



U.S. Department of the Interior  
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**Volume II: Final Resource Management Plan Amendments/Environmental  
Impact Statement Wyoming Pipeline Corridor Initiative Appendices  
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U.S. Department of the Interior

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## **APPENDIX A**

### **Consultation and Coordination**



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# INTRODUCTION

Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA) require that federal agencies provide meaningful opportunities to the public and stakeholders to provide input and identify their concerns during an environmental impact statement (EIS) process. Federal laws such as the Endangered Species Act, the Clean Water Act, and the National Historic Preservation Act of 1966, as amended, mandate public involvement and consultation with agencies or federally recognized tribal governments. This appendix provides information on the consultation and coordination that occurred during the NEPA process for the Wyoming Pipeline Corridor Initiative (WPCI) EIS.

## AGENCY CONSULTATION

CEQ regulations implementing NEPA allow the lead agency to invite tribal, state, and local governments, as well as federal agencies, to serve as cooperating agencies during the NEPA process. To serve as a cooperating agency, the potential agency or government must have either jurisdiction by law or special expertise relevant to the environmental analysis. State agencies are cooperators under the memorandum of agreement between the Bureau of Land Management (BLM) and State of Wyoming. Agencies not listed below may later become cooperating agencies if they are found to have jurisdiction by law or special expertise. The following agencies accepted the invitation to be cooperators:

- Big Horn Commissioners
- Campbell County Conservation District
- Clear Creek Conservation District
- Converse County Commissioners
- Fremont County Commissioners
- Hot Springs County Commissioners
- Johnson County Commissioners
- Lincoln County Commissioners
- Lower Wind River Conservation District
- Meeteetse Conservation District
- Park County Commissioners
- Powder River Conservation District
- Saratoga-Encampment-Rawlins Conservation District
- State parks
- Sublette County Commissioners
- Sublette County Conservation District
- Sweetwater County Commissioners
- Washakie County Commissioners
- Wyoming Game and Fish Department
- Wyoming Oil and Gas Commission
- Wyoming Office of State Lands and Investments

## PUBLIC INVOLVEMENT

### Scoping Period

The formal public scoping process for the WPCI began on November 15, 2019, with the publication of the notice of intent in the *Federal Register*. The notice of intent initiated the public scoping process and served to notify the public of the BLM's intent to prepare an EIS. The BLM also issued media releases and emails that announced the public scoping period to the mailing list. The mailing list was developed from BLM's mailing list, tribal contacts, and other cooperating agencies. The public comment period concluded on December 27, 2019. Cooperating agency scoping meetings were held at 2 p.m. Mountain Standard Time in Cheyenne, Casper, Thermopolis, and Rock Springs, Wyoming, on December 9, 10, 11, and 12, 2019, respectively. Formal public scoping meetings followed at 4:00 p.m. Mountain Standard Time. The public scoping meetings provided information on the WPCI and gave members of the public and agency personnel the opportunity to ask questions or make comments. The public scoping meetings

were open-house forums; representatives from the BLM, the State of Wyoming, and SWCA Environmental Consultants, the third-party NEPA contractor, were available during the public scoping meetings for questions. Meeting attendees were encouraged to review materials and maps and ask questions. The BLM developed several posters that were on display throughout the room; these showed an overview of the WPCI, the WPCI schedule, methods for providing comments, and several overview maps.

Members of the public, tribes, cooperators, and other agencies had several methods for providing comments during the scoping period:

- Comments could be handwritten on comment forms at the scoping meeting. Comment forms were provided to all meeting attendees and were also available throughout the meeting room so attendees could write and submit comments during the meeting.
- Electronic submissions were received via the BLM's ePlanning website: [go.usa.gov/xpCMr](https://go.usa.gov/xpCMr).

The BLM received a total of 33 submissions from members of the public and the cooperating agencies during the scoping period. In all, 283 unique comments were identified from all 33 submissions. Issue statements were developed from similar comments. All comments were given equal consideration, regardless of method of submittal. For more information on the scoping comments and the scoping analysis process, refer to the January 2020 *Scoping Summary Report, Wyoming Pipeline Corridor Initiative Project Draft Environmental Impact Statement*, available on the BLM's E-Planning website at [https://eplanning.blm.gov/public\\_projects/lup/1502028/20012041/250016414/Final\\_WPCI\\_Scoping\\_Summary\\_Report.pdf](https://eplanning.blm.gov/public_projects/lup/1502028/20012041/250016414/Final_WPCI_Scoping_Summary_Report.pdf).

## Draft Public Comment Period

The Notice of Availability for the draft EIS was published in the *Federal Register* on April 17, 2020. The Notice of Availability serves as the official public announcement of the release of the draft EIS and initiated the 90-day public comment period, which concluded on July 16, 2020. The BLM issued a press release on May 13, 2020, to notify the cooperators, tribes, other agencies and the public of two upcoming virtual public meetings regarding the draft EIS, and a dedicated website was created to allow participants to register for the virtual meetings (<https://www.swcavirtualpublicinvolvement.com/wyoming-pipeline-corridor-initiative-rmp/eis>). The press release also included information about the WPCI and provided guidance on how to comment on the draft EIS.

On May 18, 2020, the BLM sent an email to federal and state agencies, tribes, interested parties, those who requested to be placed on the WPCI mailing list, those who submitted scoping comments, and cooperating agencies. The email provided notification of the virtual public meetings, a registration link to sign up for the virtual public meeting, and the dates of the public comment period for the WPCI.

The BLM held two virtual public meetings on May 28, 2020, one from 11:00 a.m. to 1:00 p.m. Mountain Daylight Time and the other from 5:00 p.m. to 7:00 p.m. Mountain Daylight Time. The format of the virtual public meetings included a short presentation followed by a question and answer (Q&A) session. The morning meeting had 33 attendees, and the evening meeting had 24 attendees. Attendees included the BLM, the third-party contractor, cooperators, and members of the public. The BLM received a total of 38 questions from the public during the morning meeting and 12 questions from the public during the afternoon meeting. Several other questions and answers were provided by the BLM during the meetings, and those were also captured in the Q&A Report posted to the BLM's E-Planning website on June 5, 2020.

Members of the public, cooperating agencies, tribes, and other agencies had the option of submitting formal comments on the draft EIS to the BLM through the agency's E-Planning website (<https://eplanning.blm.gov/eplanning-ui/project/1502028/510>) or directly by emailing BLM Project Manager Heather Schultz at

HSchultz@blm.gov. The BLM Wyoming State Office received 29 public comment submissions from members of the public; federal, state, and local agencies; organizations; businesses; and cooperating agencies during the public comment period. SWCA identified 540 individual comments within the public comment letters. The Public Comment Summary Report is included as Appendix K of the final EIS.

## TRIBAL AND SECTION 106 CONSULTATION

### Advisory Council on Historic Preservation

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. The BLM has a national programmatic agreement with the ACHP and the National Conference of State Historic Preservation Officers regarding the manner in which the BLM will meet its responsibilities under the NHPA. Section 5 of the national programmatic agreement lists thresholds for ACHP notification. The BLM has determined that this undertaking does not meet any of those thresholds.

### Tribal Consultation

The NHPA requirements for tribal and Section 106 consultation are in addition to and independent of the opportunity for qualified entities to cooperate under the provisions of NEPA. Table A-1 summarizes the consultation requests and other correspondence the BLM sent to the Tribes.

**Table A-1. Summary of BLM Correspondence and Consultation Requests Sent to Tribes**

Date	Type	Summary
8/20/2019	Letter	Cooperating agency letter to all tribes
12/6/2019	Email	Invitation to all pertinent tribes to cooperating agency Meetings and Public Meetings
12/10/2019	Letter	Invitation for government-to-government consultation
1/29/2020	Email	Invitation to all pertinent tribes to alternatives development workshop
2/4/2020	Email	Update on WPCI alternatives development workshop with call-in information to all tribes
4/17/2020	Email	Press release on release of draft EIS to all tribes
5/18/2020	Email	Invitation to all pertinent tribes to virtual public meetings

Letters to initiate tribal consultation were sent to the tribes listed below on December 10, 2019. The letters notified the tribes of the WPCI and requested government-to-government consultation between the BLM and the tribes. To date, only the Northern Cheyenne Tribe, Comanche Nation, Shoshone Bannock, Three Affiliated Tribes, and Northern Arapaho have responded.

- Blackfeet Nation
- Cheyenne and Arapaho Tribes
- Cheyenne River Sioux Tribe
- Chippewa Cree Tribe of the Rocky Boy's Reservation
- Comanche Nation
- Crow Creek Sioux Tribe of the Crow Creek Reservation
- Crow Tribe of Indians
- Eastern Shoshone Tribe of the Wind River Reservation
- Fort Peck Assiniboine and Sioux Tribes
- Lower Brule Sioux Tribe

- Nez Perce Tribe
- Northern Arapaho Tribe
- Northern Cheyenne
- Oglala Sioux Tribe
- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribes of Fort Hall Reservation
- Sisseton Wahpeton Oyate of the Lake Traverse Reservation
- Spirit Lake Tribe
- Standing Rock Sioux Tribe
- Three Affiliated Tribes
- The Ute Tribe of the Uintah and Ouray Reservation
- Winnebago Tribe of Nebraska
- Yankton Sioux Tribe

## State Coordination

Federal undertakings may take place on lands under the jurisdiction of the state. In accordance with Section 101(b)(3) of the NHPA, the Wyoming SHPO is also responsible for advising and assisting federal agencies in carrying out their Section 106 responsibilities and for cooperating with agencies, local governments and organizations, and individuals to ensure that historic properties are considered at all levels of planning and development (36 CFR 800.2(c)(1)(i)).

The BLM is consulting with the Wyoming SHPO about the WPCI for Section 106 of the NHPA (see section 3.3.1) according to the State Protocol (BLM Wyoming State Director and State Historic Preservation Officer 2014). Initial formal notification regarding WPCI was sent from the BLM Wyoming State Office to SHPO on December 10, 2019 and the BLM requested SHPO's concurrence on the level of identification and with the determination of effects for this undertaking on September 28, 2020. Consultation is still ongoing.

## U.S. FISH AND WILDLIFE SERVICES CONSULTATION

The BLM is required to consult with the U.S. Fish and Wildlife Service (USFWS) to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat are near the proposed corridors. The USFWS was invited to be a cooperating agency and provide comments during scoping and on the draft resource management plan amendments/EIS. The BLM responded to scoping comments from the USFWS and is in coordination with the USFWS regarding this initiative. The BLM has worked with the USFWS to determine if any federally listed or proposed endangered or threatened species or their designated critical habitat would be affected by the proposed corridors. The BLM has prepared a biological assessment (BA) to meet federal requirements and agreements set forth between the BLM and USFWS. The BA addresses federally listed threatened and endangered, candidate, and proposed species and is prepared under the 1973 ESA section 7 regulations, in accordance with the 1998 procedures set forth by the USFWS. The BA identifies the nature and extent of adverse impacts, and to recommend mitigation measures that would avoid the habitat and/or species or that would reduce the potential impact to acceptable levels. As new applications to construct within the corridors are received, the BLM will conduct further, site-specific evaluations for those implementation-level projects in the designated corridors. Where necessary, the BLM will further consult with the USFWS at the site-specific level for activities authorized within the corridors where they may affect any threatened, endangered, candidate, or proposed species, or their designated critical habitats.



# LIST OF PREPARERS

Tables A-2 and A-3 identify BLM staff and consultants used in the preparation of the EIS.

**Table A-2. BLM Staff Used in the Preparation of this Environmental Impact Statement**

Name	Entity and Position	Role
Janelle Alleman	State Office Interdisciplinary Team (SO IDT)	Acting Branch Chief – Planning, Social, and Cultural
Thomas Bill	Field	
Kathy Boden	SO IDT	Cultural Resources and Tribal consultation
Brent Breithaupt	SO IDT	Paleontology
Keith Brown	SO IDT	Recreation
Bonni Bruce	Field	Rawlins Field Office (RFO) – Archeology
Health Cline	Field	RFO - Wildlife
Holly Elliot	Field	WRBBD – Project and Environmental Coordinator (P&EC)
Jennifer Fleuret	Core team	NEPA and Planning
Susan Foley	Field	RFO – P&EC
Merry Gamper	SO IDT	Minerals
Noelle Glines Bovio	SO IDT	Visuals, Special Designations, and Lands With Wilderness Characteristics
Mark Goertel	SO IDT	Rangeland
Amber Haverlock	Field	Buffalo Field Office (BFO) – Realty Specialist
Kenneth Henke	SO IDT	Weeds and Hazmat
Michael Hogan	SO IDT	Realty
Susan Hunter	Core team	Geographic Information System (GIS)
Sonja Hunt	Field	HDD Resource Advisor
Joshua Jackson	SO IDT	Forestry
Bradley Jost	SO IDT	Riparian
Chris Keefe	SO IDT	Threatened and & Endangered Species (T&E)
Kristen Lenhardt	Management	Public Affairs Officer
Douglas Linn	Field	PRO-AFM Minerals and Lands
Walter Loewen	SO IDT	P&EC
Darren Long	SO IDT	Wildlife – Greater Sage-Grouse
Philip Lowe	Core team	Solicitor
Jennifer Marzluf	SO IDT	Wildlife – Greater Sage-Grouse
Ryan McCammon	SO IDT	Air
Lauren McKeever	SO IDT	P&EC
Erik Norelius	SO IDT	Natural Resources Specialist Fluids
Timothy Novotny	RFO	Assistant Field Manager
Bradford Purdy	Core team	Public Affairs
Kellie Roadifer	Field	Pinedale Field Office
Michael Robinson	Field	Casper Field Office (CFO) – P&EC
Jennifer Schein Dobb	SO IDT	Economist
Heather Schultz	Core team	Project Manager
Michael Valle	Core team	Project Lead
George Varhalmi	SO IDT	Geologist
Jennifer Weber	Field	CFO Realty Specialist

Name	Entity and Position	Role
June Wendlandt	SO IDT	Wild Horses
Timothy Wilson	Management	Acting DSD Minerals and Lands
Janelle Wrigley	Field	RFO – Realty

