proposed to revise 817.121(c)(2) to *include* the language suspended on March 25, 1985.[219] In explaining its actions, OSM said that, while it does not view SMCRA as *requiring* OSM to provide repair or compensation independent of that mandated by state law, such a provision would be authorized if the agency had chosen to incorporate one. OSM, however, determined not to incorporate an independent repair or compensation requirement at this time because the agency considers such action "inappropriate."[220]

OSM's position on the issue of authorization is at best contradictory. The better interpretation at this time appears to favor industry's position. Sections 516(b)(10) and 515(b)(2) do not provide standards for repair and compensation; those two provisions combine only to provide authority for restoration, and indeed only specify restoration of land, not of structures. Further, Section 507(f), (used by Judge Flannery to support the repair or compensation requirements when they were considered at *In re: I*) by its own terms appears limited to provide only for compensation under the applicable provisions of state law. These factors seem to weigh in favor of industry's claim that SMCRA neither requires nor authorizes repair or compensation provisions in addition to those found in state law.[221]

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[218] 50 Fed. Reg. 7274, 7276 & 7278 (1985).

[219] 50 Fed. Reg. 27,910 (1985). "[T]he Surface Mining Act does not require operators to repair subsidence caused material damage to structures irrespective of State law. OSM is not asserting that it could not impose such a standard, but only that the law does not require it and that such sweeping responsibility is inappropriate." 50 Fed. Reg. 27,911 (1985).

[220] *See* 50 Fed. Reg. 27,911 (1985).

[221] It would be pointless to contend that pre-existing state requirements - ones based

V. PERMITTING

A. The Requirement to Permit Subsidence Impacts

The fact that one must have a license to conduct surface coal mining operations is clearly provided for in both SMCRA and its legislative history. The basic permitting requirement of the Act is set forth in Section 506(a)[222] which provides that after certain dates "no person shall engage in or carry out on lands within a State any surface coal mining operations unless such person has first obtained a permit. . . ."[223] A "permit" is in turn defined in the Act to mean "a permit to conduct surface coal mining and reclamation operations issued by the State regulatory authority pursuant to a State program or by the Secretary pursuant to a Federal program."[224] In simpler terms, a permit is a written license authorizing one to conduct a surface coal mining and reclamation operation.

Section 516(d) of the Act extends the permitting requirements to the surface operations and surface impacts incident to underground mines. That section states:

> The provisions of title V of this Act relating to State and Federal programs, *permits*, bonds, inspections and enforcement, public review, and administrative and judicial review shall be applicable to surface operations and surface impacts incident to an underground coal mine with such modifications to the permit application requirements, permit approval or denial procedures, and bond requirements as are necessary to accommodate the distinct difference between surface and underground coal mining. The Secretary shall promulgate such modifications in accordance with the rulemaking procedure established in section 501 of this Act.[225]

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largely on common law principles - need not be considered because SMCRA provides a mechanism to change state law. State law has a bearing on the relative rights of the parties with respect to whether longwall mining may be authorized under the deed of the minerals. *See* McGinley, *Does the Right to Mine Coal Under Lease or Deed Include the Right to Extract by Longwall Mining Methods?*, E. MIN. L. INST. 5-1 (1984).

[222] SMCRA § 506(a), 30 U.S.C. § 1256(a) (1982).

[223] *Id.*

[224] SMCRA § 701(15), 30 U.S.C. § 1291(15) (1982).

[225] SMCRA § 516(d), 30 U.S.C. § 1266(d) (1982). The intent of Congress in relation to the permitting of subsidence impacts is set out in the following excerpt from the House Report on SMCRA during the 95th Congress:

Thus, while the Act expressly leaves the adjustment of the permitting requirements (generally applicable to surface mines) to accommodate the distinct differences between surface and underground coal mines to the Secretary's discretion, it nevertheless, makes it clear that both surface and underground mines are required to have a permit under the permanent program.

