The Transformation on Public Lands

Part 1

by

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INTRODUCTION

Federal public lands comprise nearly one-third of the United States' entire land base.[1] For the most part, these lands have been managed according to the multiple-use doctrine.[2] Con-

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1. *See* BUREAU OF LAND MANAGEMENT, U.S. DEP'T OF THE INTERIOR, PUBLIC LAND STATISTICS 5 (1991) (the federal government owns almost 30% of the land within the United States). The amount of federally owned land has remained relatively constant over the past two decades, decreasing slightly from 761 million acres in 1973 to 657 million acres in 1994. *Compare* BUREAU OF LAND MANAGEMENT, U.S. DEP'T OF THE INTERIOR, PUBLIC LAND STATISTICS 10 (1974) *with* BUREAU OF LAND MANAGEMENT, U.S. DEP'T OF THE INTERIOR, PUBLIC LAND STATISTICS 6 (1996). Most of these federally-owned lands are subject to the management and administrative control of four federal agencies, the Bureau of Land Management (BLM), the Fish and Wildlife Service (FWS), the National Park Service (NPS), and the Forest Service. The BLM, FWS, and NPS are within the U.S. Department of the Interior and the Forest Service is within the U.S. Department of Agriculture. The term "multiple use" is defined in FLPMA for BLM lands as "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources . . . ." 43 U.S.C. § 1702(c) (1994). For Forest Service lands, multiple use is deemed satisfied under the Multiple-Use Sustained-Yield Act of 1960 when national forests are administered for "outdoor recreation, range, timber, watershed, and wildlife and fish purposes." 16 U.S.C. § 528 (1994).

2. The agencies with the most acreage under their control, the BLM and the Forest Service, have, by tradition and statutory mandate, imposed a multiple use

ceptually, this doctrine contemplates the simultaneous production of a variety of resources and outputs through scientific planning.[3] In actuality, federal land managers have favored particular kinds of uses— the development and extraction of commodity resources, including minerals, energy resources, timber, and livestock forage.[4] In recent years, however, America's public

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management philosophy on their lands. *See* 3 GEORGE CAMERON COGGINS & ROBERT L. GLICKSMAN, PUBLIC NATURAL RESOURCES LAW § 16.01[1] (1997); CHARLES F. WILKINSON, CROSSING THE NEXT MERIDIAN: LAND, WATER, AND THE FUTURE OF THE WEST 20-21, 75-218 (1992). The BLM and Forest Service control 463 million acres— 272 million acres for BLM and 191 million acres for the Forest Service. These "multiple use" lands constitute over 73% of the federal land base. *Id.*

3. The standard statutory definition of multiple use is found in the Multiple-Use Sustained-Yield Act of 1960:

> 'Multiple use' means: The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; . . . 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 . . . .

16 U.S.C. § 531(a) (1994).

Similar definitions appear in the organic acts for the two primary federal multiple use agencies, the Bureau of Land Management and the Forest Service. *See* Federal Land Management and Policy Act of 1976 § 1702(c), 43 U.S.C. § 1701 (1994) (BLM); National Forest Management Act of 1976, 16 U.S.C. § 1600 (1994) (Forest Service).

4. Another commodity resource found on public lands, water, will not be discussed in this article because of the unique nature of the legal relationship that exists between private parties and water "created" for private use through federal reclamation projects. Federal reclamation laws, particularly the Reclamation Act of 1902, ch. 1093, 32 Stat. 388, were intended to support farms in areas irrigated by federal reclamation projects. *See* Nevada v. United States, 463 U.S. 110, 115 (1983). Under these laws, private agricultural interests who agreed to repay the federal government's cost of constructing reclamation projects over a period of up to 50 years received irrigation water at a fraction of the government's cost of providing it. Federal taxpayers subsidized the remainder of the cost. *See* RICHARD W. WAHL, MARKETS FOR FEDERAL WATER: SUBSIDIES, PROPERTY RIGHTS, AND THE BUREAU OF RECLAMATION 11-25 (1989); U.S. GENERAL ACCOUNTING OFFICE, NATURAL RESOURCES MANAGEMENT ISSUES 16-17 (1992) (transition series no.17). Although this Article will not focus on water as a commodity resource on public lands, it should be pointed out that federal water is undergoing the same transformation as that experienced by the other commodity resources— minerals, timber, and forage. First, there has been a steep decline in the amount of activity associated with the use of the water commodity on federal lands. The last major authorization for reclamation construction projects occurred in the late 1960s. Between 1988 and 1994, the Bureau of Reclamation had to undergo a major reorganization as construction on projects authorized in the 1960s and earlier drew to an and. *See Bureau of Reclamation Home Page: Written in Water* (visited Mar. 16, 1999) <http://www.usbr.gov/main/written/contents.html> [hereinafter *Written in Water*]. Second, this decline in water projects on federal lands was caused in part by the American environmental movement's strong opposition to water development projects. *See id.* Third, existing Bureau of Reclamation reservoirs and project lands are increasingly being used for a noncommodity purpose— recreation. Between 1966 and 1990, the number of recreational visits to Bureau of Reclamation properties

lands have undergone a fundamental change. They are now dominated by just two non-consumptive uses— recreation and preservation.

The emergence of these dominant uses of public lands is a startling development. For nearly a century, this country's federally owned lands were valuable chiefly for their natural resources that could be removed by private commodity interests. What could have caused the dramatic and sudden change from a regime of resource extraction to a system of play and preservation? Moreover, since the new dominant uses seem to be strengthening their hold on public lands, the continued viability of multiple use as a management policy is questionable. It is internally contradictory to apply a multiple-use strategy to only two dominant uses, particularly in light of the inherent conflicts between these new dominant uses and the older extractive uses.[5] The problem is further aggravated by the reality that multiple use was historically grounded in commodity exploitation, the complete opposite of recreation and preservation.

Such changes suggest that future conflicts pertaining to public use will not be fought along the traditional lines of commodity versus noncommodity use. Indeed, that battle has already been largely conceded by commodity developers. Instead, the looming conflict in public land use will be between two former allies— recreation and preservation interests. Such a conflict is particularly likely to arise between low-impact, human-powered recreational users (preservationists) and high impact, motorized recreational users (recreationists).

Although the transformation from commodity to recreation and preservation-based use is the single most important event on public lands in the past two decades, it has received surprisingly little attention.[6] Part I of this Article presents data demonstrating the nature and extent of this change. The data illustrate

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nearly doubled, from 45 million to 80 million. *See* BUREAU OF RECLAMATION, DEP'T OF THE INTERIOR, 1991 SUMMARY STATISTICS: WATER, LAND, AND RELATED DATA 11 (1991).

5. Federal land management statutes usually pair multiple use with a companion concept: sustained yield. The term "sustained yield" means "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources . . . ." 16 U.S.C. § 531(b) (1994); 43 U.S.C. § 1702(h) (1994); *see also* 16 U.S.C. § 529 (1994); 43 U.S.C. § 1732(a) (1994). For many years, the idea of sustained yield justified decisions by federal land managers to maintain a given level of periodic output of commodity products, such as grazing on public rangelands or timber harvesting on Forest Service lands.

6. Some commentators have acknowledged the transformation. *See, e.g.*, THOMAS M. POWER, LOST LANDSCAPES AND FAILED ECONOMIES: THE SEARCH FOR A VALUE OF PLACE (1996); GUNDARS RUDZITIS, WILDERNESS AND THE CHANGING AMERICAN WEST (1996); WILKINSON, *supra* note 2.

that commodity uses of public lands, including timber harvests, forage for cattle and sheep, mining of hardrock minerals, and development of energy minerals, are in decline. Part I also shows that recreation on multiple-use lands is increasing at a dramatic pace, while lands dedicated to preservation are expanding both in scope and area. Part II examines why these changes have occurred, asserting that simple economics is the primary explanation. Part III questions the viability of multiple use as a management standard in light of the rise of two dominant uses. Multiple use has failed to accomplish its goal of simultaneously producing compatible resources. More significantly, the doctrine will likely fail to adequately referee the coming dispute between recreation and preservation.

Part IV offers an efficiency criterion as an alternative to the multiple-use land-management philosophy.[7] It explains how efficiency principles applied to public lands may deal more realistically with intangible recreational and nonuse values. Indeed, efficiency may also achieve what multiple use promised, yet failed to deliver: the allocation, development, and maintenance of public lands resources in order to bring about an overall increase in social welfare.[8]

More specifically, Part IV calculates the economic value of recreation and preservation uses by employing passive use values. These values, known as option and existence values, respectively, seek to measure the utility enjoyed by people from a resource. Option value measures what a person is willing to pay to reserve the future right to use the resource. Existence value quantifies the satisfaction derived from a resource's continuing existence, regardless of whether a person will ever use the resource. When option and existence values are employed to calculate an imputed market-clearing price that includes nonmarket benefits, the results are startling. The imputed market

7. Many scholars have attempted to formulate an alternative to multiple use as a preferred public lands management standard. *See, e.g.*, Robert L. Glicksman, *Fear and Loathing on the Federal Lands*, 45 U. KAN. L. REV. 647 (1997); Michael I. Jeffery, *Public Lands Reform: A Reluctant Leap into the Abyss*, 16 VA. ENVTL. L.J. 79 (1996); Michael C. Blumm, *Public Choice Theory and the Public Lands: Why "Multiple Use" Failed*, 18 HARV. ENVTL. L. REV. 405 (1994); Scott W. Hardt, *Federal Land Management in the Twenty-First Century: From Wise Use to Wise Stewardship*, 18 HARV. ENVTL. L. REV. 345 (1994); Robert B. Keiter, *Beyond the Boundary Line: Constructing a Law of Ecosystem Management*, 65 U. COLO. L. REV. 293 (1994); Steven E. Daniels, *Rethinking Dominant Use Management in the Forest-Planning Era*, 17 ENVTL. L. 483 (1987).

8. *See, e.g.*, John D. Leshy, *Sharing Federal Multiple-Use Lands—Historic Lessons and Speculations for the Future*, *in* RETHINKING THE FEDERAL LANDS 235 (Sterling Brubaker ed., 1984).

benefits of public lands devoted to recreation and preservation far exceed the economic benefits of commodity extraction uses. Furthermore, the data suggest that the value of preservation, a non-use, overwhelms the economic benefits of recreation and commodity uses. The Article concludes that these surprising results should be taken seriously because they suggest that current public lands policy is grossly inefficient. An efficiency framework seems far preferable to an outdated reliance on multiple use because existing policy does not take into account measurable non-market benefits of recreation and preservation.

I

CHANGING USES OF PUBLIC LANDS

Public lands have experienced a fundamental shift in use over the past thirty years. The traditional commodity uses identified with Western folklore— timber, grazing, and mining operations— play a relatively less important role in the modern economy of the New West than in times past. For instance, logging on national forest land is down from 12 billion board-feet a decade ago to less than 4 billion board-feet in 1998. Livestock grazing in the West is down from 17 million head in 1934 to 2 million today. In 1983, 8,500 oil and gas wells were drilled on public and private land, while in 1996 that number had fallen to 1,900 wells drilled. Between 1954 and 1998, the number of hardrock mines fell from 3,300 to about 1,000, and mining employment from 103,000 to 57,000.[9]

This decrease in commodity use parallels an emerging fact about public lands— they are chiefly valuable for non-consumptive uses. Outdoor recreation is a $350 billion industry (in terms of gross national product), with approximately $140 billion attributable to public lands.[10] Consequently, there is a growing demand for public lands from recreational users, and a corresponding commitment towards environmental preservation. The Forest Service and BLM recorded 345 million and 73 million

9. *See* Peter Chilson, *An Era Ends: Old Industries Face Reality*, HIGH COUNTRY NEWS, April 27, 1998, at 12-13. Some of the decline in the number of wells drilled is due to increased efficiency in petroleum exploration. With the introduction of 3-D seismology, drill crews are often certain that their wells will find an oil or gas reservoir, reducing the need for many exploratory wells. The reduction in hardrock mines must be analyzed in light of the mining industry's generally rising production levels and that industry's substantial contribution ($15 billion in 1995) to the U.S. economy. *Id.* at 12.

10. *See Center Completes Report on Federal Public Land Values*, RESOURCE LAW NOTES (Natural Resources Law Center, Univ. of Colo. School of Law, Boulder, Colo.), Summer 1998, at 7.

recreational visitor days in 1995, an enormous increase from previous levels. Furthermore, public lands set aside for preservation purposes, such as wildlife refuges and wilderness areas, have grown dramatically.[11] Even more land will be subject to preservation restrictions as a result of the Endangered Species Act[12] and the designation as wilderness of certain tracts of roadless areas identified in the public lands inventory.[13]

A. Historical Perspective

The recent transition in use of public lands is consistent with the historic pattern experienced by public land law. Policies governing public lands have evolved in a dynamic fashion that tend to mirror changes in the public perception about the proper role of these lands. From the birth of the United States to the mid-twentieth century, four distinct eras of public lands can be identified: acquisition, disposal, retention, and management.[14] Each has been characterized by its own set of laws that exemplified circumstances unique to the period. This pattern suggests that new eras reflect changing social values by the relative shifts in the demand for, and supply of, particular resources.

The era of acquisition arose from a political dispute between the newly created states seeking control of the Western territory.[15] Seven of the original thirteen colonies claimed the territory extending westward to the Mississippi River.[16] The remaining six feared that their political power would be diminished over time if those seven expanded in size and population. In response to these concerns, the Constitution granted the Western territories to the federal government rather than the states.[17] Thereafter, the federal government adopted a policy of expanding the westward territory by conquest and negotiation of treaties with foreign powers. The acquisition era, which ranged from colonial

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11. *See infra* notes 144-56 and 161-66 and accompanying text.

12. 16 U.S.C. §§ 1531-1544 (1994).

13. 43 U.S.C. § 1782 (1994).

14. *See, e.g.*, James L. Huffman, *The Inevitability of Private Rights in Public Lands*, 65 U. COLO. L. REV. 241, 245-54 (1994) (identifying "acquisition," "disposal," "retention," and "management" as four historical eras); *see also, e.g.*, MARION CLAWSON, THE FEDERAL LANDS REVISITED 15-39 (1983).

15. *See* Huffman, *supra* note 14, at 246.

16. The seven states with western land claims were Massachusetts, Connecticut, New York, Virginia, North Carolina, South Carolina, and Georgia. The five states without western land claims were Maryland, Delaware, New Jersey, Rhode Island, and New Hampshire. *See id.* at 246 n.18.