**Table A-3 Consultant Staff Used in the Preparation of this Environmental Impact Statement**

Name	Role
<b>SWCA Environmental Consultants</b>	
Tom Hale	Project Manager
Amanda Nicodemus	Deputy Project Manager, Chapters 1 and 2, Greater Sage-Grouse
Chris Bockey	Visual
Laren Cyphers	Livestock Grazing, Transportation, and Special Designations; Cumulative Effects
Jeremy Eyre	Soils and Geology, Minerals
David Fetter	Physical Resources Lead
Kara Giblin	Biological Resources Lead; Vegetation and Wildlife and Fisheries
Janet Guinn	Senior NEPA Quality Assistance/Quality Control and Alternatives Development
James Gregory	Fire and Fuel Loads
Joanna Guest	Noise
Vanessa Hastings	Technical Editor
Kimberly Ip	Wild Horses
Laura Klewicki	Public Health and Safety and Hazardous Materials
Jason Kline	Fisheries
Georgia Knauss	Paleontological Resources
Melanie Medeiros	Cultural Resources
Haley Monahan	Water Quality
Naomi Ollie	Tribal Concerns and Cultural Resources
Matt Petersen	Senior NEPA Quality Assistance/Quality Control; Alternatives Development; Cumulative Effects
Ryan Rausch	Visual
Gretchen Semerad	Air Quality
Bryan Swindell	GIS Lead
Linda Tucker Burfitt	Lead Editor
Jennifer Wynn	Lands and Realty, Recreation
Debbi Smith	Formatting and Section 508 Accessibility
<b>BBC Research &amp; Consulting</b>	
Doug Jeavons	Socioeconomics and Environmental Justice
Michael Verdon	Socioeconomics and Environmental Justice

## **APPENDIX B**

### **Literature Cited**



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## **APPENDIX C**

### **Scoping Summary Report**





U.S. Department of the Interior  
Bureau of Land Management

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# Scoping Summary Report

Wyoming Pipeline Corridor Initiative Project  
Draft Environmental Impact Statement

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January 2020

## **PREPARING OFFICE**

U.S. Department of the Interior  
Bureau of Land Management  
Wyoming State Office



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# 1 INTRODUCTION

The Wyoming Pipeline Corridor Initiative Project (WPCI Project or project) is a proposal from the State of Wyoming to designate approximately 1,914 miles of pipeline corridors across private, state, and Bureau of Land Management (BLM)–managed lands throughout the central and western portions of the state that are essential to future production and distribution of oil and gas products viable to the state’s economy (Figure 1). Approximately 1,105 miles of the proposed corridors is located on BLM-managed lands in nine field offices: Buffalo, Casper, Cody, Kemmerer, Lander, Pinedale, Rawlins, Rock Springs, and Worland. The WPCI Project as proposed by the State of Wyoming would designate a statewide pipeline corridor network dedicated to pipelines and facilities associated with carbon capture, utilization, and storage (CCUS), and of pipelines and facilities associated with enhanced oil recovery (EOR). The project would not authorize any new pipelines or construction but would amend several BLM resource management plans (RMPs) across the state.

Consideration of the project is a federal action requiring compliance with the National Environmental Policy Act (NEPA) of 1969. To comply with the requirements of NEPA, an environmental impact statement (EIS) is being prepared to disclose the potential environmental impacts associated with the proposed project and to consider alternatives to the project. The BLM Wyoming State Office is the lead agency for the preparation of the EIS. The EIS will inform the public and agencies about the potential impacts the project could have on the human environment.

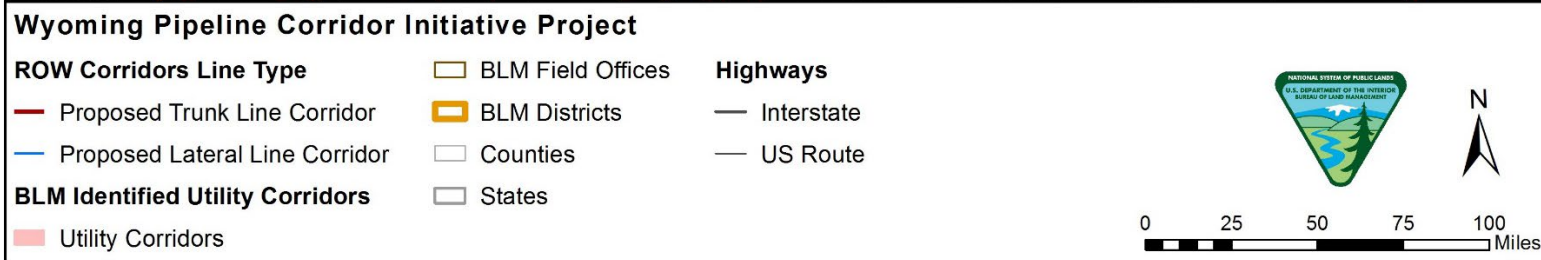
## 2 SCOPING PROCESS

The BLM follows the public involvement requirements according to the Council on Environmental Quality (CEQ) regulations set forth in 40 Code of Federal Regulations (CFR) 1501.7, which states “There should be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.” The scoping process was open to agencies, tribes, and the public to identify the range of issues to be addressed during the EIS process. The BLM solicited comments from relevant agencies, tribes, and the public. Additionally, the BLM held internal scoping meetings with resource specialists across the state to solicit feedback on potential resource issues. Comments from both the internal and public scoping meetings were organized and analyzed, and then issues that will be addressed in the EIS analysis were identified.

In addition to the identification of relevant issues, another key objective of the scoping process is to identify alternatives that should be analyzed in detail. Under CEQ regulations, the scope of an EIS consists also of alternatives that warrant consideration and detailed analysis, including the no action alternative, as well as mitigation measures and other reasonable courses of action (40 CFR 1508.25 (b)).

### 2.1 Publication of the Notice of Intent

The formal public scoping process for the project began on November 15, 2019, with the publication of the notice of intent (NOI) (Appendix A) in the *Federal Register*. The NOI initiated the public scoping process and served to notify the public of the BLM’s intent to prepare an EIS. The BLM also issued media releases and emails that announced the public scoping comment period to the project mailing list. The mailing list was developed from the BLM’s mailing list, tribal contacts, and other cooperating agencies. The public scoping comment period concluded on December 27, 2019. Although the formal comment period has ended, the BLM will, to the best of its ability, continue to consider all comments received. However, any future scoping comments received may not be formally published in a scoping report or other document.



### Figure 1. Project Overview

## 2.2 Scoping Meetings

Cooperating agency scoping meetings were held in Cheyenne, Casper, Thermopolis, and Rock Springs, Wyoming, on December 9, 10, 11, and 12, 2019, respectively, at 2:00 p.m. Mountain Time, and a formal public scoping meeting followed directly after at 4:00 p.m. Mountain Time.

For the cooperating agency meetings, the BLM provided a short presentation summarizing the WPCI project, schedule, and NEPA process and solicited feedback and questions from the cooperating agencies for consideration. Cooperating agencies were able to review all scoping meeting materials including maps and handouts.

The public scoping meetings were open-house forums that provided information on the Proposed Action and gave members of the public the opportunity to ask questions or make comments. Representatives from the BLM, the State of Wyoming, and the third-party NEPA contractor SWCA Environmental Consultants were available during the public scoping meetings for questions. Meeting attendees were encouraged to review materials and maps available and to ask questions.

The BLM developed several posters that were on display throughout the room; these showed an overview of the proposed project, the project schedule, methods for providing comments, and several overview maps. Scoping meeting materials are provided in Appendix B.

## 2.3 Opportunities for Public Comment

Members of the public, tribes, cooperators, and other agencies had several methods for providing comments during the public scoping comment period:

Comments could be handwritten on comment forms at the scoping meeting. Comment forms were provided to all meeting attendees and were also available throughout the meeting room so attendees could write and submit comments during the meeting.

Electronic submissions were received via the BLM's ePlanning website:  
[go.usa.gov/xpCMr](https://go.usa.gov/xpCMr)

## 3 COOPERATING AGENCIES

The CEQ's regulations implementing NEPA allow the lead agency to invite tribal, state, and local governments, as well as federal agencies, to serve as cooperating agencies during the NEPA process. To serve as a cooperating agency, the potential agency or government must have either jurisdiction by law or special expertise relevant to the environmental analysis.

State agencies are cooperators under the memorandum of agreement between the BLM and State of Wyoming. Agencies not listed below may later become cooperating agencies if they are found to have jurisdiction by law or special expertise.

Agencies invited to be cooperators include the following:

- Albany County Commissioners
- Big Horn County Commissioners
- Bureau of Indian Affairs
- Bureau of Reclamation
- Campbell County Commissioners
- Campbell County Conservation District
- Carbon County Commissioners
- Clear Creek Conservation District
- Coalition of Governments
- Converse County Commissioners

- Department of Revenue
- Fremont County Commissioners
- Hot Springs Conservation District
- Hot Springs County Commissioners
- Johnson County Commissioners
- Laramie County Commissioners
- Lincoln Conservation District
- Lincoln County Commissioners
- Little Snake River Conservation District
- Lower Wind River Conservation District
- Medicine Bow Conservation District
- Meeteetse Conservation District
- National Park Service
- Natrona County Commissioners
- Natrona County Conservation District
- Office of Surface Mining Reclamation and Enforcement
- Office of the Governor of Wyoming
- Park County Commissioners
- Popo Agie Conservation District
- Powder River Conservation District
- Powell-Clarks Fork Conservation District
- Saratoga-Encampment-Rawlins Conservation District
- Shoshone Conservation District
- South Big Horn Conservation District
- State of Wyoming
- Sublette County Commissioners
- Sublette County Conservation District
- Sweetwater County Commissioners
- Sweetwater County Conservation District
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Geological Survey
- Uinta County Commissioners
- Washakie County Commissioners
- Washakie County Conservation District

## 4 TRIBAL CONSULTATION

The requirements for consultation under the National Historic Preservation Act are in addition to and independent of the opportunity for qualified entities to cooperate under the provisions of NEPA. Letters to initiate tribal consultation were sent to the tribes listed below on December 10, 2019. The letters notified the tribes of the proposed project and requested government-to-government consultation between the BLM and the tribes.

- Blackfeet Nation
- Cheyenne and Arapaho Tribes of Oklahoma
- Cheyenne River Sioux Tribe
- Chippewa Cree Tribe of the Rocky Boy's Reservation
- Comanche Nation
- Crow Creek Sioux Tribe of the Crow Creek Reservation
- Crow Tribe of Indians
- Eastern Shoshone Tribe of the Wind River Reservation
- Fort Peck Assiniboine and Sioux Tribes
- Lower Brule Sioux Tribe
- Nez Perce Tribe
- Northern Arapaho Tribe
- Northern Cheyenne
- Oglala Sioux Tribe
- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribes of the Fort Hail Reservation

- Sisseton Wahpeton Oyate of the Lake Traverse Reservation
- Spirit Lake Tribe
- Standing Rock Sioux Tribe
- Three Affiliated Tribes
- The Ute Tribe of the Uintah and Ouray Reservation
- Winnebago Tribe of Nebraska
- Yankton Sioux Tribe

## 5 SCOPING COMMENTS

This section summarizes the individual comments received during the formal public scoping comment period and during the BLM's internal scoping process. In accordance with CEQ NEPA regulations (40 CFR 1501.7), it is through the scoping process that the lead agency will

- determine the scope and significant issues to be analyzed in depth in the EIS;
- identify and eliminate from detailed study the issues that are not substantive, narrowing the discussion of such issues to a brief presentation in the EIS about why the project effects related to these particular issues would not have significant effects on the human environment; and
- identify a range of reasonable alternatives that address the issues identified during scoping.

### 5.1 Public Scoping

#### 5.1.1 Summary of Submissions

The BLM Wyoming State Office received 33 submissions from members of the public, federal agencies, state agencies, organizations, businesses, and cooperating agencies during the public scoping comment period (Table 1). Comments consisted of three handwritten comments submitted during the public scoping meetings and 30 submissions emailed directly to the BLM Project Manager, Heather Schwartz, and/or submitted electronically via the BLM's ePlanning website. All comments were given equal consideration, regardless of method of submittal.

**Table 1. Comment Submissions**

Submission Number	Date Received	Submission Type	Name
001	12/11/2019	Cooperating agency	Hot Springs County
002	12/11/2019	Individual	Carol Dockery
003	12/12/2019	Individual	David Allison
004	11/18/2019	Individual	Jean Public
005	12/19/2019	Cooperating agency	Campbell County Board of Commissioners
006	12/17/2019	Cooperating agency	Board of Carbon County Commissioners
007	12/9/2019	Cooperating agency	Hot Springs County
008	12/3/2019	Federal agency	National Park Service National Trails
009	12/5/2019	Business	Occidental Petroleum Corporation
010	12/20/2019	Organization	Petroleum Association of Wyoming
011	12/20/2019	Business	Power Company of Wyoming LLC/TransWest Express LLC

Submission Number	Date Received	Submission Type	Name
012	12/16/2019	State agency	Wyoming Department of Environmental Quality, Abandoned Mine Land Program
013	12/27/2019	Cooperating agency	Wyoming County Commissioners Association
014	12/18/2019	Organization	Wyoming Pipeline Authority
015	12/19/2019	State agency	Wyoming Department of Agriculture
016	12/18/2019	State agency	Wyoming Department of Environmental Quality, Air Quality Division
017	12/26/2019	Cooperating agency	Converse County Board of Commissioners
018	12/24/2019	Organization	Enhanced Oil Recovery Institute
019	12/24/2019	Business	Genesis Alkali
020	12/23/2019	Cooperating agency	Hot Springs Conservation District
021	12/26/2019	Cooperating agency	Hot Springs County Natural Resources Planning Committee
022	12/27/2019	Cooperating agency	Saratoga-Encampment-Rawlins Conservation District
023	12/23/2019	Federal Agency	U.S. Fish and Wildlife Service
024	12/27/2019	Cooperating agency	Washakie County Commissioners
025	12/23/2019	State agency	Wyoming Game and Fish Department
026	12/23/2019	Organization	Wyoming Farm Bureau
027	12/19/2019	Cooperating agency	Office of Governor Mark Gordon
028	12/20/2019	Organization	Western Watersheds Project
029	12/18/2019	Cooperating agency	Sweetwater County Board of County Commissioners
030	12/26/2019	Federal agency	U.S. Environmental Protection Agency
031	12/27/2019	Cooperating agency	Washakie County Conservation District
032	12/26/2019	Organization	Wyoming Outdoor Council and Greater Yellowstone Coalition
033	12/27/2019	Organization	Continental Divide Trail Coalition

### 5.1.2 Methodology and Comment Coding

Once public comment submissions were received, individual comments were identified with a unique numeric identifier and coded according to an initial list of categories (Table 2). If a specific comment pertained to more than one category, that comment was assigned to multiple categories. In total, 283 unique comments were identified from all 33 submissions. Similar comments coded to each category were aggregated and used to develop category questions (Section 5.1.3). Each group of comments contains key categories and a brief summary, identifies all comments used to develop the question, and lists a few representative comments. The selected comments are not all inclusive but are intended to provide a representative example that is typical of others in the category and to illustrate the common themes and concerns summarized. A complete record of all public comments is available in the project's administrative record.

