BY THE COMPTROLLER GENERAL

Report To The Congress

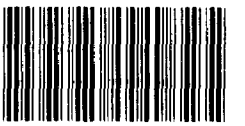
OF THE UNITED STATES

Mapping Problems May Undermine Plans For New Federal Coal Leasing

Faulty maps may undermine efforts by the Department of the Interior to resume its plans for new Federal coal leasing.

Recent actions to correct the maps, which are the major source of information on coal resources on Federal lands, and to provide needed data through other means, may be too late or fail.

Thus, unless a major change is made in the way the Interior gathers basic coal data, it may not be able to clear enough lands to meet the Nation's anticipated demands for more coal in the years ahead.



EMD-81-30
DECEMBER 12, 1980

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-199746

To the President of the Senate and the
Speaker of the House of Representatives

This report brings to the attention of the Congress and the Administration problems associated with the Department of the Interior's coal mapping program as it could affect the future leasing of coal from Federal lands. It also analyzes recent actions to correct mapping problems and discusses alternatives to better link coal mapping and land use planning.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of the Interior; and the Secretary of Energy.

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

MAPPING PROBLEMS MAY UNDERMINE PLANS FOR NEW FEDERAL COAL LEASING

D I G E S T

New energy supply initiatives will require more leasing and development of western Federal coal. Such coal is crucial in helping this Nation reduce its dependence on expensive and politically unstable foreign oil.

However, this report points out a serious problem that could undermine plans for new Federal leasing: the major source of information on coal resources on Federal lands is faulty.

Federal coal resource planning and management decisions rely on maps that are often inaccurate, unreliable, and inappropriate either to define broad planning boundaries or to support the kinds of economic, energy, and environmental trade-off decisions called for by the new Federal leasing program.

Recent actions by the U.S. Geological Survey to correct the mapping problems and provide needed data through an alternative approach may not fill the gap. Thus, unless a major change is made in the way basic coal data is obtained, the leasing program may not be able to make available sufficient quantities of economically minable Federal coal to meet the Nation's demands in the years ahead.

The maps--known as Coal Resource Occurrence/ Coal Development Potential (CRO/CDP) maps--have since 1977 been developed under contracts managed by the Survey. Contract costs have totaled about $10 million. The maps were

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intended to cover all 78,000 square miles of western Federal lands classified for possible coal leasing and to be completed by 1982.

PROBLEMS WITH CRO/CDP MAPS

The CRO/CDP mapping program began as a relatively modest, short-term data compilation effort covering a limited portion of unleased coal lands. But--based on new mandates in the Federal Coal Leasing Amendments Act and the Federal Land Policy and Management Act, both in 1976, coupled with Interior's urgent need for coal data to support its new coal program--the program was enlisted to provide detailed geologic maps for all Federal lands classified for possible coal leasing.

Despite the absence of detailed data on coal reserves and development potential--the basis for CRO/CDP mapping coverage--and warnings about the quality and usefulness of the then-existing maps, Interior decided to adopt the maps as the major source of coal information for land use planning. This was a role the maps were never intended and not equipped to assume. The result has been maps that

--are so technically flawed and unreliable that they cannot be used to support land use planning decisions called for by the new Federal coal program,

--even if technically accurate, are incomplete and inappropriate for use in making the kinds of decisions envisioned by the new program, and

--were not available when certain land use planning decisions were made.

Much of the problem was brought on by (1) a "crash program" to develop maps--through contracts--covering extensive areas even though some of the areas were believed to contain little or no economically minable coal and

(2) the absence of sufficient geologic data to prepare useful maps for most of the areas. These and other problems are discussed in more detail beginning on page 7.

RECENT ACTION MAY NOT RESOLVE THE PROBLEM

Recognizing problems with CRO/CDP maps, the Geological Survey took action to (1) revise some CRO/CDP maps to improve their quality and add proprietary data, (2) limit future CRO/CDP mapping to areas scheduled for lease, and (3) expand its regional drilling and mapping program to cover Federal lands not scheduled for leasing. (See p. 18.) In addition, Interior--in responding to our draft report--announced that it terminated the contract mapping program, effective October 1, 1980.

While these steps are well-intentioned, it is doubtful that they will permit the Geological Survey to adequately respond to the needs of the coal leasing program because:

--Limited resources and lack of guidance from Survey headquarters make it doubtful needed maps will be ready in time for the Bureau of Land Management's use in land use planning.

--Survey's decision to limit future CRO/CDP mapping to areas scheduled for leasing may create a major gap in information on coal development potential for lands outside lease sale areas.

--Survey's regional drilling and mapping program lacks funding and staffing to assume the projected workload as well as administrative procedures to identify areas for further consideration.

ALTERNATIVE APPROACH TO MEETING INFORMATION NEEDS

Despite the important role reliable coal data has in the Interior's new coal leasing program

and the problems it has experienced in developing such data in a timely, efficient manner, the Department does not specifically request timely coal data from coal companies, State governments, or the general public. Rather, it continues to rely on faulty CRO/CDP and uncertain regional maps in making crucial land use planning and other energy/environmental/economic trade-off decisions. As a result, the best data may not be made available for these decisions, and the most economically minable coal may not be leased.

No law prevents the Secretary of the Interior from requesting expressions of interest in particular areas during land use planning, and thereby having additional information to more efficiently focus the Department's limited resources on areas of highest potential. While this should not deter the Secretary from considering other land uses, it may avoid the risk of initiating screening activities in areas where Interior has limited knowledge and data and where there is little or no interest in leasing. (See p. 27.)

RECOMMENDATIONS TO THE SECRETARY OF THE INTERIOR

The Secretary of the Interior should better link its land use planning and coal mapping/drilling programs and more efficiently use its in-house capability to concentrate on areas of highest interest and potential for coal leasing. This should include:

--Publishing in the Federal Register a notice of the Geological Survey's mapping and drilling plans at the same time the Bureau of Land Management gives public notice and requests comments on its schedule for land use planning--thus providing an appropriate time for coal companies, State governments, and the public to submit comments for use by the Survey in refining its exploration and mapping priorities.

--Establishing a sufficient mapping capability in-house--including funding for drilling--to (1) revise and improve the quality of needed CRO/CDP maps and (2) assure the linking of future mapping and drilling efforts with the Bureau's land use planning.

--Requesting nonconfidential coal and economic information from coal companies, State governments, and the public at the time the Bureau gives public notice on the preparation or revision of land use plans in particular areas. This notice should include (1) specific criteria to guide coal companies, State governments, and the public in submitting coal information and (2) procedures for how and when such information will be applied in land use planning.

AGENCY COMMENTS

In its response to a draft of this report (see appendix II), Interior expressed disagreement with GAO's interpretation of the Department's regulations regarding the role of the CRO/CDP maps, as well as with GAO's concern that problems with the maps may result in insufficient quantities of economically minable coal being made available from Federal lands. Interior also indicated disagreement with GAO's position on the need for solicitation of industry, State government, and public expressions of coal interest early in land use planning.

Despite its expressions of disagreement, Interior stated its intention to do practically all the things GAO proposed in the draft report--including termination of CRO/CDP contract mapping and various actions to better link its mapping activities and land use planning. These include:

--Improving coordination between Survey's mapping and drilling activities and the Bureau's land use planning schedule for the new coal leasing program.

--Focusing future coal mapping on Federal resources having the highest interest for leasing.

--Coordinating joint Survey/Bureau Federal Register notices for both general land use planning schedules and for specific planning units at the time of preparation or revision of land use plans.

--Using Federal Register notices in the future as a means for helping the Survey to achieve its objective of acquiring all publicly available coal resource data.

--Depending on the availability of funding and staffing, placing a high priority on the establishment of sufficient in-house mapping and drilling capability.

Interior's response is evaluated in detail in chapter 6 of the report. (See p. 37.)

Contents

ABBREVIATIONS

BLM	Bureau of Land Management
CRO/CDP	Coal Resource Occurrence/Coal Development Potential
DOE	Department of Energy
EIS	Environmental Impact Statement
EMARS	Energy Minerals Activity Recommendation System
EMRIA	Energy Minerals Rehabilitation Inventory and Analysis
FLPMA	Federal Land Policy and Management Act
KRCRA	Known Recoverable Coal Resource Area
SID	Secretarial Issue Document
USGS	U.S. Geological Survey

CHAPTER 1

INTRODUCTION

In June 1979 the Secretary of the Interior adopted a new Federal coal leasing program. The new program is a complex combination of land use planning integrated with national and regional coal demand as forecasted by the Department of Energy (DOE). The capability of the new program to respond in a timely, predictable, and efficient manner to new demands for Federal coal leasing has yet to be proven.

New domestic energy supply initiatives to increase the use of coal and reduce our dependence on foreign oil will require more Federal coal leasing. The new leasing program will have to make available sufficient quantities of Federal coal to meet the production needs of conventional and synthetic fuels derived from coal. Total DOE coal production estimates for 1990 are about 1,375 million tons, of which 640 million tons are western coal. The Bureau of Land Management (BLM) estimates that 25 to 40 billion tons of Federal coal reserves must be cleared through land use planning by 1984 to ensure that a lesser amount--estimated in the range of 8 to 18 billion tons--can be leased to meet production goals established by DOE.

In implementing the new program, the Secretary of the Interior established a lease sale schedule through 1984. The first sale is scheduled for early 1981 in Colorado and Wyoming. Lease sales after 1981 are scheduled in Utah, Montana, Oklahoma, North Dakota, New Mexico, Colorado, Wyoming, and Alabama.

The critical coal resource decision in land use planning is Interior's determination of areas acceptable for further consideration for coal leasing. These areas are to be identified after all lands in a planning area have been through four screens that are integral to the land use planning process.

--First, areas would be eliminated from further coal development consideration if they do not have high to moderate coal potential on the basis of coal maps and other analysis prepared by the U.S. Geological Survey (USGS).

--Additional coal areas would be eliminated if they are judged unsuitable under Interior's lands unsuitability criteria.

--Further coal areas may be eliminated on multiple use grounds if other Federal resource values are determined to be superior to coal.

--Still other coal areas could be eliminated following Government consultations--as authorized by the Surface Mining Control and Reclamation Act of 1977--with qualified owners of private surface over Federal coal in areas where coal would be surface-mined.

This report addresses the first screen, which identifies portions of planning areas that have high or moderate development potential coal deposits. These are deposits most likely to be potentially economical to mine or to become so over the life of the land use plan.

Coal Resource Occurrence/Coal Development Potential (CRO/CDP) maps--prepared under contracts administered by the USGS--are the major source of information for the first screen. The remaining screens apply only to those high and moderate development potential deposits not eliminated in the first screen. Industry expressions of interest in particular tracts are not formally requested until after land use planning is completed.

CRO/CDP PROGRAM ORIGINALLY DEVELOPED TO MEET THE NEEDS OF EMARS

The concept of CRO/CDP maps was developed by the USGS in 1975 in response to Interior's need for coal resource information in developing eight regional environmental impact statements for its former Federal coal leasing program, known as Energy Minerals Activity Recommendation System (EMARS).

EMARS included four basic program elements: (1) nominations, (2) land use planning, (3) environmental analysis, and (4) resource evaluation. This program required Interior to first obtain industry nominations of potential lease tracts and public identification of areas that should not be leased. Nominations could be accepted for any area and, based upon them, Interior would select areas for land use planning, environmental analysis, and resource evaluation.

The final environmental impact statement (EIS) for EMARS (published Sept. 1975) advised that the USGS would provide the geologic, engineering, and economic data describing coal resources required for BLM decisions regarding multiple land use management--thus the role of CRO/CDP maps. EMARS, however, was not implemented because

of litigation challenging the adequacy of the final EIS. Nevertheless, the CRO/CDP mapping program continued.

NEW LEGISLATION REQUIRES AN INVENTORY OF UNLEASED FEDERAL COAL LANDS

Enactment of the Federal Coal Leasing Amendments Act of 1976 and the Federal Land Policy and Management Act of 1976 changed the direction and requirements of the CRO/CDP program. What started out as a short-term effort to compile coal resource data to meet the land use planning needs of EMARS "snowballed" into a program to respond to a range of new legislative requirements as well as other demands of the new Federal coal leasing program.

The amendments required a comprehensive coal exploratory program to obtain information to evaluate the extent, location, and potential for developing the known recoverable coal resources on leasable coal lands. The program was to obtain information necessary for determining the existence of commercial quantities of coal, the geological extent of the coal fields, and the amount of coal recoverable by deep and surface mining operations. This information was to provide a basis for

- --developing comprehensive land use plans--a prerequisite to leasing,
- --improving information on the value of public resources,
- --increasing competition among coal producers by providing data to all potential bidders, and
- --providing the public with information on coal deposits and the value of public resources offered for sale.

