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**MULTIPLE MINERAL DEVELOPMENT CONFLICTS: AN ARMAGEDDON IN SIMULTANEOUS MINERAL OPERATIONS?**

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**INTRODUCTION**

Multiple mineral development conflicts probably had their genesis in Titusville, Pennsylvania. In August 1859, Colonel Edwin L. Drake staked his first ***oil*** well location on the rich coalbeds of Eastern Appalachia. Innocent in his subsequent discovery lay the seeds of conflict. At once, miners and ***oil*** and gas operators became antagonists. Few could have divined the magnitude of legal and technological conflicts between competing mineral owners occasioned by that shallow discovery.[[1]](#footnote-2)1

Initially, the problems were of a legal nature, such as the ownership of stratigraphic fees or the statutory conflict between locatable minerals and leasable minerals on public domain lands- Now with the application of conservation principles and policies of multiple use, development conflicts between simultaneous extraction operations are coming into sharper focus.

Current mineral development conflicts arise on two fronts. First, they arise in the context of operational conflicts of stratigraphically separated mineral deposits subject to concurrent or simultaneous extraction. Second, they arise in the context of commingled or associated minerals, as with methane gas in coal seams. Resolution of the former requires balancing of land use priorities. Resolution of the latter requires determination of ownership before contending with multiple use questions. To a greater or lesser extent, the issues of ownership, access, and damages are common to any analysis of both categories.

This article will focus on the legal and technological conflicts of simultaneous or concurrent mineral extraction operations on the same lands. Its purpose is to acquaint the practitioner and mineral operator with the issues. It will likewise serve to propose some commonsense legal pegs upon which practitioners, as well as operators, legislators, and the judiciary, might hang these conflicts. For convenience, conflicts are addressed and analyzed against the backdrop of federal, Indian, state, and private lands.

Multiple mineral development is but one facet of the broader classification of multiple use, involving conflicts between surface owners, conflicts between surface and mineral owners, and conflicts between ecologists and developers in the land use planning sense. These latter areas of conflict are beyond the scope of this article and are addressed in existing literature.[[2]](#footnote-3)2 They will be referred to only insofar as the law pertaining to such conflicts is useful to resolution of problems between mineral developers-

**I. ORIGINS OF CONFLICTS**

One author postulates that multiple mineral development conflicts had their origins in man's first recognition that diverse minerals in the same lands could be separately owned and individually leased.[[3]](#footnote-4)3 This view is myopic- Efforts were made to create subjacent fees only because minerals were found in subjacent strata. Subjacent strata resulted from depositional processes over geologic time. The potential for conflict, therefore, existed long before man attempted to apply common law property concepts to stratigraphic intervals.

Efforts to draw the infinitely more complex product of sedimentary deposition into the framework of the common law rules governing real property law served only to define the problem. However, the inchoate conflict, buried in subterranean layers, matures first to full-blown confrontation as mining technology is applied. It can be said that the origins of conflict lie (1) in sedimentary deposition, (2) in the application of legal concepts to stratigraphic layers, and (3) in methods of extraction. Each must be analyzed in its own right to fully appreciate the problem of multiple mineral development conflicts.

**A.   Deposition, Stratigraphic Ownership, and Extraction**

**1.   *Deposition-Sedimentation***

The potential for conflict in multiple mineral development stems in the first instance from geologic processes which resulted in physical and chemical deposition of sediments. Existing land masses weathered and eroded. Particulates were transported by wind and water to form layered beds on valley floors.[[4]](#footnote-5)4 Sea-borne salts precipitated out of solution to form uniform strata containing inorganic minerals such as phosphates, potassium compounds (potash), sulfates, halite, and the like-[[5]](#footnote-6)5 These sedimentary deposits were sometimes thousands of feet thick.[[6]](#footnote-7)6 With the passage of geologic time, sedimentation was affected by periodic changes in climate, the advance and recession of inland seas, and the cyclical movement of tectonic plates- New rocks were exposed to erosion, and others were submerged to form basins which filled with new beds.[[7]](#footnote-8)7

Superimposed upon this scenario was the deposition of organic materials which formed the energy minerals. During the Paleozoic and Mesozoic Eras, primordial forests grew. Animal life inhabited the predominantly lowlying land masses. As the life forms died, the organic material decayed and was eventually overlain with new sediments and precipitates.[[8]](#footnote-9)8 These organic sediments were subjected to bacterial action, pressure, and heat- Petroleum formed from the remains of tiny plant and animal life which inhabited Pennsylvanian seas. Droplets of ***oil*** and bubbles of gas migrated upward from the organic rich mud beds into porous sandstones and limestones. Overlying sediments, impervious to migration, formed stratigraphic or structural traps to seal the ***oil*** and gas in place.[[9]](#footnote-10)9 The same forces that formed petroleum and natural gas likewise transformed organic matter into coal, kerogen (the progenitor compound of shale ***oil***), and other solid and semi-solid bitumens such as gilsonite, rock asphalt, and tar sands, which constitute our primary and secondary fossil fuel sources today.[[10]](#footnote-11)10 Although some operational conflicts occur between minerals contained in layered rock sequences and those originating in lode or veins, most multiple mineral development conflicts occur between minerals deposited by sedimentation-

**2.   *Legal Origins of Conflict-Stratigraphic Fees and Statutory Frustration***

The legal origin of conflict in multiple mineral development centered around severance of the surface and mineral estates. As the industrial revolution reached the United States, sources of coal were sought to fire the furnaces of a fledgling iron and steel industry.[[11]](#footnote-12)11 Coal was locked in sedimentary layers underlying agricultural lands- As it is today, so it was in pastoral America-the farmer did not possess the capital and technology to enjoy the minerals, especially coal, buried in his lands.[[12]](#footnote-13)12 Common law principles of real property ownership were adapted to meet these needs.

At common law, the areal extent of ownership of real property was measured in vertical boundaries which extended from the heavens to the center of the earth.[[13]](#footnote-14)13 Eventually, as the worth of minerals in different strata was recognized, minerals in place were severed by conveyance from the residue of the soil along horizontal planes, as effectively as previously observed vertical demarcations-[[14]](#footnote-15)14 Horizontal stratification of land ownership may be referred to in the context of conveyancing as establishing *subjacent fees* or as effecting a horizontal severance.[[15]](#footnote-16)15

But the conflict did not arise exclusively from adaption of common law to stratigraphic ownership- Legislative action affecting public domain lands created statutory conflicts between locatable minerals under the General Mining Law of 1872[[16]](#footnote-17)16 and the Mineral Lands Leasing Act of 1920.[[17]](#footnote-18)17 Legislative classification or definition of minerals as with rock asphalts, ***oil*** shales, and other hydrocarbons and the leasing policies affecting those minerals created yet greater conflicts-[[18]](#footnote-19)18 These conflicts have only recently been statutorily resolved.[[19]](#footnote-20)19

Thus the stage was set- With the advent of the ***oil*** industry in coal country, the scene was ripe for eruption of operational conflicts via simultaneous operations through the application of mining technology.

**3.   *Extraction Methods***

Technology applied to both the ***oil*** and gas and mining industries is the last element in the origin of operational conflicts. To understand the conflict, a brief description of ***oil*** and gas drilling operations and current mining methods is warranted.

**a.   *Oil and Gas***

***Oil*** and gas is found in reservoirs created by stratigraphic or structural trapping mechanisms. Access to the reservoir is made through a hole drilled from the surface into the petroleum or natural gas bearing beds. Concentric strings of tubing are inserted into the reservoir. The exterior string is perforated to allow ***oil*** or gas to flow through the outer string, called the casing, into the inner string or production tubing. The differential in pressure between atmospheric pressure in the well bore and the reservoir pressure drives the ***oil*** and gas up the tubing to the wellhead.[[20]](#footnote-21)20 As the reservoir is depleted or because other well bores have breached the pressure system, pressure decreases to the point that the ***oil*** and gas can no longer be recovered without resorting to secondary recovery techniques-[[21]](#footnote-22)21

**b.   *Mining***

The two classical methods of mining which place mining operators at loggerheads with the ***oil*** and gas industry are (1) the conventional room and pillar mining associated with underground coal mines of Pennsylvania, Ohio, and West Virginia and the precious metals mines of the West and (2) strip and open pit mining associated with coal in Minnesota, Montana, and Wyoming and with copper operations in Utah, Montana, and Arizona.

Room and pillar mining occurs in two phases. *First mining* drives rooms throughout the limits of the mine, separated by narrow ribs or roof support pillars set at regular intervals. Rooms are connected by tunnels and haulageways. Upwards of fifty percent of the bedded deposit is recovered in first mining. During *second mining*, the support pillars are systematically collapsed and mined.[[22]](#footnote-23)22 An additional twenty-five percent of the reserve can be recovered in second mining, for a total recovery in some cases of ninety percent of the mineral in place-[[23]](#footnote-24)23 This mining method is used for coal,[[24]](#footnote-25)24 potash,[[25]](#footnote-26)25 and ***oil*** shale[[26]](#footnote-27)26 and can be used for any bedded mineral, including metallic minerals such as iron ore, lead, and zinc-[[27]](#footnote-28)27

The natural effect of collapsing or caving the pillars during second mining is subsidence of overlying strata. Sedimentary beds are subject to vertical and lateral compressive forces which are generally considered to be in equilibrium. The effect of underground mining is to create a void or cavern in the strata, thereby diminishing the vertical support and, to a lesser extent, the lateral support. This results in collapse or subsidence of overlying beds into the void until equilbrium is again established. Successive beds collapse to fill voids created by the collapsing of underlying beds, until the surface itself subsides. The area of subsidence at the surface is greater than the actual mined-out area underground. The angle created by subsidence is called the slope or limiting angle and is relatively small for strong rocks and larger for weaker rocks.[[28]](#footnote-29)28

Subsidence generally occurs in waves at intervals- In the case of potash beds mined by the room and pillar method, surface subsidence has been documented as becoming noticeable within thirty-five days after first being detected underground. In one instance, the surface subsided a total of six feet within 200 days and during the succeeding two years subsided an additional one and onehalf feet.[[29]](#footnote-30)29 The effect of subsidence along the limiting angle may be the shearing of the well bore, and possible intrusion of ***oil***, gas, or water into the mine. Naturally occurring underground aquifers are ruptured and could cause flooding of the mine.[[30]](#footnote-31)30 Subsidence, therefore, poses a major threat to overlying mineable beds as well as to ***oil*** and gas or geothermal wells- The direct conflicts which result from room and pillar mining are discussed in a subsequent section of this article.[[31]](#footnote-32)31

Not all mining plans call for second mining. Some mine plans provide for roof support pillars to be left in place. At least for the foreseeable future, no subsidence will occur. However, all mines will eventually collapse over time, as vertical and horizontal compressive forces achieve equilibrium.

Strip and open pit mining are methods of surface mining whereby the overburden is removed to expose the bedded mineral deposits. The minerals are then mined by blasting and are removed with power shovels.[[32]](#footnote-33)32 Strip mining refers generally to the surface mining of coal, while open pit mining refers principally to the mining of metalliferous ores-[[33]](#footnote-34)33 Classic examples of open pit mines are seen at Kennecott Copper Company's Bingham Canyon Mine near Salt Lake City, Utah, and Anaconda Company's Berkeley Mine in Butte, Montana. The natural effects of strip or open pit mining are the temporary destruction of the surface until mining is completed and the surface is reclaimed. The direct conflicts occasioned by surface mining are detailed in a subsequent section of this article.[[34]](#footnote-35)34

Solution mining, *in situ* leaching, and bore hole mining are all names for yet a third extraction method-[[35]](#footnote-36)35 Extractive fluids are injected through well bores into the ore beds. Minerals dissolve into solution and are pumped or air lifted to the surface. Texasgulf Inc. mines potash by this method from its Cane Creek Mine near Moab, Utah.[[36]](#footnote-37)36 The injection and retrieval phases of solution mining are analogous to ***oil*** and gas secondary recovery operations with their attendant conflicts- The cavern created by removal of the dissolved mineral ores results in subsidence problems similar to those associated with conventional underground mining techniques.

**B.   Classic Conflicts**

The combination of sedimentary beds, stratigraphic ownership, and current mining technology (extraction methods) gives rise to several classic conflicts. Conflicts in simultaneous extraction operations on the same lands typically occur when ***oil*** and gas operations are undertaken on the lands from which minerals are being extracted by surface or underground mining methods. The extraction of one mineral may physically damage, contaminate, or preclude the development of the other. The inevitability of subsidence in second mining and the resulting intrusion of ***oil*** and gas into the mine pose the major problems to compatibility of simultaneous underground mining and ***oil*** and gas operations. In the case of surface mining, destruction of the surface threatens existing surface facilities or precludes simultaneous operations altogether. Conflicts will be discussed in the context of these two mining methods.

**1.   *Underground Coal Mining v. Oil and Gas***

Coalbeds and ***oil*** and gas fields are often found in the same geographical area.[[37]](#footnote-38)37 Conflicts between these two minerals first arose in the coalfields of Appalachia,[[38]](#footnote-39)38 and more recently have arisen in Wyoming-[[39]](#footnote-40)39 ***Oil*** and gas are seldom found overlying coal seams and are usually produced from deeper strata.[[40]](#footnote-41)40

An existing ***oil*** or gas field creates many problems for the underground miner- Wells, whether producing, shutin, or plugged and abandoned, may contain fluids under extreme pressure which could pose hazards if released into the mine should mining equipment intersect the well bore.[[41]](#footnote-42)41 Literally thousands of wells have penetrated coal seams in Ohio, Pennsylvania, and West Virginia over the last 125 years. Unfortunately, reporting requirements in most ***oil*** and gas producing states are of relatively recent origin, and earlier locations are not a matter of public record. In many cases, there is no surface evidence of old well locations.[[42]](#footnote-43)42 The mining industry has yet to develop technology which will locate existing wells from underground mines-[[43]](#footnote-44)43

The most serious problem is the need to precisely locate the well bore in the mineable horizons. Wells drilled with cable tools, as most old wells were, tend to spiral downward in a counterclockwise direction. Prior to the development of accurate borehole survey equipment, holes drilled with rotary tools were even more erratic than those drilled with cable tools.[[44]](#footnote-45)44 Although the bottom hole location could conceivably be situated on the vertical directly below the surface hole location, the chances of having a straight hole by the plumb at the point of intersection with the coal mine are relatively slim-[[45]](#footnote-46)45 The hazard created by inability of the miner to accurately locate the well bore prevents him from properly positioning his ribs or pillars to protect the well and mine. The frequency with which holes deviate from the vertical caused the United States Department of Interior, Bureau of Mines, to recommend that directional well surveys be run in all wells which penetrate coal seams at depths greater than 400 feet below the surface.[[46]](#footnote-47)46

Further, thousands of wells had been abandoned before state conservation commissions established plugging procedures-[[47]](#footnote-48)47 Early wells were plugged in a haphazard manner or not plugged at all. Improperly plugged wells contain fluids consisting of gas, ***oil***, and water, or any combination of the three, which entered the well bore from fluid producing formations. Fluids may enter after the casing has been pulled or after casings have corroded. In older wells, plugging was accomplished by throwing rocks, trash, and even tree limbs or timbers down the hole or by sealing the well with wooden plugs driven into the top of the hole.[[48]](#footnote-49)48 Given the risk to underground operators, prudent miners might offer to acquire old existing wells and plug them themselves to ensure that proper plugging procedures are observed-[[49]](#footnote-50)49

Gas reservoir pressures constitute yet another concern of underground coal miners. Well bores penetrate the coal seam to tap stratigraphically lower lying ***oil*** and gas reservoirs. High pressure ***oil*** reservoirs produce substantial quantities of gas in addition to the ***oil***.[[50]](#footnote-51)50 Dangers from explosion and fire resulting from a breached or intersected well bore pose a substantial risk to mining operations-[[51]](#footnote-52)51 Well bores may be both intentionally and accidentally intersected by continuous miners.[[52]](#footnote-53)52 Sparks may be created as the cutting edge of the machine head bites into the casing string instantaneous with the explosive expansion of gas into the mine-[[53]](#footnote-54)53 In lower pressure ***oil*** reservoirs, high pressure gas may be injected down the annular space between the casing and production tubing to give lift to the ***oil*** column.[[54]](#footnote-55)54 The hazard of intersecting the low pressure gas-lift well is no less serious than intersecting a high pressure ***oil*** well-

It should be noted that a standing column of ***oil*** in a breached well bore will gush into the mine, but does not represent the risk of explosion that exists with high pressure gas. However, it has been known to displace machinery.[[55]](#footnote-56)55 Fire can occur from gases which escape from solution; however, damage is generally minimal and localized-

Apart from dangers created by breached well bores is the concomitant problem of natural gas leakage from the wells. Gas is known to slow-leak into underground mines in the proximity of ***oil*** and gas wells.[[56]](#footnote-57)56 Where wells have been improperly drilled, cemented, or plugged, natural gas can leak from the well into the coal seam or protective pillars to enter mine headings or along the long wall-[[57]](#footnote-58)57

Finally, ***oil*** and gas operations conflict with coal mining due to the positioning of protective pillars around existing well bores. It appears as though the idea for protective pillars was conceived by the ***oil*** and gas industry to preclude dislocation and rupturing of the well bore caused by subsidence following second mining.[[58]](#footnote-59)58 The normal rib or roof support pillars called for in the mine plan for first mining can be used as the pillar in those instances where the well bore conveniently intersects the coal seam at a location scheduled for a pillar, assuming that the pillar dimensions are adequate to safely accommodate the well bore- The mine plan will likely need to be redesigned to place a larger than normal pillar out of sequence to other rib pillars in the plan in order to ensure the protection of the well bore and ultimately of the mine.

The disadvantages to the coal miner of protective barrier pillars, as distinguished from rib or roof support pillars, are legion.[[59]](#footnote-60)59 Coal seams are permeable and allow leakage of natural gas into the mine- Truck haulageways have to be redirected around an irregularly placed or oversized pillar, diminishing the safety afforded by a straight haulageway. Ventilation is adversely affected because of the increased distances air must travel. This results in greater than normal pressure losses at the entries. In those instances where wells have been abandoned and pillars are left to protect the mine from hazards of an improperly plugged well, a systematic method of recovery during second mining is interrupted, as total caving of the roof cannot occur. Overburden weight is redistributed to remaining protective pillars, resulting in general deterioration of the roof and adjacent pillaring operations. Random coal blocks left to protect the well bores likewise pose a significant hazard to personnel who are second mining, because roof collapse is not predictable. In those instances when barrier pillars are left around shut-in or producing wells, no second mining can occur. The coal miner is required to leave substantial resources in place to protect the well. These reserves, depending upon the spacing pattern or frequency of wells, can result in substantial losses to the miner.[[60]](#footnote-61)60 In fact, when wellspacing is on close or regular patterns, mining might be totally precluded.[[61]](#footnote-62)61

Whether the coal remains in place or has been mined, ***oil*** and gas operations can proceed with relatively few problems- The converse is not true, however. Mining operations could be severely hampered, if not precluded, when development of ***oil*** and gas fields predate the mining operation.[[62]](#footnote-63)62 But where second mining is not contemplated, resolution of a conflict on the basis of priority in favor of the underground miner might require the miner to leave substantial islands in place from which ***oil*** and gas operators could cluster drill.[[63]](#footnote-64)63

**2-*Underground Coal Mining v. Methane***

Methane is the primary constituent of natural gas[[64]](#footnote-65)64 and is denominated variously as methane gas, firedamp, and coal or coalbed gas,[[65]](#footnote-66)65 identifying that gas which is emitted from underground coal deposits- It constitutes a separate category of conflict from that posed by coal and ***oil*** and gas. Issues involve first, ownership and second, extraction.[[66]](#footnote-67)66

Typically, methane gas is ventilated to the atmosphere by coal mines as a safety measure.[[67]](#footnote-68)67 Approximately 100 billion cubic feet of gas each year is ventilated in the United States-[[68]](#footnote-69)68 However, in an era of energy consciousness, technological efforts to capture the methane are being made. Three possible methods have been utilized to date. One method calls for the drilling of small diameter vertical boreholes into the coal seam and hydrofracturing with jelled water and propping sand.[[69]](#footnote-70)69 The obvious risk of hydrofracturing is possible damage to the coal seam and roof strata-[[70]](#footnote-71)70

Longwall gob constitutes yet another procedure. Here, small diameter vertical boreholes used in conjunction with longwall mining are drilled through the facies, and methane gas is siphoned off as it collects in the headings. However, this procedure requires that a shaft be dug and facies cut.[[71]](#footnote-72)71 Only a coal miner would invest the capital for this type of venture- Should he then be required to wait for the gas lessee to demethanate his mine?

A third method of retrieving methane is to drive horizontal radial holes from a vertical shaft into the surrounding coal and capture the methane as it is released into the holes.[[72]](#footnote-73)72 This method also requires the gas lessee to sink an expensive vertical shaft, as in longwall gob-

The volume of high BTU gas contained in United States coalbeds (estimated to be approximately 300 trillion cubic feet) equals the entire known recoverable reserves of natural gas.[[73]](#footnote-74)73 Recent U-S. Bureau of Mines studies indicate that production of methane from coal beds is commercially feasible.[[74]](#footnote-75)74 Most high-BTU gas is found in deep-lying high ranked coalbeds. Initial research reveals that deep high rank coalbeds in Colorado, Utah, New Mexico, Oklahoma, and Arkansas, as well as Appalachia, may contain commercial gas.[[75]](#footnote-76)75

**3-   *Underground Potash Mining v. Oil and Gas***

The conflicts arising out of simultaneous developments of potash and ***oil*** and gas have been expertly documented by Judge Bryant H. Croft.[[76]](#footnote-77)76 They arose in the Paradox Basin of Southeastern Utah and the Permian Basin of New Mexico, where rich potash beds of the Hermosa Member of the Paradox Formation (Utah) and Permian Series (New Mexico) were deposited upon older ***oil*** and gas bearing strata-[[77]](#footnote-78)77 These potash deposits are believed to have resulted from evaporation of saline seas in hot arid climates.[[78]](#footnote-79)78 Few ***oil*** and gas wells have been drilled through the Paradox Basin potash deposits without encountering some ***oil*** and gas-[[79]](#footnote-80)79 Current production still comes from the Ismay and Desert Creek Formations. ***Oil*** and gas operators are resorting to secondary recovery techniques in the older Aneth and Anido Creek fields.[[80]](#footnote-81)80 However, substantial development continues in San Juan and Grand Counties, Utah-

Conflicts in simultaneous operations are similar to those of coal and other bedded deposits.[[81]](#footnote-82)81 Subsidence of potash mines shears ***oil*** and gas wellbores-[[82]](#footnote-83)82 It also ruptures up aquifers[[83]](#footnote-84)83 which conceivably could flood the mine- Intersection with wellbores during mining creates the hazard of gas explosions and fires in conventional potash mines,[[84]](#footnote-85)84 or the loss of drilling fluids and contamination of the potash beds either through intersection of the wellbore or faulty cementing through the salt zone[[85]](#footnote-86)85 in either conventional or solution mines- Gases occur naturally in mines.[[86]](#footnote-87)86 However, leakage from active or even plugged and abandoned wells creates even greater risks to the potash mines.[[87]](#footnote-88)87 Fatalities in the 1963 gas explosion in the Cane Creek Mine resulted not only in Texasgulf switching to solution mining, but more importantly resulted in regulatory interdiction to prevent further risks of loss of life, machinery, and mineral reserves occasioned by conflicts between extraction methods for these two minerals-[[88]](#footnote-89)88

**4.   *Underground Oil Shale Mining v. Oil and Gas***

Perhaps the most recent conflict is posed by the proposed underground mining of ***oil*** shale from known ***oil*** and gas fields of eastern Utah and western Colorado. Although several different mining methods are being tested in prototype developments, the conventional room and pillar method[[89]](#footnote-90)89 used in the Colony Mine at Parachute, Colorado, and proposed for Tosco Corporation's Sand Wash Project near Vernal, Utah, constitutes the greatest problem in terms of multiple mineral development conflicts-

***Oil*** shale is a compact sedimentary rock which contains no ***oil*** as such, but which upon distillation will yield ***oil*** from a sapropelic material called kerogen.[[90]](#footnote-91)90 ***Oil*** shale beds in eastern Utah and western Colorado occur in tertiary lakebeds of the Green River Formation-[[91]](#footnote-92)91 The richest mineable bed is in the Mahogany zone in the Parachute Creek Member.[[92]](#footnote-93)92 The ***oil*** shale beds of Utah and Colorado provide the United States with its primary supplementary sources of liquid hydrocarbon fuels-[[93]](#footnote-94)93

Tosco's proposed Sand Wash Project is situated on Utah state lands approximately 30 miles due south of Vernal, Utah. In addition to the ***oil*** shale leases owned by Tosco, the lands are covered by State of Utah ***oil***, gas, and hydrocarbon leases, metalliferous (uranium) mining leases; gilsonite leases; and, in some cases, bituminous sands-asphaltic sands leases.

The ***oil*** and gas leases have been committed to the 89,848.49 acre Natural Buttes Unit, one of the largest federal units ever created.[[94]](#footnote-95)94 The unit agreement unitizes the Wasatch and Mesaverde Formations for the production of ***oil*** and gas-[[95]](#footnote-96)95 Originally, drilling proceeded on 640-acre patterns, but is currently being conducted on 160-acre patterns.[[96]](#footnote-97)96 The operators and their respective farmees have produced gas from lenticular sands since first unit production on July 16, 1969-[[97]](#footnote-98)97 Since then, in excess of 300 wells have been drilled to the unitized formations.[[98]](#footnote-99)98 The predecessor Bitter Creek, South Ouray, Uintah, and Ute Trail Units on the same lands have experienced drilling and exploration activity since the late 1940's and have produced since the late 1950's-[[99]](#footnote-100)99 ***Oil*** is currently being produced on forty-acre drilling and spacing units in the Natural Duck Field within the unit boundaries northwest of Sand Wash from shallower nonunitized zones in the Green River Formation.[[100]](#footnote-101)100 Recently, the Utah Board of ***Oil***, Gas, and Mining established 160-acre drilling and spacing units for production of gas from the non-unitized Green River Formation underlying lands immediately adjacent to Sand Wash[[101]](#footnote-102)101 in a noticeable progression of activity southeasterly toward the Tosco mine site-[[102]](#footnote-103)102 The Mahogany zone is encountered at approximately 2,500 feet below the surface. Both Wasatch-Mesaverde and Green River production is had from below the ***oil*** shale formations.[[103]](#footnote-104)103 In short, the Sand Wash and surrounding areas appear as a veritable pincushion, supporting many old plugged and abandoned wells, inactive and as yet unplugged wells, currently producing wells, and proposed wells-

Mining of ***oil*** shale also presents possible problems in simultaneous development by virtue of commingled minerals. Dawsonite, nahcolite, and halite, all sodium compounds, have been found in the ***oil*** shale of the Piceance Basin. At one time, nearly 1.1 million acres of ***oil*** shale were contained in federal sodium preference right leases in Utah, Colorado, and Wyoming.[[104]](#footnote-105)104 Retorting[[105]](#footnote-106)105 also yields inorganic byproducts of ammonia and sulfur-[[106]](#footnote-107)106 In addition, dolomite, quartz, and feldspar are found in Green River ***oil*** shales.[[107]](#footnote-108)107

**5-   *Oil-Impregnated Rocks v. Oil and Gas***

Another category of minerals which creates a conflict with ***oil*** and gas and ***oil*** shale production is that of ***oil***-impregnated rocks or solid hydrocarbons which include tar sands,[[108]](#footnote-109)108 rock or native asphalt,[[109]](#footnote-110)109 gilsonite,[[110]](#footnote-111)110 ozokerite,[[111]](#footnote-112)111 wurtzilite,[[112]](#footnote-113)112 and the like-[[113]](#footnote-114)113 ***Oil***-impregnated rocks are generally derivatives of petroleum crudes which migrated from deeper horizons to shallower depths through cracks and fissures. Volatiles escaped through evaporation, leaving a solid or semisolid residue. Eventually these rocks or veins were sometimes exposed at the surface by faulting or folding of beds.[[114]](#footnote-115)114

Although major tar sands deposits have been discovered in Missouri, Kansas, Oklahoma, Colorado, California, and Wyoming,[[115]](#footnote-116)115 Utah contains nearly ninety-five percent of all mapped United States reserves of ***oil***-impregnated rocks-[[116]](#footnote-117)116 Almost all of these rocks appear in the Uinta Basin of eastern Utah, occurring primarily in the Green River Formation.[[117]](#footnote-118)117 Many are located in the same geographical areas as those containing commercial quantities of ***oil*** and gas and ***oil*** shale- The only major commercial deposits of gilsonite are situated in Utah.[[118]](#footnote-119)118 ***Oil***-impregnated rocks are typically surface mined from veins which outcrop, although tar sands may be mined by fireflooding or other *in situ* techniques.[[119]](#footnote-120)119

The interesting conflict presented by solid and semi-solid hydrocarbons, particularly tar sands, is not so much an operational conflict as it is one of ownership- Tar sands may be liquified for extraction, analogous to some secondary recovery techniques used in ***oil*** and gas operations. If tar sands are crude petroleum residues from which the volatiles have escaped, how do they differ from ***oil*** residues left in place after primary recovery in ***oil*** and gas operations? These were the very issues faced both by Congress in the recent legislation providing for a federal combined hydrocarbon lease[[120]](#footnote-121)120 and by the State of Utah prior to utilization of its ***oil***, gas, and hydrocarbon lease.[[121]](#footnote-122)121

**6-   *Underground Gas Storage Reservoir v. Coal***

Natural gas pipeline companies commonly store gas in depleted gas reservoirs near use destinations during periods of fluctuating markets.[[122]](#footnote-123)122 The gas is injected under high pressure into the reservoirs until virgin reservoir capacity and pressures are achieved- The injection and retrieval of stored gas create the same conflicts as underground mining and ***oil*** and gas operations.

**7.   *Uranium, Sodium, and Geothermal Steam***

Uranium and sodium may conflict with both ***oil*** and gas and other mining operations. Development of geothermal steam reservoirs presents yet another set of possible conflicts with underground mining.

Uranium bearing pitchblende and carnotite ore occur in areas of sedimentary deposits in phosphatic rocks, lignite, bituminous sands, and monozite sands.[[123]](#footnote-124)123 The largest and most numerous deposits are found in the Colorado Plateau- Nearly 75% of the uranium lands managed by the Bureau of Land Management (BLM) were under federal ***oil*** and gas leases in the early 1950's.[[124]](#footnote-125)124 Both open pit and underground shaft or solution methods are used in mining. All potential problems attendant to room and pillar,[[125]](#footnote-126)125 open pit,[[126]](#footnote-127)126 and solution mining[[127]](#footnote-128)127 are applicable to uranium- Risk of intrusion is created by ***oil*** and gas contaminating the uranium deposits and the extractive fluids used in solution uranium operations intruding into ***oil*** and gas reservoirs.

Sodium is a light, soft, chemically reactive metal derived principally from sodium chloride.[[128]](#footnote-129)128 Sodium chloride in sea water or playa brines precipitated out of solution and was later covered by clay, shales, limestones, and sandstones- Sodium bicarbonate (nacholite) is frequently found in sedimentary beds in the vicinity of ***oil*** shale deposits. Extraction is accomplished by solar evaporation of brines, room and pillar mining of dome or bedded deposits, and solution mining.

Finally, the development of geothermal steam has the potential of generating conflicts. Although prospective conflicts are not isolated to sedimentary deposits as is the case with most conflicts discussed in this article, similarity of extraction processes joins geothermal resources with ***oil*** and gas as an antagonist of underground and surface mining operations.

**8.   *Strip and Open Pit Mining Operations***

Strip or open pit mining poses serious problems for the ***oil*** and gas operation. Surface mining techniques displace the entire surface area, foreclosing the opportunity for ***oil*** and gas development until after reclamation.[[129]](#footnote-130)129 The specter of the relatively short-term ***oil*** and gas lease expiring prior to reclamation looms large- Where ***oil*** and gas operations are first to the site, surface miners may be precluded from mining not only the site, but also sufficient adjacent lands to provide lateral support and protection to wells from blasting.[[130]](#footnote-131)130 When drilling activities result in a dry hole, mining operations will have been only temporarily inconvenienced. But when production is obtained, the life of the well might totally prevent mining operations or render operations uneconomical if spacing is tight or surface mineral leases are blocked.[[131]](#footnote-132)131

**D-   Issues**

The foregoing discussion of the origins of conflicts suggests the following issues in concurrent ***oil*** and gas and underground mining operations: Does each operator have a right of access through the mineral deposits of the other? What is the standard of conduct where concurrent operations are authorized? In those instances where mineral operators are under mandate to conduct their operations so as not to unreasonably damage or interfere with the deposits of the other, which operator bears the additional costs of protecting the other mineral deposits? Should the underground miner bear the additional costs to the ***oil*** and gas operator of running the directional survey or of casing through the mining zone? Is the ***oil*** and gas operator required to pick up the expense of underground surveys to determine pillar location or pay the value of the unrecovered mineral left in support or barrier pillars? Are equitable remedies such as injunctions available to prevent imminent injury, damage, or waste? Is the ***oil*** and gas operator liable for actual damages to the mine caused by a gas explosion from a leaking well bore? Is the miner required to pay for a damaged well which has been intersected by the continuous miner? Is the miner liable in damages for loss of a well sheared or collapsed by subsidence?

When either underground or surface mining conflicts with ***oil*** and gas and when either operator is prevented from extracting his minerals, are money damages available for the loss of the value of the reserves in place? Finally, with commingled minerals such as coal and methane gas,[[132]](#footnote-133)132 may the coal miner ventilate without answering to the owner of the gas for waste? When gas is ventilated for safety reasons, may it be captured and sold for the benefit of the miner? May the owner of gas retrieve his mineral without fear of liability to the miner in the event extraction techniques damage the coal seam? And, may one competing mineral owner enjoin the operation of the other to prevent waste?