**Table 2. Public Comment Coding Categories**

Initial Coding Category	Coding Counts	Percentage of Total
Add to mailing list	4	1%
Air quality	13	3%
Alternatives	32	7%
Avoidance, minimization, and mitigation	60	14%
Cultural resources	1	0%
Cumulative effects	14	3%
Environmental justice	3	1%
General ecological resources	1	0%
Geology and minerals	11	2%
Groundwater	9	2%
Hazardous and solid waste management	3	1%
Land use and access	23	5%
Native American concerns	3	1%
Negative comment (non-substantive)	2	0%
NEPA analysis and related processes	29	7%
Out of scope	8	2%
Positive comment (non-substantive)	20	5%
Proposed Action	27	6%
Public health and safety	6	1%
Purpose and need	5	1%
Range and grazing	12	3%
Recreation	18	4%
Request for additional information	6	1%
Socioeconomics	22	5%
Soils	4	1%
Special-status species	29	7%
Surface water	24	5%
Transportation	5	1%
Vegetation	14	3%
Visual resources	6	1%
Wildlife, general	26	6%

### **5.1.3 Public Scoping Comments**

#### **Air Quality**

##### **AIR 1: Would Storage of Large Quantities of CO<sub>2</sub> in the Pipeline Corridor affect Wyoming's GHG Emissions?**

(028-009, 030-018, 028-007, 028-008, 028-012, 030-016)

Commenters expressed concern about the scientific uncertainty of CO<sub>2</sub> capture benefits, like those associated with the proposed action. It was recommended that the BLM analyze the net emissions consequences of increased oil production from EOR, as well as the residual, non-captured coal plant emissions potentially enabled by the project. Representative comments follow:

“Because so much uncertainty exists as to whether the CO<sub>2</sub> pipelines for which the state wishes to see BLM amend nine RMPs would be net CO<sub>2</sub> contributors or net CO<sub>2</sub> negative, BLM's EIS must fully analyze an alternative that assesses the impacts of the possible net CO<sub>2</sub> outcomes and discuss how the impacts of a net CO<sub>2</sub> contributor outcome would be minimized, avoided, and mitigated.” (028-008)

“The EPA recommends that the BLM include a general description of the anticipated direct and indirect greenhouse gas (GHG) emissions and reductions associated with the CO<sub>2</sub> sequestration and enhanced recovery projects.” (030-018)

“However, current scientific literature assessing the GHG emission impacts of EOR finds mixed results, not the purely positive impact asserted in the WPCI Proposal. It is currently far from clear whether EOR is a net CO<sub>2</sub> contributor or whether it is net carbon negative, and the available research studies are difficult to compare because the GHG emission scenarios are set up differently within them. Furthermore, that determination rests in large part on whether the source of the CO<sub>2</sub> is anthropogenic (e.g., created by coal-fired power plants) or naturally occurring (already in the ground). The majority of EOR projects have used naturally occurring CO<sub>2</sub>, and absent a large increase in oil prices or some other kind of strong, reliable financial incentive, this seems likely to continue.<sup>6</sup> If this is the case for EOR projects associated with the WPCI project, it would push the WPCI project's downstream GHG and climate change impacts toward the net CO<sub>2</sub> contributor end of the spectrum. The WPCI Proposal does not specify whether anthropogenic or naturally occurring sources of CO<sub>2</sub> would be carried in this pipeline network, and instead merely identifies the locations of both. Whether an EOR project is net carbon negative or a net CO<sub>2</sub> contributor can also be influenced by how old a specific EOR project is. Research suggests that EOR projects are initially net carbon negative for their first few years but then become net CO<sub>2</sub> contributors if they continue.” (028-007)

##### **AIR 2: Would Emissions from Aboveground Facilities, Equipment, and Vehicles used during Pipeline Construction and Operation affect Air Quality, including Visibility?**

(032-015, 028-003, 028-004, 028-005, 028-017, 030-006)

Commenters recommended that the BLM consider the GHG emissions and exacerbation of climate change that could result from the construction and operation of the pipeline. Commenters also suggested the BLM quantify and discuss the significance of the direct, indirect, and cumulative GHGs generated by the Proposed Action. Representative comments follow:

“BLM must consider recent climate science as well as the GHG emissions that would result from the construction and operation of the CO<sub>2</sub>, oil, and natural gas pipeline network for which it is considering amending nine RMPs. BLM must also consider the



upstream, downstream, and cumulative GHG and climate change impacts from the increased oil production that is a purpose of the WPCI Proposal, increased natural gas production that would result from increased access to markets resulting from the Project's natural gas pipelines, as well as cumulative impacts from past, present, and reasonably foreseeable projects." (028-004)

"Based on our current understanding of the proposed Wyoming Pipeline Corridor Initiative (WPCI) project and the area, the EPA has identified the following key topics that we recommend be analyzed and discussed in the Draft EIS so that potential impacts to public health and the environment can be fully understood: (3) air resources; (4) GHG emissions and climate change." (030-006)

## **Alternatives**

### **ALT 1: Alternatives to the Proposed Action should include other Source and Sink Locations.**

(005-001, 005-002, 017-002)

Commenters suggested that additional CO<sub>2</sub> sources and oil fields that could benefit from EOR should be included in the analysis. Representative comments follow:

"Additionally, there are significant CO<sub>2</sub> sources such as the Dry Fork Station and the Wyodak Campus, which could be analyzed as the origin of supply source points in the pipeline network recognizing that private surface easements would need to be obtained by a third party before construction of pipelines could occur. The Dave Johnson and Laramie River power plants should also be considered as a major CO<sub>2</sub> supply source in this study." (005-002)

"While we recognize that Converse County has a significant portion of private surface, there could be some tangible benefits of getting CO<sub>2</sub> to the county through this infrastructure proposal by promoting opportunities to develop additional lateral pipelines for EOR to multiple existing oil field complexes." (017-002)

### **ALT 2: Alternatives to the Proposed Action should include Flexibility in Use of Designated Corridors.**

(010-004, 013-003, 022-015, 024-003, 026-003, 030-002)

Commenters suggested that corridors should be flexible in the types of uses permitted in the corridors. Representative comments follow:

"The RMPs must provide flexibility to allow use of the pipeline corridors for various purposes consistent with BLM's Federal Land Policy and Management Act (FLPMA) multiple use mandate; and the RMPs must retain flexibility to resolve resource conflicts, in the context of valid existing rights on a case by case basis. In summary, flexibility in the use of pipeline corridors, the ability to resolve potential resource conflicts with respect to pipeline corridors, and the inclusion of other key resource issues in the RMP amendments are of significant concern to our members and, as such, BLM needs to ensure they are clearly provided for in the EIS and potential RMP amendments." (010-004)

"As the WPCI moves forward, the County would like the Bureau of Land Management and State of Wyoming to also plan for future gas & crude pipelines to be included in the corridor. Consideration of the possibility to allow broadband infrastructure could be an

added benefit to help connect rural Wyoming. Finally, it will be important to explore any overlooked opportunities for potential future lateral pipelines to tie-in to the main trunk lines.” (024-003)

“Broadband infrastructure is an important topic in Wyoming and WyFB likes that the proposal references broadband infrastructure as a use that could be located in the corridor in the future. WyFB requests that further details and analysis regarding future siting telecommunication infrastructure placement in the proposed corridor. As technology advances, reliable broadband will become more and more critical to WyFB members.” (030-002)

### **ALT 3: Alternatives to the Proposed Action should avoid Known Environmental Conflicts.**

(006-003, 011-006, 019-003, 019-004, 019-005, 019-006, 020-008, 025-001, 028-026, 032-007)

Commenters suggested that alternatives should be developed that avoid known environmental conflicts such as scenic and recreational areas, important habitats for wildlife, and existing rights. Representative comments follow:

“The BLM must consider the factors enumerated at 43 C.F.R. § 2802.11(b) along with other relevant factors and should consider identifying areas where the BLM will not allow corridors for environmental, safety, or other reasons in accordance with 43 C.F.R. § 2802.11(d).” (032-007)

“When considering the proposed pipeline corridor, we encourage evaluating alternative routes with existing line development and corridors. Although the current proposed trunk corridor (6) is the location of an existing product pipeline, there is no established corridor. Corridor 6 is proximate to significant scenic and recreational areas including the Seminoe to Alcova Scenic Byway. Alternatives to the proposed action should evaluate other routes in Carbon County that have existing corridor development to lessen potential degradation to scenic & recreational areas, habitat fragmentation and disturbance. Examples of possible alternative routes include two on trunk corridor 6—running along an existing corridor south of Casper towards Hanna or Medicine Bow and along US 30 and I-80 that would go to Sinclair; or headed west from Casper, North of Alcova, then South on US 789 towards Bairoil.” (006-003)

“Given the extensive conflicts with existing, authorized, and planned infrastructure and current right-of-way grants, PCW and Trans West recommend that BLM develop an alternative route for the WPCI corridors currently proposed for south of Rawlins. Due to the congestion in the I-80 utility corridor, which PCW and Trans West believe is at or near capacity between Sinclair and Rawlins, we encourage the BLM to develop alternative WPCI corridors, as well as any new RMP utility corridors, north of Sinclair and Rawlins.” (011-006)

“Many of the proposed pipeline corridors are within biologically important big game habitats; are within sage-grouse core population areas; or are within 0.6 miles and 0.25 miles of numerous core area and non-core area leks, respectively. Although these proposed corridors generally follow existing pipelines and corridors, we recommend developing an alternative that analyzes minor changes to the proposed routes where they bisect ‘vital’ habitats (per the Wyoming Game and Fish Commission Mitigation Policy 20 16) in order to avoid potential loss of habitat function.” (025-001)

**ALT 4: Alternatives to the Proposed Action should be Located on Federal Lands and Collocated.**

(004-003, 017-004, 022-011, 022-023, 022-033, 025-002, 029-001, 029-003, 029-009, 030-008, 032-004)

Commenters suggested that alternatives should be located on federal lands to the extent possible, collocated with existing corridors to minimize impacts, and collocated with existing rights-of-way to reduce disturbance. Representative comments follow:

“The SER CD fully supports the statement in the Purpose and Need, ‘Identifying integrated corridors across federal lands under the direction of the various field offices in Wyoming would lead to greater consistency among the individual field offices and would comprehensively address the desire to manage the location of future pipeline construction and operation activities across field offices, thereby minimizing the aggregate impact of future projects on federal lands in Wyoming.’ The SER CD believes it is imperative that integrated corridors be collocated with existing statewide utility corridors (see Map 1 attachment) or collocated with Region 4 Section 368 Energy Corridors (see Map 4 attachment). This will not only minimize the aggregate impact of future projects on federal lands, but on private and state lands too. These exiting corridors have roads that could be used for more purposes and reduce the need for additional habitat fragmentation, expanded reclamation challenges, and reduce additional noxious weed infestation opportunities.” (022-011)

“Additionally, there are numerous utility corridors already designated in RMPs. Some of these corridors do not line up with field office or other boundaries making it unlikely they will be utilized in the future. We recommend the BLM consider an alternative that looks at all intra-state utility corridors on BLM lands to reduce the number of corridors on the landscape, ensure they connect to other corridors, and consolidate pipelines and other linear infrastructure.” (025-002)

“Unless the BLM identifies resource concerns specific to CO<sub>2</sub> pipelines, we recommend collocating these CO<sub>2</sub> corridors with existing ROWs wherever possible to minimize the footprint of disturbance and associated impacts.” (030-008)

**ALT 5: The Impact Analysis should include an Alternative where Uncertainties Associated with Air Quality are Fully Analyzed.**

(028-006, 028-008)

Two comments suggested that the impact analysis include an alternative that addresses the uncertainties related to air quality. Both comments follow:

“The EIS Must Consider a Range of Reasonable Alternatives, Including an Alternative Studying the Significant Uncertainties Associated with the WPCI Proposal’s GHG Emissions and Net CO<sub>2</sub> Outcomes.” (028-006)

“Because so much uncertainty exists as to whether the CO<sub>2</sub> pipelines for which the state wishes to see BLM amend nine RMPs would be net CO<sub>2</sub> contributors or net CO<sub>2</sub> negative, BLM’s EIS must fully analyze an alternative that assesses the impacts of the possible net CO<sub>2</sub> outcomes and discuss how the impacts of a net CO<sub>2</sub> contributor outcome would be minimized, avoided, and mitigated.” (028-008)

## Avoidance, Minimization, and Mitigation

### MIT 1: Areas that Should be Avoided

(032-025, 033-007)

Commenters provided areas that should be avoided by the Proposed Action and alternatives. A representative comment follows:

“To this end, CDTC seeks to minimize the impacts of utility developments and their associated facilities on the Trail’s resources. To do so, CDTC encourages avoiding the following resources whenever possible in sighting utility corridors and facilities near the Trail:

1. Wilderness areas and their adjacent buffer zones;
2. BLM NLCS and WSA areas, USFS semi-primitive non-motorized areas and NPS natural areas;
3. Areas of significant cultural, historic and natural value;
4. The Foreground zone as determined by the Scenery Management System for all Trails, and as seen from prominent viewpoints and key scenic features such as rock outcrops with large expansive vistas, or open landscape, sub alpine, alpine areas where the landscape is uninterrupted by man’s influence or development;
5. Wetlands and other important natural features; and
6. Any other special area where important Trail values, such as a sense of remoteness, would be compromised.” (033-007)

### MIT 2: Suggested Coordination

(012-002, 012-003, 015-004, 019-004, 019-007, 022-019, 022-021, 022-029, 031-004)

Commenters provided situations where operators should coordinate with other entities to minimize impacts. Representative comments follow:

“We would request that the AML Program be contacted when such planning commences so that we can provide the best available data on known underground mine workings and provide input into either avoidance or mitigative strategies.” (012-003)

“We strongly encourage BLM staff and pipeline development companies to work closely and consistently with all affected grazing permittees and agriculture producers to learn of their concerns and recommendations regarding these proposed corridors. Agriculture producers are intimately familiar with areas affected by this proposal and they possess irreplaceable long-term, on-the-ground knowledge. We highly recommend that during the planning process developers and BLM officials seek and address the concerns and recommendations of these stewards of habitat, forage and rangeland health.” (015-004)

“WCCD encourages the BLM to work closely with pipeline development companies to ensure the private landowner’s concerns and interests are met on an individual basis including any road construction, reclamation, and pipeline placement.” (031-004)

### MIT 3: Minimize Disturbance where Possible

(013-002, 032-011)

Commenters suggested that corridors should be collocated to the extent possible and that pipelines and associated facilities should be placed in such a manner to minimize disturbance. Both comments follow:

“Ensure pipelines and associated facilities are collocated with existing corridors and other disturbances to the extent possible. WCCA appreciates that the majority of the proposed pipeline on public lands will be sited in existing designated corridors or adjacent to existing pipelines. Collocating pipelines will reduce impacts to natural resources, wildlife and wildlife habitat and ensure that public lands remain open to multiple uses. BLM and the State should seek to collocate all pipelines with designated corridors or existing pipelines where practicable. WCCA encourages BLM and the State to consider siting construction rights-of-way, temporary work spaces and associated aboveground facilities on lands that have already been disturbed or to collocate these activities with other similar disturbances. This would also serve to reduce impacts to public lands, natural resources and multiple uses.” (013-002)