Other provisions of the amendments included (1) authority for the USGS to conduct stratigraphic drilling to obtain information pertaining to all recoverable coal resources; (2) requirement for Interior to make available to the public all data, information, maps, interpretations obtained directly by the Department or under service contracts; and (3) requirement for USGS to prepare, publish, and keep current a series of detailed geologic and geophysical maps and reports concerning all coal lands to be offered for leasing.

The Federal Land Policy and Management Act of 1976 (FLPMA) included requirements for maintaining an inventory of public lands and resources to be used in developing land use plans, also required by the act. FLPMA also required that previous mineral land classifications of the past century--such as withdrawals--be reviewed.

As a result, the CRO/CDP program became an important part of Interior's plan for responding to these new legislative requirements. Because of a lack of personnel to produce the necessary maps in the required time frame, USGS contracted out the CRO/CDP mapping program. USGS issued the first contract in early 1977 and since has issued 16 contracts for about 806 maps and reports. Funds obligated as of November 1980 total about $10 million.

The objectives of the CRO/CDP contract program were to (1) compile and make available 1,400 maps--utilizing all publicly available non-proprietary data--covering 78,000 square miles of the major Federal coal regions in the Western United States by 1982; (2) show the development potential and occurrence of coal deposits on Federal lands within Known Recoverable Coal Resource Areas (KRCRAs); (3) provide a fundamental source of coal resource data for the land use planning system of BLM; and (4) provide detailed compilation of all proprietary and nonproprietary coal information to assist USGS in fulfilling its land classification, lease sale evaluation, and land exchange responsibilities.

CRO/CDP maps were intended to provide a compilation of publicly available coal data for selected unleased Federal coal lands. These maps were to show where the coal occurs, its geological setting, its extent, magnitude and development potential. The development potential of non-Federal coal lands was not to be shown. A brief report accompanies each map summarizing the geologic setting and character of coal seams and providing an explanation of unique conditions which may affect mining development. The report was also to discuss the coal resources of the area in relation to the coal development potential for mining-method categories; the criteria used in determining coal development potential; the relationship of development potential to individual coal beds or zones; and estimates of total coal resources and reserves by mining methods and development potential category. More details on what the maps were supposed to include are discussed in appendix I.

OBJECTIVES, SCOPE, AND METHODOLOGY

We undertook a study of the CRO/CDP mapping program for the following reasons:

--The Congress and the Administration want to decrease this Nation's dependence on foreign oil by increasing the use of domestic coal.

--Interior is now preparing to resume Federal coal leasing for the first time in 10 years, and the Congress wants to maintain oversight on how well it is working, since Federal coal is anticipated to play an increasingly more important role in the Nation's energy future.

--CRO/CDP maps are the major source of information on coal resources on Federal lands and are relied on by Interior in its critical first screening of potential coal areas during land use planning.

--Concern and controversy, both in the Congress and within the Interior Department, have been expressed about the quality and usefulness of the maps to meet the needs of the new Federal coal program.

Our effort included reviewing policy, planning, budgetary, and secretarial issue documents for the Federal Coal Management Program; CRO/CDP contract administration files at USGS headquarters and field offices; internal USGS correspondence and program objectives and results; internal USGS task force reports concerning various aspects of the CRO/CDP and regional coal mapping programs; and Interior's regulations governing the use of CRO/CDP maps in land use planning.

We interviewed Interior, USGS, and BLM officials having responsibilities for designing and implementing the Federal coal leasing program as well as the supporting coal exploration and mapping programs. We made visits to USGS and BLM headquarters in Reston, Virginia, and Washington, D.C., respectively as well as to their field offices in Denver and Craig, Colorado; Cheyenne, Casper, and Rawlins, Wyoming; Salt Lake City, Utah; Tulsa, Oklahoma; Billings, Montana; and Alburquerque and Santa Fe, New Mexico. In addition, we discussed issues relating to land use planning, resource mapping, and administrative

procedures with various technical personnel including field geologists and contracting officers and monitors as well as with officials and analysts of the Department of Energy, Fish and Wildlife Service, Bureau of Reclamation, Office of Surface Mining Control and Reclamation, Environmental Protection Agency, Council on Wage and Price Stability, and Office of Management and Budget.

We also tested our observations and gained additional inputs from coal experts representing industry and environmental groups, as well as State geological surveys. Additionally, we discussed mapping problems with CRO/CDP contractors in Colorado, Utah, and Texas.

In light of the complex and often interrelated technical and policy issues associated with a resource mapping program, we utilized a multi-disciplinary team including a geologist, mining engineer, economist, and management analysts, and an administrative procedures expert consultant.

CHAPTER 2

PROBLEMS WITH CRO/CDP MAPS

Regulations governing the new Federal coal program designate CRO/CDP maps as the major source of information for BLM in determining which Federal coal deposits have development potential. This determination is the critical coal resource decision in land use planning since only those areas designated as having high or moderate development potential can be considered further for coal leasing. In addition, since only a portion of the coal deposits within a planning area is likely to be potentially economic to mine or to become so over the life of the land use plan, Interior's policy is to apply land use planning screens only to the economically minable portions of the coal lands in each planning area. 1/

Thus, the importance of a sufficient amount of reliable coal information to first pinpoint such areas and then to help establish planning boundaries and set priorities for other follow-on steps--such as collecting and analyzing environmental data, applying unsuitability criteria, and performing multiple-use tradeoff analysis--is evident. When Interior adopted the new coal program, it assumed CRO/CDP maps could provide the extensive amount of data required to make its very exacting, planning-oriented program work.

But experience with the program has shown that often CRO/CDP maps are not sufficiently accurate, reliable, or even appropriate to define broad planning boundaries or to adequately support energy, environmental, and economic tradeoff decisions within those boundaries. The reasons are many and interrelated. Most basic, perhaps, is that the CRO/CDP mapping program was called upon to fill a role it was never intended or equipped to fill. And, once committed to the program, the following problems contributed to the current dilemma

--limited knowledge of coal resource areas,

--mapping strategy not implemented as planned,

1/U.S. Department of the Interior, "Secretarial Issue Document: Federal Coal Management Program," Volume I, June 2, 1979, pp. 44-45.

--reliability of raw data not verified by USGS field experts,

--coal boundaries not accurate and information not transferred accurately from its source,

--coal development potential and resource evaluations derived only for lands underlain by Federal coal,

--all available data not considered in preparing CRO/CDP maps,

--supplemental economic and mining engineering data needed,

--map scale not the most practical for BLM planning, and

--maps not timely prepared to meet BLM's planning schedule.

While the USGS has taken various actions to correct some of the CRO/CDP maps, as well as to provide alternative sources of coal information--as discussed in chapter 3--faulty CRO/CDP maps will continue to be heavily relied on in future land use planning and tract delineation activities.

TOO MUCH EXPECTED OF CRO/CDP PROGRAM

The CRO/CDP program started out primarily as a data compilation effort covering a limited range of unleased Federal coal lands but quickly "snowballed" into an inventory of detailed geologic maps for all unleased Federal coal lands in areas designated as KRCRAs--a role it was never intended and not equipped to assume.

The CRO/CDP program was the first major effort by the Government to pull together previously uncompiled, publicly available data on Federal coal lands. This compilation represented an important, first step in locating Federal coal resource occurrence--a prerequisite for estimating the quantity of coal resources on Federal lands--and establishing an inventory of Federal coal lands required by the Federal Coal Leasing Amendments Act and the Federal Land Policy and Management Act, both passed in 1976.

Subsequently, the USGS was directed to respond to these new legislative requirements as well as to Interior's need

for coal development potential maps to support eight regional environmental impact statements under EMARS--the Department's former coal leasing program which never was implemented because of litigation.

Then in 1978, in designing the new Federal Coal Management Program, Interior once again selected the CRO/CDP program--but this time to provide detailed information on the minability of coal within each KRCRA. This information was to be used by Interior to select enough areas or tracts to meet the desired leasing level--a mandatory requirement for leasing through a system which uses leasing goals.

Despite the fact that detailed reserves and development potential information was not available from KRCRA classifications--the basis for CRO/CDP mapping coverage--Interior decided to adopt the maps as the major source of information in land use planning. This decision was made without (1) an adequate consideration of the problems affecting the quality and usefulness of the maps and (2) without requesting specific expressions of interest from industry, State governments and the public concerning mapping and leasing priorities.

In June 1979 the Department officially adopted this approach in the Secretarial Issue Document and subsequent regulations for the Federal Coal Management Program--despite USGS and BLM internal concerns about the quality and appropriateness of the CRO/CDP maps.

LIMITED KNOWLEDGE OF COAL RESOURCE AREAS

Contracts for mapping were issued to cover entire KRCRAs even though only portions of the KRCRAs might contain economically minable coal. On the other hand, some areas having known economically recoverable coal were not mapped because they were outside the boundaries of a KRCRA. This was done because USGS had not previously compiled and analyzed existing data within each KRCRA. Because USGS had limited knowledge of the specific coal resource areas--including the distribution of publicly available coal data within each area--to determine which portions of the KRCRAs contained economically recoverable coal, they decided to map entire KRCRAs.

The USGS selected areas for CRO/CDP mapping on the basis of standards USGS employs for classifying KRCRAs rather than standards for detailed geologic mapping of potentially economically minable coal deposits. There is a marked difference between the criteria and data required to define a KRCRA and

that required to prepare a detailed geologic map--such as a CRO/CDP map--showing strippable and subsurface coal potential of specific lands.

A KRCRA is an administratively-defined area--sometimes over a million acres--which includes Federally owned coal meeting minimum standards for recoverability, based on past and current mining practices in the area. A KRCRA does not guarantee the existence of recoverable coal or that coal will be found in commercial quantities. Existing coal resource data in many KRCRAs is not adequate for the preparation of detailed geologic maps. For example, coal data points and outcrop lines used to classify KRCRAs can be as much as 6 miles apart--too far apart to support geologic interpretations implied by CRO/CDP maps.

Accurate detailed mapping of subsurface deposits is impossible when sufficient outcrop and sub-surface geologic data is not available. Nevertheless, the USGS decided to issue contracts for maps covering entire areas within KRCRAs even though some areas were believed to have only small portions of coal and contained no coal data points. Further, although some areas with adequate coal data points had been previously mapped by competent and experienced field geologists of the USGS, many of these were unnecessarily remapped after the decision to contract out all the mapping.

In issuing the contracts, we found that USGS field specialists were often not consulted concerning which KRCRAs had adequate data bases, where and how many quadrangles could be contracted and adequately monitored, what coal beds can be correlated and should be mapped, and what the format of the CRO/CDP maps should be.

MAPPING STRATEGY NOT IMPLEMENTED AS PLANNED

USGS implemented its mapping strategy just the opposite of what it should have and, in fact, intended to do. In complying with the Federal Coal Leasing Amendments Act, Interior submitted a 5-year exploratory plan to the Congress in February 1977 describing a coal mapping and drilling program based on a two-stage approach which Interior considers to be the ideal sequencing of mapping and drilling activities.

The first stage involves broadbrush regional mapping to fill data gaps in KRCRAs to produce an up-to-date appraisal of the present state of knowledge of the coal resources in

each region. This knowledge is to help determine where additional exploratory drilling is needed to identify potentially minable coal beds, establish the geographic distribution and depths of these coal beds, and delineate geologic features which must be considered in land use planning. These determinations would be used to locate areas within a region where coal deposits may have high to moderate development potential (in terms of production costs) for near-term development. First-stage results would be shown on a map having a scale of 1:100,000 (meaning that one inch on the map equals about 1-1/2 miles on the ground) and covering an area of between 1,500 and 2,200 square miles.

The second stage is to focus on smaller areas, thought to have development potential, identified through the regional mapping. More detailed information would be made available by drilling to determine the commercial quantities of coal that could be mined by surface and deep mining operations. Second stage results were to be shown on maps at a scale of 1:24,000 (meaning that one inch on the map equals about 1/3 mile) and covering an area of about 56 square miles (the same scale chosen for the CRO/CDP program).

Thus, in an ideally planned coal program the regional maps should be produced first and be used in land use planning to locate smaller areas where coal deposits may have high to moderate development potential. Detailed mapping would then be confined to the most promising areas, thus avoiding the mapping of areas where development potential was questionable.

For a variety of reasons, the USGS did not implement the coal mapping program on the basis of this ideal sequence. Instead, it decided to expand its existing CRO/CDP program to cover the regions before implementing a regional mapping program. Limited budgetary and manpower resources and a lack of regional topographic maps have been cited as main reasons. Because of these factors it was not possible for the USGS to generate regional maps ahead of the ambitious plans for extensive coal leasing that was projected by EMARS and subsequently by the new coal program.