The foregoing issues will be analyzed under the law pertaining to federal, Indian, state, and private lands-

**II.   FEDERAL LANDS**

Conflicts on the public domain first arose in the head-on collision of mineral appropriation philosophies under the General Mining Law of 1872[[133]](#footnote-134)133 and the Mineral Lands Leasing Act of 1920-[[134]](#footnote-135)134 Subsequent to 1920, development of Leasing Act minerals and locatable minerals was considered to be mutually exclusive.[[135]](#footnote-136)135 It was not until the late 1940's that public awareness developed over the incompatibility of the two statutes, for the likely reason that minerals subject to the General Mining Law and those subject to the mineral leasing laws had not previously been discovered within the same area-[[136]](#footnote-137)136 However, the discovery of uranium in lignite coal deposits and uranium bearing carnotite ore in sedimentary deposits on the Colorado Plateau in areas which for years had been the subject of federal ***oil*** and gas leasing gave clear focus to the incongruity.[[137]](#footnote-138)137

The Multiple Mineral Development Act of 1954[[138]](#footnote-139)138 was Congress' first full-fledged effort at legislating concurrent development of minerals on public domain lands- Few topics have received such attention in Annual Institute Proceedings and in other legal literature as the locatable minerals versus Leasing Act minerals difficulties and the subsequent authorization of contemporaneous development.[[139]](#footnote-140)139 As noted by several writers, the concept of utilizing the same lands for multiple purposes was not a new concept. It had been incorporated into the agricultural homestead acts and subsequent legislation pertaining to federal lands.[[140]](#footnote-141)140 The current land management notions of multiple use are of a recent legislative origin- They superimpose water storage, recreation, timber, wilderness, and preservation of scenic values notions on contemporaneous mineral extraction uses.[[141]](#footnote-142)141 Nevertheless, the most dramatic illustration of multiple use conflicts arises in connection with mineral development.[[142]](#footnote-143)142

**A-   Statutes**

**1.   *Multiple Mineral Development Act of 1954***

The Multiple Mineral Development Act of 1954 was the first congressional act to use the term multiple use. That Act provides for concurrent mineral extraction operations for leasable minerals and locatable minerals on the same lands.[[143]](#footnote-144)143 Operations are to be conducted "so far as reasonably practicable, in a manner compatible with-..multiple use."[[144]](#footnote-145)144 The Act also establishes the standard for conduct of operations. Operations involving locatable minerals are to be conducted "so far as reasonably practicable, in a manner which will avoid damage to any known deposit of any Leasing Act minerals."[[145]](#footnote-146)145 The language is almost identical for Leasing Act operations where "[o]perations-..shall be conducted, so far as reasonably practicable, in a manner which will avoid damage to any known deposit of any mineral not...reserved from [a] mining claim or millsite."[[146]](#footnote-147)146 In both instances, operations are not to endanger or unreasonably interfere with existing surface or underground improvements or facilities. The statute provides for judicial arbitration in those instances where operators determine that their operations are incompatible. When operators determine that they cannot reasonably and properly extract these minerals without endangering or unreasonably interfering with existing improvements, workings, or facilities of the other, either operator may petition the local federal district court to determine whether the proposed use outweighs probable damage to or interference with existing facilities or improvements or with their utilization. If the court finds that the proposed use outweighs the risk of injury to or interference with the existing facilities, it can require the operator to post security in an amount consisting of fair compensation for the injury or interference. When the proposed use does not outweigh the risk of injury or interference, it presumably will be enjoined.[[147]](#footnote-148)147 The reasonably practicable standard has been incorporated into departmental regulations-[[148]](#footnote-149)148 Finally, the statute requires the party owning the existing improvements and facilities to provide the competing operator, upon request and at the expense of the requesting party, any information concerning the facilities, workings, and improvements and to permit reasonable access to the facilities for surveying and inspection.[[149]](#footnote-150)149

No similar provision is made for damage to or interference with the mineral deposit itself- The Act applies only to surface or underground improvements, workings, or facilities, and then only to those existing at the time of the use or proposed use. Further, the statute does not address itself to possible damage which will result from interference with improvements, workings, or facilities to be constructed under a phased plan of operations as with ***oil*** and gas wells which are to be drilled at the location of a proposed ancillary mine shaft to an existing mine. Finally, the *so far as reasonably practicable* standard applies only to *known* mineral deposits.[[150]](#footnote-151)150

The Act addresses conflicts arising between locatable minerals and Leasing Act minerals. It does not address itself to conflicts which might arise between diverse Leasing Act minerals.[[151]](#footnote-152)151 No judicial decisions were found concerning simultaneous development of two or more Leasing Act minerals- And yet, it is precisely such a conflict which poses the predominant conflict today. Further, no judicial decisions are available which construe *reasonably practicable* or which establish a measure of damages for injury to the deposits themselves or for preclusion of access to the minerals by virtue of the operations of another operator. It is reasonable to assume, however, that the general law applicable to private lands will obtain.[[152]](#footnote-153)152

**2.   *Multiple Surface Use Act of 1955***

The Multiple Surface Use Act of 1955,[[153]](#footnote-154)153 frequently referred to as the Common Varieties Act, removed mineral materials such as sand and gravel from location under the General Mining Law and provided for their sale under the Materials Act of 1947-[[154]](#footnote-155)154 Mining claimants were prohibited from using the surface of the mining claims for other than prospecting and purposes incident to prospecting.[[155]](#footnote-156)155 Common varieties are typically mined by surface or quarry mining methods-[[156]](#footnote-157)156

**3.   *Classification and Multiple Use Act of 1964***

With the Classification and Multiple Use Act of 1964,[[157]](#footnote-158)157 Congress applied the "multiple use" definition to minerals contained in public domain lands- Section 5(b) of the Act reads as follows:

"Multiple use" means the management of the various surface and subsurface resources so that they are utilized in the combination that will best meet the present and future needs of the American people; the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; *the use of some land for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output*.[[158]](#footnote-159)158

The Act directed the Secretary to classify all public lands for retention and multiple use-[[159]](#footnote-160)159 This was a radical departure from prior land classification schemes, which always had been a prelude to sale or other disposition.[[160]](#footnote-161)160 Section 7(a) expressly provides that nothing in the Act shall be construed to restrict mineral development unless inconsistent with the purposes of the Act-[[161]](#footnote-162)161 The authority of the Secretary to classify public lands terminated in 1970,[[162]](#footnote-163)162 and lands are currently being declassified-[[163]](#footnote-164)163

Policy guidelines established by the Act are crucial to the present discussion. To carry out his mandate of multiple use management, the Secretary was to provide for utilization of both surface and mineral resources on the lands in a combination which would (1) best meet present and future needs of the American people,[[164]](#footnote-165)164 (2) provide for the most judicious use of *some* or all of the lands in a manner to conform with changing needs and conditions, (3) sometimes limit use to less than all of the resources on a given parcel, and (4) allow each resource to be managed in relation to the other without impairing the productivity of the land- In balancing uses, consideration is given to the relative values of the resources, and not necessarily to the combination from which the greatest economic return could be derived.

**4.   *Federal Land Policy and Management Act of 1976***

Congress' most recent policy-setting legislation in the multiple use area is the Federal Land Policy and Management Act of 1976 (FLPMA).[[165]](#footnote-166)165 The definition of multiple use found in the Classification and Multiple Use Act of 1964 is employed with only minor variations in wording-[[166]](#footnote-167)166 FLPMA expressly provides that, with limited exceptions, nothing in the Act is intended to modify the General Mining Law.[[167]](#footnote-168)167 Although no similar provision exists for Leasing Act minerals, the same is implied-

The public policy set by the foregoing series of acts is widely recognized as calling for concurrent or simultaneous development of mineral deposits in federal lands, albeit as balanced against other uses of the lands and presumably as against one another. What is not so obvious was pointed out by Messrs. Marsh and Sherwood in 1980: "Exclusion of one or more resources on public lands is not 'multiple use,' it is 'land management planning.'"[[168]](#footnote-169)168 Resource management plans have in fact created areas of limited, restrictive, and exclusive land use-[[169]](#footnote-170)169

**5.   *Federal Coal Mine Health and Safety Act of 1969***

The Federal Coal Mine Health and Safety Act of 1969[[170]](#footnote-171)170 requires coal miners to take reasonable measures to locate ***oil*** and gas wells which penetrate the coalbeds-[[171]](#footnote-172)171 Protective pillars are to be left around each ***oil*** and gas well as determined by state law. Pillars are to be at least 300 feet in diameter, unless the state and the Secretary concur that pillars of a lesser diameter are adequate. The Secretary can require pillar diameters in excess of 300 feet when mine depth, geologic conditions, or other factors require thicker pillars.[[172]](#footnote-173)172 In addition, the Act requires miners to post an up-to-date copy of the mine plan on the surface of the mine which shows all mine workings, and pillared, worked out, and abandoned areas, together with producing and abandoned ***oil*** and gas wells located within 500 feet of the mine or underground area of the mine-[[173]](#footnote-174)173

**6.   *Surface Mining Control and Reclamation Act of 1977***

The Surface Mining Control and Reclamation Act of 1977[[174]](#footnote-175)174 (SMCRA) was enacted with the express purpose of assuring that the rights of parties having an interest in land would be fully protected from surface coal mining operations-[[175]](#footnote-176)175 It applies to all lands containing surface mineable coal on federal, Indian, state, and private lands. States may assume exclusive jurisdiction over federal lands, as well as state and private lands, when state surface coal mining reclamation acts, regulations, and policies are approved by the Secretary and when the states enter into a cooperative agreement with the Secretary.[[176]](#footnote-177)176 To qualify for approval, state reclamation plans must be equally or more restrictive than the program under SMCRA and regulations issued pursuant thereto-[[177]](#footnote-178)177 Thereafter, states will have exclusive responsibility and authority to implement SMCRA within the framework of the state reclamation plans.[[178]](#footnote-179)178

SMCRA and its approved state counterparts also apply to surface effects incident to underground coal mining operations-[[179]](#footnote-180)179 The Act requires underground coal miners to adopt measures consistent with known technology to prevent subsidence which would cause material damage, and to maintain the value and reasonably foreseeable use of the surface lands, except in those instances where the mine plan requires planned and controlled subsidence. The Act expressly provides that nothing in the Act should be construed to prohibit conventional room and pillar mining.[[180]](#footnote-181)180 SMCRA also provides for the exclusion of coal-bearing lands from development as being unsuitable for surface mining operations- It establishes procedures and criteria for designation of certain areas as unsuitable for surface coal mining.[[181]](#footnote-182)181

It is beyond the scope of this article to detail the provisions of SMCRA. There is abundant literature on the matter.

**7.   *Geothermal Energy Act of 1970***

The Geothermal Energy Act of 1970[[182]](#footnote-183)182 affects the simultaneous development conflicts issue in two ways- First, it expressly provides for the coexistence of other leases or mining claims under principles of multiple use, subject to the reciprocal obligation that operators will not unreasonably interfere with or endanger the operations of the other. As with the Multiple Mineral Development Act of 1954, this Act prohibits unreasonable endangerment of or interference with operations, but does nothing to protect the deposits themselves from injury.[[183]](#footnote-184)183 All conflicts with other mineral developers will be resolved on a first in time, first in right basis.[[184]](#footnote-185)184 Finally, the Act provides for suspension of lease terms and operating obligations in the interest of conservation when necessary to promote development and maximize recovery-[[185]](#footnote-186)185

Second, the Act affects the simultaneous development conflict issue insofar as it includes within the definition of "geothermal steam and associated geothermal resources" minerals other than ***oil***, hydrocarbon gas, and helium which might be found in solution or in association with geothermal resources to the extent that (1) the minerals have a value of less than seventy-five percent of the geothermal resources or (2) do not warrant extraction by themselves.[[186]](#footnote-187)186 The Ninth Circuit Court of Appeals has defined geothermal steam itself as a mineral-[[187]](#footnote-188)187

**8.   *Underground Gas Storage***

There is no separate act governing the underground storage of natural gas. However, the Secretary is authorized to allow for the underground storage of natural gas, as well as ***oil***, in federal lands leased for Leasing Act minerals. Storage is allowed regardless of whether or not the commodity stored was produced from federal lands. The only statutory provision is found in the section of the Mineral Lands Leasing Act dealing with cooperative or unit agreements.[[188]](#footnote-189)188 It is not clear whether a separate underground storage lease would be issued to a third party when an existing ***oil*** and gas lease covers the lands- No judicial cases have been reported.[[189]](#footnote-190)189

**B.   Departmental Regulations**

The Secretary has promulgated departmental regulations providing for management of public domain lands consistent with principles of multiple use and sustained yield under the Classification and Multiple Use Act of 1964. Unfortunately, the regulations are a patchwork, rather than coordinated effort, and give no clear guidelines to the solution of problems occassioned by simultaneous development.[[190]](#footnote-191)190 Whereas the Public Land Law Review Commission recommended that mining be a priority use,[[191]](#footnote-192)191 the regulations expressly establish no priority- Rather, they call for authorization of that combination of uses which will best achieve multiple use, after considering such factors as "ecology, existing uses, and the relative values of the various resources in particular areas."[[192]](#footnote-193)192

The regulations may be conveniently catalogued into four categories: (1) those pertaining to the management of the lands themselves under the direction of the Bureau of Land Management; (2) operating regulations under supervision of the Minerals Management Service; (3) operating regulations under supervision of the Office of Surface Mining; and (4) Mine Safety and Health Administration. Each category must be examined individually.

**1.   *Bureau of Land Management Regulations***

The Secretary has issued regulations under the Multiple Mineral Development Act for both Leasing Act minerals and locatable minerals.[[193]](#footnote-194)193 Separate regulations for multiple mineral development exist for ***oil*** and gas,[[194]](#footnote-195)194 coal,[[195]](#footnote-196)195 and all other Leasing Act minerals-[[196]](#footnote-197)196 In all three instances, the regulations expressly provide for the issuance of other mineral leases on the same lands, as well as for mineral locations, entries, or selections, subject to special stipulations for simultaneous development.[[197]](#footnote-198)197 Operations are not to interfere unreasonably with or endanger other lawful operations authorized under the Mineral Lands Leasing Act-[[198]](#footnote-199)198 Other surface land uses are expressly allowed under the leasing regulations for coal, provided there is no unreasonable conflict and the competing uses will not be jeopardized by the presence of the other uses.[[199]](#footnote-200)199 Similar provisions are not found in departmental regulations for ***oil*** and gas or for other Leasing Act minerals-

Finally, separate regulations for ***oil*** and gas and for all other Leasing Act minerals (presumably including coal) provide for suspension from all operating and producing requirements of the lease where, in the judgment of the Regional Deputy Minerals Manager for ***oil*** and gas, such suspension is justified for conservation purposes.[[200]](#footnote-201)200 These provisions will become increasingly important in those instances when, because of incompatibility of simultaneous operations, one lessee may not be allowed access to the mineral deposits- The topic of suspension is discussed in a subsequent section of this article.[[201]](#footnote-202)201

With respect to multiple use and locatable minerals, Bureau of Land Management (BLM) regulations deal specifically with the validation of preexisting mining claims[[202]](#footnote-203)202 and section 7 proceedings[[203]](#footnote-204)203 under the Multiple Mineral Development Act- These regulations provide for an authorized officer to resolve any claims arising between operators of Leasing Act minerals and locatable minerals.[[204]](#footnote-205)204

The BLM has also issued regulations applicable to geothermal resources under the Geothermal Steam Act of 1970.[[205]](#footnote-206)205 Although no express policy is provided for issuance of other mineral leases or entry of mining claimants, regulations do impose reciprocal obligations on the geothermal lessee and other lessees or users of the land not to "unreasonably interfere with or endanger operations" conducted by others-[[206]](#footnote-207)206 The geothermal lessee is expressly instructed to take precautions to prevent subsidence, seismic activity, or waste fluid disposal which would damage or curtail the use of other resources or of the lands.[[207]](#footnote-208)207 Further, the geothermal lessee is under obligation to take all reasonable precautions to prevent waste of "all geothermal and other natural resources found or developed in the leased lands-"[[208]](#footnote-209)208

Finally, when commingled minerals or byproducts produced with the geothermal resources exist, the United States expressly reserves by regulation all rights to extract the ***oil***, hydrocarbon gas, and helium from all geothermal resources in a manner so as not to cause substantial interference with geothermal operations.[[209]](#footnote-210)209 When it is determined, however, that commingled minerals leasable under the Mineral Lands Leasing Act render the lands primarily valuable for the leasing of the byproducts, the geothermal lessee may convert his geothermal lease to a mineral lease-[[210]](#footnote-211)210

The BLM regulations pertaining to underground storage are found in the ***oil*** and gas leasing section under "Cooperative Conservation Provisions."[[211]](#footnote-212)211 These regulations essentially track the language of the Mineral Lands Leasing Act pertaining to underground storage-[[212]](#footnote-213)212 It appears that only *interested parties* may apply for storage rights. The regulations are unclear as to whether an interested party must also be the ***oil*** and gas lessee when a valid existing ***oil*** and gas lease affects the lands. However, in *American Natural Gas Production Co*.,[[213]](#footnote-214)213 the Department of Interior Board of Land Appeals ruled that an existing ***oil*** and gas lessee's right to drill and produce under an ***oil*** and gas lease was modified to the extent such activities would be inconsistent with the storage operation- This would seem to indicate that third parties would probably not be successful in obtaining underground storage agreements on lands already covered by an ***oil*** and gas lease. But in *M. Robert Paglee*,[[214]](#footnote-215)214 the Wyoming State Office proposed to issue an ***oil*** and gas lease to a third party within the East Mahoney Dome Gas Storage Area. The BLM withheld leasing of those formations already committed to a gas storage permit and attached special casing and cementing stipulations for protection of the gas storage reservoirs. That case involved an appeal of the decision of the state director requiring execution of the stipulation as a condition precedent to issuing the lease. It would appear that no ***oil*** and gas lease would be issued on lands covered by an underground storage agreement for obvious reasons.

**2.   *Minerals Management Service (Operating) Regulations***

The Minerals Management Service (MMS)[[215]](#footnote-216)215 enforces operating regulations pertaining to multiple mineral development conflicts- Separate regulations exist for the extraction of ***oil*** and gas, coal, other Leasing Act minerals, and geothermal resources. In some instances, the regulations are similar for all minerals, while in others they are mineral specific. All four categories of regulations have general provisions requiring operators to comply with all lease terms, permits, written instructions, and regulations; to prevent damage to mineral deposits other than the one being mined; to prevent injury to life and property, including improvements of other lessees and users on the lands; and to prevent waste of the mineral to be mined or extracted.[[216]](#footnote-217)216 All operators may apply to the appropriate Deputy Minerals Manager for suspension of operations and lease terms in the interest of conservation.[[217]](#footnote-218)217 Although the regulations do not specify what conditions merit such a suspension, prohibition of access to one's mineral deposit in deference to the extracting operation of another might be precisely that type of condition to warrant the granting of a suspension-

Under the coal operating regulations, coal operators are required to include in their mining plans the location and extent of underground mines and ***oil*** and gas wells within one quarter mile of the affected lands,[[218]](#footnote-219)218 as well as measures to be taken to protect ***oil***, gas, and water wells and underground water resources-[[219]](#footnote-220)219 Measures include those considered by the Regional Deputy Minerals Manager necessary to protect ***oil***, gas, and water boreholes, while at the same time obtaining maximum recovery of the coal.[[220]](#footnote-221)220 It is unclear whether these measures apply to geothermal resources- The coal lessee must likewise include, in both his exploration plan[[221]](#footnote-222)221 and his mining plan,[[222]](#footnote-223)222 the names and addresses of all surface and subsurface owners of record other than the United States-

Both coal operators and operators of mineral leases other than coal and ***oil*** and gas must adopt methods consistent with feasible known technology to prevent subsidence or, in those cases where subsidence mining is intended, to plan subsidence in a predictable and controlled manner in order to maintain the value and use of the surface lands.[[223]](#footnote-224)223 Sufficient pillars must be left in first mining of minerals other than coal to ensure maximum recovery,[[224]](#footnote-225)224 although no pillar size is specified- No support pillar requirements are found in the coal operating regulations for protective pillars. However, detailed regulations in this regard have been promulgated by the Mine Safety and Health Administration. Finally, the Deputy Minerals Manager for geothermal resources is to approve well-spacing and casing programs after considering several factors, including unreasonable interference with multiple use.[[225]](#footnote-226)225

It is interesting to note that MMS regulations add little to the needed guidelines in the area of simultaneous development. Most MMS involvement arises in the context of the permitting procedures, where stipulations are attached to operating permits as the result of negotiations and cooperative efforts of the operators and the Deputy Minerals Manager.

**3.   *Office of Surface Mining***

The Office of Surface Mining has issued reclamation performance standards under SMCRA.[[226]](#footnote-227)226 These regulations also contain the texts of the cooperative agreements between the States of Colorado, Montana, New Mexico, North Dakota, Utah, and Wyoming- The agreements grant to the states supervisory authority over surface mining on federal as well as state and private lands.[[227]](#footnote-228)227 Provisions of state reclamation plans are discussed under state law in this article.[[228]](#footnote-229)228

**4-   *Mine Safety and Health Administration***

Regulations of the Mine Safety and Health Administration (MSHA) issued pursuant to the Federal Coal Mine Health and Safety Act[[229]](#footnote-230)229 require the coal operator to take reasonable measures to identify existing ***oil*** and gas wells which penetrate the coal beds and to provide 300 feet wide diameter pillars around those wells- Narrower pillars may be permitted where authorized by state law and the Secretary of Labor.[[230]](#footnote-231)230 Where either the Secretary[[231]](#footnote-232)231 or state law[[232]](#footnote-233)232 requires pillars of greater diameters, then the greater width diameters are to be used- Protective pillars are to be in the form of a square with the ***oil*** and gas well located in the center of the pillar.[[233]](#footnote-234)233 The depth of overburden is used to determine pillar size and configurations, with no excavation exceeding fifteen feet in width and no pillar dimension being less than twice the width of the excavated area.[[234]](#footnote-235)234 The MMS considers these and other procedures specified in literature of the Bureau of Mines and Mine Enforcement and Safety Administration (now MSHA) pertaining to pillaring and to mining around ***oil*** and gas wells to be applicable to all non-coal underground mines in the United States-[[235]](#footnote-236)235 The risk of general application of these guidelines to potash or ***oil*** shale mining, for example, is that one is dealing with rocks of different tensile strength, porosity, and permeability, which would affect pillar dimension requirements.

**C.   Lease Terms**

BLM lease forms for Leasing Act minerals contain various provisions affecting simultaneous mineral operations on the same lands. The provisions fall conveniently into several groupings by topic common to two or more leases. These topics include operations, protection of other resources, reservations to the lessor, and lease term suspension.

Lease terms require ***oil*** and gas operators to conduct their operations to prevent waste or damage to coal measures or other mineral deposits and to preserve the property for future productive operations.[[236]](#footnote-237)236 Similar language applies to phosphate, sulfur, and native asphalt lessees-[[237]](#footnote-238)237 ***Oil*** shale operators are required to avoid waste of all surface and mineral resources in the lands,[[238]](#footnote-239)238 while coal operators are charged with a somewhat lesser standard of minimizing the possible wasting of surface and underground resources-[[239]](#footnote-240)239 In all cases, the charge appears to apply to both the mineral under lease as well as to other minerals.

Furthermore, ***oil*** and gas, sulfur, native asphalt, and ***oil*** shale lessees, as well as prospectors for all Leasing Act minerals except ***oil*** and gas and coal, are obligated to conduct operations in such a manner as to prevent unnecessary damage to improvements owned by the United States or other parties.[[240]](#footnote-241)240 Such improvements could include range improvements, surface facilities of other lessees, pipeline and utility transmission line facilities, as well as surface structures and crops of the surface estate which has passed out of federal ownership-

Additional multiple use language is contained in reddendum clauses of federal leases issued under the Mineral Lands Leasing Act. Federal phosphate leases contain a simple reservation to the United States to lease other mineral deposits in the lands.[[241]](#footnote-242)241 The ***oil*** and gas, sulfur, native asphalt, and coal leases contain a somewhat broader provision reserving to the United States the right to dispose of any resource in the lands which will not unreasonably interfere with operations under the lease-[[242]](#footnote-243)242 The federal prospecting permits provide that issuance of the permit will not preclude the issuing of other permits or leases on the same lands.[[243]](#footnote-244)243

A curious provision is contained in all three forms of federal ***oil*** and gas leases, under which the lessee is obligated to comply at his own expense with all reasonable orders of the Secretary respecting diligent operations, prevention of waste, and protection of other resources-[[244]](#footnote-245)244 This innocent statement could become the basis for requiring ***oil*** and gas operators to bear all expenses incident to protecting the mineral deposits of other operators, such as directional surveys, the additional expenses of directional drilling, relocation of surface facilities and gathering systems to accommodate surface mining.

Finally, all federal leases and prospecting permits, with the exception of federal phosphate leases, contain a general provision requiring the lessee or permittee to comply with all regulations of the Secretary pertaining to mineral operations on the lease.[[245]](#footnote-246)245 In most cases, reference is made to the applicable parts, subparts, or groups contained in the *Code of Federal Regulations*, while in the case of ***oil*** and gas, a general reference is made to the ***oil*** and gas operating regulations-[[246]](#footnote-247)246 It is interesting to note that only the federal ***oil*** shale leases provide for suspension of lease terms upon application to the Deputy Minerals Manager for ***oil*** shale.[[247]](#footnote-248)247

**D-   Special Stipulations**

The Department of Interior imposes special stipulations on mineral operations on federal leases to implement multiple use concepts. BLM stipulations are attached to the lease as a condition of issuance. Some stipulations apply generally to all federal lands, such as ***oil*** and gas operations in ***oil*** shale withdrawals, or apply locally to a geological, historical, or cultural feature.[[248]](#footnote-249)248 MMS stipulations are typically attached to permits to drill or mine- Several stipulations pertain specifically to simultaneous operations.

**1.   *Bureau of Land Management Stipulations***

BLM regulations provide for the issuance of leases for Leasing Act minerals, subject to special stipulations for simultaneous development.[[249]](#footnote-250)249 A representative example is the ***oil*** shale withdrawal stipulation attached to ***oil*** and gas leases in Utah- This stipulation prohibits the drilling of any wells on lands within an Executive Order 5327 interpretive withdrawal area without the express approval of the Deputy Minerals Manager for ***oil*** and gas. The Deputy Minerals Manager will authorize drilling only when he has determined that ***oil*** and gas operations would not (1) interfere with the mining of ***oil*** shale, (2) constitute a hazard to mining operations, or (3) result in waste, presumably of the ***oil*** shale. In addition, plugging and abandonment provisions impose upon the ***oil*** and gas operator the duty to prevent intrusion of ***oil*** or gas into the ***oil*** shale beds.[[250]](#footnote-251)250 A similar stipulation is imposed in Colorado.[[251]](#footnote-252)251 The only enforcement mechanism available to the BLM for noncompliance is administrative termination of a nonproducing lease[[252]](#footnote-253)252 or judicial cancellation of a producing lease-[[253]](#footnote-254)253

**2.   *Minerals Management Service Stipulations***

Historically, stipulations pertaining to the exercise of operating rights on a lease were fashioned on a case-by-case basis. When the filing of an ***oil*** and gas permit or a mine plan revealed a potential for operational conflicts, the Deputy Minerals Manager arranged a meeting between the district ***oil*** and gas and the district mining supervisors and the lessees to determine under what conditions an operation might be allowed to proceed, if at all.[[254]](#footnote-255)254 Special stipulations were drafted as a result of the meeting and were attached to the permits as conditions of approval- Frequently, the permits bore a special stamped notation, "Approved Subject to Special Conditions." Until recently, the MMS made no effort to standardize the conditions. An analysis of the current practice is best undertaken in the context of specific mineral operations for designated minerals.

**a.   *Oil Shale***

Until recently, the MMS had no coordinated approach to regulating ***oil*** and gas operations in ***oil*** shale areas. Under date of February 2, 1981, the Salt Lake District Office promulgated *guidelines* for protection and isolation of ground water and ***oil*** shale in the Uinta Basin.[[255]](#footnote-256)255 This instruction generally required that (1) surface casing be set at 300 feet and cemented to the surface and that (2) a second string of casing be set at approximately 300 feet below the lowest aquifer and cemented at stages to isolate the ***oil*** shale zone and aquifers- These guidelines apply to all federal leases drilled in the Uinta Basin within the ***oil*** shale withdrawal. Similar guidelines have been issued for ***oil*** and gas activities in the Piceance Basin ***oil*** shale area of Colorado.[[256]](#footnote-257)256

In February 1982, the District ***Oil*** and Gas Supervisor in Grand Junction, Colorado, recommended to the Deputy Minerals Manager for ***oil*** and gas that a special standardized ***oil*** and gas lease stipulation for the protection of ***oil*** shale (and other minerals) be attached to all ***oil*** and gas leases in the Central Region.[[257]](#footnote-258)257 The District Supervisor's immediate concern was that the moratorium on ***oil*** and gas operations within federal ***oil*** shale tracts in Colorado (and Utah) would result in the termination of several ***oil*** and gas leases which were nearing their primary term-[[258]](#footnote-259)258 That stipulation authorizes ***oil*** and gas drilling operations in ***oil*** shale withdrawal areas with the proviso that the District Supervisor could at any time order the well to be plugged and abandoned, if at some future date it became apparent that continued operations would result in undue waste or interference with ***oil*** shale operations.[[259]](#footnote-260)259 The stipulation clearly favors the development of ***oil*** shale-

A recent memorandum opinion of the Regional Solicitor, Rocky Mountain Region, specified that the proposed stipulation should be applied only to those leases which contained the special BLM ***oil*** shale withdrawal stipulation. The Regional Solicitor also concluded that imposition of the MMS stipulation, absent the underlying BLM stipulation, might have the effect of subordinating the rights of the ***oil*** and gas lessee to those of an ***oil*** shale operator whose lease was issued second in time. Finally, the Regional Solicitor opined that a similar stipulation could be attached to all permits affecting ***oil*** and gas drilling operations in lands containing mineral resources other than ***oil*** shale, such as coal, so long as special lease stipulations for the protection of other mineral deposits were attached to the lease by the BLM.[[260]](#footnote-261)260 The stipulation was approved for region-wide utilization in May 1982 and is currently being employed by both the Grand Junction and Salt Lake district ***oil*** and gas supervisors-[[261]](#footnote-262)261

**b.   *Coal***

MMS procedures for coal are similar to those for ***oil*** shale. However, the issues are not nearly as well defined, perhaps because there have been few actual conflicts which have matured into confrontations or because conflicts were resolved by cooperative agreement.[[262]](#footnote-263)262 In Wyoming, several conflicts arose between ***oil*** and gas operators and coal miners,[[263]](#footnote-264)263 but died natural deaths either because the large diameter pillaring requirements rendered mining uneconomical or because the ***oil*** and gas lessee did not want to undertake an expensive plugging and casing program-[[264]](#footnote-265)264 Nevertheless, when there is an outstanding coal lease covering an ***oil*** and gas prospect, the Deputy Minerals Manager arranges a meeting with the lessees and district mining and ***oil*** and gas supervisors. Stipulations are drawn and attached to the permit to drill for ***oil*** and gas as a condition for approval. The stipulations focus on isolation of water-bearing horizons and the mineable zones.[[265]](#footnote-266)265 Other stipulations affect surface casing requirements in areas to be surface mined-[[266]](#footnote-267)266

**c.   *Potash***

Major conflicts likewise have erupted involving ***oil*** and gas and potash operations on public domain lands in the Paradox Basin of Utah and the Permian Basin of New Mexico. In the early 1960's, pursuant to Public Land Order Nos. 2199[[267]](#footnote-268)267 and 2379,[[268]](#footnote-269)268 the BLM withdrew certain potash deposits in the Cane Creek area of Utah from ***oil*** and gas leasing because of the apparent incompatibility of concurrent ***oil*** and gas and potash operations- Simultaneously, the State of Utah withdrew state-owned sections in the Cane Creek area from further ***oil*** and gas leasing.[[269]](#footnote-270)269

The New Mexico experience has a longer history. By a Secretarial Order dated February 6, 1939,[[270]](#footnote-271)270 federal lands in Eddy and Lea Counties, New Mexico, were withdrawn from ***oil*** and gas leasing under the Mineral Lands Leasing Act- The withdrawal was revoked on October 16, 1951,[[271]](#footnote-272)271 and the lands were opened to ***oil*** and gas leasing, subject to rules and special stipulations for concurrent development.[[272]](#footnote-273)272 The current stipulations provide that (1) no wells will be drilled in a designated potash area until a determination is reached by the MMS that operations will not interfere with the mining of the potash deposits; (2) no locations will be permitted which will result in waste of the potash deposits or constitute a hazard or interference with the potash operations; (3) unitization of ***oil*** and gas operations for preservation of the potash deposits as well as for conservation of ***oil*** and gas may be required; and (4) all drilling and abandonment must comply with requirements of the Deputy Minerals Manager to prevent intrusion of the ***oil***, gas, or water into the potash beds and mine workings-[[273]](#footnote-274)273 A reciprocal provision for potash leases within the designated potash area is made part of the lease or attached as a stipulation, to the effect that no mining or exploratory operation will be allowed which would constitute a hazard to or interfere with ***oil*** and gas operations.[[274]](#footnote-275)274 The foregoing stipulations are similar to the ***oil*** shale stipulations imposed on lands within an ***oil*** shale withdrawal-[[275]](#footnote-276)275

In addition, each potash lessee must inventory his enclaves of barren ore lands and mineable lands, as well as lands mined and lands affected by current mining. The express policy of Interior is to deny approval of permits to drill for ***oil*** and gas in any potash enclave, with two exceptions. First, vertical or directional drilling will be authorized only on those barren areas within the potash enclaves where it is determined that drilling will not adversely affect active or planned mining operations. Second, drilling will be authorized by vertical or directional drilling, including cluster directional drilling, from lands within a known potash enclave where (1) there are no barren enclaves from which drilling would be permitted without interfering with the potash operation, (2) the reservoirs cannot be accessed by a vertically or directionally drilled well within a barren enclave, or (3) the reservoir cannot be reached from a surface location outside of the enclave.[[276]](#footnote-277)276 Any islands which occur will be established for drilling consistent with all known data and within directional drilling capabilities which will minimize the loss of potash ore-[[277]](#footnote-278)277 No well locations are allowed within one mile of any area to be mined within three years of the application date.[[278]](#footnote-279)278 Moreover, unitization of the ***oil*** and gas operation is required where a permit to drill the logical location would result in drainage from under an adjacent lease-[[279]](#footnote-280)279 This requirement is also found in ***oil*** shale stipulations issued by the BLM on Utah and Colorado ***oil*** shale withdrawals.[[280]](#footnote-281)280

A potash operator may be required to file a three-year mining plan with the Deputy Minerals Manager for mining-[[281]](#footnote-282)281 Records, reports, applications for permits to drill, mine plans and the like maintained by the Deputy Minerals Managers or district mining or ***oil*** and gas supervisors are available to the ***oil*** and gas operators and potash permittees or licensees.[[282]](#footnote-283)282 Finally, Interior defers to the New Mexico ***Oil*** Conservation Commission to implement its rules and regulations as to those federal lands within the State of New Mexico designated ***Oil***-Potash Area,[[283]](#footnote-284)283 but reserves the right to make the final approval for any proposed well on a federal ***oil*** and gas lease within the state potash area-[[284]](#footnote-285)284

Interior's policy is fairly stated as one that allows the potash lessee to mine first, based upon the premise that ***oil*** and gas can always be recovered later.[[285]](#footnote-286)285 This policy stems from the fact that simultaneous operations have resulted in waste of the potash ore-[[286]](#footnote-287)286 Federal ***oil*** and gas lessees have sought and obtained suspension of lease terms under the Mineral Lands Leasing Act, until potash mining is completed in the area of the well locations and it is determined that ***oil*** and gas operations may proceed without interference with the potash operation or hazard to the ***oil*** and gas operation.[[287]](#footnote-288)287

Thus far, the approach of the MMS has been to attempt to work out the potential conflict between the operators- When no agreement can be reached, one operator or the other, generally the potash lessee, goes before the New Mexico ***Oil*** Conservation Commission to seek an injunction. Representatives of the MMS may cross-examine witnesses, but they are not consulted in the decision. This cooperative procedure works very well, and few problems have been encountered. No drilling islands within active or known potash ore-bearing enclaves have been established. However, there has been directional drilling from barren enclaves which bottom hole under mineable potash beds or potash mines.[[288]](#footnote-289)288

**d.   *Lease Suspensions***

Operating regulations and the federal ***oil*** shale lease provide for a suspension of lease terms under certain circumstances. The authority for suspensions is found in section 39 of the Mineral Lands Leasing Act,[[289]](#footnote-290)289 in which Congress empowered the Secretary to waive, suspend, or reduce rentals and royalties where necessary for the "greatest ultimate recovery of coal, ***oil***, gas, ***oil*** shale, phosphate, sodium, potassium and sulfur-"[[290]](#footnote-291)290 The lease term is extended for a period equal to the suspension.[[291]](#footnote-292)291 To effect suspensions, an application is filed with the Deputy Minerals Manager who supervises the specific extractive operation-[[292]](#footnote-293)292 In situations of incompatible operations when operations could be deferred beyond the natural term of the lease, this mechanism adds a sense of justice. The question remains as to which operator should be allowed to proceed first.

**e.   *Cooperative Agreements***

No enforcement mechanism is provided by statute, regulation, or stipulation for the resolution of conflicts between competing operators. Therefore, operators frequently attempt to seek a practical solution by negotiating cooperative agreements that define development rights and priorities among themselves.[[293]](#footnote-294)293 The proposed agreement could be fashioned prior to the arranged meeting of the operators with the respective Deputy Minerals Managers and submitted at the meeting- Essential terms could then be incorporated into the respective permits.[[294]](#footnote-295)294 Although this is a reasonable and practical solution, Interior cannot enforce the parties' agreements. It appears that resolution of third party rights must be sought in the courts.[[295]](#footnote-296)295

Stipulations provide the only real guidance to resolution of operational conflicts of public domain lands- The stipulations are a logical attempt to resolve an otherwise unresolvable situation. The intensity of effort of Interior generally, and the MMS in particular, to accommodate the mineral extraction industries is frequently and unfortunately a reflection of the President's policies and attitudes. Fortunately for industry and for conflicting operators, the Reagan administration favors both extraction and accommodation of competing interests to other uses of the land.[[296]](#footnote-297)296

**E.   Special Situations on Federal Lands**

No treatment of the topic of conflicts in simultaneous operations on public domain lands would be complete without a discussion of the new combined hydrocarbon lease and recent developments concerning the ownership of methane gas in coal seams.

