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Report to Congressional Requesters

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FEDERAL LAND MANAGEMENT

Better Oil and Gas Information Needed to Support Land Use Decisions

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Resources, Community, and
Economic Development Division

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The Honorable Dale Bumpers
Chairman, Subcommittee on Public Lands,
National Parks and Forests
Committee on Energy and Natural Resources
United States Senate

The Honorable Nick J. Rahall, II
Chairman, Subcommittee on Mining and
Natural Resources
Committee on Interior and Insular Affairs
House of Representatives

Section 5111 of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (P.L. 100-203, Dec. 22, 1987) and your March 2, 1988, letter directed GAO and the National Academy of Sciences to study the manner in which oil and gas resources are considered in Bureau of Land Management and Forest Service land use plans and recommend any improvements that may be necessary to ensure that (1) potential oil and gas resources are adequately addressed in planning documents; (2) the social, economic, and environmental consequences of exploration and development of oil and gas resources are determined; and (3) any stipulations to be applied to oil and gas leases are clearly identified.

This report analyzes how Bureau of Land Management and Forest Service land use plans address the oil and gas issues and social, economic, and environmental impacts of oil and gas development; and it analyzes stipulations used to reduce impacts. The National Academy of Sciences completed a separate report in September 1989.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to interested congressional committees, the Secretary of the Interior, the Secretary of Agriculture, the Director of the Bureau of Land Management, and the Chief of the Forest Service.

This work was performed under the direction of James Duffus III, Director of Natural Resources Management Issues. He may be reached at (202) 275-7756. Other major contributors are listed in appendix X.

J. Dexter Peach
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Executive Summary

Purpose

Federal onshore leases produced oil and gas valued at about $3.3 billion in 1988. The federal government, states, and Indians share a percentage of the revenues from these leases. In making leasing decisions, the Department of the Interior's Bureau of Land Management (BLM) and the Department of Agriculture's Forest Service must weigh the benefits of oil and gas development against potentially adverse impacts on other resources.

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 required GAO to study how oil and gas development is considered in BLM and Forest Service land use plans and to recommend any necessary improvements. GAO addressed (1) whether land use plans include adequate information on oil and gas activities in areas with high oil and gas potential, (2) whether appropriate mitigating measures (stipulations or conditions of approval) are imposed on leases and drilling permits to minimize the adverse environmental consequences of oil and gas development, and (3) what it will cost to improve oil and gas information in land use plans.

Background

The Federal Land Policy and Management Act and the National Forest Management Act, both enacted in 1976, require Interior (through BLM) and Agriculture (through the Forest Service) to develop land use plans. These plans are to clearly identify the area's resources, such as minerals, wildlife, recreation, and timber, and encourage management of those resources to meet present and future public needs. Both agencies have determined that they must comply with the National Environmental Policy Act (NEPA) when developing land use plans and use the environmental impact statement process NEPA requires as the principal analysis in developing the plans. BLM and the Forest Service also have determined that they must comply with NEPA at two subsequent points when making oil and gas leasing and development decisions: (1) issuing a lease and (2) approving a drilling permit. In preparing the NEPA analyses to support issuing leases or approving drilling permits, both agencies draw on and/or tier to previous analyses, including land use plans, and supplement them as necessary.

GAO identified five key elements required by NEPA, BLM, and Forest Service regulations and/or guidance that are essential to assess the environmental impacts of oil and gas leasing and development decisions. These elements are (1) oil and gas potential, (2) reasonably foreseeable development scenario(s), (3) indirect impacts, (4) cumulative impacts, and (5) lease stipulations.

Results in Brief

Most plans and related environmental impact statements covering BLM and Forest Service lands with high oil and gas potential do not contain adequate information on one or more of the five elements essential for assessing the environmental impacts of oil and gas leasing and development decisions. Moreover, at the four BLM resource areas and four Forest Service forests visited, GAO found that only one BLM resource area had supplemented its plan with the additional studies necessary to address all five elements before making oil and gas leasing or development decisions. Both agencies also have issued leases and approved permits without including appropriate mitigating measures, even approving some drilling permits without first completing the environmental studies they identified as necessary. Such actions have led to delayed or suspended oil and gas activity. As a result, federal revenues have been delayed or lost. Although the total cost is unknown at this time, information GAO reviewed indicates that estimated foregone and delayed revenues resulting from inadequate environmental studies far exceed any reasonable estimated cost to improve them.

Both BLM and the Forest Service have identified many resource areas and forests where oil and gas information is insufficient and have begun to complete additional environmental studies. However, both agencies still must clarify guidance for their field offices and institute more effective oversight.

Principal Findings

Inadequate Environmental Studies Used to Make Oil and Gas Decisions

In examining 82 land use plans and related environmental impact statements covering BLM and Forest Service lands having high oil and gas potential, GAO found that 75 either did not identify, and/or only partially addressed 1 or more of the 5 elements essential for assessing the environmental impacts of oil and gas activities. Only six BLM plans and one Forest Service plan met GAO's criteria for all five elements.

Recognizing that NEPA regulations permit the agencies to supplement the plans with additional environmental studies before issuing leases or approving permits to drill, GAO looked at other environmental studies relating to oil and gas activities at four BLM resource area offices and four Forest Service offices. At the four BLM resource area offices and two Forest Service offices that used other existing environmental studies to supplement their plans, GAO found that, when taken together

with the land use plans, only one BLM resource area met GAO's criteria for addressing all five essential elements.

Some Permits to Drill Approved Without Appropriate Mitigating Measures

Three of the four BLM resource areas and three of the four Forest Service forests visited also approved some drilling permits without including all the conditions of approval required by the land use plans, environmental studies, and/or resource specialists. GAO reviewed all or a sample of permits approved in fiscal year 1988 and estimates that 10 percent of all permits approved in those resource areas and forests were approved without all of the conditions of approval identified as necessary to protect other resources.

Potential Revenues Appear to Exceed Cost to Develop Additional Oil and Gas Information

Inadequate land use plans and/or environmental studies have resulted in leasing being suspended, primarily on Forest Service lands. These actions result in lost or delayed federal revenues. The total cost associated with developing improved information on the environmental impacts of oil and gas leasing and development decisions cannot be estimated with any degree of certainty at this time. However, it appears that estimated foregone and delayed revenues far exceed any reasonable estimated cost to develop such information for resource areas and forests with high oil and gas potential. For example, the Forest Service estimates that it will cost about $620,000 to complete the environmental studies for the Custer National Forest—including the Little Missouri National Grasslands. GAO estimates that about $22 million in bonus bids alone (payments made to acquire leases) will be generated when leasing resumes in the grasslands.

Agencies' Initiatives

BLM has chosen to develop the needed oil and gas information by amending existing plans or preparing new ones. The Forest Service will decide on a case-by-case basis whether to amend or revise its plans, and/or complete additional environmental studies, as appropriate. On the basis of its review, GAO believes that studies may be required for additional resource areas and forests.

Management Controls

If BLM and Forest Service initiatives to improve information on the environmental impacts of oil and gas leasing and development decisions are to be successful, they must be accompanied by improved internal management controls. Existing BLM and Forest Service guidance is unclear on how to address cumulative impacts, and the Forest Service needs to

clarify guidance on what types of environmental studies will be required. Moreover, both agencies need more effective oversight of their field offices to ensure compliance with applicable regulations and guidance.

Recommendations to the Secretaries of the Interior and Agriculture

GAO recommends, among other things, that the Secretaries of the Interior and Agriculture direct the BLM Director and the Forest Service Chief, respectively, to

- establish management controls to ensure that (1) NEPA requirements are adequately addressed, whether in land use plans and/or other environmental studies, before issuing leases or approving permits to drill and (2) appropriate stipulations and conditions of approval are attached to leases and permits; and
- determine which resource areas or forests will yield the most revenues and give priority to developing adequate information for those areas so oil and gas development can proceed expeditiously, with the least possible damage to the environment.

Agency Comments

Interior and the Forest Service agreed with GAO's two major recommendations and have indicated actions they are taking in response to the draft report. Interior had no significant disagreements with the draft report; however, it offered technical clarifications that have been incorporated into the report. The Forest Service noted that its plans are not intended to be used for making oil and gas leasing or development decisions, and asked that the report make clear the Forest Service's phased approach for complying with NEPA. The report has been clarified to make clear that there are alternative ways of complying with NEPA; however, it should be noted that in the four forests GAO visited, none of the land use plans or other environmental studies used to make leasing or development decisions adequately addressed the five elements.

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Abbreviations

BLM	Bureau of Land Management
EIS	environmental impact statement
EISs	environmental impact statements
FLPMA	Federal Land Policy and Management Act of 1976
IBLA	Interior Board of Land Appeals
NEPA	National Environmental Policy Act of 1969

Introduction

More than 925 million acres of subsurface mineral estate are administered by the Department of the Interior's (Interior) Bureau of Land Management (BLM) and the U.S. Department of Agriculture's (Agriculture) Forest Service. Approximately 76 million of these acres are leased for the development of oil and gas. Oil and gas valued at about $3.3 billion was produced from onshore leases in 1988, and the government collected over $600 million in revenues.[1]

Decisions to issue oil and gas leases on federal lands often generate controversy. Oil and gas development may significantly affect other uses of these lands—wildlife habitat, vegetation, grazing, range, and recreation—if steps are not taken to minimize the impacts of development.

Federal laws encourage the domestic production of oil and gas as well as the environmental preservation of other resources that may be affected by that development. BLM and the Forest Service are required to manage their lands under the principles of multiple use and sustained yield to ensure that resources are used in the combination that best meets demands, yet are protected and preserved for future generations.[2] To this end, BLM and the Forest Service are required to develop land use plans that clearly identify how the resources will be managed. These plans should, among other things, identify the resources present in an area; encourage the domestic development of minerals, including oil and gas; and reflect a multiple-use/sustained-yield philosophy for managing the land.

Laws Affecting Oil and Gas Leasing and Development

Several laws govern oil and gas leasing and development. The objectives of these laws vary, from promoting domestic oil and gas development to ensuring consideration of the environmental impacts of oil and gas development on other resources. Taken together, these laws reflect an attempt to balance the often competing interests of developers and environmentalists.

[1]These revenues include bonus payments for the right to acquire leases, annual rent paid to hold nonproducing leases, and royalties paid as a percentage of the value of the oil and gas produced.

[2]Multiple use requires management of public lands and their various resource values, such as fish and wildlife, range, recreation, timber, and watershed, so that they are used in the combination that will best meet the present and future needs of the public. Sustained yield requires that the lands' condition be maintained so that future generations will have access to the multiple uses associated with land resources.

Legislation Promoting and Regulating Oil and Gas Development

The Mineral Leasing Act of 1920, (30 U.S.C. 181 et seq.), as amended, is intended to promote and regulate the development of minerals, including oil and gas, on public lands.[3] The act provides a framework under which public lands can be leased and developed for valuable mineral deposits. The act also outlines a fee structure, including rents, bonuses, and royalties, for monies due the government for the use of the land and minerals, and authorizes Interior to issue and administer onshore oil and gas leases on federal land.[4]

In the Mining and Minerals Policy Act of 1970 (P.L. 91-631), the Congress declared that the continuing policy of the federal government is to encourage the development of domestic minerals, including oil and gas. While it did not specifically mention federal lands, the act is referenced in legislation applicable to federal land management.

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (P.L. 100-203, the "reform act") amended several provisions in the Minerals Leasing Act. A major purpose of the reform act is to require competitive bidding initially for all oil and gas leases, rather than allowing leases to be purchased noncompetitively. The Congress expects to generate more revenue through a competitive bidding process. In addition, although BLM will still offer Forest Service lands along with other federal lands for lease, the reform act gives the Forest Service the authority to approve leasing on its public domain lands[5] and designate surface use stipulations and conditions of approval[6] that are applicable to all its lands.