“BLM should ensure that any surface disturbing infrastructure is sited appropriately to avoid adverse impacts to other resources, particularly infrastructure that will require ongoing maintenance.” (032-011)

#### **MIT 4: Reclamation Practices**

(015-008, 022-006, 022-031, 028-009, 029-005, 032-010)

Commenters suggested that reclamation of disturbed areas be required, and monitoring should be enforced to ensure disturbed areas are returned to pre-disturbance quality. Representative comments follow:

“The WDA Insists the BLM oversee and ensure successful/performance based reclamation and mitigation In the proposed corridor, including any new/temporary roads and disturbed areas. This also Includes monitoring and eradicating Invasive and noxious weeds until desired vegetation Is established.” (015-008)

“Appendix E Upland Erosion Control, Revegetation, and Maintenance Plan and Appendix F Upland Restoration and Revegetation Plan. The SER CD requests ‘Mulch’ procedures be included on all disturbed areas for ‘Installation’, ‘Restoration’, and ‘Revegetation’. With the lack of topsoil in our district, mulch is necessary to have any chance at reclamation success on flat or sloped areas. Appendix E Upland Erosion Control, Revegetation, and Maintenance Plan and Appendix F Upland Restoration and Revegetation Plan. The ‘Seed Mixes’ section on page 80 states, ‘Additionally, agricultural based private lands will be reseeded to the specifications of applicable landowners. All seed mixes on private lands will be consistent with adjacent undisturbed lands and approved by applicable landowners.’ The SER CD requests modifying the statement to say ‘Additionally, private lands will be reseeded to the specifications of applicable landowners. Whether or not the lands are considered agricultural or native, the expertise and goals of the private landowner should be honored. Many times private landowners top priority is soil stability for native private lands and this is not always consistent with planting seeds consistent with adjacent undisturbed lands.’” (022-031)

#### **MIT 5: Air Quality**

(030-017, 032-015)

Comments follow:

“Dust suppression from disturbed areas is a particularly critical mitigation consideration in the arid west. The EPA recommends the Draft EIS include a commitment to addressing dust control as site-specific corridor projects are evaluated. We suggest such plans include, but not be limited to; dust suppression methods and the level of required or

anticipated control, inspection schedules, and documentation and accountability processes. Given the arid climate of the area and the associated challenges with reclamation, the EPA recommends reducing surface disturbance to effectively reduce fugitive dust.” (030-017)

“The BLM should evaluate and mitigate reasonably foreseeable GHG emissions.” (032-015)

## **MIT 6: Environmental Justice**

(030-019)

Comment follows:

“...Mitigation measures or alternatives to avoid or reduce any disproportionate adverse impacts. The EPA recommends involving any affected communities in developing the measures and in identifying alternate corridor routes. Given that this is a linear project, the BLM may want to consider the guidance developed by the Federal Highway Administration for linear transportation projects ([https://www.environment.fhwa.dot.gov/env\\_topics/ej/guidance\\_ejusticenepa.aspx](https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejusticenepa.aspx)). In addition, the EPA recommends reviewing the EIS for the expansion of I-25 through Pueblo, Colorado (<https://www.codot.gov/library/studies/i25pueblois>, see chapter 3.6). The Pueblo EIS has a good discussion of minority and low-income thresholds, examples of adjusting the alternatives to reduce impacts to EJ populations, and mitigation measures.” (030-019)

## **MIT 7: Socioeconomics**

(015-009)

Comment follows:

“The BLM must analyze and mitigate Increased costs and reduced revenues on disturbed land for private landowners and grazing permittees in the final EIS and Record of Decision.” (015-009)

## **MIT 8: Public Health and Safety**

(030-004)

One comment indicated that a spill response plan be included in the analysis. Comment follows:

“Based on our current understanding of the proposed Wyoming Pipeline Corridor Initiative (WPCI) project and the area, the EPA has identified the following key topics that we recommend be analyzed and discussed in the Draft EIS so that potential impacts to public health and the environment can be fully understood: ( 1) pipeline construction, safety and spill response;” (030-004)

## **MIT 9: Recreation**

(033-008, 033-013)

Two comments provided avoidance, minimization, and mitigation measures for the Continental Divide National Scenic Trail. Both comments follow:

“In addition, we encourage the following guidelines to identify areas, where when necessary to cross, parallel or otherwise include the CDNST, utility lines and facilities may be located as to reduce their impacts to the CDNST:

1. Locating at a site where the CDNST crosses an existing state or federal highway or highway intersection. In these instances, through applying sound sighting procedures,

many of these crossings may only be visible at the point of intersection. We encourage the practice of careful sighting whenever possible.

2. Locating at a site where the CDNST crosses areas that are already developed, and classified as Rural or Urban by the USFS Recreation Opportunity Spectrum (ROS);
3. Upgrading or co-aligning a new corridor with existing lines, or relocating existing lines into new single corridors, and the subsequent decommissioning of replaced or relocated utility lines;
4. Utilization of an underground route through open areas for natural gas pipelines; and
5. Passage through an area where Trail values, such as a sense of remoteness, would not be compromised.

Finally, we highly encourage sighting teams to engage with CDTC and other agency partners to identify these key areas and potential mitigation when the CDNST and its unique resources cannot be avoided.” (033-008)

“We recommend that the should any impacts occur to the CDNST, the EIS addresses mitigation to help alleviate direct, ancillary and cumulative impacts to the CDT in identification of these potential corridors. The section should address the need for both on-site and off-site enhancements to benefit the unavoidable scenery and Recreation Opportunity Spectrum setting effects on the CDNST and other National Scenic and Historic Trails. Potential mitigation to minimize impacts could be both onsite and off-site strategies and might include the following:

1. Funding for CDNST trail development and maintenance, corridor management, rights-of-way acquisition, and trailhead developments;
2. Removal of facilities that are no longer needed;
3. Relocation of existing smaller capacity transmission lines to the corridors identified by the proposal, and reclamation of those sites back to a natural state;
4. Careful review of the height and type of power line towers;
5. Careful location of power line towers so as to minimize their impacts;
6. Color and reflectivity of facilities; and
7. Landscape treatment within the right-of-way and at other places that screen structures.” (033-013)

## **MIT 10: Water Quality**

(020-006, 022-034, 023-003, 025-006, 025-007, 025-010, 025-017, 030-012)

Several comments pertained to requiring water quality monitoring and other measures such as setback distances and implementing erosion control measures as means to minimize and mitigate impacts to water quality. Representative comments follow:

“The SER CD requests any pipeline proponent be required to pay for an extensive water quality monitoring plan and subsequent monitoring for the North Platte River and all tributaries in close proximity to any new Proposed Project corridor per SER CD Long Range Plan, Policy Water Resources #7: ‘The District requires water quality monitoring as a part of all energy and right-of-way development projects to ensure groundwater and surface water quality is not degraded.’” (022-034)

“We recommend extra workspaces for vehicle parking or construction staging areas be located a minimum of 300-feet from wetlands and waterbodies. In addition, we

recommend temporary extra workspaces and additional temporary workspaces for stockpiling of excavated material should be located a minimum of 150-feet from wetland and waterbodies.” (023-003)

“Riparian areas and floodplains should not be used as staging or refueling areas. All chemicals, solvents and fuels should be kept at least 500 feet away from streams and riparian areas.” (025-010)

## **MIT 11: Streams and Wetlands**

(025-012, 025-013, 025-014, 025-015, 029-007, 030-014, 030-015, 032-023)

Several comments included mitigation measures that should be included to avoid, minimize, and mitigate impacts to stream and wetland resources. Representative comments follow:

“Where pipeline crossings of streams (perennial or intermittent) will be trenched not bored, stream banks should be re-stabilized with large angular rock (greater than two feet in one dimension). Riprap should be placed from the channel bottom to the top of the normal high-water line on the bank. We recommend that the applicant utilize double-ditching techniques to separate the top one-foot of stream bottom substrate from deeper soil layers. Substrate layers should be replaced in the same order that they are removed from the stream. The trench should be open less than 24 hours if the stream/river is less than 1 00-feet wide and no more than 72 hours if the stream/river is more than 1 00-feet wide.” (025-012)

“Any pipelines that parallel drainages should be located outside the 1 00-year floodplain. Pipeline crossings of riparian areas and streams should be at right angles to minimize the area of disturbance.” (025-013)

“The Green River is the source of drinking water for the cities of Rock Springs, Green River and Granger and for several unincorporated communities. It provides high quality process water for several mines and major industries. In addition, the Green River provides water for the Seedskaadee National Wildlife Refuge and the Fontenelle and Flaming Gorge Reservoirs which support sport fishing, boating and other recreational opportunities. To protect Green River water for these important uses, Sweetwater County recommends that all pipeline crossings of the Green River be completed by boring under the river and that up and down stream safety shut off valves be installed to limit the size of product spills if a potential break in a pipeline occurs.” (029-007)

“The EPA recommends that impacts to wetlands and other surface water bodies be avoided and minimized to the maximum extent practicable during waterbody crossings. Where feasible, the EPA recommends the use of horizontal directional drilling for pipeline routing under all water crossings and their associated floodplains and wetlands. Unless other resource concerns outweigh aquatic resource impacts, we recommend identifying corridor alignments that minimize potential impacts to aquatic resources. If more damaging, open-cut water body crossings are anticipated, it is recommended that mitigation measures be used to stabilize and return stream banks to preconstruction contours, and waterbody crossing areas be graded and revegetated immediately following construction. Additionally, it is recommended that rip-rap, gabions, or other methods to harden banks be avoided or used only sparingly to control erosion and stabilize banks at stream crossings during and/or after construction. The EPA supports an overall goal to return construction sites to natural, preconstruction conditions.” (030-015)



## MIT 12: Vegetation

(025-004, 025-008, 025-009)

Representative comments follow:

“Riparian canopy or stabilizing vegetation should not be removed if possible. Crushing or shearing streamside woody vegetation is preferable to complete removal. Any such vegetation that is removed in conjunction with stream crossings should be reestablished immediately following completion of the crossing. Proper riparian grazing management strategies, including rest, should be applied to disturbed stream banks.” (025-008)

“We recommend the use of large wood plank matting joined with cable to minimize impacts to the riparian habitat.” (025-009)

## MIT 13: Wildlife

(022-028, 025-003, 025-005, 025-011, 025-016, 028-027, 028-038, 028-041, 028-042, 028-043, 028-044, 028-045, 032-012, 032-018, 032-024)

Several comments pertained to measures to reduce impacts to wildlife and their habitats. Suggestions of avoiding sensitive habitats and following timing limitation stipulations, construction practices to avoid impacting priority streams, and compensatory mitigation were the most mentioned topics. Representative comments follow:

“The Department recognizes it is impossible to avoid all seasonally important wildlife habitats on a project of this scale. If pipeline corridors are designated that do cross important wildlife habitats, we recommend the application of appropriate timing limitation stipulations to construction activity in order to protect species when they are most vulnerable to disturbance.” (025-003)

“Any pipeline crossing of perennial streams that is a Blue Ribbon or Red Ribbon Trout Stream and/or contain Species of Greatest Conservation Need should be accomplished by boring under the active channel to avoid impacts to the channel and associated riparian areas. This would further eliminate any concerns with sedimentation and the need to avoid critical times of year such as when fish species are spawning. Not entering the live channel will also eliminate all aquatic invasive species concerns. Boring pits should be located far enough back from the channel that stream bank stability is not reduced.” (025-011)

“It would be far preferable for the WPCI corridors to be sited outside of priority habitat management areas (PHMA) and sagebrush focal areas (SFA). But if BLM allows siting inside them, BLM should provide the option of voluntary grazing permit retirement buyout as compensatory mitigation for the WPCI project. Permanent retirement of livestock grazing confers multiple benefits for sage-grouse habitats and populations. Permanently retiring grazing allotments is a proven and cost-effective method of obtaining habitat service gains, as well as a way of facilitating fence removal, thus removing a well-known threat to sage-grouse. Riparian areas where grazing has been removed can show markedly beneficial changes in two to five years, while upland areas take longer.” (028-043)

“Construction, operation, and maintenance should be timed appropriately to avoid raptor nesting seasons, sage grouse lekking, parturition times for big game, and other sensitive times for wildlife where the adverse impacts of development could be exacerbated.” (032-018)

## Cultural Resources

### **CUL 1: How Would the Proposed Action affect Cultural Resources and Cultural Resources of Native American Concern?**

(032-020)

Comment follows:

“The BLM must ensure adequate consultation with tribes, particularly regarding traditional cultural properties, which may not be mapped, and any other resources of cultural or spiritual significance. The BLM should avoid designated and proposed National Historic Trails and their viewsheds. The current proposal sites corridors across the Mormon, California, and Oregon trails and through their protected viewsheds.” (032-020)

## Cumulative Effects

### **CUM 1: What are the Cumulative Effects from the Proposed Action on the Kirby Creek and Bridger Pass Area?**

(001-001, 007-002, 013-004, 020-002, 020-004, 021-008)

Commenters provided information regarding existing projects and planned projects for the Kirby Creek and Bridger Pass areas. Representative comments follow:

“Bridger Pass (on the boundary between HSC and Fremont Co.) is a choke point. It contains corridors for vehicles, wildlife, drainage and pipelines in a very narrow bit of real estate. I expect Game & Fish will have some issues there. We also have a growing interest in being able to develop the existing County Road into an alternate all-weather route out of the County (since shutdowns in the Canyon are frequent), and this will ultimately require more right-of-way or easement in Bridger Pass than currently exists.” (007-002)

“The Conservation District has historically been involved in the Kirby Creek CRM project which has restored significant segments of Kirby Creek to previous conditions. Millions of dollars have been invested in stream restoration work, much of it, within the designated energy corridors.” (020-004)

### **CUM 2: What are the Cumulative Effects from the Proposed Action and Development Projects?**

(011-002, 019-002, 019-003, 030-003, 033-006)

Commenters provided information regarding development projects that could contribute to cumulative effects. Representative comments follow:

“PCW and Trans West are developing the CCSM Project and TWE Project, respectively, in southern Wyoming. The CCSM Project is an approximately 3,000-megawatt (MW) wind energy project located in Carbon County, Wyoming, south of Sinclair. The TWE Project is an approximately 730-mile transmission line extending to southern Nevada. In Wyoming, the TWE Project begins south of Sinclair, continues west to Wamsutter, and then turns south roughly following the Carbon Sweetwater County line before crossing into Colorado. Development of the CCSM Project and TWE Project has been underway since 2008. Together, the CCSM Project and TWE Project will constitute a \$6 billion investment in Wyoming. PCW and Trans West have collectively invested hundreds of

millions of dollars in the development and construction of these critical infrastructure projects.” (011-002)