**1.   *Federal Combined Hydrocarbon Lease***

One of the major legal, as opposed to operational, conflicts between competing Leasing Act mineral lessees on the same land originated with the 1960 amendment to the Mineral Lands Leasing Act. That amendment added native asphalt, solid and semisolid bitumen and bituminous rock, including ***oil***-impregnated rock or sands to the list of minerals leasable under the Act.[[297]](#footnote-298)297 According to the transcript of Senate hearings, the term native asphalt was intended to include "brea, maltha, mineral pitch, mineral tar, and like minerals"; solid and semisolid bitumen was intended to cover "gilsonite, vintaite, wurtzilite, elaterite, tabbyite, grahamite and their numerous variants"; while bituminous rock was intended to cover "bituminous sandstone, bituminous limestone, and bituminous shale-"[[298]](#footnote-299)298

Prior to September 2, 1960, tar sands were located as either lode claims or petroleum placer claims.[[299]](#footnote-300)299 After September 2, 1960, tar sands, asphalt, and gilsonite were statutorily authorized to be leased under one or even separate leases on the same lands-[[300]](#footnote-301)300 The amendment also authorized ***oil*** and gas leasing of those petroliferous minerals which flowed to and up the well bore either during primary or secondary production, but also included extraction of the residue left after all volatiles had been recovered and the reservoir was exhausted.[[301]](#footnote-302)301 Thus a conflict arose wherein the ***oil*** and gas lessee could recover the same residues under its lease that the tar sands lessee was authorized to mine under its lease-

Although the 1960 amendment provided a mechanism for leasing these petroliferous minerals, Congress could not legislate contrary to nature. The issue with which Congress grappled in 1960 remained a problem; namely, when did crude ***oil*** cease to be crude ***oil*** and become tar sands? Because of these problems, only one tar sands lease sale was held, resulting in the issuance of five bituminous sandstone leases.[[302]](#footnote-303)302 A leasing moratorium on tar sands was imposed by the Director of the Bureau of Land Management in November 1965, and remained in effect until November 16, 1981-[[303]](#footnote-304)303 All five tar sands leases had been relinquished by February 11, 1972.[[304]](#footnote-305)304

Finally, after many years,[[305]](#footnote-306)305 Congress enacted the Combined Hydrocarbon Lease Act of 1981-[[306]](#footnote-307)306 This legislation served to amend the Mineral Lands Leasing Act by (1) deleting "native asphalt, solid and semisolid bitumen and bituminous rock" from the Act and replacing it with "gilsonite (including all vein-type solid hydrocarbons)," (2) defining ***oil*** to include "all nongaseous hydrocarbon substances other than ... coal, ***oil*** shale, or gilsonite (including all vein-type solid hydrocarbons)," and (3) providing for a combined hydrocarbon lease covering ***oil*** and gas and tar sands within a designated tar sands area.[[307]](#footnote-308)307 Tar sands are defined in the Act as "[a]ny consolidated or unconsolidated rock (other than coal, ***oil*** shale, or gilsonite) that either (1) contains a hydrocarbonaceous material with a gas-free viscosity, at original reservoir temperature, greater than 10,000 centipoise, or (2) contains a hydrocarbonaceous material and is produced by mining or quarrying-"[[308]](#footnote-309)308 A separate lease for gilsonite or other solid hydrocarbons not covered by the combined hydrocarbon lease may also be issued on the same lands under principles of multiple use.[[309]](#footnote-310)309 Lessees holding valid ***oil*** and gas leases and owners of a valid mining claim located prior to January 21, 1926, for minerals leasable under the combined hydrocarbon lease and located within a designated tar sands area may convert their leases or mining claims to combined hydrocarbon leases prior to November 16, 1983-[[310]](#footnote-311)310

On May 24, 1982, the Secretary issued final rules for the conversion of existing ***oil*** and gas leases and valid mining claims.[[311]](#footnote-312)311 The regulations became effective on June 23, 1982-[[312]](#footnote-313)312 Nine areas have been designated as tar sands areas,[[313]](#footnote-314)313 and by June 1982 eighty applications had been filed for conversion-[[314]](#footnote-315)314 The MMS has recommended to the Secretary that no new mining operating regulations be adopted specifically for tar sands, but rather that the existing operating regulations for ***oil*** and gas and other minerals be amended to provide procedures for approval of mine plans.[[315]](#footnote-316)315

**2-   *Gas in Coal Seams-The Federal Position***

A relatively recent federal development pertains to the ownership of gas in coal beds. In a May 12, 1981 Memorandum Opinion, the Solicitor of the Department of Interior concluded that the federal lessee or owner of the coal previously reserved under agricultural patents *does not* own the gas in the coalbeds.[[316]](#footnote-317)316 He also concluded that coalbed gas is separately leasable as gas under the Mineral Lands Leasing Act provisions applicable to ***oil*** and gas-[[317]](#footnote-318)317

The Solicitor's reasoning is instructive when dealing with the ownership problem on state and private lands. First, methane is a byproduct of coalification and is fugacious by nature. Its retention in coal pores is dependent upon pressure, temperature, absorptive capacity, and moisture content of the coal. Therefore, he concludes that coal and methane in coalbeds are two distinct and potentially severable resources.[[318]](#footnote-319)318 Second, legislative history reveals that Congress intended coal only, and not its associated minerals, to be reserved under the various grants and reservations- Under the Acts of March 3, 1909,[[319]](#footnote-320)319 June 22, 1910,[[320]](#footnote-321)320 and the Stock-Raising Homestead Act of July 17, 1914,[[321]](#footnote-322)321 Congress authorized agricultural and stockraising homestead patents to issue with reservation of coal in the United States, but not the ***oil*** and gas-[[322]](#footnote-323)322 Subsequent enactment of the Uraniferous Lignite Act of August 11, 1955, allowed for mineral location of the uranium commingled with lignite.[[323]](#footnote-324)323 Mineral patents perfected under that Act granted the uranium and attendant rights to remove it, but reserved the lignite, even though some damage to the government's lignite deposits would occur-[[324]](#footnote-325)324 Third, the Solicitor notes that while the Mineral Lands Leasing Act does not distinguish coalbed gas from section 17 gas,[[325]](#footnote-326)325 royalties are applied to extraction of *all* gas within the context of ***oil*** and gas operating regulations and operating regulations for minerals other than coal-[[326]](#footnote-327)326 Fourth, the Solicitor observes that coalbed gas is not expressly leased to coal lessees under the Mineral Lands Leasing Act, in stark contrast to sodium, phosphate, and ***oil*** shale which are leased together with their associated, related, or other minerals, and concludes that the present leasing system grants the coal lessee the right to ventilate gas for safety reasons.[[327]](#footnote-328)327 Finally, the Solicitor reasons that since ***oil*** and gas leases do not expressly reserve coalbed gas, coalbed gas must pass with the ***oil*** and gas-[[328]](#footnote-329)328

The Solicitor notes that the ***oil*** and gas lessee should not have unlimited access to the coalbed gas where his operation might injure the coal measures or create safety hazards for subsequent mining operations.[[329]](#footnote-330)329 Conversely, he notes that the rights of a subsequent ***oil*** and gas lessee would be subject to a prior coal lease-[[330]](#footnote-331)330 Pregnant in his suggestion is a priority of operations based upon a first in time, first in right theory. Unfortunately, he reserves his opinion as to potential conflicts occasioned by simultaneous operations.[[331]](#footnote-332)331

**III-   INDIAN LANDS**

Mining and ***oil*** and gas operations on Indian lands have been the topic of several papers delivered primarily at special institutes sponsored by the Rocky Mountain Mineral Law Foundation.[[332]](#footnote-333)332 This section of the article will serve merely to catalogue statutes, regulations, lease terms, and stipulations applicable to simultaneous operations of mineral lessees- Inasmuch as no mineral location procedure is provided for under federal statutes, no conflicts between locatable and leasable minerals arise on Indian lands.

**A.   Statutes**

Mineral deposits on Indian lands (with express statutory exceptions) are leased under authority of the Indian Leasing Act of 1909[[333]](#footnote-334)333 for allotted Indian lands and the Indian Leasing Act of 1938[[334]](#footnote-335)334 for unallotted or tribal Indian lands- All operations conducted on both allotted and tribal lands are made expressly subject to rules and regulations promulgated by the Secretary for such purposes.[[335]](#footnote-336)335 The Secretary is also authorized to issue leases for subsurface ***oil*** or gas storage on lands covered by either allotted or tribal lands mineral leases for purposes of preventing waste and promoting the conservation of natural resources and the welfare of the Indians.[[336]](#footnote-337)336

No language other than the provisions for subsurface storage of ***oil*** or gas on lands covered by other leases has been found which either expressly authorizes or prohibits multiple mineral leasing on Indian lands- However, the author is not familiar with any instance of multiple mineral leasing on Indian lands.

**B.   Regulations**

Departmental regulations pertaining to mineral leasing are enforced by the Bureau of Indian Affairs (BIA), while operating regulations fall under the authority of the MMS.

**1.   *Bureau of Indian Affairs***

No regulatory provisions authorizing or prohibiting multiple mineral leasing on either allotted or tribal lands were found. However, all mineral leases are made expressly subject to restrictions or stipulations of the Secretary as may be necessary for the protection of natural resources on the leased lands.[[337]](#footnote-338)337 Furthermore, suspension of lease terms for leases of both allotted and tribal lands may be authorized by the Secretary only for leases other than ***oil*** and gas, and then only when, in the judgment of the Secretary, it is determined that market facilities are inadequate, or economic conditions are unsatisfactory for continued operations-[[338]](#footnote-339)338 This would remove any incentive to phase conflicting operations when it is determined that multiple mineral leasing might be authorized. Applications for suspension are made to the Regional Deputy Minerals Manager for mining;[[339]](#footnote-340)339 however, suspension would not relieve the lessee from obligations of continued payments of rentals or royalties-[[340]](#footnote-341)340 No similar provision exists for ***oil*** and gas.

Regulations applicable to ***oil*** and gas operations on tribal land require the operator to conduct his operation in a prudent manner so as to preserve the property for future productive operations.[[341]](#footnote-342)341 Similar provisions appear in the operating regulations and in federal ***oil*** and gas leases-[[342]](#footnote-343)342 In addition, regulations affecting tribal lands authorize the Supervisor of the BIA to issue prospecting permits for minerals other than ***oil*** and gas.[[343]](#footnote-344)343 No mention is made of whether or not prospecting may be undertaken on lands covered by ***oil*** and gas mining leases or other mineral leases- No separate regulations for subsurface storage could be found.

**2.   *Minerals Management Service***

MMS operating regulations for ***oil*** and gas, coal, and other minerals on public domain lands are expressly made applicable to Indian lands.[[344]](#footnote-345)344 Geothermal operating regulations apparently do not apply to Indian lands- The anomaly created by the application of operating regulations for public domain lands to Indian lands is that the regulations expressly provide for multiple use. This issue has yet to be litigated.

As noted previously, the BIA has promulgated its own surface mining and reclamation regulations.[[345]](#footnote-346)345 These regulations are not applicable to ***oil*** and gas operations or to the mining of minerals where the surface is not owned by the Indians-[[346]](#footnote-347)346 The stated purpose of the regulations is to protect other resources and to prevent hazards to public safety and welfare.[[347]](#footnote-348)347 The regulations governing surface coal mining include surface effects incident to underground mining-[[348]](#footnote-349)348 No pillaring requirements are contained in the regulations. However, it would appear that the pillaring requirements contained in the Federal Coal Mine Health and Safety Act,[[349]](#footnote-350)349 and associated regulations issued pursuant to that Act, would be applicable to such underground coal mining operations-[[350]](#footnote-351)350

The BIA has proposed leasing regulations and separate operating regulations for surface mining.[[351]](#footnote-352)351 These proposed regulations likewise contain no express multiple mineral development concepts-

**C.   Lease Terms**

Lease forms utilized by the BIA pursuant to the Indian Leasing Acts of 1909 and 1938 contain some language which indicates that the possibility of multiple leasing of minerals and the potential simultaneous development conflicts are not totally foreclosed. The ***oil*** and gas mining lease forms for both allotted and tribal Indian lands authorize the Secretary to impose restrictions concerning drilling and production operations to protect natural resources in the lands.[[352]](#footnote-353)352 Both leases contain a provision obligating the lessee to carry out, at his own expense, reasonable orders and requirements of the MMS to prevent waste and to preserve the property-[[353]](#footnote-354)353 A similar provision is contained in federal ***oil*** and gas lease forms and could be used as authority to require an operator to bear all extra expenses incident to protecting mineral deposits of other lessees.[[354]](#footnote-355)354

Both the form of sand, gravel, pumice, and building stone permit and the form of mineral prospecting permit (nonexclusive) reserve to the BIA the right to lease or dispose of other minerals not covered by the permit-[[355]](#footnote-356)355 In the mineral prospecting permit (exclusive with option), the BIA expressly reserves the right to dispose of ***oil*** and gas deposits in lands embraced by the permit.[[356]](#footnote-357)356 Finally, the mining lease for minerals other than ***oil*** and gas reserves to the lessor the right to lease ***oil*** and gas-[[357]](#footnote-358)357 This lease also obligates the lessee to conduct all operations in such a manner so as to prevent unnecessary damage to improvements.[[358]](#footnote-359)358 Unfortunately, the BIA has not defined what constitutes unnecessary damage or specified which improvements should not be damaged-

The relatively specific language of federal leases which allows for operations under multiple mineral concepts is absent in Indian leases. Nevertheless, statutory language contained in both Indian Leasing Acts authorizes the Secretary to promulgate operating regulations. The presence of multiple use language contained in the operating regulations so promulgated, and oblique but important language in the leases themselves allow the conclusion that multiple mineral development conflicts on Indian lands are possible.

Neither type of lease issued under either of the Indian Leasing Acts differentiates between ***oil*** and gas and other hydrocarbons. However, BIA regulations which pertain to ***oil*** and gas royalties describing "***oil***, gas...and/or all other hydrocarbon substances produced and saved from the land" may be authority for the inclusion of tar sands and associated hydrocarbons (except perhaps ***oil*** shale and gilsonite) under Indian ***oil*** and gas leases.[[359]](#footnote-360)359

**D-   Stipulations**

No standard stipulations were found which pertain to multiple mineral development conflicts on Indian lands. The BIA occasionally customizes stipulations to meet special circumstances. Perhaps stipulations could be fashioned to meet concurrent development situations.

**IV.   STATE LANDS**

The prospect of conflict occasioned by simultaneous mineral extraction operations is no less likely on state-owned lands than on public domain lands. Clearly, geological and technological origins of conflicts are constant factors which apply equally to all mineral lands whether in federal, Indian, state, or private ownership. Only the structure and sophistication of the law varies.

This section surveys multiple mineral development statutes, regulations, lease provisions, and judicial decisions from the Rocky Mountain jurisdictions of Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, and Wyoming. As with federal and Indian lands, state laws affecting multiple mineral development exist for the most part within the penumbra of state regulatory agencies charged with administration of state-owned lands and those clothed with authority to conserve natural resources.

**A.   General Overview**

**1.   *Land Administration***

The states of Montana, North Dakota, Utah, and Wyoming have relatively well-developed multiple use schemes. Arizona, Colorado, Idaho, and New Mexico have qualified multiple use statutes which recognize, at least to some extent, the potential for multiple mineral development conflicts and make an effort to address those conflicts. Kansas, Nebraska, Nevada, and South Dakota appear to have no multiple mineral use laws.

Generally, those states which do provide for multiple use development impose a duty upon the lessees to protect other mineral deposits. Any unreasonable actions by a lessee which would substantially impair the development of other natural resources on the lands, regardless of whether or not there are other mineral leases on those lands, are discouraged. It is not always clear how such policies are enforced.

Montana, North Dakota, Utah, and Wyoming have a general policy to encourage the greatest ultimate recovery of natural resources and at the same time to protect the interests of the owners of the various leases and of the state. In furtherance of that policy, several different approaches are taken. Montana favors fossil fuels by prohibiting leases for other minerals to be issued on lands covered by ***oil*** and gas or coal leases. Wyoming grants exploration priority to the first lessee, but grants development priority to the first lessee to develop. Utah appears to have abandoned any notion of a first in time, first in right policy in favor of a balanced approach to simultaneous development. The only state where priority of access and development appears to be uncertain is North Dakota. In each instance, the standard is vague in that one lessee or operator is not to unduly or unreasonably interfere with the deposits and operations of the other.

Montana law gives general authority to a state agency to resolve conflicts resulting from multiple mineral development, but the standards to be followed and the duties of the state agency are not outlined. In contrast, Wyoming regulations provide standards and specify duties of the Commissioner of Public Lands in cases of a conflict, based primarily on the economic argument of highest and best use. Utah and North Dakota laws, although not outlining the specific standards to be followed, give a clear indication of the duties of the state agencies. In both Utah and North Dakota, the agencies may require a bond to indemnify other lessees and the state for damage or injury to other mineral deposits, and the agencies can resolve disputes following general administrative procedures. North Dakota is the only state with a statute which addresses itself exclusively to conflicts in simultaneous mineral development operations.

Arizona, Colorado, Idaho, and New Mexico are again those states which have qualified multiple use provisions. Approaches are so varied that no general observations can be made. Arizona, New Mexico, and South Dakota empower their state land administration agencies to withdraw lands from ***oil*** and gas leasing if the agency deems such removal to be in the best interest of the state. The best interest of the state may well be served by withdrawing land from ***oil*** and gas leasing in order to lease the same land to another type of mineral developer.

**2.   *Conservation Administration***

In most cases, conservation or mining commissions are charged by statute to oversee the permitting and supervision of mineral extraction on state lands. Typically, regulatory authority is derived in ***oil*** and gas conservation acts and surface mining and reclamation statutes. A North Dakota statute provides for the prevention of waste of all minerals. Statutes and regulations in Colorado, New Mexico, and Utah restrict the development of specified minerals. Utah and New Mexico give authority to state agencies to prohibit ***oil*** and gas development in potash mining areas. Utah, Colorado, and Wyoming have established a specialized area of law restricting the drilling of ***oil*** and gas wells in coalbeds. Utah has an identical regulation for all underground mines.

All twelve states have statutes prohibiting waste of ***oil*** and gas. Prohibiting waste might be interpreted to restrict ***oil*** and gas development in order to allow the area to be mined for another mineral. Arizona, Colorado, Idaho, Kansas, Nebraska, New Mexico, South Dakota, and Utah expressly provide for the protection of correlative rights. Such authority might be applied to restrict one developer's operation in favor of protecting another's correlative rights.

Eleven states require casing and plugging of ***oil*** and gas wells in order to protect water-bearing formations and to prevent the escape of ***oil*** and gas into other formations. North Dakota regulations mandate plugging and abandoning procedures to confine *all* minerals to their respective strata. The Idaho conservation commission may direct an ***oil*** and gas operator to perform a directional survey. That survey could be used by an underground miner to assist in developing his mine plan.

Finally, with regard to mining statutes, some provision is made in many states which could be construed to give implied authority to the regulatory agency to regulate mining for simultaneous development. Mined land reclamation statutes and coal mining legislation require mine operators to submit maps of their workings to a state agency. Wyoming requires that the coal map include the location of ***oil*** and gas wells in the vicinity of the proposed mine. The map requirement would allow an ***oil*** or gas operator to know the exact location of mine workings in order to avoid them if he drills in that area.

Montana gives its mining agency authority to restrict shallow coal mining in order to protect deep coal reserves. Colorado, Kansas, Montana, New Mexico, North Dakota, Utah, and Wyoming clothe their regulatory agency with authority to deem lands unsuitable for coal mining under SMCRA. Idaho has a similar provision in its coal mining statutory scheme. Also under SMCRA, Colorado, Montana, New Mexico, and Utah prohibit subsidence of the surface due to underground mining, unless effected pursuant to a controlled plan of subsidence mining. Colorado and Utah have separate statutes prohibiting subsidence mining to protect other mineral owners. These could serve to remove a major potential obstacle from the paths of other mineral developers.

**B.   Survey**

**1.   *Arizona***

The June 2, 1951 amendment to the Enabling Act for the State of Arizona expressly authorizes the Arizona legislature to issue multiple mineral leases on the same state lands.[[360]](#footnote-361)360 However, Arizona has neither a multiple mineral development statutory framework nor regulations that apply to operational conflicts- State land development statutes and regulations authorize state mineral lessees to use so much of the surface as is reasonably necessary for the conduct of operations on the lands.[[361]](#footnote-362)361 The lessee is liable for damages to the surface owners and may be required to post a bond in a reasonable amount.[[362]](#footnote-363)362 There is neither statutory nor regulatory authorization for, nor prohibition of, multiple mineral leasing on the same state lands- There is, however, a statute which directs the ***Oil*** and Gas Conservation Commissioners to supervise geothermal resource production to prevent waste of fossil fuels, helium, and water.[[363]](#footnote-364)363

Both the mineral prospecting permit and the mineral (mining claim) leases obligate the lessee to conduct his operations so as to prevent *any* waste upon the lands or to minimize or prevent surface or underground waste and promote conservation by sealing "ore, gas, helium, water, minerals or other natural resource strata" to prevent contamination by intrusion.[[364]](#footnote-365)364 It is interesting to note that one current form of the application for a mineral (mining claim) lease requires a response as to whether or not there are prior valid mineral locations on the land-[[365]](#footnote-366)365

The Arizona ***oil*** and gas conservation statute and corresponding regulations expressly establish state policy to protect correlative rights and to prevent waste.[[366]](#footnote-367)366 The regulations define waste to include inefficient dissipation of reservoir energy and overproduction of gas in excess of demand or transportation-[[367]](#footnote-368)367 Given that narrow construction, it would appear that there is little implied authority to be squeezed from the Arizona ***Oil*** and Gas Conservation Act or regulations to regulate prevention of waste of other mineral deposits. However, a broad reading of the definition and mandate might lead to regulation of ***oil*** and gas operations to protect other minerals, and vice versa.

***Oil*** and gas operators are statutorily required to case and cement wells to prevent ***oil*** and gas from escaping into other strata.[[368]](#footnote-369)368 The statute and corresponding regulations[[369]](#footnote-370)369 appear to be concerned solely with the conservation of ***oil*** and gas, as opposed to the protection of other strata or mineral deposits from contamination or pollution by intrusion-

No provision is made in statute, regulations, or otherwise for suspension of lease terms for incompatible simultaneous operations. Finally, Arizona does not appear to authorize the leasing or condemnation of gas storage reservoirs, as do several other states.

**2.   *Colorado***

One of Colorado's statutory provisions pertaining to the multiple mineral use concept involves master planning. The statute provides that countries are to consider multiple-sequential use of lands to effect maximum benefit to the public.[[370]](#footnote-371)370 Another statute implies possible multiple mineral use by requiring that commercial mineral deposits be exploited to avoid waste-[[371]](#footnote-372)371 It would seem that prevention of waste to the deposit being mined might mandate phased simultaneous operations to prevent loss through pillaring, drilling islands, or prohibited access to deposits by virtue of incompatibility of competing operations.

Regulations published by the State Board of Land Commissioners reserve in the Board the right to issue more than one mineral lease on the same lands, although subsequent lessees will be subject to the rights of the first lessee.[[372]](#footnote-373)372 Inasmuch as the Board of Land Commissioners is not a regulatory agency, its pronouncements are guidelines without the force of law-[[373]](#footnote-374)373 Nevertheless, the guidelines of the board reflect a first in time, first in right leasing policy.

The leases issued by the State Board of Land Commissioners for minerals other than ***oil***, gas, and coal expressly reserve to the Board the right to lease the lands for other purposes not inconsistent with those of the lease.[[374]](#footnote-375)374 While multiple mineral leasing is not expressed, it is implied- The coal and the uranium leases are more clear, reserving to the Board the right to lease the lands "for any purpose, including the right to explore and prospect...other than for [coal or uranium] deposits" in a manner not inconsistent with the rights granted.[[375]](#footnote-376)375 Those leases likewise obligate the lessee to conduct his operations consistent with good mining practices to extract the maximum amount of coal or uranium.[[376]](#footnote-377)376 These latter provisions, again, might be employed as authority to phase competing operations so as not to require pillaring, islands, or the like- Both lease provisions do not preclude contemporaneous development. However, under the Board's first in time, first in right policy, any conflicts would appear to be resolved in favor of the first lessee.

The ***oil*** and gas lease contains no reservations or other language from which authorization of concurrent operations could be implied.[[377]](#footnote-378)377

Finally, the current coal mining lease provides that the coal lessee may produce and sell methane gas extracted from the coal seams, so long as the gas is extracted for safety purposes prior to mining-[[378]](#footnote-379)378 However, methane gas and other gases produced from the coal seams and underlying and overlying rock by an ***oil*** and gas lessee prior to mining are the property of the ***oil*** and gas lessee.[[379]](#footnote-380)379 It would appear from the coal mining lease language that a preexisting ***oil*** and gas lessee would own the methane gas in the coal measures- It is less clear, but arguable, that an ***oil*** and gas lessee whose lease is second in time to the coal lease also owns the gas. It would follow then that the coal owner is entitled to the coalbed gas only if no valid ***oil*** and gas lease covers the coal lands and then only when gas is removed for safety purposes prior to mining.

Colorado law regulating conservation and ***oil*** and gas and mining operations is perhaps the most definitive of all twelve states surveyed. Under the Colorado ***Oil*** and Gas Conservation Act and corresponding regulations, an ***oil*** and gas operator must report any borehole which penetrates a coal seam to the Colorado ***Oil*** and Gas Conservation Commission.[[380]](#footnote-381)380 The borehole may not be located within 200 feet of a mine shaft, within 100 feet of a mine boiler or mine engine house, or within fifteen feet of a mine haulage-[[381]](#footnote-382)381 Moreover, all boreholes must be cased and cemented across the coal seam,[[382]](#footnote-383)382 and the mineable coal section must be plugged upon abandonment,[[383]](#footnote-384)383 in part to protect the coal seam from contamination from water aquifers and ***oil*** and gas seepage and for obvious safety reasons-[[384]](#footnote-385)384

The Colorado ***Oil*** and Gas Conservation Act expressly establishes the state policy as one intended to prevent waste and to protect correlative rights.[[385]](#footnote-386)385 The Colorado Act defines waste in the classic ***oil*** and gas terminology,[[386]](#footnote-387)386 and empowers the ***oil*** and gas commission to require casing and plugging programs to prevent ***oil*** and gas from entering other formations-[[387]](#footnote-388)387 As with several other states surveyed, a broad reading of the definition of waste and the mandate to prevent waste might be used as authority to regulate other mineral operations to protect ***oil*** and gas deposits and vice versa.

Colorado also provides for the condemnation of underground storage reservoirs by a natural gas public utility.[[388]](#footnote-389)388 However, only lands which are no longer productive for ***oil*** and gas by primary or secondary recovery techniques may be condemned-[[389]](#footnote-390)389 The rights to gas storage reservoirs are not to prejudice the access rights of other mineral owners to their deposits, subject to orders and regulations of the ***Oil*** and Gas Conservation Commission to protect the storage reservoir from pollution or escape. However, the additional expenses encountered by the other mineral developers to protect the gas storage reservoir are to be borne by the natural gas utility. Finally, the natural gas utility is always considered to be the owner of the injected gas.[[390]](#footnote-391)390

Pursuant to the Colorado Surface Coal Mining Reclamation Act, underground coal miners are required to prevent subsidence and to maintain the reasonably foreseeable use and value of the surface lands-[[391]](#footnote-392)391 However, as in the federal counterpart, the Colorado Act expressly allows planned and controlled subsidence and conventional room and pillar method of mining.[[392]](#footnote-393)392 Upon petition of any interested party, the Act also provides for the Mined Land Reclamation Board to consider designating certain areas as unsuitable for surface coal mining-[[393]](#footnote-394)393 Among other factors, the reclamation board must consider whether the proposed surface mining would (1) adversely affect renewable resources,[[394]](#footnote-395)394 or (2) affect a natural hazard area which could substantially endanger life and property-[[395]](#footnote-396)395 If *renewable resources* were construed to include mountain water sources for salt brines for evaporative mineral extraction or geothermal sources dependent upon disrupted aquifers, or if mining in a natural hazard area were to endanger another mining operation, this statute could provide a remedy for some multiple mineral development conflicts involving surface coal mining.

The Colorado legislature recently enacted legislation which forbids government agencies from erecting structures which would permanently preclude extraction of commercial mineral deposits.[[396]](#footnote-397)396 No provision is made by statute, regulation, or otherwise for suspension of lease terms for incompatible simultaneous operations- Finally, the Colorado Geothermal Resources Act was enacted in 1974 and neither authorizes nor prohibits the issuance of geothermal resource leases or permits on lands covered by mineral leases.[[397]](#footnote-398)397 Any geothermal resource producer is required to include in his drilling permit application a description of measures to be employed to prevent subsidence.[[398]](#footnote-399)398

**3-   *Idaho***

Idaho land administration appears to have no multiple mineral development statutory framework. However, regulations issued by the Idaho Department of Lands expressly provide for multiple use. The ***oil*** and gas leasing regulations authorize the lands director to issue leases for other uses.[[399]](#footnote-400)399 It is unclear whether *other uses* pertains to surface leases for grazing or agricultural purposes or whether it would include mineral leases as well- The ***oil*** and gas lessee is obligated to take all reasonable precautions to prevent waste or damage to all surface and subsurface natural resources.[[400]](#footnote-401)400 ***Oil*** and gas lessees are liable to the state or its lessees for all damages resulting from failure to take reasonable precautions to prevent injury to persons and property and to prevent waste of the ***oil*** and gas and all other surface and subsurface resources.[[401]](#footnote-402)401

Geothermal resource leasing regulations expressly authorize the Idaho Board of Land Commissioners to issue ***oil*** and gas and other mineral leases on the same lands and provide ingress and egress rights to all surface and mineral lessees-[[402]](#footnote-403)402 Further, the geothermal resource regulations provide that operations under other leases or uses shall not unreasonably interfere with or endanger operations for geothermal resources and obligate the geothermal resource lessee not to unreasonably interfere with or endanger operations under any lease, license, claim, permit or other authorized use.[[403]](#footnote-404)403 The geothermal resources lessee is likewise obligated to take all reasonable precautions to prevent waste and damage to all natural resources and to effect the maximum ultimate recovery of geothermal resources-[[404]](#footnote-405)404 The regulations expressly extend the definition of waste to all natural resources and not exclusively the geothermal resource being developed.[[405]](#footnote-406)405 The geothermal leasing regulations grant preferential rights to the geothermal resources lessee to take leases on any other minerals he discovers in the course of conducting his geothermal operations-[[406]](#footnote-407)406 That provision should serve to prevent some potential conflicts.

The Idaho mineral lease form reserves to the Board of Land Commissioners the right to lease the surface of the same lands for any purpose including mining.[[407]](#footnote-408)407 The lease, however, reserves no express authority in the Board to lease for other minerals on the same lands- Further, the mineral lease makes subsequent leases subject to all prior existing rights and leases.[[408]](#footnote-409)408 No such provisions appear in ***oil*** and gas or geothermal steam leases, although the ***oil*** and gas lease incorporates all ***oil*** and gas operating regulations by reference.[[409]](#footnote-410)409 No provision is made by statute, regulation, or otherwise for suspension of lease terms for incompatible simultaneous operations-

No laws or regulations for the location of mining claims bear directly on simultaneous operational conflicts.[[410]](#footnote-411)410

Finally, no statutes pertaining to ***oil*** and gas conservation deal directly with multiple mineral use- Idaho protects correlative rights and prohibits waste of ***oil*** and gas in the classic ***oil*** and gas terminology.[[411]](#footnote-412)411 Conceivably, this waste prohibition might be used as authority to prevent preclusion of ***oil*** and gas drilling operations in deference to some competing mineral extraction operation. The Idaho ***Oil*** and Gas Commission is likewise given discretionary authority to require directional surveys and the casing and plugging of well bores to prevent the escape of ***oil*** and gas.[[412]](#footnote-413)412 As with other states, the Idaho provision appears to be directed more at conservation of ***oil*** and gas than protection of other strata[[413]](#footnote-414)413 except for the directional survey requirement which may provide protection for underground miners in their efforts to identify the location of well bores which intersect the mineable beds-

**4.   *Kansas***

Kansas has no statutory, regulatory, or judicial authority either authorizing or prohibiting simultaneous development. The Kansas statutes and regulations do, however, prohibit waste and charge the Kansas Corporation Commission with protecting correlative rights, including enforcement of adequate plugging and abandoning procedures.[[414]](#footnote-415)414 However, waste is defined in classic ***oil*** and gas terms and does not appear to extend to the protection of other minerals-[[415]](#footnote-416)415

Kansas has also enacted an underground natural gas storage reservoir act.[[416]](#footnote-417)416 That act provides for the leasing and condemnation of underground gas storage reservoirs by a natural gas public utility-[[417]](#footnote-418)417 Subject to orders and regulations of the Kansas Corporation Commission to protect the storage reservoir from pollution or escape, the rights to gas storage reservoirs are not to prejudice other mineral owners' access to their minerals.[[418]](#footnote-419)418 No guidelines are given as to what lands may be leased or condemned, other than as the Kansas Corporation Commission determines-[[419]](#footnote-420)419 However, it is fairly evident that gas storage reservoirs may be leased or condemned in lands covered by other mineral leases.

The Kansas Corporation Commission has issued special regulations for the drilling of wells or test holes through gas storage reservoirs.[[420]](#footnote-421)420 In addition to requiring the operator to protect the storage structure, the rules establish notice requirements, provide for utility input on cementing and plugging procedures, and allow the utility and the commission to monitor the operation-[[421]](#footnote-422)421 Where the utility objects to any procedures proposed by the operator, the commission may hold a hearing to resolve differences.[[422]](#footnote-423)422 Finally, the regulations require the utility to pay for all necessary extra expenses which the other mineral operator incurs in protecting the reservoir and which are approved by the commission-[[423]](#footnote-424)423

Upon petition of any interested party, the Mined-Land Conservation and Reclamation Act[[424]](#footnote-425)424 empowers the Mined-Land Conservation and Reclamation Board to designate certain areas unsuitable for surface coal mining where the Board determines that surface mining would adversely affect renewable resources[[425]](#footnote-426)425 or would effect a natural hazard area which could substantially endanger life and property-[[426]](#footnote-427)426 If *renewable resources* were construed to include water sources for salt brines for evaporative mineral extraction or geothermal sources dependent upon disrupted aquifers, or if mining in a natural hazard area were to endanger another mining operation, this statute could provide a remedy for some multiple mineral development conflicts involving surface coal mining. Although the Kansas program has been approved by the Secretary of Interior, no cooperative agreement has been signed.[[427]](#footnote-428)427

**5-   *Montana***

Montana is one of the few states to address directly by statute the issue of multiple mineral development conflicts. The Montana Board of State Lands is charged with managing state lands "under the multiple-use management concept" to balance utilization of all natural resources to best meet public needs.[[428]](#footnote-429)428 State lands are to be developed to achieve their highest and best use, to increase state revenues and benefit the economy-[[429]](#footnote-430)429

Under the Montana statutory scheme, all sales and leases issued on state lands are expressly subject to prior existing mining leases.[[430]](#footnote-431)430 The term "mining leases" is defined as leases for "metalliferous minerals or gems-"[[431]](#footnote-432)431 However, no mining lease may be issued on lands covered by a preexisting coal, ***oil***, or gas lease except to the holder of such lease, unless the holder gives express written consent.[[432]](#footnote-433)432 Inasmuch as the statutes pertaining to coal, ***oil***, or gas leasing do not have a reciprocal consent requirement, by implication legislative policy favors fossil fuel extraction over metalliferous minerals and gems- Upon demand by the Board, the metalliferous and gem mining provisions require the lessee to post a bond for protection of the interests of prior purchasers, lessees, or contractees.[[433]](#footnote-434)433 Any prior purchaser, contractor, or lessee may sue on the bond for violation of bond terms or the lease.[[434]](#footnote-435)434 No similar provisions are found in leases for any nonmetallic minerals, coal, ***oil***, or gas-

Lands covered by nonmetalliferous mining leases, which exclude coal, ***oil***, and gas,[[435]](#footnote-436)435 apparently may not be leased for other minerals-[[436]](#footnote-437)436 On lands covered by a coal, ***oil***, or gas lease, there is no express statutory authority for issuing other mineral leases except mining leases with the preexisting lessee's permission.

There is a statutory limitation on coal leasing. If the Board determines that strip mining would impair future recovery of deep mineable coal, it may not issue a strip mining lease.[[437]](#footnote-438)437 Furthermore, coal miners are to conduct their operations to prevent waste of coal and so as not to render future mining more difficult or expensive-[[438]](#footnote-439)438

In addition, the Board is empowered to issue underground natural gas storage leases.[[439]](#footnote-440)439 These leases are authorized for lands containing depleted gas reservoirs and may be given only to a natural gas public utility authorized to do business in the state-[[440]](#footnote-441)440 The leases will be issued subject to existing rights.[[441]](#footnote-442)441 It is unclear from the statutes if such leases can be issued on lands covered by existing mineral leases, but at a minimum, multiple mineral leasing limitations should apply- For example, gas storage might be allowed on lands subject to metalliferous mining leases, but not on lands subject to nonmetalliferous, coal, or ***oil*** and gas leases.