17. *See generally id.* at 246; Paul W. Gates, *The Federal Lands—Why We Retained Them*, *in* RETHINKING THE FEDERAL LANDS 35 (Sterling Brubaker ed., 1984).

times to 1867, led to a fourfold increase in United States land size in just one hundred years.[18]

Dual influences then led to a disposal era. This era promoted Jeffersonian democracy by providing land for the yeoman farmer, while, in keeping with more pragmatic Hamiltonian concerns, raising revenue to reduce the federal debt.[19] During this era, the federal government established surveys and a governing framework for the territories,[20] opened land to disposition through homestead acts,[21] and granted long corridors of alternating sections of land to railroads as an incentive to build tracks westward.[22] In addition to the land itself, various policies transferred resource rights to those seeking to develop the West.[23]

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18. *See* Huffman, *supra* note 14, at 246; *see also* CLAWSON, *supra* note 14, at 15-17. The major additions include: (1) Louisiana Purchase from France in 1803— 827,192 square miles; (2) Treaty with Spain for Florida and portions of Louisiana in 1819— 72,003 square miles; (3) Republic of Texas annexed in 1845— 390,143 square miles; (4) Oregon Compromise with Britain in 1846— 285,580 square miles; (5) Mexican Cessession of western states in 1848— 529,017 square miles; (6) Gadsden Purchase from Mexico in 1853— 29,640 square miles; (7) Alaskan Purchase from Russia in 1867— 586,412 square miles; (8) Hawaii annexed in 1898— 6,450 square miles. *See* BUREAU OF THE CENSUS, DEP'T OF COMMERCE, HISTORICAL STATISTICS OF THE UNITED STATES: COLONIAL TIMES TO 1970, at 428 (1975).

19. *See* Gates, *supra* note 17, at 36.

20. The Land Ordinance of 1785 established surveys of western lands and created the division of land into townships and sections. The Northwest Ordinance of 1787 governs the framework of new territories, and the process to statehood. *See* JAN G. LAITOS, NATURAL RESOURCES LAW: CASES AND MATERIALS 243 (1985).

21. Various homestead acts granted land to those who maintained and cultivated it for a specified number of years. *See, e.g.*, Preemption Act of 1841, ch. 16, 5 Stat. 453 (1841) (repealed 1891) (validating land claims to squatters of surveyed federal lands); Homestead Act of 1862, ch.75, 12 Stat. 392 (repealed 1976) (permitting any citizen over 21 years of age to claim up to 160 acres of land provided that the homesteader maintained and cultivated land for five years); Desert Land Act of 1877, 43 U.S.C §§ 321-339 (as amended 1994) (allowing a homesteader to claim up to 640 acres on the arid land west of the 100th meridian); Enlarged Homestead Act of 1909, ch. 160, §§ 1-6, 35 Stat. 639, 639-40 (1909) (repealed 1976) (enlarging the homestead lots to 320 acres for land designated by the USGS); Stock-Raising Homestead Act of 1916, 43 U.S.C. §§ 291-302 (repealed 1976, except § 299) (authorizing entry on 640 acres designated as valuable for grazing).

22. *See* Pacific Railway Act of 1862, ch. 120, 12 Stat. 489 (1862) (granting land for the first transcontinental line).

23. The Timber Culture Act transferred productive timberland in the Pacific Northwest to private landowners. Timber Culture Act, ch. 277, 17 Stat. 605 (1873) (repealed 1891). The Timber and Stone Act protected the right of state nonresidents to cut timber from unentered mining lands. Timber and Stone Act, ch. 151, 20 Stat. 89 (1873) (repealed 1955). The General Mining Law of 1872 permitted the free and open exploration of minerals on federal land and allowed miners to claim lands upon the discovery of minerals. General Mining Act of 1872, ch. 152, 17 Stat. 91 (1872) (current version at 30 U.S.C. §§ 21-42 (1994). *See generally* LAITOS, supra note 20, at 250-51; Huffman, *supra* note 14, at 248-49.

In response to perceived over-exploitation and wanton abuse of public lands by the private sector resulting from the disposal era, public land management policies entered the reservation era in the late nineteenth and early twentieth centuries.[24] A new conservation ethic prompted the federal government to reserve certain types of land and resources from disposition for private use.[25] Accordingly, Congress and the Executive Branch withdrew several mineral commodities and virtually all public rangeland from private entry and acquisition.[26]

The current management era began in the early twentieth century. It arose from a growing consensus to retain ownership and control the use of federal lands for the public good.[27] Once the federal government assumed the role of long-term owner rather than disposer, it faced the fundamental problem of any property owner— how to allocate these lands, and their resources, among competing uses. During the early part of the twentieth century, when demand on federal land was relatively low, management was "custodial" in nature and largely limited to trespass and fire prevention.[28] With the increasing demand for competing uses of public lands over the century, more sophisticated management tools became necessary.[29]

The concept of multiple use was deployed as a management tool for most federally-owned lands, particularly those of the Bureau of Land Management.[30] During the heyday of the multiple-

24. *See generally* CLAWSON, *supra* note 14, at 27; Gates, *supra* note 17, at 42-47.

25. *See generally* CLAWSON, *supra* note 14, at 28-31; Gates, *supra* note 17, at 48-53.

26. President Theodore Roosevelt reversed the principle of free access to mineral resources by withdrawing 66 million acres of coal land from all forms of entry in 1906. The Coal Lands Acts of 1909 and 1910 severed the right to the underlying coal from the surface estate and reserved the coal for the U.S. *See* LAITOS, *supra* note 20, at 266. The Mineral Leasing Act of 1920 withdrew energy minerals (coal, natural gas, and oil) from the locational system to the leasing system. Mineral Leasing Act of 1920, 30 U.S.C. §§ 181-287 (1994). The Taylor Grazing Act of 1934 signaled the final closure of the disposal period by creating a regulatory structure limiting grazing on public domain lands. Taylor Grazing Act of 1934, 43 U.S.C. § 315-315(r) (1994); *see also* Huffman, *supra* note 14, at 250-52. For example, in response to excessive timber cutting, the General Revision Act of 1891 authorized the President to set aside public domain forest lands as forest reserves. General Revision Act of 1891, ch. 561, § 24, 26 Stat. 1095, 1103 (1891) (repealed 1976).

27. *See* Huffman, *supra* note 14, at 252-53; Gates, *supra* note 17, at 53-54.

28. *See generally* CLAWSON, *supra* note 14, at 31-37; LAITOS, *supra* note 20, at 268.

29. Clawson identifies a "custodial management" period from the early 1900s to 1950, an "intensive management" period from 1950 to 1970, and a "consultation and confrontation" period from 1970 to the early 1980s. *See* CLAWSON, *supra* note 14, at 15-16, 31-56.

30. *See generally* Hardt, *supra* note 7.

use management era (1930-1970), commodity uses of federal lands were dominant.[31] In the 1970s, however, new environmental laws (triggered by a burgeoning environmental movement) led to growing restrictions on the traditional extractive uses of public lands.[32]

B. *The Rise and Fall of Traditional Commodity Uses on Public Lands*

Two federal agencies have had the primary role of managing federal lands for traditional commodity purposes over the past century. The first is the Forest Service, which originated during the reservation era, following the creation of the forest reserve system.[33] The second agency, the Bureau of Land Management (BLM), was created in 1946 by a merger of the General Land Office and the Grazing Service.[34]

Gifford Pinchot became the first chief forester of the Forest Service in 1905 after successfully lobbying for the transfer of forest reservations from the Department of the Interior to the Department of Agriculture. Pinchot called for the application of scientific principles of forestry that would yield sustained harvests over time. He and his successors ordered that the national forests be managed according to the multiple-use concept, primarily emphasizing timber harvesting and watershed protection.[35] In Pinchot's view, reflected in official Forest Service policy for several decades, multiple use was best accomplished when the for-

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31. *See generally* Kelly Nolen, *Residents at Risk: Wildlife and the Bureau of Land Management's Planning Process*, 26 ENVTL. L. 771, 832-33 (1996); Blumm, *supra* note 7, at 426-27.

32. *See, e.g.*, Wilderness Act of 1964, 16 U.S.C. §§ 1131-1136 (1994); National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4321-4370 (1994); Endangered Species Act (ESA) of 1973, 16 U.S.C. §§ 1531-1544 (1994). Congress incorporated various environmental considerations in the modern statutory authority of the Forest Service and BLM. *See* Federal Land Policy and Management Act (FLPMA) of 1976, 43 U.S.C. §§ 1701-1784 (1994); National Forest Management Act (NFMA) of 1976, 16 U.S.C. §§ 1600-1614 (1994).

33. The Organic Act of 1897 authorized the President to reserve forest lands. Organic Act of 1897, 16 U.S.C. § 475 (1994).

34. *See* CLAWSON, *supra* note 14, at 37.

35. *See* Huffman, *supra* note 14, at 252. The Organic Act of 1897 provided:

> No national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and *to furnish a continuous supply of timber* for the use and necessities of citizens of the United States; but it is not the purpose or intent of these provisions, or of said section, to authorize the inclusion therein of lands more valuable for the mineral therein, or for agricultural purposes, than for forest purposes.

16 U.S.C. § 475 (1994) (emphasis added).

est was "used" for its principal economic commodity— the harvesting of trees.[36] Congress officially sanctioned the multiple-use concept in the national forests in passing the Multiple-Use Sustained Yield Act of 1960.[37]

As the debate over managing National Forests intensified over the next decade, Congress expanded the Forest Service's planning role with the 1974 Renewable Resources Planning Act (RPA)[38] and the National Forest's Management Act of 1976 (NFMA).[39] Both acts adopted the principle of multiple-use management.[40] Today, the Forest Service manages the 191-million acre National Forest System, which consists of national forests, national grasslands, land utilization projects, research and experimental areas, and other types of land.[41] Its management philosophy continues to be governed largely by multiple use.[42]

The BLM is the nation's primary land management agency, controlling just over 264 million acres of federal land.[43] Prior to the formation of the BLM, the General Land Office' had the primary responsibility for management and disposal of public domain lands under the homestead laws, state land grants, and mining laws.[44] It also managed the productive timber lands in Oregon known as the Oregon and California (O&C) lands.[45] In contrast to the General Land Office, the Grazing Service enforced regulations promulgated under the Taylor Grazing Act of 1935.[46] Since BLM's creation, its primary focus has been the continued support of the traditional commodity uses of grazing, mining,

36. *See* COGGINS & GLICKSMAN, *supra* note 2, § 16.01 [1]; *see also* William Andrew Shutkin, Note, *The National Park Service Act Revisited*, 10 VA. ENVTL. L.J. 345, 347-48 (1991).

37. 16 U.S.C. §§ 528-531 (1994).

38. 16 U.S.C. §§ 1601-1610 (1994).

39. 16 U.S.C. §§ 1600, 1611-1614, 472a, 521b (1994).

40. *See* John V. Krutilla & John A. Haigh, *An Integrated Approach to National Forest Management*, 8 ENVTL. L. 373, 375 (1978).

41. *See* NATIONAL AGRICULTURAL STATISTICS SERVICE, DEP'T OF AGRIC., AGRICULTURAL STATISTICS XII-27 (1995-1996).

42. *See* FOREST SERVICE, DEP'T OF AGRIC., THE FOREST SERVICE PROGRAM FOR FOREST AND RANGELAND RESOURCES: A LONG-TERM STRATEGIC PLAN 4-5 through 4-9 (1990); *see also* COGGINS & GLICKSMAN, *supra* note 2, at 16-19; JOHN B. LOOMIS, INTEGRATED PUBLIC LANDS MANAGEMENT 221-22 (1993).

43. *See* PUBLIC LAND STATISTICS (1996), *supra* note 1, at vi.

44. *See* CLAWSON, *supra* note 14, at 35.

45. The Oregon and California railroad obtained these lands in an 1869 land grant. When the railroad violated the terms of the grant, the federal government repossessed the land and transferred management responsibility to the General Lands Office. *See id.* at 19.

46. *See id.* at 35.

and timber.[47] In 1964, Congress extended multiple-use management philosophy to the BLM.[48] Consequently, when Congress revised the BLM's statutory framework in the Federal Land Policy and Management Act of 1976 (FLPMA),[49] it embraced the multiple-use philosophy.[50]

Operating under the mandate of multiple use, the Forest Service and the BLM historically have permitted commodity uses to dominate the public lands.[51] More recently, however, these uses of public lands have been declining. The following section examines the historical data depicting the general downward trend of the three major commodities: timber, grazing, and mining (hardrock and energy minerals).

1. Timber

Timber production is the largest generator of receipts for both the Forest Service and the BLM.[52] Of the nation's 490 million acres of timberland, 19.7% belonged to the federal government and 17.3% was National Forest land.[53] In the early years, from 1905 to 1930, Forest Service timber cuts remained below 2 billion board feet, largely because of an ample supply of timber from private lands.[54] During the 1930s, the onset of the Great Depression reduced the overall economic demand for lumber.[55] In response to falling lumber prices and the threat of private timber stock liquidations, the forest product industry attempted to stabilize prices by organizing and restricting output under the New Deal' National Recovery Act. The Forest Service accommodated this effort by reducing its timber sales.[56] After the nation

47. *See* Nolen, *supra* note 31, at 832-33.

48. Act of Sept. 19, 1964, Pub. L. No. 88-607, 78 Stat. 986 (1964) (repealed 1970).

49. 43 U.S.C. §§ 1701-1784 (1994).

50. *See* 43 U.S.C. § 1702(c) (1994).

51. *See generally* WILKINSON, *supra* note 2; Blumm, *supra* note 7.

52. Forest Service receipts from timber as a percentage of total receipts were 91% in 1988 and 78% in 1995. *See* AGRICULTURAL STATISTICS, *supra* note 41, at XII-28 (1997). BLM sales of timber as a percentage of total receipts were 86% in 1988 and 63% in 1996. *Compare* PUBLIC LAND STATISTICS (1988), *supra* note 1, at 101, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 119.

53. "Timberland" is defined as "forest land that is producing or is capable of producing crops of industrial wood and that is not withdrawn from timber utilization by statute or administrative regulation. Areas qualifying as timberland have the capability of producing more than 20 cubic feet per acre per year of industrial wood in natural stands." AGRICULTURAL STATISTICS (1995-1996), *supra* note 41, at XII-24.

54. *See* CLAWSON, *supra* note 14, at 73.

55. *See id.*

56. *See id.* at 75.

rebounded from the Great Depression and World War II, the economy enjoyed approximately 25 years of expansion that led to a growing demand for timber from public land. Accordingly, timber harvests on National Forest lands rose from 2 billion board feet to over 12 billion board feet by the mid-1960s.[57] By the early 1980s, National Forest timber cuts[58] began a marked decline that has continued in the 1990's to less than 4 billion board feet.[59] This decline in timber cut has occurred despite a robust national economy and a fairly strong housing sector.[60]

BLM-managed timber harvests on public domain and the productive O&C lands amount to about 10% of the Forest Service timber harvests.[61] Prior to 1940, timber sales from the O&C lands were rather small because of an inadequate legal mandate to manage these lands and the low demand for Oregon timber.[62] Timber sales from BLM lands rose after World War II, mirroring the increase on Forest Service lands, and leveled off during the mid-1960s to the mid-1980s. After 1990, however, BLM timber cuts dropped over 90% from the levels maintained during the late 1980s.[63]

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57. *See id.* The long upward trend exhibits some sensitivity to the short-run fluctuations of the business cycle. There have been slight dips corresponding to the relatively minor recessions of 1952-53, 1958, and 1960.