Environmental Legislation

Oil and gas decisionmaking must be consistent with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.) and other environmental legislation such as the Endangered Species Act of 1973 as

[3]The Mineral Leasing Act for Acquired Lands provides similar approval authority for the Forest Service's acquired lands. For purposes of this report, public and acquired lands are referred to as federal lands.

[4]Offshore leasing is covered primarily under the Outer Continental Shelf Lands Act (67 Stat. 462), as amended.

[5]Public domain lands are lands owned by the federal government that have never been in private or state ownership; acquired lands are lands purchased by, condemned by, or donated to the federal government.

[6]Stipulations are restrictions on operations that are included on leases; conditions of approval are restrictions on drilling permits. Both are designed to mitigate adverse environmental impacts.

amended (16 U.S.C. 1531 et seq.). NEPA requires that the applicable federal agency prepare a detailed environmental impact statement (EIS) for every major federal action that may significantly affect the quality of the human environment. The EIS is designed to ensure that important environmental impacts will not be overlooked or underestimated before the government makes a commitment to a proposed action.

The Council on Environmental Quality, established by NEPA, developed regulations implementing NEPA on a governmentwide basis. These regulations provide agencies with a process for determining whether or not to prepare an EIS. When an agency is not sure if an EIS is necessary, it prepares an environmental assessment that should provide sufficient information to permit the agency to determine whether to prepare an EIS. If the environmental assessment determines that the proposed action will not significantly affect the environment, and therefore an EIS is not necessary, the agency prepares a "finding of no significant impact." This finding explains why the proposed action will have no significant impact on the environment.

According to the regulations, an EIS must address the following five issues: (1) the environmental impacts of the proposed action (including the direct, indirect, and cumulative impacts); (2) any adverse environmental impacts that cannot be avoided should the proposed action be implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources that would occur should the proposed action be implemented. In addition, before making a decision, the responsible agency must solicit comments from the public and other government agencies that may have jurisdiction by law or expertise with respect to any environmental impacts. If an agency believes that a class of actions will not individually or cumulatively have a significant effect on the environment, NEPA regulations allow that agency to exclude these actions from environmental analysis.

With regard to oil and gas leasing and development, there are three key points at which NEPA requirements must be met: (1) developing a land use plan, (2) issuing an oil and gas lease, and (3) approving a drilling permit. At each of these points, the agencies must assess whether they have adequately disclosed, to the extent possible, the impacts of oil and gas development. Implementing regulations provide flexibility and a variety of options regarding the type of study that may be done to meet NEPA requirements. To avoid duplicating efforts, the regulations

encourage drawing on and/or tiering to existing studies when possible and supplementing them as appropriate.

To the extent that a land use plan makes oil and gas leasing and/or development decisions, the EIS should address the five elements in the detail necessary to assess the environmental impact of the proposed action. If the land use plan does not make such decisions, oil and gas issues should be more generally discussed in the EIS accompanying the plan. Such an EIS should, in broad terms, discuss the environmental consequences of the possible uses of the lands. Subsequently, more specific environmental analysis concerning oil and gas activities should be prepared before issuing leases or drilling permits.

Land Use Planning Legislation

In the mid-1970s, the Congress required Interior and Agriculture to develop land use plans that provide for the management, protection, development, and enhancement of public lands. The 1976 Federal Land Policy and Management Act (FLPMA) (P.L. 94-579) applies to Interior, and the 1974 Forest and Rangeland Renewable Resources Act (P.L. 93-378), as amended by the 1976 National Forest Management Act (P.L. 94-588), applies to Agriculture. Except for some differences discussed below, the acts contain similar requirements for land use planning.

In developing land use plans, both agencies are required to consider the principles of multiple use and sustained yield. Agencies must also (1) use a systematic, interdisciplinary approach; (2) consider present and potential uses of the public lands; (3) consider the relative scarcity of the values involved; (4) weigh long-term benefits against short-term benefits to the public; (5) comply with pollution control laws; and (6) to the extent practicable, coordinate with state and local plans. The acts also stipulate that the general public play an integral role in developing land use plans through a public participation process described in the legislation.

In addition, both agencies must establish requirements that are consistent with NEPA analysis requirements for EISs. For example, both agencies' land use planning legislation requires that present and potential alternative uses of public lands be considered. This requirement is similar to the NEPA requirement that an EIS analyze alternatives to the proposed action. Also, both NEPA and land use planning laws require public participation in the development and analysis of alternatives.

The two land use planning laws differ in some areas. Interior is required to develop land use plans for both renewable resources (surface resources, such as timber and wildlife) and nonrenewable resources (subsurface resources, such as oil and gas). Agriculture is required to develop land use plans for renewable resources only. However, the Forest Service's guidance and regulations require that nonrenewable resources also be considered in preparing land use plans.

BLM and Forest Service Organization

BLM and the Forest Service are organized similarly, both having four levels of management. The BLM Director and Forest Service Chief head their respective agencies. Both agencies' headquarters consist of a variety of program offices that issue policy and guidance for their respective programs. Each agency has three levels of management in field operations.

BLM field operations consist of state offices, district offices, and resource area offices. Its 12 state offices, each managed by a state director, are responsible for providing statewide program direction, oversight, and coordination of resource programs for federal lands under BLM's jurisdiction. Each state office has several district offices, each headed by a district manager. Each district office is responsible for two or more resource areas. District offices provide oversight and support to their resource area offices. Resource area offices, each headed by a resource area manager, are the primary field locations for public contact and information on the use of BLM lands.

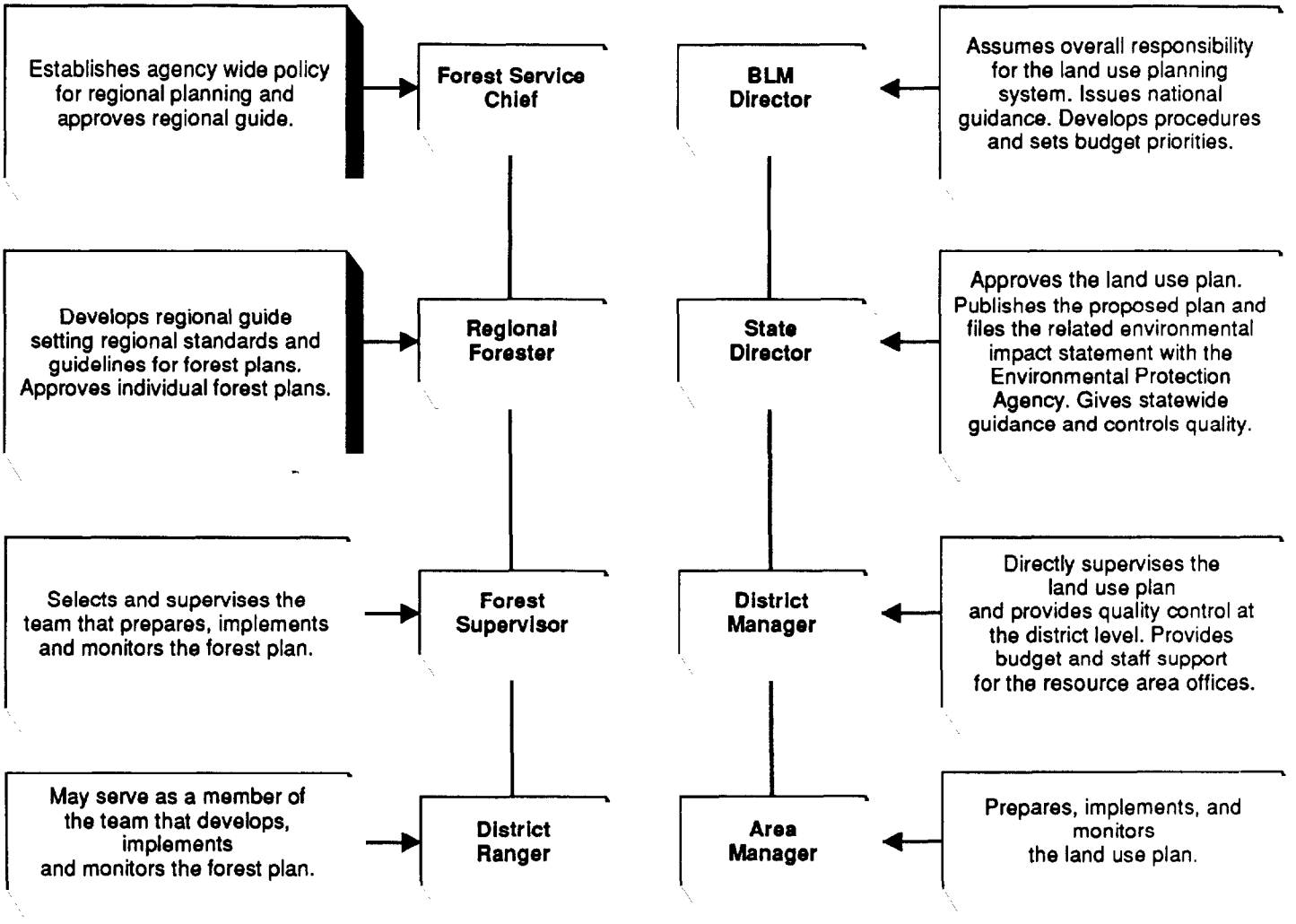
Forest Service field operations consist of regional, forest, and ranger district offices that manage the nation's forests. The Forest Service has nine regional offices, each managed by a regional forester. A regional office has several forest offices, managed by a forest supervisor. A forest office is responsible for two or more ranger district offices. Ranger district offices, managed by district rangers, consist of a portion of a forest.

Land Use Planning Process

BLM and the Forest Service follow a decentralized approach to land use planning and oil and gas leasing and development. BLM state and Forest Service regional offices develop their own planning policies and procedures and have the flexibility to conduct their planning processes on the basis of individual needs and priorities. However, both agencies' expect resource areas and forests with high oil and gas potential to have similar oil and gas information in their land use plans.

BLM and the Forest Service develop their land use plans for a resource area or forest by using resource specialists who provide input to the plan on the basis of their fields of expertise, such as wildlife biology, geology, range conservation, or forestry. BLM state offices and Forest Service regional offices oversee the development of and have the authority to approve the land use plans. Both agencies' headquarters provide national guidance on how to develop land use plans; however, they do not approve completed plans. Figure 1.1 identifies the roles of BLM and Forest Service personnel in the land use planning process.

Figure 1.1: BLM and Forest Service Roles in the Land Use Planning Process



BLM and the Forest Service have developed a land use planning process that is intended to meet the requirements of land use planning legislation and comply with NEPA. Both agencies have determined that, under NEPA, the development of a land use plan constitutes a major federal action, and thus requires an EIS. The EIS then becomes the major analysis used in developing a land use plan. Both agencies are required by NEPA to examine alternative combinations of resource uses, including oil and gas development, and estimate the physical, biological, economic, and

social effects of implementing each alternative. The land use plan is developed from the selected alternative or combination of alternatives in the EIS that best meets the agency's management objectives for the area. A land use plan may incorporate one or more resource area(s) or forest(s).

Nine separate planning steps occur during the development of a BLM or Forest Service land use plan and related EIS. Table 1.1 provides a brief explanation of each of these steps.

Table 1.1: BLM and Forest Service Planning Process

Action	Description
Identify issues	Solicit information from the public, industry, and government to identify issues or land use problems.
Develop planning criteria	State the limits of what will or will not be considered during the planning process.
Collect inventory data and information	Gather existing inventories and other information and develop other needed information.
Analyze the management situation	Describe the physical and biological characteristics of the land and its resource potential.
Formulate alternatives	Identify a range of reasonable combinations of resource uses and management practices that respond to the planning issues.
Estimate effects of alternatives	Compare, evaluate, and analyze the impacts of each alternative on the environment.
Select the preferred alternative	Recommend the alternative that best resolves planning issues and promotes balanced multiple-use and sustained-yield objectives.
Develop the land use plan	Choose or modify the preferred alternative after analyzing public comments.
Monitor and evaluate the land use plan	Track changes and trends in the environment caused by planning decisions and evaluate compliance with the plan, laws, and policies.