The eminent domain statutes expressly provide that condemnation of lands by a public natural gas utility for underground gas storage shall be without prejudice to the rights of land owners or owners of an interest in the land to bore or drill through the underground storage reservoir or otherwise use the lands.[[442]](#footnote-443)442 The right to breach a gas storage reservoir exists subject to orders and rules of the Board of ***Oil*** and Gas Conservation to protect against escape of gas from underground reservoirs, and the condemnor bears all additional costs incurred by other mineral owners and lessees to protect the storage reservoir-[[443]](#footnote-444)443

Finally, Montana statutes and regulations expressly allow geothermal resource leasing on lands covered by other mineral leases.[[444]](#footnote-445)444 However, the first lessee in time is entitled to a priority of right, provided that the priority does not interfere with actual production of geothermal resources when so ordered by the Board-[[445]](#footnote-446)445 Geothermal operations are to be conducted in a manner which will prevent waste, maximize recovery of geothermal resources, and protect other natural resources.[[446]](#footnote-447)446

Although statutes indicate that other mineral leases will not be issued on lands covered by coal, ***oil***, or gas leases, the current lease forms for ***oil*** and gas and for nonmetalliferous minerals employed by the Board expressly reserve the right to dispose of any estate or interest in the lands-[[447]](#footnote-448)447 The leases also provide that subsequent dispositions will not interfere with the lessees' rights to possession.[[448]](#footnote-449)448 The current lease forms for metalliferous minerals and uranium limit the reservation to the Board to surface rights-[[449]](#footnote-450)449

The nonmetalliferous mineral lease obligates the lessee not to interfere unduly with natural resource production operations, presumably of other lessees, including prior mineral leases.[[450]](#footnote-451)450 In addition, the lessee must maximize production of his nonmetalliferous mineral without waste, while at the same time preventing waste of all other natural resources and preserving the property for future uses-[[451]](#footnote-452)451

No provision is made in statute, regulation, or otherwise for suspension of lease terms for incompatible simultaneous operations.

The Montana ***Oil*** and Gas Conservation Act prohibits waste.[[452]](#footnote-453)452 By regulation, waste is given the classic ***oil*** and gas definition-[[453]](#footnote-454)453 Wells should be adequately cased and plugged to prevent communication of ***oil***, gas, and water with other formations and with each other.[[454]](#footnote-455)454 As with several other states surveyed, this passage might be cited as authority to prevent preclusion of ***oil*** and gas drilling operations in deference to a competing mineral extraction operation and vice versa-

Finally, the Montana Strip and Underground Mine Reclamation Act[[455]](#footnote-456)455 provides that a person possessing an adversely affected interest, or one likely to be adversely affected, may petition the Department of State Lands to designate an area unsuitable for surface coal or uranium mining-[[456]](#footnote-457)456 The Act, like the Colorado Surface Coal Mining Reclamation Act, provides several criteria which, if read disjunctively, may apply to some simultaneous use conflicts. The Department must consider whether proposed surface mining would (1) adversely affect renewable resource lands,[[457]](#footnote-458)457 or (2) affect natural hazard lands which could substantially endanger life and property-[[458]](#footnote-459)458 If *renewable resources* were construed to include mountain water sources for salt brines, for evaporative mineral extraction, or geothermal sources dependent on disrupted aquifers, or if mining in natural hazard lands were to endanger another mining operation, this statute could provide a remedy for multiple mineral development conflicts involving surface mining. The statute also requires an operator to prevent damage to real and personal property occasioned by subsidence and other hazards.[[459]](#footnote-460)459

**6-   *Nebraska***

Nebraska has not directly addressed multiple mineral use development in either its statutory or regulatory scheme. The Nebraska ***Oil*** and Gas Conservation Act and regulations pursuant thereto provide for the protection of correlative rights,[[460]](#footnote-461)460 prohibit waste in the classic sense,[[461]](#footnote-462)461 and require casing and plugging programs to prevent ***oil*** and gas from entering other formations-[[462]](#footnote-463)462 As previously mentioned, such statutes may provide implied authority for regulation of other mineral operations to conserve ***oil*** and gas and vice versa.

Nebraska also provides for the condemnation of underground storage reservoirs by a natural gas public utility.[[463]](#footnote-464)463 Only lands in which (1) production capacity for ***oil*** and gas no longer exists or has been forty percent depleted, (2) a utility has acquired sixty percent of the ownership possessing the right to use the underground stratum, and (3) a stratum has more value for storage than for production may be condemned-[[464]](#footnote-465)464 The right to store gas must not prejudice the rights of owners of ***oil***, gas, and other minerals to their deposits, but no condemnee may drill into a storage reservoir contained in a vacant mining cavern.[[465]](#footnote-466)465 The additional expenses incurred by mineral developers to protect the gas storage reservoir are borne by the natural gas utility-[[466]](#footnote-467)466 Injected gas is considered at all times to be owned by the utility.[[467]](#footnote-468)467

**7-   *Nevada***

Nevada has no multiple mineral development law.[[468]](#footnote-469)468 The Nevada ***Oil*** and Gas Conservation Act provides for protection of correlative rights and prohibits waste of ***oil*** and gas-[[469]](#footnote-470)469 Mineral leases are not issued on a regular basis as with other states,[[470]](#footnote-471)470 and those leases which are issued are individually negotiated-[[471]](#footnote-472)471

**8.   *New Mexico***

New Mexico does not have a statutory policy on multiple mineral development. Of the twelve states surveyed, it does have perhaps the most experience with concurrent mineral development issues because of conflicts with Permian Basin potash and ***oil*** and gas.

No direct statutory authority exists for multiple mineral leasing. Under the regulatory scheme, the Commissioner of Public Lands is expressly authorized to execute various categories of mineral leases on state lands. Leases for potassium, sulfur, sodium, phosphorus, and other minerals of similar occurrence;[[472]](#footnote-473)472 sodium chloride;[[473]](#footnote-474)473 common varieties;[[474]](#footnote-475)474 and coal[[475]](#footnote-476)475 will be issued only if the lands are open on the tract books- Whether "open" connotes that no other lease in the same mineral category exists or whether it refers to the existence of any mineral lease regardless of category remains unclear. No such restriction applies to leases of ***oil*** and gas[[476]](#footnote-477)476 or minerals other than the aforementioned.[[477]](#footnote-478)477

New Mexico has a regulation which authorizes ***oil*** and gas operators to seek a waiver of exploration, drilling, and production obligations on grounds that such development interferes with that of another lessee- The availability of lease extensions under those circumstances is consistent with multiple mineral leasing policy.[[478]](#footnote-479)478 Waivers are granted on public land survey subdivisions where an actual conflict occurs.[[479]](#footnote-480)479 The current lease forms employed for coal, potash, geothermal resources, common salt, and the general lease for all other minerals (excluding ***oil*** and gas) provide for issuance of other mineral leases on the same lands-[[480]](#footnote-481)480 All of the forms, with the exception of those for coal and potash, obligate the respective lessees to observe all rules and regulations of the state land office issued for protection and preservation of other valuable mineral deposits.[[481]](#footnote-482)481 ***Oil*** and gas lease forms are statutory[[482]](#footnote-483)482 and do not contain the foregoing multiple mineral leasing language- However, one of the ***oil*** and gas lease forms does reserve to the state land office the right to lease lands covered by an ***oil*** and gas lease for geothermal resources.[[483]](#footnote-484)483 The commissioner may withhold lands from leasing if he determines it is in the best interest of the state.[[484]](#footnote-485)484 Presumably, this power could be used to avoid multiple mineral conflicts- Finally, the commissioner has the authority to designate some lands unsuitable for coal leasing.[[485]](#footnote-486)485 Again, this could result in the unavailability of coal lands for leasing by virtue of potentially incompatible operations.

The ***Oil*** Conservation Commission is statutorily charged with the conservation of ***oil*** and gas and the prevention of waste of potash.[[486]](#footnote-487)486 It has authority to determine the limits of commercial potash deposits and prohibit ***oil*** and gas operations on potash lands when such operations would unduly interfere with the orderly commercial development of such deposits-[[487]](#footnote-488)487 The commission has issued special rules and regulations governing ***oil*** and gas operations on designated potash lands.[[488]](#footnote-489)488 Those regulations expressly prohibit drilling at locations which would result in waste of potash or injury to, or undue interference with, operations on potash deposits-[[489]](#footnote-490)489 These rules require the ***oil*** and gas operator to provide a special salt protection string, to comply with special cementing procedures, to use salt-saturated drilling fluids in the salt section, to place a solid cement plug through the salt section and water-bearing horizons upon plugging and abandonment, and to provide directional surveys which are to be run from the surface to a point below the lowest potash interval.[[490]](#footnote-491)490 The rules appear to apply even when no potash lease exists on the lands- Furthermore, where a potash operator objects to a proposed well location, the objection is referred to the secretary-director of the commission for arbitration, with rights of appeal to the commission[[491]](#footnote-492)491 and eventually to the district court.[[492]](#footnote-493)492 The rules apply to federal lands within potash-***oil*** areas pursuant to a cooperative relationship between the federal government and the ***Oil*** Conservation Commission-[[493]](#footnote-494)493

Several practical procedures have been developed by potash operators to comply with the rules. Islands are left around existing wells in which no mining is prosecuted. Islands surrounding low pressure gas wells have a radius of 100 feet, while those surrounding a high pressure well have a 200-foot radius.[[494]](#footnote-495)494 In one instance, a 4-13-foot thick potash bed 700 feet below the surface resulted in approximately 125,930 tons of ore being left in place to protect the well.[[495]](#footnote-496)495 Pillar dimensions, however, have not been established by statute, rule, or regulation.

New Mexico also provides for gas injection storage. A natural gas company may condemn lands for underground gas storage, except those lands known to contain commercial deposits of ***oil*** and gas or potash and those lands in which storage would injure underground or surface water resources.[[496]](#footnote-497)496 The grant of storage rights exists without prejudice to the rights of others to drill through the storage reservoirs, which rights are subject to all orders of the ***Oil*** Conservation Commission protecting storage areas from pollution and escape of the gas-[[497]](#footnote-498)497 Further, the injector always owns the injected gas.[[498]](#footnote-499)498 Unlike other surveyed states, however, it does not appear that the condemnor must bear the additional expenses incurred by other mineral developers to protect the gas storage reservoir-[[499]](#footnote-500)499

The Surface Mining Act[[500]](#footnote-501)500 obligates miners of coal to prevent surface subsidence unless mine plans call for controlled subsidence-[[501]](#footnote-502)501 Room and pillar mining is expressly allowed.[[502]](#footnote-503)502 The Coal Surface Mining Commission may declare lands unsuitable for surface coal mining where it determines that surface mining would adversely affect renewable resource lands[[503]](#footnote-504)503 or would affect natural hazard lands which could substantially endanger life and property-[[504]](#footnote-505)504 If *renewable resources* can be construed to include mountain water sources for salt brines used in evaporative mineral extraction or geothermal sources dependent on disrupted aquifers, or if *property damage* can be construed as loss or impairment of an ***oil*** and gas well shut-in to allow passage of the mining operation, then this statute provides a possible remedy for some multiple mineral development conflicts involving mining.

The New Mexico experience is precedent-setting. It demonstrates a necessary cooperation of federal and state governments in those states having substantial public domain lands.[[505]](#footnote-506)505 The fact that senior ***oil*** and gas lessees may be deferred in favor of potash lessees reflects a conservation approach of preventing waste of potash ore- Potash operators may subsidence mine without losing reserves to protective pillars. The maximum quantity of ore is recovered. ***Oil*** and gas reserves are also conserved because the ***oil*** and gas operator may subsequently recover his minerals without risk of sheared wellbores or escape of ***oil*** and gas into other shafts. This notion rejects a long-honored rule under the common law of first in time, first in right in favor of maximum conservation. Finally, it provides a statutory mechanism for ***oil*** and gas lease suspension during periods when an ***oil*** and gas lessee is denied access to his deposits.

**9.   *North Dakota***

North Dakota has a definitive body of law pertaining to multiple mineral development conflicts. An entire chapter of the North Dakota Century Code is dedicated to resolution of conflicts in subsurface mineral production.[[506]](#footnote-507)506 It is the avowed policy of North Dakota to promote subsurface mineral development so as to prevent waste, protect the rights of all owners, and achieve the greatest possible economic recovery of natural resources for the benefit of the state, producers, and royalty owners-[[507]](#footnote-508)507 The statute empowers the Industrial Commission to resolve conflicts between producers to prevent waste and effect the greatest economic advantage.[[508]](#footnote-509)508 Moreover, a bond is required to ensure full compliance with multiple mineral development policies-[[509]](#footnote-510)509

North Dakota is the only state which directly seeks to promote the greatest economic advantage from mineral extraction. That policy is diametrically opposed to its federal counterpart, which requires the balancing of uses to the greatest public benefit, but does not necessarily equate to the greatest economic return.[[510]](#footnote-511)510

North Dakota has no statutes or regulations which either authorize or prohibit the issuance of multiple mineral leases on the same lands-[[511]](#footnote-512)511 None of the lease forms examined contained language either reserving the lessor's right to lease other minerals in the lands or charging lessees to protect the mineral deposits of another mineral lessee.

The North Dakota Industrial Commission is empowered to oversee the development of mineral resources.[[512]](#footnote-513)512 The Commission is charged with the responsibility of protecting correlative rights, preventing waste[[513]](#footnote-514)513 of ***oil*** and gas, and ensuring that wells are properly cased and plugged-[[514]](#footnote-515)514 For the most part, the North Dakota ***oil*** and gas conservation statutes are couched in standard language. However, the regulations issued pursuant to the subsurface mineral conflicts provisions expressly require ***oil*** and gas operators to take precautions to prevent waste and damage to *all* mineral-bearing formations.[[515]](#footnote-516)515 Further, although no express guidelines are given, regulations require plugging and abandonment in such a manner as to confine *all* subsurface minerals, including ***oil***, gas, and water, to their original strata-[[516]](#footnote-517)516 No other state applies the concepts of ***oil*** and gas conservation to the protection of *all* other mineral deposits by ***oil*** and gas operators.

No statutes, regulations, or lease terms were found that affect either geothermal resources, gas storage reservoirs, or lease term suspensions when development is deferred by incompatible conflicts with other operators.

The North Dakota Surface Mining and Reclamation Act contains many provisions which are similar to those in surface mining and reclamation acts in other states. The Public Service Commission may designate lands unsuitable for surface coal mining where it would adversely affect renewable resources[[517]](#footnote-518)517 or would constitute a hazard which would substantially endanger life or property-[[518]](#footnote-519)518 These provisions may be used as either a sword or shield to defeat surface mining. The North Dakota version does not contain environmental performance standards pertaining to surface effects caused by underground mining. Finally, North Dakota has no statutes or regulations affecting gas in coal seams.

**10.   *South Dakota***

The state of South Dakota has not statutorily considered multiple mineral development issues. Further, no land administration regulations deal with concurrent developments. South Dakota does have a statute which expressly provides that the Commissioner of School and Public Lands is not required to lease any tract when, in his judgment, the tract should not be leased.[[519]](#footnote-520)519 That statute might be used as authority to deny a subsequent mineral lease when a preexisting lease already covers the lands- Finally, no South Dakota lease forms contain the customary language reserving the lessor's right to lease other minerals or requiring the mineral lessee to protect other deposits.

The ***Oil*** and Gas Conservation Act and the corresponding regulations[[520]](#footnote-521)520 are couched in general ***oil*** and gas terms of protecting correlative rights, prohibiting waste, and providing adequate casing and abandonment procedures to prevent escape of ***oil*** and gas- Perhaps by broad interpretation, the ***oil*** and gas act and regulations apply to other minerals as discussed under other states with similar statutes. Nothing found in the Surface Land Reclamation Act or its regulations specifically deals with potential multiple mineral development conflicts. Finally, South Dakota does not appear to make provision for the leasing or condemnation of gas storage reservoirs.

**11.   *Utah***

Because Utah has nearly ninety-five percent of the known ***oil***-impregnated rocks and solid and semisolid bitumen deposits in the United States, it faced at an early date and resolved the conflicts occasioned by ***oil*** and gas leases in tar sands areas. Like New Mexico, it has had to deal with conflicts between potash and ***oil*** and gas and has ameliorated its problems under a rather well-developed body of statutory and regulatory law.

Utah's avowed multiple mineral development policy is contained in the organic act of the Utah Division of State Lands. The statute expressly provides that a mineral lease with suitable stipulations for multiple use may be issued notwithstanding the existence of other mineral leases on the same lands.[[521]](#footnote-522)521 In furtherance of the statutory policy, regulations require mineral operators to conduct their operations to avoid all unreasonable damage or injury to mineral deposits or improvements of others, including those of the state-[[522]](#footnote-523)522 Those regulations also authorize the State Land Board to designate lands within a multiple use area as a *critical area* and to require operators to post a bond as assurance that the state and other mineral lessees will be indemnified for all unreasonable and unnecessary damage or injury.[[523]](#footnote-524)523 The designation imposes upon the mineral lessee additional requirements pertaining to submission and approval of mine plans and plans of operation, subject to public hearing and comment at the discretion of the Board-[[524]](#footnote-525)524 Once the designation has been made, a stipulation notice of designation is attached to all mineral leases affecting the area. It is important to note that the *critical area* designation could be made in an area where no other types of mineral leases are outstanding, solely to protect a known mineral deposit owned by the state. *Critical area* designations have been limited to the Paradox Basin potash beds of Grand County.[[525]](#footnote-526)525

Under the original language of the Utah Mineral Leasing Act of 1959,[[526]](#footnote-527)526 the Division of State Lands issued two types of leases on the same deposit- ***Oil*** and gas leases were issued for recovery of mobile ***oil*** and gas in a liquid state, while asphaltic sands-bituminous sands leases were issued for native asphalts, solid and semisolid bitumens, and tar sands to allow for mineral quarrying of oilimpregnated rocks. This created the same classic conflict between ***oil*** and gas and tar sands as experienced on federal lands. In response, the Utah Mineral Leasing Act of 1967, which contains the multiple mineral leasing concept, provided for only one lease to be issued for the same purpose on the same lands.[[527]](#footnote-528)527 Shortly thereafter, the Utah Supreme Court capitalized on the language of the new statute to determine that ***oil*** extracted under ***oil*** and gas leases and the native asphalts, solid and semisolid bitumens, and ***oil***-impregnated rocks extracted under the bituminous sands leases were simply different forms of the same mineral and held that only one lease covering all such hydrocarbons should be issued.[[528]](#footnote-529)528 Thereafter, Utah issued and still continues to issue a combined ***oil***, gas, and hydrocarbon lease on all of the foregoing minerals- Regulations provide for the conversion of the former ***oil*** and gas lease and of the asphaltic sands-bituminous sands lease to combined ***oil***, gas, and hydrocarbon leases.[[529]](#footnote-530)529 When the lands were covered by both of the pre-1968 leases, then conversion of one could occur only upon expiration of the other.[[530]](#footnote-531)530 Subsequently, the supreme court was called upon to rule that ***oil*** shale was not covered by an ***oil***, gas, and hydrocarbon lease-[[531]](#footnote-532)531 Currently, separate leases are issued for ***oil*** shale and for ***oil***, gas, and other associated hydrocarbons.

Utah issues mineral leases on ***oil***, gas, and associated hydrocarbons; coal; ***oil*** shale; metalliferous minerals; potash; phosphate; clay; gemstones; gypsum; gilsonite; limestone; fossils; lava aggregate; obsidian; geothermal resources; and brines in the Great Salt Lake. All leases carry a standard provision whereby the State of Utah reserves to itself the right to issue leases on other minerals not covered by the lease, to the extent that other leases will not unreasonably interfere with the rights of the lessee.[[532]](#footnote-533)532 In each instance, a bond is required to cover damages caused to other lessees-[[533]](#footnote-534)533 Further, all operations are to be conducted to avoid unnecessary damage or injury to natural resources not covered by the lease.[[534]](#footnote-535)534 Finally, the ***oil***, gas, and hydrocarbon lease obligates the lessee to take reasonable steps to prevent waste of the other mineral deposits[[535]](#footnote-536)535 and to implement, at lessee's expense, all orders of the Board or Division relative to the prevention of waste and preservation of the property-[[536]](#footnote-537)536 It is not clear if the lessee is to preserve only the ***oil*** and gas deposits for future use or is to preserve the entire property, including other mineral deposits, at his own expense. This same provision is found in the federal and State of Wyoming ***oil*** and gas lease forms[[537]](#footnote-538)537 and could be construed, if read broadly, to require the lessee to bear all costs incident to protecting other mineral deposits- No special statutes, regulations, or lease terms address the issue of lease suspension upon denial of access to the mineral deposits when such would be incompatible with other mineral extraction operations.

In concert with the federal withdrawal of potash lands in the Paradox Basin from leasing under the Federal Mineral Lands Leasing Act,[[538]](#footnote-539)538 the State of Utah statutorily withdrew its lands near Cane Creek, Utah, from ***oil*** and gas leasing-[[539]](#footnote-540)539 The withdrawal took effect upon termination of preexisting leases.[[540]](#footnote-541)540 Existing leases were not subordinated to the rights of potash lessees unless the ***oil*** and gas leases expressly so provided-[[541]](#footnote-542)541 The withdrawal remains in effect.[[542]](#footnote-543)542

The Utah ***Oil*** and Gas Conservation Act provides for the protection of correlative rights and for the prevention of waste of ***oil*** and gas in the standard language customary of such statutes,[[543]](#footnote-544)543 including adequate casing and plugging procedures-[[544]](#footnote-545)544 The Board of ***Oil***, Gas, and Mining is authorized to make and enforce rules, regulations, and orders reasonably necessary to carry out all provisions of the Act.[[545]](#footnote-546)545 It is expressly given jurisdiction and authority over the development and production of crude ***oil*** from bituminous sandstone and ***oil*** shale[[546]](#footnote-547)546 and the underground storage of both ***oil*** and gas-[[547]](#footnote-548)547 The extension of conservation authority to include crude ***oil*** from tar sands and ***oil*** shale expands Board authority to deal with many types of mineral leasing conflicts in the Uinta Basin and elsewhere where the multifarious fossil fuel source rocks are found. The Office of the Utah Attorney General has suggested that a broad reading of the Utah ***Oil*** and Gas Conservation Act may allow regulation of all forms of mineral extraction in an effort to protect any type of minerals from injury or waste by virtue of ***oil*** and gas operations,[[548]](#footnote-549)548 or even tar sands or ***oil*** shale operations- Conceivably, all mineral extraction operations could be regulated to protect and conserve ***oil*** and gas.

In addition to the regulation of ***oil*** and gas, the Board of ***Oil***, Gas, and Mining has issued regulations for the protection by the ***oil*** and gas operator of potash, coal seams, and underground mining generally. The potash rules require, *inter alia:* (1) the use of salt-saturated fluids when drilling through the salt sections, (2) a directional survey to be run from 20 feet below the salt section to the surface, (3) the use of salt-saturated cement, (4) casing to be set through the salt section, and (5) cement plugs 200 feet in length to be placed across the top and bottom of the salt section and across any water shows.[[549]](#footnote-550)549 The foregoing requirements are to be observed in addition to standard operational requirements of the regulations-[[550]](#footnote-551)550 Where a new form ***oil***, gas, and hydrocarbon lease is used, the ***oil*** and gas lessee might be required to bear all additional expenses of protecting the potash beds. Finally, where the potash lessee contributes to the cost of logging or directional surveys, he is entitled to inspect the well.[[551]](#footnote-552)551 These rules apply to all lands designated as a potash area by the State Land Board, MMS, or the Board of ***Oil***, Gas, and Mining-[[552]](#footnote-553)552 When ***oil*** and gas operations will penetrate coal beds, the ***oil*** and gas operator must provide notice to coal owners and operators. In addition, the ***oil*** and gas operators must run casing fifty feet below the next lowest impervious formation to the deepest coal bed.[[553]](#footnote-554)553 Finally, any ***oil*** and gas operator is required to include in his application for permit to drill information regarding the owner of any suspected underground, surface, solution, or solar evaporation mining operation-[[554]](#footnote-555)554

Utah does not have a separate natural gas storage act. However, the Utah legislature recently added underground gas storage to its eminent domain statutes as one of the public uses for which property could be condemned.[[555]](#footnote-556)555 It would appear that only the gas storage formation itself can be condemned, in fee simple, together with an easement to use so much of the surface as is necessary for access to the injection well-[[556]](#footnote-557)556 The Board of ***Oil***, Gas, and Mining has exclusive jurisdiction in regulating gas storage operations on lands subject to the jurisdiction of the board.[[557]](#footnote-558)557 There is no statutory or regulatory provision which speaks to multiple mineral development issues such as concurrent leasing, other mineral operators penetrating the storage reservoir, and allocation of expenses for protecting the storage stratum-

The Utah Coal Mining and Reclamation Act obligates coal miners to prevent surface subsidence unless mine plans call for controlled subsidence.[[558]](#footnote-559)558 Room and pillar mining is expressly allowed-[[559]](#footnote-560)559 The Board of ***Oil***, Gas, and Mining if it determines that surface mining would admining if it determines that surface mining would adversely affect renewable resources[[560]](#footnote-561)560 or would affect a natural hazard and which would substantially endanger life and property-[[561]](#footnote-562)561 If *renewable resources* could be construed as mountain water sources for salt brines used in evaporative mineral extraction or geothermal sources dependent on disrupted aquifers or if mining in a natural hazard area were to endanger another mining operation, this statute provides a possible remedy for some multiple mineral development conflicts involving surface mining. Finally, Utah has authorized natural gas operators to extract gas from coal seams,[[562]](#footnote-563)562 although no formal decision exists determining the ownership of the gas-

**12.   *Wyoming***

Although Wyoming does have a multiple mineral development scheme within a regulatory framework, no statutes could be found which adopted a legislative policy of multiple mineral use. The Board of Land Commissioners has issued regulations which embrace concepts of multiple use for minerals management. Those regulations provide that "[m]ultiple use and development of the subsurface resources...to the fullest extent practicable, is permitted and encouraged."[[563]](#footnote-564)563 Separate mineral leases for bentonite; zeolite; coal; ***oil*** and gas; geothermal resources; gold, silver, diamonds and other metallic minerals; and nonmetallic minerals including trona and uranium and the like may be issued on the same state lands-[[564]](#footnote-565)564 The Board is empowered to withdraw certain lands from leasing to protect the interests of the state,[[565]](#footnote-566)565 and may condition the issuance of a lease on stipulations for the protection of the subsurface or surface resources-[[566]](#footnote-567)566 These latter provisions could be used by the Board to foreclose any possibility of multiple mineral development conflicts by simply refusing to lease or precluding concurrent development by stipulation.

Each lessee has equal access to multiple leased lands to conduct exploratory operations,[[567]](#footnote-568)567 which operations are to be conducted so as not to prevent or unduly interfere with the operations of the other-[[568]](#footnote-569)568 However, the first lessee to commence actual production has the right to continue his operations without substantial interference from the other lessees.[[569]](#footnote-570)569

Two or more lessees may conduct concurrent operations on the same lands under a cooperative arrangement when they can agree that all operations can be conducted simultaneously without materially reducing the value of the resources to be produced or without unduly interfering with or raising the cost of the operations of the prior developer, unless the prior developer is compensated for such increased costs-[[570]](#footnote-571)570 The cooperative agreement is to set forth the plan of operations and assessment of costs under which both operations are to be concurrently conducted.[[571]](#footnote-572)571 Any such cooperative agreement must be submitted to the Board for approval-[[572]](#footnote-573)572 If the lessees cannot agree on a plan of concurrent development, or an assessment of costs, or that operations are not conducive to concurrent development, the Commissioner of Public Lands may act as arbiter, subject to appeal to the Board and eventually the court.[[573]](#footnote-574)573 If the commissioner finds that the cooperative agreement does not materially reduce the quantity or value of the first lessee's mineral deposit and does not significantly increase the cost of his operation or, if costs are increased, they are adequately compensated for by the subsequent operator, then he may approve the plan, and operations may be conducted concurrently-[[574]](#footnote-575)574 However, if the commissioner finds otherwise, he must enter his order deferring the development obligations of the proposing lessee, usually the second developer in time.[[575]](#footnote-576)575 In this event, the lease is transferred to operational, but deferred status, subject nevertheless to payment of rentals during the period of deferment and subject to negotiation to conform with the then current lease form if the period of deferment exceeds five years-[[576]](#footnote-577)576 However, when the commissioner concludes that concurrent operations cannot be conducted without materially wasting the resource or increasing the cost of operations of the first lessee, and finds that the operation of the second lessee will provide greater benefit to the state than the existing operation, he may enter a decision terminating the first operation upon compensation for rights lost by the first operator.[[577]](#footnote-578)577 The value of these rights is determined in the same manner as appraisals and evaluations are made in eminent domain proceedings-[[578]](#footnote-579)578 Thereupon the first operator assigns his lease to the second operator.[[579]](#footnote-580)579 Finally, if the proposing lessee disagrees with the commissioner's findings of value of rights lost by the first developer he may refuse to commence operations without violating the development obligations of his lease unless the amounts ordered to be paid are such an insubstantial addition to the overall cost of operations that a prudent operator would assume them-[[580]](#footnote-581)580

The various mineral leases issued by the Board likewise address multiple mineral use. The ***oil*** and gas lease forms obligate the lessee to prevent waste to the deposit to be mined, to preserve and conserve the property for future production operations,[[581]](#footnote-582)581 and to comply at lessee's expense with all orders and instructions of the Board for such preservation of property-[[582]](#footnote-583)582 It is unclear whether the lessee is to preserve only the ***oil*** and gas deposits for future use or is to preserve the entire property, including other mineral deposits, at his own expense. The provision is found in both the federal and State of Utah ***oil*** and gas lease forms[[583]](#footnote-584)583 and could be construed broadly to require the lessee to bear all costs incident to protecting other mineral deposits- The Board expressly reserves the right to issue other mineral leases in accordance with its rules and regulations.[[584]](#footnote-585)584

Coal, metalliferous and non-metalliferous, and bentonite leases require the lessee to fully indemnify any other lessee for destruction of or injury to any improvements.[[585]](#footnote-586)585 Further, the lessee's rights are expressly made subject to the prior rights of any other mineral lessee, with the obligation not to unduly interfere with his operations-[[586]](#footnote-587)586 Also, no operations conducted by the lessee are to approach nearer than 200 feet to any productive ***oil*** and gas well without consent of the ***oil*** and gas lessee.[[587]](#footnote-588)587 These lease forms contain no language reserving to the Board the right to issue subsequent mineral leases-

No provisions are contained in any lease form examined which expressly provide for the suspension of lease terms during a period of deferred operations. However, all lease forms render the leases subject to all rules and regulations of the Board. This language, of course, serves to incorporate suspension provisions of the regulations into the leases by reference.[[588]](#footnote-589)588

The Wyoming ***Oil*** and Gas Conservation Act and associated regulations prohibit waste of ***oil*** and gas[[589]](#footnote-590)589 in the standard language, including language for adequate casing and plugging procedures-[[590]](#footnote-591)590 As with other conservation agencies, the Wyoming ***Oil*** and Gas Conservation Commission is empowered to make and enforce rules, regulations, and orders reasonably necessary to carry out its mandate.[[591]](#footnote-592)591 This language, if construed broadly, could be authority for regulating all mineral extraction operations to prevent waste of ***oil*** and gas and even to protect other minerals from damage by ***oil*** and gas operations- No separate rules pertaining to specific minerals or other minerals generally have been promulgated by the Commission. A statute requires that all ***oil*** and gas wells which penetrate coal beds must be drilled according to Wyoming statutes.[[592]](#footnote-593)592 However, no special statutes pertaining to this subject were found.

The Environmental Quality Council may, pursuant to the Wyoming Environmental Quality Act (surface mining and reclamation), declare lands unsuitable for surface coal mining when it determines that surface mining would adversely affect renewable resources[[593]](#footnote-594)593 or would affect a natural hazard area which would substantially endanger life or property-[[594]](#footnote-595)594 If *renewable resources* could be construed as mountain water sources for salt brines used in evaporative mineral extraction or geothermal sources dependent on disrupted aquifers or if mining in a natural hazard area were to endanger another mining operation, this statute could provide a possible remedy for some multiple mineral development conflicts in the surface mining context. Finally, Wyoming appears not to have legislated that portion of surface mining control and reclamation pertaining to surface effects of subsidence from underground mining.

No Wyoming law was found pertaining to geothermal leasing, underground gas storage leasing, or condemnation procedures applicable to conflicts occasioned by concurrent operations.

Wyoming procedures are precedential. Wyoming discards the notion of first in time, first in right for a more practical rule of first to develop, first in right. Further, Wyoming addresses the sensitive issues of who pays for increased costs by requiring the second developer to compensate the first developer for additional costs of operating concurrently. It utilizes the cooperative agreement format to resolve problems as who bears what costs and how operations are to proceed. Finally, Wyoming has carefully considered the problems of lease suspensions and the potential of incompatible operations by providing for deferments and quasi-eminent domain procedures where the second developer's operation is deemed to provide a greater benefit to the state.

**V.   PRIVATE LANDS**

Federal and state statutes and associated regulations, unless directed specifically at federal and state lands, apply also to private lands. This includes the Federal Coal Mining Health and Safety Act, SMCRA, and all state ***oil*** and gas conservation and surface mined land reclamation acts and their regulations. With the exception of federal administrative and judicial case law pertaining to conflicts between locatable minerals and leasable minerals on the public domain lands, there are few cases adjudicating rights between competing private mineral owners.

The first conflicts between mineral operators and the first judicial attempts to deal with competing rights of coal and ***oil*** producers arose on private lands. Not surprisingly, these cases come from Pennsylvania, where both coal and ***oil*** and gas have been produced for over a century.[[595]](#footnote-596)595 The early decisions involved underground mining- Recent decisions, however, address competing surface mining issues. The importance of these cases turns not only on the proposition of law, but also upon the legal remedies and the measure of damages.

**A.   Underground Mining**

The Pennsylvania courts were the first to confront the task of determining multiple mineral owners' rights to simultaneously develop deposits in the same lands. Early cases discussed all of the current issues. The courts took several different approaches, but arrived at the same conclusion that each mineral owner had a right to his deposit.

The first approach found an implied right to ingress and egress to gain access to and remove the minerals. The leading case is *Chartiers Block Coal Co. v. Mellon*,[[596]](#footnote-597)596 in which all the issues of contemporary import were before the court; namely, right of access, availability of injunctive relief, and remedies at law- In *Chartiers Block*, the coal estate was severed from the surface fee. A subsequent ***oil*** and gas lease was given by the owner of the surface and other minerals, and drilling operations commenced which would penetrate the Pittsburgh coal seam. The coal owner sought injunctive relief. The trial court refused to grant the injunction for wells already being drilled or future wells which would not pass through the Pittsburgh coal seam. The trial court did grant the injunction as to all future wells which would penetrate the Pittsburgh vein and required that the defendants furnish a bond (in addition to the injunction bond) to protect the coal seam and the coal operator's employees from damages caused by the authorized wells. Finally, the ***oil*** and gas operator was directed to utilize "the best methods, devices, and appliances in the construction and operation of such wells; and that before said wells are abandoned they shall securely plug the same above each ***oil*** and gas bearing sand."[[597]](#footnote-598)597 The Supreme Court of Pennsylvania affirmed the lower court's decision that the owner of the ***oil*** and gas rights had an implied right of access through overlying strata to lower strata not previously conveyed,[[598]](#footnote-599)598 even though the access rights were not expressly reserved-

The Pennsylvania courts had before them in *Chartiers Block* the same policy considerations that arise today. The difficulty then, as now, was to apply the law to allow each owner or lessee of coal rights the enjoyment of his strata without infringing upon the rights of others.[[599]](#footnote-600)599 Of the right of the ***oil*** and gas owner to develop his deposits, the court reasoned:

If he is denied the means of access to it, he is literally deprived of [his] estate-...In such case the public might be debarred the use of hidden treasures which the great laboratory of nature has provided for man's use in the bowels of the earth. Some of them, at least, are necessary to his comfort. Coal, ***oil***, gas, and iron are absolutely essential to our common comfort and prosperity. To place them beyond the reach of the public would be a great public wrong.[[600]](#footnote-601)600

Modern pronouncements of multiple use philosophy could not be more eloquent or time-enduring. The operator was not entitled to interfere with overlying strata at his whim and pleasure.