“Genesis Alkali LLC is a trona mining and soda ash production company in Western Wyoming, producing approximately four million tons per year of natural soda ash and employing about 900 people at our two facilities near Green River, Wyoming. Soda ash is the largest inorganic material exported from the United States and Genesis Alkali is the largest US producer. Ninety percent of all soda ash produced in the United States is produced in Wyoming, just west of Green River. Southwest Wyoming holds almost all of the nation's mineable trona reserves, the majority of which lie within the approximately 700,000-acre Known Sodium Leasing Area (KSLA).” (019-002)

“In addition to looking at direct impacts in the immediate vicinity of the proposed pipeline, the Council on Environmental Quality (CEQ) regulations (40 C.F.R. § 1502.16) instruct agencies to consider other effects that are reasonably foreseeable. Thus, in addition to considering the impacts occurring from the proposed amendments, the EPA recommends that the Draft EIS evaluate whether this project would facilitate increased oil and gas production or exploration and any associated potential impacts including any potential beneficial impacts.” (030-003)

### **CUM 3: What are the Cumulative Effects of the Proposed Action on the Continental Divide National Scenic Trail?**

(033-012)

Comment follows:

“Perhaps our greatest concern has to do with cumulative effects. If full environmental-impact analysis occurs only at the project or activity level, then how does the agency propose to assess the cumulative impacts of multiple projects or activities over time and their impacts to the entire CDNST? While we applaud the agency’s intentions to undertake such a forward looking planning process, we are concerned that without rigorous attention to the cumulative impacts of incremental decisions, the cumulative impacts of multiple projects and activities could be obscured and lead to unintended consequences that may or may not be consistent with a particular management direction for the CDNST. CDTC believes that for linear resources, such as the CDNST, that are affected by more than one corridor, that special attention be given to a full exploration and understanding of the cumulative effects to these very special and unique resources.” (033-012)

### **CUM 4: What are the Cumulative Effects from the Proposed Action on Wildlife Habitat?**

(028-034, 028-035)

Comments follow:

“Similarly, sage-grouse habitat in Wyoming and across the grouse’s range is impacted by grazing and recreation including authorized and unauthorized off-road vehicle use. The EIS must consider the cumulative impact of the establishment of pipelines and the past, current, and projected energy leasing/development, grazing, and recreational activity on sage-grouse and its habitat.” (028-034)

“The EIS must analyze the impacts to big game species including cumulative impacts. Fragmentation and disturbance of habitat adversely impacts big game species. As with sage-grouse discussed above, the effects of establishing the proposed pipeline corridors must be analyzed in the context of other past, present, and foreseeable activities that affect big game and their habitat. These activities and uses include energy leasing and

development, recreation, and linear disruptions such as roads, fences, and fuel breaks.”  
(028-035)

## **Environmental Justice**

### **ENJ 1: Would Construction, Operation, Maintenance, and Reclamation of Pipelines in the Trunk and Lateral Corridors affect Environmental Justice Communities?**

(028-022, 030-007, 030-019)

Commenters recommended analysis of impacts to minority, low-income, and tribal communities, specifically impacts to the health and welfare of these communities. One commenter recommended involving any affected communities in developing mitigation measures or alternate corridor routes to avoid or reduce any disproportionate adverse impacts to the communities. A representative comment follows:

“In addition, the EIS must analyze the impacts to indigenous communities that would result from the construction and operation of the pipelines and oil and gas development associated with them, including the impacts of worker man camps.” (028-022)

## **General Ecological Resources**

### **ECO 1: Would the Proposed Construction or Operation of the Pipeline Affect Ecosystem Services?**

(022-014)

One commenter expressed general concern to impacts on ecosystem services. The comment follows:

“The SER CD requests that ecosystem services are analyzed to full extent in the Proposed Action, per SER CD Long Range Plan, Policy Ecosystem Services #1: ‘The District will ensure ecosystem services as defined and outlined by the National Agricultural Statistics Service Wyoming Agricultural Statistics report are analyzed to the full extent within all NEPA documents and subsequent actions.’” (022-014)

## **Geology and Minerals**

### **GEO 1: Is the Analysis Area Prone to Geologic Hazards (earthquakes, landslides/slumping) that could affect Pipelines or that could be Exacerbated by Pipeline Construction or Oil and Gas Development (fracking) supported by the Proposed Action?**

(012-002, 012-004, 012-005)

Comments noted potential geologic hazards that could affect pipelines supported by the Proposed Action. Comments follow:

“After receiving notice of this initiative, AML asked their consultants who have been working on this large area project to perform a high-level review of the proposed WPCI corridors for such conflicts or potential risks. I am providing some general mapping to illustrate that there are potential risks to the integrity of such installations in some areas. The attached mapping provides a general analysis of potential areas of risk should pipelines or other such utilities be installed over known underground workings. We feel that such areas will need to be considered, and carefully evaluated for geologic stability, and actual risks of ground failure, as final routes for such extensive pipelines are worked out. Many of these workings could be avoided with careful advance planning. Otherwise

specialized engineering techniques may be required to ensure the integrity and safety of such installations.” (012-002)

“The attached maps provide what we presently know of mines that would potentially impact the proposed pipelines. You will note that one map also provides a location for a coal fire. The attached maps provide what we presently know of mines that would potentially impact the proposed pipelines. You will note that one map also provides a location for a coal fire” (012-004)

“One attached PDF provides a general view of the proposed pipelines, and a basic map of the distribution of abandoned mines across the state. The remaining PDFs provide mapping of different parts of the state that our consultants have evaluated. We hope this high-level information is informative and provides a place to start a discussion on how underground mine workings should be considered during any design effort for infrastructure that could be at risk from ground subsidence.” (012-005)

## **GEO 2: Would the Pipeline Corridors affect Valid Existing Rights of Mines in the Analysis Area?**

(019-003, 019-004)

Comments follow:

“As proposed, WPCI Lateral Corridor 1 passes through lands designated as Core Population areas pursuant to the Wyoming Executive Order on Greater Sage-Grouse Core Area Protection. Additionally, as proposed, portions of WPCI Lateral Corridor 1, as well as the western most portion of Truck Corridor 4, pass through the KSLA, and more particularly, Genesis Alkali active and planned future mining areas. Genesis Alkali maintains that this proposed routing should be modified both to minimize the impact to trona producers and to avoid the Sage Grouse Core Population areas as well as the KSLA to the maximum extent feasible.” (019-003)

“Trona mining, both dry mining and solution mining, creates surface subsidence of up to seven (7) feet. Genesis Alkali has longstanding experience working with pipeline owners/operators, both natural gas and liquids, to mitigate the impacts of subsidence on pipelines that cross over mining areas. These mitigation discussions can take significant time and effort and costs can run into the millions, which can take a toll on pipeline owner/operators and on the Wyoming’s trona mining businesses who are affected. To avoid such costs, designated routes for new pipelines should be developed to avoid current and future mining areas whenever practicable.” (019-004)

## **GEO 3: Would the Pipeline Corridors make Leasable, Locatable, Saleable, and oil/Gas/Geothermal Mineral Locations Inaccessible to Exploration and/or Development?**

(009-001, 009-002, 010-001)

Representative comments follow:

“Oxy is committed to low carbon ventures utilizing CO<sub>2</sub> sequestration and EOR as part of its low carbon initiative to become carbon neutral. Oxy is the world's largest handler of CO<sub>2</sub> for EOR and has potential EOR prospects within the Powder River Basin. In addition to Oxy's alignment with the State of Wyoming's EOR and sequestration initiatives, the proposed corridors cross a significant portion of Oxy owned surface, specifically in SW Wyoming. Oxy generally supports the State of Wyoming's proposal to increase transportation corridors for EOR activities but wants to ensure its interests are

fully and adequately protected. For that reason, the BLM must consider and expressly protect all valid and existing rights.” (009-002)

“Collectively, PAW’s members produce over 90% of the State’s oil and gas, generate more than \$5 billion in economic activity, and employ more than 18,000 of Wyoming’s hardworking men and women. Our members have an interest in this project and need to be kept informed of decisions made throughout the process. PAW members are actively pursuing new federal fluid mineral leases in prospective areas and may submit future APDs in order to develop existing and future leases in the proposed area of the corridor. PAW and its members, therefore, may be directly affected by the amended RMPs and associated Records of Decision (ROD).” (019-004)

#### **GEO 4: Would the Pipeline Corridors increase Oil and Gas Development in the Analysis Area?**

(028-015, 028-016, 030-003)

Commenters noted that the BLM must update the reasonably foreseeable development scenarios for oil and gas production in the nine RMPs and analyze the impacts to resources from the potential increase in oil and gas development across the state. Representative comments follow:

“BLM’s Wyoming RMPs contain reasonably foreseeable development scenarios for oil and gas development, often expressed as a range representing the low and high numbers of oil and gas wells expected to be developed. This approach will need to be augmented for the WPCI Proposal because EOR in depleted oil fields may result in greater production from existing wells, not just the development of new wells. As a result, the reasonably foreseeable development scenarios must also include estimates for increased production from existing wells” (028-016)

“In addition to looking at direct impacts in the immediate vicinity of the proposed pipeline, the Council on Environmental Quality (CEQ) regulations (40 C.F.R. § 1502.16) instruct agencies to consider other effects that are reasonably foreseeable. Thus, in addition to considering the impacts occurring from the proposed amendments, the EPA recommends that the Draft EIS evaluate whether this project would facilitate increased oil and gas production or exploration and any associated potential impacts including any potential beneficial impacts.” (030-003)

### **Groundwater**

#### **GRW 1: Would the Proposed Action Lead to an Increase Risk of Groundwater Contamination from Chemicals?**

(028-013, 028-014, 030-010, 030-011)

Representative comments follow:

“The coal ash disposal impacts of extending the lifespan and/or utilization rate of coal-fired power plants that would otherwise be retired or utilized at lower rates must also be analyzed in the EIS. Wyoming coal ash disposal pond sites are some of the most contaminated in the United States. A May 2019 study of the Dave Johnston power plant’s coal ash disposal pond found ‘arsenic, cadmium, molybdenum and radium were at statistically significant levels above the groundwater protection standards,’ requiring closure and remediation. Groundwater contaminants exceeding allowable standards have also been found at coal ash disposal ponds for the Jim Bridger and Naughton coal power plants, also requiring closure and remediation.” (028-013)

“We recommend the Draft EIS include an evaluation of potential adverse impacts from pipeline leaks or spills. This should include potential adverse impacts to; surface waters, public or private water supplies, human health, vegetation, or wildlife. In this part of the analysis, it would be useful to discuss the probabilities and/or likely frequencies of different types of spill or leak events over the life of this type of pipeline. We expect this information would be useful in determining appropriate, safe corridor locations.” (030-010)

## **GRW 2: How Would the Proposed Action affect Groundwater, Especially Shallow Groundwater Resources?**

(002-001, 021-005, 028-017, 030-005, 030-011, 030-012)

Several comments were general in nature and requested that impacts to groundwater resources be addressed in the analysis. Other comments were more specific as to the type of groundwater resource, including livestock wells, aquifers, and groundwater recharge areas. Representative comments follow:

“Based on our current understanding of the proposed Wyoming Pipeline Corridor Initiative (WPCI) project and the area, the EPA has identified the following key topics that we recommend be analyzed and discussed in the Draft EIS so that potential impacts to public health and the environment can be fully understood: (2) groundwater and surface water resources;” (030-005)

“Is this going to interfere in the livestock wells and also the Big Springs in Thermopolis. Also, the personal water wells.” (002-001)

“...If the BLM determines that leaks from CO<sub>2</sub> pipelines have potential impacts to groundwater resources, we recommend presenting baseline data on groundwater resources, with particular emphasis on: the major aquifers in the project areas; the location and extent of the groundwater recharge areas; the location of shallow and sensitive aquifers that are susceptible to contamination from surface activities; and, the uses of each potentially impacted aquifer ( e.g. stock, domestic, irrigation, public water supply, etc.).” (030-011)

## **Hazardous and Solid Waste Materials**

### **HAZ 1: Would a Hazardous Materials Spill affect Public Health and Safety (e.g., contaminated soils or groundwater, near roadways)?**

(025-007, 025-010, 025-014)

One commenter expressed concern about the potential effects of a hazardous materials spill on water resources. This commenter suggested several mitigation measures. A representative comment follows:

“Any pipeline crossings of live streams should be protected by automatic shutoff valves. Additional shutoff valves should be installed on both sides of any drainage basin crossed within 10 miles above a Blue or Red Ribbon Trout Stream or streams containing SGCN species.” (025-014)

## Land Use and Access

### **LUA 1: How would the Proposed Action affect the Relevant and Important Values of Areas with Special Designation?**

(029-008, 032-025)

Comment follow:

“In the vicinity of T17N R106W Section 10 and T17N R107W Section 12, Lateral Pipeline Corridor #1 crosses the Flaming Gorge National Recreation Area (FGNRA). The FGNRA is a national recreation resource whose wildlife, fisheries and scenic resources support a multi-million dollar multi-state recreation industry. With this in mind, Sweetwater County encourages the state, BLM and USFS to ensure that any proposed crossing of the FGNRA be completed in a manner that utilizes existing pipeline corridors and rights of way and preserves water quality, wildlife habitat and visual resources. As previously stated, all crossings of the Green River should be completed by boring underneath the river or gorge and with the installation of up and down stream safety shut off valves.” (029-008)

“BLM should avoid siting the corridor within or along the border of WSAs. For instance, the current proposal sites the corridor on the northern border of Alkali Draw WSA, along the southern border of Pinnacles WSA, and near the southern border of Cedar Mountain WSA, where an important Native American sacred site is located. BLM should also avoid siting corridors along the base of Steamboat Mountain, which is protected by ACEC [areas of critical environmental concern] and SMA designations, provides habitat for a rare desert elk herd, and is significant to Native American tribes.” (032-025)

### **LUA 2: How Would the Proposed Action affect other Corridors, Rights-of-Way, or Land Uses?**

(001-001, 008-003, 011-001, 011-003, 011-004, 011-005, 011-007, 013-005, 020-002, 020-005, 021-006, 029-004, 031-005, 032-014)

Several comments noted potential existing conflicts with other rights-of-ways, and general comments requested these types of conflicts to be addressed in the impact analysis. Additionally, other land use types near the project were mentioned, and requests were made to include the potential impacts to these other types of land uses. Representative comments follow:

“Our primary concerns are 1) the preservation of NHT resources, 2) the continuation of public access to the NHTs, and 3) the preservation of applicable historic settings along the NHTs.” (008-003)