During the land use planning process, mineral specialists develop information on oil and gas activity, including available data on the area's geology and oil and gas exploration and production in written summaries, tables, or maps. This information should describe previous oil and gas exploration and production in the area or forest, assess the potential for finding oil and gas, estimate the amount of oil and gas that might be discovered, and describe the facilities necessary to produce the oil and gas. Other resource specialists should identify the potential impacts of development on the land's other resources. The resource area manager or regional forester then makes preliminary decisions about lands to be open or closed to oil and gas development, including stipulations on development to mitigate impacts. The draft land use plan is then made available to the public for comment.

BLM and Forest Service procedures for internal review and approval of plans are different. Authority to approve plans generally rests at a comparable level in each agency—the Regional Forester in the Forest Service, and the State Director in BLM. However, in the Forest Service each plan must be routed through Forest Service headquarters for review to ensure that its format is consistent with national standards. BLM headquarters staff, on the other hand, do not routinely review plans and have delegated this responsibility to the state offices.

Land Use Planning Policies

BLM and Forest Service headquarters issue land use planning regulations and policies and procedures in manuals, handbooks, and other guidance documents. BLM's Director issues this information to all state offices, which, in turn, distribute them to their district and resource area offices. Similarly, the Forest Service Chief issues this information to all regional offices, which distribute them to their forest and ranger district offices.

In November 1986 BLM issued supplemental program guidance that specified the type of oil and gas information that must be included in land use plans and related EISs. This guidance notes that all plans are expected to identify areas that are open and closed to leasing and the conditions under which stipulations will be attached to leases. In addition, for areas considered to have high potential for oil and gas development, the guidance directs that land use plans identify (1) the amount of oil and gas potential, (2) the projected level of development—called a reasonably foreseeable development scenario, and (3) the projected cumulative impacts of that development. These elements are discussed in greater detail below.

Until October 1989, the Forest Service's requirements for how oil and gas issues are to be considered in land use plans were contained throughout the agency's planning regulations, manuals, and handbooks. In an October 11, 1989, memorandum, the Forest Service Chief issued guidance similar to BLM's supplemental program guidance.

Procedures for Oil and Gas Development

In order to develop oil and gas on federal lands, an operator must have a lease and a drilling permit. A lease usually gives an operator the right to drill and to perform other necessary development activities, such as

road building. However, before operators can undertake any surface-disturbing activities, they must obtain approval for those actions by submitting an application for a permit to drill to BLM, and in the case of forest lands, to the Forest Service.

A drilling permit contains an operator's plan of operations and is divided into two parts: a surface-use plan describing surface-disturbing activities and a drilling plan describing subsurface activities. For forest lands, the Forest Service approves the surface-use plan. BLM approves the surface-use plan for BLM lands, and approves the drilling plan for all federal lands, including Forest Service lands.

Objectives, Scope, and Methodology

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 requires GAO and the National Academy of Sciences to (1) study BLM's and the Forest Service's consideration of oil and gas development in their land use plans and (2) make recommendations for improvement to ensure that oil and gas resources are adequately addressed; the social, economic, and environmental consequences of exploration and development are determined; and any stipulations to be applied to oil and gas leases are clearly identified.

The Chairman, Subcommittee on Public Lands, National Parks and Forests, Senate Committee on Energy and Natural Resources, and the Chairman, Subcommittee on Mining and Natural Resources, House Committee on Interior and Insular Affairs, authored bills that ultimately led to the reform act. In a March 2, 1988, letter, the Chairmen elaborated on the issues that they wanted us and the Academy to address in response to the legislation. As a result of the letter and discussions with their offices, we agreed to focus our review on the following issues: (1) whether land use plans include adequate information on oil and gas in areas of high oil and gas potential, (2) whether BLM and the Forest Service impose appropriate mitigating measures (stipulations or conditions of approval) on leases and drilling permits to minimize the adverse environmental consequences of oil and gas development, and (3) what it will cost to improve oil and gas information in land use plans. In addition, we also identified the extent of oil and gas activities on BLM and Forest Service lands in a separate report.[7]

[7]Federal Land Management: The Extent of Oil and Gas Activities on BLM and Forest Service Lands (GAO/RCED-90-123FS, Apr. 11, 1990).

As agreed with the Chairmen's offices, we and the Academy conducted independent studies.[8] We did, however, coordinate our review with Academy officials and kept them advised of our progress. The Academy's report addressed, among other things, the interrelation between oil and gas leasing decisions and other resource planning decisions.

We performed our evaluation in four BLM state offices and three Forest Service regional offices covering four states—California, Colorado, New Mexico, and Wyoming. Additionally, we visited Forest Service officials in region 1 in Missoula, Montana, where all oil and gas leasing activities have been suspended. The four states were selected because they had the highest level of oil and gas activity as measured by the number of producing and exploratory oil and gas wells drilled. Within each state, we visited officials from the applicable BLM state office, one resource area office, and applicable district office staff. Similarly, for the Forest Service, we met with Forest Service officials in region 2 in Lakewood, Colorado; region 3 in Albuquerque, New Mexico; and region 5 in San Francisco, California; and visited one forest, district, and ranger district office in each state.

We selected resource areas and forests that were identified as having the most oil and gas activity in each state. Resource areas visited were Caliente, in California; White River, in Colorado; Farmington, in New Mexico; and Platte River, in Wyoming. Forests visited included Los Padres, in California; San Juan, in Colorado; Carson, in New Mexico; and Medicine Bow, in Wyoming.

We interviewed environmental, planning, and minerals staff in BLM and Forest Service headquarters and state and local offices. We obtained policies and procedures on the development of land use plans and the oil and gas leasing program, and information on the cost to amend plans, the process used to lease lands for oil and gas exploration, and how stipulations and conditions of approval are imposed on leases and drilling permits, respectively.

To address the adequacy of oil and gas information in land use plans, we conducted a two-phased approach. First, because neither BLM nor the Forest Service had information on a nationwide basis, our staff geologist identified resource areas and forests located in productive or potentially

[8]The Academy's report, entitled Land Use Planning and Oil and Gas Leasing on Onshore Federal Lands was issued in Sept. 1989.

productive oil and gas provinces.[9] The geologist mapped current and previous oil and gas production locations by provinces using a variety of government and petroleum industry maps, reports, and professional journals. Using maps obtained from BLM that identified resource areas, and a map from the Forest Service that identified all forests, our geologist determined which of the 141 BLM resource areas and 156 national forests were located in productive or potentially productive oil and gas provinces.[10]

The geologist determined that 62 BLM resource areas and 56 forests are located in productive or potentially productive oil and gas provinces. Because of time constraints, the geologist did not verify whether the federal lands within the provinces were currently productive. We reviewed 40 BLM plans and related EISs covering 41 of the 62 BLM resource areas; the remaining 21 resource areas are generally covered by different types of plans and, therefore, not included in our detailed review.[11] We reviewed 42 Forest Service land use plans and related EISs covering all 56 forests located in high oil and gas potential areas. A total of 82 plans and related EISs were reviewed, covering 97 BLM and Forest Service lands.

We did not review any BLM plans covered by the Alaska or the Eastern States Offices, which do not have resource areas. Their planning efforts are different than those of the other state offices. The Alaska State Office plans by district; and the Eastern States Office plans by state. In addition, the Eastern States Office is not completing land use plans as provided for by FLPMA; rather, it is completing less detailed documents called "planning analyses" provided for in BLM's implementing regulations. Among the most significant differences between a land use plan and a planning analysis is that the former requires an EIS, while the Eastern States Office is completing its planning analyses with environmental assessments.

Second, we identified five key elements required by NEPA regulations or BLM and Forest Service regulations and/or guidance (including BLM's supplemental program guidance) as essential for the agencies to assess the environmental impacts of oil and gas development in resource areas and

[9]For purposes of this report, we will consider these areas high potential oil and gas areas.

[10]Alaska was not included in this determination.

[11]These areas are generally covered by "management framework plans." These plans generally do not meet FLPMA or NEPA requirements and are sometimes unpublished documents. It is not unusual for several of these documents to exist for one resource area.

forests with high oil and gas potential. These elements are (1) oil and gas potential, (2) reasonably foreseeable development scenario(s), (3) indirect impacts, (4) cumulative impacts, and (5) lease stipulations. Officials from BLM and the Forest Service as well as officials from environmental and industry groups concurred that these elements are necessary to address the environmental impacts of oil and gas development.

We then developed criteria to assess each element on the basis of information in NEPA regulations, BLM's supplemental program guidance, Forest Service regulations and guidance, and discussions with BLM and Forest Service officials. We developed our criteria to serve as a baseline for minimal requirements that, we believe, must be met to address each element. Because these elements and criteria are not necessarily all-inclusive, the EISs and other environmental studies that meet our criteria for all five elements cannot be automatically assumed to fully comply with NEPA. Appendix I describes the five elements and their associated criteria. Appendixes II and III contain the results of our review of the 82 land use plans using the criteria.

In addition, because the reform act specifically asked us, we reviewed the land use plans and related EISs to determine how social and economic consequences were addressed. After reviewing NEPA, BLM, and Forest Service regulations and guidance, and discussing the issue with agency officials, we developed criteria to assess how social and economic consequences were addressed in the land use plans. In order to fully address this element, our criteria were that the land use plan and related EIS contain a narrative or table assessing the future impacts of oil and gas development on the local economy, in terms of jobs and/or actual dollars. See appendix IV for a summary of our findings regarding this issue.

To determine whether BLM and the Forest Service impose appropriate stipulations on leases, we reviewed recent lease sale protests that have occurred nationwide. To determine if conditions of approval identified in approving oil and gas drilling activity were attached to the permits, we focused our examination on recent drilling permits for two reasons: (1) most of the leases for the resource areas and national forests visited were issued before land use plans were required or completed, and, in many instances, before NEPA was passed, and (2) the approval of a drilling permit represents the third and final key decision point for the development of oil and gas resources. To determine whether appropriate conditions of approval are included on drilling permits, we reviewed all or a sample of permits approved in fiscal year 1988 at the four resource

areas and four forests we visited. For each approved permit, we identified the resources present in the affected area and the conditions of approval that should be included in the permit; and determined if the identified conditions were actually included in the approved permit. We reviewed agency files, including the permit application documentation, and interviewed resource specialists to determine whether required conditions were attached to the permits. If conditions of approval were not included, we attempted to determine through discussions with agency officials why they were missing.

Because we sampled drilling permits, our estimates of the percentage of permits approved without applicable conditions are subject to sampling error. The sampling error is the maximum amount by which results obtained from a statistical sample can be expected to differ from the true universe characteristic (value) we are estimating. At the 95-percent confidence level, this means that the chances are 19 out of 20 that if we reviewed all permits, the results would differ from the estimates we obtained by less than the sampling error of these estimates. The two sampling errors for the estimates in this report were calculated at the 95-percent confidence level and do not exceed 2 percent.

To determine BLM and Forest Service cost and schedule estimates for developing oil and gas information in land use plans and the basis for those estimates, we: (1) determined the agencies' strategy to revise land use plans, including cost and schedule estimates; (2) determined the basis for those estimates; and (3) assessed the reasonableness of the estimates. In addition, in one Forest Service region that has suspended leasing until necessary environmental studies are completed, we compared the cost of completing the necessary environmental studies with the revenue that has been lost because of leasing delays.