The permitting requirements of the Act are in turn reflected in OSM's permanent program regulations. These regulations require, among other things, that:

> On and after 8 months from the effective date of a permanent regulatory program within a State, no person shall engage in or carry out any surface coal mining and reclamation operations, unless such person has first obtained a permit issued by the regulatory authority.[226] . . . The permittee shall comply with the terms and conditions of the permit, all applicable performance standards of the Act, and the requirements of the regulatory program.[227]

For underground mines, the operator must submit a subsidence control plan, which includes a description of the measures that will be taken to comply with the subsidence performance standards relating to the minimization of surface impacts from subdience.[228]

B. Definitions and Terminology

1. Permit Area

The definition of the "permit area" in relation to under-

> Since the Act covers surface impacts of underground coal mining concurrently with those of surface mining, underground coal operators will be bound by permit requirements of the act. *They are required to apply for permits, the terms of which include standards relating to minimizing surface subsidence*, sealing portals and openings, disposing of mine wastes, constructing impoundments for mine wastes, revegetating disturbed areas, preventing off-site damages, and discharge of waterborne pollutants.
>
> The Secretary is required to review the basic environmental protection standards of the act and to make those necessary adjustments in the regulations reflecting the inherent difference between surface and underground operations.

H.R. REP. No. 218, 95th Cong., 1st Sess. 93 (1977) (emphasis added).

[226] 30 C.F.R. § 773.11 (1985).

[227] 30 C.F.R. § 773.17(c) (1985).

[228] *See* 30 C.F.R. § 784.20 (1985).

ground workings was initially resolved in OSM's 1979 regulations by specifically defining the "permit area" as follows:

> *Permit area* means the area of land and water within the boundaries of the permit which are designated on the permit application maps, as approved by the regulatory authority. This area shall include, at a minimum, all areas which are or will be affected by the surface coal mining and reclamation operations during the term of the permit."[229]

The 1979 definition thereby tied the "permit area" to the "affected area," which was further defined to include "land or water which is located above underground mine workings."[230]

As part of the 1982 OSM regulatory reform, the Secretary proposed to revise the definition of the term "permit area" to "exclude the area of expected subsidence from the permit area.[231] On April 5, 1983, the Secretary promulgated final rules revising the definition of "permit area." The revised rule followed the definition of "permit area" in Section 701(17) of the Act and, expressly rejected the approach, used in the 1979 regulations, of including the area overlying underground workings in the "permit area."[232]

The preamble to the final rule includes an extensive discussion on the relationship between the final definition of permit area and the area overlying underground mine workings:

> The comments suggesting that the term "permit area" specifically include all areas overlying underground workings has been rejected. The Act requires that the "permit area" include the land covered by the operator's bond. As stated above, this includes all areas upon which surface coal mining and reclamation operations are conducted. Those are the areas for which reclamation operations are planned and for which the performance bond can be accurately set. *Although there is a*

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[229] 44 Fed. Reg. 15,320 (1979).

[230] No statutory provision required the Secretary to define "permit area" in terms of the "affected area." In fact, two alternatives: (1) defining the permit area based on the concept of impacted resources and (2) tying the permit area to coverage by a performance bond, were rejected for policy, not statutory reasons, in the development of the definition in 1979. *See* 44 Fed. Reg. 14,920 (1979).

[231] 47 Fed. Reg. 47 (1982).

[232] 48 Fed. Reg. 14,814 (1983).

> *potential for subsidence causing material damage in areas overlying the underground workings*, there is no reclamation work planned there (unless there will also be a surface coal mining operation on that area). Thus there is no need for a performance bond on those areas. Operator financial responsibility for areas outside the permit area is covered under the liability insurance requirements of Section 507(f) of the Act. *Accordingly, to the extent the definition of "permit area" is tied to the bonding requirements of the Act, it is incorrect to include in the definition any reference to the "areas overlying the underground workings" or to the "affected area."*
>
> Under the revised definition of permit area, the performance standards of the Act will continue to apply to all surface coal mining and reclamation operations. Also, where informational requirements must apply to areas outside the redefined permit area, the provisions enunciating these requirements will be revised if necessary to include information from adjacent areas or other locations.[233]