The court refused to address damages because the wells then being drilled had not yet penetrated the commercial Pittsburgh seam. However, the court felt that the coal owner had an adequate remedy at law for injuries.[[601]](#footnote-602)601 It recommended that the legislature fashion a process whereby a party whose deposits or operation would conflict with concurrent operations of another could file a petition to a court for a decree regulating the mode of exercise of the right and to impanel a jury to assess damages-[[602]](#footnote-603)602

In another Pennsylvania case, the court refused to enjoin a surface owner's ***oil*** and gas lessee from drilling wells through coal mines and coal seams. In *Monongahela River Consolidated Coke Co. v. Greensboro Gas Co*.,[[603]](#footnote-604)603 the trial court ordered the gas lessee to undertake certain safety procedures to avoid the possibility of gas leakage into the mine- These procedures included: (1) specifying the manner in which the defendant gas company should case its wells, (2) directing the gas company to conduct daily inspections of wells and test for escaping gases, (3) prescribing the methods by which the well should be plugged if abandoned, and (4) requiring the gas company to post a bond to indemnify the plaintiff against damage resulting from the operation of the wells.[[604]](#footnote-605)604 In *T. W. Phillips Gas &* ***Oil*** *Co. v. Manor Coal Co*.,[[605]](#footnote-606)605 another dispute between a coal lessee and an ***oil*** and gas lessee, the court exercised its equity powers and selected sites for the ***oil*** wells so as to protect the interests of both parties-[[606]](#footnote-607)606

A second approach achieved the same result as *Chartiers Block* by finding a way of necessity through subjacent fees to the ***oil*** and gas deposits. In *Pyramid Coal Corp. v. Pratt*,[[607]](#footnote-608)607 the owner of the surface and ***oil*** and gas estates sued to recover damages he suffered when his water well was destroyed by the coal lessee- The coal lessee was ordered to indemnify the surface owner for its wrongful act of cutting the pipe casings which passed through the coal seam. The court held that the fee owners retained a way of necessity through the coal stratum for reasonable enjoyment of their ***oil*** and gas estate in underlying strata. The court also found that there was no distinction between ***oil*** and water and identified a surface owner's rights in either case as being identical, regardless of the form and matter of the underlying estate.[[608]](#footnote-609)608

Regardless of whether courts have turned to an implied right of ingress and egress or a way of necessity, they have uniformly allowed drilling for ***oil*** and gas through coal seams.[[609]](#footnote-610)609 There are no cases dealing with the reciprocal issue of mining in an established ***oil*** or gas field-

The doctrine of subjacent support also arises in concurrent development of minerals. The rule, simply stated, is that the owner of a subterranean strate owes an absolute duty to protect all overlying strata and the surface from destruction by collapse or subsidence.[[610]](#footnote-611)610 Thus, courts have issued injunctions to prevent second mining of a lower coal seam which, through subsidence, would threaten the minability of shallower coal seams[[611]](#footnote-612)611 and limestone-[[612]](#footnote-613)612 It appears that while the courts initially considered the right to subjacent support so absolute that they were willing to preclude mining altogether,[[613]](#footnote-614)613 recent decisions appear to be more accommodating- They impose upon underground miners the obligation to disrupt no more of the surface than is reasonably necessary to achieve the underground mining, subject to compensating the surface owner for resulting injury.[[614]](#footnote-615)614

**B.   Surface Mining**

The issues raised by concurrent mineral development in a surface mining context are no less intriguing than those involving two or more subterranean operators. There is only limited judicial precedent. The more recent legal literature suggests two alternative legal pegs upon which courts might hang those conflicts. Both are borrowed from extensive judicial precedent regarding conflicts between surface and underground mineral owners. One alternative is the implied right of reasonably necessary surface usage, also referred to as the doctrine of alternative means, and the other is the doctrine of accommodation.

**1.   *Doctrine of Alternative Means***

The doctrine of alternative means or implied right of reasonably necessary surface usage derives from the time-honored *Chartiers Block* case. The *Chartiers Block* rationale has been applied to surface clay deposits which overlie coal seams,[[615]](#footnote-616)615 ***oil*** and gas drilling through grazing leases,[[616]](#footnote-617)616 and water well drilling operations injured by underground coal operations-[[617]](#footnote-618)617 The rule, simply stated, is that the owner of the dominant mineral estate cannot unduly interfere with the subservient surface estate if there is a reasonable alternative which would interfere less.[[618]](#footnote-619)618 The Texas Supreme Court in *Getty* ***Oil*** *v- Jones*[[619]](#footnote-620)619 applied the doctrine to ***oil*** and gas well pumps which interfered with a self-propelled travelling sprinkler boom. In *Diamond Shamrock Corp. v. Phillips*,[[620]](#footnote-621)620 the Arkansas Supreme Court used the doctrine to prevent ***oil*** and gas operations from interfering with a homesite- The Utah Supreme Court in *Flying Diamond Corp. v. Rust*[[621]](#footnote-622)621 applied it to a well site access road which would have caused less damage to surface crops had it entered the surface owner's lands from a different direction. Most recently, the North Dakota court in *Hunt v. Kerbaugh*[[622]](#footnote-623)622 applied it to enjoin the surface owners from interfering with seismic exploration-

The doctrine of alternative means requires the surface owner to first seek alternatives to the use interfered with. If no alternatives exist, the burden passes to the mineral owner to seek alternatives.[[623]](#footnote-624)623 A detailed discussion of the doctrine of alternative means and its advantages and disadvantages is contained in the legal literature-[[624]](#footnote-625)624 Although the doctrine arises in conflicts between surface and mineral owners, it should reasonably be extended to conflicts between owners of separate mineral estates.[[625]](#footnote-626)625

**2-   *Doctrine of Accommodation***

The doctrine of accommodation is a variation on the theme of alternative means, diverging insofar as it stresses the equal dignity of estates and the resolution of conflicts by a balancing of correlative rights.[[626]](#footnote-627)626 Factors weighed include the priority of operations, the priority of leases or severance, the potential injury, the utility of both operations, and the public interest in benefits derived-[[627]](#footnote-628)627 Cooperative agreements are employed. Upon failure to agree or to implement the agreement, boards of arbitration or the courts can fashion equitable solutions.[[628]](#footnote-629)628 This approach typically requires the first operator to be compensated for injury to or interference with his deposit or operation caused by the second operator-[[629]](#footnote-630)629 It is surprisingly analogous to the regulatory approach taken in Wyoming on state-owned lands.

Finally, in subjacent support cases, the courts appear to hold that when a surface owner conveys or leases his mineral estate without express language providing for strip mining, no stripping, quarrying, or open pit mining will be allowed even though it is the only feasible method of extraction.[[630]](#footnote-631)630 In another setting, the Arkansas Supreme Court stated:

[W]e think the word "surface" means something more than that portion of the land which is or may be used for agricultural purposes- It means not only the actual top of the ground, but also all the earth substructure, except the coal therein, the right to mine and recover which was granted in the lease.[[631]](#footnote-632)631

This would serve to prohibit surface mining in some instances.

**C.   Damages**

In the celebrated case of *Erie Railroad Co. v. Tompkins*, Justice Brandeis stated:

[E]xcept in matters governed by the Federal Constitution or by acts of Congress, the law to be applied to any case is the law of the state....There is no Federal common law. Congress has no power to declare substantive rules of common law applicable in a state whether they be local in their nature or "general", be they commercial law or a part of the law of torts.[[632]](#footnote-633)632

When federal statutes provide no remedy for injury or interference occasioned by multiple mineral development conflicts, state statutes and common law apply-

The issue of damages in the setting of concurrent mineral extraction operations has not been the central focus of legislative and judicial attention. Many of the leading cases involved injunctive relief when no actual injury to the deposits occurred.[[633]](#footnote-634)633 The operator of a water well which penetrated the coal seam was awarded damages by one court for the coal operator's wrongful act of cutting the pipe casing-[[634]](#footnote-635)634 Another court enjoined an ***oil*** lessee from producing gas belonging to a separate gas lessee. However, the gas lessee was not required to pay for the well.[[635]](#footnote-636)635 In yet another case, no injunction was awarded to prevent an ***oil*** and gas lessee from drilling through a mine from which all but the pillar coal had been pulled-[[636]](#footnote-637)636 This suggests that the ***oil*** and gas lessee may not be liable for compensating the coal owner for pillar coal left in place in mines when no second mining was planned or even in mines when pillars were to be collapsed. It would appear that common law tort concepts such as strict liability, gross negligence, and comparative or contributory negligence could also apply. The doctrine of nuisance has been applied in the case of damage to a pipeline caused by the enlargement of a slush pit, even when both parties had a lawful right to be where they were.[[637]](#footnote-638)637 It is unclear whether or not a trespass could be found, since both had a lawful right to develop their deposits- Procedures associated with evaluation and appraisal for compensation under eminent domain law might also be applied when access to deposits is precluded. On the other hand, a suit for damages in breach of contract might lie where access is precluded in the private sector, or for a taking without compensation when federal or state lands are involved.[[638]](#footnote-639)638 However, it is beyond the scope of this paper to analyze the law pertaining to theories of liability and available remedies.

**D.   Special Situation-Methane Gas in Coal Seams**

Research has revealed no new or novel approaches to the perennial problem of methane gas in coal seams in private lands. Current legal literature addresses this topic.[[639]](#footnote-640)639 However, an update on *United States Steel Corp- v. Hoge*,[[640]](#footnote-641)640 which appears to be the sole and leading case in the field, is appropriate.

On September 29, 1980, the trial court entered its Opinion and Final Decree holding that the conveyance of a coal seam, together with attendant rights to ventilate, did not pass title to the coal bed gas. It further held that methane gas is natural gas in the same generic sense as the natural gas extracted from gas reservoirs. A reservation of ***oil*** and gas logically included all coalbed gas. The court also concluded that requirements to leave protective barrier pillars around gas wells would constitute a taking without compensation, suggesting even that the coal operator was justified in mining through and even terminating the well. The court found inconceivable the prospect that drilling permits would be issued to extract coalbed gas which would "by location or frequency [be] in direct conflict with the present or anticipated future method of mining operations." However, the court ruled that the surface owner could not take the coalbed gas by hydrofracturing because of the potential damage which that procedure might cause to the coal seams.[[641]](#footnote-642)641

United States Steel Corporation appealed to the Pennsylvania Superior Court that portion of the decision which dealt with the ownership issue- No cross appeal was taken. Oral arguments were made on April 29, 1981, but no decision had been filed as of the date of this writing. Hydrofracturing is the procedure proposed by Hoge's lessee to extract gas from the coal. Therefore, the decision serves to prevent access as a practical matter. It should be noted that the trial court stated that if new procedures are developed which could be demonstrated not to injure the coal measures, the practical result might be different.[[642]](#footnote-643)642

**VI.   RECOMMENDATIONS AND SOLUTIONS**

No analysis of any topic is complete without suggestions for resolution of identified problems. At the same time, fashioning meaningful recommendations is an arduous task at best. Resolution of simultaneous mineral operations conflicts presents no exception to this general rule. In the federal arena, policy is well-developed in statute and regulation, but uniform guidelines and an implementing mechanism are noticeably absent. On the state level, experience with multiple mineral development conflicts varies widely from state to state. Solutions range from benign neglect on the one hand, perhaps occasioned by no history of conflicts demanding resolution, to the rather intricate policy balancing approaches of Wyoming. Nevertheless, the collective experience and application of creative thinking opens new vistas for amelioration of conflicts.

**A.   Policy Considerations**

First in time, first in right is an ageless common law maxim. It has served well in federal and state appropriations for over a century.[[643]](#footnote-644)643 It appears to be implied in the BLM leasing regulations where provision is made for suitable stipulations for simultaneous development-[[644]](#footnote-645)644 First in time, first in right is also the apparent policy of the MMS in its regulation of mineral extraction operations, absent a subordination agreement.[[645]](#footnote-646)645 The policy would most likely also be applied in those states which have no avowed multiple mineral development policy, but whose lease terms make a subsequent lease expressly subject to all prior existing leases- In this instance, subsequent lessees take with knowledge of all prior rights and make their lease offer recognizing possible risks of deferred or even precluded development. There is probably little question that a policy of first in time, first in right would be applied by most courts, absent statute or regulation to the contrary.[[646]](#footnote-647)646 Surely this approach would take less effort and create fewer administrative hassles.

However, first in time, first in right fails to encourage development of mineral resources or adequately protect existing investments.[[647]](#footnote-648)647 ***Oil*** and gas lessees are known to block large areas for speculation only, without serious intentions to develop the lands- Mining lessees, on the other hand, rarely make an acquisition without serious thought toward development. The mining industry invests literally millions of dollars and several years before actual mining commences. ***Oil*** and gas conducts its exploration work in a relatively short time, with drilling lasting from a few days to a few months. Multiple use concepts require harmonious development of competing resources, taking into consideration not only economic factors and impacts upon the developers, but present and future needs of society.

One author advocates a blend of the temporal priority of the common law with multiple use concepts by allowing the lessee to proceed whose lease is first in time when concurrent operations are totally incompatible.[[648]](#footnote-649)648 He would apply this rule even in those cases where the subsequent lessee commences development first-[[649]](#footnote-650)649 Such approaches would always mitigate in favor of ***oil*** and gas extraction, as developers can get on to the property relatively quickly after acquiring the lease. True application of progressive multiple mineral development concepts would focus on maximizing development of the resources for the public good in light of modern extractive technology. New Mexico potash mining has proceeded regardless of lease priority. Federal stipulations for ***oil*** shale will also defer a preexisting ***oil*** and gas lessee in favor of ***oil*** shale operations. ***Oil*** and gas can still fully develop its reservoirs after subsidence has occurred. The converse is not true. If ***oil*** and gas were allowed to proceed first and if production were achieved, wells could produce for years. Potash and ***oil*** shale in pillars could not be recovered for years, if ever. Authorizing mining to proceed first allows for total exhaustion of the potash, ***oil*** shale, or other underground bedded minerals and subsequent depletion of ***oil*** and gas reservoirs without all the attendant risks to both developments and waste of resources.[[650]](#footnote-651)650

Those states which are seeking to initiate or revamp their statutory and regulatory policies might well look to other state approaches- A direct legislative approach similar to the statutes of Montana, North Dakota, and Utah provides a clear mandate of multiple mineral development. Other states, such as Wyoming, use implied statutory authority from their conservation acts to weave sound, workable, and sometimes intricate regulatory schemes. New Mexico and Utah have focused on specific mineral conflicts between ***oil*** and gas and potash and coal, while Wyoming extends its regulatory scheme to all mineral conflicts. This author recommends a combination of statutory mandate and specific regulatory guidelines. The North Dakota or Utah statute in combination with the Wyoming regulatory framework could be the ultimate resolution. Such a statutory and regulatory scheme should incorporate cooperative agreements which set forth plans of development and assessment of costs and liabilities, administrative approval procedures to ensure public benefit, a balancing of utility of operations for the greatest good and to meet present and future needs, and provisions for lease suspension and compensation for precluded operations under eminent domain standards.

For those developers who are frustrated by a paucity of developed law in their jurisdictions, all is not lost. It was Lord Coke who said, "Let us now peruse the ancient books, for out of old fields comes the new corn."[[651]](#footnote-652)651 "The expansive property of the common law"[[652]](#footnote-653)652 provides alternatives in the doctrines of implied access and accommodation- The judiciary has established precedent for arbitration of conflicts and for compensation. Amazingly, *Chartiers Block* provides in a judicial context all the features of Wyoming regulatory precedent. It speaks to injunctions; bonding; balancing of interests and equities for not only the developers, but also for the common good; and reminds us that actual damages can always be resolved in court. The only element of a full-fledged and workable multiple mineral development program not contained in *Chartiers Block*, that of cooperative agreements, was later provided by *T.W. Phillips Gas &* ***Oil*** *Co. v. Manor Coal Co*.[[653]](#footnote-654)653

With regard to assessment of costs in either cooperative agreements or in administrative or judicial settings, some thought might be given to coordination and balancing. Federal and state laws impose a limited obligation not to unreasonably interfere with operations or unnecessarily injure the deposits of the other mineral lessee. Considered as an affirmative obligation, a workable and equitable scheme for assessing costs and expenses appears. The obligation has both active and passive elements. Active measures taken by each operator to protect the deposits of the other might be borne by the operator upon which the obligation rests. In ***oil*** and gas operations, the ***oil*** and gas operator would absorb the costs of the directional survey, the additional cementing and casing, expenses incidental to the more stringent plugging requirements, and costs of whip stocking or slant drilling. On the other hand, the underground miner would absorb the additional costs of the more exact mine survey for protective pillaring, of the ***oil*** and gas lessee shutting in and reopening a well, of relocation of surface facilities or pipeline gathering systems, and of altering mine plans to accommodate existing wells. Miners would also absorb the loss of value of the ore left in place in the protective pillaring. In each instance, the active cost measures should offset one another.

Passive protective measures include deferring operations or even being denied access to deposits totally. Guidelines here are more nebulous. Considering the equities, it probably should be the rule that no operator under a valid lease should ever be totally denied access to his deposits without fair compensation. Operators might consider more frequently the prospects of voluntary buyouts. Administrative or judicial procedures might be established to bring these buy-outs within the construct of eminent domain statutes. Underground miners who are concerned about the presence of old plugged and abandoned wells or even existing wells might look more to purchasing the well to ensure proper plugging. It would seem only fair that when suspensions are authorized, all leasehold obligations, including the payment of rentals or minimum royalties, should be deferred. It seems incongruous to give a lease with diligent development requirements on the one hand, and then administratively defer operations while requiring payment of the royalties on the other. Operators might consider writing provisions into their cooperative agreements to the effect that the operator who is allowed to proceed in incompatible-deferred operation scenarios is to pick up the rental or minimum royalty tab of the operator whose development is deferred.

Finally, counsel and corporate land departments should either obtain an all minerals lease when hunting for and blocking prospects so as to eliminate the prospect of conflict or, in the alternative, seek the inclusion of a suspension provision for any administrative actions which would defer development. Such a provision should postpone all leasehold development, delay rental or minimum royalty provisions and the running of the lease term itself until operations can be commenced. The period of deferment would then be tacked on to the remaining term of the lease. This provision should also require the lessor to forego rentals or royalties for the period of deferment.

There is an obvious need to maximize development of all resources and to remove legal barriers which impair not only the economic expectation of lessors and lessees, but also the enjoyment of those resources by the public. Prudence dictates the need for mutual accommodation. Only when facts deny or frustrate mutuality in negotiations should issues of correlative rights devolve upon the courts.

**VII.   TITLE EXAMINATIONS**

The prospect of multiple mineral development conflicts is not solely the concern of the exploration department or mining project engineer. It should also be of concern to the landman and title examiner at the acquisition stage. Title examination procedures pertaining to conflicts between locatable minerals and Leasing Act minerals on the public domain are adequately set forth in the literature.[[654]](#footnote-655)654 Developmental problems of competing Leasing Act minerals do not run to the validity of the right to be on the lands so much as to the practical and legal issues of access-

An initial philosophical hurdle for any title examiner is determining whether or not such matters should be the subject of a title examination and its resulting opinion letter. There are two schools of thought. The purist focuses only on title-related questions. He would not discuss zoning, nonlien taxes, or practical development problems. On the other hand, the pragmatist would discuss zoning, applicable regulations, nonlien taxes, potential development conflicts, and such other matters as might affect a decision to acquire the prospect or give direction to drilling or mining operations. Lands free from title defects might yet be foreclosed to operations because of a jurisdictional policy disfavoring multiple use. Title work might be immaculate in a pure sense and totally useless if multiple mineral policies are not delineated and explained. A title examiner sensitized to the jurisdiction's approach to multiple use will be more conscious of meaningful title repository and regulatory agency records pertaining to surface and subsurface usage, land management plans, party identification and current addresses, existence of cooperative agreements, and correlative rights.

**A.   Title Repositories**

Examination procedures for records maintained in the title repositories are not greatly altered to accommodate concerns for multiple mineral development. A few pointers might be useful, however. When examining title to federal leases, mining claim indices and files should be examined for the existence of mining claims filed in compliance with FLPMA requirements, as well as for validity of claims located between July 31, 1939, and February 10, 1954. Where leases or lands are situated in designated tar sands, potash, or ***oil*** shale withdrawal areas, the title examiner should investigate and report on all special BLM stipulations and practices pertaining to such designated areas. The title examiner should satisfy himself that all statutory and regulatory prerequisites for conversion of ***oil*** and gas leases or mining claims to combined hydrocarbon leases have been observed. Serial register pages and lease forms of all other mineral leases should be examined for any provision which would bear on multiple mineral use. With the exception of being conscious of special lease stipulations pertaining to simultaneous operations, no special consideration need be given Indian title examination except to ensure familiarity with local agency practices pertaining to multiple use. Should multiple mineral leases exist, pertinent data pertaining to ownership and lease terms should be investigated and reported.

Similar records should be examined and procedures observed when examining records to state-owned lands. Mineral plat indices will identify the existence of other mineral leases. Serial register pages will provide names and addresses of apparent current owners. It is not necessary to run title to competing leases, but effective dates should be checked to determine apparent validity. The lease form for the conflicting minerals, if any, should be thoroughly examined for multiple mineral development provisions, and current copies of the state leasing regulations should be obtained and studied.

Neither federal nor state leasing regulations are applicable to privately-owned lands. Principles of contract and state real property law apply. When examining title to state and private lands, zoning ordinances should be examined to determine whether or not county land use planning requirements may affect concurrent mineral development. Zoning ordinances do not apply to federal lands under the law of *Ventura County v. Gulf* ***Oil*** *Corp*.[[655]](#footnote-656)655

**B-   Minerals Management Service and State *Oil*, Gas, and Mining Conservation Records**

A major change in focus for most title examiners may be to include as a part of the examination the records of the federal or state agency responsible for regulating ***oil*** and gas and mining operations. Sometimes these records are housed under one roof, while at other times the records might be maintained by different agencies in different cities. Nevertheless, unless expressly instructed not to examine these records, title examinations incident to the preparation of full-blown acquisition or drilling title opinions should include these records.[[656]](#footnote-657)656

Regardless of whether the title examination is conducted for an ***oil*** and gas operator or for a surface or underground miner, both ***oil*** and gas and mining records should be examined- In many states, where state ***oil*** and gas conservation commissions require duplicate copies of all applications for permits to drill federal and Indian wells to be filed with the commission, the title examiner might be satisfied with limiting his search to the state agency when examining title to federal and Indian lands. In other states, the records of the MMS should be examined. Regardless of the jurisdiction, the title examiner should, unless otherwise instructed or where obviously inappropriate (1) identify the location of all plugged and abandoned, active, and proposed wells; (2) determine the identity of the well and its ownership; (3) determine well status; (4) obtain copies of the well completion reports for purposes of identifying total depths drilled, formations penetrated, and producing intervals; (5) identify whether or not well logs and directional surveys have been run and are on file for future access; (6) obtain copies of production records and well histories to determine production rates and amounts; (7) identify the location of all active, abandoned, and proposed underground mines both as to surface location and mineable intervals; (8) determine availability of and access to mine maps; and (9) determine location and ownership of any underground storage reservoirs, together with other relevant ownership and stratigraphic data.[[657]](#footnote-658)657 Finally, the title examiner should be familiar with statutes, regulations, and case law pertaining to multiple mineral development applicable to the lands.

**C.   Title Reports and Opinions**

The title examiner should incorporate his multiple mineral development findings into his title opinion. Comments or qualifications need not be elaborate, but should be detailed enough to alert the natural resources developer to potential conflicts. If detailed reports are needed, this initial data could be expanded and amplified in a side letter. In all cases, the title examiner should require that a surface inspection be performed. Surface inspections will identify the existence of mining claims, surface facilities, pipeline gathering systems and the like.

**CONCLUSION**

This article has focused on legal and technological conflicts of simultaneous or concurrent mineral extraction operations on the same lands. With the sole exception of Indian lands, each ownership sector is experiencing a philosophical swing away from the exclusivity of operations by mineral classification or development priorities based upon older common law notions of first in time, first in right to those of maximum utilization of mineral resources for the highest and best good of society. These principles of land use planning and conservation reflect our recent realization that most fossil fuel reserves and inorganic ore bodies are finite and nonrenewable. Whether the implementing construct be statutory, regulatory, judicial, or a combination of the three, the law has proved itself dynamic and resilient. Although the issues may all be identified, they are not all resolved. Unrestrained operations, freedom from interference, and immediacy of access will need to backseat themselves to contemporaneous or even phased operations. Surely, industry can economically and efficiently operate within a multiple mineral use framework of harmony, cooperation, and accommodation. There need not be an Armageddon.

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1. 1"Colonel" Drake drilled his first well to an apparent depth of 69 1/2 feet and "completed" it as a "producer" on August 27, 1859. L. Fanning, *The Rise of American* ***Oil*** 5 (1948). It is unlikely that any coal seams were encountered in the well. No well logs, core samples, or completion reports were filed with local officials to verify geologic formation tops, reservoir pressures, coal seams penetrated, or flow rates. Apparently, Colonel Drake's drilling bond was not forfeited for failure to file the "required" reports as he became a rather prominent driller in the area. [↑](#footnote-ref-2)
2. 2For a general discussion of multiple use as it affects the mineral industry, see Deering, "Multiple Use Problems of Operators Both On and Off the Public Domain," 7 *Rocky Mt. Min. L. Inst*. 541 (1962); Marsh & Sherwood, "Metamorphosis in Mining Law: Federal Legislative and Regulatory Amendment and Supplementation of the General Mining Law Since 1955," 26 *Rocky Mt. Min. L. Inst*. 209 (1980); Peck, "'And Then There Were None', Evolving Federal Restraints on the Availability of Public Lands for Mineral Development," 25 *Rocky Mt. Min. L. Inst*. 3-1 (1979). For a discussion of surface versus mineral owners, see Lopez, "Upstairs/Downstairs: Conflicts Between Surface and Mineral Owners," 26 *Rocky Mt. Min. L. Inst*. 995 (1980). [↑](#footnote-ref-3)
3. 3Deering, *supra* note 2, at 541. [↑](#footnote-ref-4)
4. 4Miller, "Basic Petroleum Geology," *Basic* ***Oil*** *and Gas Technology for Lawyers and Landmen* 1-1, 1-2 (Rocky Mt. Min. L. Fdn., 1979); United States Geological Survey, "Mineral and Water Resources of Utah," Bulletin No. 73 (1964), *reprinted in* S. Rep. No. 12, 91st Cong., 1st Sess. 19-25 (1969) [hereinafter cited as S. Rep. No. 12]. [↑](#footnote-ref-5)
5. 5S. Rep. No. 12, *supra* note 4, at 206-07. [↑](#footnote-ref-6)
6. 6Miller, *supra* note 4, at 1-3. [↑](#footnote-ref-7)
7. 7*Id*. at 1-4. [↑](#footnote-ref-8)
8. 8Croft, "Conflicts Between Potash and ***Oil*** and Gas Developments," 10 *Rocky Mt. Min. L. Inst*. 29, 32 (1965). [↑](#footnote-ref-9)
9. 9*Id*. at 31-32. [↑](#footnote-ref-10)
10. 10S. Rep. No. 12, *supra* note 4, at 61. [↑](#footnote-ref-11)
11. 11VI *The Making of America, Mining and Metallurgy* 188-89 (R. La. Follette ed. 1906). [↑](#footnote-ref-12)
12. 12Chartiers Block Coal Co. v. Mellon, 152 Pa. 286, 25 A. 597, 598 (1893). Multiple mineral development conflicts first arose in private lands between coal and ***oil*** and gas operations. *See* notes 38-63 and accompanying text *infra*. [↑](#footnote-ref-13)
13. 13*Chartiers Block*, 152 Pa. at 295, 25 A. at 598; Murray v. Allard, 100 Tenn. 100, 43 S.W. 355, 360 (1897). *See generally*, Craig & Myers, "Ownership of Methane Gas in Coalbeds," 24 *Rocky Mt. Min. L. Inst*. 767, 774-75 (1978). [↑](#footnote-ref-14)
14. 14Humphreys-Mexia Co. v. Gammon, 113 Tex. 247, 254 S.W. 296, 301 (1923). [↑](#footnote-ref-15)
15. 15Note, "On Leasing Gas From Coal Seams," 47 *W. Va. L.Q*. 211 (1941); E. H. Williams & C. Meyers, ***Oil*** *and Gas Law* 341 (1981). [↑](#footnote-ref-16)
16. 1630 U.S.C.A. §§ 22 *et seq*. (West 1971 and Supp. 1982). *See generally* note 133 and accompanying text *infra*. [↑](#footnote-ref-17)
17. 1741 Stat. 437 (February 25, 1920), 30 U.S.C.A. §§ 181 *et seq*. (West 1971 and Supp. 1982); *see generally* note 134 and accompanying text *infra*. [↑](#footnote-ref-18)
18. 1830 U.S.C.A. §§ 181 *et seq*. (West 1971 and Supp. 1982). *See* notes 297-315 and accompanying text *infra* (dealing with tar sands on federal public domain lands). *See also* text accompanying notes 526-531 *infra* (discussing the evolution of Utah Division of State Land practices under the Utah Mineral Leasing Act of 1959). [↑](#footnote-ref-19)
19. 19Legislation providing for the Federal Combined Hydrocarbon Lease found in 30 U.S.C.A. §§ 181 *et seq*. (West Supp. 1982). [↑](#footnote-ref-20)
20. 20*See generally* Bergeson, "Basic Operational Engineering," *Basic* ***Oil*** *and Gas Technology for Lawyers and Landmen* 2-1 (Rocky Mt. Min. L. Fdn., 1979). For a good discussion of reservoir engineering and drive mechanisms, see Bass, "Reservoir Engineering," *Basic* ***Oil*** *and Gas Technology for Lawyers and Landmen* 4-7 to -9 (Rocky Mt. Min. L. Fdn., 1979). [↑](#footnote-ref-21)
21. 21*See generally* Smith, "The Engineering Aspects of Pressure Maintenance and Secondary Recovery Operations," 6 *Rocky Mt. Min. L. Inst*. 211 (1961); Walker, "Problems Incident to the Acquisition, Use and Disposal of Repressuring Substances Used in Secondary Recovery Operations," 6 *Rocky Mt. Min. L. Inst*. 273 (1961). [↑](#footnote-ref-22)
22. 22Bureau of Mines, United States Dept. of the Interior, *A Dictionary of Mining, Mineral, and Related Terms* 432, 941, 979 (W. Thrush, Jr. ed. 1968) [hereinafter cited as Dictionary of Mining]; Williamson & Daum, *The American Petroleum Industry* (1959). *See generally* Croft, *supra* note 7, at 45-46. [↑](#footnote-ref-23)
23. 23Croft, *supra* note 7, at 45. [↑](#footnote-ref-24)
24. 24*Dictionary of Mining, supra* note 22, at 941. [↑](#footnote-ref-25)
25. 25Croft, *supra* note 7, at 45. [↑](#footnote-ref-26)
26. 26Kell, "The ***Oil*** and Gas Lease and Tar Sands," 13 *Rocky Mt. Min. L. Inst*. 247, 278 (1967). [↑](#footnote-ref-27)
27. 27*Dictionary of Mining, supra* note 22, at 941. [↑](#footnote-ref-28)
28. 28Croft, *supra* note 7, at 46-47. The limiting angle in New Mexico potash mines varies from 30 to 51. [↑](#footnote-ref-29)
29. 29*Id*. at 48-49. [↑](#footnote-ref-30)
30. 30*Id*. at 49-50. [↑](#footnote-ref-31)
31. 31For a discussion of actual conflicts *see* notes 37-63 and 76-107 and accompanying text *infra*. [↑](#footnote-ref-32)
32. 32*Dictionary of Mining, supra* note 22, at 1090. [↑](#footnote-ref-33)
33. 33*Id*. at 769, 1090. [↑](#footnote-ref-34)
34. 34For a discussion of actual conflicts see notes 129-131 and accompanying text *infra*. [↑](#footnote-ref-35)
35. 35*See generally* Shock & Conley, "Solution Mining-Its Promises and Its Problems," *Solution Mining Symposium* 79 (AIME 1974). [↑](#footnote-ref-36)
36. 36Curfman, "Solution Mining Project," *Solution Mining Symposium* 173 (AIME 1974). It should be noted that Texasgulf Inc. initially mined its Cane Creek deposit by the conventional room and pillar method. *See id*.; Croft, *supra* note 7, at 36, 43. [↑](#footnote-ref-37)
37. 37J. Wasson & C. Whieldon, Jr., "Procedures for Evaluating Hazards to Coal Mining Operations From Hydrocarbon Reservoirs," Bureau of Mines, United States Dept. of the Interior, Information Circular 8582 at 5, 13 (1973) [hereinafter cited as Information Circular 8582]. [↑](#footnote-ref-38)
38. 38*See id*. [↑](#footnote-ref-39)
39. 39Schissler, "Developmental at Conflicts and Constraints Dealing with the Problem of Coexistent Estates," 22 *Rocky Mt. Min. L. Inst*. 203, 259 (1976). [↑](#footnote-ref-40)
40. 40Information Circular 8582, *supra* note 37, at 13. [↑](#footnote-ref-41)
41. 41*Id*. at 2. [↑](#footnote-ref-42)
42. 42*Id*. at 5-6. [↑](#footnote-ref-43)
43. 43*Id. See also* Johnston, Carroll, Heemstra & Armstrong, "How to Find Abandoned ***Oil*** and Gas Wells," Bureau of Mines, United States Dept. of the Interior 46 (1973). [↑](#footnote-ref-44)
44. 44Information Circular 8582, *supra* note 37, at 6. Two wells drilled at Seminole, Oklahoma, with early rotary equipment from locations 660 feet apart intersected at a depth of 1,900 feet. *Id*. [↑](#footnote-ref-45)
45. 45Bergeson, *supra* note 20, at 2-5. [↑](#footnote-ref-46)
46. 46Information Circular 8582, *supra* note 37, at 6. [↑](#footnote-ref-47)
47. 47*Id*. at 7. [↑](#footnote-ref-48)
48. 48*Id*. at 8, *e.g*., 1892 Utah Laws, ch. 39, § 2, repealed by Utah ***Oil*** and Gas Conservation Act of 1955, 1955 Utah Laws, ch. 65, § 15. [↑](#footnote-ref-49)
49. 49*Id*. [↑](#footnote-ref-50)
50. 50*Id*. at 9. [↑](#footnote-ref-51)
51. 51*Id*. at 10. [↑](#footnote-ref-52)
52. 52Componation, Tisdale, & Pasini III, "Cleaning Out, Sealing and Mining Through Wells Penetrating Areas of Active Coal Mines in Northern West Virginia," Mining Enforcement and Safety Administration, United States Dept. of the Interior, Informational Report 1052, at 12 (1977) [hereinafter cited as MESA Informational Report 1052]. Well bores of plugged and abandoned wells are frequently mined through in order to recover the rib or pillar coal surrounding the well base. [↑](#footnote-ref-53)
53. 53*See* Information Circular 8582, *supra* note 37, at 9. [↑](#footnote-ref-54)
54. 54*Id*. at 10. [↑](#footnote-ref-55)
55. 55*Id*. [↑](#footnote-ref-56)
56. 56*See* M. Zabetakis, T. Moore, Jr., A. Nagel, & J. Corpetta, "Methane Emissions in Coal Mines: Effects of ***Oil*** and Gas Wells," Bureau of Mines, United States Dept. of the Interior, Report of Investigation 7658, at 1 (1972). The presence of abandoned ***oil*** and gas wells appears to increase the flow rate of methane into the mine by a factor of 2 to 30 in an active mine in the Pittsburgh coal seam. *Id*. The Pittsburgh coal seam is highly permeable and gas from a well bore can migrate freely through the coal seam. MESA Information Report 1052, *supra* note 52, at 2. [↑](#footnote-ref-57)
57. 57*Zabetakis, supra* note 56, at 1 (implies that even properly drilled, plugged, and cemented well bores will leak some natural gas where there is an environment of sufficient pressure). [↑](#footnote-ref-58)
58. 58MESA Informational Report 1052, *supra* note 52, at 2-5. [↑](#footnote-ref-59)
59. 59*See id*. at 2-5. [↑](#footnote-ref-60)
60. 60For a discussion of regulatory practices pertaining to pillar shapes and sizes under the Federal Coal Mine Health and Safety Act of 1969 and federal regulations issued pursuant thereto, see notes 229-235 and accompanying text *infra*. It should be noted that a 400-foot diameter pillar left in a 4.13-foot thick potash seam resulted in the loss of 125,930 tons of recoverable reserve to protect one well. *See* note 495 and accompanying text *infra*. [↑](#footnote-ref-61)
61. 61MESA Informational Report 1052, *supra* note 52, at 2. [↑](#footnote-ref-62)
62. 62Information Circular 8582, *supra* note 37, at 13. [↑](#footnote-ref-63)
63. 63This alternative is discussed at notes 276-277, 494 and accompanying text *infra*. [↑](#footnote-ref-64)
64. 64H. Price & K. Ancell, *The Feasibility of Methane Production from Coal* (1978) (unpublished study made for Intercomp Resource Development and Engineering, Inc.), *cited in* Craig & Myers, *supra* note 13, at 768. [↑](#footnote-ref-65)
65. 65McGinley, "Legal Problems Relating to Ownership of Gas Found in Coal Deposits," 80 *W. Va. L. Rev*. 369, 370 (1978).