For this comparison, we obtained cost estimates from the Forest Service's region 1 office to complete environmental studies in that region's forests, and estimated lost and foregone rent, and royalty revenues. Specifically, the Forest Service estimated that one-third of all acreage offered in the region would be leased, and we calculated the amount of rental revenue that is lost annually because lands are not being leased in the region. The Forest Service estimated that 100 percent of the Little Missouri National Grasslands would be leased. On the basis of that assumption and after considering the bonus bids received from seven sales of state leases that occurred from April 1987 to May 1989 in the same area, we estimated foregone bonus bid revenue. To complete our

analysis, we accepted Forest Service estimates of the amount of foregone royalty revenue for the Little Missouri National Grassland.

We also met with special interest groups in Washington, D.C., and in the states we visited: the Colorado Environmental Coalition, Burlington Northern Inc.,[12] the National Wildlife Federation, the New Mexico Oil and Gas Association, the Rocky Mountain Oil and Gas Association, and the Sierra Club Legal Defense Fund. We obtained these interest groups' comments regarding BLM and Forest Service land use plans and the oil and gas leasing program.

Our work was performed primarily from May 1988 through October 1989 in accordance with generally accepted government auditing standards.

The Department of the Interior and the Forest Service provided written comments on a draft of this report. Interior's comments are presented and evaluated in appendix VIII and the Forest Service's comments are presented and evaluated in appendix IX.

[12]This company is the holding company for Meridian Oil and El Paso Pipeline Co.

Oil and Gas Leasing and Development Continue Without Adequate Information And/Or Mitigating Stipulations

The management decisions made in a land use plan—such as whether to allow leasing in a given resource area or national forest—represent the first of three key decision points for the development of oil and gas resources. However, our examination of 82 land use plans and related EISs showed that most plans did not address or only partially addressed one or more of the five key elements essential to assess the environmental impacts of oil and gas leasing and development decisions. To the extent that these plans and related EISs are used to make such decisions, more information is needed.

In addition, at the other two subsequent decision points—issuance of a lease and approval of a drilling permit—we found that the four BLM offices and the four Forest Service offices we visited (1) rely on environmental studies that lack the necessary oil and gas information to make informed decisions concerning environmental impacts;[1] (2) continue to approve some drilling permits even though additional environmental studies, identified as needed by the agencies, have not been completed; and/or (3) do not always include mitigating measures (stipulations or conditions of approval) required in the leases or permits to minimize the environmental impact of oil and gas development. Consequently, some leasing and development decisions have been contested in administrative and judicial actions, suspending or delaying oil and gas development activities.

Five Key Elements Should Be Adequately Addressed at Three Decision Points

In resource areas and forests with high oil and gas potential, decisions relating to oil and gas activities and compliance with environmental requirements converge at three key points: (1) developing a land use plan, (2) issuing oil and gas leases, and (3) approving drilling permits. At each point, the responsible agency must assess whether it has adequately disclosed information on such essential elements as (1) oil and gas potential, (2) reasonably foreseeable development scenario(s), (3) indirect impacts, (4) cumulative impacts, and (5) lease stipulations. When adequate information is not available on one or more of the elements to make leasing and/or development decisions, the agency must complete the additional environmental studies, and/or draw on existing studies, to reach an informed decision.

[1]For purposes of this report, environmental studies encompass the EISs prepared as part of the land use planning process as well as areawide environmental assessments and other EISs and environmental assessments developed to support leasing and development decisions.

A judgment about the adequacy of available information on a particular element is subjective. However, we believe that the criteria we developed to assess whether an element is fully or only partially addressed in land use plans, related EISs, and other environmental studies represent minimal requirements that must be met. As we cautioned previously, these elements and criteria are not necessarily all-inclusive, and land use plans, related EISs, and other environmental studies that meet our criteria for all five elements cannot be automatically assumed to be in full compliance with NEPA.

Inadequate Environmental Studies Used to Support Leasing and Development Decisions

To the extent that BLM and the Forest Service rely on land use plans and/or related environmental studies to support leasing and/or development decisions, they must ensure that these plans and/or related studies contain sufficient information to meet NEPA requirements. However, most of the BLM and Forest Service land use plans that we reviewed did not fully address one or more of the key elements essential to adequately assess the impacts of oil and gas development. Additionally, for three of the four resource areas and all four of the forests we visited, other environmental studies used to meet NEPA requirements for oil and gas leasing and development decisions did not adequately address one or more of the key elements. Yet, the agencies continue to rely on these documents to support their leasing and development decisions.

Most Land Use Plans Do Not Contain Essential Oil and Gas Information

We found that 75 of 82 land use plans and related EISs covering BLM and Forest Service lands having high oil and gas potential did not fully address one or more of the 5 key elements. Table 2.1 shows the extent to which the elements were fully addressed for the plans. In all, only 7 of the 82 plans met our criteria for all 5 elements—6 plans in BLM and 1 plan in the Forest Service. (See apps. II and III for the extent to which each of the 5 elements was addressed.)

Table 2.1: Extent to Which Key Elements Were Fully Addressed in 82 BLM and Forest Service Plans

Number of elements fully addressed	BLM		Forest Service		Total plans	
	Number	Percent	Number	Percent	Number	Percent
None	3	8	4	10	7	9
One	6	15	14	33	20	24
Two	14	35	16	38	30	37
Three	6	15	4	10	10	12
Four	5	13	3	7	8	10
Five	6	15	1	2	7	9
Total	**40**		**42**		**82**	

The extent to which the 82 land use plans addressed each of the five elements varied greatly by element. For example, 71 of the 82 plans did not cite the cumulative impacts of a reasonably foreseeable development scenario. The following is a brief summary of how the plans addressed each element.[2]

- Oil and gas potential. Sixty plans met the criteria by identifying in a map, narrative, or table areas of high, medium, low, unknown, or no oil and gas potential. An additional 17 plans partially addressed this element.
- Reasonably foreseeable development scenarios. Twenty-one plans met the criteria by projecting the number of wells that BLM or the Forest Service expects to be drilled during the life of the plan. Forty-five plans partially addressed this element.
- Indirect impacts. Forty-nine of the plans met the criteria by discussing the anticipated impacts of oil and gas development on other resources in the area. An additional 20 plans partially addressed this element.
- Cumulative impacts. We could not develop criteria to assess the adequacy of these plans' treatment of cumulative impacts because neither BLM nor the Forest Service had issued applicable guidance at the time of our review. However, in order to address cumulative impacts of oil and gas development, land use plans must first project a reasonably foreseeable development scenario. Of the 21 plans that projected a development scenario, only 11 specifically cited the cumulative impacts of such a scenario in discussing impacts on other resources.
- Lease stipulations. Thirty-five plans met the criteria by identifying applicable stipulations through a map, narrative, or table for all areas within a resource area or forest. An additional 44 plans partially addressed this element.

[2]App. V provides a detailed breakdown by element of the number of plans that met the criteria, partially met the criteria, or did not identify the element.

The NEPA regulations permit agencies to supplement their land use plans and related EISs with other studies before issuing leases or approving drilling permits. The four BLM resource area offices and the four national forest offices we visited often based leasing and development decisions on the EISs prepared as part of the land use planning process and/or areawide oil and gas environmental assessments. However, these studies either did not identify or only partially addressed one or more of the key elements. (See app. VI for the results of our review of the land use plans and applicable areawide environmental assessments covering the four resource areas and four forests.) Two of the eight offices referred solely to the land use plan in approving leases and/or drilling permits. The other six offices referenced the areawide oil and gas environmental assessments and/or the land use plans. In seven of the eight offices, the land use plans and/or areawide environmental assessments, when taken together, did not fully address all of the five key elements. For example, at three offices the applicable environmental studies did not identify or only partially addressed a reasonably foreseeable development scenario. As a result, these resource areas and forests also could not address the cumulative impacts of projected oil and gas development.

Drilling Permits Approved Before Needed Studies Completed

If BLM and the Forest Service determine that the information in land use plans or environmental assessments is inadequate, NEPA regulations require them to develop additional information before deciding to issue a lease or approve a drilling permit. At two of the four resource area offices and two of the four forest offices visited, the agencies had identified the need for more comprehensive environmental studies. However, three of these four offices continued to approve drilling permits even though the additional studies had not been completed. Although two of the three studies are now complete, our review shows that neither study fully addresses the five key elements essential to assess the environmental impacts of oil and gas development. Although the needed study was completed at the fourth office before development activities were allowed to begin, it did not fully address the five key elements.

Environmental Impacts of Producing Methane Gas From a Coal Seam

In 1988, at two resource area offices and one forest office we visited, the existing plans and/or environmental studies were inadequate because they did not analyze the environmental impacts of producing methane gas from a coal seam called the Fruitland Formation. Drilling for coalbed methane gas was initiated in BLM's Farmington resource area and the Forest Service's Carson National Forest, both in New Mexico, and the San Juan National Forest in Colorado as a result of a tax credit offered for developing nonconventional fuel sources. Under the law,

wells had to be drilled by December 31, 1989, (since extended to Dec. 31, 1990) to qualify for the credit.

All three areas determined that additional studies were required. For example, Farmington resource area officials stated that coal-gas development requires larger drill pads than conventional development and acknowledged potentially greater impacts on surface resources. Moreover, many of these wells may produce large quantities of water, creating a potential disposal problem. The following identifies the status of these studies as of May 1990:

- The Farmington resource area issued its environmental assessment in November 1988. The assessment projected that 600 wells would be drilled in the Fruitland Formation by December 31, 1989. This projection included almost 100 wells already drilled before November 1988. The environmental assessment concluded that the coal-gas development would not result in significant impacts to the human environment as long as conditions of approval were added to drilling permits.
- The Carson forest completed its environmental assessment in April 1989, concluding that there would be no significant impacts from coal-gas production.
- The San Juan forest is in the process of preparing an EIS to determine the impacts of coal-gas production in its portion of the Fruitland Formation and expects to have a draft of the study by July 1990.

Prior to completing these additional environmental studies, Farmington and the two forests issued 97 leases and approved over 210 gas wells through fiscal year 1988. Approximately 70 of these leases and about 190 of these approved wells were within the Farmington resource area.

Although two of the three additional studies are now complete, they do not fully address all five of our key elements. For example, although the Farmington study concludes that there will be no significant impacts associated with coal-gas development, it did not adequately address cumulative impacts. Also, the study for the Carson forest only partially addressed indirect impacts and lease stipulations.

Environmental Impacts of Oil and Gas Development in a Colorado Resource Area

The White River resource area in Colorado completed an environmental assessment in April 1988 for approving oil and gas development in the Douglas Creek area. The study projected that 28 wells would be drilled in that area. Officials told us that if more wells are drilled than projected, they will complete an additional environmental study. In our

review of the April environmental assessment, we found that the elements of oil and gas potential, reasonably foreseeable development scenarios, and indirect impacts met our criteria. However, we did not find a specific citation of cumulative impacts. Conditions of approval also were included—although the assessment does not clearly show which conditions of approval apply to which well sites. The assessment concludes that the environmental impact of the projected level of oil and gas development is not significant. Nevertheless, no wells were allowed to be drilled before the environmental assessment was completed.

Conditions of Approval Not Always Included in Drilling Permits

Before issuing a lease, the BLM resource area offices and national forests we visited identified stipulations from land use plans and/or other environmental studies as well as in-house maps and records. Before approving drilling permits, these offices conducted on-the-ground inspections of the areas to approve the location of surface-disturbing activities, such as roads and well pads, and to identify conditions of approval needed to protect resources identified at the sites. Resource specialists in the offices were also consulted to identify the resources present in the areas and to help identify any necessary conditions of approval.

We estimate that 96 percent of the oil and gas drilling permits we sampled at the resource areas and national forests visited were for leases issued before applicable land use plans were completed, and, in many instances, before NEPA was passed. Consequently, these leases do not include certain stipulations that resulted from subsequent land use plans. In these instances, however, BLM and Forest Service officials said that they have been able to include appropriate conditions of approval in the drilling permits to mitigate the adverse impacts of oil and gas development.