58. The one exception to this downward trend was in the late 1980s, when the economy was booming and the political climate accommodated higher levels of timber cuts. Gross Domestic Product increased 17.9% from 1984 to 1989 in real 1992 dollars. *See* BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES 443 (1996).

59. The 1995 timber cut was 3.8 million board feet. In contrast, the timber cut in 1987, 1988, and 1989 was 12.7 million board feet, 12.6 million board feet, and just under 12.0 million board feet, respectively. *See* AGRICULTURAL STATISTICS (1997), *supra* note 41, at XII-27.

60. Gross Domestic Product increased 9.8% from 1990 to 1995 in real 1992 dollars. *See* STATISTICAL ABSTRACT, *supra* note 58, at 443. Housing starts for new privately owned housing units increased 13.5% from 1990 to 1995. *Id.* at 713.

61. Compare the volume of timber cut in million board feet (mbf) between Forest Service and BLM lands in 1993 (5,917 mbf on FS lands and 87 mbf on BLM lands or 1.4%), 1990 (10,500 mbf on FS lands and 1,222 mbf on BLM lands or 11.6%), and 1980 (9,178 mbf on FS lands and 1,197 mbf on BLM lands or 13.0%). *Compare* AGRICULTURAL STATISTICS (1995-1996), *supra* note 41, *and* AGRICULTURAL STATISTICS (1985), *supra* note 41, at 487, *with* PUBLIC LAND STATISTICS (1980), *supra* note 1, at 62, *and* PUBLIC LAND STATISTICS (1990), *supra* note 1, at 32, *and* PUBLIC LAND STATISTICS (1993), *supra* note 1, at 33.

62. *See* CLAWSON, *supra* note 14, at 77.

63. BLM timber sales in 1986 and 1987 were 1.55 and 1.27 billion board feet, respectively. By 1992 and 1993, they had dropped to 0.13 and 0.09 billion board feet, respectively. *Compare* PUBLIC LAND STATISTICS (1986), *supra* note 1, at 22, *and* PUBLIC LAND STATISTICS (1987), *supra* note 1, at 22, *with* PUBLIC LAND STATISTICS (1992), *supra* note 1, at 33, *and* PUBLIC LAND STATISTICS (1993), *supra* note 1, at 33.

2. Grazing

The grazing of domestic livestock is the oldest use of federal lands and requires the greatest acreage.[64] Although grazing accounts for only a small fraction of total receipts for the Forest Service and BLM,[65] it has extremely important implications for regional economies built on the expectation of livestock access to federal lands. Western ranching operations typically prefer to graze animals on federal lands during the spring and summer, and utilize forage grown from adjacent private lands during the winter.[66] This system of "commensurate rights" links the right to graze federal lands with the value of private lands and their associated water rights.[67]

Before federal land management, early Western settlers practiced large-scale grazing on the open plains because arid conditions did not support agriculture or grazing on small plots of land.[68] Between 1870 and 1890, cattle drives took livestock to the Northern plains over the winter months as a means of killing disease-carrying ticks.[69] By the 1890s, ranchers had expanded grazing to most of the Western range, and livestock totals in the West reached 20 million head.[70]

At the turn of the century, the newly formed Forest Service began to restrict grazing on Forest Reserves due to overuse of the land.[71] In its early transition years, from 1905 to 1914, the Forest Service stabilized the level of grazing sheep and goats, and allowed for marginal increases of cattle and horses. Grazing increased by 33% during World War I.[72] The Forest Service soon realized that the land could not sustain such high levels of grazing and adopted policies that caused levels of stock to decline through the 1920s.[73] The amount of sheep and goats

64. *See* CLAWSON, *supra* note 14, at 63.

65. Forest Service receipts from grazing were 0.9% of total receipts in 1988, and 2.1% of receipts in 1993. *See* AGRICULTURAL STATISTICS, *supra* note 41, at XII-28 (1995-1996). BLM receipts from grazing amounted to 5% of total receipts in 1988, and 7.5% of total receipts in 1993. *Compare* PUBLIC LAND STATISTICS (1988), *supra* note 1, at 101, *with* PUBLIC LAND STATISTICS (1988), *supra* note 1, at 116.

66. *See* Perry R. Hagenstein, *The Federal Lands Today—Uses and Limits*, *in* RETHINKING THE FEDERAL LANDS, 74, 86 (Sterling Brubaker ed., 1984).

67. *See id.*

68. *See* Terry L. Anderson & Peter J. Hill, *The Evolution of Property Rights: A Study of the American West*, 18 J.L. & Econ. 163, 172-73 (1975).

69. *See* CLAWSON, *supra* note 14, at 63-64.

70. *See* Ed Marston, *The Old West is Going Under*, HIGH COUNTRY NEWS, Apr. 27, 1998, at 1.

71. *See* CLAWSON, *supra* note 14, at 64.

72. *See id.* at 65.

73. *See id.*

grazing on the National Forest System continued to decline over the next 60 years, resulting in an 85% drop from 1930 to the mid-1990s.[74] The quantity of cattle and horses experienced a gradual decline from the 1930s to the 1970s, reached a plateau during the mid-1970s, only to resume its decline in the 1980s through the 1990s. From a peak in 1976 to its level in 1995, the number of cattle, horses, and burros dropped by over 27%.[75]

Grazing on BLM lands followed a similar long-term decline. The Taylor Grazing Act of 1934 was enacted in response to domestic livestock overgrazing on public domain lands.[76] It authorized the Grazing Service, and later the BLM, to establish grazing districts and regulate the number of stock using the lands.[77] BLM measures all stock under a common animal unit month (AUM).[78] From the mid-1930s to the early-1940s, the number of AUMs increased with the number of grazing districts established under the new regulatory framework.[79] BLM grazing remained constant from the 1940s until the late 1950s, but then began a long-run decline in the early 1960s that lasted through the 1990s. By 1996, grazing had dropped over 45% from its peak level in 1955.[80] The general downward trend follow the net decline seen for grazing of all stock in the national forests.[81] Overall, livestock in the West is down from 20 million head in 1900 to less than 2 million in 1998.[82]

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74. Sheep and goat levels were approximately 6,714 thousand in 1930 and 940 thousand in 1995. *Compare* AGRICULTURAL STATISTICS (1951), *supra* note 41, *with* AGRICULTURAL STATISTICS (1997), *supra* note 41, at XII-28.

75. The number of cattle, horses, and burros grazing on the National Forests System lands amounted to 1,690 thousand in 1976 and 1,227 in 1995. After 1977, livestock data on cattle and horses includes burros. *Compare* AGRICULTURAL STATISTICS (1997), *supra* note 41, at XII-28, *with* AGRICULTURAL STATISTICS (1985), *supra* note 41, at 489.

76. *See* CLAWSON, *supra* note 14, at 67; Gates, *supra* note 17, at 52-53.

77. *See* 43 U.S.C. §§ 315 (1994); *see also* Nolen, *supra* note 31, at 784.

78. "Animal unit month" defines the quantity of forage needed to sustain a cow for a month. *See* PUBLIC LAND STATISTICS, *supra* note 1, at 131 (1993).

79. *See* CLAWSON, *supra* note 14, at 67.

80. The number of AUMs fell from 15,367 thousand in 1955 to 8,423 in 1996. *Compare* BUREAU OF LAND MGMT., DEP'T OF THE INTERIOR, REPORT OF THE DIRECTOR OF THE BUREAU OF LAND MGMT.: STATISTICAL APPENDIX 140 (1955), *with* PUBLIC LAND STATISTICS, *supra* note 1, at 62 (1996). *See also* MARION CLAWSON, THE FEDERAL LANDS SINCE 1956: RECENT TRENDS IN USE AND MANAGEMENT 67 (1967).

81. *See* CLAWSON, *supra* note 14, at 68.

82. *Marston*, *supra* note 70.

3. Minerals

a. Hardrock Mining

Mining was one of the first federally encouraged uses of public lands and an important factor in the development of the West.[83] Gold rushes in the middle of the nineteenth century attracted thousands of prospectors seeking their fortunes in California and Colorado.[84] Other minerals played a significant role in creating an industrial base of mining and associated metal manufacturing in many inland Western states.[85] Today, the development of energy and mineral resources on federal lands falls under four different statutory frameworks discussed below.[86]

The Mining Law of 1872 permits individuals who discover valuable minerals on public lands to extract these minerals under either an unpatented mining claim or a federal patent. An unpatented mining claim grants exclusive possession of the surface area, the right to remove minerals, and the right to sell them without payment of royalties to either the federal or state government.[87] Many mines operate on federal lands under unpatented mining claims because such claims provide sufficient protection for land and mineral interests and also offer certain tax advantages.[88] On the other hand, a patent grants the miner

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83. *See generally* JOHN D. LESHY, THE MINING LAW: A STUDY IN PERPETUAL MOTION 12 (1987).

84. *See generally* POWER, *supra* note 6; CARL UBBELOHDE ET AL., A COLORADO HISTORY 56-67 (7th ed., 1995).

85. Mining played a key role in the industrial bases of Arizona, New Mexico, Utah, Idaho, and Montana. *See* POWER, *supra* note 6, at 93-94.

86. The Mining Law of 1872 grants access to the mining of hardrock minerals on unreserved public domain lands and permits exclusive use of such land upon the discovery of minerals. 30 U.S.C. §§ 21-47 (1994). The Mineral Leasing Act of 1920 retains federal ownership of energy and fertilizer resources on federal lands and establishes a leasing system that requires private developers to pay royalties upon extracting the resource. 30 U.S.C. §§ 181-287 (1994). The Materials Act of 1947 governs the sale of commonly occurring mineral materials such as sand, stone, gravel, and clay. 30 U.S.C. §§ 601-604 (1994). Finally, various disposal laws granted land patents to private individuals but reserved the subsurface mineral rights to the federal government. These minerals are subject to the conditions of the applicable lease or sale. *See* Coal Lands Act of 1909, 30 U.S.C. § 81 (1994); Agricultural Entry Act of 1914, 30 U.S.C. § 121 (1994); Stock-Raising Homestead Act of 1916, 43 U.S.C. § 291-302 (repealed 1976, except §§ 299, 301); *see also* LAITOS, *supra* note 20, at 374-77; Leshy, *supra* note 83.

87. *See* LAITOS, note 20 at 384.

88. *See* Leshy, *supra* note 83, at 266-67; *see also* Wilbur v. United States *ex rel.* Krushnic, 280 U.S. 306, 317 (1930) ("[S]o long as [the claimant] complies with the provisions of mining laws, his possessory right, for all practical purposes of ownership, is as good as though secured by patent.").

full ownership in the form of a fee simple upon fulfilling various requirements.[89] Today, many hardrock mines in the West are on private lands transferred from the public domain under the patenting process.[90]

From 1880 to the turn of the century, each year more than 1,000 mining patents were issued.[91] After 1912, the number of patents dropped to several hundred per year, and by 1930 less than 200 per year were issued.[92] The number of patents issued fell during the 1960s and early 1970s, enjoyed a resurgence in the mid-1980s,[93] only to drop again in the 1990s to all-time low levels. By the late 1990s, due in part to a moratorium on patent issuance, the number of patents issued had dropped 96% from the level in 1960.[94]

The total of unpatented mining claims on federal lands is difficult to quantify. Prior to 1976, various studies estimated that there were approximately 6 million such claims.[95] The en-

89. Applicant for a patent must be able to show compliance with requirements, which include discovery of a valuable mineral, existence of the mineral on land subject to mineral location, annual assessment work, compliance with recordation deadlines, and no adverse claimants. *See* LAITOS, *supra* note 20, at 384.

90. *See* Hagenstein, *supra* note 66, at 89 (citing U.S. OFFICE OF TECHNOLOGICAL ASSESSMENT, MANAGEMENT OF FUEL AND NONFUEL MINERALS IN FEDERAL LAND (1979)).

91. *See* Leshy, *supra* note 83, at 266.

92. *See id.*; *see also* Robert C. Anderson, *Federal Mining Policy: The General Mining Law of 1872*, 16 NAT. RESOURCES J. 601, 604 (1976).

93. Two spikes in an otherwise downward sloping curve for patent issuance in the 1980s are explained by the extraordinarily large number of patents for bentonite issued in 1983 (almost all within the state of Montana) and the Reagan Administration's decision in 1987 to settle quarter-century-old litigation challenging pre-1920 mining claims for oil shale, which resulted in a high number of oil shale patents issued that year. *See, e.g.*, Tosco Corp. v. Hodel, 611 F. Supp. 1130 (D. Colo. 1985) (holding that the United States was estopped from asserting the validity of nearly 100 pre-1920 oil shale claims); PUBLIC LAND STATISTICS (1983), *supra* note 1, at 143 tbl.75; John D. Leshy, *Reforming The Mining Law: Problems and Prospects*, 9 PUB. LAND L. REV. 1, 8 (1988).

94. The number of mineral patents issued dropped from 168 in 1960 to 5 in 1996. *Compare* PUBLIC LAND STATISTICS (1960), *supra* note 1, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 99. Since 1994, BLM has issued no more than ten mining patents per year in part because of a moratorium on new mining patents. On September 30, 1994, Congress enacted an appropriation bill for the Department of Interior that placed a moratorium on the processing of mining or millsite patent applications and the issuing of patents under general mining laws. Department of the Interior and Related Agencies Appropriations Act, Pub. L. No. 103-332, 108 Stat. 2499 (1994). The Secretary of the Interior, Bruce Babbitt, issued an Instruction Memorandum that interpreted the statute to halt the processing of pending claims. Bruce Babbitt, Dep't of the Interior, Instruction Memorandum No. 95-01 (Oct. 4, 1994). In a subsequent court challenge, the Tenth Circuit held that the Secretary improperly discontinued the processing of a mining company's application. *See* Mt. Emmons Mining Co. v. Babbitt, 117 F.3d 1167 (10th Cir. 1997).

95. *See generally* LESHY, *supra* note 83, at 82.

actment of FLPMA in 1976 created a new federal recording system that was intended to identify legitimate unpatented claims and eliminate abandoned or inactive mining claims.[96] By 1996, this FLPMA provision resulted in the administrative closing of more than 2 million claims because of either abandonment or the failure to document an effort to develop the claim.[97] Numerous investigations suggested that many of these claims had been used for nonmining purposes or otherwise abandoned.[98] If one tracks the number of unpatented mining claims recorded under FLPMA, the number rose above the 1.2 million mark for most of the 1980s as claims were being recorded, but then significantly dropped in the 1990s. By 1996, unpatented claims fell to 0.3 million, a 75% drop over 10 years.[99] The overall reduction in patents and unpatented claims is reflected in a decline in the number of operating hardrock mines in the West from 3,300 in 1954, to about 1,000 in the late 1990s.[100]

b. Energy Minerals

Energy development on federal lands has been pursued under the Mineral Leasing Act of 1920.[101] Oil and gas leasing on public domain lands was relatively insignificant during the 1920s and 1930s.[102] After World War II, the number of leases shot up from just over 5,000 to reach 140,000 by 1960. Following this increase, the number of leases fell until the mid-1960s, gradually rose during the "energy crisis" of the 1970s, and peaked in the early 1980s. During the remainder of the 1980s and into the 1990s, however, the number of oil and gas leases has experienced a downward slide. The 1996 level of leases on the public domain represents a 71% drop from the peak 1960

96. *See generally* LESHY, supra note 83, at 81; LAITOS, *supra* note 20, at 397.