The legislative history of the term "permit area," while limited, tends to lend support to OSM's revised definition which excludes the area overlying the underground workings. This is evidenced by hearings during the 95th Congress on both Senate Bill S. 7 and House Bill H.R. 2. At those hearings, Governor Herscheler of Wyoming testified as follows:

> The definition of 'permit area' is inadequate and does not describe those lands that should be contained within the boundary of the 'permit area.' . . . The 'permit area' should include the activities defined under 'surface coal mining operations' and should also include surface areas; overlying proposed underground excavations.[234]

Although Governor Herscheler's complaint that the defini-

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[233] 48 Fed. Reg. 14,820-21 (1983) (emphasis added). A similar discussion is included in the Final Environmental Impact Statement accompanying the OSM regulatory reform rulemaking. *See* FINAL ENVIRONMENTAL STATEMENT, *supra* note 183, at IV-61.

[234] *Surface Mining Control and Reclamation Act of 1977: Hearings on S. 7 Before the Subcommittee on Public Lands and Resources of the Senate Comm. on Energy and Natural Resources*, 95th Cong., 1st Sess. 604 (1977) (appendix to the statement of Hon. Ed. Herschler, Gov. of Wyo.); *see also, Surface Mining Control and Reclamation Act of 1977: Hearings On H.R. 2 Before the Subcommittee on Energy and the Environment of the H.R. Comm. on Interior and Insular Affairs*, 95th Cong., 1st Sess. 186 (1977) (appendix to the statement of Hon. Ed. Herschler, Gov. of Wyo.).

tion of permit area did not include surface areas overlying proposed underground excavations was raised before both houses, Congress chose to make no revision to the definition. While not determinative, Congress' failure to revise the definition of permit area in response to this suggestion lends support to OSM's revision of the definition.

2. Affected Area and Adjacent Area

In addition to the term "permit area," there are two other main terms used in the regulations to provide for the description of the mining area overlying underground workings: the "affected area" and the "adjacent area." The definition of the affected area, while relevant primarily only to the issue of whether mines qualify for the two-acre exemption, clearly includes the area located above underground workings.[235]

The definition of the term "adjacent area" does not expressly include the area above underground workings, but does

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[235] 30 C.F.R. § 701.5 (1985). *Affected area* is defined in § 701.5 to mean:

> [A]ny land or water surface area which is used to facilitate, or is physically alterated by, surface coal mining and reclamation operations. The affected area includes the disturbed area; any area upon which surface coal mining and reclamation operations are conducted; any adjacent lands the use of which is incidental to surface coal mining and reclamation operations; all areas covered by new or existing roads used to gain access to, or for hauling coal to or from, surface coal mining and reclamation operations, except as provided in this definition; any area covered by surface excavations, workings, impoundments, dams, ventilation shafts, entryways, refuse banks, dumps, stockpiles, overburden piles, spoil banks, culm banks, tailings, holes or depressions, repair areas, storage areas, shipping areas; any areas upon which are sited structures, facilities, or other property material on the surface resulting from, or incident to, surface coal mining and reclamation operations; and the area located above underground workings. The affected area shall include every road used for purposes of access to, or for hauling coal to or from, surface coal mining and reclamation operations, unless the road (a) was designated as a public road pursuant to the laws of the jurisdiction in which it is located; (b) is maintained with public funds, and constructed in a manner similar to other public roads of the same classification within the jurisdiction; and (c) there is substantial (more than incidental) public use.

Id. The primary application of the term "affected area" is found in relation to the two acre exemption. *See* 30 C.F.R. § 700.11(b) (1985), (which exempts from the program requirements "the extraction of coal for commercial purposes where the surface coal mining and reclamation operation, together with any related operations, has or will have an affected area of two acres or less").

include areas impacted by underground workings.[236] The "adjacent area" is defined as "the area outside the permit area where a resource or resources, determined according to the context in which adjacent area is used, are or reasonably could be expected to be adversely impacted by proposed mining operations, including probable impacts from underground workings."[237]