    Methane in coal seams is a result of biochemical and bacterial transformations [that occur] during the peat state of coal deposition and subsequently by metamorphic process as buried peat increases in rank to become coal. Because of the fine pore structure of coal and degraded peat, sorptive capacities of such substances is very large so that much of the methane evolved during coalification is held in part and in the coal.

    As a coal seam is mined, the methane migrates to the face of the mining operation and is released into the air. It is at this point where it tends to accumulate and present a threat to the miners and mining operator. The ignition of accumulated methane causes most mine explosions. Olson, "Coalbed Methane: Legal Considerations Affecting its Development as an Energy Resource," 13 *Tulsa L.J*. 377, 379-80 (1978). [↑](#footnote-ref-66)
66. 66*See* notes 316-331 and accompanying text *infra*. [↑](#footnote-ref-67)
67. 67McGinley, *supra* note 65, at 371. [↑](#footnote-ref-68)
68. 68Craig & Myers, *supra* note 13, at 769. [↑](#footnote-ref-69)
69. 69The water creates the fractures which are held open by the propping sand. Gas can flow more liberally through the porous sand. This seems to increase the drainage radius. Cohen, "Legal Issues Involved in Producing Coal Bed Methane Gas," 42 *Ala. Law*. 660 (1981). Craig & Myers, *supra* note 13, at 769-70; McGinley, *supra* note 65, at 374. [↑](#footnote-ref-70)
70. 70McGinley, *supra* note 65, at 374. [↑](#footnote-ref-71)
71. 71*Id*. [↑](#footnote-ref-72)
72. 72*Id*. [↑](#footnote-ref-73)
73. 73Duel & ***Kern***, "Degasification of Coalbeds-A Commercial Service of Pipeline Gas," *Am. Gas Ass'n Monthly* 7 (May 1967), *cited in* Craig & Myers, *supra* note 13, at 769. [↑](#footnote-ref-74)
74. 74Cohen, *supra* note 69, at 660. [↑](#footnote-ref-75)
75. 75McGinley, *supra* note 65, at 372. [↑](#footnote-ref-76)
76. 76Croft, *supra* note 7. Judge Croft formerly was a member and Chairman of the Utah Board of ***Oil***, Gas, and Mining. For the past 17 years, he has served as a District Judge in the Third Judicial District Court of Salt Lake, Summit and Tooele Counties, Utah. [↑](#footnote-ref-77)
77. 77***Oil*** and gas bearing structures in the Paradox Basin are found in the Hermosa or "Honaker Trail," Paradox, lower Hermosa or "Pinkerton Trail" and Molas Formations of Pennsylvanian age. S. Rep. No. 12, *supra* note 4, at 59-60. Potash is found in the Pennsylvanian Paradox Member of the Hermosa Formation. *Id*. at 208. The ***oil*** and gas bearing structures in the Permian Basin are found with the Bend, Pennsylvanian, Devonian, Siluro-Devonian, Simpson, and Ellenberger Formations. Croft, *supra* note 7, at 42. Potash beds in the Permian Basin are found in upper Permian series which are earlier in geologic time than the Pennsylvanian beds containing ***oil*** and gas reservoirs. *Id*. at 39. [↑](#footnote-ref-78)
78. 78Croft, *supra* note 7, at 36. [↑](#footnote-ref-79)
79. 79*Id*. at 32-33. [↑](#footnote-ref-80)
80. 80In the Matter of Vacating the Order Issued in Cause No. 48, Insofar as the Order Applies to Certain Lands Covered Within the Anido Creek Area, San Juan County, Utah. Hearing Before the Utah Board of ***Oil***, Gas & Mining in Cause No. 48-2 (Feb. 25, 1982). *See* R. Lauth, Anido Creek Field Geological and Engineering Study Lower Ismay (Paradox) Reservoir San Juan County, Utah (August 11, 1977). [↑](#footnote-ref-81)
81. 81*See* notes 37-63 and accompanying text *supra*. [↑](#footnote-ref-82)
82. 82Croft, *supra* note 7, at 50. [↑](#footnote-ref-83)
83. 83*Id*. at 49. [↑](#footnote-ref-84)
84. 84*Id*. at 51-52. [↑](#footnote-ref-85)
85. 85*Id*. at 52. [↑](#footnote-ref-86)
86. 86*Id*. [↑](#footnote-ref-87)
87. 87*See* notes 56-57 and accompanying text *supra*. [↑](#footnote-ref-88)
88. 88*See* notes 549-552 and accompanying text *infra*. [↑](#footnote-ref-89)
89. 89Eliason, "Land Exchanges and State In-Lieu Selections as They Affect Mineral Resource Development," 21 *Rocky Mt. Min. L. Inst*. 617, 620 n.9 (1975). [↑](#footnote-ref-90)
90. 90*Dictionary of Mining, supra* note 22, at 764. [↑](#footnote-ref-91)
91. 91S. Rep. No. 12, *supra* note 4, at 61. [↑](#footnote-ref-92)
92. 92*Id*. [↑](#footnote-ref-93)
93. 93*Id*. [↑](#footnote-ref-94)
94. 94The unit area originally contained 89,812.72 committed acres. Effective July 16, 1981, the unit contracted down around the participating areas and currently contains approximately 78,756.66 acres. Letter from F. A. Salerowics, Deputy Minerals Manager-***Oil*** and Gas, Central Region, Minerals Management Service to Coastal ***Oil*** and Gas Corp. (June 8, 1982). [↑](#footnote-ref-95)
95. 95Unit Agreement for the Development and Operation of the Natural Buttes Area, Uintah County, Utah ¶ 3 (June 15, 1967, approved effective Jan. 5, 1968). [↑](#footnote-ref-96)
96. 96E.P. Petroleum Consultants, Inc., ***Oil*** *and Gas Resource Assessment, Sand Wash Area, Utah* 38 (Feb. 15, 1982) (unpublished study made for Tosco Development Corp.) [hereinafter cited as Sand Wash Assessment]. In the Matter of the Application of Coastal ***Oil*** & Gas Corp. for an Order Establishing 160-Acre Drilling and Spacing Units for Lands in the Natural Buttes Area, Uintah County, Utah, Cause No. 197-1, Hearing Before the Utah Board of ***Oil***, Gas and Mining, Transcript 18, 23, 39 (April 29, 1982). [↑](#footnote-ref-97)
97. 97*Sand Wash Assessment, supra* note 96, at 4, 10-11. Production was obtained from the Natural Butters Unit No. 3 Well situated in the SW1/4 NE1/4 of Section 17, Township 9 South, Range 21 East, SLM. Memorandum from R. A. Smith, District Engineer, United States Geological Survey, Salt Lake City, Utah to Acting Regional ***Oil*** and Gas Supervisor, Casper, Wyoming (Aug. 7, 1969). [↑](#footnote-ref-98)
98. 98*Sand Wash Assessment, supra* note 96, at 38. [↑](#footnote-ref-99)
99. 99The first production of any magnitude was obtained from the Ute Trail Unit in 1957. State of Utah Division of ***Oil***, Gas and Mining (records pertaining to the Bitter Creek, South Ouray, Uintah and Ute Trail Units). [↑](#footnote-ref-100)
100. 100*Sand Wash Assessment, supra* note 96, at 38. [↑](#footnote-ref-101)
101. 101Order, In the Matter of the Application of Coastal ***Oil*** & Gas Corp. for an Order Establishing 160-Acre Drilling and Spacing Units for Lands in the Natural Buttes Area, Uintah County, Utah, Utah Board of ***Oil***, Gas and Mining, Cause 197-1 (Apr. 29, 1982). [↑](#footnote-ref-102)
102. 102*Sand Wash Assessment, supra* note 96, at 38. [↑](#footnote-ref-103)
103. 103The ***oil*** shale sequence consists primarily of the Parachute Creek member of the Green River Formation of Tertiary Age, defined as the stratigraphic equivalent of the interval between 1,428 feet and 2,755 feet below the Kelly Bushing on the resistivity log in the Ute Trail No. 10 Well drilled by Dekalb Petroleum Corporation in the NE1/4SW1/4 of Section 34, Township 9 South, Range 21 East, SLM, Uintah County, Utah. Green River gas production is had between 4,000 and 4,500 feet below the surface while Mesaverde gas production is obtained in the interval below 5,000 feet. In the Matter of the Application of Coastal ***Oil*** & Gas Corp. for an Order Establishing 160-Acre Drilling and Spacing Units for Lands in the Natural Buttes Area, Uintah County, Utah, Hearing before the Utah Board of ***Oil***, Gas & Mining in Cause No. 197-1, Transcript 30-31 (April 29, 1982). [↑](#footnote-ref-104)
104. 104Anderson, "Acquiring Rights to Minerals Associated with or Contained in ***Oil*** Shale," 13 *Rocky Mt. Min. L. Inst*. 233, 233-34 (1967). [↑](#footnote-ref-105)
105. 105"Retorting" is the distillation process whereby ***oil*** is recovered from the ***oil*** shale by application of heat to vaporize volatile hydrocarbons in the kerogen which are then distilled in crude ***oil***, ammonia, naphtha, and other byproducts. The ***oil*** shale is completely destroyed by the process. *Dictionary of Mining, supra* note 22, at 718, 764. [↑](#footnote-ref-106)
106. 106Bureau of Mines, United States Dept. of the Interior, Bull. No. 650, Mineral Facts and Problems, 183, 191 (1970) [hereinafter cited as Bull. No. 650]. [↑](#footnote-ref-107)
107. 107Anderson, *supra* note 104, at 236. [↑](#footnote-ref-108)
108. 108Kell, *supra* note 26, at 251-55. For a discussion of tar sands in a federal context, see notes 297-315 and accompanying text *infra*. [↑](#footnote-ref-109)
109. 109Rock (or native) asphalt is used primarily for paving and for mastic flooring, roofing, and water proofing. S. Rep. No. 12, *supra* note 4, at 66-67. [↑](#footnote-ref-110)
110. 110Gilsonite has the appearance of solidified tar. It is used primarily for metallargical coke, but is also used in ink, floor tile, brake lining, point electrical insulations, battery boxes, and fiberboard. *Id*. at 65. [↑](#footnote-ref-111)
111. 111Ozokerite is a native mineral wax which can be as hard as gypsum or as soft as tallow. It is used in electrical insulation, candles, potashes, rubber additives, and wax figures. *Id*. at 65-66. [↑](#footnote-ref-112)
112. 112Wurtzilite appears in vertical veins, has an appearance similar to gilsonite, and is used in caulking and waterproofing compounds and preservative paints. *Id*. at 66. [↑](#footnote-ref-113)
113. 113"There are no sharp lines of demarcation between a conventional ***oil*** field with a very viscous crude ***oil*** that will flow into wells and tar sands with a slightly more viscous crude ***oil*** which will not flow into the wells in commercial quantities." DeNevers, "Tar Sands and ***Oil*** Shales," *Scientific American* 22 (February 1966) (*quoted in* Kell, *supra* note 26, at 253-54). Webb v. American Asphaltum Mining Co., 157 F. 203, 206 (8th Cir. 1907). [↑](#footnote-ref-114)
114. 114Kell, *supra* note 26, at 252, 253; S. Rep. No. 12, *supra* note 4, at 63. [↑](#footnote-ref-115)
115. 115Kell, *supra* note 26, at 250, *citing* Bureau of Mines, "Surface and Shallow ***Oil*** Impregnated Rocks and Shallow ***Oil*** Fields in the United States," Monograph 12, at 5. [↑](#footnote-ref-116)
116. 116Backman, "Public Land Law Reform-Reflections from Western Water Law," 1982 B.Y.U.L. Rev.-(*citing* ***Oil***, Shale, and Tar Sands (J. Smith & M. Almand eds. 1976)). [↑](#footnote-ref-117)
117. 117S. Rep. No. 12, *supra* note 4, at 63-67. Gilsonite is also found in the Tertiary Duchesne River, Uinta, Green River, and Wasatch Formations in veins ranging from less than an inch up to 18 feet thick. *Id*. at 65. Rock or native asphalt appears in the Cretaceous Mesaverde and the Tertiary Duchesne River Formation at Asphalt Ridge southwest of Vernal, Utah, and in the Wasatch Formation at Sunnyside, Utah. *Id*. at 66-67. [↑](#footnote-ref-118)
118. 118*Id*. at 65. [↑](#footnote-ref-119)
119. 119Kell, *supra* note 26, at 254-55. [↑](#footnote-ref-120)
120. 120See notes 297-315 and accompanying text *infra* for a discussion of the federal combined hydrocarbon lease. [↑](#footnote-ref-121)
121. 121*See* notes 526-531 and accompanying text *infra* for a discussion of the State of Utah ***oil***, gas, and hydrocarbon lease. [↑](#footnote-ref-122)
122. 122Information Circular 8582, *supra* note 52, at 14-15. [↑](#footnote-ref-123)
123. 123Bull. No. 650, *supra* note 106, at 219. [↑](#footnote-ref-124)
124. 124*See* notes 236-245 and accompanying text *infra*. [↑](#footnote-ref-125)
125. 125*See* notes 22-31 and accompanying text *supra*. See also notes 37-63 and accompanying text *supra* for discussion of coal versus ***oil*** and gas and notes 26-88 and accompanying text *supra* for a discussion of potash versus ***oil*** and gas. [↑](#footnote-ref-126)
126. 126*See* notes 32-34 and accompanying text *supra*. [↑](#footnote-ref-127)
127. 127*See* notes 35-36 and accompanying text *supra*. [↑](#footnote-ref-128)
128. 128*Bull. No. 650, supra* note 106, at 1201. [↑](#footnote-ref-129)
129. 129Norvell, "Developing Lands Characterized by Separate Ownership of ***Oil*** and Gas and Surface Mineable Coal and Uranium-The Other Side of *Acker v. Gwinn* and its Progeny," 33 ***Oil*** *& Gas Inst*.-(Sw Legal Fdn. 1982). [↑](#footnote-ref-130)
130. 130*Id*. [↑](#footnote-ref-131)
131. 131*Id. See also* Broyles, "***Oil*** and Gas Producers v. Coal Producers, Planning Impacts of a Developing Judicial Policy," 15 *Forum* 481, 481 (1980); Comment, "The Surface Mineral Producer v. the ***Oil*** and Gas Producer: A Need for Peaceful Coexistence," 29 *Baylor L. Rev*. 907, 911-12 (1977). [↑](#footnote-ref-132)
132. 132*See generally* McGinley, *supra* note 65, at 377-78. [↑](#footnote-ref-133)
133. 13330 U.S.C.A. §§ 22 *et seq*. (West 1971). The General Mining Law of 1872 pertained only to "valuable minerals" such as gold, silver, lead, zinc, and cinnibar. [↑](#footnote-ref-134)
134. 13430 U.S.C.A. §§ 181 *et seq*. (West 1971). Leasable minerals currently include coal, phosphate, sodium, ***oil***, ***oil*** shale, gas, sulfur, potassium, and solid and semisolid bitumens. [↑](#footnote-ref-135)
135. 135"[T]here can be no room for contemporaneous operation of both the mining law and one or other of the leasing acts with respect to the same lands...." Wilbur v. Krushnic, 280 U.S. 306, 314-15 (1930); Filtrol Co. v. Brittan and Echart, 51 L.D. 649, 653 (1926); Applicability of the Mining Laws to Lands Known to Contain Any of the Minerals Named in the Leasing Acts of October 22, 1917, and February 25, 1920, 50 L.D. 650, 651 (1924); Joseph E. McClory, 50 L.D. 623, 626 (1924). [↑](#footnote-ref-136)
136. 136Bloomenthal, "Multiple Mineral Development on the Public Domain," 9 *Wyo. L.J*. 139, 141 (1955). [↑](#footnote-ref-137)
137. 137Davis, "Multiple Uses of Public Lands," 1 *Rocky Mt. Min. L. Inst*. 495, 501-02 (1955); Note, "The Impact of the 'Uranium Boom' On Mining Laws," 4 *Utah L. Rev*. 239, 251, n. 125 (1954). [↑](#footnote-ref-138)
138. 13830 U.S.C.A. §§ 521 *et seq*. (West 1971 & Supp. 1982). Congress had previously granted temporary help to miners under the Uranium Relief Act of 1953, 30 U.S.C.A. §§ 501 *et seq*. (West 1971). This Act served to validate mining claims located subsequent to July 31, 1939, and prior to January 1, 1953, on lands which at the time of location were covered by an offer or application to lease or were known valuable for Leasing Act minerals. Miners could test the validity of mining claims as against a mineral lease by initiating patent proceedings. The United States could on its own motion challenge mining claims. But the ***oil*** and gas lessee was left without a remedy as no administrative means were made available to the ***oil*** and gas lessee to invalidate a possibly invalid mining claim. Deering, *supra* note 2, at 554. [↑](#footnote-ref-139)
139. 139For discussions of the historical perspective and aspects of the Multiple Mineral Development Act of 1954, see notes 133-152 and accompanying text *supra*; Bloomenthal, *supra* note 136; Davis, *supra* note 137; Deering, *supra* note 2; Due, "Multiple Mineral Development Problems-Public Law 585 in Retrospect," 31 *Rocky Mt. L. Rev*. 269 (1959); Elliott, "The New Forty-Niners: Uranium vs. ***Oil*** and Gas on the Public Domain," 28 *So. Cal. L. Rev*. 147 (1955); Loesch, "Multiple Uses of Public Lands-Accommodation or Choosing Between Conflicting Uses," 16 *Rocky Mt. Min. L. Inst*. 1 (1971); Marsh & Sherwood, *supra* note 2; Patton, "Current Aspects of Multiple Use of Public Lands," 14 *Rocky Mt. Min. L. Inst*. 521 (1968); Senior, "***Oil*** Placers and Unproductive Mining Claims," 1 *Rocky Mt. Min. L. Inst*. 289 (1955); Sherwood, "Prospecting for Locatable Minerals on Public Lands Classified for Retention for MultipleUse Management," 14 *Rocky Mt. Min. L. Inst*. 167 (1968); Vernon, "Termination of Rights Under Valid Mining Claims," 5 *Rocky Mt. Min. L. Inst*. 135 (1960); Note, "Multiple Mineral Development of Public Lands," 24 *Geo. Wash. L. Rev*. 319 (1956). [↑](#footnote-ref-140)
140. 140*E.g*., Patton, *supra* note 139, at 522-23. [↑](#footnote-ref-141)
141. 141Davis, *supra* note 137, at 504. [↑](#footnote-ref-142)
142. 142Deering, *supra* note 2, at 541. [↑](#footnote-ref-143)
143. 14330 U.S.C.A. § 526(a) (West 1971). The statute also (1) validated mining claims located between July 31, 1939, and February 19, 1954, on lands contained within permits, leases, offers or applications, or which were known valuable for Leasing Act minerals, and (2) established a rather cumbersome administrative procedure whereby the lessee of Leasing Act minerals could determine whether his rights or the rights of the mining claimant were dominant. 30 U.S.C.A. §§ 521, 527 (West 1971). For a discussion of these Section 7 Proceedings see Dufford, "Multiple Use Act-Section 7 Proceedings," 1 *Law of Federal* ***Oil*** *and Gas Leases*, ch. XXVI Rocky Mt. Min. L. Fdn., (1980); Bloomenthal, *supra* note 136, at 164-68; Due, *supra* note 139, at 285. One author has ranked this Act on equal footing with the mineral location laws and the Mineral Lands Leasing Act of 1920 as a statement of national policy. Elliot, *supra* note 139, at 147. [↑](#footnote-ref-144)
144. 14430 U.S.C.A. § 526(a) (West 1971). [↑](#footnote-ref-145)
145. 145*Id*. § 526(b). [↑](#footnote-ref-146)
146. 146*Id*. § 526(c). [↑](#footnote-ref-147)
147. 147*Id*. § 526(d). *See* Schissler, *supra* note 39, at 272, 273. [↑](#footnote-ref-148)
148. 148*See* notes 195-196 and accompanying text *infra*. [↑](#footnote-ref-149)
149. 14930 U.S.C.A. § 526(c) (West 1971). Bloomenthal, *supra* note 136, at 152. [↑](#footnote-ref-150)
150. 150Apparently the United States, as owner, can seek damages for injury to mineral deposits in those instances where no lease, permit, or offer to lease exists. 1 *American Law of Mining* § 1.41, n.1 (Rocky Mt. Min. L. Fdn., 1981). [↑](#footnote-ref-151)
151. 151Under the General Mining Law, the locator has the right to all valuable minerals not disposed of under some other act such as the Common Varieties Act, note 153 *infra*, or the Mineral Lands Leasing Act. Therefore, the locator's only conflict would be with senior locators pursuing their extra-lateral rights. *See* 30 U.S.C.A. § 26 (West 1971). [↑](#footnote-ref-152)
152. 152Deering, *supra* note 2, at 604. For a discussion of damages in the context of private lands, see notes 632-638 and accompanying text *infra*. [↑](#footnote-ref-153)
153. 15330 U.S.C.A. §§ 601, 603 (West 1971). Mineral materials covered by the Act are sand, stone, gravel, pumice, pumicite, cinders, and clay. [↑](#footnote-ref-154)
154. 15430 U.S.C.A. §§ 601 *et seq*. (West 1971). [↑](#footnote-ref-155)
155. 155*Id*. § 612(a). [↑](#footnote-ref-156)
156. 156Long haulage makes mining of these materials uneconomical. Therefore, they generally will be mined near construction sites and urban growth centers. [↑](#footnote-ref-157)
157. 15743 U.S.C.A. §§ 1411 *et seq*. (West Supp. 1982). [↑](#footnote-ref-158)
158. 158*Id*. § 1415(b) (emphasis added). [↑](#footnote-ref-159)
159. 159*Id*. § 1411(b). [↑](#footnote-ref-160)
160. 160Marsh & Sherwood, *supra* note 2, at 246. [↑](#footnote-ref-161)
161. 16143 U.S.C.A. § 1417(a) (West Supp. 1982). [↑](#footnote-ref-162)
162. 162*Id*. § 1418 Harvey, "Public Land Management Under The Classification And Multiple Use Act," 2 *Nat. Resources Law* 238, 247 (1969). [↑](#footnote-ref-163)
163. 163*E.g*., 47 Fed. Reg. 18,435 (1982). [↑](#footnote-ref-164)
164. 164*See* Strickland v. Norton, 519 F.2d 467, 469-70 (9th Cir. 1975). [↑](#footnote-ref-165)
165. 16543 U.S.C.A. §§ 1701 *et seq*. (West Supp. 1982). FLPMA is sometimes referred to as the "BLM Organic Act." [↑](#footnote-ref-166)
166. 166*Id*. § 1702(c) (West Supp. 1982). The relevant provision reads:

     The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output. [↑](#footnote-ref-167)
167. 16743 U.S.C.A. § 1732(b) (West Supp. 1982). [↑](#footnote-ref-168)
168. 168Marsh & Sherwood, *supra* note 2, at 245. [↑](#footnote-ref-169)
169. 169*Id*. at 270. [↑](#footnote-ref-170)
170. 17030 U.S.C.A. §§ 801 *et seq*. (West 1971). [↑](#footnote-ref-171)
171. 171*Id*. § 877. [↑](#footnote-ref-172)
172. 172*Id*. For a discussion of applicable regulations, *see* notes 229-234 and accompanying text *infra*. [↑](#footnote-ref-173)
173. 17330 U.S.C.A. § 872(a) (West 1971). [↑](#footnote-ref-174)
174. 17430 U.S.C.A. §§ 1201 *et seq*. (West Supp. 1982). [↑](#footnote-ref-175)
175. 175*Id*. § 1201(b). [↑](#footnote-ref-176)
176. 176*Id*. § 1235(b); Colorado, Kansas, Montana, New Mexico, North Dakota, Utah and Wyoming have conditionally approved programs, and all but Kansas have elected to enter into cooperative agreements with the Secretary of the Interior. 30 C.F.R. § 211.77 (1982); Barry, "The Surface Mining Control and Reclamation Act of 1977 and the Office of Surface Mining: Moving Targets or Immovable Objects," 27 *Rocky Mt. Min. L. Inst*. 169, 230-234 (1982); Van Buskirk & Dragoo, "The Designation of Coal Lands as 'Unsuitable' for Surface Coal Mining Operations," 27 *Rocky Mt. Min. L. Inst*. 339, 347 (1982). [↑](#footnote-ref-177)
177. 17730 U.S.C.A. § 1236(d) (West Supp. 1982). [↑](#footnote-ref-178)
178. 178*Id*. At least for the present, Indian lands remain under the jurisdiction of the Secretary, 30 U.S.C.A. § 1300 (West Supp. 1982). For a discussion of Bureau of Indian Affairs Regulations pertaining to surface mining on Indian lands, see notes 386-389 and accompanying text *infra*. [↑](#footnote-ref-179)
179. 17930 U.S.C.A. § 1266(a) (West Supp. 1982). *See* Welborn & Fanyo, "Special Problems for Underground Mine Operation in the West Under the Reclamation Laws," *Western Land Use Regulation & Mined Land Reclamation* 11-1 (Rocky Mt. Min. L. Fdn., 1979). [↑](#footnote-ref-180)
180. 18030 U.S.C.A. § 1272 (West Supp. 1982). *See also* Van Buskirk & Dragoo, *supra* note 176. States with cooperative agreements may not designate federal lands as unsuitable. 30 U.S.C.A. §§ 1253(a), 1272 (West Supp. 1982). *See also* Barry, *supra* note 176; Van Buskirk & Dragoo, *supra* note 176, at 295-96. [↑](#footnote-ref-181)
181. 181Barry, *supra* note 176. *See also* Hemenway, "Selected Issues Under the Surface Mining Control Act of 1977," 24 *Rocky Mt. Min. L. Inst*. 233 (1978). [↑](#footnote-ref-182)
182. 18230 U.S.C.A. §§ 1001 *et seq*. (West Supp. 1982). [↑](#footnote-ref-183)
183. 183*Id*. § 1016. [↑](#footnote-ref-184)
184. 18430 U.S.C.A. § 1003(b) (West Supp. 1982) *See also id*. §§ 1004, 1025. [↑](#footnote-ref-185)
185. 185*Id*. §§ 1010, 1012. [↑](#footnote-ref-186)
186. 186*Id*. § 1001(c). Geothermal resources are defined as follows: "(i) all products of geothermal processes, embracing indigenous steam, hot water, and hot brines; (ii) steam and other gases, hot water, and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (iii) heat or other associated energy found in geothermal formations...." Id. *See also id*. § 1522(b)(2). [↑](#footnote-ref-187)
187. 187United States v. Union ***Oil*** Co. of California, 549 F.2d 1271, 1273-74 (9th Cir. 1977). [↑](#footnote-ref-188)
188. 18830 U.S.C.A. § 226(j) (West 1971). [↑](#footnote-ref-189)
189. 189*Id*. [↑](#footnote-ref-190)
190. 19043 C.F.R. § 1725 (1981). Schissler, *supra* note 39, at 256. [↑](#footnote-ref-191)
191. 191Public Land Law Review Commission, *One Third of the Nations Land* 121-22 (1970). *See also* Martz, "Mineral Resources (***Oil*** and Gas and ***Oil*** Shale)," 6 *Land & Water L. Rev* 193, 200-01 (1970). [↑](#footnote-ref-192)
192. 19243 C.F.R. § 1725.3 (1981). [↑](#footnote-ref-193)
193. 193*See* note 143 and accompanying text *supra*. [↑](#footnote-ref-194)
194. 19443 C.F.R. § 3100.4 (1981). [↑](#footnote-ref-195)
195. 195*Id*. § 3400.1. [↑](#footnote-ref-196)
196. 196*Id*. § 3500.2. Minerals provided for in *id*. §§ 3500.0-3 to 3509.1 (1981) include:

     deposits of chlorides, sulphates, carbonates, borates, silicates, or nitrates of potassium and sodium; phosphate; native asphalt, solid and semisolid bitumen, and bitumenous rock including ***oil***-impregnated rock or sands from which ***oil*** is recoverable only by special treatment after the deposit is mined or quarried; sulphur in the states of Louisiana and New Mexico; minerals in acquired lands which would be subject to location under the United States mining laws if located in public domain lands;...sodium, magnesium, aluminum, or calcium deposits, in any of the forms described and associated with the potassium deposits.

     *Id*. § 3500.1-1 (1981). [↑](#footnote-ref-197)
197. 197For a discussion of special stipulations see notes 248-288 and accompanying text *infra*. [↑](#footnote-ref-198)
198. 19843 C.F.R. § 3410.5 (1981). [↑](#footnote-ref-199)
199. 199*Id*. § 3465.1(c). [↑](#footnote-ref-200)
200. 200*Id*. § 3103.3-8 (***oil*** and gas) (this provision appears to waive, suspend, or reduce rentals or royalties under § 3103.3-7 as well); *id*. § 3503.3-2(d) (other Leasing Act minerals) (this section apparently also applies to coal pursuant to the terms of 30 C.F.R. § 211.3(a)(ii) (1981)). [↑](#footnote-ref-201)
201. 201*See* notes 289-292 and accompanying text *infra*. [↑](#footnote-ref-202)
202. 20243 C.F.R. §§ 3741.1 to .6 (1981). [↑](#footnote-ref-203)
203. 203*Id*. §§ 3742.1 to 3742.4. [↑](#footnote-ref-204)
204. 204*Id*. § 3802.4-3. [↑](#footnote-ref-205)
205. 205See notes 182-187 and accompanying text *supra*. [↑](#footnote-ref-206)
206. 20643 C.F.R. § 3200.0-8(b) (1981). [↑](#footnote-ref-207)
207. 207*Id*. § 3204.1(e). [↑](#footnote-ref-208)
208. 208*Id*. § 3204.2. [↑](#footnote-ref-209)
209. 209*Id*. § 3203.1-6. [↑](#footnote-ref-210)
210. 210*Id*. [↑](#footnote-ref-211)
211. 211*Id*. §§ 3105.0 to .6. [↑](#footnote-ref-212)
212. 212*Id*. § 3105.5. [↑](#footnote-ref-213)
213. 21349 IBLA 230, GFS(O&G) 153 (1980). [↑](#footnote-ref-214)
214. 21459 IBLA 192, GFS(O&G) 207 (1981). [↑](#footnote-ref-215)
215. 215Formerly the Conservation Division, United States Geological Survey. [↑](#footnote-ref-216)
216. 21630 C.F.R. §§ 221.9, .18 (1981) (***oil*** and gas); *id*. §§ 211.4(a), (b) (coal); *id*. § 231.4(a) (other Leasing Act minerals); *id*. §§ 270.30(a), (b) (geothermal). [↑](#footnote-ref-217)
217. 217*Id*. § 221.14 (***oil*** and gas); *id*. § 211.3; *id*. § 3503.3-2(e) (coal); *id*. § 231.3(c)(6), 43 C.F.R. § 3503.3-2(e) (1981) (other Leasing Act minerals); 30 C.F.R. § 270.17(a) (1981) (geothermal). [↑](#footnote-ref-218)
218. 21830 C.F.R. § 211.10(c)(7)(iii) (1981). [↑](#footnote-ref-219)
219. 219*Id*. § 211.10(c)(6)(xiv). [↑](#footnote-ref-220)
220. 220*Id*. § 211.11. [↑](#footnote-ref-221)
221. 221*Id*. § 211.10(b)(1). [↑](#footnote-ref-222)
222. 222*Id*. § 211.10(c)(1). [↑](#footnote-ref-223)
223. 223*Id*. § 211.31 (coal); *Id*. § 231.32 (other Leasing Act minerals). [↑](#footnote-ref-224)
224. 224*Id*. § 231.32. [↑](#footnote-ref-225)
225. 225*Id*. § 270.15. [↑](#footnote-ref-226)
226. 226*See* notes 174-181 and accompanying text *supra*. [↑](#footnote-ref-227)
227. 227For reclamation performance standards under SMCRA, see 30 C.F.R. § 211.40 (1981). *See also id*. §§ 715.11 to .200 (general performance standards); *id*. §§ 716.1 to .7 (special performance standards for steep slopes, mountaintops, and other conditions); *id*. §§ 717.11 to .20 (underground mining general performance standards). For the text of cooperative agreements with the various states, see *id*. § 211.77. [↑](#footnote-ref-228)
228. 228*See* notes 391-395, 424-427, 455-459, 500-504, 517-518, 558-561, 593-594 and accompanying text *infra*. [↑](#footnote-ref-229)
229. 229*See* notes 170-173 and accompanying text *supra*. MSHA, which is currently part of the Department of Labor, is the successor agency to the Mine Enforcement and Safety Administration (MESA). [↑](#footnote-ref-230)
230. 23030 C.F.R. § 75.1700 (1981). [↑](#footnote-ref-231)
231. 231*Id*. [↑](#footnote-ref-232)
232. 232Memorandum from the Assistant Director-Coal Mine Health and Safety, Bureau of Mines to Coal Mine Health and Safety Directors in Pittsburgh [Pennsylvania], Mt. Hope [West Virginia], Norton [Virginia], Vincennes [Indiana], and Denver [Colorado] (April 23, 1970) (regarding the application of 30 C.F.R. § 75.1700 and adopting criteria established by the Joint Coal and Gas Committee of the ***Oil*** and Gas Division, Department of Mines and Mineral Industries, Commonwealth of Pennsylvania pertaining to dimensions of coal pillars and ***oil*** and gas wells). [↑](#footnote-ref-233)
233. 233*Id*. [↑](#footnote-ref-234)
234. 234*Id*. Specifications for pillar dimensions based upon overburden:

     Cover(ft.)

     Req'd Solid Pillar Area (sq.ft.)

     Req'd Additional Pillar Area (Solid or Split) (sq.ft.)

     Total Area Bearing Surface Req'd (sq.ft.)

     100-149

     3,600

     -

     3,600

     150-249

     5,625

     -

     5,625

     250-349

     10,000

     -

     10,000

     350-449

     10,000

     5,600

     15,600

     450-549

     10,000

     13,000

     23,000

     550-649

     10,000

     22,000

     32,000

     650 plus

     10,000

     30,000

     40,000

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     [↑](#footnote-ref-235)
235. 235Memorandum from the Conservation Manager, Central Region to Area Mining Supervisors; Acting Area Mining Supervisor; District Mining Supervisors for Rock Springs [Wyoming] and Rolla [New Mexico]; Deputy Mining Supervisor, Carlsbad [New Mexico]; Supervisory Mining Engineers, Casper [Wyoming] and Farmington [New Mexico]; and the Area ***Oil*** Shale Supervisor, Grand Junction [Colorado] (August 9, 1977). [↑](#footnote-ref-236)
236. 236Section 2(j) of all three federal ***oil*** and gas leases reads in part:

     *Diligence, prevention of waste, health and safety of workmen*-[T]o carry on all operations in accordance with approved methods and practices as provided in the ***Oil*** and Gas Operating Regulations, having due regard for the prevention of waste of ***oil*** or gas or damage to deposits or formations containing ***oil***, gas, or water or to coal measures or other mineral deposits ... for the preservation and conservation of the property for future productive operations....

