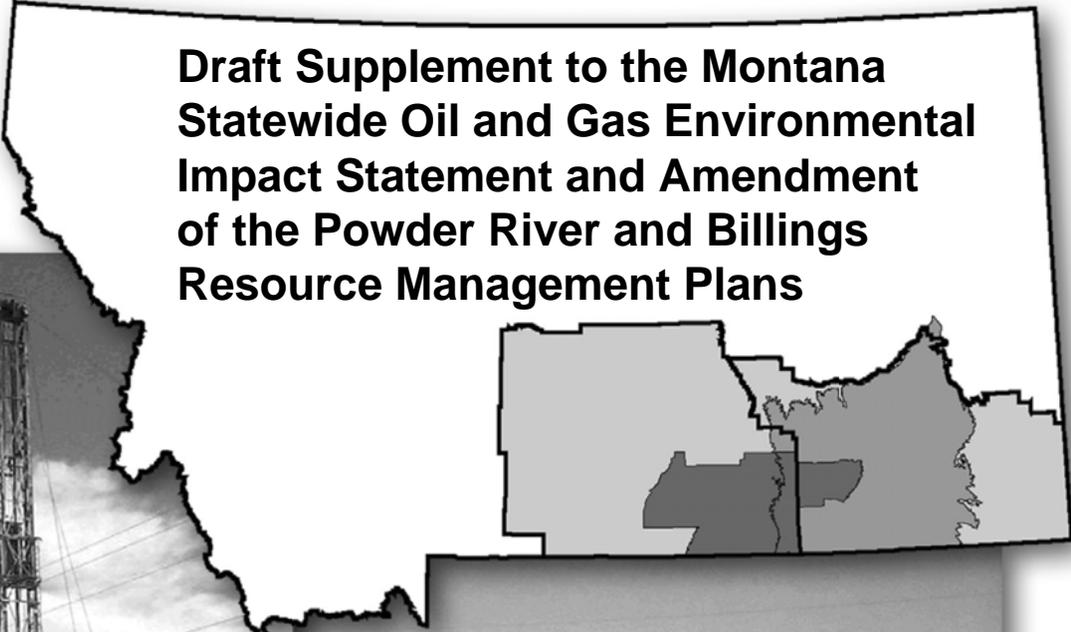
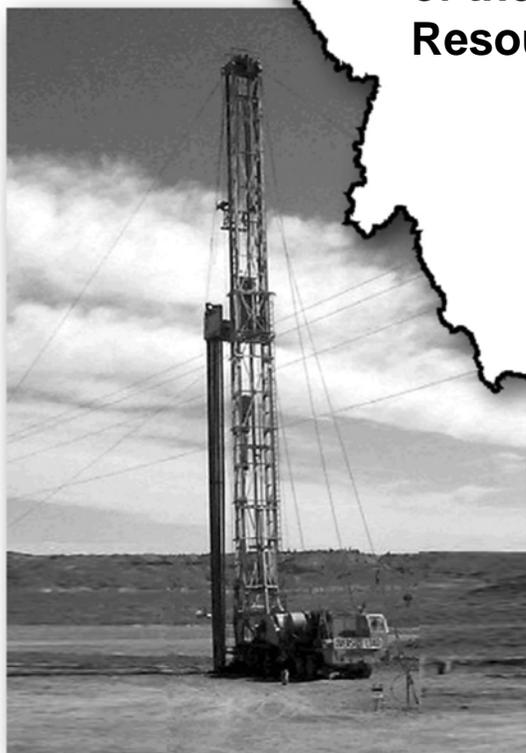


MONTANA



**Draft Supplement to the Montana
Statewide Oil and Gas Environmental
Impact Statement and Amendment
of the Powder River and Billings
Resource Management Plans**



VOLUME I

December 2006

Miles City Field Office



Public Lands USA: Use, Share, Appreciate

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.



United States Department of the Interior



IN REPLY TO: 1310

BUREAU OF LAND MANAGEMENT

Miles City Field Office
111 Garryowen Road
Miles City, Montana 59301-0940
<http://www.mt.blm.gov/mcfo/>

Dear Reader:

Enclosed for your review is the *Draft Supplement to the Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans* (Draft SEIS). The document was prepared by the Bureau of Land Management (BLM) as a result of U.S. District Court issued orders. The orders, dated February 25, 2005, and April 5, 2005, required the BLM to prepare a Supplemental Environmental Impact Statement to evaluate a phased development alternative for coal bed natural gas (CBNG) production. The U.S. District Court also advised the BLM to include the proposed Tongue River Railroad in the cumulative impact analysis and analyze the effectiveness of water well mitigation agreements.

The Bureau of Indian Affairs, Crow Tribe, Department of Energy, Environmental Protection Agency (EPA), Lower Brule Sioux Tribe, Montana Board of Oil and Gas Conservation, Montana Department of Environmental Quality, U.S. Army Corps of Engineers and the following counties: Big Horn, Carbon, Golden Valley, Musselshell, Powder River, Rosebud, Treasure, and Yellowstone actively participated in the development of the SEIS as Cooperating Agencies. The Northern Cheyenne Tribe declined to become a cooperating agency, but was invited by BLM to participate in all cooperating agency activities. Consultation with the Crow, Northern Cheyenne, and Lower Brule Sioux tribes has taken place throughout the process to gather their input and concerns. Consultation with the U.S. Fish and Wildlife Service has also occurred. The BLM has also met with individuals from the public, special interest groups, industry, and local governments upon their request.

The Draft SEIS is a reissue of the original EIS/Amendment: *Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans (RMPs)* (Statewide Document). With the exception of minor edits, new text supplementing the Statewide Document is shaded gray for easy identification.

The Draft SEIS provides additional information and analyses regarding the topics identified by the U.S. District Court. It was prepared by developing alternative management strategies for phased development based on issues identified during the public scoping period. The Draft SEIS analyzes the environmental consequences of three new alternatives, including the BLM Preferred Alternative (H).

The Draft SEIS may be accessed at the following BLM website: http://www.blm.gov/eis/mt/milescity_seis/. Copies of the Draft SEIS are also available for public inspection at the following BLM offices:

Bureau of Land Management
Montana State Office
5001 Southgate Drive
Billings, Montana 59107

Bureau of Land Management
Miles City Field Office
111 Garryowen Road
Miles City, Montana 59301

We anticipate the Final SEIS being available to the public in the summer of 2007.

The Draft SEIS is contained in two volumes. Volume I contains the Summary, Chapters 1 - 5, the Glossary, Index and Bibliography. Volume II includes the appendixes arranged by resource or topic.