“One of the proposed lateral pipeline corridors in Carbon County would interfere with the TWE Project and the CCSM Project. The affected area is located in Township 21 North, Range 86 West, Sections 31 and 32; and Township 21 North, Range 87 West, Sections 33, 34, 35, and 36, Sixth Principal Meridian (see attached Figure 1). Specifically, the proposed lateral pipeline corridor would interfere with the TWE Project transmission line in three locations and would interfere with the Wyoming Terminal of the TWE Project. The TWE Project Northern Terminal is critical and integral to the success of the entire \$3 billion TWE Project. The lateral line corridor would also interfere with the CCSM Project Overland Substation, as well as with multiple electrical transmission lines connecting to the substation. Installing up to three high-pressure pipelines under or within an electrical transmission substation or terminal location is an incompatible use that affects PCW's



and Trans West's ability to safely operate the CCSM and TWE Projects within their authorized rights-of way.” (011-003)

“We also encourage BLM to review existing rights-of-way in the proposed WPCI corridors and provide written notice to existing right-of-way holders during development of the draft EIS to solicit early input from these right-of-way holders regarding how the proposed WPCI corridors may affect the integrity of, or the ability to operate, existing facilities. Early avoidance of conflicts between the WPCI corridors and current and authorized infrastructure will help BLM and the State of Wyoming achieve the designation of feasible, functional pipeline corridors that can be used to efficiently locate and analyze future project-specific proposals.” (011-007)

“WCCD encourages the BLM to maintain a strong communication with all affected grazing permittees and agriculture producers to learn of their concerns and recommendations regarding the proposed corridors. Potential concerns may include: Increased off and on-road traffic; Cut fences; Opened gates; Damaged range improvements; Decreased Animal Unit Months; Decreased palatability of vegetation and forage from road dust and development activities; Reclamation failures; Introduction and spread of noxious weeds” (031-005)

### **LUA 3: How Would the Proposed Action affect Land Use Plans?**

(006-001, 006-004, 022-001, 022-002, 022-006, 031-001, 031-002)

Several comments noted existing land use plans that could apply to areas that overlap the project. Most land use plans allow and, in some instances, encourage these types of projects, but there exists the potential for conflicts in priorities and goals. Representative comments follow:

“A goal in the Carbon County Comprehensive Land Use Plan is to achieve a sustainable balance between energy development, agriculture, and the environment. Two strategies to address this goal are the following: encourage a steady, paced development of the gas and oilfields; enhance the County Government’s capacity to monitor, comment on, and influence state and federal decisions on energy development projects. Additionally, a goal within the Land Use Plan is to sustain scenic areas, wildlife habitat, and other important open spaces. One strategy is to limit development in wildlife migration corridors, winter range, and birthing areas, and sage grouse core areas.” (006-001)

“Our comments are specific to our mission as a local government entity within the project area: ‘develop and direct programs to promote long-term conservation and enhancement of our natural resources while contributing to the economic stability of the district and its residents.’ As this project impacts the conservation of our natural resources and the stability of the district and residents, we believe it is important you continue to inform us of proposed actions and decisions for the Proposed Project. Conservation districts are the only local government charged, specifically by state statute, with natural resource management. District supervisors serve as the grass roots representatives of private landowners and the general public, providing leadership and direction in natural resource conservation programs. We appreciate the continued opportunity to express the importance of pertinent issues and concerns on the Proposed Project.” (022-001)

“Goal- WCCD supports minerals and oil and gas production and will provide information and education on the importance of natural resource conservation. The minerals and oil and gas industry is a significant part of the custom and culture of the district, and it provides economic opportunity to Washakie County.

- i. Supports the continued development and extraction of minerals, and oil and gas within federal and state jurisdiction in keeping with the local and regional custom and culture, in order to maintain the economic stability of Washakie County.
- ii. Encourages mineral, and oil and gas production to be conducted in an environmentally responsible manner and to ensure industries continuance is compatible with the principles of multiple use on public lands.” (031-002)

## **Native American Concerns**

### **NAC 1: Would the Proposed Pipeline Development Physically (directly) or Indirectly (visually) Affect both Known and Unknown Cultural Resources of Native American concern?**

(028-019, 028-020, 028-022)

One commenter recommended meaningful tribal consultation to ensure traditional ecological knowledge was used in this planning process. A representative comment follows:

“The WPCI Project area encompasses ancestral, historic, traditional, or treaty lands for many indigenous peoples, including the Apsaalooké (Crow); Arapaho; Bannock; Eastern Shoshone; Očeti Šakówiŋ (Sioux); Só'taeo'o, Tsétséhéstáhese, and Tsistsistas (Cheyenne); and Ute. Based on past projects, we anticipate that BLM will notify tribes about the Project and invite them to participate in government-to-government consultation, but that BLM will not provide financial resources that would help tribes to do so, nor provide sufficient time for internal tribal decision-making related to the consultation. Given the federal government's track record with other large-scale oil and gas projects in the Great Plains, there is a high risk that this Project's tribal consultation process will not meaningfully influence the outcome of BLM's NEPA decision-making, but instead will merely tick a box on a checklist. However, without meaningful tribal consultation, it will be virtually impossible for BLM's EIS to include traditional ecological knowledge that could help BLM achieve more sustainable land management practices.” (028-020)

### **Negative Comment (non-substantive)**

(004-001, 004-002)

One commenter expressed general opposition to the Proposed Action. A representative comment follows:

“They are blasting. They are destroying vegetation. They are killing all wildlife on this land. This is a totally massively destructive plan to ruin 2000 miles of land.” (004-002)

## **NEPA Analysis and Related Processes**

### **PRO 1: The EIS should include all Statutes and Regulations Pertinent to the Proposed Action and Agency Decision.**

(010-004, 016-001, 022-10, 022-027, 023.002, 032-003)

Representative comments follow:

“Please include the Clean Air Act in this list of regulations.” (016-001)

“The RMPs must provide flexibility to allow use of the pipeline corridors for various purposes consistent with FLPMA's multiple use mandate; and the RMPs must retain

flexibility to resolve resource conflicts, in the context of valid existing rights on a case by case basis. In summary, flexibility in the use of pipeline corridors, the ability to resolve potential resource conflicts with respect to pipeline corridors, and the inclusion of other key resource issues in the RMP amendments are of significant concern to our members and, as such, BLM needs to ensure they are clearly provided for in the EIS and potential RMP amendments.” (010-004)

**PRO 2: The NEPA Process should include Participation from Various Agencies and Stakeholders, Solicitation of Information from the Public, and a Robust Tribal Consultation.**

(008-002, 011-007, 015-001, 022-001, 022-004, 022-036, 028-002, 028-021)

Commenters requested varying levels of participation from becoming a cooperator to being kept informed of the EIS process for the WPCI Project. One commenter suggested the EIS include a description of the government-to-government consultation with the tribes and how the BLM would support tribal participation in the NEPA process. Representative comments follow:

“As the federal Administrator of these NHT we would like to review with you our options for participation in the NEPA process (including evaluation of proposals under the National Trails System Act) and request consulting party status for the NHPA process.” (008-002)

“We also encourage BLM to review existing rights-of-way in the proposed WPCI corridors and provide written notice to existing right-of-way holders during development of the draft EIS to solicit early input from these right-of-way holders regarding how the proposed WPCI corridors may affect the integrity of, or the ability to operate, existing facilities. Early avoidance of conflicts between the WPCI corridors and current and authorized infrastructure will help BLM and the State of Wyoming achieve the designation of feasible, functional pipeline corridors that can be used to efficiently locate and analyze future project-specific proposals.” (011-007)

“Therefore, the EIS should explain how government-to-government consultation for this Project will be meaningful and how BLM will support tribal participation beyond just issuing invitations.” (028-021)

**PRO 3: The EIS should include a Summary of how Subsequent NEPA Analysis will be Completed at the Project Level.**

(020-001, 020-009, 021-002, 021-007, 022-010, 028-001, 032-008)

Several comments provided assumptions on how subsequent NEPA would be completed at the project level and requested that clarification be provided. Representative comments follow:

“Secondly, I note that this pipeline corridor initiative was first considered at a multi-state scale, several years ago. This present planning effort will ‘zoom in’ the environmental review of the corridor network to a statewide or county-by-county scale. We recognize that the next (and final) step would be a more site-specific review of individual pipeline proposals within the proposed corridors. The inherent danger of this layering of federal, state, and local focus is that all prior environmental review has been at macro levels. When we finally get to the micro phase, with individual pipelines proposed for placement, will the environmental assessment give the site-specific proposals a ‘pass’ due to the state-level EIS?” (021-002)

“If the current EIS is not able to sufficiently address such environmental impacts at this time, then it should speak to the environmental assessment process for the future pipeline

construction permitting stage. Clear direction should be given to address these concerns, in the event it is determined that an EIS is not warranted at that future time.” (021-007)

#### **PRO 4: Impact Analysis Methods**

(028-10, 028-15, 028-18, 028-208, 028-039, 028-040, 030-001, 032-002, 033-003)

Several comments included information on how the impact analysis for various resources should be conducted. Representative comments follow:

“The EIS Must Analyze the Impacts of Wyoming Producing More Fossil Fuels Instead of Renewable Energy as a Result of the WPCI Project.” (028-010)

“BLM Must Update the Reasonably Foreseeable Development Scenarios for Oil Production in the Nine RMPs, and Analyze the Increased Impacts to Other Resources That Would Result from the WPCI Project.” (028-015)

“Wyoming’s pipeline proposal includes 1,105 miles of pipelines on BLM lands and another 809 miles on other lands. The BLM must not only analyze the impacts of the pipeline corridors that traverse BLM-administered lands but must also analyze the impacts related to the 809 miles of pipelines that will be enabled by the construction of pipelines on BLM lands. Related activities on non-federal lands that are connected to the BLM action must be analyzed as indirect impacts and count towards the significance of and required mitigations for BLM actions.” (028-040)

“Because of the projects scope (almost 2000 miles of corridor intersecting nine field offices) the 25 segments of proposed corridor should be analyzed individually as well as cumulatively in order to satisfy NEPA’s ‘hard look’ requirement.” (032-002)

#### **Out of Scope**

(003-001, 005-003, 013-001, 017-003, 017-005, 022-007, 026-002, 032-022)

Most out-of-scope comments were regarding the extent of the Proposed Action, export of products out of state, or the potential for future lateral tie-ins. Representative comments follow:

“WyFB requests the State and the BLM consider and analyze ways for future developers to be able to use corridor and associated pipelines. This should include permitting tie-ins for future lateral pipelines that would cross private lands. It should include working with developers on private lands now to determine where laterals would be sited and permit the public lands portion now.” (026-002)

“Finally, all opportunities for exporting products out of the state (natural gas, oil, CO<sub>2</sub>, etc.) should be considered to the maximum extent possible in this analysis.” (017-005)

#### **Positive Comment (non-substantive)**

(002-002, 006-002, 007-001, 010-002, 013-006, 014-001, 015-002, 017-001, 018-001, 018-003, 019-001, 020-009, 021-001, 024-001, 026-001, 027-001, 031-001, 031-003, 033-001)

Several commenters expressed support for the project and project goals. Representative comments follow:

“Carbon County supports the Wyoming Pipeline Corridor Initiative to further the establishment of pipelines associated with CCUS, and EOR.” (006-002)

“PAW understands the benefits of this project and the need to streamline the NEPA process for future pipeline project proponents within the corridor. PAW is pleased to see BLM’s recognition of valid existing rights in the NOI, and the inclusion of valid existing rights as part of BLM’s planning criteria. In addition, we are further encouraged to see oil

and gas development in the area is also a stated issue that needs to be addressed in BLM's analysis." (010-002)

"The WPA supports the proposed action of the designation of a statewide pipeline corridor network for future pipeline development associated with CCUS as well as associated EOR (C02-EOR) facilities. Amending the RMPs will create greater consistencies and efficiencies across Wyoming BLM field offices to make future analysis of pipeline-specific proposals more efficient." (014-001)

"Providing incentives for the expansion of pipeline infrastructure for CCUS and EOR is a critical component of Converse County's overall development and marketing strategy and is vital to the long-term economic health of our county and the State of Wyoming." (017-001)

"As a proud partner of the USFS, BLM and NPS, CDTTC recognizes the need to replace an overly burdensome energy corridor process with more efficient planning methods. We commend the intent of developing a method that defines a collaborative process and provides a framework for pre-selection of potential corridors for future energy development projects." (033-001)

## Proposed Action

### PRA 1: The Proposed Action Description should include Flexibility in the Use of Corridors.

(010-003, 010-004, 013-004, 022-15, 026-003, 029-009, 032-13)

Several commenters expressed support for the project and project goals. Representative comments follow: Several commenters noted that the Proposed Action description focuses on limiting the corridors to carbon capture and EOR products but does mention that the corridors could be used for other uses such as broadband. Commenters requested that it be made clear that the corridors would be multi-use. Some representative comments follow:

"However, consistent with BLM's FLPMA multiple use mandate, our members would like to ensure continued flexibility for the State of Wyoming and oil and gas operators to use pipeline corridors for a variety of purposes and to resolve resource conflicts on a case-by-case basis. PAW members are concerned about the State of Wyoming's Wyoming Pipeline Corridor Initiative Proposal (WPCI) statement that use of the 'corridors are constrained to only transport CCUS and EOR products; however, other compatible uses may be considered that would not limit future use of the corridors for CCUS and EOR pipelines and facilities.'" (010-003)

"Ensure the proposed pipeline corridor has the capacity for additional pipelines. BLM and the State should ensure the pipeline as proposed can accommodate additional pipelines. There appear to be segments of the proposed corridor that may not have the physical room needed for additional infrastructure. For example, at least four pipelines, a county road, electrical transmission lines and livestock watering flow lines already occupy the Kirby Creek-Jim Bridger pass route. BLM and the State should consider whether there is sufficient capacity for additional pipelines in this and other already-crowded corridors." (013-004)

"Section 1.0 Introduction. The purpose identified for the Proposed Project is 'to establish corridors on public lands dedicated to future use for pipelines associated with CCUS, and EOR.' Yet it goes on to say, 'other compatible uses (i.e. broadband infrastructure) at the outer boundaries of the corridors would be considered.' The remainder of the document only identifies the Proposed Project corridor to be used for CCUS and EOR. The SER CD supports a statewide corridor designation for all energy-related, technology-

related, and intra/interstate commerce-related products known now or developed in the future. If the scope of the Proposed Project continues with the narrow focus, we suggest removing the vague statement about other compatible uses unless they are clearly defined.” (022-015)

## **PRA 2: The Proposed Action Conflicts with Existing Rights or Projects.**

(011-001, 011-003, 011-004)

One commenter provided known conflicts with the Proposed Action. Representative comments include the following:

“One of the proposed lateral pipeline corridors in Carbon County would interfere with the TWE Project and the CCSM Project. The affected area is located in Township 21 North, Range 86 West, Sections 31 and 32; and Township 21 North, Range 87 West, Sections 33, 34, 35, and 36, Sixth Principal Meridian (see attached Figure 1). Specifically, the proposed lateral pipeline corridor would interfere with the TWE Project transmission line in three locations and would interfere with the Wyoming Terminal of the TWE Project. The TWE Project Northern Terminal is critical and integral to the success of the entire \$3 billion TWE Project. The lateral line corridor would also interfere with the CCSM Project Overland Substation, as well as with multiple electrical transmission lines connecting to the substation. Installing up to three high-pressure pipelines under or within an electrical transmission substation or terminal location is an incompatible use that affects PCW's and Trans West's ability to safely operate the CCSM and TWE Projects within their authorized rights-of way.” (011-003)