To determine whether appropriate conditions of approval were attached to drilling permits, we reviewed all or a sample of permits approved in fiscal year 1988 at the four resource areas and four forests we visited. We identified the resources located in the affected area; and the conditions of approval the agencies believed were necessary to protect those resources,[3] and determined whether those conditions of approval were actually included in the permit.

[3]We identified these conditions by reviewing the environmental studies the agencies provided us as well as discussing the permits with appropriate resource specialists. Unlike the land use plans, however, we did not assess the adequacy of the environmental studies; we merely extracted the conditions of approval from them.

We estimate that an average of 10 percent of drilling permits in the offices we visited were approved without one or more of the required conditions of approval. The actual number of permits reviewed at these BLM resource area and Forest Service offices is shown in table 2.2.

Table 2.2: Fiscal Year 1988 Drilling Permits Issued Without One or More Appropriate Conditions of Approval

Area	Drilling permits	Permits reviewed	Permits missing conditions[a]
BLM			
Caliente, California	85	85	26
White River, Colorado	44	29	0[b]
Farmington, New Mexico	279	80	3[b]
Platte River, Wyoming	104	53	3[b]
BLM Total	**512**	**247**	[b]
Forest Service			
Los Padres, California	5	5	0
San Juan, Colorado	6	6	2
Carson, New Mexico	16	16	11
Medicine Bow, Wyoming	10	10	2
Forest Service Total	37	37	15

[a]We discussed our findings with BLM resource area offices and Forest Service ranger district offices because these offices have primary responsibility for including conditions of approval in permits.

[b]These data are for information purposes only. They should not be used to estimate the total number of permits missing conditions of approval in the individual offices visited.

The type of missing conditions of approval varied. For example, cultural/archaeological requirements, such as suspending work in the event of the discovery of any historic or prehistoric ruin, monument, or site, were missing from 25 BLM drilling permits. Also, standard conditions of approval, such as measures to protect soil and watersheds, were not attached to eight BLM permits. And specific conditions of approval, such as certain wildlife restrictions, were missing from 11 Forest Service drilling permits.

Some Leasing and Development Decisions Have Been Contested

Over the past several years, environmental groups have challenged some BLM and Forest Service leasing and development decisions, either through BLM's internal administrative protest procedures or through the courts. Recent lease sale protests have generally focused on two concerns:[4] (1) the stipulations attached to a lease were not adequate and (2) the cumulative impacts of oil and gas development were not adequately addressed in developing an EIS or other environmental study.

As of May 1989, lease sales had been protested in Colorado, Montana, Utah, and Wyoming. Additionally, since June of 1987, an environmental group has been appealing the adequacy of the environmental study covering portions of four forests in California. Several groups have protested recent lease sales, in part, because stipulations were (1) not identified in the land use plans; (2) when identified, were not attached to the leases involved in the sales; or (3) challenged as not being effective. BLM generally upheld these protests and either retroactively attached the required stipulations to the leases or suspended the sales.

Although both agencies have been subjected to administrative protests, the Forest Service has borne the brunt of the litigation. The Forest Service has faced intensive scrutiny by environmental groups because, it is generally agreed, the Forest Service has more environmentally sensitive lands. Three recent circuit court decisions involving Forest Service lands have addressed the level of information necessary to make adequate leasing and development decisions and meet NEPA requirements.

Two decisions involved cases in which BLM issued leases on over 1 million acres of Forest Service lands. The District of Columbia Circuit Court[5] and the 9th Circuit Court in California[6] found that unless leases are issued with no-surface-occupancy stipulations, leasing constitutes an "irretrievable and irreversible commitment of resources." As such, under NEPA, the environmental impacts of the proposed actions must be assessed in EISs before leases are issued. The courts held that leases lacking no-surface-occupancy stipulations only give the government the right to impose reasonable conditions on the development, not the right to prevent development. Therefore, the courts have held that the environmental impacts of the proposed actions must be assessed before

[4]Since BLM issues the leases for federal lands, lease sales are challenged through the BLM administrative protest process. If Forest Service lands are involved, the Forest Service assists in resolving the protest.

[5]Sierra Club v. Peterson, 717 F2d 1409, D.C. Circuit, 1983.

[6]Conner v. Burford, 848 F2d 1441, 9th Circuit, 1988.

issuing the leases. The courts held that the agencies could issue leases with no-surface-occupancy stipulations without first completing EISs because they reserved to the government the absolute right to preclude all surface-disturbing activity.

In another case, challenging the issuance of one lease, the 10th Circuit in Colorado ruled that the Forest Service's environmental assessment, which concluded that the issuance of oil and gas leases in the Shoshone National Forest would have no significant impact on the environment, was adequate.[7] The court held that the Forest Service did not have to prepare an EIS because (1) it had prepared an extensive environmental assessment, (2) the lessee's development plans were too speculative to trigger the need for an EIS, and (3) the lease subjected all development proposals to continuing NEPA review.

Industry groups believe the Conner and Park County decisions are inconsistent and petitioned the Supreme Court to review the Conner decision. Industry argued that under Conner leasing will always require preparing an EIS, while under Park County leasing did not have to be preceded by an EIS. The Supreme Court denied the petition for review on February 21, 1989.

These administrative or judicial actions have delayed oil and gas development activities. To date, the Forest Service has formally suspended leasing on about 35 million acres of land, pending completion of environmental studies that adequately assess the cumulative impacts of development, and BLM has done the same for several thousand acres of its lands.

Conclusions

A number of administrative protests and lawsuits have occurred because leasing and development decisions were based on inadequate information about the environmental impacts of oil and gas activities, and because leases were issued and drilling permits approved without including all of the required stipulations or conditions of approval. Some of these protests and court decisions have resulted in leasing and development being suspended on about 35 million acres of Forest Service land and on several thousand acres of BLM land. The agencies have resolved other protests by retroactively attaching the required stipulations to the leases.

[7]Park County Resource Council, Inc. v. U.S. Department of Agriculture, 817 F2d 609, 10th Circuit, 1987.

Most BLM and Forest Service land use plans and related environmental studies for resource areas and forests with high oil and gas potential do not contain adequate information necessary to make informed decisions about the environmental impacts of oil and gas leasing and development. Although the plans and studies are often deficient, BLM and the Forest Service often relied on these plans and studies when issuing leases and approving drilling permits.

We recognize that the expiration of the tax credit for nonconventional fuel sources placed added pressure on BLM and the Forest Service to continue approving drilling permits in the Fruitland Formation while the necessary environmental studies were still ongoing. However, these agencies recognized that they did not meet NEPA requirements. Regardless of the final outcome, we believe that approving permits to drill without having first completed the environmental studies required by NEPA regulations does not meet the spirit of a multiple-use philosophy because it places oil and gas development ahead of the use of other resources, and does not comply with NEPA.

Status of BLM and Forest Service Initiatives to Improve Information and Related Cost Estimates

BLM and the Forest Service have begun to improve their information on the environmental impacts of oil and gas activities. However, we believe that more needs to be done. BLM plans to develop the needed information by amending land use plans or completing new ones. Towards this end, it has identified resource areas with high oil and gas potential and/or high industry interest and plans to amend existing plans or prepare new ones for many of these areas. The Forest Service's approach to developing the needed information is less clear, but it appears that the regional offices will have the option of amending existing land use plans, supplementing the plans with additional environmental studies before issuing leases or approving drilling permits, or clarifying information already contained in the plans. As a first step, regional offices have identified those forests that they believe need more detailed oil and gas information.

We believe, however, that both BLM and the Forest Service may have underestimated the number of resource areas and forests, respectively, that need additional information on the environmental impacts of oil and gas activities before issuing leases or approving permits to drill. Until BLM and the Forest Service accurately determine the total number of plans and studies that need to be amended or prepared, the total cost to improve oil and gas information will be unknown. However, we believe that developing this information may be cost-effective for resource areas and forests with high oil and gas potential because foregone and delayed revenues resulting from suspended leasing activities appear to far exceed any reasonable estimated cost to develop such information.

BLM Plans to Improve Oil and Gas Information but Underestimates the Number of Resource Areas

After the reform act was passed in 1987, BLM increased its efforts to incorporate more oil and gas information into its land use plans. However, we believe that to the extent that land use plans are used to make leasing and development decisions, more resource areas than currently identified and scheduled by BLM may require additional oil and gas information.

Information provided to us by BLM in March 1990 and supplemented in an April 18, 1990, Federal Register notice, indicates that BLM has identified 49 resource areas with high oil and gas potential and/or high interest to industry that need improved oil and gas information. BLM officials told us that 2 new plans have been completed, and 24 new plans and 13 amendments covering the 49 resource areas are tentatively

scheduled to be completed by fiscal year 1996. (See table VII.1 in app. VII, for BLM's schedule.)

Generally, BLM is preparing new plans for those resource areas currently operating under a management framework plan. Management framework plans are planning documents usually completed prior to the enactment of FLPMA; they do not have EISs and/or meet current requirements for public involvement. BLM has determined that these plans do not meet its supplemental program guidance. It believes that when these scheduled efforts are completed, virtually all of BLM's land use plans for identified oil and gas priority areas will comply with its supplemental program guidance.

BLM plans to develop new plans or amendments for 45 of the 55 resource areas that we identified as having both high oil and gas potential and inadequate land use plans for making well-informed oil and gas leasing and/or development decisions.[1] We believe that improved oil and gas information may be required for the remaining 10 resource areas. (See table VII.2 in app. VII for a list of these resource areas.)

Forest Service Plans to Improve Oil and Gas Information but Approach Unclear

A 1988 internal assessment by the Forest Service concluded that almost all of its land use plans and accompanying EISs would not meet existing oil and gas planning requirements. The Forest Service has begun to improve its oil and gas information. Responding to our September 1989 testimony that addressed inadequacies in the Forest Service's land use plans,[2] the Forest Service Chief issued an October 11, 1989, directive to the regional foresters that land use plans must provide a good basis for oil and gas leasing decisions when there is oil and gas potential or interest in leasing. Offices were instructed to prioritize forests and complete additional environmental studies, including amending land use plans when appropriate. As of March 1990, the Forest Service had identified 46 forests on the basis of industry interest for oil and gas leasing that need improved oil and gas information. Fifteen of these forests were not identified by us as high oil and gas potential areas. As of

[1]Of the 49 resource areas identified by BLM, 4 were not included on our list of plans that may require additional information. We reviewed plans for two of these areas—the Cody resource area plan in Wyoming and the Book Cliffs resource area plan in Utah—and found that both met our criteria for all five elements. We did not evaluate the Border resource area plan in Oregon or the Lahontan resource area plan in Nevada because they were not on our list of oil and gas resource areas with high potential.

[2]Implementation of the Federal Onshore Oil and Gas Leasing Reform Act of 1987, (GAO/T-RCED-89-69, Sep. 28, 1989).

March 1990, the Forest Service had completed additional studies for five forests; the remaining studies are expected to be completed by fiscal year 1994.[3] (See table VII.3 in app. VII for the Forest Service's tentative schedule.)

In addition to the 46 forests the Forest Service identified (31 of which we also identified), we identified another 24 forests with high oil and gas potential that had limited information on oil and gas in their land use plans. We believe that many of these 24 forests may require improved oil and gas information prior to making leasing and development decisions. (See table VII.4 in app. VII for a list of these forests.)

An Accurate Estimate of the Total Cost to Develop Additional Oil and Gas Information Is Not Possible Now

Until BLM and the Forest Service determine the total number of land use plans and environmental studies that need to be completed or amended, the total cost cannot be estimated with any degree of certainty. However, we computed rough cost estimates for BLM to develop 24 new plans and to amend 13 existing plans by using costs provided by BLM headquarters to develop new plans or amendments. According to BLM headquarters planning officials, a state office is normally allocated $300,000 to develop a new plan and $100,000 to amend an existing plan. Applying these amounts to the 37 plans to be developed or amended, we estimate that revisions would cost about $8.5 million. Adding the 10 additional resource areas that we believe may require new plans or amendments would increase the cost even further.