The Summary found in front of the document briefly describes the issues and alternatives found later in detail.

Chapter 1 contains the legal authority mandating the writing of this document, the purpose and need for action and its application. The planning area is defined and a general location map is provided. The plan's conformance to the BLM RMPs is discussed. There is a brief discussion on concerns raised during scoping. The "Planning Criteria" that helped guide the preparation of the Draft SEIS are provided in Chapter 1.

Chapter 2 discusses the eight alternatives and the rationale for alternatives considered but not analyzed in detail.

Management Common to All Alternatives is discussed first, then the management actions specific to each alternative is given. Table 2-2 in Chapter 2 compares the specific management actions for the alternatives, and Table 2-3 provides a brief comparison of the impacts anticipated to result from the alternatives.

Chapter 3 describes the existing environment and discusses the results of various studies conducted since the completion of the Statewide Document. Each resource or topic is listed alphabetically.

Chapter 4 provides analysis of the impacts predicted to occur from each of the alternatives described in Chapter 2. The chapter includes assumptions for the analysis. Assumptions are predictions made by specialists based on their knowledge, education and experience. Chapter 4 describes the impacts from management common to all alternatives and impacts from each alternative by resource. The conclusion describes cumulative impacts, unavoidable adverse impacts, irreversible or irretrievable impacts, and short-term impacts vs. long-term productivity.

Chapter 5 includes BLM's coordination efforts, a listing of the personnel involved in preparing the document, and the SEIS distribution list.

Volume II contains the appendixes arranged alphabetically by resource or topic. The appendixes contain material too detailed and analytical for the general discussion in the chapters. The appendixes were used to help develop the analyses described in the body of the document. The Monitoring Appendix provides monitoring guidance for resources or programs.

The Glossary is a list of definitions of technical terms used in the document; the Bibliography cites the references in the document; and the Index is a listing of words and topics and their location within the Draft SEIS.

You are encouraged to comment on the supplemental material in the document. A 90-day comment period will begin the day the Draft SEIS is filed by EPA in the *Federal Register* (anticipated to be on or about February 9, 2006 - check local news releases or the SEIS webpage for final dates and deadlines). Submitted comments will be responded to in the Final SEIS if received within the 90-day comment period. Please submit your comments electronically via the website comment tool or mail them to the following:

CBNG Draft SEIS Comments, Bureau of Land Management, P.O. Box 219, Miles City, Montana 59301.

BLM will also hold public meetings to answer questions and gather comments concerning this document. The meetings will be held on or about the week of March 26, 2007, at the following locations: Billings, Hardin, Lame Deer, Broadus, and Miles City, Montana. Check local news releases or the SEIS webpage for final dates.

The comments received on the Draft SEIS will be given equal consideration in the preparation of the Final SEIS and Proposed RMP Amendment (Final SEIS). In the Final, you will be able to evaluate the BLM's responses to comments regarding the Draft SEIS. A 30-day public protest period will be held following the publication of the BLM proposed decision in the Final SEIS and RMP Amendment.

Please retain this copy of the Draft SEIS for future reference. If you have any questions or require additional copies of the document, email: cbng_seis@all-llc.com. We appreciate your interest in the management of the public lands.

Sincerely,



Theresa M. Hanley
Acting Miles City Field Manager

**DRAFT SUPPLEMENT
TO THE
MONTANA STATEWIDE OIL & GAS
ENVIRONMENTAL IMPACT STATEMENT
AND
AMENDMENT OF THE
POWDER RIVER AND BILLINGS
RESOURCE MANAGEMENT PLANS**

Bureau of Land Management
December 13, 2006

Recommended by: 
Sandra S. Brooks, Billings Field Manager

Recommended by: 
Theresa M. Hanley, Acting Miles City Field Manager

Approved by: 
Gene Terland, State Director, Montana/Dakotas

Draft Supplement to the Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans

Lead Agency: U.S. Department of the Interior, Bureau of Land Management (BLM)

Type of Action: Administrative

Jurisdiction (Planning Area): BLM-administered lands and minerals in the Powder River RMP Area (Powder River, Carter, and Treasure counties and portions of Big Horn, Custer and Rosebud counties) and the Billings RMP Area (Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone counties and the remaining portion of Big Horn County). The planning area contains about 1,506,011 acres of federally managed surface, and 5,009,784 acres of federal mineral estate.

Abstract: As a result of lawsuits filed against the BLM's Record of Decision (ROD), the U.S. District Court issued orders, dated February 25, 2005, and April 5, 2005, that required the BLM to prepare a Supplemental Environmental Impact Statement (SEIS) to evaluate a phased development alternative for CBNG production. The U.S. District Court also issued an order, dated February 25, 2005, advising the BLM to include the proposed Tongue River Railroad in the cumulative impact analysis and analyze the effectiveness of water well mitigation agreements.

The Draft SEIS is a reissue of the original EIS/Amendment: *Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans* (Statewide Document). This SEIS provides additional information and analyses regarding the topics identified by the U.S. District Court. It is intended to expand on the information presented in the Statewide Document.

The Draft SEIS analyzes three phased development alternatives (F, G, and H) for managing oil and gas resources in the planning area. As a result, the BLM selected a new preferred alternative (H). This alternative would amend the Resource Management Plans and allow coal bed natural gas (CBNG) exploration and development while minimizing impacts on environmental resources.

SUMMARY

Introduction

In 2003, the Bureau of Land Management (BLM) and the State of Montana jointly prepared the Montana Final Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans (Statewide Document). For the BLM, the Statewide Document analyzed the environmental impacts associated with the exploration and development of oil and gas resources, including coal bed natural gas (CBNG) in the Powder River and Billings RMP areas. The BLM Record of Decision (ROD) for the Statewide Document, approved on April 30, 2003, amended the Powder River and Billings Resource Management Plans (RMPs) to change existing land use decisions regarding the development of oil and gas resources, including CBNG exploration and development.

As a result of lawsuits filed against the BLM's ROD, the U.S. District Court issued orders, dated February 25, 2005, and April 5, 2005, that required the BLM to 1) prepare a Supplemental EIS (SEIS) to evaluate a phased development alternative for CBNG production, 2) include the proposed Tongue River Railroad in the cumulative impact analysis and to 3) analyze the effectiveness of water well mitigation agreements.

The SEIS provides additional information and analyses regarding the topics identified by the U.S. District Court. It is intended to expand on the information presented in the Statewide Document, not replace it. This SEIS has been prepared according to the National Environmental Policy Act (NEPA) of 1969, as amended, and the Federal Land Policy and Management Act of 1976, as amended. It considers the three topics identified above at a programmatic planning level.