“In addition to the specific conflicts with the CCSM Project and TWE Project discussed above, the WPCI lateral and trunk pipeline corridors south of Rawlins interfere with other existing, authorized and planned infrastructure. There are multiple pipelines, communication lines, and transmission lines owned by other companies in the area and crossing those facilities would either be technically infeasible or would add significant, potentially prohibitive cost to future WPCI pipeline project developers.” (011-004)

## **PRA 3: The Proposed Action was Designed to Minimize Environmental Impacts.**

(014-004, 018-002, 022-011, 022-023, 022-035, 026-001, 027-003, 029-011, 032-005)

Commenters noted that the Proposed Action is collocated with designated corridors or existing pipeline rights-of-way to minimize environmental impacts. Representative comments follow:

“The WPA has been involved with the corridor planning and design since the beginning of the project. The WPA provided technical assistance in the analyses used to develop proposed routes, with primary consideration for EOR development. The majority of the WPCI proposal lies within previously established pipeline corridors in existing RMPs or parallels existing pipeline rights-of-way. In instances where the WPCI proposal diverges from existing corridors or pipelines, it is due to analyses using GIS imagery that diverted the corridors away from potential human conflicts such as housing or agriculture, or other important natural resources.” (014-024)

“The SER CD fully supports the statement in the Purpose and Need, ‘Identifying integrated corridors across federal lands under the direction of the various field offices in Wyoming would lead to greater consistency among the individual field offices and would comprehensively address the desire to manage the location of future pipeline construction and operation activities across field offices, thereby minimizing the aggregate impact of future projects on federal lands in Wyoming.’ The SER CD believes it is imperative that integrated

corridors be collocated with existing statewide utility corridors (see Map 1 attachment) or collocated with Region 4 Section 368 Energy Corridors (see Map 4 attachment). This will not only minimize the aggregate impact of future projects on federal lands, but on private and state lands too. These exiting corridors have roads that could be used for more purposes and reduce the need for additional habitat fragmentation, expanded reclamation challenges, and reduce additional noxious weed infestation opportunities.” (022-011)

#### **PRA 4: The Proposed Action Description should include a General Description of Pipeline Construction and Associated Facilities**

(006-004, 022-016, 022-018, 022-022, 022-024, 022-026, 030-009)

Commenters recognized that the BLM would not be authorizing construction of any pipelines at this time, but to fully assess the potential impacts to resources, the Proposed Action description should include general construction practices and associated facilities. Representative comments follow:

“Section 2.3 Associated Aboveground Facilities. The SER CD requests clarification for the conflicting statement in paragraph 2.3.1, ‘Access will be year-round, depending upon winter weather.’ If access is dependent on winter weather, it is not year-round access and should be clearly stated as such. Section 2.3 Associated Aboveground Facilities, 2.3.3 Pump and Compressor Stations. Please remove the word ‘approximate’ before the ‘3- to 10-acre fenced area’. It should be either an approximate number of acres or a range but not both. Section 2.3 Associated Aboveground Facilities, 1.2.5 Measurement Facilities. The SER CD requests clarification as to whether the vegetation will be cleared or not in these areas.” (022-024)

“We understand that this EIS will not authorize pipeline construction. We nonetheless recommend that general information about pipeline construction be included so that anticipated impacts can be considered when selecting ROWs. We recommend that information regarding the following project facility components be incorporated into the Draft EIS to assess potential construction impacts within ROW alternatives:

- Description of anticipated support facilities typical for this type of pipeline including; operation and maintenance buildings, construction camps, pipeline yards, compressor stations, maintenance roads, and materials sites;
- Anticipated temporary land use locations;
- Typical pipeline type(s) by use - Type I Single use, Type II Multiple source, Type III Hybrid lines;
- Typical pipeline wall thicknesses; and,
- Location of potential CO<sub>2</sub> sources and sinks to be connected to the proposed pipeline corridors.

The EPA recommends that to the greatest extent possible the WPCI pipelines be co-located within existing infrastructure ROWs and make use of existing Federal and State designated corridors on public land, avoiding potential additional adverse impacts to wetlands and other aquatic resources; and to avoid the need for additional access roads and material source sites.” (030-009)

#### **PRA 5: Sweetwater County supports the Current Placement of Trunk Corridor #4.**

(029-010)

Sweetwater County supports the placement of Trunk Corridor #4 in its current location because it minimizes impacts to the Tri-territory Scenic Loop Tour route. The comment follows:

“Approximately one third of the WPCI Pipeline Trunk Corridor #4 is located adjacent to and parallel to the Tri-territory Scenic Loop Tour route. In this corridor, proposed pipelines would be buried and surface disturbance reclaimed thus resulting in minimal view shed impacts to the Tri-territory Loop Tour. Because of this, Sweetwater County supports the establishment of Pipeline Corridor #4 in this location. It should be emphasized that Sweetwater County opposes the West-wide Energy designation of the Tri-territory Loop Tour portion of this corridor as a multi-modal corridor which would allow both underground and above ground energy transmission lines. Sweetwater County believes that construction of above ground transmission facilities within this would be a detriment to the Tri-territory Scenic Loop Tour and the scenic vistas of the Killpecker Sand Dunes, North and South Table Mountains, Spring Butte, Steamboat Mountain and Boars Tusk and others. For the protection of these natural features and the scenic loop tour, Sweetwater County supports this corridor as an underground right of way corridor only which would be compatible with the WPCI project. To ensure proper coordination with West-wide Energy above ground only corridors, Sweetwater County encourages the BLM to compare the western portion of this trunk line with the West-wide Energy Corridor.” (029-010)

## **Public Health and Safety**

### **SAF 1: How Would a Hazardous Materials Spill Affect Public Health and Safety?**

(004-005, 012-001, 012-004, 030-004, 030-010)

A couple of comments were general, indicating that the analysis should include a look at the potential impacts from spills. A couple of comments provided details of how conflicts with underground mines could lead to public health and safety concerns. Representative comments follow:

“We recommend the Draft EIS include an evaluation of potential adverse impacts from pipeline leaks or spills. This should include potential adverse impacts to; surface waters, public or private water supplies, human health, vegetation, or wildlife. In this part of the analysis, it would be useful to discuss the probabilities and/or likely frequencies of different types of spill or leak events over the life of this type of pipeline. We expect this information would be useful in determining appropriate, safe corridor locations.” (030-010)

“The Wyoming AML Program has performed a recent assessment of underground mine workings as they intersect existing infrastructure such as power transmission lines, pipelines, roads, and other utilities and infrastructure. We have found that there are numerous intersections of such infrastructure with subsiding mine workings, and that in some areas there is risk of failure of the ground surface which could significantly disrupt or damage such infrastructure, and as a result interrupt public services. In some cases, such failures could significantly compromise public health and safety. We have concerns that such conditions could occur within the proposed pipeline corridors if the locations, extents, and depths of abandoned underground mines are not considered by designs for the pipelines that may eventually be installed under this initiative.” (012-001)

### **SAF 2: How would fire affect public health and safety?**

(028-030)

Comment follows:

“Further, an increase in annual grass abundance in the pipeline corridor and adjacent lands alters the fire regime, changing the timing and style of wildfires. This in turn can



lead to larger scale ecological transformation as burnt areas are more likely to see annual grasses revegetate instead of native vegetation.” (028-030)

## **Purpose and Need**

### **PAN 1: The Need for the Project Must be Clearly Explained and Verified.**

(013-005, 032-001)

Commenters requested clarification on use of the corridors and how these corridors relate to other designated corridors. The comments follow:

“Provide evidence for the purpose and need of this project. The evidence should address the need for each segment of the project as well as the project as a whole. This discussion should clearly explain that a corridor designation is not a prerequisite to the grant of a pipeline rights of way, and that the absence of a designated corridor is not an impediment to the authorization and construction of new pipelines.” (032-001)

“Clarify the anticipated use and scope of the proposed pipeline corridor and how the proposed corridor might interact with the Section 368 Energy West-Wide Energy Corridors. It is unclear based on the Proposal whether the proposed corridors would be solely for CO<sub>2</sub> [carbon dioxide] pipelines or would be available for pipelines transporting other resources, such as natural gas or crude. WCCA requests the BLM and the State clarify the ultimate intent of the corridors and consider uses beyond solely CO<sub>2</sub>. Additionally, WCCA asks that BLM explain how the WPCI fits within or relates to the Section 368 West-wide Energy Corridor. Specifically, are the efforts duplicative, interconnected and/or complementary? WCCA encourages BLM and the State to reduce redundant analysis where possible and to broadly consider the location of corridors to ensure efficient and effective development and collocation where possible.” (013-005)

### **PAN 2: The Purpose and Need should include a Description of How the Project Encourages Carbon Capture Technology and Infrastructure.**

(014-005, 027-002, 027-004)

Commenters suggested that the project would encourage development of pipeline infrastructure that would support further development of carbon capture technologies. Representative comments follow:

“The WPCI is a first of its kind project that we believe incentivizes solutions to some of our nation's most substantial environmental and economic challenges.” (027-004)

“The WPCI proposal is receiving national attention as a model for the federal government to support the development of CO<sub>2</sub> pipeline networks for use in CCUS. This project is in alignment with the federal bipartisan USE IT Act (Utilizing Significant Emissions with Innovative Technologies). The USE IT Act supports the commercial use of industrial CO<sub>2</sub> emissions and carbon capture technology as well as expedited permitting for the development of CO<sub>2</sub> pipeline infrastructure.” (014-005)

## **Range and Grazing**

### **RNG 1: Would Vegetation Removal and Surface Disturbance Temporarily and Permanently Affect Available Animal Unit Months or Acres with Suitable Forage for Grazing?**

(015-003, 015-007, 021-003, 022-003, 026-004)

Commenters expressed general concern regarding the suitability of disturbed areas for continued livestock grazing. Representative comments follow:

“This corridor project will have a direct Impact on livestock grazing as pipelines are built. The BLM should analyze any loss or Impact to these Important environmental, historical and social values of livestock grazing.” (015-007)

“WDA appreciates the BLM recognizing the potential impact to livestock grazing and agriculture producers in the 1,914 mile proposed corridor area. However, there are a number of specific impacts to agriculture the BLM must analyze in the EIS: increased off- and on-road traffic, increased number of speeding vehicles In the area causing death or impairments of livestock, cut fences, opened gates, damaged range improvements, decreased Animal Unit Months (AUM's), decreased palatability of vegetation and forage from road dust and development activities, unsuccessful reclamation of disturbed areas, introduction and spread of noxious weeds and other detrimental social and economic impacts on livestock management operations.” (015-003)

## **RNG 2: Would the Pipeline Affect the Various Range Improvements it Intersects during Construction?**

(015-003, 002-001)

General concern was expressed regarding the potential for damaged range improvements. A representative comment follows:

“Is this going to interfere in the livestock wells and also the Big Springs in Thermopolis. Also, the personal water wells.” (002-001)

## **Recreation**

### **REC 1: Would the Construction, Operation, and Long-Term Presence of Aboveground Facilities and Access Roads affect Recreational Experience and Access?**

(029-002, 029-008, 033-011)

Commenters generally asked for additional analysis of impacts to recreational experiences within, intersected by, or otherwise impacted by the proposed corridors. Using existing pipeline corridors and rights-of-way to preserve recreational user experience and access was suggested. Representative comments follow:

“As a unit of the National Trails System, and otherwise considered designated area, the proposal should include a more fully evaluated section on impacts to recreational experiences within, intersected by, or otherwise impacted by the proposed corridors. We realize that each trail section is unique with specific localized conditions, however, we also feel that there should be consistent treatment of the Trail and its resources and the experience it offers all users in the discussion of impacts to recreational resources in this document. We encourage that evaluation of the potential impacts to recreational resources of the CDNST be included in the EIS.” (033-011)

“In the vicinity of T17N R106W Section 10 and T17N R107W Section 12, Lateral Pipeline Corridor #1 crosses the Flaming Gorge National Recreation Area (FGNRA). The FGNRA is a national recreation resource whose wildlife, fisheries and scenic resources support a multi-million dollar multi-state recreation industry. With this in mind, Sweetwater County encourages the state, BLM and USFS to ensure that any proposed crossing of the FGNRA be completed in a manner that utilizes existing pipeline corridors

and rights of way and preserves water quality, wildlife habitat and visual resources. As previously stated, all crossings of the Green River should be completed by boring underneath the river or gorge and with the installation of up and down stream safety shut off valves.” (029-008)

## **REC 2: How Would the Proposed Action Affect National Historic and Scenic Trails?**

(008-001, 008-003, 029-006, 029-011, 033-002, 033-003, 033-004, 033-005, 033-006, 033-007, 033-008, 033-009, 033-010, 033-011, 033-012, 033-013)

Commenters recommended that the analysis of impacts to National Historic and Scenic Trails include preservation of trail resources, public access and recreation experience, visual and audible impacts, and cumulative effects of infrastructure projects. Additionally, commenters requested more detailed mapping of where the Proposed Action would parallel or intersect National Historic and Scenic Trails.