In accord with the "adjacent area" definition, the permitting regulations require consideration of both the permit area and the adjacent area in the development of the subsidence control plan under Section 784.20.[238] In OSM's development of the subsidence control regulations, one commentator complained that the proposed rules were limited to onsite and surface impacts and did not address offsite or underground impacts. In response, the preamble to the final rule explained:

> OSM's final rules are not limited to onsite impacts. OSM recognizes that certain offsite areas could be affected by subsidence. The final permitting rules and performance standards apply to all lands that may be affected by subsidence. There is no limitation that these rules would only apply to lands within the permit area.[239]

Thus, the terms "permit area" and "adjacent area" work in concert under the regulations to not only cover the areas required to be initially bonded under the program,[240] but also the areas outside the "permit area" that are potentially impacted by the mining operation.[241]

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[236] The interlocking relationship between OSM's definition of "permit area" and "adjacent area" is based upon the premise that OSM's jurisdiction is not limited to the permit area, and correlatively, that all areas subject to mining impacts need not be included within the permit area to be subject to regulation. This result is similar to the situation existing where the permit requirements of the Act extend to the hydrologic impacts of the mine both within and outside the permit area. *See* 30 C.F.R. § 773.15(c)(5) (1986).

[237] 30 C.F.R. § 701.5 (1986).

[238] 30 C.F.R. § 784.20 (1986).

[239] 48 Fed. Reg. 24,640 (1983).

[240] For a discussion of the relationship between the area above underground workings and the bonding requirements see *infra* notes 231-244 and accompanying text.

[241] The difficulties in applying the traditional permit area concepts applicable to surface mines to the area overlying underground workings was resolved in the Illinois regulatory program by defining an entirely new term: the "shadow area," to describe

C. *Subsidence Control Plans*

As part of the required permit application for each underground mine, OSM regulations require that the applicant submit a subsidence control plan to the regulatory authority. The subsidence control plan must set forth the measures that the operator will use to comply with the performance standards pertaining to subsidence and be approved before the permit may be issued for the mine.[242]

At a minimum the subsidence control plan must include a survey to show whether structures or renewable resource lands[243] exist within the proposed permit area and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of the reasonably foreseeable use of such structures or renewable resource lands. If these features are not present, the operator is not required to provide further information regarding subsidence control. If, however, surface structures or renewable resource lands are present, the operator must either (1) show in the plan that subsidence will neither cause material damage to nor diminish the reasonably foreseeable use of such features;[244] or (2) submit a full subsidence control plan for the mine.[245] If such a showing is not agreed to by the regulatory authority, or if the operator determines that such features may be materially damaged or the reasonably foreseeable use affected, submission of additional information in the form of a full subsidence control plan is required.

If a full subsidence control plan is required, 30 C.F.R.

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the area above underground workings. Illinois' regulations define the "shadow area" as follows: "*Shadow area* means any area beyond the limits of the permit area, in which underground mine workings are located. This area includes all resources above and below the coal that are protected by the Act that may be adversly impacted by underground mining operations including impacts of subsidence." ILL. ADMIN. CODE tit. 62, § 1701.5 (1984).

[242] 30 C.F.R. § 784.20 (1986).

[243] *Id. Renewable resource lands* are defined to mean "aquifers and areas for the recharge of aquifers and other underground waters, areas for agricultural or silvicultural production of food and fiber, and grazing lands." 30 C.F.R. § 701.5 (1986).

[244] 30 C.F.R. § 784.20 (1986) (The applicability of most of the Act's subsidence control provisions depends upon a determination that subsidence could cause material damage to the surface or diminution of the reasonably foreseeable use of surface structures or renewable resource lands. The regulations do not, however, include a definition for the term "material damage" as used under the subsidence regulations.).