Additionally, the SEIS updates the Statewide Document with new information and reflects any changes in policies, regulations, or activities since that document was approved. Summaries of monitoring data and the results of studies completed since the Statewide Document was finalized have been incorporated to update the public. These additions can be found in Chapter 3 under the individual resource topics as well as in appropriate appendices.

This summary discusses the following information:

- The planning area analyzed in the SEIS.
- The federal agencies responsible for preparing the SEIS.
- A brief explanation of what CBNG is and why it occurs in coal beds.
- A summary of the purpose of and need for the SEIS.
- An explanation of how the SEIS conforms with the Powder River and Billings RMPs.
- A description of the environmental issues discussed in Chapters 3, 4, and 5 of the SEIS.

The Planning Area

The planning area for the SEIS encompasses the BLM-administered lands and minerals in the Powder River and Billings RMP areas (Map 1-1). The planning area excludes those lands administered by other agencies such as the Forest Service; and sovereign tribal governments, such as the Crow Tribe of Indians, and the Northern Cheyenne Tribe. Indian allotted lands are also excluded from the planning area. The BLM will make oil and gas decisions based on the Statewide Document and this SEIS for the oil and gas estate it administers within the Powder River and Billings RMP areas. See the location map on the next page.

Preparers of the SEIS

The BLM is the lead agency responsible for preparing the SEIS. The information and proposed decisions discussed in the plan are not final until the BLM signs a Record of Decision (ROD). The ROD will be signed no sooner than 30 days after the Final SEIS is published. The BLM will take any protests into account before signing the ROD.

What does the Summary Include?

The sections in this summary are the same as the five major chapters within the Draft Supplemental Environmental Impact Statement (DSEIS). In most cases, second-level headings in the summary cover the same information as the same headings in the DSEIS. Readers of this summary with questions should go to the parallel chapter or section in the DSEIS.

SUMMARY

The following cooperating agencies and tribes assisted the BLM in the preparation of this Draft SEIS:

- U.S. Environmental Protection Agency (EPA)
- Department of Energy (DOE)
- Bureau of Indian Affairs (BIA)
- U.S. Army Corps of Engineers (USACE)
- Montana Department of Environmental Quality (MDEQ)
- Montana Board of Oil and Gas Conservation (MBOGC)
- Lower Brule Sioux Tribe
- Crow Tribe of Indians
- Commissioners from the following counties: Big Horn, Carbon, Golden Valley, Musselshell, Powder River, Rosebud, Treasure, and Yellowstone.

The Northern Cheyenne Tribe has also commented on the development of the SEIS.

The cooperators' assistance included the submission of technical information and frequent consultation meetings with the BLM to discuss issues and concerns along with possible mitigation measures. The cooperators may use or reference the SEIS for their future actions.

Coal Bed Natural Gas

CBNG is a natural hydrocarbon gas, primarily methane (CH₄), that occurs in beds of coal. Coal beds developed when dead plant material collected in ancient swamps and bogs. Once preserved and covered by soil and rocks, the plant material began to decay and to lose water, becoming more compact and dense, and its temperature began to increase. Over thousands of years, these natural processes ultimately produced various types of coal. Methane is usually found in sub-bituminous and bituminous coals.

CBNG exploratory wells are drilled in an attempt to find viable commercial quantities of trapped methane. If the CBNG exploratory wells are successful, additional wells are drilled to produce the methane by bringing it to the surface where it is processed and transported through pipelines to markets. Currently, the only methane production in Montana is from approximately 555 wells at the CX Field and a few other fields near Decker, Montana.

Chapter 1: Purpose and Need

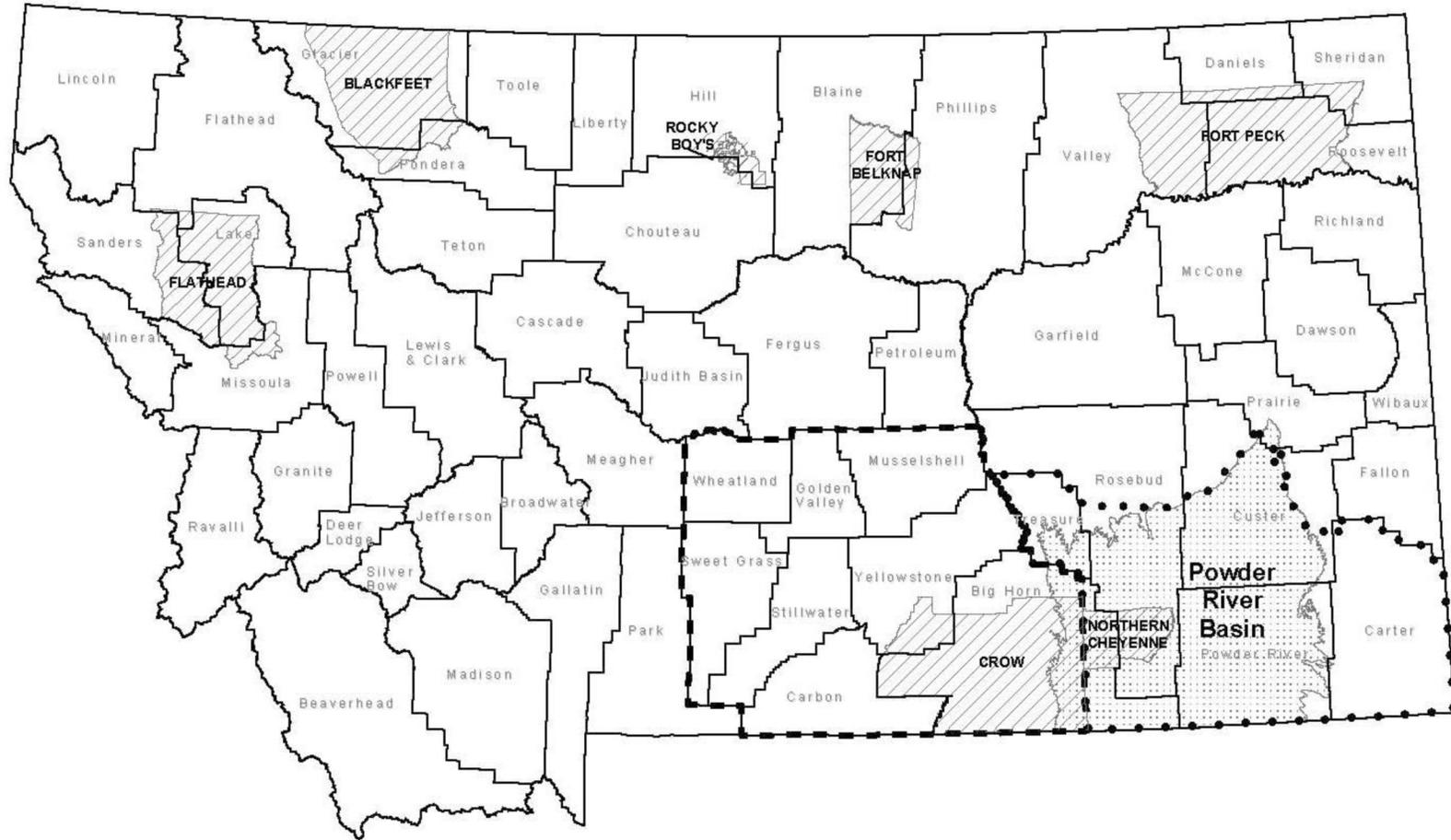
The BLM and the State of Montana were co-leads for preparation of the Statewide Document. The BLM is responsible for managing federally owned oil and gas resources. For the BLM, the purpose of the Statewide Document was to analyze impacts from oil and gas activity, including CBNG exploration, production, development, and reclamation in the Powder River and Billings RMP areas. The EIS was used to analyze options for the BLM to change its planning decision by considering oil and gas management options, including mitigating measures that will help address the environmental and social impacts related to CBNG activities.