BLM officials generally agree that the amount allocated by headquarters to prepare or amend a plan are less than the total cost incurred. BLM's Chief of Planning and Environmental Coordination stated that the agency does not know the actual cost of preparing a land use plan or the cost of amending an existing plan to improve oil and gas information. Although $300,000 is an estimate of the costs needed to prepare a new plan, he said this estimate does not generally include funding for resource specialists who participate in preparing the plan. BLM's Colorado state office officials estimated that the actual cost of preparing a land use plan may be $400,000.

Because the Forest Service is still not sure how many of the 46 forests identified as needing improved oil and gas information will require amended land use plans, supplemental environmental studies, or clarifications to the plans, and has no agencywide estimates of the costs to

[3]Some of these studies will cover portions of the forests, not the entire forest.

complete these different analyses, no accurate estimate of total cost is possible at this time. However, we believe that whatever cost estimate the Forest Service finally develops should include the costs needed to improve the oil and gas information in the additional 24 forests we identified as having high oil and gas potential.

Improving Oil and Gas Information Appears to Be Cost-Effective

In areas where industry interest is high because of oil and gas potential, foregone and delayed revenues resulting from suspending leasing activities are likely to exceed the costs associated with developing adequate environmental information. Until these resource areas and forests have adequate environmental documentation to support leasing decisions, the federal government will continue to lose rental revenue, and receipt of bonus bid and royalty revenue will be delayed.

For example, the Forest Service's Region 1, which covers 24 million acres and includes 15 forests in northern Idaho, Montana, North Dakota, and northwest South Dakota, suspended leasing in 1985 following a district court decision that the Forest Service had not adequately assessed the environmental impacts of its leasing decisions.[4] We estimate that about $9.6 million in rental revenue is lost annually on the 5.4 million acres that the Forest Service believes would be leased in the region and on leases that have been suspended because existing environmental studies do not comply with NEPA. By comparison, the Forest Service estimates that it will cost between $140,000 and $620,000 to complete additional environmental studies for each of the six forests with high oil and gas potential in Region 1, or a total of about $1.9 million.

In addition to foregone rental revenue, bonus bids and additional royalty revenues cannot be generated until leasing resumes. For example, in fiscal year 1987, Region 1 suspended leasing in the Little Missouri National Grasslands in the Custer National Forest. The Forest Service estimates that it will cost $620,000 to complete the environmental studies for the Custer National Forest—a portion of which will directly relate to the Little Missouri National Grasslands. The Forest Service estimates that about 336,000 acres will be leased in the Little Missouri National Grasslands. We estimate that this will generate about $22 million in bonus bids. The Forest Service estimates that about $1.1 million in royalties would have been generated annually in the Little Missouri National Grasslands had companies been allowed to lease the land and

[4]Conner v. Burford, 605 F Supp. 107 (D.Mont. 1985).

drill wells. In addition, about $500,000 of the $9.6 million in rental revenue identified above is lost annually.

Conclusions

Although BLM and the Forest Service recognize the importance of improving information on the environmental impacts of oil and gas leasing and development, it will be many years before they complete or amend all plans and/or environmental studies for resource areas and forests with high oil and gas potential to include such information. Overall estimates of the cost to develop this information to meet NEPA requirements cannot be determined until both agencies have a better understanding of how many plans and studies are deficient and what it will take to improve them. However, available cost estimates for individual projects indicate that it may be cost-effective to improve oil and gas information for resource areas and forests with high oil and gas potential. Estimated foregone and delayed revenues resulting from suspended leasing activities far exceed any reasonable estimated cost to develop such information.

Recommendations

To ensure that resources available to improve oil and gas information are used efficiently, we recommend that the Secretaries of the Interior and Agriculture direct the BLM Director and Forest Service Chief, respectively, to determine which resource areas or forests will yield the most revenues and give priority to revising plans or studies for those areas so oil and gas development can proceed expeditiously, with the least possible damage to the environment.

Agency Comments and GAO's Evaluation

Both Interior and the Forest Service generally agreed with the facts in this chapter and support this recommendation. Interior added that it believes the recommended approach would help refine the schedule for land use planning. Although Interior believes that it has already identified its resource areas with high oil and gas potential, we continue to recommend that it determine which resource areas are likely to yield the most revenues and give priority to revising those plans.

Improved Internal Management Controls Must Accompany Agency Initiatives

If BLM and Forest Service initiatives to improve information on the environmental impacts of oil and gas leasing and development are to be successful, improvements to existing management controls must also take place. Specifically, (1) BLM and the Forest Service need to improve their guidance on how to address cumulative impacts in land use plans and environmental studies, (2) the Forest Service needs to clarify its recently issued guidance on what types of environmental studies will be required, and (3) both agencies need to institute more effective oversight to ensure compliance with land use planning and environmental regulations and guidance.

Better Agency Guidance Needed on Addressing Cumulative Impacts

The key element most often missing from land use plans and related environmental studies is cumulative impacts. NEPA requires that cumulative impacts be disclosed in land use plans; however, the agencies did not provide clear guidance on how to develop this information. While both agencies have improved their guidance, it is still inadequate for assessing the cumulative impacts of oil and gas leasing and development.

BLM Guidance

BLM's November 1986 supplemental program guidance identified the type of oil and gas information that should be included in land use plans and related EISs. To address cumulative impacts, this guidance states only that such impacts should be assessed for each alternative presented in the land use plan. In 1987 BLM concluded that its guidance for assessing cumulative impacts was both unclear and inadequate. In October 1988, responding to the need for more detailed guidance, BLM issued a handbook providing instructions for complying with NEPA. This was followed in February 1989 by a draft fluid minerals handbook that provided even more detailed guidance on how to develop oil and gas information. However, neither BLM's NEPA handbook nor its draft fluid minerals handbook provide adequate guidance for analyzing cumulative impacts.

Forest Service Guidance

The guidance in effect during the development of the Forest Service's land use plans was diffused throughout the agency's planning regulations, manuals, and handbooks, and did not provide adequate information on how to develop a reasonably foreseeable development scenario or assess cumulative impacts. In a May 1988 memorandum, the Forest Service Chief agreed to consolidate the Forest Service's planning guidance, incorporating the major elements of BLM's supplemental program

guidance. This consolidated guidance was issued on October 11, 1989. The revised guidance defined the reasonably foreseeable development scenario, and like BLM's draft fluid minerals handbook, listed the factors to be considered when projecting such a scenario. However, it does not provide clear direction on developing cumulative impacts analyses.

Forest Service Needs Clear Guidance on What Types of Environmental Studies Will Be Required

The Forest Service's revised guidance is also unclear about what types of environmental studies will be required to support oil and gas leasing and development decisions. It provides several options for meeting its requirements: (1) amending existing land use plans and completing appropriate environmental studies; (2) tiering additional environmental studies to existing land use plans before issuing leases or approving drilling permits; or (3) supplementing land use plans with "additional clarification" that may or may not require additional environmental studies. However, there is no further discussion in the guidance as to when each of these options may be appropriate. We believe that further clarification is needed because the level of detail in the studies required to be completed under each of these options varies significantly.

More Direct Oversight and Evaluation of Field Offices Needed

Although both BLM and the Forest Service are improving their guidance on land use planning and environmental studies, the decentralized nature of the two agencies provides no assurance that the improved guidance will be followed. Neither agency has the necessary oversight and evaluation in place to ensure that field offices adhere to their national policies and guidance.

Under BLM's and the Forest Service's decentralized management philosophy, effective program oversight and evaluation are needed to provide management with feedback to measure performance and, when necessary, to correct performance problems. However, this oversight and evaluation has not accompanied devolution of responsibility for oil and gas leasing and development decisions. Neither agency can ensure that land use plans and related environmental studies comply with land use planning and environmental regulations and guidance. In addition, neither agency has the necessary internal management controls in place to ensure that leases and drilling permits include all the necessary stipulations. As a result, resource area and forest offices lack uniformity in (1) their interpretation and implementation of land use planning and environmental regulations and guidance and (2) the extent to which all required stipulations and conditions of approval are attached to leases and drilling permits.

Compliance With Planning Regulations and Guidance Varies Among Field Offices

Although BLM and Forest Service field offices are responsible for developing land use plans, neither agency has adequate systems in place to ensure that applicable regulations and guidance are followed. As a result, the extent to which land use plans contained the necessary information varied among BLM state and Forest Service regional offices. For example, six of the eight plans we reviewed from BLM's Utah state office met our criteria for at least four of the five elements, whereas the four plans we reviewed from BLM's Nevada state office met our criteria for only two or fewer of the elements. Similarly, the six plans we reviewed from the Forest Service's Region 1 generally met our criteria for two or more of the five elements, whereas the three plans we reviewed from the Forest Service's Region 3 met our criteria for only one or none of the elements.

BLM headquarters issued a memorandum in May 1988 reiterating the importance of the supplemental program guidance and the requirement that it be incorporated into land use plans. For areas of high oil and gas potential, the guidance directs that the plans contain more detailed information. Officials at the four BLM state offices we visited said that although they did not incorporate the supplemental program guidance into their land use plans, they believe the plans they have approved comply with both FLPMA and NEPA requirements. BLM Wyoming State Office officials, for example, stated that they view the supplemental program guidance as optional guidance, not policy, that does not necessarily have to be complied with.

According to officials of the three Forest Service regional offices we visited, the resource specialists who prepare the plans in the local forest offices often lack the oil and gas expertise needed to develop the necessary information. Additionally, although the regional offices are responsible for approving land use plans, some regions also lack the necessary oil and gas expertise. This lack of knowledge, coupled with the lack of agencywide guidance, make it difficult to reach informed decisions on the environmental impacts of oil and gas activities.

BLM and Forest Service headquarters officials told us that they have limited control over the quality of the land use plans developed by resource area and forest offices and approved by state and regional offices, respectively. Under the agencies' decentralization philosophies, these officials view their role as being primarily responsible for providing guidance, training, and technical assistance to their respective state and regional offices. They look to their state and regional offices to provide the necessary systems or controls needed to ensure adherence to land

use planning and NEPA policies and procedures. And, although all Forest Service plans must be routed through Forest Service headquarters, review at this level is limited primarily to format rather than content.

Incorporating Required Stipulations or Conditions of Approval Into Leases and Permits Varies Among Field Offices

The extent to which BLM resource area offices and Forest Service forest offices included all needed stipulations and conditions of approval in leases and permits also varied. For example, 26 (or 31 percent) of the 85 permits reviewed at BLM's Caliente resource area, in California, did not have 1 or more of the conditions of approval required by the land use plans and/or other environmental studies, while only 3 (or 4 percent) of the 80 permits reviewed at the Farmington, New Mexico, resource area had been approved without the appropriate condition(s). Similarly, 11 (or 69 percent) of the 16 permits reviewed at the Carson National Forest, in New Mexico, were missing 1 or more conditions, while 2 (or 20 percent) of the 10 permits reviewed at the Medicine Bow National Forest, Wyoming, had been approved without the appropriate condition(s) included.

BLM and Forest Service officials explained that stipulations are missing from some leases because the responsible BLM state office or Forest Service regional office did not ensure that it had the most current information from the affected resource area or forest. Colorado BLM officials also said stipulations are missing from some leases because the wording in the applicable land use plans is vague or inconsistent with other studies. Moreover, these officials believe that drilling permits have missing conditions of approval because resource specialists responsible for identifying the potential impacts of oil and gas development on other resources did not properly review the permits to ensure all conditions were included.