RELIABILITY OF RAW DATA NOT VERIFIED

Many of the CRO/CDP maps may not be useful for planning purposes because the raw data used in making the maps had not been verified by USGS field geologists before the maps

were prepared. Further, the contract did not contain a provision permitting contractor personnel to do field work such as "spot-checking" outcrops and questionable data. Resource determinations based on faulty information may provide developers and community planners with erroneous facts upon which to base their future actions.

In many areas the CRO/CDP data had been collected over a period of many years and has not been verified. Without any verification of its reliability the planners are forced into assuming that all data is of equal validity, which our analysis showed is not the case. For example, we found that water or oil and gas drill-hole logs--which varied in quality and age--were sometimes used to identify, correlate, and measure coal deposits, resulting in disputes between USGS field geologists and contractor personnel over interpretations of the logs. BLM officials told us they would have more confidence in the maps if USGS rated the reliability of each map or portions of a map, such as is done in the Outer Continental Shelf leasing program. Only one CRO/CDP contract--issued in 1979 for Eastern Oklahoma--included a provision requiring the contractor to indicate data reliability.

COAL BOUNDARIES NOT ACCURATE AND INFORMATION NOT TRANSFERRED ACCURATELY FROM ITS SOURCE

Many CRO/CDP maps were prepared by transferring coal data points and outcrop lines from poor quality smaller-scale topographic base maps to the large-scale CRO/CDP maps. But, contractors were often not given clear guidance as to how they should transfer outcrop and other surface information taken from different scale maps. While later contracts called for all outcrops to be traced and adjusted to modern topography, it was never made clear how this should be done.

Because of the differences in scale and other problems with the quality of the base maps, drill holes, outcrop locations, and boundaries of coal beds were often incorrectly plotted. Some CRO/CDP maps have been identified with "map-edge faults" or areas where outcrop and structure contour lines do not match with the adjacent quadrangle map. In some cases, parts of coal beds are shown to lie in the wrong legal locations (i.e., in the wrong sections). This affects the usefulness of the maps in supporting site-specific analysis since they could lead to erroneous estimates of the amount of overburden and coal tonnage and thus the development potential

of the areas mapped. However, the maps can be used in locating coal lands over a large area where further work is required before performing site analysis.

Coal planning boundaries are very important because unsuitability criteria applications and multiple-use tradeoff analyses are made within these boundaries. If the boundaries do not include the "best" coal, BLM stands the risk of wasting substantial time and resources on inventory collection and analyses.

COAL DEVELOPMENT POTENTIAL AND RESOURCE EVALUATIONS DERIVED ONLY FOR LANDS UNDERLAIN BY FEDERAL COAL

Even if technically accurate, CRO/CDP maps are not appropriate in themselves for supporting the kind of decisions called for by the new coal program because they do not include coal development potential and resource evaluations for coal lands underlain by non-Federal coal. 1/ BLM officials regard this as one of the most critical limitations of the CRO/CDP maps. BLM must consider all coal--Federal and non-Federal--and its development potential. In areas characterized by a checker-board ownership pattern--Federal coal interspersed with adjacent non-Federal coal--BLM planners cannot rationally plan for coal development or assess and rank alternative locations for development within a region.

Procedures implementing the leasing program do not allow BLM planners to delineate potential lease tracts in land use planning. Yet, they must think about this anyway to make sure that the areas that come through the screens actually have potential to be economically mined. In addition, mining of non-Federal coal also affects the environment and this impact must be taken into account when BLM prepares regional EIS's. Thus, BLM is forced to infer the development potential for non-Federal coal.

1/USGS officials state that it is not the mandate of the USGS to make public judgments on the relative economic value and development potential of privately owned resources. They state that to do so would be to underwrite the value of those resources. Officials also state that Federal appropriations under the Federal Coal Leasing Amendments Act are specifically earmarked for the investigation of Federal coal lands.

ALL AVAILABLE DATA NOT CONSIDERED IN PREPARING CRO/CDP MAPS

CRO/CDP maps are further limited because only publicly available data was compiled and used by the contractors in preparing them, including that released by industry and all USGS-developed data that has been published or otherwise made available to contractors. Thus, proprietary data obtained by USGS was not considered in the preparation of CRO/CDP contract maps. Because of statutory limitations, USGS cannot include proprietary data on maps to be made publicly available--but it does not bar USGS from considering such data in their analysis.

The Federal Coal Leasing Amendments Act requires the Secretary to maintain the confidentiality of all data obtained from industry as a result of an exploration license or from other sources not under service contract with the USGS. Under section 4 of the act, confidentiality is to be protected until after the areas involved have been leased or until such time as the Secretary determines that making the data available to the public would not damage the competitive position of the licensee, whichever comes first.

USGS plans to insert proprietary data and make a set of non-public CRO/CDP maps. In some cases, extensive revisions will be necessary which will require considerable time and resources. This is further discussed in chapter 3 beginning on page 19.

SUPPLEMENTAL ECONOMIC AND MINING ENGINEERING DATA NEEDED

Further, CRO/CDP maps were not designed to include information specific enough to identify economically minable coal deposits. Thus, Interior will have to obtain and use other data sources to supplement the maps before determining development potential for specific Federal coal deposits.

The USGS established universal criteria for classifying unleased Federal coal deposits into coal development potential categories of high, moderate, and low for deposits minable by surface mining, underground mining, and in-situ gasification operations. 1/

1/In-situ gasification technology is a process in which coal resources are processed or converted into energy in the geologic strata where they were originally deposited.

--The mining ratio--cubic yards of overburden that must be removed to recover one ton of coal--is the principal development potential criterion for coal deposits minable by surface mining operations. A mining ratio between zero and 10 indicates high development potential. Moderate potential deposits have a mining ratio between 10 and 15 and a mining ratio greater than 15 denotes low development potential.

--Depth is the principal criterion for classifying development potential of coal deposits minable by underground mining operations. Deposits within 1,000 feet of the surface have high development potential; moderate, between 1,000 and 2,000 feet; and low, if between 2,000 and 3,000 feet.

--Depth and coal bed dip are the principal criteria for classifying coal development potential for deposits minable by in-situ gasification methods.

Although the above parameters are regarded as "rough" economic indicators, other important economic, coal quality and environmental factors--which enter into the actual development potential determination for any particular deposit--are not a part of the CRO/CDP mapping standards. Some of these factors are difficult to display on a map, e.g., heat content; sulfur content; moisture content; water deposits; roof conditions for underground minable deposits; accessibility; feasibility of transporting the coal once it is mined; powerplant siting potential; market conditions; and the size of the reserve. All such factors, however, may render portions of deposits or entire deposits environmentally unsuitable or uneconomical for mining, and thus unacceptable as a fuel in the marketplace. Since CRO/CDP maps were never intended to provide this type of information, other sources of analysis must be used to determine marketability and minability of specific deposits.

Thus, CRO/CDP maps--used by themselves--sometimes contain misleading information, e.g., an area shown on a map as having low potential where an actual coal mine is operating; an area of high potential for surface mining in a flood plain; and a 5-acre area of high potential on an isolated steep ridge. In addition, a BLM official told us that some areas classified as low potential are misleading because powerplant siting is not taken into account. Even though coal in such areas may have relatively high extraction costs, the siting of a powerplant

adjacent to the deposits could offset extraction and development costs through lower transportation costs, making the coal competitive in a market area.

According to geologists and mining engineers in and outside Government, the consideration of economic and coal quality factors is necessary to realistically characterize the development potential of unleased Federal coal deposits. Although these factors are difficult to quantify, BLM planners and geologists must take them into account through other sources of information when assessing the overall development potential of unleased Federal coal deposits.

CRO/CDP MAPS PREPARED ON A MAPSCALE NOT PRACTICAL FOR BLM'S PLANNING NEEDS

The CRO/CDP map scale used by USGS is 1:24,000 (one inch line on the map equals about 2,000 feet or 1/3 mile on the ground). USGS officials decided to have the CRO/CDP maps prepared on this scale because topographic base maps are readily available at that scale and USGS needed to respond quickly to BLM's planning resource information needs.

Most BLM planning maps, however, are on the scale of 1:126,720 (1/2 inch equals 1 mile). Some BLM planners find it difficult to transfer data from the CRO/CDP maps to their smaller scale planning maps and believe that USGS did not select a scale that is most practical and useful for BLM land use planning. USGS is now preparing smaller scale CDP maps (1:100,000 or one inch equals about 1-1/2 miles), but this effort is limited to a few areas because of the lack of personnel and funds. One of the smaller scale maps (1:100,000) shows an area that is covered by 32 of the "blown-up" or large scale 1:24,000 maps. BLM personnel who had used small scale maps state that they cover an entire KRCRA and present a more concise regional overview of the entire KRCRA.

MAPS NOT TIMELY PREPARED TO MEET BLM PLANNING SCHEDULE

CRO/CDP maps prepared for some areas in Colorado, Utah, Wyoming, North Dakota, and New Mexico were not prepared in time for BLM's use in the land use planning process. If the BLM had waited until the maps were completed, land use planning schedules would have had to be delayed--thus delaying coal leasing.

In northwest Colorado, where the first lease sale under the new program is scheduled for early 1981, BLM did not use CRO/CDP maps in land use planning because not all of them were available. According to a BLM official in Colorado, those that were available were not used because of obvious quality problems, e.g., areas with active coal mining operations were shown on the maps as low development potential areas.

The Area Geologist for Northern Rocky Mountain Area stated that BLM is preparing land use plans in the Montana portion of the Northern Powder River Basin without CRO/CDP maps. The maps--contracted at a cost of $1.4 million--were scheduled to be completed by January 1979 but were not completed until over a year later. To meet BLM's planning requirements, the Area Geologist is now providing maps to BLM which differ from the data provided by the CRO/CDP maps.

In southern Utah, BLM is near the end of its land use planning process--again without the use of CRO/CDP maps. USGS issued a $116,000 contract in 1978 for this purpose, but it was not completed until March 1980 or about 1 year too late, according to a BLM State planner.

BLM could have used CRO/CDP maps in formulating land use planning decisions in New Mexico; however, because of lengthy delays (in some instances, over a year), BLM had to turn to local USGS offices and the New Mexico Bureau of Mines for information. A BLM official said the New Mexico Bureau of Mines was very helpful because they were mapping the same area the CRO/CDP maps were to cover.

USGS had had other problems in trying to meet BLM requirements. For example, after issuing a 1978 contract for about $555,000, USGS discovered--1 year later--that the contracted area no longer fell within a BLM priority area for coal leasing. USGS terminated the contract after all the funds were paid and work half completed.

CHAPTER 3

RECENT USGS ACTIONS MAY FURTHER JEOPARDIZE ITS ABILITY TO PROVIDE BLM SUFFICIENT COAL INFORMATION FOR LAND USE PLANNING

Interior's new coal leasing program relies heavily on USGS to provide timely and sufficient information to BLM on coal development potential to support land use decisions, thus influencing the availability of potentially minable coal from public lands. Recent actions by the USGS have been to

--revise the first 100 CRO/CDP maps because of their poor quality and add proprietary data, as necessary, to all completed CRO/CDP maps;

--limit future CRO/CDP mapping to areas scheduled for leasing (i.e., exclude areas not scheduled for leasing); and

--expand its regional drilling/mapping program to cover other unleased areas not yet scheduled for leasing.

Although intended to improve its performance in meeting BLM's needs, these actions may not adequately resolve the problems because (1) actions do not go far enough in correcting deficiencies in CRO/CDP maps (as discussed in chapter 2) which, under existing regulations, will continue to be heavily relied on in land use planning and tract delineation efforts, and (2) sufficient time and resources may not be available to complete the regional drilling and mapping activity necessary to meet the coal information needs of land use planning. These conditions make it difficult for Interior to make reasonable, defensible, and expeditious land use planning decisions affecting the availability of potentially minable coal deposits. Therefore, the new coal leasing program may be in jeopardy.

REVISING CRO/CDP MAPS AND ADDING PROPRIETARY DATA TO COMPLETED MAPS

After reviewing the observations and recommendations of various task force groups--established to review the CRO/CDP program--the Chief of USGS's Conservation Division in August 1979 decided, among other things, to

--not fund any new mapping contracts for fiscal year 1980; 1/

--transfer responsibility for managing the program to Area Geologists;

--require Area Geologists to submit a schedule for revising the first 100 CRO/CDP maps; and

--add proprietary data to the maps, as necessary, and update them annually.

Even though revisions of the first 100 maps may be extensive and require substantial time and effort, schedules have not been established and Interior has neither made sufficient funds available nor determined the costs of doing such a massive revision effort. In addition, because of limited staffing of Area Geologist Offices, such effort will take resources away from other high priority leasing activities such as tract delineation and evaluation. USGS has not provided the necessary guidance, funding, or personnel to its field offices to achieve an orderly revision of the first 100 maps, or more recently produced maps also needing revisions. As a result, field office resources may either have to be reprogrammed, thus jeopardizing other priorities, or map revisions will have to be limited to selected priority areas, deferred or terminated.