The analysis in the Statewide Document focused on oil and gas development issues not covered in the 1994 and previous RMPs, such as water management from CBNG production. The alternatives provided a range of management options for amending the RMPs. The preferred alternative (Alternative E) was BLM's proposed and selected RMP amendment.

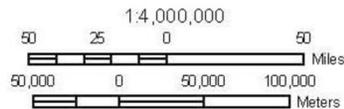
For the State of Montana, the purpose of the Statewide Document was to support the state's development of a program to address CBNG exploration, development, production, and reclamation in Montana. The EIS, in part, responded to the stipulation and settlement agreement, dated June 19, 2000, resulting from a lawsuit brought by the Northern Plains Resource Council challenging the MBOGC in the Montana First Judicial District Court, Lewis and Clark County.

The BLM published the original Notice of Intent for the Statewide Document in the Federal Register on December 19, 2000. The BLM published the Notice of Availability in the Federal Register on January 17, 2003. Immediately following approval of the ROD on April 30, 2003, several lawsuits were filed against the BLM's decision in the U.S. District Court. The U.S. District Court issued orders, dated February 25, 2005, and April 5, 2005, that required the BLM to prepare an SEIS to evaluate a phased development alternative for CBNG production. The U.S. District Court also advised the BLM to include the proposed Tongue River Railroad in the cumulative impact analysis and to analyze the effectiveness of water well mitigation agreements.

Map S-1: Planning Area - Billings and Powder River RMP Areas



-  Billings RMP Area
-  Powder River RMP Area
-  Native American Reservations
-  Powder River Geologic Basin



DATA SOURCES:
 Counties: 1:100,000 scale, counties, Montana State Library/NRIS, Helena, Montana.
 Reservations: 1:100,000 scale, counties, Montana State Library/NRIS, Helena, Montana.
 Powder River Geologic Basin: 1:250,000 scale, USGS Professional Paper 1625a.

SUMMARY

This SEIS addresses the three topics identified by the U.S. District Court. For the evaluation of CBNG phased development, this document will analyze the direct, indirect, and cumulative environmental and social impacts of phased development alternatives based on issues identified by the U.S. District Court, cooperating agencies, and public scoping comments. These phased development alternatives, coupled with the alternatives presented in the Statewide Document, will provide a range of management options for amending the Powder River and Billings RMPs to address CBNG development. The SEIS impact analysis in Chapter 4 will also include the cumulative impacts from the proposed Tongue River Railroad and will address the effectiveness of water well mitigation agreements, as required under 85-11-175, MCA.

This SEIS updates the description of the Affected Environment (Chapter 3) and the Environmental Consequences (Chapter 4) presented in the Statewide Document with relevant new information and reflects any changes in policies, regulations, or activities since that document was approved. Summaries of monitoring data and the results of studies completed since the Statewide Document was finalized have been incorporated to update the public.

Conformance with BLM Land Use Plans

This SEIS considers alternatives that would amend the two BLM RMPs:

- The Billings RMP issued by BLM on September 28, 1984, and subsequently amended to consider oil and gas development in 1994
- The Powder River RMP issued by the BLM on March 15, 1985, and subsequently amended for oil and gas in 1994
- The 1994 amendment to the RMPs analyzed oil and gas leasing operations and management actions on BLM administered lands.

Consultation

As part of the scoping effort, BLM consulted with the U.S. Fish and Wildlife Service (FWS), regarding analysis in the DSEIS and compliance with the Endangered Species Act.

In addition to the cooperating agencies, a number of state departments were consulted, including the Montana Bureau of Mines and Geology (MBMG), the Montana Department of Fish, Wildlife, and Parks (MFWP), the Montana Natural Resources and Conservation (DNRC), and the Montana State Historic Preservation Office (MSHPO).

Finally, consultation included meetings with the three Native American tribes. The Crow Tribe of Indians and the Northern Cheyenne Tribe have land in the planning area. The Lower Brule Sioux Tribe has areas of historic use within the planning area. The BLM has met with these Tribes several times to discuss their concerns about CBNG development.

Issues Developed During Scoping

The following issues were identified from the public scoping process held during August and September 2005. The issues raised were in relation to CBNG phased development. Note, these issues have been expressed in the form of questions.

Air Quality/Climate

- How will air quality, including visibility, be protected and mitigated, especially when considering all existing and proposed sources within the region? Concerns include general air quality, visibility, and potential adverse effects to public health from cumulative emissions of fine particles and fine particle precursors.
- How will air quality, including visibility be protected within the Northern Cheyenne Indian Reservation airshed and other Class I airsheds?
- How will impacts on water chemistry in high altitude lakes with little acid neutralizing capacity be prevented?
- How will potential for fires from the migration of methane be avoided?
- What additional impacts will the Tongue River Railroad have on regional air quality?

Cultural Resources

- How will culturally important springs and other traditional cultural properties be affected and protected? These include all traditional cultural properties identified by the Northern Cheyenne Tribe as important such as the Rosebud and Wolf Mountains Battlefield sites and Northern Cheyenne Homestead sites in the Tongue River Valley.
- What traditional cultural properties in the RMP areas may be affected by CBNG development and how will they be managed?

Native American Concerns

- How will unique environmental, social, economic, and cultural impacts to Native Americans be addressed by phased development?