97. The cumulative number of claims closed, forfeited, or voided in 1996 was 3,043,245. This figure was derived from the 1993 cumulative number plus the annual number closed for the years 1994-96. *See* PUBLIC LAND STATISTICS (1993), *supra* note 1, at 94; PUBLIC LAND STATISTICS (1994), *supra* note 1, at 194; PUBLIC LAND STATISTICS (1995), *supra* note 1, at 199; PUBLIC LAND STATISTICS (1996), *supra* note 1, at 100.

98. See generally LESHY, *supra* note 83, at 55-77.

99. Unpatented claims of record were 1.214 million in 1986 and .307 million in 1996. *Compare* PUBLIC LAND STATISTICS (1986), *supra* note 1, at 78, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 100.

100. *See* Chilson, *supra* note 9, at 12. This decrease in the number of mines is explained in part by a general increase in the size of mines coupled with a diminution in the quantity of mineral resources remaining in the earth.

101. 30 U.S.C. §§ 181-287 (1994).

102. *See* CLAWSON, *supra* note 14, at 87.

level.[103]

This downward trend of oil and gas activity on public lands is also evidenced by the decline in drilling activity. "Applications for permit to drill" (APDs), "new holes started," and "producible completions" have all dropped since the 1980s.[104] The number of producible completions, the indicator of a successful drilling effort, rose during the late 1980s, but has since declined in the mid-1990s. As of 1996, producible completions dropped 63% from its peak in 1992.[105] There has been a commensurate decline in the amount of petroleum produced from public lands. The number of barrels of oil produced from these lands has fallen from 201.5 million in 1970, to 144 million in 1980, then to 126.7 million in 1993, and to 121.5 million in 1996.[106]

The number of federal coal leases on public lands remained relatively low from the 1920s through 1960.[107] Anticipation of tightening energy markets prompted coal companies and other energy speculators to seek rights to coal on federal lands.[108] This period saw a rise in the number of coal leases from around 300 to over 500 leases in the mid-1970s. Coal leases subsequently peaked above the 600 level in the early 1980s, but since the mid-1980s has steadily dropped. The 1996 level of coal leases was 36% lower than its peak level in 1983.[109]

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103. The number of oil and gas leases on public domain lands dropped from 139,500 in 1960 to 40,711 in 1996. *Compare* HISTORICAL STATISTICS, *supra* note 18, at 432, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 67-78. In 1997, a consortium of oil and gas trade and professional associations, through the American Association of Professional Landmen, conducted a study inventorying and classifying federal lands in eight western states to show their availability for oil and gas exploration and development. The study found that 32.6 million acres (less than 17% of total federal mineral estate) were under lease in 1997, compared with 114 million acres (72%) in 1983. *See* COOPERATING ASSOCIATIONS FORUM, FEDERAL LAND ACCESS TO OIL AND GAS MINERALS IN EIGHT WESTERN STATES 15 (1997).

104. *See* PUBLIC LAND STATISTICS (1985-1996), *supra* note 1.

105. There were 8,500 wells on public and private lands in 1983, and 1,900 wells in 1996. *See* Chilson, *supra* note 9. By 1998, that number had fallen to just over 1000. *See Hard Work If You Can Get It*, N.Y. TIMES, July 8, 1998, at C1. Producible completions fell from 2,213 in 1992, to 824 in 1996. *Compare* PUBLIC LAND STATISTICS (1992), *supra* note 1, at 76, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 83. *See also* COOPERATING ASSOCIATIONS FORUM, *supra* note 103, at 7 (noting that between 1983 and 1997, access to oil and gas reserves on public lands in eight western states declined by more than 60%).

106. *See* PUBLIC LAND STATISTICS (1970), *supra* note 1, at 105; PUBLIC LAND STATISTICS (1980), *supra* note 1, at 98.

107. *See* CLAWSON, *supra* note 14, at 93.

108. *See id.*

109. Coal leases on federal lands dropped from 611 in 1983 to 389 in 1996. *Compare* STATISTICAL ABSTRACT 1990, *supra* note 58, at 328, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 86.

What is striking about this downward trend among commodity uses is that it is relentless and pervasive among all the traditional economic resources. There has been a decline in timber harvesting, grazing, hardrock mining, and extraction of energy minerals from public lands. Moreover, the trend has not slowed in recent years, it has accelerated. To fully understand the scope of change, one should compare this slide with the rise of recreation and preservation.

C. *The Growth of Recreation and Preservation Uses On Public Lands*

Recreation and preservation have been the fastest growing uses of public lands in the late twentieth century and arguably are now the dominant uses of federal lands. The growth of recreation and preservation on public lands is analyzed below on two levels. First, data from the relevant federal agencies show a dramatic increase in recreational visitors to public lands over the last several decades. Second, a review of the statutes governing uses on public lands throughout the twentieth century shows a large increase in lands set aside for recreation and/or preservation and a corresponding decrease in public lands available for commodity extraction.

This change from lands that were commodity-based to lands that are now recreation and preservation-based is reflected in basic economics. The hundreds of billions of dollars spent each year on outdoor recreation has surpassed mining, timber harvesting, and grazing as an economic force on Western public lands.[110] The Secretary of Agriculture has recognized that of the $130 billion that the national forests will contribute to the national economy by the year 2000, nearly $100 billion will come from recreation.[111]

1. *The Rise of Recreational Visitors*

Although the major land management agencies all provide recreational opportunities, they operate under distinct mandates and collect recreational data in different forms. Most rely on visits to public lands. Because of the difficulty in aggregating the recreation data of different agencies, some caution is therefore

110. *See* Jon Margolis, *The Latest 1,000-Pound Gorilla*, HIGH COUNTRY NEWS, Apr. 27, 1998, at 15.

111. *See id.*

required.[112]

Recreation has surged in the National Forest System during the post-World War II era. From 1924 to 1964, the Forest Service measured recreation in terms of visits. After 1966, it adopted the visitor-day unit in order to differentiate the duration of particular visits. A visitor day defines recreational use in aggregates of twelve hours. The 1995 level of 345 million visitor days on National Forest lands represents a 1,161% increase since 1950, and a 100% increase since 1970.[113] By 1999, the number of visitor days is expected to double the 1995 level to over 800 million.[114]

The available recreation data for BLM lands is more difficult to interpret because of a change in the units of measure and the BLM's difficulty in consistently reporting recreation uses over its vast amount of land. Although the BLM reported visits from 1964 to 1992, it discontinued the practice in 1993 pending the implementation of a new, more accurate, reporting system.[115] From 1964 to 1981, the BLM followed the Forest Service practice of reporting recreation in terms of visitor-days, but then switched to a visitor-hours unit of measure in 1982.[116] One can convert BLM's visitor hours to visitor days simply by dividing by twelve, since one visitor day is equal to twelve visitor hours.[117] Using such a conversion, visitor-days on BLM lands increased 341% between 1964 and 1981.[118] The discontinuity between the former and adjusted visitor-day measures probably reflects structural changes in BLM's techniques for measuring recreation. Looking at the data from 1982, BLM's adjusted visitor-days rose

112. *See* U.S. GENERAL ACCOUNTING OFFICE, PARK SERVICE: MANAGING FOR RESULTS COULD STRENGTHEN ACCOUNTABILITY 22 tbl.II.1 (1997) (noting that "[c]aution must be used in interpreting data on visitation when making comparisons across agencies").

113. The Forest Service counted 27,368 thousand visits in 1950, 172,555 thousand visits in 1970, and 345,083 thousand visits in 1995. *Compare* AGRICULTURAL STATISTICS (1952), *supra* note 41, at 790, *with* AGRICULTURAL STATISTICS (1971), *supra* note 41, at 580, *with* AGRICULTURAL STATISTICS (1997), *supra* note 41, at XII-30. By comparison, the population of the United States registered a 63% increase between 1950 and 1990, and a 35% increase between 1970 and 1990. *See* STATISTICAL ABSTRACT, *supra* note 58, at 8. The rise in recreational use is therefore not merely explained by national population increases.

114. *See* Kit Miniclier, *Sky's Not the Limit: Forests Alive With Sounds of Tourists*, DENVER POST, Aug. 2, 1998, at B1.

115. *See* PUBLIC LAND STATISTICS (1993), *supra* note 1, at 52.

116. *See* PUBLIC LAND STATISTICS (1982), *supra* note 1 at 76.

117. *See* CHARLES I. ZINSER, OUTDOOR RECREATION: UNITED STATES NATIONAL PARKS, FORESTS, AND PUBLIC LANDS 553 (1995).

118. BLM visitor days rose from 14.477 million in 1964, to 63.825 million in 1981. *Compare* PUBLIC LAND STATISTICS (1964), *supra* note 1, at 73, *with* PUBLIC LAND STATISTICS (1981), *supra* note 1, at 71.

176% from 1982 to 1996.[119]

Other major land management agencies also show large increases in recreation use. For example, the National Park Service has recorded recreational visits since 1904. Prior to the 1940s, total visits never exceeded 20 million and temporarily dropped during World War II.[120] Since the early 1950s, however, the number of visits has been rising at a steady rate. The 1995 visitation level of nearly 270 million visits per year represents a 711% increase since 1950, and a 57% increase since 1970.[121] Among the various components of the National Parks System, National Parks attracted 23% of the total visits in 1994, followed by National Recreation Areas with 19%, National Historic Parks with 9%, and National Monuments with just under 9%.[122] The Fish and Wildlife Service reports a 21.3% increase in visits to its lands from 1985 to 1996.[123] Visits to facilities operated by the Army Corps of Engineers rose 23% from 1986 to 1996.[124] The Bureau of Reclamation also experienced a 36.1% rise in visitor-day units at its reservoirs and project lands over the period covering 1980 to 1990.[125]

2. *The Rise in Recreation and Preservation Pursuant to Statutory Mandates*

At the turn of the century, the conservation movement mobilized enough political strength to institutionalize the national park concept in the National Park Service Organic Act of 1916.[126]

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119. BLM adjusted visitor-days increased from 26,213 thousand (316,959 thousand visitor hours) in 1982 to 72,793 thousand (873,524 thousand visitor hours) in 1996. *Compare* PUBLIC LAND STATISTICS (1982), *supra* note 1, at 76, *with* PUBLIC LAND STATISTICS (1996), *supra* note 1, at 123.

120. *See* HISTORICAL STATISTICS, *supra* note 18, at 396.

121. National Park Service recreation visits were 33 million visits in 1950 and 270 million visits in 1995. *See* Jan G. Laitos, *National Parks and the Recreation Resources*, 74 DENV. U. L. REV. 847, 851 (1997).

122. National Park System recreational visits in 1994 broke down as follows: Total, 268,636,169; National Parks, 62,984,052; National Recreation Areas, 52,309,921; National Historical Parks, 23,860,116; and National Monuments, 23,563,779. *See* NATIONAL PARK SERVICE, NATIONAL PARK SERVICE STATISTICAL ABSTRACT 2 (1994).

123. Fish and Wildlife Service visits rose from 24 million in 1985, to 29.1 million in 1996. *See* MANAGING FOR RESULTS, *supra* note 112, at 22.

124. Corps of Engineer visits increased from 172.3 million in 1986 to 211.9 million in 1996. *See id.*

125. *See* BUREAU OF RECLAMATION, DEP'T OF THE INTERIOR, 1990 SUMMARY STATISTICS: WATER, LAND, AND RELATED DATA 11 (1990).

126. 16 U.S.C. §§ 1-18f (1994); *see also* Shutkin, *supra* note 36. The National Park System began with the creation of Yellowstone as the first national park in 1872. Act of March 1, 1872, 17 Stat. 32 (codified as 16 U.S.C. §§ 21-40 (1994)); *see*

The Organic Act sets forth the Park Service's dual, and sometimes conflicting, mandate to provide for recreational use, while at the same time preserving resources "unimpaired for the enjoyment of future generations."[127] Today, the 75 million acre National Park System[128] encompasses 54 National Parks covering 48 million acres,[129] including national monuments,[130] historic parks and sites, recreation areas, parkways, and seashores.[131]

In 1940, an executive order created the Fish and Wildlife Service (FWS) by merging the Bureau of Fisheries of the Commerce Department with the Division of Biological Survey of the Department of Agriculture.[132]

Wildlife refuges administered by FWS have also become an increasingly important preservation and recreation resource on federal lands in the twentieth century. Acts initiated by Congress and the Executive Branch resulted in the formation of the modern National Wildlife Refuge System (NWRS).[133] The National Wildlife Refuge System Administration Act of 1966[134] defined refuges as a "system"[135] and became the organic act by which the

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also Gates, *supra* note 17, at 48.

127. 16 U.S.C. § 1 (1994).

128. "National Park System" is defined as "any area of land and water now or hereafter administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational, or other purposes." *Id.* § 1(c)(a) (1994).

129. *See* STATISTICAL ABSTRACT, *supra* note 58, at 250.

130. *See* Antiquities Act of 1906, 16 U.S.C. §§ 431-433 (1994).

131. *See* PARK SERVICE STATISTICAL ABSTRACT, *supra* note 122, at 2.

132. The Bureau of Fisheries and the Bureau of Biological Survey were shifted to the Department of the Interior under Reorganization Plan No. 2 of 1939, §§ 3(e), 3(f), 53 Stat. 1431, 1433-34 (1939). The two bureaus were merged into the FWS by Reorganization Plan No. 3 of 1940, § 3, 54 Stat. 1231, 1232 (1940). The Fish and Wildlife Act of 1956 gave the FWS authority to take action to conserve fish and wildlife, including acquiring land and water areas. Act of Aug. 8, 1956, ch. 1036, § 3, 70 Stat. 1119, 1120 (1956) (current version codified at 16 U.S.C. § 742b (1994)). *See generally* Richard J. Fink, *The National Wildlife Refuges: Theory, Practice, and Prospect*, 18 HARV. ENVTL. L. REV. 1, 39, 39 n.261-62 (1994).

133. In 1903, President Roosevelt established the Pelican Island National Wildlife Refuge to protect herons and egrets from over hunting. In 1905 and 1906, Congress granted the President authority to designate a wildlife range for bison and Texas longhorn in the Wichita National Forest and the Grand Canyon National Forest. The Migratory Bird Treaty Act of 1918 prompted refuge actions protecting migratory birds in North America from over-hunting. The Migratory Bird Conservation Act of 1929 authorized land acquisition to comply with the Migratory Bird Treaty Act of 1918. Federal acquisitions of land for refuges have largely been financed by two sources, The Migratory Bird Hunting Stamp Act of 1934 and the Land and Water Conservation Fund Act of 1964. *See* Fink, *supra* note 132, at 10-18.

134. Pub. L. No. 89-669, 80 Stat. 926 (1966) (amended as the National Wildlife Refuge Administration, current version codified as 16 U.S.C. §§ 668dd-668ee (1994)).