     Bureau of Land Management, United States Dept. of the Interior, Offer to Lease and Lease for ***Oil*** and Gas, Form 3110-1 (11th ed. Mar. 1977) (used in noncompetitive over-the-counter offers) [hereinafter cited as Federal Noncompetitive ***Oil*** and Gas Lease]; Bureau of Land Management, United States Dept. of the Interior, Lease for ***Oil*** and Gas, Form 3110-2 (Jan. 1978) (used in noncompetitive simultaneous offers) [hereinafter cited as Federal Noncompetitive ***Oil*** and Gas Lease-Simultaneous]; and Bureau of Land Management, United States Dept. of the Interior, ***Oil*** and Gas Lease, Form 3120-7 (Feb. 1977) (used for competitive ***oil*** and gas leases) [hereinafter cited as Federal Competitive ***Oil*** and Gas Lease]. [↑](#footnote-ref-237)
237. 237Section 2(m) of phosphate, sulfur, asphalt, and tar sands leases reads in part: "*Operations, wages, freedom of purchase*. [T]o carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health or property; and the waste or damage to any water or mineral deposits...." Bureau of Land Management, United States Dept. of the Interior, Phosphate Lease, Form 3520-4 (Dec. 1975) [hereinafter cited as Federal Phosphate Lease]; Bureau of Land Management, United States Dept. of the Interior, Sulphur Lease, Form 3520-5 (Dec. 1975) [hereinafter cited as Federal Sulphur Mining Lease]; Bureau of Land Management, United States Dept. of the Interior, Asphalt Lands Lease, Form 3560-2 (May 1976) [hereinafter cited as Federal Asphalt Lease]; Bureau of Land Management, United States Dept. of the Interior, Form 3560-2 (May 1976) [hereinafter cited as Federal Tar Sands Lease]. [↑](#footnote-ref-238)
238. 238United States Department of the Interior ***Oil*** Shale Lease Utah 25918 issued to Phillips Petroleum Company and Sun ***Oil*** Company (Delaware) on May 1, 1974, effective June 1, 1974, affecting tract U-a. Section 12(a)(3) provides: "The Lessee shall avoid wasting the mineral deposits, and other resources, including but not limited to surface resources, which may be found in, upon, or under such lands" [hereinafter cited as Federal ***Oil*** Shale Lease]. [↑](#footnote-ref-239)
239. 239Bureau of Land Management, United States Dept. of the Interior, Coal Lease, Form 3400-12 (Dec. 1980), § 13(b), which reads: "The lessee shall minimize to the maximum extent possible wasting of the coal deposits and other mineral and nonmineral resources, including, but not limited to, surface resources which may be found in, upon, or under such lands." [↑](#footnote-ref-240)
240. 240These provisions are found in the Federal Noncompetitive ***Oil*** and Gas Lease, *supra* note 236, at § 2(q), Federal Noncompetitive ***Oil*** and Gas Lease-Simultaneous, *supra* note 236, at § 2(q); Federal Competitive ***Oil*** and Gas Lease, *supra* note 236, at § 2(r); Federal Sulphur Lease and Federal Asphalt Lease *supra* note 237, at § 5(3); Federal ***Oil*** Shale Lease, *supra* note 238, at § 12(c)(93); and Bureau of Land Management, United States Dept. of the Interior, Prospecting Application and Permit (Other than Coal) Form 3510-1 (Sept. 1977), at § 12(3). A customized form of Bureau of Land Management, United States Dept. of Interior, Lease of Native Asphalt, Solid and Semisolid Bitumen and Bituminous Rock, Utah 0126943, issued to American Gilsonite Company on August 1, 1964 contains the same language at § 10(4). [↑](#footnote-ref-241)
241. 241Federal Phosphate Lease, *supra* note 237, at § 3(b). [↑](#footnote-ref-242)
242. 242Federal Noncompetitive ***Oil*** and Gas Lease, *supra* note 236, at § 3(b); Federal Noncompetitive ***Oil*** and Gas Lease-Simultaneous, *supra* note 236, at § 3(b); Federal Competitive ***Oil*** and Gas Lease, *supra* note 236, at § 3(b); Federal Sulphur Lease, *supra* note 237, at § 3(b); and Federal Asphalt Lease, *supra* note 237, at § 3(b). Section 16 of the Federal Coal Lease reads as follows:

     *Authorization of Other Uses and Disposition of Leased Lands*-(a) The lessor reserves the right to authorize other uses of the leased lands by regulation or by issuing, in addition to this lease, leases, licenses, permits, easements, or rights-of-way, including leases for the development of minerals other than coal under the Act. The lessor may authorize any other uses of the leased lands that do not unreasonably interfere with the exploration and mining operations of the lessee, and the lessee shall make all reasonable efforts to avoid interference with such authorized uses. [↑](#footnote-ref-243)
243. 243United States Department of the Interior Prospecting Application and Permit, Form 3510-1 (Sept. 1977), at § 3(b). *See also id*. § 3(c). [↑](#footnote-ref-244)
244. 244*See* note 236 *supra*. For a similar provision contained in Indian ***oil*** and gas leases, see notes 352-353 and accompanying text *infra*. [↑](#footnote-ref-245)
245. 245*See* note 236 *supra*; Federal Coal Lease at § 13(a), Federal ***Oil*** Shale Lease (*See* 30 C.F.R. §§ 231.1 to .80 (1981), 43 C.F.R. §§ 23.1 to .13, 3000.0-5 to 3045.3 (1981); and Federal Sulphur Lease, *supra* note 237, at § 2(m); Federal Asphalt Lease (30 C.F.R. §§ 211.1 to .78 (1981)). [↑](#footnote-ref-246)
246. 246*See* note 236 *supra*. [↑](#footnote-ref-247)
247. 247Federal ***Oil*** Shale Lease, *supra* note 238, at § 22. [↑](#footnote-ref-248)
248. 248Examples of Bureau of Land Management Multiple Use Special Stipulations include stipulations for (1) surface disturbance; (2) watershed and water recreational areas; (3) protection of cultural, paleontological resources; (4) roadless areas; (5) reclamation land-use; (6) highway material site rights-of-way; (7) powersites; (8) wilderness protection; (9) surface occupancy within national forests; (10) controlled or limited access stipulations; (11) ***oil*** and gas operations in designated tar sands areas; and (12) ***oil*** and gas operations in ***oil*** shale withdrawals. [↑](#footnote-ref-249)
249. 249*See* notes 194-196 and accompanying text *supra*. [↑](#footnote-ref-250)
250. 250Stipulations for Lands in ***Oil*** Shale Withdrawal, Executive Order 5327, April 15, 1930, Form Ut 3110-4a (Nov. 1978) [hereinafter cited as ***Oil*** Shale Stipulations]. Executive Order No. 5327 withdrew from location, mineral leasing, entry and sale lands containing ***oil*** shale. Exec. Order No. 5327 (1930). It was later modified in 1933 to permit ***oil*** and gas leasing and again in 1935 to permit prospecting for and the leasing of sodium. *See* Anderson, *supra* note 104, at 233, 239.

     These stipulations read:

     1.   No wells will be drilled for ***oil*** or gas except upon approval of the Area ***Oil*** and Gas Supervisor of the Geological Survey, it being understood that drilling will be permitted only in the event that it is established to the satisfaction of the Supervisor that such drilling will not interfere with the mining and recovery of ***oil*** shale deposits or the extraction of shale ***oil*** by in situ methods or that the interest of the United States would best be served thereby.

     2.   No wells will be drilled for ***oil*** or gas at a location which, in the opinion of the Area ***Oil*** and Gas Supervisor of the Geological Survey, would result in undue waste of ***oil*** shale deposits or constitute a hazard to or unduly interfere with mining or other operations being conducted for the mining and recovery of ***oil*** shale deposits or the extraction of shale ***oil*** by in situ methods.

     3.   When it is determined by the Area ***Oil*** and Gas Supervisor of the Geological Survey that unitization is necessary for orderly ***oil*** and gas development and proper protection of ***oil*** shale deposits, no well shall be drilled for ***oil*** or gas except pursuant to an approved unit plan.

     4.   The drilling or the abandonment of any well on this lease shall be done in accordance with applicable ***oil*** and gas operating regulations including such requirements as the Area ***Oil*** and Gas Supervisor of the Geological Survey may prescribe as necessary to prevent the infiltration of ***oil***, gas or water into formations containing ***oil*** shale deposits or into mines or workings being utilized in the extraction of such deposits.

     ***Oil*** Shale Stipulations, *supra*. [↑](#footnote-ref-251)
251. 251Schissler, *supra* note 39, at 250 n.118. [↑](#footnote-ref-252)
252. 25230 U.S.C.A. § 188(a) (West 1971); 43 C.F.R. § 3108.3(a) (1981). [↑](#footnote-ref-253)
253. 25330 U.S.C.A. §§ 184, 188(a) (West 1971 & Supp. 1982); 43 C.F.R. § 3108.3(b) (1981). [↑](#footnote-ref-254)
254. 254Interview with James Fisher and John Flannigan of the Office of the Central Region Deputy Director, ***Oil*** and Gas, Minerals Management Service, Denver, Colorado in Lakewood, Colorado (April 23, 1982) [hereinafter cited as "Fisher Interview"]. *See also* Schissler, *supra* note 39, at 246. [↑](#footnote-ref-255)
255. 255Minerals Management Service, United States Dept. of the Interior, General Outline for the Protection and Isolation of Ground Water and ***Oil*** Shale in the Uinta Basin (Feb. 2, 1981) (signed by E.W. Guynn, District ***Oil*** and Gas Supervisor). [↑](#footnote-ref-256)
256. 256Minerals Management Service, United States Dept. of the Interior, Notice to ***Oil*** and Gas Operators in Piceance Basin ***Oil*** Shale Area of Colorado (undated) (promulgated over the signatures of both the Area ***Oil*** Shale and ***Oil*** and Gas Supervisors, Salt Lake City, Utah). [↑](#footnote-ref-257)
257. 257Letter from John L. Price, District ***Oil*** and Gas Supervisor, Mineral Management Service, Grand Junction, Colorado, to Deputy Minerals Manager for ***Oil*** and Gas, Central Region (Feb. 23, 1982) (with attached stipulations) [hereinafter referred to as Letter of Feb. 23, 1982]. [↑](#footnote-ref-258)
258. 258Memorandum from John L. Price, District ***Oil*** and Gas Supervisor, Minerals Management Service, Grand Junction, Colorado to Deputy Conservation Manager, ***Oil*** and Gas, Central Region (Nov. 27, 1981) (Subject: Special Lease Stipulations for the Protection of ***Oil*** Shale). [↑](#footnote-ref-259)
259. 259Letter of Feb. 23, 1982, *supra* note 257. [↑](#footnote-ref-260)
260. 260Letter Opinion from the Regional Solicitor, Rocky Mountain Region to the Deputy Conservation Manager, ***Oil*** and Gas, Central Region (Jan. 22, 1982) (pertaining to the legality of proposed stipulations for ***oil*** and gas operations in areas designated by the BLM as requiring U.S.G.S. determination of impact of ***oil*** and gas operations on other minerals [hereinafter cited as Regional Sol. Op.]. [↑](#footnote-ref-261)
261. 261Telephone interview with Mr. Frank A. Salerowiczs, Central Region Deputy Minerals Manager for ***Oil*** and Gas, Minerals Management Service, Denver, Colorado (July 14, 1982). [↑](#footnote-ref-262)
262. 262Schissler, *supra* note 39, at 259-62. [↑](#footnote-ref-263)
263. 263*Id*. at 244. [↑](#footnote-ref-264)
264. 264Fisher Interview, *supra* note 254. [↑](#footnote-ref-265)
265. 265The mineable zones should be isolated with cement from a point 100 feet below the formation to 100 feet above the formation. Water-bearing horizons should be cemented in like manner. Except for salines or water-bearing horizons with potential for mixing aquifers, a depth of 4,000 feet has been deemed the lowest limit for cementing. Memorandum from District Mining Supervisor, Salt Lake District, United States Geological Survey, to District ***Oil*** and Gas Engineer, Salt Lake District (June 23, 1981) (pertaining to form stipulation to be imposed upon ***oil*** and gas lessee under Federal ***Oil*** and Gas Lease Utah 8361 on lands in which underground coal mining operations were being prosecuted or were pending). [↑](#footnote-ref-266)
266. 266"Surface casing should be set to at least 50 feet below the lowest strip minable zone at \_\_\_\_\_ and cemented to surface. Upon abandonment, a 300-foot cement plug should be set immediately below the base of the minable zone." *Id*. (this provision would be applicable in those areas where surface mining is contemplated). [↑](#footnote-ref-267)
267. 26725 Fed. Reg. 8293 (1960). *See also* Schissler, *supra* note 39, at 245; Croft, *supra* note 7, at 53. [↑](#footnote-ref-268)
268. 26826 Fed. Reg. 45678 (1961). *See also* Schissler, *supra* note 39, at 245; Croft, *supra* note 7, at 53. [↑](#footnote-ref-269)
269. 269*See* notes 538-542 and accompanying text *infra*. [↑](#footnote-ref-270)
270. 2704 Fed. Reg. 1012 (1939). [↑](#footnote-ref-271)
271. 27116 Fed. Reg. 10669 (1951). [↑](#footnote-ref-272)
272. 272Secretarial Order of May 11, 1965, 30 Fed. Reg. 6692, 6693 (1965). [↑](#footnote-ref-273)
273. 27340 Fed. Reg. 51,486-87 (1975). *See also* Schissler, *supra* note 39, at 246. [↑](#footnote-ref-274)
274. 27440 Fed. Reg. 51,486-87 (1975). [↑](#footnote-ref-275)
275. 275*See* notes 250-251 and accompanying text *supra*. [↑](#footnote-ref-276)
276. 27640 Fed. Reg. 51,487 (1975). The four stipulations are attached to each federal ***oil*** and gas lease in the area designated in 40 Fed. Reg. 51,487-88 (1975). For a reaffirmation of departmental policy dicta regarding cluster drilling, see Bass Enterprises Production Co., 48 IBLA 11, GFS(O&G) 111 (1980); Belco Petroleum Corp., 42 IBLA 150, GFS(MIN) 63 (1979). [↑](#footnote-ref-277)
277. 27740 Fed. Reg. 51,487 (1975). [↑](#footnote-ref-278)
278. 278*Id*. [↑](#footnote-ref-279)
279. 279*Id*. [↑](#footnote-ref-280)
280. 280*See* note 290 and accompanying text *supra*. [↑](#footnote-ref-281)
281. 28140 Fed. Reg. 51,487 (1975). [↑](#footnote-ref-282)
282. 282*Id*. [↑](#footnote-ref-283)
283. 283*Id*. [↑](#footnote-ref-284)
284. 284*Id*. For a discussion of the New Mexico ***Oil*** Conservation Commission rules and regulations, see notes 488-493 and accompanying text *infra*. [↑](#footnote-ref-285)
285. 285E. Wyatt, "***Oil***-Potash Area of Southeastern New Mexico", at 11 (undated, unpublished paper delivered by permission of the Director, United States Geological Survey sometime after July 1, 1967). *See also* Belco Petroleum Corp., 42 IBLA at 153, in which a permit was denied on lands for which a potash lease application was pending, but no lease had yet been issued. [↑](#footnote-ref-286)
286. 286Wyatt, *supra* note 285, at 11. [↑](#footnote-ref-287)
287. 287*Id*. at 13, 14. At the time Mr. Wyatt delivered his paper, some 51 suspensions had been granted affecting nearly 15,480 acres. *Id*. at 14. [↑](#footnote-ref-288)
288. 288Telephone interview with Mr. James Gillham, District ***Oil*** and Gas Supervisor, Roswell, New Mexico (April 26, 1982). [↑](#footnote-ref-289)
289. 28930 U.S.C.A. § 209 (West 1971). [↑](#footnote-ref-290)
290. 290*Id*. [↑](#footnote-ref-291)
291. 291*Id*. [↑](#footnote-ref-292)
292. 292*See* note 200 *supra*. [↑](#footnote-ref-293)
293. 293Fisher Interview, *supra* note 254. *See also* Schissler, *supra* note 39, at 259. [↑](#footnote-ref-294)
294. 294Schissler, *supra* note 39, at 262. For a recitation of provisions utilized by conflicting coal and gas operators in Wyoming, *see id*. at 260-62. [↑](#footnote-ref-295)
295. 295Schissler, *supra* note 39, at 263. [↑](#footnote-ref-296)
296. 296Fisher Interview, *supra* note 254. [↑](#footnote-ref-297)
297. 297Pub. L. No. 86-705, 74 Stat. 790 (1960) (codified at 30 U.S.C.A. § 181 (West 1971)). The amendment is commonly referred to as the Tar Sands Amendment. [↑](#footnote-ref-298)
298. 298S. Rep. No. 1549, 86th Cong., 2d Sess. (1960), *quoted in* Kell, *supra* note 26, at 258 n.30. [↑](#footnote-ref-299)
299. 299Webb v. American Asphaltum Mining Co., 157 F. 203, 207 (1907); *see generally* Kell, *supra* note 26, at 257-58. [↑](#footnote-ref-300)
300. 30030 U.S.C.A. § 241(c) (West 1971). [↑](#footnote-ref-301)
301. 301Kell, *supra* note 26, at 260-61. [↑](#footnote-ref-302)
302. 302The sale affected lands near Sunnyside, Utah, and was held on January 23, 1964. Utah 0133638 and Utah 0133642 were issued to the Bituminous Sand Corp. of America effective April 1, 1964. Utah 0133639, Utah 0133640, and Utah 0133641 were issued to Atlantic Richfield Co. effective March 1, 1964. The five leases covered a total of 8,242.02 acres. Kell, *supra* note 26, at 266 n.44. [↑](#footnote-ref-303)
303. 303Memorandum from the Director, Bureau of Land Management to State Directors, Bureau of Land Management (November 18, 1965). [↑](#footnote-ref-304)
304. 304Utah 0133639, Utah 0133640, and Utah 0133641 were relinquished on December 28, 1970. Utah 0133638 and Utah 0133642 were relinquished on February 11, 1972. [↑](#footnote-ref-305)
305. 305The first tar sands legislation was introduced in the Senate by Senator Frank Moss of Utah as Senate Bill 3622 on July 18, 1966. Kell, *supra* note 26, at 280. [↑](#footnote-ref-306)
306. 306Pub. L. No. 97-78, 95 Stat. 1070 (1981) (codified at 30 U.S.C.A. §§ 181 *et seq*. (West Supp. 1982)). [↑](#footnote-ref-307)
307. 30730 U.S.C.A. § 181 (West Supp. 1982). [↑](#footnote-ref-308)
308. 308*Id*. § 209. [↑](#footnote-ref-309)
309. 309*Id*. § 241(c). [↑](#footnote-ref-310)
310. 310*Id*. § 226(k). [↑](#footnote-ref-311)
311. 31147 Fed. Reg. 22474 (1982). [↑](#footnote-ref-312)
312. 312*Id*. at 22424. [↑](#footnote-ref-313)
313. 313All nine areas are within the State of Utah. Five areas were designated in 1980: PR Spring, Sunnyside and Vicinity, Asphalt Ridge-Whiterodes and Vicinity, Circle Cliffs East and West Flanks, and Tar Sand Triangle. 45 Fed. Reg. 76800-01 (1980). Four additional areas were designated in 1981: Argyle Canyon-Willow Creek, Hill Creek, Pariette, and Raven Ridge-Rim Rock and Vicinity. 46 Fed. Reg. 6077-6078 (1981). [↑](#footnote-ref-314)
314. 314Interview with James V. Piani, Tar Sands Manager, Utah State Office, Bureau of Land Management in Salt Lake City (June 18, 1982). [↑](#footnote-ref-315)
315. 315Interview with J. Gordon Whitney, Assistant Deputy Minerals Manager-Mining; Salt Lake City, Utah in Salt Lake City (May 4, 1982). *See also* Determination of Effects of Rules (undated, unpublished) (proposal by MMS pertaining to promulgation of mining operating regulations for tar sands). [↑](#footnote-ref-316)
316. 316Solicitor Memorandum 36935, Ownership of and the Right to Extract Coalbed Gas in Federal Coal Deposits (May 12, 1981); GFS(MIN) SO-2(1981) (with same pagination) [hereinafter cited as Sol. Op. M-36935]. [↑](#footnote-ref-317)
317. 317*Id*., referring to 30 U.S.C.A. § 226 (West 1971 and Supp. 1982). [↑](#footnote-ref-318)
318. 318Sol. Op. M-36935, *supra* note 316, at 3. [↑](#footnote-ref-319)
319. 319*Id*. at 4. [↑](#footnote-ref-320)
320. 320*Id*. [↑](#footnote-ref-321)
321. 321*Id*. at 6, 7. [↑](#footnote-ref-322)
322. 322*Id*. at 5 *citing* H.R. Rep. No. 377, 61st Cong., 2d Sess. 4 (1910) containing Secretary of the Interior Bellinger's testimony regarding the Act of 1910. [↑](#footnote-ref-323)
323. 323*Id*. [↑](#footnote-ref-324)
324. 324*Id*. at 6. [↑](#footnote-ref-325)
325. 325*Id*. at 9. [↑](#footnote-ref-326)
326. 326*Id*. at 10. [↑](#footnote-ref-327)
327. 327*Id*. at 11-12. [↑](#footnote-ref-328)
328. 328*Id*. at 12-13. [↑](#footnote-ref-329)
329. 329*Id*. at 13. [↑](#footnote-ref-330)
330. 330*Id*. However, the Solicitor cites the unpublished slip opinion United States Steel Corp. v. Hoge, No. 78-682 (Pa. Ct. C. P., Greene County, March 24, 1980, appeal filed October 22, 1980), for the proposition that the surface owner owning the coalbed gas by reservation may not infringe on the coal owner's estate to recover coalbed gas beyond normal ***oil*** and gas recovery techniques. [↑](#footnote-ref-331)
331. 331Sol. Op. M-36935, *supra* note 316, at 13. [↑](#footnote-ref-332)
332. 332A. Berger, "Negotiations for Acquiring Exploration Rights on Indian Lands," 19 *Rocky Mt. Min. L. Inst*. 447 (1974); Berger & Mounce, "Applicability of State Conservation and Other Laws to Indian and Public Lands," 16 *Rocky Mt. Min. L. Inst*. 347 (1971); Berger, "Indian Lands-Minerals-Related Problems," 14 *Rocky Mt. Min. L. Inst*. 89 (1968); Burley "Indian Lands-An Industry Dilemma," 27B *Rocky Mt. Min. L. Inst*. 1605 (1982); Fiske, "Rush to the Rockies: Some Aspects of Mineral Development of Non-Fee Land," 7 *Rocky Mt. Min. L. Rev*. 39 (1969); Gibbons, "Examination of Indian Mineral Titles," 10 *Rocky Mt. Min. L. Inst*. 73 (1965); McLane, ***Oil*** *and Gas Leasing on Indian Lands* (1955); Moore, "Title Examination of Indian Lands," *Mineral Title Examination II* 4-1 (Rocky Mt. Min. L. Fdn., 1982); Moore, "Title Examination of Indian Lands," *Mineral Title Examination* 5-1 (Rocky Mt. Min. L. Fdn., 1977); Moore, "Title Examination of Indian Lands," *Institute on Indian Land Development-****Oil****, Gas, Coal and Other Minerals* 7-1 (Rocky Mt. Min. L. Fdn, 1976). [↑](#footnote-ref-333)
333. 33325 U.S.C.A. § 396 (West 1963). This Act, also known as the Allotted Lands Leasing Act, does not apply to members of the Five Civilized Tribes and Osage Indians in Oklahoma. *Id*. [↑](#footnote-ref-334)
334. 33425 U.S.C.A. § 396a-396g (West 1963). Prior to the Indian Leasing Act of 1938, leasing of tribal lands was a result of piecemeal legislation: 25 U.S.C.A. § 398 (West 1963) (leases on unallotted lands for ***oil*** and gas purposes); 25 U.S.C.A. § 398a (West 1963) (leases on unallotted Executive Order Indian reservations or withdrawals for ***oil*** and gas purposes); 25 U.S.C.A. § 398e (West 1963) (leases on unallotted Indian reservation or Executive Order lands which filed application for mineral leasing under the Mineral Lands Leasing Act of 1920 (federal public domain lands) prior to May 27, 1924); 25 U.S.C.A. § 399 (West 1963) (leases on unallotted lands withdrawn from mineral location prior to June 30, 1919, affecting metalliferous and nonmetalliferous minerals not including ***oil*** and gas); 25 U.S.C.A. § 400 (West 1963) (leases for mining purposes on unallotted lands in Fort Peck and Blackfeet Indian Reservations); 25 U.S.C.A. § 400a (West 1963) (leases for mining purposes on lands reserved for agency schools); 25 U.S.C.A. § 401 (West 1963) (leases for mining purposes on unallotted lands in the Kaw Reservation). The Act of 1938 brought all unallotted (tribal) Indian lands under one lease provision. P. Maxfield, M. Dietrich and F. Trelease, *Natural Resources Law on American Indian Lands* 163 (1977). The Indian Leasing Act of 1938 does not apply to the Crow Reservation in Montana, the ceded lands of the Shoshone Reservation in Wyoming, the Osage Reservation in Oklahoma, or the coal and asphalt lands of the Choctaw and Chickasaw Tribes in Oklahoma. 25 U.S.C.A. § 396f (West 1963). [↑](#footnote-ref-335)
335. 33525 U.S.C.A. § 396 (West 1963) (pertaining to allotted lands); 25 U.S.C.A. § 396d (West 1963) (pertaining to tribal lands). [↑](#footnote-ref-336)
336. 33625 U.S.C.A. § 396g (West 1963). [↑](#footnote-ref-337)
337. 33725 C.F.R. § 172.24 (1981) (pertaining to allotted lands); 25 C.F.R. § 171.21 (1981) (pertaining to tribal lands). [↑](#footnote-ref-338)
338. 33825 C.F.R. § 172.15a (1981) (pertaining to allotted lands); 25 U.S.C.A. § 171.14a (1981) (pertaining to tribal lands). [↑](#footnote-ref-339)
339. 33925 C.F.R. § 172.15a (1981); 25 C.F.R. § 171.14a (1981). [↑](#footnote-ref-340)
340. 34025 C.F.R. § 172.15a (1981); 25 C.F.R. § 171.14 (1981). [↑](#footnote-ref-341)
341. 34125 U.S.C.A. § 171.19 (1981). [↑](#footnote-ref-342)
342. 342*See* note 236 *supra*. [↑](#footnote-ref-343)
343. 34325 C.F.R. § 171.27a (1981). [↑](#footnote-ref-344)
344. 34430 C.F.R. § 221.3 (1981) (***oil*** and gas); 25 C.F.R. § 211.1 (1981) (coal); 25 C.F.R. § 231.1 (1981) (minerals other than coal and ***oil*** and gas). *See generally* Maxfield, *supra* note 334, at 189-90. For a discussion of operating regulations on federal public domain lands, see notes 215-227 and accompanying text *supra*. [↑](#footnote-ref-345)
345. 34525 C.F.R. §§ 177.1 to .114 (1981). [↑](#footnote-ref-346)
346. 346*Id*. § 177.2. [↑](#footnote-ref-347)
347. 347*Id*. § 177.4(a). [↑](#footnote-ref-348)
348. 348See definition of "Surface Coal Mining Operation," *id*. § 177.101. [↑](#footnote-ref-349)
349. 34930 U.S.C.A. §§ 801 *et seq*. (West 1971). [↑](#footnote-ref-350)
350. 350*See* notes 230-234 and accompanying text *supra*. [↑](#footnote-ref-351)
351. 35142 Fed. Reg. 18,083 (1977); 45 Fed. Reg. 53,164 (August 11, 1980). [↑](#footnote-ref-352)
352. 352Bureau of Indian Affairs, United States Dept. of the Interior, ***Oil*** and Gas Mining Lease-Allotted Indian Lands, Form 5-5432 (Jan. 1962), at § 10 [hereinafter cited as Allotted ***Oil*** and Gas Lease]; Bureau of Indian Affairs, United States Dept. of the Interior, ***Oil*** and Gas Mining Lease-Tribal Indian Lands, Form 5-5439 (Jan. 1962), at § 8 [hereinafter cited as Tribal ***Oil*** and Gas Lease]. [↑](#footnote-ref-353)
353. 353Allotted ***Oil*** and Gas Lease, *supra* note 352, at § 3(f); Tribal ***Oil*** and Gas Lease, *supra* note 352, at § 3(f). [↑](#footnote-ref-354)
354. 354*See* notes 236, 244 and accompanying text *supra*. [↑](#footnote-ref-355)
355. 355Bureau of Indian Affairs, United States Dept. of the Interior, Sand, Gravel, Pumice, and Building Stone Permit, Form 5-5433 (June 1956), at § 3; Bureau of Indian Affairs, United States Dept. of the Interior, Mineral Prospecting Permit (Nonexclusive and Nonoptional), Form 5-5436 (Oct. 1957), at § 2(c). [↑](#footnote-ref-356)
356. 356Bureau of Indian Affairs, United States Dept. of the Interior, Mineral Prospecting Permit (Exclusive With Option), Form 5-5437 (Oct. 1957), at § 2(d). [↑](#footnote-ref-357)
357. 357Bureau of Indian Affairs, United States Dept. of the Interior, Mining Lease Indian Lands (for Minerals other than ***Oil*** and Gas), Form 5-5446 (Oct. 1957), at § 12. [↑](#footnote-ref-358)
358. 358*Id*. at § 16. [↑](#footnote-ref-359)
359. 35925 C.F.R. § 172.16 (1981) (allotted lands); *id*. § 171.13(a) (tribal lands). *See also* Kell, *supra* note 26, at 267. [↑](#footnote-ref-360)
360. 360Act of June 2, 1957, ch. 120, 65 Stat. 51,52 (1951) (amending section 28 of the Enabling Act for the State of Arizona relating to the terms of leases of state-owned lands). [↑](#footnote-ref-361)
361. 361Ariz. Rev. Stat. Ann. § 27-560 (1976); Ariz. Admin. Comp. R. 12-5-707(D) (1976) (mineral [claim] leases); *Id*. R. 12-5-796 (1979) (***oil*** and gas leases). [↑](#footnote-ref-362)
362. 362The surface use regulations provide that the State Land Department may require mineral or ***oil*** and gas lessees to post a bond in a reasonable amount for damages to the interest of the surface lessee. *See* Ariz. Admin. Comp. R. 12-5-707(d) (1976). Where the surface lessee and the ***oil*** and gas lessee cannot agree on the amount of the damages, the Department will conduct an appraisal and establish the amount, subject to the lessee's right to appeal. *See id*. R. 12-5-796 (1979). This notion of arbitration may be useful in determining damages occasioned by simultaneous development. A similar provision also exists for a lessee of geothermal resources. *See id*. R. 12-5-858. [↑](#footnote-ref-363)
363. 363Ariz. Rev. Stat. Ann. § 27-652 (1976). [↑](#footnote-ref-364)
364. 364Arizona State Land Department Mineral (Claim) Lease, Form A-31, at ¶ 5 (mineral ores); Minerals are defined by statute as including "metals and minerals, exclusive of hydrocarbonds." Ariz. Rev. Stat. Ann. § 27-101(4) (1976). Arizona State Land Department, Prospecting Permit, Form 20-72, at ¶ 13. [↑](#footnote-ref-365)
365. 365Arizona State Land Department, Application for Mineral Lease on State Lands, Form 31-73, at ¶ 5. [↑](#footnote-ref-366)
366. 366Ariz. Rev. Stat. Ann. § 27-503 (1976); ***Oil*** and Gas Conservation Commission of the State of Arizona, Rules and Regulations § B-3 (1971) [hereinafter cited as ***Oil*** and Gas Rules]. New rules and regulations are scheduled for distribution in late 1982. [↑](#footnote-ref-367)
367. 367***Oil*** and Gas Rules, *supra* note 366, at § A-28. [↑](#footnote-ref-368)
368. 368Ariz. Rev. Stat. Ann. § 27-516 (1976). [↑](#footnote-ref-369)
369. 369***Oil*** and Gas Rules, *supra* note 366, §§ C-107(B),-109(A). [↑](#footnote-ref-370)
370. 370Colo. Rev. Stat. § 34-1-304 (1973). [↑](#footnote-ref-371)
371. 371*Id*. § 34-1-301. This statute appears to apply only to the more densely populated counties of the state. Commercial mineral deposits for purposes of this statute include limestone, coal, sand, gravel, and quarry aggregate. *Id*. § 34-1-302(1). [↑](#footnote-ref-372)
372. 372State Board of Land Commissioners, Colo. Dept. of Nat. Res., Mining Rules and Regulations ¶ 6 (rev. ed. 1973). [↑](#footnote-ref-373)
373. 373Letter to Phillip Wm. Lear from Thomas E. Betz, Minerals Director, Colorado Board of Land Commissioners (April 16, 1982). [↑](#footnote-ref-374)
374. 374State Board of Land Commissioners, Colo. Dept. of Nat. Res., Mining Lease, Form 226-3 ¶ B (reddendum clause) (rev. Oct. 1969). [↑](#footnote-ref-375)
375. 375State Board of Land Commissioners, Colo. Dept. of Nat. Res., Coal Mining Lease, Form SLB 3/23/77 ¶ B (reddendum clause) (rev. Mar. 1981) [hereinafter cited as Colorado Coal Lease]; State Board of Land Commissioners, Colo. Dept. of Nat. Res., Uranium Lease, Form SLB 3/22/77 ¶ B (reddendum clause) [hereinafter cited as Colorado Uranium Lease]. [↑](#footnote-ref-376)
376. 376Colorado Coal Lease, *supra* note 375, at ¶ 17; Colorado Uranium Lease, *supra* note 375, at ¶ 17. [↑](#footnote-ref-377)
377. 377State Board of Land Commissioners, Colo. Dept. of Nat. Res., Colorado ***Oil*** and Gas Lease, Form 193-4 (rev. Jan. 1981). [↑](#footnote-ref-378)
378. 378Colorado Coal Lease, *supra* note 375, at ¶ 23. [↑](#footnote-ref-379)
379. 379*Id*. [↑](#footnote-ref-380)
380. 380Colo. Rev. Stat. § 34-61-101 (1973); *See* ***Oil*** and Gas Conservation Commission of Colorado, Rules and Regulations § 209 (1981) [hereinafter cited as ***Oil*** and Gas Rules]. [↑](#footnote-ref-381)
381. 381Colo. Rev. Stat. § 34-61-102 (1973); ***Oil*** and Gas Rules, *supra* note 380, § 318. [↑](#footnote-ref-382)
382. 382Colo. Rev. Stat. § 34-61-103 (1973); ***Oil*** and Gas Rules, *supra* note 380, § 209. [↑](#footnote-ref-383)
383. 383Colo. Rev. Stat. § 34-61-104 (Supp. 1981); ***Oil*** and Gas Rules, *supra* note 380, § 209. [↑](#footnote-ref-384)
384. 384Colo. Rev. Stat. §§ 34-61-104,-105 (1973 and Supp. 1981); ***Oil*** and Gas Rules, *supra* note 380, § 209. [↑](#footnote-ref-385)
385. 385Colo. Rev. Stat. § 34-60-102 (Supp. 1981). [↑](#footnote-ref-386)
386. 386*Id*. § 34-60-103(11), (12) (1973). [↑](#footnote-ref-387)
387. 387*Id*. § 34-60-106(1)(c). The commission has adopted rules that require casing and plugging. *See* ***Oil*** and Gas Rules, *supra* note 380, §§ 317, 331. [↑](#footnote-ref-388)
388. 388Colo. Rev. Stat. § 34-64-103 (1973). [↑](#footnote-ref-389)
389. 389*Id*. § 34-64-104. [↑](#footnote-ref-390)
390. 390*Id*. § 34-64-107. [↑](#footnote-ref-391)
391. 391Colo. Rev. Stat. § 34-33-121 (Supp. 1981). [↑](#footnote-ref-392)
392. 392*Id*. [↑](#footnote-ref-393)
393. 393*Id*. § 34-33-126. [↑](#footnote-ref-394)
394. 394*Id*. § 34-33-126(b)(III). [↑](#footnote-ref-395)
395. 395*Id*. § 34-33-126(b)(IV). [↑](#footnote-ref-396)
396. 396*Id*. § 34-1-305 (Supp. 1981). [↑](#footnote-ref-397)
397. 397*Id*. §§ 34-70-101 to -110 (Supp. 1981). For leasing provisions see *id*. § 36-1-147 (Supp. 1981). [↑](#footnote-ref-398)
398. 398*Id*. § 34-70-106 (5)(e). [↑](#footnote-ref-399)
399. 399*See* Department of Lands, State of Idaho Rules and Regulations for ***Oil*** and Gas Leases on Idaho State Lands, Rule 17.j (1981). [↑](#footnote-ref-400)
400. 400*Id*. Rule 17.b. [↑](#footnote-ref-401)
401. 401*Id*. [↑](#footnote-ref-402)
402. 402Idaho State Board of Land Commissioners, Rules and Regulations Governing the Issuance of Geothermal Resources Leases, Rule 14.11 (1978). [↑](#footnote-ref-403)
403. 403*Id*. Rule 14.7. [↑](#footnote-ref-404)
404. 404*Id*. Rule 16.1, 16.3. [↑](#footnote-ref-405)
405. 405*Id*. Rule 17.1. [↑](#footnote-ref-406)
406. 406*Id*. Rule 24. [↑](#footnote-ref-407)
407. 407Department of Lands, State of Idaho, Mineral Lease, at § 18 (used for minerals other than ***oil***, gas, and other hydrocarbons). [↑](#footnote-ref-408)
408. 408*Id*. at § 22. [↑](#footnote-ref-409)
409. 409Department of Lands, State of Idaho, ***Oil*** and Gas Lease § 7; Department of Lands, State of Idaho, Geothermal Resources Lease. [↑](#footnote-ref-410)
410. 410*See* Idaho Bureau of Mines and Geology, Dept. of Lands, Rep. No. 82-2, Laws Governing the Staking and Filing of Mining Claims in Idaho (1982). A revised open report will be issued in the fall of 1982. Neither the Idaho Surface Mining Act, *see* Idaho Code §§ 47-1501 to -1518 (1977), nor regulations governing dredge and placer mining operations, *see* Department of Lands, State of Idaho, Rules and Regulations Governing Dredge and Placer Mining Operations in Idaho (1980), provide for simultaneous operational conflicts. [↑](#footnote-ref-411)
411. 411*See* Idaho Code §§ 47-315, -316 (1977). [↑](#footnote-ref-412)
412. 412*Id*. § 47-319(2), (3). [↑](#footnote-ref-413)
413. 413The Act contains a directional survey requirement which may provide protection. [↑](#footnote-ref-414)
414. 414Kan. Stat. Ann. §§ 55-601, -604(b), -701 (1976); Conservation Division, State Corp. Comm'n of the State of Kansas, General Rules and Regulations for the Conservation of Crude ***Oil*** and Natural Gas, Rules 82-2-202, -303, -307 (1982) [hereinafter cited as Kansas ***Oil*** and Gas Rules]; *see also* Mobil ***Oil*** Corp. v. State Corp. Comm., 227 Kan. 594, 608 P.2d 1325 (1980). [↑](#footnote-ref-415)
415. 415*See* Kan. Stat. Ann. §§ 55-602, -702 (1976). [↑](#footnote-ref-416)
416. 416*See id*. §§ 55-1201 to -1207. [↑](#footnote-ref-417)
417. 417*Id*. § 55-1203 (condemnation); *id*. § 55-1207 (leasing). [↑](#footnote-ref-418)
418. 418*Id*. § 55-1203. [↑](#footnote-ref-419)
419. 419*Id*. [↑](#footnote-ref-420)
420. 420*See* Kansas ***Oil*** and Gas Rules, *supra* note 414, Rule 82-2-220. [↑](#footnote-ref-421)
421. 421*Id*. Rule 82-2-220 (A)-(D). [↑](#footnote-ref-422)
422. 422*Id*. Rule 82-2-220 (I)-(I). [↑](#footnote-ref-423)
423. 423*Id*. Rule 82-2-220 (J). [↑](#footnote-ref-424)
424. 424Kan. Stat. Ann. §§ 49-402 to -430 (Cum. Supp. 1980). [↑](#footnote-ref-425)
425. 425*Id*. § 49-405b(a)(2)(C). [↑](#footnote-ref-426)
426. 426*Id*. § 49-405b(a)(2)(D). [↑](#footnote-ref-427)
427. 427*See* note 176 *supra*. [↑](#footnote-ref-428)
428. 428Mont. Code Ann. § 77-1-203 (1981). That provision provides:

     (1)   the board shall manage state lands under the multiple-use management concept defined as the management of all the various resources of the state lands so that:

     (a)   they are utilized in that combination best meeting the needs of the people and the beneficiaries of the trust, making the most judicious use of the land for some or all of those resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions and realizing that some land may be used for less than all of the resources; and

     (b)   harmonious and coordinated management of the various resources, each with the other, will result without impairment of the productivity of the land, with consideration being given to the relative values of the various resources.