- How will phased development provide an economic base to benefit tribal members, while not leading to another boom-and-bust cycle?
- How will subsistence hunting, fishing, and gathering be affected and protected?
- How will phased development help BLM to fulfill its Native American treaty trust obligations?
- How will phased development provide protection to tribal reserved water rights?
- How will phased development include coordination and consultation with tribal representatives?

Oil and Gas

- How will phased development be structured to address the national supply and demand situation and reduce the United States' dependence on foreign energy resources?
- How will RMP- or landscape-scale effects be addressed by phased development?
- How will lease stipulations be used to mitigate for effects from phased development?
- How will phased development be structured to minimize infrastructure development (to reduce both costs and impacts), including coordination with neighboring landowners?
- How will reclamation and restoration be addressed by phased development?

Phased Development

- How will phased development be planned to account for and protect other resources?
- How will resource impacts from development and other CBNG activities be evaluated and addressed throughout the implementation of phased development?
- How will phased development minimize fluctuations in populations, air quality impacts, overburdening of infrastructure and services, and increases in secondary development?
- How will drainage of federal gas resources and impacts to federal lessees be addressed or affected by phased development?
- What phased development implementation strategy or strategies will be included (e.g., restrictions on location [specific area or coal seam], timing, or number of wells)?

- Will more than one phased development alternative be addressed in the SEIS/Amendment?
- How will phased development reduce impacts, improve mitigation options, or protect multiple-use of resources?

Socioeconomics

- How will social and cultural changes be addressed by phased development? Specific concerns included infrastructure and service costs borne by state, local, and tribal governments, increased population, social pathologies (crime, alcoholism, drug use, etc.), and environmental exploitation.
- How will revenues (income lessees and state and local taxes) be affected by phased development, and how will these effects differ for reservation and off-reservation communities?
- How will phased development affect jobs, job security, local economy, and farming and ranching activities, and how will these effects differ for reservation and off-reservation communities?

Vegetation

- How will phased development address impacts to and the reclamation of sagebrush steppe and grassland ecosystems?
- How will phased development account for the relatively slow vegetative response to changes in groundwater or surface water characteristics?
- How will phased development address the spread of non-native species in affected areas?
- How will phased development affect medicinal and ceremonial native plants important to Native Americans?

Water Resources

- How will produced water be managed by phased development?
- How will groundwater impacts be addressed by phased development? Concerns include groundwater drawdown in area or neighboring aquifers, effects on drinking water and stock watering wells, natural springs, and approved water rights.
- How will phased development address surface water effects and mitigation? Concerns include the consequences of changing surface water quality and transforming ephemeral or intermittent streams into perennial water bodies.

SUMMARY

- How will effects from development outside the planning area be addressed by phased development?
- How will water well mitigation agreements mitigate the effects of aquifer drawdown and methane migration?
- How will phased development affect surface and groundwater quality?

Wildlife

- How will phased development address impacts on wildlife (particularly fish and other aquatic species) and habitat from changes to water quality?
- How will phased development address impacts (both site-specific and at the RMP, landscape, or ecosystem scale) to terrestrial wildlife species (and associated habitats), including song birds, burrowing owls, and bald eagles, but especially sage grouse and prairie dogs? Particular concerns included habitat fragmentation and cumulative effects from development outside the planning area and the ability to assign and quantify impacts from various anthropogenic influences.
- How will phased development address potential effects on big game and other subsistence wildlife populations relative to tribal hunting and fishing rights?
- How will phased development affect ESA-listed or potentially listed ESA species?

Data Gaps

The SEIS/Amendment planning process will incorporate relevant new data collected since the spring of 2002 to update information presented in the Statewide Document, as needed to meet the requirements of the Court's decision. The BLM will incorporate these new data to address the topics identified by the Court and during public scoping, evaluate project effects from phased development alternatives, and analyze significant new environmental information relevant to environmental concerns and having bearing on alternatives or their impacts.

Chapter 2: Alternatives

The DSEIS presents eight alternatives that describe and analyze different actions regarding the management of CBNG activities. The No Action Alternative describes and analyzes current management of CBNG activities by BLM and the State while the other seven alternatives describe and analyze other management actions including phased development that provide

different methods of protection to other resources and land uses from CBNG activities. The eight alternatives analyzed in detail are described briefly below.

Alternatives Considered

Alternative A—No Action (Existing CBNG Management)

BLM would continue to review and approve APDs for conventional oil and gas and for CBNG wells in accordance with the 1994 Oil and Gas Amendment.

Approved APDs would include only CBNG exploration wells, not production wells. The State would conduct its permitting process by complying with the Stipulation and Settlement Agreement dated June 19, 2000. Under this agreement, the State can approve up to a maximum of 325 producing wells in the CX Field and 200 exploratory CBNG wells throughout the rest of the state.

Alternative B—CBNG Development with Emphasis on Soil, Water, Air, Vegetation, Wildlife, and Cultural Resources

BLM and the State would review and approve CBNG activities with an emphasis on resource protection. BLM and the State would use stringent mitigation measures to minimize or eliminate adverse impacts to other resources. Examples of such mitigation measures would include requiring the injection of water produced with CBNG and requiring all compressors to be fueled by natural gas rather than by diesel or electricity.

Alternative C—Emphasize CBNG Development

BLM and the State would review and approve CBNG activities with an emphasis on facilitating production of CBNG. BLM and the State would use the least restrictive mitigation measures to minimize or eliminate adverse impacts to other resources. Examples of such measures would be to authorize the discharge of water produced with CBNG onto the ground or into the water bodies when the discharge water meets applicable standards. Compressors could be fueled by gas, diesel, electricity, or other means as long as other permitting standards, such as air quality, are met.

Alternative D—Encourage CBNG Exploration and Development While Maintaining Existing Land Uses

BLM and the State would review and approve CBNG activities with an emphasis on maintaining or enhancing land uses in combination with CBNG development. BLM and the State would use mitigation measures, as much as possible, that compliment the needs of land owners and other lessees. Management of water produced with CBNG would be greatly influenced by the surface owner. The water could be made available for beneficial uses or may be required to be reinjected. Location of facilities, such as compressors, would be influenced by the needs of the landowner.

Alternative E—Allow CBNG Exploration and Development with Enhanced Mitigation to Minimize Environmental Impacts While Maintaining Existing Land Uses

BLM and the State would review and approve CBNG activities in a manner that facilitates efficient and orderly CBNG activities while providing the appropriate type of resource protection on a site specific basis as well as an ecosystem basis. Different management actions, such as discharge, impoundment, reinjection or beneficial use, would be applied to water produced with CBNG. Likewise, different management actions such as location, size, and mufflers (as required) would be applied to compressors. Also, realty questions, such as the handling of surface disturbance, would be handled by requiring the operator to consult with the owner of the surface rights.