In light of their limited resources, USGS should be selective in the CRO/CDP revisions and focus on maps in areas where land use planning is likely to occur in the near future and where alternative sources of reliable data are not available. However, USGS has not determined which of the various BLM planning areas contain adequate coal development potential information and which areas have inadequate information. Additionally, USGS has not taken the proper steps of publishing notices to provide an opportunity for industry, State governments, and the general public to submit expressions of interest and data to help USGS establish mapping priorities, particularly for areas where USGS has limited information and where CRO/CDP maps are unacceptable for land use planning.

Because of the lack of guidance from headquarters concerning how to proceed in revising CRO/CDP maps, some field offices have taken the initiative of determining which maps will be needed by a certain date to meet BLM's needs. For example, while 69 maps prepared in the San Juan Basin in New Mexico are considered inaccurate, by the field geologists,

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1/Early 1980, USGS decided to defer fiscal year 1981 funds for additional CRO/CDP mapping until fiscal year 1982 and to assess other information sources which could possibly satisfy USGS's and BLM's coal data requirements. In commenting on this report (see app. II) Interior announced that it terminated the CRO/CDP program effective of Oct. 1, 1980.

these geologists are concentrating on revising only 24 maps BLM will need by 1982. 1/ However, many of these maps will need extensive revisions before they can be made available to BLM. The status of the remaining 45 maps remains unclear. They may not be revised because of limited resources.

In addition, USGS's decision to add proprietary data to completed CRO/CDP maps may lead eventually to more accurate maps but at the expense of considerable time and effort. 2/ To be effective, this information should be added before USGS sends the maps to BLM for their use in land use planning. However, USGS does not know how much time is required to modify the maps using proprietary data, and thus is not sure whether the necessary maps can be modified within the time frame for which it must respond to BLM's need for coal information. As a result, USGS may not be able to provide BLM with coal information for specific areas scheduled for land use planning in 1981 and beyond, and the quality of decisions affecting the availability of minable coal deposits may suffer.

In the Alton-Kanab area of Utah, for example, the publicly available data is based primarily on 16 drill holes scattered among 9 quadrangles, each about 56 square miles. Three of the quadrangles had no drill holes. However, USGS has proprietary data that includes logs from more than 50 drill holes in 4 of the quadrangles. Considerable effort will be required to add the proprietary data and the maps probably will have to be redrawn because the addition of proprietary data may change geologic interpretations. However, USGS intends to make the maps available to BLM before considering proprietary data. These imprecise maps could result in misleading coal development

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1/According to documents in USGS's contract files, the maps were considered inaccurate because incorrect elevation of drill holes were plotted; discrepancies in interpretations of well logs occurred; outcrop locations were disputed; all publicly available data was not used; and criteria for correlating coal beds were disputed.

2/In adding proprietary data, USGS plans to send BLM only the CDP maps in order to protect the confidentiality of the data. The CDP map shows the boundaries of high and moderate development potential coal lands but does not show the data sources and the geologic information underlying the CDP interpretations.

potential boundaries and their use by BLM could result in incorrect initial land use decisions.

The Alton-Kanab area is not a typical case since a significant amount of proprietary data is available; however, any amount of proprietary data could alter the maps and such data should be considered before the maps are sent to BLM for use in land use planning.

LIMITING FUTURE CRO/CDP MAPPING TO LEASE SALE AREAS

The USGS's Conservation Division is placing greater emphasis on near-term, tract delineation, and evaluation activities related to scheduled lease sales, while decreasing its longer-term coal information activities (e.g., geologic mapping and drilling) outside areas already scheduled for leasing. Thus, the CRO/CDP mapping program--which used to include broader areas--is to be limited to areas scheduled for leasing through 1984.

USGS's decision to limit future CRO/CDP mapping to areas scheduled for lease sale--together with the limited usefulness of existing maps--may create a major gap in coal development potential information on lands outside lease sale areas. How critical a problem this is for the new leasing program is unknown because USGS has not determined how many maps in each BLM planning area need revision or the consideration of proprietary data before BLM uses them in land use planning. In addition, many potentially minable areas of unleased Federal lands may go unmapped for an indefinite period, particularly if the Geologic Division's regional mapping program is not sufficiently funded.

As a result of the potential coal data gaps, Federal coal leasing may be slowed. Under the new coal leasing program, the pace of land use planning depends on BLM's and USGS's resources rather than the magnitude of demand for coal from Federal lands. Thus, Interior's planning procedures may be impediments to expeditious decisionmaking.

EXPANSION OF USGS REGIONAL COAL DRILLING AND MAPPING PROGRAM

USGS proposes to expand its Geologic Division's regional coal resource drilling and mapping program to cover unleased areas formerly covered by the Conservation Division through CRO/CDP maps. The key objectives are to (1) attain a capability to

meet BLM's coal information needs for land use planning through 1984 by producing up to 110 regional maps on a scale appropriate for land use planning, 1/ and (2) implement the staged drilling and mapping strategy first proposed by the Interior Department in its 1977 coal exploratory plan (see pp. 10 and 11).

Interior considers regional maps an initial step in the coal leasing program to assist BLM in preparing new resource management plans in selecting areas for future competitive lease sales. Also, the maps are to be used by other agencies for other energy-related planning activities. It is highly questionable, however, whether the Geologic Division's regional mapping program will meet BLM's coal information needs in a timely manner because

--the Geologic Division lacks sufficient staffing and funding to assume the projected workload, including the extra work to fill the gap created by the shift in workload emphasis by the Conservation Division; and

--Interior lacks administrative procedures for using Geologic Division's regionally-scaled coal maps in land use planning, together with data submitted by coal companies, State governments, and the general public, to identify areas for further consideration.

Lack of funding and staffing

The Geologic Division is neither staffed nor funded sufficiently to achieve the objectives of the regional coal drilling and mapping program and to assume the increased workload to fill data gaps created by the shift in workload emphasis by the Conservation Division. This lack of funding and staffing may result in insufficient coal and environmental data for BLM's planning needs for fiscal years 1981-86.

If this data insufficiency is not corrected, the USGS will not be able to fulfill its mission in the Federal coal

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1/Regional coal resource maps have a scale of 1:100,000, meaning that 1 inch on the map equals about 1-1/2 miles on the ground. Each map covers an area between 1,500 and 2,200 square miles.

leasing program. 1/ This will mean that BLM's needs for coal-related information cannot be met completely in the following priority coal areas:

1. Northwestern Colorado
2. Eastern Washakie, Hanna, and Carbon Basins, Wyoming
3. South-central and southern Utah
4. Southern Powder River Basin, Wyoming
5. Northern Powder River Basin, Montana
6. Northern part of San Juan Basin, Colorado and New Mexico
7. Southwestern Colorado
8. Central-eastern Montana
9. North Dakota
10. North Park, Colorado

Other areas may become future problems as coal development priorities change through time.

The 1981 budget provides $5,997,000 and 76 positions for the regional coal drilling and mapping program, which amounts to a 40-percent increase over 1980 funding. The following budgeting needs have been projected by the USGS for fiscal years 1982-86 as essential for producing maps required to meet BLM's coal information needs:

1/U.S. Geological Survey memorandum, dated Mar. 17, 1980, concerning "Potential Inadequacies in the Coal Exploratory Program of the Geological Survey," U.S. Geological Survey memorandum, dated Mar. 21, 1980, concerning "Management Implementation Plan, Energy and Minerals--Coal FY 82-86."

	Fiscal year				
	1982	1983	1984	1985	1986
Funding ($K)	9,497	9,497	9,497	9,497	9,497
Positions	91	93	94	96	96

USGS budget documents indicate that most resources will be used for new stratigraphic drilling to obtain subsurface information for filling data gaps because existing drill holes are either located improperly for coal assessment research or were not adequately cored or logged. Without the above levels of funding to support drilling activities and without the personnel to map new quadrangles, they state that it will be virtually impossible for the USGS to produce coal resource maps to support BLM's planning under the new coal program.

Lack of administrative procedures

In addition, Interior has not established administrative procedures concerning how USGS and BLM will use Geologic Division regionally-scaled coal maps in land use planning to identify areas for further consideration under the new coal program. While Interior's 1977 coal exploratory plan, under the former coal leasing program (EMARS), included procedures for using such maps--together with CRO/CDP maps and industry nominations--to identify, select, and evaluate potential lease-sale tracts, Interior has not modified them since it adopted its new program. Interior's regulations governing the new leasing program designate CRO/CDP maps as the major source of information in the first screen to identify potentially minable Federal coal deposits in land use planning but do not provide for the use of regional coal maps.

Following the first round of lease sales in 1981, the land use planning process of the new leasing program is to reflect the staged drilling and mapping strategy presented in the Department's 1977 coal exploratory plan. BLM is to use regional maps as the first screen to identify coal lands within planning areas, particularly those having the thickest deposits and the thinnest overburden. For these lands, BLM is to collect data on other resources (wildlife, agriculture, watersheds, grazing, etc.), and then apply unsuitability criteria and perform multiple use tradeoffs to eliminate additional coal resources from further leasing consideration. Those coal resource areas that remain following

the screening process will be matched with CRO/CDP maps. Within these areas, BLM and the USGS are to delineate, evaluate, and select potential lease sale areas on land classified as having high and moderate coal development potential. All these activities are to be completed before Interior specifically requests industry expressions of interest in particular lease tracts within the areas.

But existing Interior regulations indicate that BLM shall generally use CRO/CDP maps--rather than regional maps--as the first screen to identify potentially minable coal deposits on Federal lands. We were not able to determine how USGS and BLM plan to proceed in implementing its new approach in using regional maps in initial planning and CRO/CDP maps in selecting and evaluating tracts. New drilling would be required to upgrade CRO/CDP maps before final tract selection decisions could be defended. Some planning areas in Montana and Wyoming are so large that two or three regional maps will be required to cover each planning area. Further, smaller areas that will be considered for tract selection may be only one-tenth the size of the area examined in the initial land use planning stage. Again, Interior is unclear as to how it will identify and select these smaller areas, and how much time will be required to complete the planning process.

USGS has published only three of the regional maps to date and only a limited number of BLM planners have worked with the maps. Because of the limited availability of regional maps, BLM officials are not certain how they will use the maps, together with publicly submitted information, in land use planning. Potential tract selection areas may be identified through BLM's Energy Minerals Rehabilitation Inventory and Analysis (EMRIA) program--a program designed to collect new information about reclamation and rehabilitation characteristics, e.g., soils, surface and ground water, revegetation, overburden, etc. However, EMRIA studies, although based on stratigraphic drilling and field work, cover only a small portion of all known coal regions. About 30 areas have been studied to date and their size ranges from 3 or 4 square miles to 40 square miles. The major problem with EMRIA study data is that it cannot be projected to other potential tract selection areas because of varying environmental, economic, and geologic characteristics.

In addition, although Interior's coal leasing regulations encourage coal companies, State governments, and the general public to submit coal information to USGS under the CRO/CDP mapping program and to BLM in the earlier inventory stages of land use planning, Interior lacks clear procedures

to ensure that new information is introduced when needed. Moreover, there is currently no provision for the submission of such information under USGS's new regional mapping program. As a result, Interior has confused those interested in participating in land use planning by sending conflicting signals about data submission. This and other issues affecting Interior's regulations are addressed in the following chapter.

CHAPTER 4

COAL LEASING REGULATIONS DO NOT ENCOURAGE TIMELY PUBLIC SUBMISSION OF NEEDED COAL INFORMATION

Despite the importance of accurate and reliable coal information for the new coal leasing program and Interior's problems in developing such information in a timely and efficient manner--in part because of problems discussed in the prior chapters--its regulations and procedures nonetheless do not effectively encourage the timely public submission of needed coal information. Instead, Interior's regulatory approach is designed so that it must rely on CRO/CDP maps. As a result, useful coal information may not be brought to bear on important land use planning decisions, and the most economically minable coal may not be leased.

Existing regulations are inadequate because they lack provisions for

--including notice of USGS's mapping and drilling plans at the same time BLM gives public notice and requests comments on its schedule for land use planning--thus providing an appropriate time for coal companies, State governments, and the general public to submit comments for use by USGS in refining its priorities and undertaking exploration and resource mapping programs; and

--specifically requesting submissions of non-confidential coal and economic information from coal companies, State governments, and the general public when BLM gives public notice on the preparation or revision of land use plans in particular areas.

Interior's coal leasing regulations, published July 1979, state the following: 1/

1/Bureau of Land Management, Final rulemaking on "Coal Management; Federally Owned Coal," Section 3420.2-3, Federal Register, Part VIII, July 19, 1979.