[245] *Id.*

Section 784.20 dictates that it consist of seven major elements:

> (a) A description of the method of coal removal . . .
> (b) A map of the underground workings which describes the location and extent of areas in which planned-subsidence will be used and includes all areas where the measures described in paragraph (d) . . . will be taken to prevent or minimize subsidence or subsidence-related damage.
> (c) A description of the physical conditions which affect the likelihood or extent of subsidence and subsidence-related damage.
> (d) Except for those areas were planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence or subsidence-related damage . . .
> (e) A description of the anticipated effects of planned subsidence, if any.
> (f) A description of measures to be taken . . . to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of (1) The land or (2) Structures or facilities under state law.
> (g) Other information required by the regulatory authority as necessary to demonstrate that the operation will be conducted in accordance with the applicable performance standards . . . for subsidence control.[246]

VI. BONDING

A. Background

Performance bonding for underground mines was first adopted as part of the permanent program regulations issued on

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[246] 30 C.F.R. § 784.20 (1986). The measures contemplated may include, but are not limited to:

> (1) [b]ackstowing or backfilling of voids,
> (2) [l]eaving support pillars of coal,
> (3) [l]eaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place,
> (4) [t]aking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface, and
> (5) [m]onitoring to determine the commencement and degree of subsidence so that other appropriate measures can be taken to prevent or reduce material damage.

30 C.F.R. § 784.20(d) (1986).

March 13, 1979. At that time, the Secretary acknowledged the "complexity of developing criteria for bonding the surface effects of underground mining."[247] This complexity "and a present lack of adequate information to develop a special bonding program for underground mining . . . led to the deletion" of the bonding provisions applicable to surface impacts of underground mines.[248]

This omission was corrected on August 6, 1980, with the issuance of regulations applicable to bonding for subsidence and mine drainage.[249] The August, 1980, regulation required that measures constructed to prevent damage to surface facilities due to subsidence be subject to bond coverage and that the estimated cost of such measures be included in the estimated bond amount.[250]

These regulations were challenged by the National Coal Association, the American Mining Congress, and the Pennsylvania Coal Mining Association [hereinafter Industry].[251] The Industry plaintiffs argued that the rules improperly required bonding for subsidence control measures. As a result of that litigation, the Secretary agreed to suspend the regulations applicable to bonding of subsidence measures.[252] The suspension was based on the recognition that while there is a need to require completion of surface measures to prevent subsidence before the advance of underground workings, there is no need to bond for these actions or to bond measures not disturbing the surface, since the underground workings would not advance and the work would not be necessary in the case of bond forfeiture.[253]

Section 516(d) on the other hand, makes it clear that the bonding provisions of the Act were intended by Congress to

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[247] 44 Fed. Reg. 15,112 (1979).

[248] *Id.*

[249] 45 Fed. Reg. 52,317 (1980).

[250] 30 C.F.R. § 801.16(a) (1980), *suspended* 46 Fed. Reg. 59,935 (1981).

[251] National Coal Ass'n v. Andrus, Civ. No. 80-2530 (D.D.C. Dec. 23, 1981) (Judge T. Hart granted defendant's motion to dismiss on Dec. 23, 1981, and no appeal was filed); Pennsylvania Coal Mining Assoc. v. Dept. of Interior, Civ. No. 80-2544 (D.D.C. Dec. 28, 1981) (Judge T. Hart granted defendant's motion to dismiss on Dec. 28, 1981, and no appeal was filed). The decision by the Secretary to suspend the requirements for bonding of subsidence control measures sufficiently resolved the issues pending under the industry suit and the cases were dismissed.

[252] 46 Fed. Reg. 59,935 (1981).

[253] *Id.*; *see* 48 Fed. Reg. 32,947-48 (1983).

apply to underground mines, but with "such modifications to the . . . bond requirements as are necessary to accommodate the distinct difference between surface and underground coal mining."[254]

B. OSM's 1983 Bonding Regulations

In 1983, the OSM revised all of the permanent program bonding regulations and specifically reconsidered the provisions for bonding of subsidence control measures.[255] Rather than adopt a new provision for subsidence bonding, OSM determined that "bonding for subsidence control measures is neither necessary nor required by the Act."[256] Instead, OSM added a new section to the regulations for insurance coverage establishing an operator's financial responsibility for ensuring that material damage resulting from subsidence will be repaired. Section 800.14(c) of the revised bonding regulations provides that: "An operator's financial responsibility under Section 817.121(c) of this chapter for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required under Section 800.60."[257]