135. 16 U.S.C. § 668dd(a)(1) (1994).

FWS administered the refuge system.[136] This Act articulated the primary goal of the NWRS as the preservation of wildlife, although it permitted other "compatible" uses at the agency's discretion.[137] It also established recreation as a secondary objective,[138] incorporating the 1962 Refuge Recreation Act,[139] which called for recreational use of the NWRS compatible with wildlife conservation.[140] The NWRS expanded approximately 475% from 1960 to 1996.[141] In 1980 alone, the passage of the Alaska National Interest Lands Conservation Act[142] added 53.7 million acres, tripling the size of the NWRS.[143] Since the Alaska addition in 1980, there has been a 21.5% total increase in the number of NWRS reserves as of 1996.[144] Overall, by 1996 the NWRS covered 92.6 million acres and consisted of 509 National Wildlife Refuges, 193 Waterfowl Protection Areas, and 50 Coordination Areas.[145]

The Wilderness Act of 1964[146] signaled a heightened commitment to preservation, setting in motion a process that has transferred millions of acres from extractive uses to recreation and the preservation of wildlife habitat.[147] The Act defines wilderness as an area where "the earth and its community of life are untrammeled by man," where the land retains its "primeval character" and has "been affected primarily by the forces of nature."[148] Wilderness areas generally restrict the building of roads and structures, commercial development, and the operation of

136. *See* Fink, *supra* note 132, at 25.

137. 16 U.S.C. § 668dd(d)(1)(A) (1994); *see also* Fink, *supra* note 132, at 27.

138. 16 U.S.C. § 668dd(h) (1994); *see also* Fink, *supra*, note 132, at 25.

139. Pub. L. No. 87-714, 76 Stat. 653 (1962) (current version codified at 16 U.S.C. §§ 460k to 460k-4 (1994)).

140. "[T]he Secretary of the Interior is authorized, as an appropriate incidental or secondary use, to administer such areas or parts thereof for public recreation when in his judgment public recreation can be an appropriate incidental or secondary use . . . ." 16 U.S.C. § 460(k) (1994).

141. The Total Refuge System (National Wildlife Refuges, Waterfowl Protection Areas, and Coordination Areas) consisted of 92.644 million acres in 1996. *See* U.S. Fish and Wildlife Service, Annual Report of Lands Under the Control of the U.S. Fish and Wildlife Service 4 (1996). The Fish and Wildlife Service controlled 16,016 thousand acres in 1960. *See* PUBLIC LAND STATISTICS, *supra* note 1 (1960).

142. Pub. L. No. 96-487, 94 Stat. 2371 (1980) (codified in part at 16 U.S.C. §§ 3101-3133 (1994)).

143. *See* Fink, *supra* note 132, at 30-31.

144. Total Refuge System rose from 619 units in 1980, to 752 units in 1996. *See* FWS Annual Report, *supra* note 141.

145. *See id.*

146. Pub. L. No. 88-577, 78 Stat. 890 (codified at 16 U.S.C. §§ 1131-1136 (1994)).

147. See 2 COGGINS & GLICKSMAN, *supra* note 2, §§ 14B.01 through 14B.02.

148. 16 U.S.C. § 1131(c) (1994).

motorized vehicles.[149] Created by congressional acts,[150] they are managed by the agencies that had previous jurisdiction over the land.[151] The entire National Wilderness Preservation System has grown from the 9.1 million acres originally designated in the 1964 Wilderness Act to over 96 million acres.[152] Wilderness areas in Forest Service and BLM lands impose significant restraints on traditional extractive uses that otherwise would be managed under multiple-use principles. By 1994, wilderness areas amounted to 34.6 million acres of Forest Service lands and 1.7 million acres of BLM lands.[153]

Despite these changes of use, both the Forest Service and BLM have moved slowly (and reluctantly) to tailor their management philosophies to reflect the dominance of recreation and preservation use on their lands. These two public land agencies still adhere to their original multiple-use mandate, despite that mandate's increasing irrelevance. Gifford Pinchot, the first director of the Forest Service, gave scarce recognition to recreation,[154] and for many years, the Forest Service deemed its primary responsibility to be the harvesting of the timber.[155] The Supreme Court ratified this belief, interpreting the Forest Service's 1897 Organic Act as specifying only two multiple-use purposes: timber production and watershed protection.[156] It was not until 1960 that Congress first instructed the Forest Service to include both outdoor recreation and wildlife and fish preservation in its multiple-use management.[157] The National Forest Man-

149. The Wilderness Act, however, embodies political compromises creating several exceptions to the general restriction on commodity extraction. The three key exceptions are timber cutting for control of fire, insects, and diseases, 16 U.S.C. § 1133(d)(1) (1994); a twenty-year grace period for some types of mining, 16 U.S.C. § 1133(d)(3) (1994); and grandfathering of grazing uses prior to 1964, 16 U.S.C. § 1133(d)(4) (1994).

150. 16 U.S.C. § 1131(a) (1994).

151. 16 U.S.C. § 1131(b) (1994).

152. *See* ZINSER, *supra* note 117, at 635. Designated wilderness on Forest Service lands in 8 western states increased by almost 9 million acres, or 100%, since 1983. *See* COOPERATING ASSOC. FORUM, *supra* note 103, at 15.

153. *See* ZINSER, *supra* note 117, at 635.

154. Although most data on Forest Service activities dates back to 1905, the Forest Service did not begin collecting and publishing recreation data until 1924. *See* CLAWSON, *supra* note 14, at 34.

155. *See, e.g.*, GEORGE CAMERON COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW 662 (3d ed. 1993) ("Commercial timber is the most valuable commodity resource in the National Forest System. The operations of most Forest Service field offices are effectively organized around the allowable cut.").

156. *See* United States v. New Mexico, 438 U.S. 696 (1978).

157. *See* Multiple-Use Sustained Yield Act of 1960, 16 U.S.C. §§ 528-531 (1994).

agement Act of 1976[158] reiterated Congress' intent that recreation and wildlife preservation should be included in the multiple uses on Forest Service land.[159]

Similar to the Forest Service, the BLM's historic roots were closely tied to traditional commodity uses— grazing, mining, and timber.[160] In 1964, Congress first authorized the BLM to manage with a multiple-use mandate.[161] In that same year, the BLM started including recreation data in its annual reports.[162] In 1976, FLPMA required BLM to adopt a multiple-use management philosophy with recreation, wildlife preservation, and aesthetics as statutorily mandated uses.[163]

II

FACTORS CAUSING FUNDAMENTAL CHANGES IN PUBLIC LAND USE

Part I showed that commercial commodity development of public lands has been declining in relative importance, while use of these lands for recreation and preservation has become predominant.[164] Before examining how the relevant federal agencies have failed to cope with this fundamental change in Part III, Part II explores the reasons behind the reduction in commercial uses of public lands and the rise in use of these lands for recreational and preservationist purposes.

A. The Declining Commercial Role of Natural Resources on Public Lands

Several economic and legal factors have caused the commercial potential of natural resources on public lands to decline. These factors include: (1) inadequate profitable returns on extractive uses of public land resources; (2) a marketplace demand shift away from raw materials extraction that reflects a higher value placed upon a broad range of services, recreational opportunities, and non-use preservationist values; and (3) a legal

158. 16 U.S.C. §§ 1600-1614 (1994).

159. 16 U.S.C. § 1607 (1994).

160. *See generally* Nolen, *supra* note 31, at 836.

161. Act of Sept. 19, 1964, Pub. L. No. 88-607, 78 Stat. 986 (1964) (repealed 1970).

162. *See* PUBLIC LAND STATISTICS, *supra* note 1, (1964); *see also* CLAWSON, *supra* note 14, at 291.

163. 43 U.S.C. § 1702(c) (1994).

164. Noncommercial, nonextractive uses of public lands encompass outdoor recreational opportunities, as well as preservationist values bound up with clean air and water, biodiversity, healthy and intact ecosystems, wilderness areas, habitat protection for wildlife, and scenic beauty.

structure that encourages noncommercial, nonextractive uses of public lands to compete with (and now dominate) traditional extractive uses of these lands.

1. Domestic Industries Do Not Rely On Public Lands For Natural Resources

The products of several American industries, such as the construction, manufacturing, electrical, plumbing, and agricultural industries, rely on natural resources. If industries dependent on natural resources used only minerals, timber, and forage found on public lands, such lands would be quite valuable as a supply source. These industries would also likely locate at, or near, the source of these commodities and stimulate local economies with payrolls and local purchases. In the Rocky Mountain West, where most public lands are located, however, there has been a general decline in employment and income associated with the extraction of commodity resources. In 1969, over 11% of all direct employment and 9.6% of personal income came from natural resources industries. By 1991, these industries represented less than 6% of all employment and less than 5% of all personal income.[165]

This trend is partially the result of decisions by companies either to abandon altogether the United States (and its public lands) as a source of supply,[166] or to rely on private, nonfederally owned resources.[167] With fewer resource-dependent corporations finding their supply of natural resources on public lands, local communities near these lands have had to become less economi-

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165. *See* Raymond Rasker, *A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands*, 65 U. COLO. L. REV. 369, 377 (1994) (citing BUREAU OF ECON. ANALYSIS, U.S. DEP'T OF COMMERCE, REGIONAL ECONOMIC INFORMATION SYSTEM: FULL AND PART-TIME EMPLOYMENT AND INCOME BY INDUSTRY (1992)); COOPERATING ASSOC. FORUM, *supra* note 103, at 7 (noting that industry employment in the petroleum and natural gas extraction sector dropped by almost 50% between 1983 and 1997).

166. This shift away from domestic sources of supply has perhaps been most pronounced with respect to minerals, where private companies are increasingly tapping foreign sources of hard rock minerals, oil, and natural gas. *See generally* Robert Block, *Taking Sides: As Zaire's War Rages, Foreign Businesses Scramble for Inroads: Mining Firms Want a Piece of Vast Mineral Wealth*, WALL ST. J. EUROPE, Apr. 15, 1997, at 1; James Brooke, *For U.S. Miners, The Rush Is On to Latin America*, N.Y. TIMES, at C9.

167. Timber and grazing interests depend on nonfederal lands to supply a majority of their harvestable timber and feed for livestock. *See, e.g.*, Keith Schneider, *House and Senate Agree to Raise Fees for Grazing on Federal Land*, N.Y. TIMES, Oct. 8, 1993, at A-27; Timothy Egan, *Wingtip 'Cowboys' in Last Stand to Hold On to Low Grazing Fees*, N.Y. TIMES, Oct. 29, 1993, at A1.

cally dependent on extractive industries. Although the specific reasons behind the dwindling presence of commodities industries on public lands vary by commodity, the consequence is the same for the communities near these lands. That is, their economies are not being driven by the extraction of natural resources.

a. Timber

The primary commodity use of Forest Service lands, logging, does not yield enough revenue after costs to generate net profits to the federal landowner. The White House Council of Economic Advisors has concluded that harvests on national forests cost more money than they make. A White House report showed that for the fiscal year ending September 30, 1995, the Forest Service collected $616 million in receipts from timber sales, but spent more than $850 million on timber management, reforestation, logging roads, payments to states, and other costs.[168] Such figures reveal that the Forest Service's logging operations do not turn a profit; instead, this federal agency is effectively subsidizing timber extraction from public lands by collecting less in timber sale revenues than it is spending on timber program costs.[169]

The modest, if not insignificant, contribution of the Forest Service's timber commodity to the nation's economy is evidenced by the fact that the major commercial users of Forest Service timber, the wood products industry, represent only 3% of the Gross National Product.[170] By the late 1990s, logging levels across the 192 million acres of national forests were just one fourth of the peak harvest levels of 12 billion board feet annually of the 1980s.[171] Moreover, the federal government does not control sufficient timber commodity resources on its public lands to

168. *See* Scott Sonner, *Council Agrees Taxpayers Lose Money on U.S. Logging*, THE COLUMBIAN, Feb. 19, 1997, at Section A.

169. One important component of the federal timber subsidy is the cost of building logging roads in national forests, typically paid for with taxpayer money. The cost of building such roads is increasingly cited as the reason that many national forests lose money on timber sales. *See* Carey Goldberg, *Sylvan Roads That Lead to Bitter Protests*, N.Y. TIMES, May 23, 1997, at A14; *see also Timber Sales Lose Money*, DENVER POST, Jan. 8, 1998, at 3B (noting that the Forest Service's commercial logging programs lost $204 million in 1996); *Cut the Cutting*, WASH. POST, Aug. 19, 1997, at A12.

170. *See* Daniels, *supra* note 7, at 486.

171. *See* Scott Sonner, *100-Year-Old Logging Law Draws Fire From 2 Sides*, ROCKY MOUNTAIN NEWS, June 5, 1997, at 53A. Potential timber sales of 100 million board feet of timber will be lost in the late 1990s because of a moratorium on new road building in most national forests. *See* Todd Wilkinson, *Forest Service Seeks a New (Roadless) Road to the Future*, 30 HIGH COUNTRY NEWS, Apr. 27, 1998, at 9.

affect, by the sale of its timber, the distribution of monetary wealth at an aggregate level.[172]

b. Forage from Federal Rangeland

The federal grazing permit also represents a sizable subsidy to private concerns, by allowing federal permittees to graze livestock for as little as a tenth of the cost a nonpermittee rancher must bear.[173] This subsidy is reflected in the fee ranchers pay for grazing privileges on federal lands, which is far below fair market value for the use of comparable grazing lands.[174] The below-cost federal grazing fee has thwarted BLM attempts to institute a range improvement program that would increase the forage-producing capacity of grazing allotments. Whenever such proposals involve even temporary reductions in the number of livestock allowed under a permit, permittees are inclined to fight the proposals for fear that the reductions will limit their commensurate rights, thereby lowering the base value of their ranches.[175]

The subsidy inherent in the fee for grazing on public lands contributes significantly to the deterioration of range conditions. When permittees maintain more animals than carrying capacity allows, the public rangeland becomes less productive.[176] Thus, it is not surprising that federal rangeland accounts for only 2 to 5% of the livestock produced in the United States as a whole.[177]

c. Minerals

The 1872 General Mining Law[178] permits exploration, private ownership, and removal of hardrock minerals on public domain lands. Since its passage in 1872, its operative scope has greatly diminished as federal reservation policies, private settlement,

172. *See* Daniels, *supra* note 7, at 486.

173. *See* COGGINS & GLICKSMAN, *supra* note 2, § 19.02[2].

174. *See, e.g.*, FEDERAL PUBLIC LAND AND RESOURCES LAW, supra note 155, at 702-04 (3d ed. 1993); DENZEL FERGUSON & NANCY FERGUSON, SACRED COWS AT THE PUBLIC TROUGH, ch. 16 (1983).

175. *See generally* Nolen, *supra* note 31; Richard H. Cowart and Sally K. Fairfax, *Public Lands Federalism: Judicial Theory and Administrative Reality*, 15 ECOLOGY L.Q. 375, 378-80 (1988); George Cameron Coggins, *Livestock Grazing on the Public Lands: Lessons From the Failure of Official Conservation*, 20 GONZ. L. REV. 749, 758 (1985).