The State chose this alternative as their Preferred in 2003 and issued a ROD based on this approach.

Alternative F – Phased Development Multiple Screens (High Range)

Under this alternative, development of CBNG on federal leases in the Billings and Powder River RMP areas would be done in a phased manner through restrictions imposed by the BLM. The BLM would limit the number of federal applications for permit to drill (APD) approved each year (910) cumulatively (both state and federal APDs combined) and in each fourth order watershed. BLM would also limit the percentage of disturbance on BLM surface or on private surface overlying federal minerals within each

identified crucial habitat polygon. Furthermore, conditions would be placed on any proposed federal CBNG development within crucial sage-grouse habitat areas with the goal of avoiding displacement of sage-grouse from crucial habitat areas. BLM would place a limit on the volume of untreated water discharged to surface waters from federal CBNG wells within each fourth order watershed. The fourth order watershed level was adopted for this alternative because it provides a geographic perspective consistent with the analysis completed for the 2003 FEIS and is appropriate for the SEIS analysis.

Exploration and development of CBNG resources on BLM-administered minerals would also be subject to a Reservation buffer (5 miles), an evaluation of water management options, POD requirements, State and federal permits, and lease stipulations.

Alternative G – Phased Development Multiple Screens (Low Range)

Under this alternative, development of CBNG on federal leases in the Billings and Powder River RMP areas would be done following the same management actions as described under Alternative F; however, development would be limited to the low range of predicted wells (6,470) from the RFD (325 per year). Therefore, the following would be applied under Alternative G:

- Annual cumulative limit (5 percent or 325 APDs/year)
- Fourth order watershed rate of development
- Wildlife habitat (20 percent over 20 years)
- Crucial Sage-grouse habitat conditions
- Untreated produced water (10 percent of 7Q10) thresholds
- Reservation buffer distance (5 miles)
- Principles of adaptive management
- POD requirements
- State and federal permits, and lease stipulations
- Discussion of a range of water management options

The low range of development, as described in the RFD, was developed following the same assumptions as the high range.

Alternative H – Preferred Alternative - Multiple Screens

Alternative H is the BLM’s preferred alternative for the development of CBNG resources on BLM-administered lands. Mitigation measures and screens in this alternative would be applied to BLM administered mineral estate.

Alternative H has three key components. First, a phased development approach would be implemented where CBNG proposals would be reviewed against four filters or screens to determine if the proposal needs to be modified. Second, this alternative would include extensive requirements that an operator must meet when submitting a POD. Third, mitigation measures would be considered and applied to each POD, as appropriate.

The review screens would be applied to water resources, wildlife, Native American concerns, and air resources. The screens would be implemented to monitor impacts and develop a decision-making process that could control and reduce impacts before authorizing the action. The phased approach is intended to reduce the overall cumulative impacts to any resource by managing the pace of development. Reduced development rates may extend the overall time required for extraction of the CBNG resources. Such reductions might be one outcome of the phased development approach. No restrictions on the pace of development may occur if POD submittals were slower than anticipated, or if monitoring data indicates that additional impacts to resources are being mitigated. In other words, full-field development may be allowed if each POD passed the four screens and sufficient monitoring data were available to evaluate each POD against the four screens.

Exploration and development of CBNG resources on BLM-administered minerals would be subject to agency decisions, lease stipulations, permit requirements, and surface owner agreements.

Chapter 3: Affected Environment

This chapter in the DSEIS does not present impacts. It describes what is currently present or happening within the counties being analyzed.

The affected environment includes the physical, biological, social, and economic resources that the alternatives could impact. For the BLM, these resources are in two resource planning areas located in south-central and southeastern Montana. Several federally recognized Indian tribes own land within the

RMP areas analyzed in the DSEIS. These tribal governments include the Crow Tribe of Indians, the Northern Cheyenne Tribe, The Lower Brule Sioux Tribe, and the North Dakota Turtle Mountain Tribe. Their land holdings are an important share of the planning area:

- The Crow Reservation comprises nearly 2,296,000 acres in south-central Montana.
- The Northern Cheyenne Reservation comprises about 445,000 acres in southeastern Montana, and lies just east of the Crow Reservation.
- The North Dakota Turtle Mountain Tribe has approximately 61,250 acres of federal trust lands allotted to their members, which are scattered throughout the emphasis area.
- The Lower Brule Sioux Tribe has also contacted BLM about the allotted lands held in trust by the federal government in the emphasis area, along with numerous traditional cultural sites.

These Native American land holdings share many of the same resource values as those summarized below for the planning area.

Resources in the emphasis area are described in the DSEIS based on the scope and intensity of the potential impacts. The following bullet points highlight the existing resource conditions. For more information about the resources in the study area, see Chapter 3 in the DSEIS.

- Air quality is generally very good, based on few industrial emission sources and on scattered residences in small communities and isolated ranches.
- The area is rich in cultural resources, especially historic sites, including fur trading posts, homesteads, emigrant and stage trails, Indian war battle sites, ranch centers, and many Native American sites (the use of which continued well into the historic period).
- Minerals include uranium, gold, silver, gypsum, vanadium, and bentonite. Oil and gas resources are scattered across the analysis area. Extensive coal beds are an especially important resource in south-central and southeastern Montana.
- Surface water is the primary water source for Montana users. The quality of surface water is generally good to fair, but some problems with salinity occur during periods of low flow. Groundwater is a minor source of usable water, however in some areas groundwater is the only source of water for domestic stock use.

Groundwater quality is sometimes a problem, often making it unsuitable for irrigation, however it typically meets standards for domestic and stock use.

- Indian trust assets include lands, timber, water resources, other natural resources, and assets held in trust by the U.S. government for Indian tribes and individual Indians.
- Livestock grazing is an important economic activity. The planning area includes some 1,205 federal grazing allotments, covering about 1.6 million acres of federal land.
- Recreation is an increasingly important feature of the Montana economy. Large areas of federal and state land are dedicated to recreation, including land for fishing, hunting, hiking, photography, wildlife viewing, water sports, off-road vehicle activities, camping, touring, and caving.
- Population within the planning areas is increasing at an average annual rate of 1.1 percent. Socio-economic data from the 2000 census shows a total population of about 238,760 people in the planning area. These residents, along with the many thousands who annually visit and use Montana resources, are important contributors to the overall health of the Montana economy.
- Socio-economic data includes the per capita income figure for the planning area: \$17,427. The statewide per capita figure was \$21,229, while the total U.S. figure was \$27,203. Per capita income has been increasing in the planning area at roughly a 5.2 percent annual rate.
- Vegetation varies within a wide range of plant communities: grasslands, shrublands, forests, and riparian areas.
- Visual resources in the analysis area are diverse and of high importance, both to residents and to the many visitors to Montana.
- Wildlife include mammals such as elk, mule deer, white-tailed deer, and pronghorn; bird species, including waterfowl, raptors, and songbirds (many of which are neotropical migrants); reptiles and amphibians; and many species are either listed for protection or are of special management concern, including sage grouse, mountain plover, prairie dogs, gray wolf, Canada lynx, and the grizzly bear.