--Only those areas subject to evaluation for leasing that have high or moderate development potential coal deposits shall be considered acceptable for further consideration for leasing.

--This determination shall be based generally on the Geological Survey's CRO/CDP maps. If CRO/CDP maps are not available, the Geological Survey shall use other available data sources to estimate coal development potential for the surface management agency. If other data sources are used, the same criteria for designating coal deposits as high or moderate development potential shall be used. Coal companies, State governments, and the general public are encouraged to submit information to the Geological Survey for use in the CRO/CDP mapping program at any time.

--Coal companies, State governments, and members of the public may submit non-confidential coal geology and economic data during the earlier inventory phase of planning to BLM State Office conducting the planning. Where such information is determined to indicate significant development potential for an area not shown to be of moderate or high development potential in the CRO/CDP maps, the area shall be considered moderate development potential and shall not be excluded from further consideration and application of the remaining screens in the land use planning process.

LACK OF USGS NOTICE ON DRILLING AND MAPPING PRIORITIES

Currently, the regulations do not provide for public notice in the Federal Register announcing proposed USGS drilling and mapping priorities and providing an appropriate point in land use planning for coal companies, State governments, and the general public to submit information and comments before final drilling and mapping priorities are established. Instead, these parties are encouraged to submit information for use in the CRO/CDP mapping program at any time. "Any time" is too vague.

According to the preamble of the Federal coal regulations, a few commenters on the proposed rules complained that no opportunity existed for anyone to introduce information into

the process for determining development potential for coal deposits. To "clarify" this point, BLM revised the proposed regulation to encourage coal companies and others to submit information any time to the USGS for use in the CRO/CDP mapping program.

The provision, however, does not require Interior to provide a notice in the Federal Register to inform interested parties where and to whom in USGS their coal information may be submitted, the time period within which such information should be submitted to have an opportunity to influence USGS drilling and mapping priorities in various planning areas, and the criteria to guide submissions. Nothing is stated at all concerning USGS's regional mapping program.

Further, since USGS recently took action to limit future CRO/CDP mapping to areas scheduled for lease sale, it is unclear how the USGS would use any publicly submitted information. Without knowing when, how, or if BLM and USGS would use such information--there is little incentive for coal companies, State governments, and the general public to go to the time and expense of collecting it. Thus, it remains unclear just what opportunities are available to interested parties to influence BLM planning priorites by submitting coal information to the USGS.

To be more effective in encouraging public submissions of coal information to USGS, we believe the regulatory framework should be designed so that submissions to USGS are tied to mapping/drilling decisionmaking, which in turn should be tied into land use planning decisionmaking. Traditionally, USGS has not published its drilling/mapping schedules in the Federal Register to indicate how they relate to BLM's planning schedule announcements.

Under Interior's new land use planning regulations, published August 1979, implementing provisions of the Federal Land Policy and Management Act, BLM already is required to publish a planning schedule in the Federal Register in each fiscal year. 1/ The schedule is to advise the public of the status of each plan in process or to be started during that fiscal year and projected

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1/Bureau of Land Management, Final rulemaking on "Public Lands and Resources; Planning System," Section 1601.3 (a), Federal Register, Part II, Aug. 7, 1979.

new planning starts for the 3 succeeding years and invite comments to help refine BLM's priorities. Thus, existing regulations provide an opportunity to better link USGS's mapping and drilling priorities with BLM's land use planning schedule. BLM's first planning notice, however--published in December 1979--did not do this and no plan existed to include USGS drilling/mapping schedules by areas corresponding to BLM planning projections, and to request comments, in future notices.

LACK OF BLM NOTICE
ON LAND USE PLANNING

In addition, Interior's coal leasing regulations do not require BLM to give public notice specifying an appropriate point in land use planning and criteria for guiding public submissions of non-confidential coal and economic information before making screening and trade-off decisions--even though an opportunity exists within the regulatory framework to do this.

Interior's new land use planning regulations require BLM to publish five public notices in the planning process following its notice announcing a general planning schedule. Two of these notices are published early in land use planning: (1) a notice in the Federal Register announcing the start of preparation or revision of a land use plan for a particular area and inviting participation in the identification of issues for consideration in that process and (2) a notice inviting comments on BLM's planning criteria to guide development and revision of land use plans for a particular area and its criteria guiding the collection and use of inventory data and information. 1 / Thus, the existing regulatory framework provides appropriate opportunities for BLM to also specifically request submission of non-confidential coal and economic data from coal companies, State governments, and the general public early in land use planning.

Rather than this approach, however, existing coal leasing regulations state that parties may submit such information during

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1/The other required notices in the planning process occur at (1) the time of publication of the draft plan and draft EIS; (2) publication of the final plan and final EIS which triggers the opportunity for protest; and (3) public notice and comment on any significant change made to the plan as a result of action on a protest.

the earlier inventory phase of planning to the BLM State Office conducting the planning. However, the provision does not define "earlier inventory phase of planning" and does not tie it to any of the public participation notices BLM is required to publish early in land use planning.

The Secretarial Issue Document (SID) for the new coal leasing program is also unclear as to the timing of public and industry submission of coal and economic information. The SID states that industry expressions of interest will not be accepted until after land use planning is completed, pointing out that industry would be expected to argue forcefully in favor of coal development over other uses in the lands unsuitable screening and resource trade-off decisionmaking. The SID also states that industry may participate in planning through all the formal and informal channels available to the general public, submitting their general comments and interest during land use planning or whenever any party might want to indicate an interest in Federal coal in a particular area. Such information would be used by Interior for planning purposes or setting regional production goals and leasing targets.

Some BLM officials implementing the land use planning process indicated a preference for having as much information as soon as possible before planning boundaries and coal potential decisions are acted upon. Otherwise, information received after these determinations may not be as useful to BLM and USGS for a particular planning area during a given planning cycle. The officials also indicated that a specific timeframe for submitting information would also enhance effective planning.

Unless information is introduced at the appropriate time, BLM planners may not have an opportunity to use it effectively until the area is recycled through the planning process which could be several years. Therefore to achieve maximum practical use of available data, a common point for submission of information to BLM would be beneficial and enhance fair planning practices.

Giving proper notice as to the appropriate point and time period for submissions could avoid duplicative submissions throughout the planning process and achieve maximum use of the information before BLM makes screening and trade-off decisions. Otherwise, BLM may not have the information available when needed. In situations where BLM does not have sufficient inventory information to support coal resource development and trade-off decisions in planning, Interior's policy is that "the

decision shall preserve future resource options and avoid irreversible commitments to the degree practical."

In addition to specifying an appropriate point in land use planning for public submissions of coal information, uniform criteria for submitting coal, geologic, and economic information to BLM during initial planning also would be useful. Uniform criteria could guide the collection of needed information, thus enhancing the quality and usefulness of information available to BLM in decisionmaking and trade-off analyses. In addition, information submitted by industry to BLM that is standardized in terms of the criteria could help BLM develop a better understanding of coal demand/supply potential and focus its planning efforts where interests in development exists. As a minimum, industry expressions of interest in particular areas during land use planning should be based on reasonable criteria to discourage excessive submissions. For example, the criteria could include the following:

--Location parameters such as metes and bounds, township, range, and section.

--Coal quality data such as overburden, coal seam thickness, sulfur content, moisture content, strike and dip of coal beds, and estimates of recoverable reserves.

--Coal utilization objectives.

--General expression of mining method.

--Expression of interest to develop and timing of development.

In addition to specifying criteria to guide public submission of coal information, BLM should also disclose in its planning notices the qualitative criteria that it intends to use in making trade-off decisions and setting threshold development levels for particular planning areas. Because coal will win out in many cases over other resource values, qualitative criteria--such as ranking factors and subjective judgmental factors in measuring non-market benefits and costs--will have to be used in making reasoned trade-off decisions. By disclosing qualitative criteria early in planning, BLM would be providing useful information to parties interested in submitting coal and economic information to BLM.

INTERIOR NEEDS TO ADOPT AN ALTERNATIVE TO EXISTING REGULATIONS

The Federal Coal Leasing Amendments Act of 1976 grants considerable discretion to the Secretary of Interior concerning the timing of industry and public expression of interest in particular coal areas. Expressions of interest do not necessarily have to follow all land use planning activities. Section 2 of the amendments states that:

> "The Secretary of the Interior is authorized to divide any lands subject to this Act which have been classified for coal leasing into leasing tracts of such size as he finds appropriate and in the public interest and which will permit the mining of all coal which can be economically extracted in such tract and thereafter he shall, in his discretion, upon the request of any qualified applicant or on his own motion, from time to time, offer such lands for leasing and shall award leases thereon by competitive bidding."

According to the preamble to Interior's final coal management regulations, KRCRA designation is the method by which the Secretary of Interior "classifies" lands for leasing. Interior's regulations which call for the use of CRO/CDP maps in screening Federal coal lands was implemented at the Secretary's discretion.

Section 2 recognizes the alternative of Interior's reviewing, analyzing, and offering for lease sale areas in which no prior specific indication of lessee interest may have occurred. This alternative would ensure that where Interior's knowledge and evaluation of Federal coal is superior to that of the private sector, the availability of such lands will be brought to the attention of potential lessees and other interested parties.

Another alternative is for Interior to request formal and specific expressions of interest in a particular area during land use planning. This alternative should not preclude Interior's efforts to review and analyze an area which may be subdivided. Some or all of the resulting tracts--including those identified by expressions of interest--could then be offered for lease sale. The point is that Interior would be focusing attention on economically minable tracts whose production potential would be established in land use planning.

Because of the complexity of the planning process and the substantial data requirements in applying the various screens, early expressions of interest by potential lessees and others may help Interior to utilize its limited resources more effectively by focusing on priority areas. In this way, Interior could consider the best potential lands for lease sale tracts rather than run the risk of initiating screens in areas where Interior has limited knowledge and data and where industry has limited or no interest in leasing.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The Department of the Interior's new coal leasing program relies on maps--developed under contracts--that are often inaccurate, unreliable, and inappropriate for supporting the kinds of economic, energy, and environmental decisions called for in land use planning. Unless a major change is made in the way basic coal data is obtained, the leasing program may not result in making available sufficient quantities of economically minable Federal coal to help meet the Nation's anticipated demand in the years ahead.

Interior adopted CRO/CDP maps as the major source of coal information for land use planning, despite warnings about the quality and usefulness of the maps. Many of the maps were prepared by contractors who were unfamiliar with the areas being mapped, and USGS did not verify and correct what raw data was made available prior to preparation of the maps. As a result, the maps are technically flawed and unreliable to support planning boundary decisions. In addition, even if the maps were technically reliable, they have a limited usefulness in land use planning and tract delineation efforts because they do not include coal data and evaluations on adjacent non-Federal lands, proprietary data, and economic and mining engineering information necessary to determine the minability of coal deposits. Morever, many of the maps were not available when land use decisions were made.

Recognizing problems with CRO/CDP maps, the USGS took various actions designed to improve its performance in meeting BLM's coal information needs in implementing the new coal leasing program. Although well-intentioned, the USGS actions are fraught with many potential problems and uncertainties--including funding and staffing--and it is doubtful they will adequately respond to the coal information needs of the coal program.

Despite the critical role reliable coal data has in Interior's new coal leasing program and the problems it has experienced in developing such data itself in a timely and efficient manner, Interior's policies do not specifically request the timely public submissions of coal data. Rather, its emphasis is geared to continuing to rely on faulty USGS CRO/CDP maps and uncertain regional maps in making critical land use planning and other energy/environmental/economic trade-off decisions. As a result, the best information may not be made available for these decisions, and the most economically minable coal may not be offered for lease.

A better alternative for obtaining timely and useful coal data may be to request industry and public expressions of interest in particular areas during land use planning and thereby having that additional source of information with which to more efficiently focus the Department's limited resources to areas of highest potential priority. While this should in no way deter the Secretary from considering other potentially competing land uses, it may avoid the risk of initiating screening activities in areas where Interior has limited knowledge and data and where there is little or no interest in leasing.

RECOMMENDATIONS

We recommend that the Secretary better focus Interior's planning effort by better linking its land use planning and mapping/drilling programs and more efficiently using its in-house capability to concentrate on areas of highest interest and potential for coal leasing. This should include:

--Publishing in the Federal Register a notice of USGS's mapping and drilling plans at the same time as BLM gives public notice and requests for comments on its schedule for land use planning---thus providing an appropriate point in time for coal companies, State governments, and the general public to submit comments for use by USGS in refining its priorities and undertaking exploration and resource mapping programs.

--Establishing a sufficient mapping capability in-house through staffing of professional personnel and necessary funding--including funding for drilling--to (1) continue the timely revision of needed CRO/CDP maps to improve their quality, and (2) assure the linking of future mapping and drilling efforts with BLM's land use planning.