The Rocky Mountain Regional Coordinating Committee, with the support of the BLM Director and Forest Service Chief, has issued guidance that is intended to standardize language for lease stipulations identified in land use plans, making it clearer when and what stipulations are applicable. However, without effective oversight, BLM and the Forest Service will not know the extent to which field officials are complying with this guidance. Moreover, there is no system to ensure communication and coordination among the responsible BLM state, district, and resource area offices, or between the responsible Forest Service regional office and the affected forest office to ensure that stipulations are attached to leases on the basis of the most current information available. There is a need for similar coordination and communication among

resource specialists before a drilling permit is approved by a resource area or forest office.

BLM and the Forest Service Recognize a Need for Management Controls

In its 1987 NEPA evaluation report, BLM concluded that program management and quality control (oversight) improvements were needed at both the headquarters and state office levels. BLM state offices generally agreed with the evaluation report's recommendation and made a commitment to improving their program management and oversight strategies. In addition, in commenting on a draft of our report, Interior stated that BLM is planning to review its planning and NEPA compliance processes to improve its performance and is reorganizing its fluid minerals group in headquarters to improve efficiency. BLM also plans to issue additional guidance on its oil and gas program, including draft guidance on how to develop cumulative impact analysis.

The Forest Service has recognized the need to improve management controls to ensure that NEPA requirements are adequately addressed before making leasing or development decisions and to ensure appropriate stipulations or conditions of approval are attached to leases or drilling permits, respectively. In commenting on a draft of our report, the Forest Service stated that it has recently established an advisory group with expertise drawn from minerals, environmental, and planning staffs. Among other things, this group will coordinate with Agriculture's Office of General Counsel and provide advice to the Forest Service management team on how to prepare environmental studies. It will also periodically review the environmental studies in process.

Conclusions

In the last few years, BLM and the Forest Service have improved their guidance on the oil and gas information to be included in land use plans and related environmental studies. In particular, the Forest Service's recently issued guidance on analyzing oil and gas environmental impacts is an improvement over earlier guidance that was diffused throughout the agency's planning regulations, manuals, and handbooks. However, as recognized by the agencies, clearer guidance is still needed on how to address cumulative impacts. In addition, the Forest Service guidance provides several options for meeting the guidance but does not provide clear direction on how to decide when each option is appropriate.

Both BLM and the Forest Service are improving their guidance for land use planning and environmental studies, as well as their guidance on when and where stipulations or conditions of approval are applicable.

However, the decentralized nature of the two agencies, coupled with the lack of effective management controls and program oversight and evaluation, provides no assurance that the improved guidance will be adhered to. Delegation of responsibility for approving land use plans and for making leasing and development decisions that affect other resources carries with it an implied accountability. Yet, neither BLM nor the Forest Service has instituted the necessary internal management controls to ensure that in taking these actions, its field offices will comply with applicable planning regulations and guidance.

Recommendations

To better ensure that the environmental impacts of oil and gas leasing and development on federal lands are adequately considered in land use plans and at subsequent key decision points and that available resources are used efficiently, we recommend that the Secretaries of the Interior and Agriculture direct the BLM Director and the Forest Service Chief, respectively, to

- provide clear guidance on how to address cumulative impacts in land use plans and related environmental studies. In addition, the Forest Service Chief should be directed to clarify when the recently issued guidance can be met by amending the land use plan, completing additional environmental studies, or supplementing the plan with additional information.
- establish an oversight and evaluation program to ensure that (1) NEPA requirements are adequately addressed, whether in land use plans and/or other environmental studies, before leases are issued or permits to drill are approved; and (2) appropriate stipulations or conditions of approval are attached to leases and permits. As part of this program, the BLM Director and the Forest Service Chief should establish measurable goals and target dates to correct identified problems.

Agency Comments and GAO's Evaluation

Both Interior and the Forest Service generally agreed with the facts in this chapter and supported our recommendations. Although Interior did not specifically address our recommendation regarding the need for additional guidance on cumulative impacts, it indicated that it plans to issue such draft guidance. The Forest Service disagreed with us regarding missing conditions of approval from drilling permits and, in most cases, considered such conditions standard operating procedures, and therefore did not believe these conditions needed to be included.

However, we identified several types of conditions missing from the permits including cultural, wildlife, and road restrictions that are not considered standard operating procedures in every forest. We have summarized the actions BLM and the Forest Service are taking in this chapter.

List of Elements Reviewed And Associated NEPA And/Or Agency Regulatory Or Guidance Citations

Elements	Requirements	GAO criteria
Identification of areas open to leasing and applicable stipulations	BLM Supplemental Program Guidance (SPG) 1624.21 Identify areas open and closed to development. For land open to development, identify areas subject to standard lease terms and conditions, areas subject to seasonal or other minor constraints, areas subject to no-surface-occupancy and similar major constraints. The boundaries of these areas are to be portrayed on maps. Forest Service planning regulations, 36 CFR 219.22(f) Recognize the probable effect of renewable resource prescriptions and management direction on oil and gas exploration and development (resource prescriptions are translated into stipulations). National Environment Policy Act (NEPA) regulations, 40 CFR 1502.14(f) Include appropriate mitigation measures (stipulations) not already included in the proposed action or alternatives.	Full response A map, narrative, or table identifying areas that are (1) open subject to standard lease terms and conditions; (2) open subject to moderate protection (such as restricted seasonable use stipulations; (3) open subject to maximum protection (such as no-surface-occupancy stipulations); and (4) closed to leasing. Partial response A narrative discussing acreage or percentage of areas with appropriate stipulations without identifying specific areas. A narrative or table listing stipulations that will apply in given certain circumstances without identifying specific areas (e.g., if wildlife exists, apply wildlife protection stipulation). A map, narrative or table identifying one or more of the required stipulations, but not all of them.
Oil and gas potential	BLM SPG 1624.22(A) The potential for fluid mineral occurrence should be assessed using BLM's classification system as well as public interest that has been shown in an area. Should be in a table format with low, moderate, high and unknown potential. Forest Service planning regulations, 36 CFR 219.22(c) Recognize the probable occurrence of leasable minerals (oil and gas); the potential for future mineral development. NEPA regulations, 40 CFR 1502.15 Succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. (Oil and gas potential is one aspect of the environment.)	Full response A map, narrative, or table identifying areas of high, medium, low, unknown, or no potential for oil and gas. Partial response A narrative or table discussing acreage or percentage of potential, but not identifying specific areas. A map, narrative or table discussing drilling and production activity, without a discussion of other potential in the area.
Reasonably foreseeable development scenarios	BLM SPG 1624.22(B) Reasonably foreseeable development scenario projections should usually be expressed in terms of the number of wells and fields. Such projections should vary depending on the potential for fluid mineral occurrence and which areas are open to development. Forest Service planning regulations, 36 CFR 219.22(e) Recognize the access requirements for mineral exploration and development.	Full response A map, narrative, or table projecting the anticipated level of oil and gas development in terms of number of wells over the life of the plan. These projections should be based on mineral potential and development history. Partial response A general narrative of future oil and gas development in the area.

(continued)

Elements	Requirements	GAO criteria
	Forest Service Manual 2806.4 An activity forecast should be in the plans, projecting the most probable types of oil and gas activities expected to occur and where the activity is most likely to occur. NEPA regulations 40 CFR 1502.16 The agency must disclose reasonably foreseeable future actions in order to assess cumulative impacts.	A narrative or table of the number of expected leases. However, no discussion on possible development of these leases. A narrative of stipulations that will be imposed and their effect on oil and gas development. A map or narrative on currently producing fields and their life expectancy.
Indirect impacts	BLM planning guidance 1600 series, 1616.62 Discuss the indirect impacts in estimating the effects of alternatives. Forest Service planning regulations, 36 CFR 219.12(g) The estimated effects of the alternatives will be considered in detail according to NEPA procedures (includes indirect impacts). NEPA regulations 40 CFR 1502.16(b) and 1508.8 Discuss the environmental impacts of alternatives including indirect effects and their significance. Indirect effects, which are caused by the action (i.e., oil and gas exploration and development) and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include related effects on air and water and other natural systems, including ecosystems.	Full response A map, narrative, or table of the types of impacts to other resources expected from surface and subsurface activities such as clearing land, drilling, building roads, and/or installing pipelines. This discussion must address significant resources such as wildlife, cultural values, soil, vegetation, air and water quality. We did not require the plan to disclose the magnitude of indirect impacts associated with different levels of development; therefore, we accepted indirect impact discussions without disclosure of a reasonably foreseeable development scenario. Partial response A narrative or table on the impact(s) of oil and gas development to some, but not all resources in the area. A narrative or table that identifies resources that will be affected by oil and gas development; however, does not describe how they will be affected.
Cumulative impacts of reasonably foreseeable development scenarios	BLM SPG 1624.22(B) The cumulative impacts of reasonable foreseeable development scenarios should be analyzed in detail. Forest Service planning regulations, 36 CFR 219.12(g) The estimated effects of alternatives will be considered in detail according to NEPA procedures. NEPA regulations 40 CFR 1502.16(b) and 1508.7 Discuss the environmental impacts of the alternatives including the cumulative impacts. Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.	Full response For those plans containing a reasonably foreseeable development scenario, a narrative specifically citing the term "cumulative impacts". We did not evaluate the adequacy of these citations because at the time of our review neither agency had criteria for developing cumulative impacts as they relate to oil and gas development. Reasonably foreseeable development scenarios were required to be fully addressed in order to receive a complete response for cumulative impacts because cumulative impacts are the incremental impacts of the proposed actions, which cannot be assessed without the expected level of development.

Results of BLM Land Use Plan Review

Resource area	Lease stips identified	Oil and gas potential	Reasonably foreseeable dev.scenario	Indirect impacts	Cumulative impacts
California					
California Desert	P	Y	P	Y	N
Caliente	Y	Y	N	Y	N
Hollister	P	Y	P	P	N
Colorado					
Glenwood Springs	Y	P	N	P	N
Grand Junction	Y	Y	Y	Y	Y
Kremmling	P	Y	P	P	N
Little Snake	Y	Y	N	Y	N
Northeast	Y	Y	N	Y	N
San Juan	Y	Y	P	P	N
Uncompahgre	Y	Y	Y	Y	Y
White River	P	Y	P	Y	N
Montana					
Billings	P	Y	P	Y	N
Garnet	P	Y	P	Y	N
Great Falls, Havre	Y	Y	Y	Y	Y
Headwaters	Y	P	P	Y	N
North Dakota	P	P	P	Y	N
Powder River	Y	Y	P	N	N
South Dakota	P	Y	N	Y	N
Nevada					
Egan	P	Y	N	N	N
Elko	Y	Y	P	P	N
Eureka, Shoshone	N	Y	N	N	N
Wells	P	N	P	P	N
New Mexico					
Carlsbad	Y	Y	P	Y	N
Farmington	P	P	N	N	N
Rio Puerco	P	P	P	N	N
Taos	Y	Y	P	N	N
Oregon					
Wenatchee (Spokane District)	P	Y	N	Y	N
Utah					
Bear River	Y	Y	N	P	N
Book Cliffs	Y	Y	Y	Y	Y
Grand	Y	Y	Y	Y	N
San Juan	Y	Y	P	Y	N

(continued)

Resource area	Lease stips identified	Oil and gas potential	Reasonably foreseeable dev.scenario	Indirect impacts	Cumulative impacts
San Rafael[a]	Y	Y	Y	P	N
Wyoming					Y
Buffalo	P	Y	Y	Y	Y
Cody	Y	Y	Y	Y	N
Great Divide (Formerly Medicine Bow and Divide)	P	Y	Y	P	
Kemmerer	P	Y	N	Y	N
Lander	Y	Y	Y	Y	N
Pinedale	Y	Y	Y	Y	Y
Platte River	Y	Y	Y	Y	N
Washakie	Y	Y	Y	Y	N

[a]Draft plan was reviewed

Legend

Y = Yes, element fully addressed
P = Partial, element partially addressed
N = No, element not addressed