176. *See, e.g.*, NRDC v. Hodel, 624 F. Supp. 1045 (D. Nev. 1985), *aff'd*, 819 F.2d 927 (9th Cir. 1987) (discussing grazing allotments and the maintenance or improvement of ecological condition).

177. *See generally* DEPARTMENT OF THE INTERIOR & DEPARTMENT OF AGRICULTURE, STUDY OF FEES FOR GRAZING LIVESTOCK ON FEDERAL LANDS (1977).

178. 30 U.S.C. §§ 22-47 (1994).

and withdrawals have reduced the acreage of lands in the public domain open to mineral entry.[179] Congress has removed several varieties of valuable minerals from its operation.[180] Environmental considerations have greatly burdened a miner's access to minerals otherwise subject to the liberal ownership terms of the General Mining Law.[181] Also, many investors have decided that real assets, such as natural resources in general, and hard rock minerals in particular, are no longer good places to invest for high returns. In the 1990s, this shift away from investments in minerals can be explained by low inflation rates and high yields for noncommodity stock market portfolios.[182] Over the long run, it may be explained by declining prices for mineral resources.[183]

Energy resources, like oil and gas, that are found on shore in federal lands are buffeted by three realities that work to deter interest in domestic extraction of these resources. First, domestic oil on public lands cannot easily compete with the relatively cheap and plentiful supply from foreign nations.[184] Oil from the Persian Gulf is expected eventually to supply 3 out of every 4 barrels of new oil demand, reducing the need for domestic production and causing net imports from foreign sources to increase from 8 to over 10 million barrels per day by the year 2010.[185] New and planned Canadian gas pipelines may inundate the Midwest and Eastern United States with significant new gas supplies by the end of the century. One result of this unprecedented gas-on-gas competition will be lower wellhead prices for domestic gas from public lands.

Foreign competition is not the only deterrent to oil and gas exploration and development on public lands. Because oil and gas producers on federal lands are lessees that must pay royal-

179. *See* COGGINS & GLICKSMAN, *supra* note 2, §§ 25.02[1] through 25.02[2].

180. *See* Mineral Leasing Act of 1922, 30 U.S.C. §§ 181-287 (1994).

181. *See generally* Dunn McCampbell Royalty Interest, Inc. v. National Park Service, 964 F. Supp. 1125 (S.D. Tex. 1995); Philip F. Schuster, II, & Roger F. Dierking, *Future Prospects for Mining and Public Land Management: The Federal "Retention-Disposal" Policy Enters the Twenty-First Century*, 26 ENVTL. L. 489 (1996).

182. *See Low Interest Rates Fuel Surging Stock Market*, DENVER POST, July 16, 1997, at A1.

183. *See* Margaret E. Slade, *Trends in Natural-Resource Commodity Prices: An Analysis of the Time Domain*, 9 J. ENVTL. ECONOMICS & MANAGEMENT 122 (1982).

184. *See* Matthew L. Wald, *U.S. Increasing Its Dependence On Oil Imports*, N.Y. TIMES, Aug. 10, 1997, at D10 ("American production is declining because it is easier to obtain oil from other countries than from the dwindling reserves in the United States.").

185. *See* ENERGY INFORMATION AGENCY, DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK (1996). Imports of oil have increased by 100% since 1983, increasing from 1.8 billion barrels to 3.5 billion barrels in 1996. *See* COOPERATING ASSOCIATIONS FORUM, *supra* note 103, at 16.

ties on their leases to the federal owner, they are subjected to royalty valuation problems. Unlike those due to lessors under private oil and gas leases, royalties under federal oil and gas leases must be calculated consistent with various federal statutory and regulatory regimes.[186] As a result, the ultimate profit to private oil and gas lessees may be substantially reduced if royalties are determined by valuation procedures that tend to maximize revenue to the United States. The Department of Interior's Mineral Management Service has been experimenting with valuation methods that move the point of valuation far away from the lease.[187] This policy could simultaneously increase the royalty due the United States, exacerbate the already considerable financial uncertainty inherent in planning whether to develop onshore federal oil and gas, and thereby decrease the desirability of oil and gas production on public lands.

A third difficulty facing those in the energy industry is that federal law imposes an overlay of environmental requirements on public lands that work to delay the operations of even the most conscientious, ecologically-sensitive, energy companies. The chief delay-producing statutes are the National Environmental Policy Act (NEPA),[188] the Endangered Species Act,[189] and the Federal Onshore Oil and Gas Leasing Reform Act.[190] A combination of these statutes, their implementing regulations, and the relevant case law has produced the equivalent of a de facto moratorium on new oil and gas leasing and lease renewals.[191] Another

186. The Federal Oil and Gas Royalty Management Act of 1982, 30 U.S.C. §§ 1701-1757 (1994), authorizes the Secretary of the Interior to audit the accounts of oil and gas lessees on federal lands to assist in the calculation and collection of lease royalties. The Secretary has delegated these powers to the Minerals Management Services. *See, e.g.*, Phillips Petroleum Co. v. Lujan, 963 F.2d 1380 (10th Cir. 1992).

187. *See, e.g.*, Amendments to Gas Valuation Regulations for Federal Leases, 62 Fed. Reg. 19536 (1997) (to be codified at 30 C.F.R. pts. 202, 206, and 211); Establishing Oil Value for Royalty Due on Federal Leases, and on Sale of Federal Royalty Oil, 62 Fed. Reg. 3742 (1997) (to be codified at 30 C.F.R. pts. 206 and 208).

188. 42 U.S.C. §§ 4321-4370d (1994).

189. 16 U.S.C. §§ 1531-1544 (1994).

190. Act of Dec. 22, 1987, Pub. L. No. 100-203, §§ 5101-5113, 101 Stat. 1330-256 to 1330-263) (codified at 16 U.S.C. § 3148, 30 U.S.C. §§ 187a-b, 188, 191, 195, 226, 226-3 (1994)).

191. This slowdown in leasing is especially evident on Forest Service lands. *See* Jan G. Laitos, *Paralysis by Analysis in the Forest Service Oil and Gas Leasing Program*, 26 LAND & WATER L. REV. 105 (1991); *see also* John F. Shepherd, *Key NEPA Issues Affecting Oil and Gas Development on Federal Lands*, 37 ROCKY MTN. MIN. L. INST. 15-1 (1991). An average of 50% of the subsurface acreage containing known oil and gas reserves on public lands within eight western states is unavailable for leasing due to discretionary restrictions imposed by federal law. *See* COOPERATING ASSOCIATIONS FORUM, *supra* note 103, at 15.

disincentive facing would-be developers is the ability of federal leasing agencies (for example, the BLM) to recover a wide array of costs associated with federal environmental laws from private developers, such as the costs of preparing an environmental impact statement under NEPA.[192] These types of costs can be substantial and serve to discourage commercial activity on public lands.

2. *Modern Legal Institutions Have Discouraged Commodity Development on Public Lands While Encouraging Recreation and Preservation*

When the environmental movement achieved full voice in the 1960s and 1970s, groups of reformers mobilized and demanded that federal laws be changed to halt the loss of nature to commercial development. Conservation groups discovered that they had tapped into a latent public concern about environmental degradation and that they had the ear of Congress. Within a decade, federal statutes were enacted that worked to deter private interest in exploiting the economic potential of natural resources on public lands. The newly passed laws, which dramatically increased the amount of land in the National Wildlife Preservation System, the National Wildlife Refuge System, and the National Parks were designed to protect the environment, save the wilderness, enhance outdoor recreational opportunities, and permit legal challenges to private commodity uses of public lands.[193]

Perhaps the most dramatic effect of these recreation and preservation initiatives is that the amount of public lands normally managed according to multiple-use statutes[194] has dwindled, decreasing the land base historically used by resource extractive industries favoring commodity production.[195] For

192. *See* Opinion of the Solicitor, Dep't of the Interior, BLM's Authority to Recover Costs of Minerals Document Processing (Dec. 5, 1996).

193. *See* ALSTON CHASE, IN A DARK WOOD: THE FIGHT OVER FORESTS AND THE RISING TYRANNY OF ECOLOGY 1-2 (1995); *see also* SAMUEL P. HAYS, BEAUTY, HEALTH, AND PERMANENCE: ENVIRONMENTAL POLITICS IN THE UNITED STATES, 1955-1985 (1987).

194. The Federal Land Policy and Management Act (FLPMA) imposes a multiple use philosophy on BLM lands. 43 U.S.C. §§ 1701(a)(7), 1712(c)(1), 1732(a) (1994). The National Forest Management Act (NFMA), 16 U.S.C. §§ 1600(3), 1601(d), 1602(5)(A), 1604 (e)(1), 1607 (1994), and the Multiple-Use Sustained Yield Act, 16 U.S.C. § 528 (1994), establish multiple use (and sustained yield for the timber commodity) as the foundation for management of Forest Service lands.

195. *See generally* George Cameron Coggins, *Of Succotash Syndromes and Vacuous Platitudes: The Meaning of "Multiple Use, Sustained Yield" for Public Land Management*, 53 U. COLO. L. REV. 229 (1982); COGGINS & GLICKSMAN, *supra* note 2, §

example, multiple-use BLM and Forest Service lands cannot support a resource extraction industry if they are (1) classified as national park system units, wilderness, or wildlife refuges; (2) designated as critical habitat for endangered species; (3) developed for recreational use (e.g., for mountain biking or skiing); or (4) subject to access restrictions that prevent commodity development. As a result of Congressional and agency decisions, the multiple-use land base has been halved since 1934.[196]

Federal government actions have done more than shrink the number of acres of multiple-use lands. Some multiple-use statutes were enacted in part because Congress intended to reverse the traditional approach of federal lands agencies that tended to favor consumptive interests. For example, the FLPMA[197] directs the BLM to propose comprehensive plans that give all resources, including nonconsumptive ones like wildlife protection, equal priority in the planning process.[198] FLPMA also assumes that the disposal policies inherent in various federal mining and timber statutes should be replaced by a philosophy favoring the retention of lands and resources in federal ownership to prevent undue commercial development.[199] Pressure to extract and exploit the minerals on public lands has also given way to federal policies that restrict use of mining claims through access regulation.[200]

Another blow to those hoping to return public lands to traditional commodity use has come from the failure of the so-called Wise-Use movement. Its litigation and lobbying strategies have been directed toward ensuring continued exploitation of the resource wealth offered by the public domain.[201] Courts have soundly rejected the movement's arguments that local governments should have more control over public lands, which would have permitted localities to sanction the private exploitation of

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16.02[2][b].

196. *See New FS Policy May Include Bar on Access to Unroaded Areas*, PUB. LANDS NEWS, Jan. 16, 1998, at 1.

197. FLPMA, 43 U.S.C. §§ 1701-1783 (1994).

198. *See* FLPMA, 43 U.S.C. § 1712(c) (1994); *see also* Nolen, *supra* note 31, at 833 (pointing out that, despite this statutory mandate, BLM still favors consumptive interests).

199. *See* 43 U.S.C. § 1701 (a)(1) ("[P]ublic lands [should] be retained in Federal ownership . . . .").

200. *See, e.g.*, Schuster & Dierking, *supra* note 181, at 557; *see also, e.g.*, Jakoby v. United States, 38 Fed. Cl. 192 (1997).

201. *See generally* DAVID HELVARG, THE WAR AGAINST THE GREENS: THE "WISE-USE" MOVEMENT, THE NEW RIGHT, AND ANTI-ENVIRONMENTAL VIOLENCE (1994); Hardt, *supra* note 7.

resource commodities on federal property.[202] Wise-Use adherents have also been unable to find much of a sympathetic ear in Congress, causing some commentators to characterize the movement as "little more than a great deal of sound and fury."[203]

3. *Local Communities Have Recognized that Nonextractive Alternatives to Traditional Commodity Development Are Economically Preferable*

Several consequences tend to follow the conclusion that resource extractive activities on federal public lands are declining. The more dependent a community is on a resource extractive industry, the more economically depressed it is likely to be. Reliance on a traditional commodity use of public lands risks long term economic decline for local communities if relative prices of extractive commodities fall over time.[204] Conversely, when an extractive industry leaves a local community, although that community may suffer initially, it benefits in the long run because the community has ended its dependence on the exploitation of one natural resource. Indeed, in many Western communities, the loss of a mining or timber harvesting operation on adjacent public lands has resulted in improved employment and real income levels.[205]

While communities that rely on commodity use of public lands tend to have unstable economies, local communities that increase their nonextractive sectors are relatively healthy economically. As extractive industries have declined, a vigorous expansion has occurred in economic sectors that do not require development of raw materials on public lands.[206] Localities

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202. *See, e.g.*, United States v. Gardner, 107 F.3d 1314 (9th Cir. 1997); United States v. Nye County, 920 F. Supp. 1108 (D. Nev. 1996).

203. Patrick A. Perry, *Law West of the Pecos: The Growth of the Wise-Use Movement and Challenge to Federal Public Land-Use Policy*, 30 LOY. L.A. L. REV. 275, 319 (1996); *accord* RUDZITIS, *supra* note 6, at 146-53.

204. *See* POWER, *supra* note 6, at 4; *see also* Tim Woodward, *Boom-Bust Cycle Returns to Town: Silver, Gold Mine to Close in Idaho*, DENVER POST, Nov. 27, 1998, at 43A; Jonathan Fuerbringer, *No Refuge in Plunging Commodity Prices*, N.Y. TIMES, Aug. 28, 1998, at C1 (noting that a major index of commodity prices worldwide fell to its lowest level in 21 years in 1998).

205. *See* POWER, *supra* note 6, at 90-92 (discussing the expansion of the economic base of towns that lost employers in the mining industry); Rasker, *supra* note 165, at 382-85 (discussing the economic benefits experienced by towns which lost lumber mills that had used timber on adjacent public lands); *see also Towns Seek Clean Air Along With Good Jobs*, DENVER POST, Aug. 17, 1997, at 9A (recounting how the Town of Kremmling, Colorado ultimately benefited economically by the shut down of its Louisiana-Pacific waferboard mill).

206. *See* POWER, *supra* note 6, at 4-5.

showing the greatest economic strength tend to have a diversified economic base that is linked to environmental and recreational amenities.[207] Cities and counties that are not growing tend to be closely associated with mining, energy, timber, and ranching.[208]

These developments have substantially altered the traditional view that Western states and localities are economically dependent on commodity resources used by the mining, timber, and ranching industries. Indeed, by the 1990s, these extractive industries comprised only a small part of the local and regional economies of communities near federal public lands.[209] The declining importance of commodity goods production is reflected in the current American economy, which does not require indigenous raw materials to thrive. The strongest industries in the modern American economy, such as biotechnology, telecommunications, computers, finance, and transportation, are not based upon products traditionally extracted from public lands.[210] Rather than raw materials, these industries rely upon an educated and skilled work force.