--Specifically requesting submissions of nonconfidential coal and economic information from coal companies, State governments, and the general public at the point in time when BLM gives public notice on the preparation or revision of land use plans in particular areas. This notice should include (1) specific criteria to guide coal companies, State governments, and the general public in submitting coal information, and (2) procedures for how and when such information will be applied in land use planning, including qualitative and quantitative criteria to be used in making trade-off decisions.

CHAPTER 6

AGENCY COMMENTS AND OUR EVALUATION

Comments on a draft of this report were solicited from the Department of the Interior. Its response is included as appendix II to this report.

In general, Interior believes our report has a fundamental problem in that it does not evidence a good enough understanding of land use planning and activity planning, and the role of mapping in such planning. In particular, Interior disagrees with our interpretation of its regulations regarding the role of the CRO/CDP maps, as well as our concern that problems with the maps may result in insufficient quantities of economically minable coal being made available from Federal lands. Interior also indicates disagreement with our position on the need for solicitation of industry, State government, and public expressions of coal interest early in land use planning.

Despite its expressions of disagreement, Interior states its intention to do practically all the things we proposed in our draft report--including terminating the present CRO/CDP contract mapping program and taking various actions to better link its future mapping activities and land use planning. These proposed actions include:

--Improving coordination between USGS's mapping and drilling activities and BLM's land use planning schedule for the new coal leasing program.

--Focusing future coal mapping on Federal resources having the highest interest for leasing.

--Coordinating joint USGS/BLM Federal Register notices for both general land use planning schedules and for specific planning units at the time of preparation or revision of land use plans.

--Using Federal Register notices in the future as a means for helping USGS to achieve its objective of acquiring all publicly available coal resource data.

--Depending on the availability of funding and staffing, placing a high priority on the establishment of sufficient in-house mapping and drilling capability.

The following sections discuss Interior's comments in detail.

ALLEGED MISCONCEPTIONS ABOUT THE ROLE OF CRO/CDP MAPS IN LAND USE AND ACTIVITY PLANNING

Specifically, Interior states that our draft was somewhat narrow in its perspective in that it did not provide a comprehensive evaluation of the entire coal management program nor provide insight into the evolution of this program before drawing conclusions and making recommendations. Additionally, Interior implies that had our draft report properly recognized the full scope of the coal activity process--which begins after the completion of land use planning--we might not have concluded that "Interior's policies do not specifically request the timely and public submission of coal data." Thus, much of Interior's response (particularly pages 52-55) is devoted to including information to provide this alleged lack of perspective and to clear up these misconceptions on our part.

We do not agree that a comprehensive evaluation of the entire coal management program is either necessary or appropriate as a basis for drawing conclusions about mapping program deficiencies. That was not the purpose of our study, although we have attempted to do this in another recent and closely-related report entitled "A Shortfall in Leasing Coal From Federal Lands: What Effect On National Energy Goals?" (EMD-80-87, August 22, 1980). Additionally, our previous report, "Issues Facing the Future of Federal Coal Leasing" (EMD-79-47, June 25, 1979), provides an even broader analysis of the coal management program, including its evolution.

Our objective in this study was to evaluate the critical first screen in land use planning where the Government identifies areas it believes have moderate to high development potential for coal leasing and excludes from further planning lands it believes have low development potential. Our analysis showed, however, that CRO/CDP maps--which Interior regards as the major source of information for the first screen--are often inaccurate, unreliable, and inappropriate for land use planning decisions and thus cannot be relied on to identify the best potential coal lands. Since it is at this stage in planning that Interior selects

planning units for more detailed activity planning--and excludes others--its use of unreliable maps constitute a major flaw in the entire coal leasing program. Thus, regardless of efforts by Interior to later gather and solicit more data in the activity planning stage, such effort at that point is confined to areas which may not be the right ones.

We have no real problem or disagreement with the "additional perspective" Interior's response provides--other than the implications (1) that the CRO/CDP program is (or now was, since it is being terminated) basically successful in supporting the needs of the coal leasing program; (2) that the maps have only minor deficiencies which do not adversely affect the usefulness of the maps in land use planning; (3) that sufficient coal data is readily available under Interior's current system from other sources--including industry--when CRO/CDP maps are not available or reliable; and (4) that CRO/CDP maps were the only alternative available to the Department when it initially designed the new Federal coal leasing program.

Allegation that CRO/CDP program is/was basically successful

Interior implies that the CRO/CDP program was basically successful in compiling coal data in a sufficiently complete manner to be useable for further planning and leasing purposes--and that because it has achieved its objectives it is now being terminated.

We believe the implication left by Interior's response that the program has been successful is misleading. In terms of the program's original objective--which was only to provide a starting point for compiling publicly available coal data on public lands--it might be argued that it was somewhat successful. But the program's objective was changed when it was called upon late in the coal leasing program to be used as the major source of coal data for screening Federal lands and making other decisions relating to the leasing program. To fulfill this purpose, the original compilation effort was to be supplemented with additional drilling and data-gathering effort. However, this all-important second step to update the maps for planning and leasing purposes was never taken. As a result, the program failed in meeting the needs for what is/was called upon to fulfill--i.e.,

to define broad planning boundaries and to support energy, environmental, and economic tradeoff decisions within those boundaries.

In addition, our analysis showed, as was documented in chapter 2 of this report, that Interior's implementation and management of the program--even for the original compilation effort--was inadequate, causing many problems adversely affecting the quality and usefulness of the maps and the overall effectiveness of the coal program. We believe Interior's recent decision to terminate the contract mapping program--which is what we proposed in our draft report--is the right decision, but not by its virtue of its being "basically successful."

Ineffective coordination and communication between Interior, USGS headquarters and field offices, and BLM often resulted in the issuance of mapping contracts without USGS knowing the availability, accuracy, and reliability of data in a given area. In addition, USGS field offices did not verify data compiled by contractors nor correct faulty data before the maps were prepared. The program made no provisions for allowing contractors to do field work to spot-check questionable data--such as inaccurately reported outcrops and areas of burnt coal--before preparation of the maps. Moreover, there was confusion within USGS about the treatment and availability of unpublished coal data collected by field geologists. In some cases such data was withheld for long periods of time or given to the contractors after most of the work had been completed. In one case a contract was terminated because of confusion about USGS-unpublished data not received until after most of the funds had been spent, resulting in only 14 of 55 maps being completed. As a result, the maps and associated coal data was and we believe continues to be unreliable for planning and leasing decisions.

Interior stated that it is terminating the CRO/CDP program because the 806 maps contracted would provide sufficient coverage to handle coal data needs for the first rounds of scheduled Federal coal leasing. This is Interior's reason for asserting that the program has met its goals. We disagree. First of all, the 806 maps represent only 57 percent of the program's original objective of 1,400 maps covering the western coal States by 1982. Thus, by terminating the program, Interior obviously will not meet this objective. Another objective was the compilation of all proprietary and nonproprietary coal information for making a set of non-public CRO/CDP maps for USGS's use in fulfilling its land classification, lease sale, and land exchange resource evaluation responsibilities. This has not been accomplished.

Moreover, by its own admission Interior had prepared and released to the public as of July 1980 less than one-half (383 or 48 percent) of the 806 maps. Interior states that the remaining maps are to be completed and released to the public by USGS as promptly as practicable. Our analysis, however, showed that USGS plans to complete and release to the public only 600 of the 806 maps within the next year and that the remaining maps may not be completed for several years. Additionally, Interior stated that USGS has successfully attempted to modify the CDP maps to a regional scale and thus make them more useful for BLM's planning needs. Although Interior may have these plans, our follow-up analysis indicated that none of the CDP maps have yet been modified and it may be considerable time before the modification will be completed since the balance of the 600 CDP maps--mentioned above--must first be prepared.

Allegation that maps have only minor errors and are reliable for supporting land use decisions

Interior acknowledged that existing CRO/CDP maps are not error-free but maintains that the errors are not statistically significant to affect the overall usefulness of the maps. Interior also stated that USGS had initiated quality control efforts in 1979 to reduce the significance of the errors and that existing CRO/CDP maps will not be updated or corrected except in specific cases. Further, Interior stated that the maps are now used by BLM in the inventory phase of land use planning and that pre-lease activities have not been delayed due to CRO/CDP problems.

First of all, we disagree with Interior's position that mapping errors are not statistically significant and that the errors do not adversely affect the usefulness of the maps in land use planning. Because of the vagueness of contract terms and constraints placed on contractor performance, the quality of the maps is so uneven and uncertain that we question whether Interior could even begin to identify and measure the extent of errors consistently or objectively. For example, the mapping contracts were unclear as to how correlation diagrams--which show how the layers of coal and non-coal deposits relate to one another--are to be constructed. No standard horizontal and vertical scales were established, making it difficult to determine the accuracy of the underlying geologic interpretations and thus the reserve estimates of specific coal deposits. According to geologists and mining engineers, correlation diagrams are critical in the CRO/CDP process in developing an understanding of coal beds and their development potential.

In addition, our draft documented instances where CRO/CDP maps provided planners information that conflicted with actual mining conditions in the area, causing planners to resort to other and often insufficient data to identify potentially economical minable coal deposits. Our August 1980 report involving the Green River-Hams Fork region provides further evidence that BLM sometimes selected low-quality coal areas--and excluded high-quality ones--because of not having the kind of information that was intended to be provided through CRO/CDP maps.

Also, Interior's position on the magnitude of the problem is not factually correct because none of the maps are considered complete. In fact, a disclaimer appears on each map stating that it contains information of a preliminary nature and that the data and conclusions contained in it must be regarded as subject to future revision by the USGS. Also, since proprietary data in USGS files was not considered when the maps were prepared, its consideration may completely change the geological interpretations shown. As our draft pointed out, USGS--at the very least--should consider such information and update and correct incomplete maps before sending them to BLM for decision-making purposes.

With regard to USGS' quality control efforts in 1979, our analysis showed that such measures were limited and did not make the maps sufficiently reliable for their use in land use planning. Although the efforts did help identify and correct some errors in some maps, a USGS official told us that USGS did not review the maps as much as they would have liked and that insufficient funds and staff were available for a quality control program to correct other faulty CRO/CDP maps which have already been released to the public.

Interior's statement that existing CRO/CDP maps will not be updated or corrected except as necessary for specific cases fails to explain whether "specific cases" includes BLM's use of the maps during the initial and subsequent screenings in land use planning. Interior seems to be implying that existing CRO/CDP maps will not be updated or corrected prior to their use in land use planning when it states (on page 54, para. 2) that "between the inventory phase and the activity planning phase, drilling is done by the GS, for tract delineation based on data gaps revealed by the CRO/CDP maps." Therefore, it appears BLM may continue to use data that is often unreliable, incomplete, and inappropriate for supporting initial land use decisions.

Moreover, we believe that by defending CRO/CDP maps on the basis that they have not caused delays in pre-lease activities

Interior is missing the point. The real issue is not one of delay but of making land use planning decisions on the basis of faulty or unreliable data. Nonetheless, it is possible that delays may occur in that Interior's use of faulty or inappropriate maps may eventually lead to decisions being challenged as arbitrary or without factual support, triggering administrative appeals in the late stages of the activity planning process. This in turn could require changes in initial land use planning decisions and modifications of those plans.

Finally, Interior offers as one measure of their merit the fact that more than 4,000 of the maps have been purchased by industry. Our discussions with industry officials and geologists indicate that companies use CRO/CDP maps for obtaining information not available from other sources, and not necessarily for the geological interpretations included in the maps. Industry officials told us that the maps may be useful in areas where their own data is scarce or limited, but that they are of questionable value elsewhere because of the uncertain quality controls used in their preparation. Some officials have suggested that a reliability index placed on each map or portions of a map would be of help since they suspect that the CRO/CDP maps were prepared on the basis of extremely limited drilling information.

Interior's position that maps are not the only source of information

Interior asserts that our draft misinterprets its regulations by stating that the Department requires the use of CRO/CDP maps during land use planning. The Interior regulations state that the determination of coal development potential "shall be based generally" on CRO/CDP maps. Whether or not the maps are explicitly required, it is clear that Interior intended to rely on the maps as the major source of information for the first screen in land use planning, even though BLM could conceivably use other data sources. The real problem is that other data sources are not readily available because BLM's planning and hearing notices do not specifically request the kind of data needed for planning nor indicate the time frame required in order for such submissions to have a maximum impact on planning decisions. Thus, we believe Interior's approach has not effectively encouraged industry and other inputs in land use planning.