Chapter 4: Environmental Consequences

This chapter of the DSEIS presents the scientific and analytical information that supports conclusions about the potential impacts of the alternatives analyzed.

The resource impacts summarized in this section focus on the most important impacts of Alternative H—Preferred CBNG Development Alternative.

Alternative H is the one that the BLM currently consider to be “preferred” (that is, the alternative that the BLM will likely select in their respective RODs following issuance of the Final SEIS).

Resources with Low Intensity Impacts

Potential impacts on some resources are of low intensity and do not change much, if at all, among alternatives. Impacts of this sort do not help readers distinguish between alternatives.

This similarity among alternatives occurs because the alternatives are programmatic in nature. Programmatic alternatives do not and cannot reflect actual conditions at specific sites. The APD process is used to verify that the BLM and the State have considered actual site conditions before issuing an APD. Resources with low intensity and similar impacts include the following:

- Cultural Resources
- Environmental Justice
- Geology and Minerals
- Livestock Grazing
- Paleontological Resources
- Solid and Hazardous Wastes
- Wilderness Study Areas

Resource Impacts that are Important Features of Alternative H

The following sections highlight those impacts that would help readers understand the context and intensity of the actions included in Alternative H. For more information about these impacts, see the full text of Chapter 4 in the DSEIS.

SUMMARY

Air Quality

Alternative H project emissions would not alone cause a potential violation of National or Montana Ambient Air Quality Standards (NAAQS/MAAQS) or Prevention of Significant Determination (PSD) Class I/Class II Increments. However, impacts on visibility at several (15) Class I and Class II areas, including the Northern Cheyenne, and Crow Indian Reservations, have been predicted through modeling.

The air quality permitting process would be used to analyze emission sources at the project level for CBNG development. Emission sources that would violate standards would not be permitted by the agencies. Thus, the residual impacts to air quality would remain within standards.

Hydrological Resources

Surface Water

Surface water quality would be slightly altered from current water quality conditions, which are generally good. Downstream uses would not be diminished. Surface water flows moderately increase from existing flows, causing some minimal riparian erosion as well as associated sedimentation.

Groundwater

Groundwater drawdown of more than 20 feet is anticipated to extend 4 to 5 miles from the edge of production within the coal seam. However, this value may vary, depending on the intensity of CBNG development and site-specific conditions. Minor impacts on shallow groundwater quality could occur, due to some infiltration from impoundments and from other water management practices.

Beneficial Reuse

The required use of Water Management Plans would increase beneficial reuse of production waters (more than 20 percent of the production water from a given well).

Indian Trust Assets

Impacts on Indian trust assets would be mitigated, as with the preceding discussion of surface water, groundwater, and beneficial reuse management requirements. Potential effects from groundwater drawdown would be reduced by implementation of a 5-mile buffer zone. With regards to Tribal CBNG resources, mitigation and monitoring measures would protect the resources of the Tribes. Wildlife monitoring and protection measures would be employed to prevent the loss of important hunting, fishing, and plant gathering locations. Traditional cultural property sites would be identified sooner through the use of block surveys and Tribal consultations. Air Quality impacts mitigated through site specific permits and control measures.

Lands and Realty

Impacts would result from ground disturbance associated with roads, utility corridors, and CBNG drill pads. The land disturbed by CBNG activities could range from approximately 32,850 acres (long-term) to as many as 55,100 acres (short-term). These acreages are less than 1 percent of the planning area analyzed (approximately 19.4 million acres).

Recreation

Adverse impacts from roads, utility corridors, and well pads would be balanced by the increased road access. The overall impacts of Alternative H would be limited in intensity and would vary greatly from site to site.

Social and Economic Values

Exploratory and production wells could result in some new employment opportunities and some associated increases in population, but the overall percentage increase would be less than 1 percent. These impacts would be economically beneficial, but the social impacts could be either beneficial or adverse.

Soils

Disturbance to soils would be minor, based on the estimate that only 32,850 acres (long-term) would be disturbed by CBNG activities. Changes in soil chemistry would also be minimal, based on the control of production water discharges and water quality protection measures.

Vegetation

Alternative H would potentially disturb nearly 55,100 acres in the initial short-term period. Of this, approximately 48,850 acres would be native vegetation consisting of 21,450 acres of grassland, 13,200 acres of shrubland, 11,700 acres of forest land, and 2,500 acres of barren land. Noxious weed controls would be employed to control the potential spread of these unwanted species. This disturbance is less than 1 percent of the acreage in the emphasis area.

No federal threatened or endangered plant species are known to occur within the Planning Area.

Visual Quality

Visual impacts would be moderate in nature and, in some cases, permanent. For example, power line access corridors are likely to be permanent and highly visible. Required management actions (mitigations) would lessen the impacts on visual quality by employing camouflage techniques and limiting development on certain visual resource classified areas.

Wildlife

Direct impacts on wildlife would include habitat loss, death from collisions with vehicles, and disturbance from human access.

Chapter 5: Consultation and Coordination

The BLM and the State conducted extensive consultation and coordination and provided opportunities for public comment during DSEIS preparation. Public comment periods are intended to provide interested and concerned individuals opportunities to express their concerns and issues related to decisions the BLM should make.

NEPA scoping and consultation included federal agencies, state departments, and Native American tribes. Key steps and dates in the consultation and coordination were as follows:

- The BLM published a Notice of Intent in the *Federal Register*, informing the public and other agencies that the SEIS process is beginning (August 5, 2005 (Vol. 70, No. 150, Page 45417)).
- The BLM held four scoping meetings and circulated written requests for information and questions (August and September 2005).
- The BLM met with FWS and with other federal agencies, including the agencies that are official cooperators in the SEIS process. The BLM and the State also met with the Crow Tribe of Indians, and the Northern Cheyenne Tribe throughout 2005 and 2006.