Results of Forest Service Land Use Plan Review

Forest	Region	Lease stips. identified	Oil and gas potential	Reasonably foreseeable dev.scenario	Indirect impacts	Cumulative impacts
Alabama						
Conecuh, Bankhead, Talladega[a] and Tuskagee[a]	8	P	N	P	Y	N
Arkansas						
Oauchita	8	P	Y	P	P	N
Ozark and St. Francis[a]	8	P	P	P	P	N
California						
Angeles	5	P	N	P	N	N
Los Padres	5	P	Y	N	P	N
Colorado						
Arapaho and Roosevelt	2	Y	Y	Y	Y	N
Grand Mesa, Gunnison and Uncompahgre	2	P	N	N	Y	N
Pike and San Isabel[a]	2	P	Y	P	P	N
Routte	2	P	Y	P	N	N
San Juan	2	P	P	Y	Y	N
White River	2	P	Y	P	P	N
Kentucky						
Daniel Boone	8	P	P	P	Y	N
Louisiana						
Kisatchie	8	Y	Y	Y	P	Y
Michigan						
Huron and Manistee	9	P	Y	P	N	N
Mississippi						
Bienville, Delta, De Soto, Holly Springs[a] Homochitto and Tombigbee	8	N	P	P	Y	N
Montana						
Custer	1	Y	P	P	Y	N
Flathead	1	P	Y	N	Y	N
Lewis and Clark	1	Y	Y	Y	Y	Y
Lolo	1	Y	Y	Y	P	Y
Beaverhead	1	P	Y	P	Y	N
Gallatin	1	Y	Y	P	P	N

(continued)

Forest	Region	Lease stips. identified	Oil and gas potential	Reasonably foreseeable dev.scenario	Indirect impacts	Cumulative impacts
Nebraska						
Nebraska	2	P	Y	P	Y	N
Nevada						
Humboldt	4	P	Y	P	Y	N
Toiyabe	4	P	Y	N	Y	N
New Mexico						
Carson	3	P	P	P	N	N
Cibola	3	Y	P	P	P	N
Santa Fe	3	Y	P	N	N	N
Ohio						
Wayne	9	P	Y	P	Y	N
Pennsylvania						
Allegheny	9	P	P	P	Y	N
Texas						
Angelina, Davy Crockett, Sabine and Sam Houston	8	N	Y	Y	Y	N
Utah						
Ashley	4	P	Y	P	Y	N
Cache and Wasatch	4	Y	P	P	Y	N
Dixie	4	P	Y	P	Y	N
Manti Lasalle	4	P	Y	Y	Y	N
Uinta	4	Y	Y	P	N	N
Virginia						
George Washington	8	Y	Y	P	N	N
Jefferson	8	P	Y	P	P	N
West Virginia						
Monongahela	9	P	N	P	P	N
Wyoming						
Bighorn	2	P	Y	P	Y	N
Bridger-Teton[b]	4	P	P	Y	Y	Y
Medicine Bow	2	Y	P	P	Y	N
Shoshone	2	P	Y	P	Y	N

[a]This forest is not located in a high oil and gas potential area; however, it was included in a land use plan that covers at least one forest with high oil and gas potential.

[b]Draft plan was reviewed.

Legend

Y = Yes, element fully addressed
P = Partial, element partially addressed
N = No, element not addressed

Results of BLM and Forest Service Land Use Plan Review for Socioeconomic Impacts

In addition to the 5 elements required in the land use plans, we reviewed the 82 plans located in oil and gas provinces to determine whether the plans addressed the socioeconomic consequences of oil and gas exploration and development. We looked for a narrative or table assessing the future impacts of oil and gas on the local economy. These effects may be expressed in terms of jobs and/or actual dollars. Table IV.1 shows the number of plans that identify socioeconomic consequences:

Table IV.1: Extent to Which Plans Identify Socioeconomic Consequences

Extent element addressed	BLM	Percent	Forest Service	Percent	Total	Percent
Socioeconomic consequences identified in jobs and dollars to the local economy	24	60	27	64	51	62
Socioeconomic consequences not addressed	16	40	15	36	31	38
Total	**40**		**42**		**82**	

Fifty-one plans discussed the socioeconomic consequences of oil and gas development. These plans discussed the number of jobs created and dollars generated for the local economy as a result of oil and gas exploration and development—although the length and quality of the discussion varied among the plans. For example, one BLM resource area plan projected the employment and annual salaries and wages that could be expected as a result of oil and gas activity. Thirty-one plans did not discuss socioeconomic consequences specifically in terms of jobs and dollars generated.

Extent to Which BLM and Forest Service Land Use Plans Met the Criteria by Element

Tables V.1 through V.5 list the number of land use plans that met, partially addressed, or did not address each of the five key elements.

Table V.1: Extent to Which Plans Addressed Oil and Gas Potential

	BLM		Forest Service		Total plans	
Extent element addressed	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Plan meets the criteria	34	85	26	62	60	73
Plan partially meets the criteria	5	13	12	29	17	21
Element not identified in plan	1	3	4	10	5	6
Total	**40**		**42**		**82**	

Table V.2: Extent to Which Plans Projected Reasonably Foreseeable Development Scenarios

	BLM		Forest Service		Total plans	
Extent element addressed	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Plan meets the criteria	13	33	8	19	21	26
Plan partially meets the criteria	16	40	29	69	45	55
Element not identified in plan	11	28	5	12	16	20
Total	**40**		**42**		**82**	

Table V.3: Extent to Which Plans Addressed Indirect Impacts

	BLM		Forest Service		Total plans	
Extent element addressed	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Plan meets the criteria	25	63	24	57	49	60
Plan partially meets the criteria	9	23	11	26	20	24
Element not identified in plan	6	15	7	17	13	16
Total	**40**		**42**		**82**	

Table V.4: Extent to Which Plans Cited Cumulative Impacts

	BLM		Forest Service		Total plans	
Extent element addressed	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Plans meet the criteria[a]	7	18	4	10	11	13
Element not identified in plan	33	83	38	90	71	87
Total	**40**		**42**		**82**	

[a]Plans that meet the criteria for projecting reasonably foreseeable development scenarios and cite "cumulative impacts".

Table V.5: Extent to Which Plans Addressed Lease Stipulations

	BLM		Forest Service		Total plans	
Extent element addressed	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Plan meets the criteria	23	58	12	29	35	43
Plan partially meets the criteria	16	40	28	67	44	54
Element not identified in plan	1	3	2	5	3	4
Total	**40**		**42**		**82**	

BLM and Forest Service Land Use Plans and Areawide Environmental Assessments for Four Resource Areas and Four Forests Visited

Table VI.1: Extent to Which Areawide Environmental Assessments And/Or Applicable Land Use Plans Do Not Meet the Criteria for Each of the Five Elements

Location	Lease stips.	Oil/gas potential	Development scenario	Impacts	
				Indirect	Cumulative
BLM resource area					
Caliente, California			N		N
White River, Colorado	P				
Farmington, New Mexico	P				
Platte River, Wyoming					
National forest					
Los Padres, California	P		P		N
San Juan, Colorado	P	P			N
Carson, New Mexico	P	P	P	N	N
Medicine Bow, Wyoming		P	P		N

Legend:

P = partial
N = not identified

BLM and Forest Service Resource Areas and Forests That May Need Additional Oil and Gas Information as Identified by GAO And/Or the Agencies

Table VII.1: BLM Resource Areas With Actions Completed, Underway, or Proposed

State	Resource area	Type of action	Complete in FY:
California	Caliente	New plan	1992
	Clear Lake[a]	New plan	1994
	Folsom[a]	New plan	1992
	Hollister	Amendment	1991
	Indio	New plan	1992
	Redding[a]	New plan	1992
Colorado	Glenwood Springs[b]	Amendment	1991
	Kremmling[b]	Amendment	1991
	Little Snake[b]	Amendment	1991
	Northeast[b]	Amendment	1991
	Royal Gorge	New plan	1993
	San Juan[b]	Amendment	1991
	White River	New plan	1992
Montana	Big Dry[c]	Amendment	1991
	Billings[c]	Amendment	1991
	Dillon[a]	New plan	1993
	Judith[d]	New plan	1993
	Phillips[d]	New plan	1993
	Valley[d]	New plan	1993
	Powder River[c]	Amendment	1991
	South Dakota[c]	Amendment	1991
Nevada	Caliente[a]	New plan	1996
	Egan	Amendment	1991
	Elko	Amendment	1992
	Lahontan[a,e]	Amendment	1992
	Shoshone-Eureka	Amendment	1994
	Schell[a]	New plan	1994
	Tonopah	New plan	1992
	Wells[a]	Amendment	1994
New Mexico	Farmington[f]	Amendment	1991
	Rio Puerco[a,f]	Amendment	1991
	Roswell	New plan	1993
	Taos[a,f]	Amendment	1991
	Carlsbad	Amendment	1993
Oregon	Border[e,g]	Amendment	1991
	Tillamook[a]	New plan	1993
	Wenatchee[g]	Amendment	1991
Utah	Bear River	Amendment	1990
	Book Cliffs[h]	Amendment	1994
	Diamond Mountain	New plan	1992

(continued)

State	Resource area	Type of action	Complete in FY:
	Dixie[a]	New plan	1990
	Escalante[a]	New plan	1994
	Price River[a]	New plan	1995
Wyoming	Buffalo	New plan	1994
	Cody[h]	New plan	Completed
	Grass Creek	New plan	1993
	Great Divide	New plan	Completed
	Green River	New plan	1991
	Newcastle	New plan	1992

Note: BLM also identified the states of Kansas, Oklahoma, and Texas as needing new plans to address oil and gas issues in the plans. This list identifies only resource areas.

[a]Considered lower priority by BLM.

[b]These five plans are being amended in a single statewide plan amendment.

[c]These four plans are being amended in a single districtwide amendment.

[d]All part of the same land use plan.

[e]Not identified as a high potential oil and gas area by GAO.

[f]Albuquerque districtwide amendment covers these three resource areas.

[g]One land use plan covers both these areas; that plan will be amended.

[h]Plans were reviewed by GAO and met our criteria for all 5 elements.

Table VII.2: Additional Resource Areas Identified by GAO Where More Oil and Gas Information May Be Needed

State	Resource area
Montana	Dickinson District (North Dakota)
	Garnet
	Headwaters
Utah	Grand
	San Juan
	San Rafael
Wyoming	Kemmerer
	Lander
	Platte River
	Washakie

Table VII.3: Forest Service Forests With Actions Completed, Underway, or Proposed

State	National forest	Complete in FY:
Arkansas	Ouachita	1990
California	Los Padres	1992
	Mammoth[a,b]	1992
	Modoc[a,b]	1992
	Shasta-Trinity[a,b]	1992
	Six Rivers[a,b]	1992
Colorado	Arapaho[c]	1992
	Roosevelt[c]	1992
	Grand Mesa[d]	1992
	Gunnison[d]	1992
	Uncompahgre[d]	1992
	Pike[e]	1990
	San Isabel[a,e]	1990
	Rio Grande[a]	1992
	Routte	1991
	White River	1991
Idaho	Caribou[a]	1992
	Challis[a,b]	1993
	Salmon[a,b]	1992
	Targhee[a]	1994
Illinois	Shawnee[a]	1991
Michigan	Huron[f]	Completed
	Manistee[f]	Completed
Ohio	Wayne	1990
Indiana	Hoosier[a]	1991
Montana	Beaverhead	1992
	Custer[g]	1993
	Flathead	1992
	Helena[a,h]	1993
New Mexico	Lincoln[a]	1990
Pennsylvania	Allegheny[b]	Completed
Texas	Angelina[i]	1991
	Davy Crockett[i]	1991
	Sabine[i]	1991
	Sam Houston[i]	1991
Utah	Ashley[j]	1992
	Dixie	1992
	Fishlake[a]	1992
	Manti-LaSal	1991

(continued)