The transformation from a goods to a knowledge-based economy that has taken place in the second half of the century has had a profound effect on the country's social and economic

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207. *See* RUDZITIS, *supra* note 6, at 106-08 (1996); *see also* Rasker, *supra* note 165, at 375-78; Sam Howe Verhovek, *Old and New West Clash in Remote Oregon Area*, N.Y. TIMES, Nov. 20, 1998, at A14; Dustin Solberg, *Timber Town Opts for Water Over Logs*, HIGH COUNTRY NEWS, Apr. 27, 1998, at 10-11 (describing how Oregon towns that previously relied on timber mills to fuel the economy now rely on "carloads of vacationers who have built second homes near the [region's] cool waters"); Timothy Egan, *Urban Sprawl is Home on the Range*, N.Y. TIMES, July 9, 1998, at A13 (Montana rangeland being converted to subdivisions because of recreational amenities); Christopher Smith, *Moab's Natives Struggle with an Overabundance of Wildlife*, N.Y. TIMES, Mar. 11, 1998, at Adventure Sports 10 ("Moab's economy and population eroded until two brothers who were out of work as uranium miners . . . began selling . . . 'mountain bikes' . . . ."); James Brooke, *Utah is Warming Up to Newest Monument: Tourist Dollars Smooth Ruffled Feathers*, N.Y. TIMES, Oct. 13, 1997, at A8 (noting there is "a growing realization that the region's immediate economic future lies not with coal, oil or gas, but with tourism, modern Utah's largest economic activity"); Mike Evans, *Industry Diversity Could Help State Ride Out Boom-Bust Cycle*, DENVER POST, Nov. 9, 1997, at G1 (stating that less reliance on extraction of energy minerals, and more diversification into the services sector, would alleviate economic problems for Wyoming).

208. *See* RUDZITIS, *supra* note 6, at 109; *see also* Mike Evans, *Industry Diversity Could Help State Ride Out Boom-Bust Cycle*, DENVER POST, Nov. 9, 1997, at G1 ("Although Wyoming's coal production is setting records, employment decreased by 2% in that industry because of technological advances.").

209. *See, e.g.*, RUDZITIS, *supra* note 6, at 130; POWER, *supra* note 6, at 43 (noting that only 8% of the work force in non-metropolitan areas is employed in extractive activities).

210. *See* LESTER THUROW, HEAD TO HEAD: THE COMING ECONOMIC BATTLE AMONG JAPAN, EUROPE, AND AMERICA 45 (1993); Rasker, *supra* note 165, at 372-73.

environment. In rural, nonmetropolitan areas abutting public lands, there has been a shift toward a diversified economy, where services play a critical and growing role.[211] Extractive natural resources industries have, by contrast, declined in importance.[212]

The services category excludes all goods-producing industries (for example, agriculture, forestry, mining, fishing, and construction) that produce items for sale in markets. It includes knowledge-based professions, such as engineering, software design, data processing, law, medicine, telecommunications, health and biotechnology, management consulting, government, banking, financial planning, and education, as well as retail trade.[213] Such services provided close to 80% of employment in the United States[214] and over 70% of the Gross Domestic Product.[215] During the past two decades, American companies that exported services abroad (bringing foreign money into the domestic economy) produced a $59 billion trade surplus.[216]

The changes in the relative economic importance of the extractive and services industries is graphically represented in Figure 1.

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211. *See Towns Seek Clean Air*, *supra* note 205 (noting how the town of Kremmling, Colorado has begun to thrive economically by attracting industry using the town's chief assets— "its mountain location, and the fishing, hiking, and hunting to be had [on the nearby public lands]").

212. *See* POWER, *supra* note 6, at 57, 62, 78-80.

213. *See id.* at 64.

214. For other broad definitions of the term "services," see, for example, STEPHEN S. COHEN & JOHN ZYSMAN, MANUFACTURING MATTERS: THE MYTH OF THE POST-INDUSTRIAL ECONOMY 51-54 (1987) (noting that services are what remain after subtracting jobs in farms and factories); Eli Ginzberg & George J. Vojta, *The Service Sector of the U.S. Economy*, SCI. AM., Mar. 1981, at 48, 48 ("In defining services we observe the convention of national accounting that allocates to services all output that does not come from the four goods-producing sectors: agriculture, mining, manufacturing and construction.").

215. *See* James Brian Quinn & Christopher E. Gagnon, *Will Services Follow Manufacturing Into Decline?*, HARV. BUS. REV., Nov.-Dec. 1986, at 95.

216. *See* Ralph T. King, Jr., *Quiet Boom: U.S. Service Exports Are Growing Rapidly, But Almost Unnoticed*, WALL ST. J., Apr. 21, 1993, at A1; *see also* William B. Beyers, *Trends in Service Employment in Pacific Northwest Counties: 1974-1986*, GROWTH AND CHANGE, Fall 1991, at 27.

Figure 1 [217]

217. Compiled from BUREAU OF THE CENSUS AND BUREAU OF ECONOMIC ANALYSIS REGIONAL ECONOMIC INFORMATION SYSTEM, HISTORICAL STATISTICS OF THE UNITED STATES (graphically displayed in POWER, *supra* note 6, at 34).

The local economies that are no longer dependent on natural resources, but instead rely upon nonextractive, service-oriented industries, are most visible in the West, where the vast bulk of the country's public lands are located. For example, the eight states in the Rocky Mountain West[218] added over two million new jobs from 1969 to 1991, most of which were in service-related occupations.[219] By 1991, the service-related sectors of the economy constituted over 81% of employment and 68% of labor income in these states.[220]

B. Factors Causing Increased Recreational Use of Federal Lands

One of the major sociological and economic events in the twentieth century United States involves the dramatic increase in recreation, particularly outdoor recreation. By 1997, the Outdoor Recreation Coalition of America reported that more than 90% of Americans over the age of sixteen regularly participate in at least one outdoor recreational activity.[221] Much of the increase has taken place on federal lands.[222] For example, the BLM, whose lands were once thought to be conducive primarily to livestock and mining, recorded 72 million visits for recreation in 1990.[223] The Interior Department's Assistant Secretary for Land and Minerals has acknowledged that the "BLM has changed to meet public needs," in part because "[w]e prize the public lands

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218. Colorado, Idaho, Utah, Nevada, New Mexico, Arizona, Wyoming, and Montana.

219. *See generally* POWER, *supra* note 6, at chs. 4-7; RUDZITIS, *supra* note 6, at 170-31.

220. *See* Rasker, *supra* note 165, at 376-78 (citing BUREAU OF ECON. ANALYSIS, DEP'T OF COMMERCE, REGIONAL ECONOMIC INFORMATION SYSTEM: FULL AND PART-TIME EMPLOYMENT AND INCOME BY INDUSTRY (1992)); *see also* Donald Blount, *Economies More Diverse in '90s? Experts Say No*, DENVER POST, Apr. 12, 1998, at J1 (noting that in Colorado, employment in the services sector increased from 20% to 30% of total workforce in the state); Chilson, *supra* note 9, at 13 (noting that Seattle and Denver, once connected to timber and ranching, have more complex economies dependent on high-tech companies, recreation, and services).

221. *See* Penny Parker, *Sales of Outdoor Gear Hit $4.7 Billion in '96*, DENVER POST, June 18, 1997, at C1 (reviewing the 1997 *State of the Industry Report* released by The Outdoor Recreation Coalition of America); *see also* OUTDOOR RECREATION COALITION OF AMERICA, NATIONAL SURVEY ON RECREATION AND THE ENV'T, ch. 4 (1995) ("Overall, outdoor recreation is increasing.").

222. *See* Christine Bloomquist, *Tourism and Recreation Management: Strategies for Public Lands*, PARKS AND RECREATION, Sept. 1, 1996, at 92; *see also* NATIONAL SURVEY, *supra* note 221, at ch. 8 ("Federal recreation lands continue to see an increase in visitors.").

223. *See* BUREAU OF LAND MANAGEMENT, DEP'T OF THE INTERIOR, INTRODUCTION TO RECREATION RESOURCES 5 (1995); *see also* BUREAU OF LAND MANAGEMENT, DEP'T OF THE INTERIOR, RECREATION 2000 UPDATE (undated government publication available in 1995).

today for their scenic, recreational, environmental, and archeological significance."[224] The United States Forest Service, the original multiple-use federal agency, experienced a doubling of recreational use in national forests between the late 1960s (150 million visitors annually) and 1990 (almost 300 million visitors).[225] As noted by the Agriculture Department's Under Secretary for Natural Resources: "Timber is not the agenda of the future. Recreation is."[226] Public lands have become so popular for recreation that knowledgeable commentators have opined that "if aesthetic appreciation of nature is deemed a facet of recreation, then recreation is the most frequent, if not dominant, federal land use."[227]

But an overall increase in recreation does not explain why public lands have become recreation destinations. One needs to understand how traditional multiple-use public lands, such as Forest Service and BLM lands, have evolved from extractive uses to dominant, nonextractive, recreational uses. As discussed below, this change in use of public lands has been caused by psychological, sociological, economic, and legal factors.

1. Psychological and Sociological Factors

As the century comes to a close, one is left with the impression that the physical environments preferred at the beginning of the century have been replaced by a totally different vision of what constitutes an ideal community. One hundred years ago a prosperous setting was one in which extractive industries flour-

224. Bob Armstrong, *Our Federal Public Lands*, 12 NAT. RESOURCES & ENV'T 3, 7 (1997).

225. *See* JOHN F. DWYER, DEP'T OF AGRICULTURE, CUSTOMER DIVERSITY AND THE FUTURE DEMAND FOR OUTDOOR RECREATION 8 (1994); *see also* UNITED STATES GENERAL ACCOUNTING OFFICE, FOREST SERVICE: DIFFICULT CHOICES FACE THE FUTURE OF THE RECREATION PROGRAM B-242 583 (1991); UNITED STATES GENERAL ACCOUNTING OFFICE, CHANGES NEEDED IN THE FOREST SERVICE'S RECREATION PROGRAM 2 (1991) (statement of James Duffus III before Subcommittee on National Parks and Public Lands) (noting that Forest Service lands record more recreational visitor use— a quarter of a billion visitor days per year— than any other federal lands).

226. Timothy Egan, *Adapting to Fees for Enjoying Public Lands*, N.Y. TIMES, Aug. 21, 1997, at A1 ("[R]ecreational users are the biggest users of public land."); *see also* JAMES P. PERRY & ELLEN R. HORNSTEIN, DEP'T OF AGRICULTURE, RECREATIONAL DEVELOPMENTS ON NATIONAL FOREST SYSTEM LANDS 8-1 to 8-2 (paper delivered at Rocky Mountain Mineral Law Foundation Public Lands Special Institute, Denver, Colo., Nov. 14, 1997) ("Today, recreation is listed as one of the Forest Service's top resource priorities."); James Gerstenzang, *Chief Forges New Path for Forest Service*, DENVER POST, Mar. 2, 1998, at A1; Timothy Egan, *Get Used to New West, Land Managers Tell the Old West*, N.Y. TIMES Feb. 12, 1998, at A10.

227. COGGINS & GLICKSMAN, *supra* note 2, § 17.01.

ished— timber was being turned into pulp and paper; copper was being mined; cattle and sheep were grazing. Today, Americans are more aware that these economic activities impact other sources of well being. What is often far more desirable than a steel mill or paper factory is a pristine natural environment where recreation can flourish, health is protected, air and water are unpolluted, and wildlife is abundant. Americans increasingly judge an area's desirability not by the quantity of commodity goods produced there, but by the environmental and recreational amenities it offers.[228]

Interest in recreation is being fueled by several factors related to how people feel about themselves and their world. Surveys reveal that outdoor recreation has become a significant part of the lives of over 75% of Americans.[229] Reasons for the unprecedented popularity of recreation vary. People are increasingly aware of their health and their bodies.[230] They also have more interest in the natural environment and the growing number of federally managed ecosystems and biologically diverse communities now subject to a preservation mandate.[231]

Public perception of federal lands seems especially dependent on recreational potential. Over 95% of Americans surveyed believe that the federal government should preserve natural areas for the recreational use of future generations.[232] This association between public lands and recreation is in part due to the feeling one has when traveling through these unfenced, unpopulated lands (particularly in the West). The impression that is gained is that "this belongs to me." Such an assumption creates citizen pressure for recreational noncommodity uses, such as backpacking, mountain biking, camping, and fishing.[233]

Various sociological and demographic changes have also served to stimulate the public's desire to use public lands for recreational purposes. Recreation requires leisure time, and

228. *See* POWER, *supra* note 6, at 235-42.

229. *See, e.g., Poll: Outdoor Recreation, Activism Are High Priorities*, USA TODAY, Mar. 28, 1991, at 7C (noting that in a poll commissioned by the Recreation Round Table, 77% of a nationwide sample said outdoor recreation was "very important" or "fairly important" to their lives); *Return to Outdoor Activities a Priority for Many in '90s*, USA TODAY, Oct. 31, 1991, at 9C (noting that nearly three-fourths of Americans sampled in a nationwide survey indicated a desire to participate in more active forms of outdoor recreation).

230. *See id.*

231. *See id.*; *see also* DWYER, *supra* note 225, at 9.

232. *See* Karen E. Franklin, *Protect Wild Lands*, AMERICAN FORESTS, July 1986, at 49 (noting that of the 2,000 Americans surveyed, 97% agreed that federal lands should be preserved for recreation).

233. *See* RUDZITIS, *supra* note 6, at 9.

Americans enjoy an average of nearly 40 hours of leisure a week, up from 35 hours in 1965.[234] This country's population is increasing, and much of it is concentrated in urban areas,[235] whose dwellers comprise the fastest growing segment of the population using public lands for recreational purposes.[236] America also enjoys a high level of disposable personal income and an interstate highway system that provides low cost-access to recreation areas far from home.[237] Rising discretionary purchasing power and mobility combine to give recreation-minded urban residents access to public lands and nearby communities.

2. *Economic Factors Causing Increased Recreational Use of Public Lands*

For many years, the economic health of states in the West was tied closely to the commodity resources found on public lands— hardrock minerals, coal, oil and gas, water, forage for crops and livestock, and timber.[238] But with the decline of traditional commodity resource use on public lands has come a different economic reality, linked not to extractive industries, but to the emerging recreation value of public lands. Four factors help to explain the dominance of recreation use.

First, one can argue that the recreation resource on public lands is a public good. Public goods generally have two characteristics: (1) they are difficult to exclude persons from; and (2) as a consequence they tend to be over-used. Unlike most commodity resources such as a mining deposit or an oil reservoir, the recreation resource usually has no borders (other than the boundary line separating public and private property). Moreover, no administrative mechanism exists to easily restrict the flow of persons wishing to engage in public-lands recreation. As a re-

234. *See* JOHN P. ROBINSON & GEOFFREY GODBEY, TIME FOR LIFE: THE SURPRISING WAYS AMERICANS USE THEIR TIME 131-33 (1997); *see also* ZINSER, *supra* note 117, at 4 (noting that the increase in leisure time was made possible by "shorter work weeks, time-saving devices, flextime, earned time, three-day weekends and four-day work weeks").