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Acronyms and Abbreviations

Δdv	change in deciview	CFS	cubic feet per second
ACEC	Area of Critical Environmental Concern	CH ₄	methane
ACHP	Advisory Council on Historic Preservation	CO	carbon monoxide
ADT	average daily traffic	CO ₂	carbon dioxide
ADY	Alternative Development Year	COA	Condition of Approval
AOU	American Ornithologist's Union	CSU	Controlled Surface Use
ANC	acid neutralizing capacity	CWA	Clean Water Act
APD	Application for Permit to Drill	DEIS	Draft Environmental Impact Statement
APLIC	Avian Power Line Interaction Committee	DOE	U.S. Department of Energy
AQRV	Air Quality Related Value	DNRC	Department of Natural Resources and Conservation (Montana)
ARCO	Atlantic-Richfield Company	dv	deciview
ARM	Administrative Rules of Montana	EA	Environmental Assessment
Argonne	Argonne National Laboratory	EC	electrical conductivity
ARS	Agricultural Research Service	EIS	Environmental Impact Statement
AUMs	animal unit-months	EO	Executive Order
BACT	Best Available Control Technology	EPA	U.S. Environmental Protection Agency
BCF	billion cubic feet	ESA	Endangered Species Act
BER	Board of Environmental Review	FEIS	Final Environmental Impact Statement
bgs	below ground surface	FEMA	Federal Emergency Management Agency
BIA	Bureau of Indian Affairs	FERC	Federal Energy Regulatory Commission
BLM	U.S. Bureau of Land Management	FLM	Federal land managers
BMP	Best Management Practice	FLPMA	Federal Land Policy and Management Act
BTU	British thermal unit	FR	Federal Register
CAA	Clean Air Act	FWS	Fish and Wildlife Service (USDI)
CBNG	coal bed natural gas	FY	fiscal year
CEQ	Council on Environmental Quality	gpm	gallons per minute
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	GPO	Government Printing Office
CFR	Code of Federal Regulations		

ACRONYMS AND ABBREVIATIONS

GTI	Gas Technology Institute	MSO IM	Montana State Office Instruction Memorandum
HAP	hazardous air pollutants	MT-BER	Montana Board of Environmental Review
HCP	Habitat Conservation Plan	MTDEQ-AWM	Montana DEQ-Air & Waste Management Bureau
HUD	U.S. Department of Housing and Urban Development	MT-GAP	Montana Gap Analysis Project
H ₂ S	hydrogen sulfide	MOU	Memorandum of Understanding
ICC	Interstate Commerce Commission	MYBP	Millions of Years Before Present
ITA	Indian Trust Assets	NAAQS	National Ambient Air Quality Standards
kW	kilowatt	NEPA	National Environmental Policy Act
LGST	local government severance taxes	NHPA	National Historic Preservation Act
LRPL	Least Restrictive Proposed Limit	NO ₂	nitrogen dioxide
MAAQS	Montana Ambient Air Quality Standards	NO _x	oxides of nitrogen
MBMG	Montana Bureau of Mines & Geology	NOA	Notice of Availability
MBOGC	Montana Board of Oil & Gas Conservation	NOI	Notice of Intent
MBTA	Migratory Bird Treaty Act	NPDES	National Pollutant Discharge Elimination System
MCA	Montana Code Annotated	NPS	National Park Service (USDI)
MCF	thousand cubic feet	NRCS	Natural Resources Conservation Service (USDA)
MDA	Montana Department of Agriculture	NRHP	National Register of Historic Places
MDEQ	Montana Department of Environmental Quality	NRIS	Natural Resource Information System (Montana)
MDT	Montana Department of Transportation	NSO	no surface occupancy
MEPA	Montana Environmental Policy Act	NTE	Not to exceed
MFWP	Montana Fish, Wildlife, and Parks	NWP	Nationwide 404 Permit
mg/l	milligrams per liter	NWR	National Wildlife Refuge
MGWPCS	Montana Groundwater Pollution Control System	OF	Open File (Report)
MMB	Minerals Management Bureau	OSHA	Occupational Safety and Health Administration
MNHP	Montana Natural Heritage Program	PM ₁₀	particulate matter less than 10 microns in diameter (inhalable particulate matter)
MPDES	Montana Pollutant Discharge Elimination System	PM _{2.5}	particulate matter less than 2.5 microns in diameter (fine particulate matter)
MOA	Memorandum of Agreement		
MRPL	Most Restrictive Proposed Limit		

ACRONYMS AND ABBREVIATIONS

POD	Plan of Development	TCP	traditional cultural property
ppm	parts per million	TDS	total dissolved solids
PRISM	Parameter-elevation Regressions on Independent Slopes Model	TLMD	Trust Land Management Division
PSD	Prevention of Significant Deterioration	TMDL	total maximum daily load
psi	pounds per square inch	TOC	total organic carbon
psig	pounds per square inch gauge	$\mu\text{eq/l}$	microequivalents per liter
RCRA	Resource Conservation and Recovery Act of 1976	$\mu\text{g/m}^3$	micrograms per cubic meter
RFFA	Reasonably Foreseeable Future Actions	$\mu\text{S/cm}$	micro-Siemens per centimeter
RFD	Reasonably Foreseeable Development	UIC	underground injection control
RMP	Resource Management Plan	U.S.	United States
RMU	Regional Monitoring Unit	USBR	Bureau of Reclamation (USDI)
ROD	Record of Decision	U.S.C.	United States Code
ROW	right-of-way	USACE	U.S. Army Corp of Engineers
SAR	Sodium Adsorption Ratio	USDA	U.S. Department of Agriculture
SCMA	Surface Coal Mining Act of 1977	USDC	U.S. Department of Commerce
SDWA	Safe Drinking Water Act	USDI	U.S. Department of the Interior
SEIS	Supplemental Environmental Impact Statement	USFS	U.S. Forest Service (USDA)
SHPO	State Historic Preservation Office	USGS	U.S. Geological Survey (USDI)
SIP	State Implementation Plan (Montana)	VOC	volatile organic compounds
SMA	Special Management Area	VMT	vehicle miles traveled
SOC	Species of Concern	VRM	visual resource management
SN	Sunday Notice	WAAQS	Wyoming Ambient Air Quality Standards
SO ₂	sulfur dioxide	WET	whole effluent toxicity
SR	State Road (when followed immediately by the State Road number)	WMA	Wildlife Management Area
SWQATR	Surface Water Quality Analysis Technical Report	WMP	Water Management Plan
T&E	Threatened and Endangered	WMPP	Wildlife Monitoring and Protection Plan
TAC	Technical Advisory Committee	WQS	water quality standards
TCF	trillion cubic feet	WRTR	Water Resources Technical Report
		WSA	Wilderness Study Area
		WYDEQ	Wyoming Department of Environmental Quality