OSM found that "protection from subsidence damage is better covered by liability insurance since bonding is only intended to guarantee performance of the reclamation plan, while insurance protects against damage to surface owners and property."[258]

C. In Re: II

Judicial review of the issue of whether the OSM regulations

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[254] SMCRA § 516(d), 30 U.S.C. § 1266(d) (1982). The general requirements for obtaining a bond are contained in § 509 of the Act. Section 509 requires, in part that:

> [a]fter a surface coal mining and reclamation permit application has been approved but before a permit is issued, the applicant shall file with the regulatory authority, bond for performance payable, as appropriate, to the United States or to the State, and conditional upon faithful performance of all the requirements of [this] [Act] and the permit.

SMCRA § 509(a), 30 U.S.C. § 1259(a) (1982).

[255] Proposed § 800.17(c) would have required bonding of subsidence control measures. 46 Fed. Reg. 45,082, 45,087 (1981).

[256] *See* 48 Fed. Reg. 32,947-48 (1983).

[257] 30 C.F.R. § 800.14(c) (1986).

[258] 48 Fed. Reg. 32,948 (1983).

properly exclude bonding of areas over underground workings was sought before the United States District Court for the District of Columbia by the National Wildlife Federation [hereinafter NWF] in *In re: II*.[259] NWF argued that measures to prevent subsidence and subsidence damage must be bonded since they are required as part of the reclamation plan for the mine.

In its argument before the court, the Department of the Interior responded that:

> The Act does not require that a bond be imposed based upon mere speculation that subsidence impacts might occur. Rather, pursuant to section 509(a) of the Act, a bond is required to "cover that area of land within the permit area *upon which* the operator will initiate and conduct surface coal mining and reclamation operations . . ." and must be "sufficient to assure the completion of the reclamation plan if the work had to be performed by the regulatory authority in the event of forfeiture. . . ." The mere potential for subsidence is not a surface coal mining operation with an attendant reclamation responsibility . . .
>
> The basis for not requiring the bond amount to include the costs of measures to prevent subsidence damage is clear. The bond amount is required to cover the costs of completing the reclamation plan by the regulatory authority in the event of forfeiture. Subsidence control measures are either completed prior to mining in an area or they are conducted underground during mining (e.g., partial extraction). Bonding of surface measures to be taken to prevent subsidence is not necessary because the work would not be required if the bond were forfeited and thus operations were halted . . . .
>
> The basis for not requiring the bond amount to include restoration costs necessitated by potential subsidence impacts is also clear. The regulatory authority simply cannot reasonably be expected to establish the initial bond amount based upon speculative events, such as subsidence. Neither Section 509 nor any other section of the Act requires a bond amount to include such potentialities. Techniques for estimating the extent of necessary land restoration that may result from subsidence have not been developed and the amount of the performance bond based on estimated costs would be purely conjectural.

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[259] Challenges to the bonding regulations were consolidated in Round II of *In re: II*. *See supra* note 187 and accompanying text.

> Nevertheless, such impacts occasionally do occur. If such impacts occur, the regulations impose a reclamation responsibility upon the permittee even if such impacts are outside the permit area. Whether the impacts are inside or outside the permit area, the performance standards of 30 C.F.R. Part 817 provide applicable reclamation requirements. Just as the reclamation responsibility is not limited by the regulations to the permit area, neither are the bonding requirements of the program.[260]

On October 1, 1984, Judge Flannery issued his second round decision in *In re: II* and held that OSM had lawfully adopted its bonding requirements pertaining to subsidence. Judge Flannery agreed with OSM that "at the beginning of the underground mining operations, . . . it would be pure speculation to require bond for damage to land from subsidence. The bond must be adjusted, however, as necessary, to cover restoration of the land once material damage occurs due to subsidence."[261]

VII. SECTION 522(E) PROHIBITIONS

Areas designated by Congress to be unsuitable for mining are another area of subsidence regulation receiving a great deal of attention from environmentalists, Industry, and OSM. Section 522(e) of the Act prohibits mining in certain areas, subject to exceptions for areas in which valid existing rights (VER) exist. Included in the prohibitions are areas commonly called "buffer zones," which are further described in Sections 522(e)(4) & (5) as areas within 100 feet of a public road, areas within 300 feet of any occupied dwelling (absent a waiver by the owner), or "any public building, school, church, community, or institutional building, public park, or within 100 feet of a cemetery."[262]

Whether the prohibition in Sections 522(e)(4) & (5) of the Act applies to underground mining is unclear.[263] On April 3, 1985, the Secretary indicated that there was a question regarding what types of incidental surface coal mining operations - partic-

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[260] Brief for Department of the Interior, *In re: II*, *supra* note 187, at 99-109.