235. *See id.* at 8 ("The United States is a nation that is over 86% urban.").

236. *See* DWYER, *supra* note 225, at 4.

237. *See* ZINSER, *supra* note 117, at 4-6 (listing "income" and "mobility" as factors that affect the use of recreational resources).

238. *See, e.g.*, James McMahon, *The Most Pressing Environmental Issue Concerns People*, DENVER POST, Apr. 18, 1993, at 2D ("Is it not these very industries— ranching, farming, mining and logging— that provide all of the employment in many of our [western] communities?"); Raymond Rasker, *Rural Development, Conservation, and Public Policy in the Greater Yellowstone Ecosystem*, 6 SOC'Y & NAT. RESOURCES 109 (1993).

sult, once one person is allowed to use BLM or Forest Service lands for recreational purposes, it is quite difficult to exclude others from taking full advantage of similar recreational opportunities. Since it would be incredibly expensive to put impenetrable fences around all public lands not already devoted to recreation, and since it could be administratively burdensome and politically unpopular to collect fees at fixed entrance points to limit those who wish to gain access to these lands, BLM lands and national forests effectively become "commons." Visitors can hike, bike, camp, swim, ride horses, or drive their all-terrain vehicles without asking permission, making a reservation, or paying a fee. As a result, the recreation resource on public lands, as a public good or commons, becomes over used.[239]

Second, recreation has economic worth. The economic value of recreation in part takes the form of dollars that flow into the outdoor recreation equipment market. In 1996, the Outdoor Recreation Coalition of America estimated that retail sales of such equipment (e.g., mountain bikes, hiking and walking shoes, outerwear, skis, kayaks) totaled almost $5 billion.[240] The outdoor recreation industry provided nearly 800,000 full-time jobs, for a total of $13 billion in annual wages.[241] Of course, since these are national figures, one cannot presume that the economic benefits of the recreation industry are directed at states in the West where most public lands are located. Still, one can assume that a significant portion of the retail sales for outdoor recreational equipment takes place in, and therefore benefits the economies of, the public lands states.[242]

Third, apart from spending money on (and thereby employing those who manufacture) recreation equipment, outdoor enthusiasts who buy such equipment often use it on the public lands. During their visit to public lands, these individuals typically spend money in surrounding communities. Thus, nearby communities reap an economic benefit from the active participants who come to public lands to fish, hunt, camp, hike, snowboard, and raft, as well as the tourists whose recreation consists only of taking a few steps from an automobile to observe or pho-

239. For a discussion of public goods theory, see generally Daniel A. Farber, *Free Speech Without Romance: Public Choice and the First Amendment*, 105 HARV. L. REV. 554, 558-60 (1991).

240. *See generally* Parker, *supra* note 221.

241. *See id.*; *see also Adapting to Fees*, *supra* note 226 ("Human-powered outdoor recreation is a $40 billion business.").

242. *See Adapting to Fees*, *supra* note 226 ("The Forest Service now claims its land is used for 75% of the gross domestic product of [the recreation] industry . . . .").

tograph natural beauty. Both types of recreation create income for communities that are gateways to public lands, thereby boosting their economies.[243] In virtually all population centers near public lands, recreational activities and tourism provide significantly greater employment than commodity resource extraction. Most interior West states now count on recreation and tourism as the first or second largest part of their economies.[244]

The important economic role played by recreation can be seen in two quite different classes of public lands— the national forests, which are subject to a multiple-use mandate,[245] and the national parks, whose conflicting statutory purposes are recreation and preservation.[246] The Chief of the United States Forest Service has estimated that by the year 2000, recreation will account for $97.8 billion of the total $130.7 billion generated by uses of the national forests, while fish and wildlife will generate another $12.9 billion. Most of these recreational dollars are spent in surrounding communities. By contrast, timber harvesting (traditionally the preferred use) is expected to yield only $3.5 billion.[247] For the National Park Service, recreation has been increasingly favored over preservation.[248] The sheer number of visitors arriving at national parks annually has driven this choice.[249] These visitors desire not only a wilderness experience, but also food, lodging, and travel services; amenities that are supplied by concessionaires, which have a tremendous influence on Park Service decisionmaking.[250]

The "amenity resource value" of recreation is yet another type of economic benefit that flows from public lands. This value

243. *See* POWER, *supra* note 6, at 162, 213-16, 233-34.

244. *See* ATLAS OF THE NEW WEST: PORTRAIT OF A CHANGING REGION 125 (William E. Riebsame ed., 1997); *see also* POWER, *supra* note 6, at 162 (noting that in eight of ten national forests in Montana, recreation provides three times as much employment as timber harvesting; in Wyoming's nonwestern national forestland, recreation provides nine jobs for every one associated with the timber harvest); Bloomquist, *supra* note 222 (noting that communities near public lands have identified "nonextractive" methods, such as tourism, to capitalize on the decline of agricultural, mining, and forest uses of these lands); Rasker, *supra* note 165, at 375-78 (as the relative contribution of goods-producing industries to the economies of western states has declined, the economic role of tourism and recreation industries has grown).

245. *See supra* text accompanying notes 221-27.

246. *See* National Park Organic Act of 1916, ch. 408, 39 Stat. 535, 16 U.S.C. § 1 (1994).

247. *See* Jon Christensen, *The Shotgun Wedding of Tourism and Public Lands*, HIGH COUNTRY NEWS, Dec. 23, 1996, at 13.

248. *See* Jeffery, *supra* note 7, at 100-01.

249. *See* Dennis J. Herman, *Loving Them to Death, Legal Controls on the Type and Scale of Development in the National Parks*, 11 STAN. ENVTL. L.J. 3, 14 (1992).

250. *See id.* at 36-42; *see also* Jeffery, *supra* note 7, at 101-02.

refers to the largely intangible, noncommercial benefits associated with unspoiled natural resources.[251] One important amenity use of natural resources is recreational use.[252] When public lands have recreational value, they become economic assets in much the same way that forage, water, timber, and mineral resources are. They help ensure that the existing people and businesses remain[253] and they help lure potential employers and entrepreneurs.[254] Finally, they provide a quality of life and a sense of place that has value both to people currently living there and to those who might want to move or travel there.[255]

Amenity recreation resource values play an important role not so much in attracting short-term tourists and travelers to an area, but rather in encouraging the relocation of permanent residents and businesses. This, in turn, stimulates and supports diverse economic activity. The presence of such amenity values means that, in many areas near public lands, the use of the lands for recreation far exceeds the economic worth of the land for extraction of commodity resources.[256] Also, communities closely tied to recreation tend to lead both metropolitan and nonmetropolitan areas in economic vitality.[257] Some commentators have even concluded that "the amenity value of recreational opportunities in the intermountain West has been the dominant engine of population and economic growth in that region for decades."[258]

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251. *See generally* JOHN V. KRUTILLA & ANTHONY C. FISHER, THE ECONOMICS OF NATURAL ENVIRONMENTS: STUDIES IN THE VALUATION OF COMMODITY AND AMENITY RESOURCES (1975).

252. *See* ZINSER, *supra* note 117, at 2 ("The recreational use of natural resources is considered amenity use.").

253. *See* POWER, *supra* note 6, at 21-2 (amenity resource value helps explain why many western towns show surprising economic vitality after a mine or logging operation closes and environmental quality and recreational opportunities improve); *see also* Ann Arbor Miller, *Yellowstone Gateway Town in Growth Spurt*, DENVER POST, Mar. 29, 1998, at 36A.

254. *See* Rasker, *supra* note 238, at 300.

255. This economic value can be measured by the contingent valuation method, which estimates the value of areas such as parks, wilderness areas, uncut forests, ecosystems, and other natural "goods" not normally priced in a private market setting. *See* Roger Bolton, *'Place Prosperity vs People Prosperity' Revisited: An Old Issue with a New Angle*, 29 URBAN STUDIES 185, 203 (1992); *see also* RUDZITIS, *supra* note 6, at 139-40.

256. *See, e.g.*, ZINSER, *supra* note 117, at 3-4.

257. *See generally* U.S. DEP'T OF COMMERCE, ECONOMIC RESEARCH SERVICE (1994).

258. COGGINS & GLICKSMAN, *supra* note 2, § 17.01.

3. *Inducements Found in the Public's Property Interest in Recreation*

As noted previously, the erosion of the extractive use land base has been accompanied by a commensurate rise in the recreation land base. An increase in recreation lands is particularly obvious when one factors in wilderness areas, wilderness study areas, and multiple-use lands denied to commodity developers because of environmental statutes. Not surprisingly, the increase in recreation land base has been accompanied by an increase in recreational use of public lands. Furthermore, there has been a corresponding decrease in the numbers of commodity users.

These increased recreational use patterns on public lands can be explained by reference to a public goods theory that takes into account changes in property rights assignments for users of a resource. This economic theory describes how users of certain kinds of commonly owned resources derive benefits from their consumption.[259] America's public lands are an example of a public good that is characterized by two qualities with respect to its use— "jointness" and "congestibility." A good has jointness in consumption if many consumers may use a given number of units of the good at the same time, without diminishing the utility each derives from the consumption. For example, two mountain bikers may simultaneously use a 20 square mile section of BLM land near Moab, Utah without ever encountering each other or diminishing the pleasure of each other's experience. At this level of use, the public good (the BLM land) has jointness. On the other hand, jointness would be absent if 500 mountain bikers were to use this 20 square mile section at the same time. The use levels would be so high that each biker's enjoyment of the good would be spoiled.[260]

The congestion point occurs when jointness disappears and simultaneous use reduces the benefits each user derives from the public good. A public good is characterized as congestible when so many people consume the same fixed quantity of that good simultaneously that they will interfere with the benefit derived by each user.[261] When the congestion point is reached, the

259. *See generally* JAMES M. BUCHANAN, THE DEMAND AND SUPPLY OF PUBLIC GOODS (1968). Without the imposition of a property regime, a public good is not subject to private ownership rights.

260. *See generally* J.C. Head, *Public Goods and Public Policy*, 17 PUBLIC FINANCE 197 (1962).

261. *See, e.g.*, Robert P. Inman, *A Generalized Congestion Function for Highway*

only way to maintain the benefits received by each consumer is to increase the supply of the public good being consumed. In the case of the five hundred mountain bikers near Moab, congestion could be avoided, and average benefits from use of the public good retained, if the number of square miles of BLM land available to the bikers is increased.

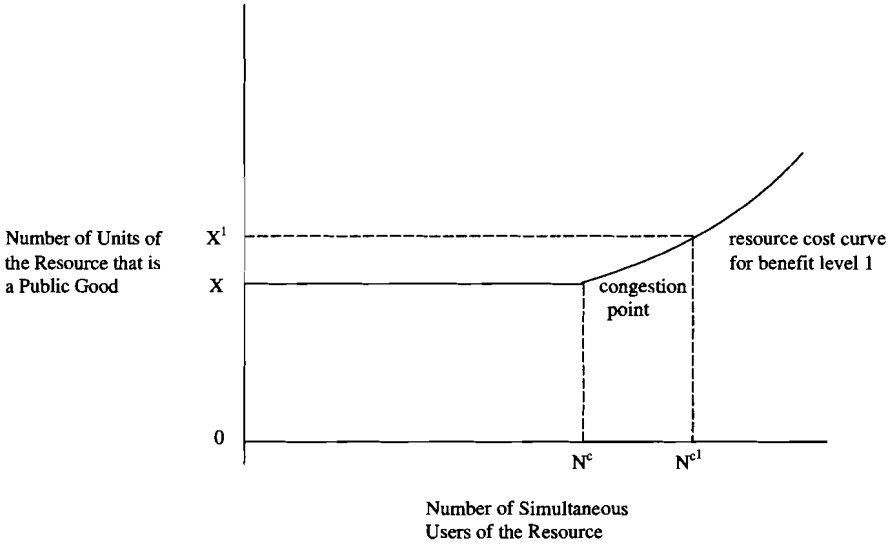
A resource cost curve can be drawn that indicates the number of units of a public good required to provide a given level of benefits per consumer for a varying number of simultaneous consumers.[262] Figure 2 depicts a resource cost curve for recreational users of public lands. The vertical axis represents the number of units (for example, the number of square miles) of the public good (here public lands) needed to maintain a level of benefit (benefit level 1) per recreational user of the good. The horizontal axis is the number of simultaneous recreational consumers of the public good. The shape of the curve will depend upon the jointness characteristics of the public good resource. When consumption, or use, of a resource that is a public good does not decrease the benefits that others derive from their simultaneous consumption of the same number of units of the resource, there is perfect jointness.[263]

Travel, 5 J. URBAN ECON. 21 (1978).

262. The curve is a "cost" curve in that it reflects the increasing number of units that eventually must be provided in order to maintain a level of benefits per consumer.

263. *See* David W. Barnes, *Enforcing Property Rights: Extending Property Rights Theory to Congestible and Environmental Goods*, 10 B.C. ENVTL. AFF. L. REV. 583, 591-94 (1983).

Figure 2


Number of Units of the Resource that is a Public Good
X1
X
0
resource cost curve for benefit level 1
congestion point
Nc
Nc1
Number of Simultaneous Users of the Resource

In Figure 2, assume that the public good is BLM land near Moab, Utah. For any number of recreational mountain bikers between zero (0) and N^c, the resource (BLM land) at X units (a number of square miles) has perfect jointness. The level of benefits each mountain biker derives from simultaneous use of X units of the BLM land is unaffected by simultaneous use of up to N^c additional mountain bikers. If N^c is 2 mountain bikers, and X is 20 square miles of the BLM land, then simultaneous use of the 20 square miles by both of the mountain bikers will not decrease the benefit that each biker derives.

An increase in the number of mountain bikers beyond N^c, to N^{c1} however, requires an increase in the number of square miles of BLM land available for mountain biking (X^1) in order to maintain for each mountain biker the same level of benefit derived from their simultaneous use. The point at which the resource cost curve begins to curve upwards (N^c, X) is the point at which the resource use combines with the nature of the resource to call for more of the resource so that each user over N^c may enjoy the same level of benefit. Thus (N^c, X) is the congestion point.[264]

The upward sloping cost curve in Figure 2 assumes the availability of additional units of the resource in order to maintain the benefits derived from simultaneous use of the resource by increasing numbers of users. One can argue that this is what has occurred in the case of federally-owned recreation lands. The erosion of the multiple-use managed land base has been accompanied by a commensurate rise in the recreation land base. These public lands that formerly were subject to commodity development are now available only to recreation users as they require more and more land.

What happens to benefits when additional units of the resource are not available to accommodate users beyond the congestion point? Figure 3 represents how average benefits are affected when there is simultaneous consumption of the same number of units of a resource by growing numbers of users. For the average benefit curve AB_0, when the number of users is between zero (0) and N^c, the resource has perfect jointness. A steady level of benefit (B^2) derived from using the resource is maintained. When users are greater than N^c, the congestion point, the average benefit to each user of the resource begins to decrease. For example, when user numbers are at N^{c2}, the average benefit to each user has dropped from B^2 to B^0.

264. *See id.* at 592.