     *Id*. § 77-1-203(1)(a), (b). This statute is similar in concept and language to its federal counterpart under the Classification and Multiple Use Act of 1964. *See* note 158 and accompanying text *supra*. [↑](#footnote-ref-429)
429. 429Mont. Code Ann. § 77-1-601 (1981). [↑](#footnote-ref-430)
430. 430*Id*. § 77-3-122. [↑](#footnote-ref-431)
431. 431*Id*. § 77-3-101(5). [↑](#footnote-ref-432)
432. 432*Id*. § 77-3-114. *See also* Mont. Admin. R. §§ 26.3.503(4), .603(4) (1981) (uranium and metalliferous minerals leasing regulations). [↑](#footnote-ref-433)
433. 433Mont. Code Ann. § 77-3-120(1) (1981). [↑](#footnote-ref-434)
434. 434*Id*. § 77-3-120(3). [↑](#footnote-ref-435)
435. 435*See id*. § 77-3-210. [↑](#footnote-ref-436)
436. 436*See id*. § 77-3-207. This provision provides expressly only for simultaneous grazing or agricultural leasing. [↑](#footnote-ref-437)
437. 437*Id*. § 77-3-305(2) (1981). [↑](#footnote-ref-438)
438. 438*Id*. § 77-3-306; Mont. Admin. R. § 26.3.317 (1979). [↑](#footnote-ref-439)
439. 439Mont. Code Ann. §§ 77-3-501 *et seq*. (1981). [↑](#footnote-ref-440)
440. 440*Id*. § 77-3-501. See *id*. §§ 82-10-301 *et seq*. for use of eminent domain by utility companies for underground gas storage. [↑](#footnote-ref-441)
441. 441*Id*. § 77-3-501. [↑](#footnote-ref-442)
442. 442*Id*. § 82-10-303(2). [↑](#footnote-ref-443)
443. 443*Id*. [↑](#footnote-ref-444)
444. 444*Id*. §§ 77-4-101 *et seq*; Mont. Admin. R. §§ 26-2-6(2)-S6070 *et seq*. (1981). [↑](#footnote-ref-445)
445. 445Mont. Code Ann. § 77-4-109 (1981); Mont. Admin. R. § 26-2.6(2)-S60140(4) (1981). [↑](#footnote-ref-446)
446. 446Mont. Admin. R. § 26-2.6(2)-S60130(1) (1981). [↑](#footnote-ref-447)
447. 447Board of Land Commissioners, State of Montana, ***Oil*** and Gas Lease § 1; Board of Land Commissioners, State of Montana, Nonmetalliferous Minerals Lease § 1 (Rev. August 19, 1974) [hereinafter cited as Montana Nonmetalliferous Lease]. [↑](#footnote-ref-448)
448. 448Board of Land Commissioners, State of Montana, ***Oil*** and Gas Lease, at § 1; Montana Nonmetalliferous Lease, *supra* note 447, at § 1. [↑](#footnote-ref-449)
449. 449Board of Land Commissioners, State of Montana Metalliferous Mineral or Gem Mining Lease § 1; Board of Land Commissioners, State of Montana, Uranium Mining Lease § 1. [↑](#footnote-ref-450)
450. 450Montana Nonmetalliferous Lease, *supra* note 447, at § 11. [↑](#footnote-ref-451)
451. 451*Id*. at § 12. No Montana coal or geothermal leases were examined for this survey. [↑](#footnote-ref-452)
452. 452Mont. Code Ann. § 82-11-121 (1981). [↑](#footnote-ref-453)
453. 453Mont. Admin. R. § 36.22.302(49) (1980). [↑](#footnote-ref-454)
454. 454Mont. Code Ann. § 82-11-123(3) (1981); Mont. Admin. R. § 36.22.1001 to .1003 (1981). [↑](#footnote-ref-455)
455. 455Mont. Code Ann. §§ 82-4-201 *et seq*. (1981). [↑](#footnote-ref-456)
456. 456*Id*. § 82-4-228. [↑](#footnote-ref-457)
457. 457*Id*. § 82-4-228(2)(b)(iii). [↑](#footnote-ref-458)
458. 458*Id*. § 82-4-228(2)(b)(iv). [↑](#footnote-ref-459)
459. 459*Id*. § 82-4-231. [↑](#footnote-ref-460)
460. 460Neb. Rev. Stat. § 57-901 (1978). [↑](#footnote-ref-461)
461. 461*Id*. § 57-902(1)(a). [↑](#footnote-ref-462)
462. 462*Id*. § 57-905(3)(e); Neb. Admin. R. 4(i)(ii)(r) (1978); Nebraska ***Oil*** and Gas Commission, Rules and Regulations, Rule 2269 (1981). [↑](#footnote-ref-463)
463. 463Neb. Rev. Stat. §§ 57-601 *et seq*. (1978). [↑](#footnote-ref-464)
464. 464*Id*. § 57-605 (1), (3), (6). *See generally* In Re Application of Kansas-Nebraska Natural Gas Company, Inc., No. 76-4, Order No. R-490 (Nebraska ***Oil*** and Gas Conservation Commission, March 30, 1976). [↑](#footnote-ref-465)
465. 465Neb. Rev. Stat. § 57-606 (1978). [↑](#footnote-ref-466)
466. 466*Id*. [↑](#footnote-ref-467)
467. 467*Id*. § 57-608. [↑](#footnote-ref-468)
468. 468Letter from Keith-Ann Marion, Land Agent, Nevada Division of State Lands to Phillip Wm. Lear (April 13, 1982) (indicating that Nevada has no statutory or regulatory scheme as only 0.2% of the land base in Nevada is state-owned) [hereinafter cited as Letter of April 13, 1982]. [↑](#footnote-ref-469)
469. 469Nev. Rev. Stat. §§ 522.010, .020, .060(1) (1979). [↑](#footnote-ref-470)
470. 470*Id*. at § 322.010-040. [↑](#footnote-ref-471)
471. 471Letter of April 13, 1982, *supra* note 468. [↑](#footnote-ref-472)
472. 472New Mexico Office of the Commissioner of Public Lands, Rules and Regulations Concerning the Sale, Lease, and Other Dispositions of State Trust Lands, Rule 3.001 (1981). [↑](#footnote-ref-473)
473. 473*Id*. Rule 4.001. [↑](#footnote-ref-474)
474. 474*Id*. Rule 5.001. [↑](#footnote-ref-475)
475. 475*Id*. Rule 6.001. [↑](#footnote-ref-476)
476. 476*Id*. Rule 1.001. [↑](#footnote-ref-477)
477. 477*Id*. Rule 2.002. [↑](#footnote-ref-478)
478. 478*Id*. Rule 1.061. [↑](#footnote-ref-479)
479. 479*Id*. [↑](#footnote-ref-480)
480. 480State Land Office, State of New Mexico, Coal Mining Lease, Form M-3 (Rev. July, 1981) ¶ 2(b); State Land Office, State of New Mexico, Potash Mining Lease, Form M-10 § 3(a) (Rev. July 30, 1981); State Land Office, State of New Mexico, Geothermal Resources Lease, Form GEO-2 ¶ 1 (Rev. January, 1980) [hereinafter cited as Geothermal Resources Lease]; State Land Office, State of New Mexico, Salt Mining Lease, Form M-7 ¶ 10 (Rev. February, 1980) [hereinafter cited as Salt Mining Lease]; State Land Office, State of New Mexico, General Mining Lease, Form GM-2 ¶ 14 (Rev. January, 1980) [hereinafter cited as General Mining Lease]. [↑](#footnote-ref-481)
481. 481Geothermal Mining Lease, *supra* note 480, at ¶ 19; Salt Mining Lease, *supra* note 480, at ¶ 12; General Mining Lease, *supra* note 480, at ¶ 16. [↑](#footnote-ref-482)
482. 482N.M. Stat. Ann. §§ 19-10-3, -4 (1978). [↑](#footnote-ref-483)
483. 483*Id*. § 19-10-4. [↑](#footnote-ref-484)
484. 484*Id*. § 19-8-33. [↑](#footnote-ref-485)
485. 485*Id*. § 69-25A-26(B). [↑](#footnote-ref-486)
486. 486*Id*. §§ 70-2-6(A), 70-2-12(16), (17). [↑](#footnote-ref-487)
487. 487*Id*. §§ 70-2-12(16), (17). [↑](#footnote-ref-488)
488. 488In re Application of the ***Oil*** Conservation Commission on Its Own Motion for an Order Revising Order R-111 Issued In Case 278 No. 278, Order No. R-111-A (New Mexico ***Oil*** Conservation Commission 1980). (Known as the Rules and Regulations Governing the Exploration of ***Oil*** and Gas in Certain Areas Herein Defined, which are known to contain Potash Reserves) (1980) [hereinafter cited as Potash Rules.] [↑](#footnote-ref-489)
489. 489Potash Rules, *supra* note 488, at III(2). [↑](#footnote-ref-490)
490. 490*Id*. at IV, VI, VII. [↑](#footnote-ref-491)
491. 491*Id*. at VII. [↑](#footnote-ref-492)
492. 492Only two cases have been appealed to New Mexico District Court (for Eddy County), each of which was dismissed before judgment. Pan Am. Petroleum Corp. v. ***Oil*** Conservation Comm., No. 22060 (Eddy County, August 31, 1965) (***oil*** and gas operator under a preexisting lease prohibited from access to his minerals in favor of subsequent potash lease). Phillips Petroleum Co. v. ***Oil*** Conservation Comm., No. 28718 (Eddy County, 1973) (District Court for Eddy County dismissed action for mootness as the United States Geological Survey had denied the application for permit to drill following an adverse ruling on the application by the ***Oil*** Conservation Commission.) [↑](#footnote-ref-493)
493. 493*See* notes 283-284 and accompanying text *supra*. [↑](#footnote-ref-494)
494. 494Croft, *supra* note 7, at 51. [↑](#footnote-ref-495)
495. 495*Id*., citing transcript of hearing in *Pan Am Petroleum Corporation, supra* note 492. [↑](#footnote-ref-496)
496. 496N. M. Stat. Ann. § 70-6-4(B) (C) and (D) (Supp. 1981). A natural gas company must attempt to acquire a reservoir by option, lease, or sale prior to instituting eminent domain proceedings. *Id*. § 70-6-3 (1978). [↑](#footnote-ref-497)
497. 497*Id*. § 70-6-4(G) (Supp. 1981). [↑](#footnote-ref-498)
498. 498*Id*. § 70-6-8 (1978). [↑](#footnote-ref-499)
499. 499*See generally id*. §§ 70-6-1 *et seq*. [↑](#footnote-ref-500)
500. 500*Id*. §§ 69-25A-1 *et seq*. [↑](#footnote-ref-501)
501. 501*Id*. § 69-25A-20(B)(1). [↑](#footnote-ref-502)
502. 502*Id*. [↑](#footnote-ref-503)
503. 503*Id*. § 69-25A-26(E)(2)(c). [↑](#footnote-ref-504)
504. 504*Id*. § 69-25-A-26(E)(2)(d). [↑](#footnote-ref-505)
505. 505The percentages reflect the quantum of federal lands in each of the following states: Arizona 44.0%, Colorado 35.5%, Idaho 63.7%, Kansas 1.3%, Montana 29.7%, Nebraska 1.4%, Nevada 86.1%, New Mexico 33.2%, North Dakota 5.3%, South Dakota 7.1%, Utah 63.6%, and Wyoming 48.6%. Bureau of the Census, United States Dept. of Commerce, Statistical Abstract of the United States 225 (1981). [↑](#footnote-ref-506)
506. 506*See* N.D. Cent. Code §§ 38-15-01 to -05 (1980). *See generally* Norvell, *supra* note 129, at 23; Comment, *supra* note 131, at 915-16. [↑](#footnote-ref-507)
507. 507*See* N.D. Cent. Code § 38-15-01 (1980). [↑](#footnote-ref-508)
508. 508*See id*. § 38-15-03(2). [↑](#footnote-ref-509)
509. 509*See id*. § 38-15-03(1). Multiple mineral conflict regulations under authority of this chapter should be available by 1982. [↑](#footnote-ref-510)
510. 510*See* note 158 and accompanying text *supra*. [↑](#footnote-ref-511)
511. 511N.D. Cent. Code § 15-05-09 (1980). The Board of University and School Lands may issue leases on state lands for "***oil***, gas, coal, cement materials, sodium sulfate, sand and gravel, road material, building stone, chemical substances, metallic ores, or colloidal or other clays...." [↑](#footnote-ref-512)
512. 512*See id*. § 38-08-04. [↑](#footnote-ref-513)
513. 513*See id*. § 38-08-01, -02, -04. [↑](#footnote-ref-514)
514. 514*See id*. § 38-08-03(1)(c); N.D. Admin. Code § 43-02-03-05-06 (1981). [↑](#footnote-ref-515)
515. 515*See* N.D. Admin. Code § 43-02-02-05 (1981). [↑](#footnote-ref-516)
516. 516*See id*. § 43-02-02-24. [↑](#footnote-ref-517)
517. 517*See* N.D. Cent. Code § 38-14.1-05(2)(c) (1980). [↑](#footnote-ref-518)
518. 518*See id*. § 38-14.1-05(2)(d). [↑](#footnote-ref-519)
519. 519*See* S.D. Codified Laws Ann. § 5-7-22 (1980). [↑](#footnote-ref-520)
520. 520S.D. Codified Laws Ann. §§ 45-9-1 to -33 (1967 & Supp. 1980); S.D. Admin. R. 52:02:03:14, -15 (1974). [↑](#footnote-ref-521)
521. 521Utah Code Ann. § 65-1-18 (Supp. 1981). The relevant language reads as follows:

     In furtherance of the principle of multiple use of state lands, the division, upon approval of the board, may grant a lease for the prospecting, exploration, development, and production of any mineral, notwithstanding the issuance of other lease or leases on the same land for other minerals, and shall include in such lease suitable stipulations for simultaneous operation. The division shall not issue more than one outstanding lease for the same purpose on the same land.

     *See also* Board of State Lands, State of Utah, Rules and Regulations Governing the Issuance of Mineral Leases (1981) [hereinafter cited as State Land Board Rules]. [↑](#footnote-ref-522)
522. 522State Land Board Rules, *supra* note 521, Rule 11(e). [↑](#footnote-ref-523)
523. 523*Id*. [↑](#footnote-ref-524)
524. 524*Id*. [↑](#footnote-ref-525)
525. 525Interview with D. Gayle Prince, Asst. Director of the Utah Division of State Lands in Salt Lake City (June 15, 1982). [↑](#footnote-ref-526)
526. 5261959 Utah Laws, ch. 132, § 1. [↑](#footnote-ref-527)
527. 5271967 Utah Laws, ch. 183, § 2. [↑](#footnote-ref-528)
528. 528Morgan v. Utah Bd. of State Lands, 21 Utah 2d 364, 367, 445 P.2d 776, 777 (1968). [↑](#footnote-ref-529)
529. 529State Land Board Rules, *supra* note 521, Rule 22. [↑](#footnote-ref-530)
530. 530*Id*. [↑](#footnote-ref-531)
531. 531Utah Resources Int'l Inc. v. Utah Bd. of State Lands, 26 Utah 2d 342, 345-57, 489 P.2d 615, 616-18 (1971). [↑](#footnote-ref-532)
532. 532Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Coal, Form 0293d Art. V (July 1981) [hereinafter cited as Utah Coal Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for ***Oil*** Shale, Form 0294d Art. V (July 1981) [hereinafter cited as Utah ***Oil*** Shale Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Metalliferous Minerals, Form 0292d Art. V (July 1981) [hereinafter cited as Utah Metalliferous Minerals Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Potash (and Associated Minerals), Form 0298d Art. V (July 1981) [hereinafter cited as Utah Potash Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Phosphate, Form 0297d Art. V (July 1981) [hereinafter cited as Utah Phosphate Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Clay, Form 0303d Art. V (July 1981) [hereinafter cited as Utah Clay Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Lease for Gemstone, Form 0304d Art. V (July 1981) [hereinafter cited as Utah Gemstone Lease]; Board of State Lands, Utah Dept. of Nat. Res., Utah State Gypsum Lease Form 0299d [hereinafter cited as Utah Gypsum Lease]; Utah State Lease for Gilsonite, Form 0302d Art. V (July 1981) [hereinafter cited as Utah Gilsonite Lease]. Utah State ***Oil***, Gas, and Hydrocarbon Lease, Form 0291d § 5(b) (July 1981) [hereinafter cited as Utah ***Oil***, Gas and Hydrocarbon Lease]. Leases for limestone, fossils, lava aggregate, obsidian, and geothermal resources are customized on a case by case basis. Lease forms for Great Salt Lake brines are contained in the State Land Board Rules, *supra* note 521, at Rule 24. [↑](#footnote-ref-533)
533. 533Utah Coal Lease, *supra* note 532, at Art. XII; Utah ***Oil*** Shale Lease, *supra* note 532, at Art. XII; Utah Metalliferous Minerals Lease, *supra* note 532 at Art. XII; Utah Potash Lease, *supra* note 532, at Art. XV; Utah Phosphate Lease, *supra* note 532, at Art. XII; Utah Gemstone Lease, *supra* note 532, at Art. XII; Utah Gypsum Lease, *supra* note 532, at Art. XII; Utah Gilsonite Lease, *supra* note 532, at Art. XII. The Utah ***Oil***, Gas and Hydrocarbon Lease, *supra* note 532, lacks a comparable provision. [↑](#footnote-ref-534)
534. 534Utah Coal Lease, *supra* note 532, at Art. XIII; Utah ***Oil*** Shale Lease, *supra* note 532, at Art. XIII; Utah Metalliferous Minerals Lease, *supra* note 532, at Art. XIII; Utah Potash Lease, *supra* note 532, at Art. XV; Utah Phosphate Lease, *supra* note 532, at Art. XIII; Utah Gemstone Lease, *supra* note 532, at Art. XIII; Utah Gypsum Lease, *supra* note 532, at XII; Utah Gilsonite Lease, *supra* note 532, at Art. XIII. [↑](#footnote-ref-535)
535. 535Utah ***Oil***, Gas and Hydrocarbon Lease, *supra* note 532, at § 11. *See also id*. at § 6(b)(2). [↑](#footnote-ref-536)
536. 536*Id*. at § 6(b)(6). [↑](#footnote-ref-537)
537. 537*See* notes 236, 244 and accompanying text *supra*. [↑](#footnote-ref-538)
538. 538*See* notes 267-268 and accompanying text *supra*. [↑](#footnote-ref-539)
539. 539Utah Code Ann. §§ 65-1-99, -104(1978). *See generally* Croft, *supra* note 7, at 53-55, 64; Schissler, *supra* note 39, at 245. [↑](#footnote-ref-540)
540. 540Utah Code Ann. §§ 65-1-100, -105 (1978). [↑](#footnote-ref-541)
541. 541Op. Utah Att'y Gen. to Lee E. Young (July 14, 1961) (regarding the subordination of outstanding ***oil*** and gas leases to rights of subsequent potash lessees) [hereinafter referred to as 1961 Op. Att'y Gen.]. [↑](#footnote-ref-542)
542. 542Interview with D. Gayle Prince, Assistant Director, Utah Division of State Lands in Salt Lake City (May 13, 1982). [↑](#footnote-ref-543)
543. 543Utah Code Ann. §§ 40-6-1 to -2 (1981). [↑](#footnote-ref-544)
544. 544*Id*. § 40-6-5(c). [↑](#footnote-ref-545)
545. 545*Id*. § 40-6-3.3(1). [↑](#footnote-ref-546)
546. 546*Id*. § 40-6-3.3(4). [↑](#footnote-ref-547)
547. 547*Id*. § 40-6-5(c)(4). [↑](#footnote-ref-548)
548. 548*See* 1961 Op. Att'y Gen. *supra* note 541. "[U]nder Section 1 of the ***Oil*** and Gas Conservation Act, a broad interpretation of waste would include protection to all minerals, both ***oil*** and gas and non-hydrocarbon substances." *Id*. [↑](#footnote-ref-549)
549. 549Division of ***Oil***, Gas and Mining, Utah Dept. of Nat. Res., General Rules and Regulations and Rules of Practice and Procedure, Rule C-23(a) (1978). [↑](#footnote-ref-550)
550. 550*Id*. [↑](#footnote-ref-551)
551. 551*Id*. Rule C-23(a)(8). [↑](#footnote-ref-552)
552. 552*Id*. Rule C-23(a). [↑](#footnote-ref-553)
553. 553*Id*. Rule C-25(a). [↑](#footnote-ref-554)
554. 554*Id*. Rule C-26(a). [↑](#footnote-ref-555)
555. 555Utah Code Ann. § 78-34-1(b)(Supp. 1981). [↑](#footnote-ref-556)
556. 556*Id*. § 78-34-2 (1977). [↑](#footnote-ref-557)
557. 557*Id*. § 40-6-5(c). [↑](#footnote-ref-558)
558. 558*Id*. § 40-10-18(2)(a) (1981). [↑](#footnote-ref-559)
559. 559*Id*. [↑](#footnote-ref-560)
560. 560*Id*. § 40-10-24(1)(c)(iii). [↑](#footnote-ref-561)
561. 561*Id*. § 40-10-24(1)(c)(iv). [↑](#footnote-ref-562)
562. 562Order, In the Matter of the Application of Mountain Fuel Supply Co. for a Reservoir Status Determination Pursuant to Section 107 of the Natural Gas Policy Act of 1978, Utah Board of ***Oil***, Gas and Mining, Cause No. K-123-1 (July 22, 1980). [↑](#footnote-ref-563)
563. 563Board of Land Commissions and Wyoming Farm Loan Board, Rules and Regulations Governing Leasing of Sub-Surface Resources § 6(b) (1982). [↑](#footnote-ref-564)
564. 564*Id*. [↑](#footnote-ref-565)
565. 565*Id*. § 4(c). [↑](#footnote-ref-566)
566. 566*Id*. § 4(d). [↑](#footnote-ref-567)
567. 567*Id*. § 26(a). [↑](#footnote-ref-568)
568. 568*Id*. [↑](#footnote-ref-569)
569. 569*Id*. § 26(b). [↑](#footnote-ref-570)
570. 570*Id*. § 26(c). [↑](#footnote-ref-571)
571. 571*Id*. [↑](#footnote-ref-572)
572. 572*Id*. [↑](#footnote-ref-573)
573. 573*Id*. § 26(d). [↑](#footnote-ref-574)
574. 574*Id*. § 26(d)(1). [↑](#footnote-ref-575)
575. 575*Id*. § 26(d)(2). [↑](#footnote-ref-576)
576. 576*Id*. [↑](#footnote-ref-577)
577. 577*Id*. § 26(d)(3). [↑](#footnote-ref-578)
578. 578*Id*. [↑](#footnote-ref-579)
579. 579*Id*. § 26(d)(4). [↑](#footnote-ref-580)
580. 580*Id*. § 26(d)(5). [↑](#footnote-ref-581)
581. 581State of Wyoming, Board of Land Commissioners, ***Oil*** and Gas Lease Form, ***Oil*** and Gas Lease Terms (April 1, 1982) [hereinafter referred to as Wyoming ***Oil*** and Gas Lease]. [↑](#footnote-ref-582)
582. 582*Id*. [↑](#footnote-ref-583)
583. 583*See* notes 236 and 537 and accompanying text *supra*. [↑](#footnote-ref-584)
584. 584Wyoming ***Oil*** and Gas Lease, *supra* note 581, at § 2(b). [↑](#footnote-ref-585)
585. 585State of Wyoming Coal Mining Lease § 4(a) (Rev. Oct. 1, 1978) [hereinafter referred to as Wyoming Coal Lease]; State of Wyoming, Metallic and Nonmetallic Rocks and Minerals Mining Lease, S-Form 2 § 4(a) (amended Feb. 7, 1980) [hereinafter referred to as Wyoming Mining Lease]; Bentonite Strip-Mining Lease § 4(a) (1981) [hereinafter referred to as Wyoming Bentonite Lease]. [↑](#footnote-ref-586)
586. 586*Id*. [↑](#footnote-ref-587)
587. 587*Id*. [↑](#footnote-ref-588)
588. 588Wyoming Coal Lease, *supra* note 585, at § 4(j); Wyoming Mining Lease, *supra* note 585, at § 4(j); Wyoming Bentonite Lease, *supra* note 585, at § 4(j); Wyoming ***Oil*** and Gas Lease, *supra* note 581, at § 1(1). The ***oil*** and gas lease reference is found in the context of compliance with all orders and requirements of the board with regard to preservation of the property. Deferment of lease obligations could be considered to be such a rule. [↑](#footnote-ref-589)
589. 589Wyo. Stat. §§ 30-5-102, -121 (1977); Wyoming ***Oil*** and Gas Conservation Commission, Rules and Regulations, Rule 201 [hereinafter cited as ***Oil*** and Gas Rules]. [↑](#footnote-ref-590)
590. 590Wyo. Stat. § 30-5-104(d)(i)(C) (1977); ***Oil*** and Gas Rules, *supra* note 589, Rules 315, 320. [↑](#footnote-ref-591)
591. 591Wyo. Stat. § 30-5-104(c) (1977). [↑](#footnote-ref-592)
592. 592*Id*. § 30-3-459. [↑](#footnote-ref-593)
593. 593*Id*. § 30-11-425(b)(ii)(C) (Supp. 1982). [↑](#footnote-ref-594)
594. 594*Id*. § 30-11-425(b)(ii)(D). [↑](#footnote-ref-595)
595. 595Comment, *supra* note 131, at 916. [↑](#footnote-ref-596)
596. 596152 Pa. 286, 25 A. 597 (1893). *See also* Schissler, *supra* note 39, at 236; Comment, *supra* note 131, at 917-21. [↑](#footnote-ref-597)
597. 59725 A. at 597. [↑](#footnote-ref-598)
598. 598*Id*. [↑](#footnote-ref-599)
599. 599*Id*. [↑](#footnote-ref-600)
600. 600*Id*. [↑](#footnote-ref-601)
601. 601*Id*. [↑](#footnote-ref-602)
602. 602*Id*. [↑](#footnote-ref-603)
603. 60338 Pa. C. 151 (1910). [↑](#footnote-ref-604)
604. 604*Id*. at 156-57. [↑](#footnote-ref-605)
605. 60568 Pa. Super. 372 (1917). [↑](#footnote-ref-606)
606. 606*Id*. [↑](#footnote-ref-607)
607. 607229 Ind. 648, 99 N.E.2d 427 (1951). [↑](#footnote-ref-608)
608. 60899 N.E.2d at 429-30. [↑](#footnote-ref-609)
609. 609Comment, *supra* note 131, at 921. A third approach has been to declare the estates in different strata to be in reciprocal servitude, one to another; being the servitudes of access and support. *Chartiers Block Coal Co*., 25 A., 600 (Williams, J., concurring). [↑](#footnote-ref-610)
610. 610*See generally* 4 *American Law of Mining, supra* note 150; Twitty, "Law of Subjacent Support," 6 *Rocky Mt. Min. L. Inst*. 497 (1961). [↑](#footnote-ref-611)
611. 611Goodykoontz v. White Star Mining Co., 94 W. Va. 654, 119 S.E. 862, 864 (1923). [↑](#footnote-ref-612)
612. 612Marguette Cement Mining Co. v. Oglesby Coal Co., 253 F. 107, 122 (N.D. Ill. 1918). [↑](#footnote-ref-613)
613. 613Noonan v. Pardee, 200 Pa. 474, 50 A. 255, at 256 (1901). [↑](#footnote-ref-614)
614. 614Smith v. Moore, 474 P.2d 794 (Colo. 1970). Although this is a surface subsidence case, the principles would apply accommodating two mineral owners owning subjacent fees. [↑](#footnote-ref-615)
615. 615Telford v. Jenning Producing Co., 203 F. 456 (7th Cir. 1913). [↑](#footnote-ref-616)
616. 616Kemmerer v. Midland ***Oil*** and Drilling Co., 229 F. 872, 875 (8th Cir. 1915). [↑](#footnote-ref-617)
617. 617229 Ind. 648, 99 N.E.2d 427 (1951). [↑](#footnote-ref-618)
618. 618Broyles, *supra* note 131, at 482. *See also* Lopez, *supra* note 2, at 1007. [↑](#footnote-ref-619)
619. 619470 S.W.2d 618, 621 (Tex. 1971). [↑](#footnote-ref-620)
620. 620511 S.W.2d 160, 163 (Ark. 1974). [↑](#footnote-ref-621)
621. 621551 P.2d 509, 511 (Utah 1976). [↑](#footnote-ref-622)
622. 622283 N.W.2d 131, 135-37 (N.D. 1979). [↑](#footnote-ref-623)
623. 623Broyles, *supra* note 131, at 483. [↑](#footnote-ref-624)
624. 624Comment, *supra* note 131, at 923-32; Broyles, *supra* note 131; Norvell, *supra* note 129, at\_\_. [↑](#footnote-ref-625)
625. 625Broyles, *supra* note 131, at 481. [↑](#footnote-ref-626)
626. 626Humble ***Oil*** and Refining Co. v. West, 508 S.W.2d 812, 815-16 (Tex. 1974); *see generally* Norvell, *supra* note 129. [↑](#footnote-ref-627)
627. 627Norvell, *supra* note 129. [↑](#footnote-ref-628)
628. 628T.W. Phillips Gas and ***Oil*** Co. v. Manor Coal Co., 68 Pa. Super. 372 (1917). [↑](#footnote-ref-629)
629. 629Norvell, *supra* note 129. [↑](#footnote-ref-630)
630. 630Coxe v. Lehigh Valley R.R. Co., 398 Pa. 424, 158 A.2d 782 (1960); Barker v. Mintz, 73 Colo. 262, 215 P. 534 (1923). [↑](#footnote-ref-631)
631. 631Gearhart v. McAlester Fuel Co., 199 Ark. 981, 136 S.W.2d 679, at 690 (1940). [↑](#footnote-ref-632)
632. 632304 U.S. 64, 78 (1938). [↑](#footnote-ref-633)
633. 633*Chartiers Block* 152 Pa. 286, 25 A. 597, at 600. [↑](#footnote-ref-634)
634. 634*Pyramid Coal Corp*., 229 Ind. 648, 99 N.E.2d 427. [↑](#footnote-ref-635)
635. 635Guffrey v. Stroud, 16 S.W.2d 527 (Tex. Comm. App. 1929). [↑](#footnote-ref-636)
636. 636Rend v. Venture ***Oil*** Co., 48 F. 248 (C.C.W.D.Pa. 1891). [↑](#footnote-ref-637)
637. 637Koch Industries, Inc. v. Haxton, 414 F. Supp. 942 (D. Okla. 1976). [↑](#footnote-ref-638)
638. 638Petition for Review 6, 7, Pan Am. Petroleum Corp., *supra* note 492. Application for Rehearing 6, Phillips Petroleum Co., *supra* note 492. [↑](#footnote-ref-639)
639. 639Cohen, *supra* note 69; Craig & Myers, *supra* note 13; McGinley, *supra* note 65; Olson, *supra* note 65; Note, "On Leasing Gas from Coal Seams," 47 *W. Va. L.Q*. 211 (1941). [↑](#footnote-ref-640)
640. 640United States Steel Corp. v. Hoge, 6 Pa.D.& C. 3d 64 (1978). [↑](#footnote-ref-641)
641. 641United States Steel Corp. v. Hoge, No. 682 In Equity (C.P. Greene County, Pa., Mar. 24, 1980) (Adjudication and Decree Nisi). [↑](#footnote-ref-642)
642. 642United States Steel Corp. v. Hoge, No. 682 In Equity (C.P. Greene County, Pa., Sept. 29, 1980) (Opinion and Final Order). [↑](#footnote-ref-643)
643. 643*See* Carlin v. Cassriel, 50 L.D. 383 (1924). [↑](#footnote-ref-644)
644. 644*See* text accompanying note 249 *supra. See also* Schissler, *supra* note 39, at 257 and n.137. [↑](#footnote-ref-645)
645. 645Regional Sol. Op., *supra* note 260, at 2; Interview with E.W. Guynn, District ***Oil*** and Gas Engineer, Salt Lake District in Salt Lake City (May 4, 1981); Fisher Interview, *supra* note 254. *See generally* Schissler, *supra* note 39, at 258 n.137. [↑](#footnote-ref-646)
646. 646*See* Schissler, supra note 39, at 256; Deering, *supra* note 2, at 604. [↑](#footnote-ref-647)
647. 647Norvell, *supra* note 129, at 22. [↑](#footnote-ref-648)
648. 648Schissler, *supra* note 39, at 260 n.139. [↑](#footnote-ref-649)
649. 649*Id*. at 257. [↑](#footnote-ref-650)
650. 650Croft, *supra* note 7, at 60-61. [↑](#footnote-ref-651)
651. 651Sir Edward Coke, 4 Inst. 109 (1964), *quoted in* Note, *supra* note 639, at 211 n.3. [↑](#footnote-ref-652)
652. 652*Chartiers Block*, 25 A. at 598. [↑](#footnote-ref-653)
653. 65368 Pa. Super. at 384-85. [↑](#footnote-ref-654)
654. 654Deering, *supra* note 2, at 570-76. [↑](#footnote-ref-655)
655. 655601 F.2d 1080 (9th Cir. 1979), *aff'd*, 100 S.Ct. 1593 (1980). [↑](#footnote-ref-656)
656. 656The author would not examine these records if the client needs only an ownership take-off report or a title examination limited only to federal, Indian, or state records. [↑](#footnote-ref-657)
657. 657*See generally* MESA Information Report 1052, *supra* note 52, at 8. [↑](#footnote-ref-658)