[261] *Id.* Slip Op. at 44.

[262] SMCRA § 522(e)(4), 30 U.S.C. § 1272(e)(4) (1982).

[263] SMCRA § 511(e)(5), 30 U.S.C. § 1272(e)(5) (1982). The legislative history of §

ularly as to the surface impacts of underground mining - are prohibited within the buffer zones. In June, 1985, the Secretary initiated the rulemaking process and suggested alternative approaches to the issue.

Since the Secretary's possibilities range from prohibiting all underground mining activities within the buffer zone to allowing all such underground mining activities, it is very difficult to predict what the final result will be. At one extreme, the regulation could disallow such passive uses as office buildings and parking lots from being installed in a buffer zone, if those passive uses are part of an underground coal mine as broadly defined in the Act.

The Joint Committee of the National Coal Association and the American Mining Congress, representing Industry, challenge any application of the buffer zone prohibitions to underground mining operations. Industry has commissioned a study by an independent engineering firm to substantiate the potentially disastrous consequences stemming from application of buffer zone prohibitions to underground mining. Potentially, these buffer zone requirements could cause large amounts of reserves to be lost because of the blocks of coal that would have to be left under roads, residences and buildings. Furthermore, the buffer zones would disrupt logical mining plans because of the barriers created by the large blocks of coal required to be left in place.

Despite Industry's efforts, OSM may be swayed by the adverse reactions and publicity generated by certain incidents of subsidence near homes and recreational areas. While OSM seems to have many alternatives in this area, it may well be that the complexities of administration are such that, for practical pur-

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522(e)(4) and (5) indicates that it was changed from a consideration to be made during the permitting process to an absolute prohibition. *See* H. REP. 93-1072, 93d Cong., 2d Sess. (1974). Section 209(d)(4) in H.R. 11500 on permit approval providing that the regulatory authority shall not issue a permit unless the applicant affirmatively demonstrates that the land to be affected does not lie within 300 feet of an occupied dwelling, unless waived, or within 300 feet of any public building; school, church, community, or institutional building, public park or cemetery; nor within 100 feet of a road right of way. Section 209(d)(9) of H.R. 11500 provided the same considerations with respect to National Parks, Forests and Refuges. The prohibitions of H.R. 11500 were added to S.425 in the next Congress during the Conference Committee's consideration of the bill. Dunlap, *supra* at 22. *Compare* § 216(c)(1) of S. 425, in S. REP. 402, 93rd Cong., 1st Sess. (1973) *with* § 522(e) of S. 425 in H. R. REP. No. 1522, 93d Cong., 2d Sess. (1974).

poses, OSM will actually be choosing between the administrative convenience provided by the two extremes, i.e. to apply Sections 522(e)(4) and (5) to all or to none of the surface impacts of underground mining operations.

VIII. CONCLUSION

While the common law approaches to subsidence liability have been sorted out by the courts of most states, the federal judiciary is only now becoming involved in the subsidence issues presented by federal mining legislation. The subsidence issues raised by the Surface Mining Control and Reclamation Act of 1977 are being raised contemporaneously with many other issues that arise under the Act, and in the setting of extremely complex litigation. As a result, the final answers may not be reached for several years, and both environmental groups and Industry will be involved in very costly, high stakes litigation until answers are crystallized. The answers reached by the courts could in any case result in dramatic changes for coal mining in the United States. While SMCRA may not represent a situation where the cure is worse than the disease, it does seem that it will be several more years before the furor generated by the legislation begins to "subside."