In criticizing our conclusions about its regulations and opportunities for public input during planning, Interior assumes that industry and the public will come forth with adequate and timely data in the absence of specific notices. We believe that planning and hearing notices should specifically request

inputs to assure effective communications and make certain that potential participants in the leasing program understand clearly what information Interior needs for planning and when it will be needed. Interior's approach is to indicate that they will accept data at any time. "Anytime" is too vague and does little to encourage timely submissions and enhance effective planning--particularly since there is a real question in minds of industry representatives and others as to whether information is really desired or, if submitted, would ever be used in land use planning.

While Interior's response seems to take issue with this, its proposed actions are in line with our recommendations. It states that in the future joint BLM/USGS Federal Register notices will be used as a means to solicit timely coal resource information for both general land use planning schedules and for specific planning units at the time of preparation or revision of land use plans.

Moreover, Interior's formal response to our August 1980 "Shortfall" report 1/ seems to confirm its basic agreement with our position even though it is again not evident by its response to this report. In responding to our August report, Interior states:

> "Also, the public participation stages in planning are not all informal. The various hearings held are formal as are the notices announcing them. Many companies seem to feel that the expressions of interest is their best or only formal chance to participate. We share your concern that this misconception must be rectified to ensure early participation by industry and therefore ensure the availability of their expertise for the land use planning system. We will be considering various methods to end this misconception including the possibility of being more specific in the hearing notices, as to what information is needed from industry during planning."
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> * * * * *
>
> "We agree that the availability of adequate data is a key ingredient critical to the success of the new

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1/"A Shortfall in Leasing Coal From Federal Lands: What Effect On National Energy Goals?" EMD-80-87, Aug. 22, 1980, pp. 90-92.

program. The report properly identifies that the Department's past inability to develop and implement a coal inventory program has constrained and continues to constrain the operation of the program.

The past starting, stopping, and constant changing of direction in the program made it impossible for the BLM and the USGS to plan and implement a long-range data acquisition program. With the implementation of the new Federal coal mangement program we have instituted a new budget planning system which we believe will result in a better integration of the coal budget and long-term inventory planning between the two agencies. However, no matter how well we are able to plan our drilling program, it is still going to take quite a few years to completely cover all of the high interest coal areas."

Allegation that CRO/CDP maps were the only alternatives

Interior states that the CRO/CDP mapping program was used for the preparation of land use plans because it was the only readily available mapping program in June 1979 when Interior announced that it would initiate a new coal leasing program.

It is misleading to say that the CRO/CDP mapping program was the only coal data option available prior to Interior's initiation of its new coal leasing program in 1979. Interior fails to point out that other coal data planning options were considered, but not accepted, in 1977-78 when it designed the new coal leasing program.

Our draft pointed out that USGS lacked sufficient topographic base maps in 1976-77 to support the increased production of regionally-scaled maps, which would have been more appropriate at that time in meeting BLM's needs. However, Interior chose not to expand production of these maps at that time but, instead, decided to continue the CRO/CDP mapping program.

Our draft also noted that Interior did not adequately consider other then-existing options to the "crash effort" expansion of the CRO/CDP program at a time when Interior was without land use planning and leasing schedules. For example, Interior could have solicitated public expressions of interest in mapping and leasing areas prior to the issuance of CRO/CDP mapping contracts, as a measure to update its then-existing mapping priorities.

Although Interior did not choose either of these alternatives when it designed the new coal leasing program, it now seems willing to do so, as indicated in it comments.

OTHER CONCERNS

We believe many of Interior's comments--particularly its opinion that our draft was too narrowly focused--reflect an attempt to place its programs in the most favorable light by downplaying the seriousness of its coal data problems. Rather than confronting these critical problems directly, Interior discusses other issues which are beyond the report's objective of evaluating the first screen in land use planning.

Moreover, Interior's comments in the latter section of its letter appear to contradict some of its comments in the earlier sections. For example, Interior states (page 57, para. 2) that its system of soliciting expressions of interest at the start of activity planning is superior to our recommendation of specifically requesting such information at the time BLM announces its plan to prepare or revise land use plans in particular areas. However, Interior states its position differently in the first section of its letter (page 54, para. 5)--stating that USGS and BLM plan to coordinate publication of joint announcements soliciting information "for both general land use planning schedules and for specific planning units at the time of preparation or revision of land use plans." Interior appears to be uncertain of its own position about the formal solicitation of information during land use planning.

In addition, from a long-range planning perspective, Interior does not seem to recognize the gap created by its mapping problems in coal information on Federal lands outside scheduled lease sale areas. Our draft analyzed recent USGS decisions to limit CRO/CDP mapping to lease sale areas and to expand regional drilling/mapping to cover areas outside those scheduled for lease sale. Our analysis showed that budgetary and staffing constraints may adversely affect USGS's capability to achieve its objectives within the existing regulatory framework. Interior, however, does not address these issues specifically but generally states that "the GS is prepared to meet coal mapping and development potential needs of the Department's future coal leasing program." Because of Interior's vagueness on this point, combined with the inconsistencies in its comments about the solicitation of data in land use planning, we continue to believe that coal mapping and data acquisition problems may significantly undermine future plans for coal leasing.

Finally, Interior states that USGS has no plans to conduct any mapping program along the lines of the CRO/CDP program for other leaseable minerals (page 55, para. 1). In our draft report, we proposed that Interior first demonstrate the workability of its approach to coal mapping before taking action to expand the CRO/CDP program to cover other leasable minerals. In previous budgetary and planning documents, USGS indicated that it was reviewing its decision to expand the CRO/CDP program to include other leaseable minerals on public lands. In view of the problems with the CRO/CDP program for coal--as indicated in our draft report--we agree with Interior's recent decision not to move forward at this time with a similar program for other leaseable minerals.

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Various editing and other minor wording changes have been made--as we felt appropriate--to the final report based on Interior's other comments and suggestions.

BRIEF DESCRIPTION OF CRO/CDP MAPS

CRO/CDP maps were intended to provide a compilation of publicly available coal data for selected unleased Federal coal lands. These maps were to show where the coal occurs, its geological setting, its extent, magnitude and development potential. The development potential of non-Federal coal lands was not to be shown. The maps were to be prepared on a scale of 1:24,000, meaning that 1 inch on the maps is the same as a distance of 2,000 feet on the ground. A brief report accompanying each map was to summarize the geologic setting and character of coal seams present, and provide an explanation of unique conditions which may affect mining development.

A CRO/CDP map for a given quadrangle was to consist of a series of individual sheets:

1. Coal Data Map
2. Boundary and Coal Data Map
3. Coal Data Sheet
4. Coal Isopach Map
5. Coal Structure Contour Map
6. Overburden/Interburden Isopach and Mining-Ratio Map
7. Areal Distribution of Identified and Hypothetical Resource Maps
8. Identified and Hypothetical Resource Maps
9. Coal Development Potential Map

Following is a brief description of what each of these individual maps was suppose to include.

Coal Data Map--This map contains information about surface and subsurface coal data to a depth of 3,000 feet including (1) the trace of all coal bed outcrops; (2) measured coal bed thickness; (3) areas of altered rock associated with the burning of coal beds; (4) locations of all coal mines, workings, and prospects identified by name; (5) locations of all boreholes from which coal data has been obtained; and

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(6) appropriate structural features required for precise construction of structure and isopach maps.

Boundary and Coal Data Map--This map shows the (a) boundaries for (1) Federal coal lands; (2) Federal coal leases and their numbers; (3) Federal coal permits and preference right lease applications and their numbers; (4) Known Recoverable Coal Resource Areas; and (5) cadestral survey boundaries of lots and tracts which depict the smallest legal subdivision. (b) It also shows Reserve Base Data, including total coal Reserve Base calculated in short tons, in accordance with methods described in USGS Bulletin 1450-B or as directed by the USGS; coal resources reported by cadestral section for Federal coal lands which are not subject to currently outstanding coal leases, permits, or preference right lease applications.

(Note: Where the available surface/subsurface, boundary, and Reserve Base data for the Coal Data Map and Boundary Data Map are insufficient to warrant the preparation of separate maps as described above, the USGS may authorize the consolidation of these CRO maps).

Coal Data Sheet(s)--This sheet shows (a) Columnar stratigraphic section: A generalized composite section of rocks in the quadrangle emphasizing the chief coal-bearing stratigraphic units. Coal and noncoal units shown are identifed by standard lithologic symbols, geologic age, formation name, and brief lithologic description. (b) Correlation diagram: Graphic columnar sections showing the coal, noncoal, clinkered, and no-record intervals for all boreholes and surface-measured sections arranged by township or in order to best show correlations. Correlations of coal beds and coal zones shall be shown and coal beds, zones, and coal thickness labeled.

Coal Isopach Map--This map shows coal isopach lines, i.e., lines of equal coal thickness, for each coal bed or zone which is determined by the USGS to have development potential. The map shows the locations of all drill holes and other data points showing coal thickness used in construction of the isopachs. Where coal-bed splits occur, superimposed sets of coal isopachs are to be prepared to depict thickness variations of each coal-bed split. For a coal zone, a

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single set of isopachs are to be prepared to illustrate changes in cumulative thickness of coal beds within the coal-zone interval as directed by the USGS. For each coal bed or zone for which an isopach map is compiled, the following additional maps are also prepared.

Coal Structure Contour Map--This map shows the contours on top of each coal bed or zone for which a coal isopach map is prepared. Data recorded on the map shows the locations of all drill holes and coal outcrop and mine measured sections if applicable; altitudes above mean sea level at the top of a coal bed or at the top of a coal zone obtained from drill holes, outcrop and mine measured sections if applicable; and portions of coal-bed discontinuities (faults, cutouts, etc.).

Overburden/Interburden Isopach and Mining-Ratio Map--This map is prepared for each complete stratigraphic interval which overlies a coal bed or zone for which a coal isopach map is prepared. In addition, this map shows contours of at least three mining-ratio values for areas where unleased Federal coal occurs in the strippable interval above the stripping limit. The mining-ratio values and stripping limit are provided by the USGS.

Areal Distribution of Identified and Hypothetical Resource Maps--These maps show boundaries of measured, indicated, inferred, and hypothetical resource areas and the boundaries of assigned recovery factors.

Identified and Hypothetical Resource Maps--For each isopach map prepared, a separate corresponding base map is prepared showing coal resource data for a given coal bed or zone. Data shown on the map includes total coal Reserve tonnage calculated and tabulated in terms of measured, indicated, inferred, and hypothetical coal tonnage.

Coal Development Potential Map--This map shows coal development potential for surface mining methods. A separate CDP map shows the coal development potential for underground mining methods; and a separate CDP map shows the development potential for in-situ mining methods. For each of the three mining method categories, areas of coal development potential are rated as either high, moderate, low, not applicable, unknown

or none. Coal development potential guidelines are furnished by the USGS. Boundaries of coal development potential coincide with boundaries of the smallest legal subdivision.

CRO/CDP Report-- For each quadrangle for which CRO and and CDP maps are prepared, a companion report is provided supposedly to discuss in detail the following topics:

--The general geography and geology of the area including brief descriptions of the location, physiography, accessibility, climate, and surface and subsurface (to a depth of 3,000 feet) formations. The report includes a complete listing of references used in the compilation of data for the report.

--A detailed description of the coal geology of the area and a detailed description of the continuity of significant coal beds or zones, including the direction of thinning, location of pinchouts, and splits or partings, coal quality, Btu/lb., ash and sulfur content, moisture on an "as-received" basis, rank of coal, and other characteristics which affect commercial value and minability of the coal.

--The coal resources of the area in relation to the coal development potential for each of the three mining-method categories. A discussion of criteria used in determining the coal development potential and the relationship of development potential to individual coal beds or zones. The discussion outlines the resource availability, technological minability of the coal, and economic factors influencing the judgments as to development potential. Total Reserve Base and hypothetical coal tonnage is tabulated for each mining method and development potential category.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

OCT 1, 1980

Mr. J. Dexter Peach
Director, Energy and Minerals
Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

We have completed our review of your second draft report on the mapping program. The following comments are offered for your consideration. We anticipate that they will be useful in the formulation of your final document.

As was pointed out earlier, there remains in this draft a fundamental problem; it does not seem that the evaluation team gained a good enough understanding of the purposes and scope of both land use and activity planning, and the particular role of the mapping program in planning. There are still a number of misconceptions that are evident in your draft report. While we do acknowledge that some modifications were made to your original draft report in response to earlier comments, a lack of familiarity with Departmental regulations is still exhibited in various places. All of this tends to make the conclusions in the draft report partially or substantially incorrect.

In order to correct some of these misunderstandings and to bring into better focus the role of the mapping program and its service to the Bureau of Land Management (BLM), we have prepared the following narrative.

CRO/CDP Mapping Program

The program was established to compile all available coal data for public lands in order to define coal leasing areas and to increase our ability to handle coal leasing and land exchanges, and to determine whether further data gathering was necessary to fulfill our responsibilities to land managing agencies. After the program was started, the Federal Coal Leasing Amendments Act of 1976 was enacted. In response to the Act, a separate and independent Coal Exploratory Program was developed to provide the public with a broad regional appraisal of public coal resources and to fill the data gaps as they became apparent. It was decided that the CRO/CDP program would continue as a necessary compilation of all available coal data from which further data acquisition could be identified and initiated. In June 1979 the Department of the Interior announced that it would initiate a coal leasing program. As the only readily available mapping program, the CRO/CDP was used for the preparation of BLM's Management Framework Plans or Resource Management Plans. During the 1 year since initiation of the leasing

program, the Geological Survey (GS) has attempted to modify the original format of the CRO/CDP maps to meet BLM's needs, especially as to map scale. This has been successful. The prelease activities have not been delayed due to CRO/CDP problems. Complete CRO/CDP maps covering all lease sale areas either have been or are being submitted to BLM and lease sale planning has proceeded into, or beyond, the tract delineation phase in four lease areas. Areas included in the proposed second round of lease sales are also covered by completed CRO/CDP maps. Despite changes in perception as to what the CRO/CDP program should accomplish, the map series has met its critical test of compiling existing data in a sufficiently complete manner to be useable for further planning and leasing purposes.

The CRO maps show coal resource occurrences, based on existing publicly available information on all coal lands within the quadrangle by depicting the location, quality, depth, thickness, and characteristics of each minable coal bed as well as the thickness of overburden and interburden. The CDP maps delineate those Federal coal lands as having high, moderate, or low development potential for surface mining, underground mining, and in situ mining methods. Estimates of the coal reserve base, reserves, and hypothetical coal tonnages for Federal coal are provided, excluding private lands, Indian lands, and those areas under Federal coal lease, permit, license, or preference right lease application. These are excluded because the GS may not act as a consultant for any individual or corporation. For each quadrangle for which a CRO/CDP map is prepared, a companion report is provided which discusses the information depicted on the map. The CRO/CDP mapping program uses a combination of outside contracts and in-house mapping. Since the inception of the program, a total of 806 quadrangles have been scheduled for preparation in selected KRCRA's in six western States and Oklahoma. As of July 1980, a total of 383 CRO/CDP maps and reports had been completed and open filed. During a formal program review in late 1979, it was decided that the 803 quadrangles would provide sufficient coverage to handle the coal leasing program needs as scheduled in the Secretarial Issue Document on the Federal coal management program. Therefore, the CRO/CDP mapping program will be terminated effective October 1, 1980, and existing CRO/CDP maps will not be updated or corrected except as necessary for specific cases. However, the GS will release the remainder of the already completed maps or partial maps that were funded under the program. The needs and goals of the CRO/CDP program have been met and the program is being terminated. However, the GS is prepared to meet coal mapping and development potential needs of the Department's future coal leasing program.

The CRO/CDP maps are not error-free. A certain amount of error is to be expected considering the complexity of the maps and the production schedule. These errors are not considered statistically significant to affect the overall usefulness of the maps. We acknowledge the variability in the quality of the maps due to such things as differences in quality among contractors, as well as geologic differences. However,

you have made no mention in your report of some of the excellent mapping work that has been done. As of August 1980, 4,109 of these maps have been purchased by industry which is but one measure of their merit. An increased quality control effort initiated in 1979 has assisted in reducing the number and significance of the errors on the maps. Moreover, a further screening of the basic data will occur as the data are entered into the National Coal Resources Data System.

The CRO/CDP maps reflect publicly available coal resource information and are now used during the inventory phase of the BLM Management Framework Planning or Resources Management Planning process. This activity is usually completed at least 3 years prior to a proposed lease sale date. Between the inventory phase and the activity planning phase, drilling is done by the GS, for tract delineation based on the data gaps revealed by the CRO/CDP maps. Thus the data base for potential lease tracts is expanded. After tract delineation is completed, additional drilling is done by the GS, or by industry under exploration license on the selected lands so that sufficient data is available for the calculation of fair market value. Changes in estimates of the reserves and minable area are normal and expected as the data base is improved. Much of the GS effort is now concentrated on these later stages of the program preparatory to the actual lease sales.

The GS/BLM Program Coordinating Committee is actively working with Department level officials to assure that planning schedules are synchronized and that the products of the GS fully meet the inventory and actively planning needs of BLM.

The CRO/CDP contractual mapping effort is scheduled to terminate effective October 1, 1980. The GS plans to complete maps in progress and to release them to the public as promptly as practicable using existing staff assigned to coal programs. Additional mapping of Federal coal will concentrate on resources having high interest for leasing.

The GS is continuously engaged in collecting information on coal resources from industry, States, other Federal agencies, and the public. The GS, by regulation, receives coal resource information from lessees, licensees, and permittees on Federal and Indian lands. Use of the Federal Register is but one mechanism for soliciting information. The GS will coordinate publication of joint announcements with BLM for both general land use planning schedules and for specific planning units at the time of preparation or revision of the land use plan.

Establishment of a sufficient in-house mapping and drilling capability is dependent upon availability of funds and personnel. Both will be given high priority so as to provide an adequate data base in support of planned coal leasing. Mapping and drilling activities of the GS are being closely coordinated and synchronized with the BLM 5-year plan for the Federal coal management program, through the mechanism of the BLM/GS Program Coordination Committee.

The initial phase of any geologic mapping activity is to search the existing record for all available information on the area. This basic concept of geologic mapping constituted the CRO portion of the CRO/CDP mapping program. The GS will continue to acquire all publicly available coal resource data as an integral part of geologic mapping activities in the future. Federal Register notices will be used toward this objective as appropriate. The GS has no plans to conduct any program along the lines of the CRO/CDP program for other leasable minerals. The GS will continue to develop CDP maps on an as needed basis for future lease sales by utilizing available staff.

Policy Comments

This section sets forth some particular difficulties that we have with the draft report. Of specific concern are the misinterpretation of our regulations, and the exclusion from the report of readily available data that would have placed the coal and mapping programs within a more meaningful context.

There are four basic assertions made, which are prevalent throughout the draft report. First, that the Department's regulations "require" the use of CRO/CDP maps (see pages 24, 25, and 33). Second, that the existing coal program "may not be able to make available sufficient quantities of economically minable Federal coal" due to the use of CRO/CDP maps in lieu of formal industry, State, and public submissions of coal interests and economic information. Third, that the Department's coal program has created a state of confusion for industry, State government, and the public about opportunities to provide coal input to land use planning because the Department does not effectively encourage their input. And fourth, that industry, State, and public expressions of coal interests and data should be formally required at an early point in land use planning. As will be pointed out below, these GAO assertions are critically flawed.

The GAO draft report is somewhat narrow in its perspective. GAO neither provides a comprehensive evaluation of the Federal coal management program contained in 43 CFR 3400 before drawing conclusions and making recommendations, nor provides insight into the evolution of this program. There should be some mention of the coal activity planning process, which includes Federal/State Regional Coal Teams that evaluate, among other things, industry expressions of interest and regional coal production goals and lease targets to assure the leasing of sufficient quantities of economical Federal coal. In addition, acknowledgement should be given to the Department's continuing policy of keeping industry and other public interests apprised of ongoing activities of the coal program through public meetings, workshops, regional coal team meetings,

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and the printed media. We also believe that it would be useful to provide an analysis of the best available data approach which the Department employs for efficiency in conducting many aspects of land use planning. Lastly, concerning the evolution of this program, the GAO does not point out the widespread criticism of the Department that occurred over the last Administration 's coal program (EMARS) policy of calling for industry nominations at the outset of land use planning. These critics, at that time, advocated that the Department, not industry, should drive the coal leasing program. Accordingly, this aspect of the existing coal program was modified to formally request expressions of interest at a later point in time. However, the Department has announced its willingness to accept data at any time.

During land use planning the Department does not require the use of CRO/CDP maps as alleged by GAO. Rather, as indicated in 43 CFR 3420.2-3(b)(2) the determination of high to moderate development potential coal is "based generally" on CRO/CDP maps. When better data are obtained from industry or any credible source, then BLM is not required by Departmental policy or regulation to use CRO/CDP maps. Evidence to illustrate this point is presented in your draft report (pages 15 and 16), which notes that BLM did not use CRO/CDP maps and in fact obtained data elsewhere. We feel that this policy permits the necessary flexibility to allow the timely and efficient progress of the coal program.

Pages 32, 36, 42, and 43 of the report note that provisions are lacking for industry and other public interests to supply data to assist the Department in making optimal decisions during land use planning. The Regulations as published in the Federal Register, July 19, 1979, make a number of provisions for the submission of data by industry and other public interests even during the earliest stages of land use planning (Ref. 43 CFR 3420.2-3 b. 2 & 3). There were no reasons put forth by the GAO team for assuming that interested publics do not, in fact, take advantage of these opportunities early in planning to either comment or supply data that they believe will enhance the Department's decisionmaking process. In fact, there is a good deal of evidence to the contrary.

Prior to and during land use planning BLM and Departmental officials are willing to work with industry, State governments, or any interested individuals to explain the coal program, and how input can be provided. Requests for data prior to land use planning are made through the Federal Register and through the local and regional newspapers (Ref. 34 CFR 1601.0-8(k) and (l); 1601.3(d)(4); 1601.3(f); 1601.3(g); 1601.3(p); 1601.4-2(b)). In 1979, BLM and Department officials conducted a series of public meetings and industry workshops to explain to anyone interested how the coal program works and how input to land use planning can be accomplished. We have published coal program summary documents for small businesses and the public at large, solely to explain all aspects of the coal program, including the input processes. Officials, from the BLM district office personnel to the Secretary, have repeatedly

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met with industry and the public to obtain input. The BLM coal State Directors and the coal State Governors have signed memoranda of understanding which agree upon the specific roles for State government involvement with coal program planning and coal leasing decisions. To infer that the Department perpetuates confusion and does not effectively encourage industry, State, and public input in land use planning due to a strict requirement to use CRO/CDP maps is positively incorrect.

Special attention to the coal activity planning processes is critical to the final report, before GAO can draw such conclusions as "... Interior's policies do not specifically request the timely and public submissions of coal data" (see page 34). The first step of the coal activity planning process is a call for industry expressions of interests. This occurs after the completion of a land use plan which identifies an area as acceptable for further consideration for coal leasing. We believe that this is the most appropriate place for formal industry input because it precedes the first site-specific step of the coal program, which is tract delineation. Also, if the call for industry nominations were earlier, it would promote industries evaluation of areas which may not be leasable due to factors such as legislative and regulatory conditions or surface owner opposition to leasing, which would make an area unsuitable for coal leasing. Industry's expressions of interest are relied upon heavily during tract delineation of site-specific candidate coal leases. These delineated tracts then go through comprehensive planning which integrate environmental, sociological, economical, governmental, and public concerns with Federal coal production goals and lease targets. We believe that this system is superior to the GAO recommended position of specifically requesting submissions of non-confidential coal and economic information "at the point in time when BLM gives public notice on the preparation or revision of land use plans in particular areas."

Specific Comments

Page iii, paragraph 2(1). The use of proprietary data was the original intent of the program, not a subsequent action.

Page iv, last paragraph. As previously stated, since the objectives of the CRO/CDP program have been met, the program has been terminated.

Page 2, line 6. It should read Surface Mining Control and Reclamation Act of 1977.

Page 3, line 1. The EMARS program was, in part, overturned because environmental groups felt industry interests were driving the program.

Page 4, lines 30-32. The GS has no statutory or regulatory authority to analyze the development potential of non-Federal coal lands. Reports do accompany all maps.

Page 7
lines 23-27. Boundary accuracy is sufficient for land-use planning screen.

Page 7, lines 9 and 10. Data from the CRO/CDP maps were not intended to provide the necessary detail for determining marketability.

Page 8, lines 22-34. KRCRA's were never intended to provide detailed reserves and development potential information.

Page 10, lines 14-16. Delete "is" and substitute "may be." In some areas there are sufficient outcrops to provide detailed mapping.
Page 9,
lines 18-19. Delete "and contained no coal data points." Until a data search is made (a purpose of the CRO/CDP Program), the amount of data available cannot be known.

Page 13, lines 14-16: It is not the mandate of the GS to make judgments on the economic value of privately held resources. Federal appropriations under the Federal Coal Leasing Amendments Act are specifically earmarked for the investigation of Federal coal lands.

Page 19, line 1. The CRO/CDP Program has been terminated with the accomplishment of its mission.

Thank you for the opportunity to comment on your report. We would like to offer as a final suggestion for consideration, the inclusion of some background information in support of your recommendations. We believe this addendum would strengthen the overall impact of your report.

Sincerely,

Larry E. Meierotto
Assistant Secretary - Policy, Budget and Administration

GAO note: Page references in this appendix refer to the final report and do not necessarily agree with the page numbers in the draft report.

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