Representative comments follow:

“Our primary concerns are 1) the preservation of NHT resources, 2) the continuation of public access to the NHTs, and 3) the preservation of applicable historic settings along the NHTs.” (008-003)

“There are several routes that will cross, parallel and/or may impact the CDNST. While many of these corridors will occur at road intersections or overlap with existing corridors, the CDNST should be identified in the project planning map so that adequate evaluation may occur. The corridors include the following: 1. Lateral Corridors: #2,#8 and maybe #9 (difficult to tell from the project map), 2. Trunk Corridors: #3,#4 and maybe #7(difficult to tell from the project map). Specifically, where the crossings/alignments for corridors #7, #8, #3, #4 and #9 intersect nearby where the CDNST occurs and should be more adequately mapped to reflect and evaluate any potential impacts to the CDNST. It is good to see that the CDNST is not included the oil production and CCUS areas.” (033-002)

“As a unit of the National Trails System, and otherwise considered designated area, the proposal should include a more fully evaluated section on impacts to recreational experiences within, intersected by, or otherwise impacted by the proposed corridors. We realize that each trail section is unique with specific localized conditions, however, we also feel that there should be consistent treatment of the Trail and its resources and the experience it offers all users in the discussion of impacts to recreational resources in this document. We encourage that evaluation of the potential impacts to recreational resources of the CDNST be included in the EIS.” (033-011)

## **Socioeconomics**

### **SOC 1: How Would the Proposed Action Affect the Economic Output of Other industries in the Analysis Area?**

(009-001, 010-001, 011-002, 015-003, 015-005, 015-009, 022-032, 026-004, 031-006)

Commenters recommended the analysis include the economic contribution of other oil and gas production, transmission construction and operation, grazing leases, and tourism. Representative comments follow:

“Oxy submits these scoping comments to the BLM because of the significant impact the proposed amendments to the RMPs may have on Oxy's ongoing and future operations in the State of Wyoming. Oxy has significant interest in areas managed by the BLM including over 225,000 acres of operated oil and gas leases, as wells as employees and contractors in the State of Wyoming. Oxy is also among the world's largest independent

oil and natural gas exploration and production companies. Oxy has fee ownership of mineral rights under nearly eight million net lease hold acres across the west, much of this in Wyoming, inclusive of royalty interests, and holds significant fee and federal mineral leases within the planning areas associated with the proposed RMP amendments.” (009-001)

“PCW and Trans West are developing the CCSM Project and TWE Project, respectively, in southern Wyoming. The CCSM Project is an approximately 3,000-megawatt (MW) wind energy project located in Carbon County, Wyoming, south of Sinclair. The TWE Project is an approximately 730-mile transmission line extending to southern Nevada. In Wyoming, the TWE Project begins south of Sinclair, continues west to Wamsutter, and then turns south roughly following the Carbon Sweetwater County line before crossing into Colorado. Development of the CCSM Project and TWE Project has been underway since 2008. Together, the CCSM Project and TWE Project will constitute a \$6 billion investment in Wyoming. PCW and Trans West have collectively invested hundreds of millions of dollars in the development and construction of these critical infrastructure projects.” (011-002)

“livestock grazing represents a vital economic value to agriculture producers and to local communities.” (015-005)

## **SOC 2: How Would the Proposed Action Affect Employment, Earnings, and Output over the Life of the WPCI Project?**

(014-003, 017-001, 022-008, 022-009, 022-013, 024-002, 028-003, 028-004, 030-003, 030-019, 031-002, 032-026)

Several comments requested the analysis include the socioeconomic impacts to local economies from the WPCI Project and from increased oil and gas development that the project would encourage. One comment requested that this analysis include the economic impacts to environmental justice (EJ) communities within nearby communities. Representative comments follow:

“Injecting C02 into depleted oil fields would increase oil production unrecoverable through conventional methods while offering a solution to reducing carbon emissions. Increased C02-EOR development would also generate considerable royalties and taxes to the State of Wyoming and associated counties as well as adding thousands of jobs.” (014-003)

“The SER CD requests a socio-economic impact analysis be provided in the Proposed Action, per SER CD Long Range Plan, Policy Socio-economics #3: ‘Local, state, and federal agency plans or management recommendations shall include a socio-economic impact description (either brief or in-depth depending on the case needs) that addresses the effects on the District natural resources, economies, and health and welfare of the District citizens.’” (022-013)

“...Assess EJ and other socioeconomic concerns for any EJ communities, to the extent information is available, including: A discussion of the potential direct, indirect and cumulative environmental impacts of the proposed project on the health or welfare of these communities, including air quality and water quality and impacts. Health risks to EJ communities from the proposed pipeline may include construction and operation impacts as well as potential leak risks. An evaluation of the socio-economic impacts and benefits to the local communities, including the potential for any additional loading placed on local communities' abilities to provide necessary public services and amenities...” (030-019)

### **SOC 3: How Would the Proposed Action Affect End-Consumer Purchases?**

(028-011)

Comment follows:

“The WPCI Proposal proposes increased use of EOR in depleted Wyoming oil fields and new CO<sub>2</sub>, oil and natural gas pipelines. This would tie up capital that could be used instead for renewable energy production and would result in additional fossil fuel products being offered to the public instead of renewable energy, potentially displacing the public’s purchase of renewables. As a result, the EIS must analyze the impacts of Wyoming producing additional new fossil fuel for end-consumer purchase instead of producing renewable energy. Any EIS must also fully disclose the potential indirect and cumulative impacts of CO<sub>2</sub> pipeline use on coal combustion and coal-fired power plant retirement and/or utilization.” (028-011)

### **Soils**

#### **SOL 1: Would Project Design and Location Affect the Risk of Ground Subsidence and Soil Erosion Associated with the Proposed Action?**

(012-005, 019-004, 020-007, 032-009)

Commenters expressed concern about the risk of surface subsidence, erosion, and seismicity associated with mining practices and pipeline location decisions. Representative comments follow:

“The BLM should evaluate seismicity, slope stability, soil type, and reclamation potential in the locations of the proposed corridor.” (032-009)

“Trona mining, both dry mining and solution mining, creates surface subsidence of up to seven (7) feet. Genesis Alkali has longstanding experience working with pipeline owners/operators, both natural gas and liquids, to mitigate the impacts of subsidence on pipelines that cross over mining areas. These mitigation discussions can take significant time and effort and costs can run into the millions, which can take a toll on pipeline owner/operators and on the Wyoming’s trona mining businesses who are affected. To avoid such costs, designated routes for new pipelines should be developed to avoid current and future mining areas whenever practicable.” (019-004)

### **Special-Status Species**

#### **SSS 1: How Would the Proposed Action Affect Habitat and Local Populations of Greater Sage-Grouse?**

(019-003, 019-005, 022-032, 025-001, 028-023, 028-024, 028-025, 028-026, 028-031, 028-033, 028-034, 032-006, 032-017)

Commenters requested that the analysis include potential impacts to greater sage-grouse designated habitat areas (e.g., priority habitat management areas and core) and individuals. Representative comments follow:

“Many of the proposed pipeline corridors are within biologically important big game habitats; are within sage-grouse core population areas; or are within 0.6 miles and 0.25 miles of numerous core area and non-core area leks, respectively. Although these proposed corridors generally follow existing pipelines and corridors, we recommend developing an alternative that analyzes minor changes to the proposed routes where they

bisect ‘vital’ habitats (per the Wyoming Game and Fish Commission Mitigation Policy 20 16) in order to avoid potential loss of habitat function.” (025-001)

“The avoidance of PHMAs and SFAs is vitally important because, for the most part, Wyoming PHMAs and SFAs are within Priority Areas of Conservation (PACs), key habitats for sage-grouse conservation that were identified by the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service’s 2013 Conservation Objectives Team Report (COT Report) states, ‘Development of infrastructure for any purpose (e.g., roads, pipelines, powerlines, and cellular towers) results in habitat loss, fragmentation, and may cause sage-grouse habitat avoidance. Additionally, infrastructure can provide sources for the introduction of invasive plant species and predators.’” (028-025)

“The EIS Must Analyze the Impacts to Greater Sage-Grouse and Other Wildlife of Amending the RMPs to Establish Pipeline Corridors.” (028-031)

## **SSS 2: How Would Water Depletions Affect Species Protected under the Endangered Species Act in the Upper Colorado River Basin and Platte River Basin?**

(023-001)

Comment follows:

“Appendix I does not discuss federally listed species that may be affected by water depletions but should be included. Please be aware that under the Upper Colorado River Endangered Fish Recovery Program and the Platte River Recovery Implementation Program, formal interagency consultation under section 7 of the ESA is required for projects that may lead to water depletions, in excess of 0.1 acre-foot per year, from any system that is a tributary to the Colorado River, and central and lower Platte River. Federal agency actions resulting in water depletions to the Colorado River system may affect the endangered bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*) and their habitat downstream in the Green and Colorado River systems. In addition, upstream depletions may contribute to the destruction or adverse modification of designated critical habitat for these four species. Critical habitat is designated for Colorado River Fish in Colorado and Utah in downstream riverine habitat in the Yampa, Green, and Colorado River systems (see 50 CFR 17.95(e)). The Service, in accordance with the Upper Colorado River Endangered Fish Recovery Program, adopted a de minimis policy, which states that water-related activities in the Upper Colorado River Basin that result in less than 0.1 acre-foot per year of depletions in flow have no effect on the Colorado River endangered fish species, and thus do not require consultation for potential effects on those species. Similarly, detention basins designed to detain runoff for less than 72 hours, and temporary withdrawals of water outside of critical habitat (e.g., for hydrostatic pipeline testing) that return all the water to the same drainage basin within 30 days, are considered to have no effect and do not require consultation. Federal agency actions resulting in water depletions to the central and lower Platte River may affect the whooping crane (*Grus americana*), including their critical habitat, and the endangered least tern (*Sternula* [Sterna] *antillarum*), pallid sturgeon 2 (*Scaphirhynchus albus*), Western prairie fringed orchid (*Platanthera praeclara*), and the threatened piping plover (*Charadrius melodius*).” (023-001)

### **SSS 3: How Would the Proposed Action Affect Special-Status Plants?**

(032-019)

Comment follows:

“BLM should ensure that potential adverse impacts to rare and sensitive plants are evaluated and avoided to the extent possible.” (032-019)

## **Surface Water**

### **SWR 1: Would Construction Associated with the Proposed Action Lead to Increases in Erosion and Resultant Sedimentation with the Potential to Affect Water Quality?**

(020-006, 020-007, 030-012)

Representative comments follow:

“The Hot Springs Conservation District has site specific knowledge of erosion and erosion control which may be of use during Phase III NEPA analysis of an actual carbon dioxide pipeline project.” (020-007)

“When considering corridor alternatives, the EPA recommends that the following resource impacts be discussed, including disclosure of which waters may be impacted, the nature of potential impacts, and specific pollutants likely to impact those waters: Surface Water Quality and Sedimentation: Potential impacts to water quality from runoff associated with surface disturbance. Runoff could introduce sediment as well as salts, selenium and other pollutants. Drinking Water: Any potential impacts to drinking water from the project, including source water protection areas and other municipal or private water supplies. Impaired Waterbodies: Potential impacts to impaired waterbodies, including waterbodies listed on the CWA § 303(d) list and waterbodies with Total Maximum Daily Loads (TMDLs). Groundwater: Any potential impacts to groundwater, including groundwater recharge areas and shallow and sensitive aquifers...” (030-012)

### **SWR 2: Would the Proposed Action Affect Surface Water Resources?**

(021-005, 028-017, 030-005, 030-010)

A few comments were general in nature requesting that impacts to surface water resources be addressed in the analysis. Representative comment follows:

“Based on our current understanding of the proposed Wyoming Pipeline Corridor Initiative (WPCI) project and the area, the EPA has identified the following key topics that we recommend be analyzed and discussed in the Draft EIS so that potential impacts to public health and the environment can be fully understood: (2) groundwater and surface water resources;” (030-005)

### **SWR 3: Would the Proposed Action Result in the Net Loss of Wetland Areas?**

(020-003, 030-011, 030-013, 030-014, 030-015)

Commenters requested that wetlands be described and impacts to wetlands and wetland function be analyzed. Representative comment follows:

“We anticipate that the primary potential for impacts to surface waters would stem from pipeline construction and from permanent surface disturbances such as access roads and ancillary facilities. The EPA recommends that the BLM characterize surface waters in proximity to the proposed corridors by: Mapping surface water resources in the proposed

development areas. This could include a summary discussion of the water resources that exist in the project areas. Presenting baseline data on the condition and quality of surface water resources, and where appropriate and possible, reasons why these resources have been impacted, including: Lists of any Clean Water Act impaired or threatened waterbody segments within or downstream of the project areas, including the designated uses of those waterbodies and the specific pollutants of concern; Inventories and maps of existing wetlands and Waters of the U.S. within the project areas, including wetlands that are regulated under Section 404 of the CWA, and wetlands that are determined to be non-jurisdictional and protected under Executive Order 11990-Protection of Wetlands (May 24, 1977), and, where project impacts are likely, acreages and channel lengths, habitat types, values, and functions of these waters.” (030-011)

#### **SWR 4: Would the Proposed Action Lead to Alteration of Stream Channels and Drainage Flows and Ultimately Stream Classification?**

(020-004, 022-032, 029-007, 030-013, 030-015)

Commenters requested the analysis to include impacts to stream and rivers. Representative comments follow:

“The protection, improvement, and restoration of wetlands and riparian areas are a high priority. These resources increase landscape and species diversity, support many species of western wildlife, and are critical to the protection of water quality and designated beneficial water uses. In addition, these areas warrant protection under Section 404 of the CWA as well as Executive Order 11990. We suggest that the BLM analyze potential impacts to the following for each proposed corridor: Stream structure and channel stability; Streambed substrate, including seasonal and spawning habitats; Stream bank vegetation, riparian habitats, and aquatic biota;...” (030-013)

“Segment 6 Location Concerns. The SER CD has major concerns with the location of Segment 6. As located in the Proposed Project, it cuts through mule deer crucial range and mule deer winter range; goes across a blue ribbon stream segment; crosses the North Platte River in the miracle mile area, an area with very high economic value for tourism and recreation (see circled area on Map 3 attachment); it crosses the North Platte River 3 times and appears to be in the river bed for nearly a mile (see circled area on Map 2 attachment); goes through winter and yearlong bighorn sheep area; goes through pronghorn crucial range; bisects the sage-grouse core area v4 west of Seminoe Reservoir and would be in close proximity to at least 2 leks (see circled area on Map 2 attachment).” (022-032)

## **Transportation**

#### **TRA 1: Would the Proposed Action Affect Existing Transportation Corridors or Public Access?**

(001-001, 021-006, 029-004, 029-011, 032-014)

Commenters generally suggested areas of specific concern or sensitivity. Representative comments follow:

“One concern: Bridger Pass. It gets crowded up there, and the County may propose substantial improvements to the road.” (001-001)

“Pipeline Lateral Corridor #5: Sweetwater County supports this corridor and its designation as an underground pipeline corridor only. During construction, special attention should be given to historical trails, crossings of Sweetwater County roads, and protection of wildlife



habitat especially the aspen groves and isolated springs along Bush Rim. Sweetwater County supported locating the Denbury Pipeline within this corridor.” (029-011)

## **Vegetation**

### **VEG 1: Would the Proposed Action Affect Vegetation Cover?**

(004-002, 004-004, 033-005, 028-028)

Commenters were generally concerned about potential negative impacts to vegetation cover and subsequent habitat fragmentation. A representative comment follows:

“Adverse impacts also include lights, access roads, cleared swaths of land, off-road vehicle access on utility rights-of-way, guy wires, chain link fences, and chemical treatments of the vegetation in the corridor.” (033-005)

### **VEG 2: Would the Proposed Action Result in the Introduction and Spread of Noxious Weeds and Other Invasive Plants?**

(015-008, 022-012, 028-029, 031-006)

Commenters recommend that the EIS analyze and disclose the potential to increase the spread of noxious weeds and other invasive plants. A representative comment follows:

“The WDA Insists the BLM oversee and ensure successful/performance-based reclamation and mitigation in the proposed corridor, including any new/temporary roads and disturbed areas. This also Includes monitoring and eradicating Invasive and noxious weeds until desired vegetation Is established.” (015-008)

### **VEG 3: Would a Pipeline Leak or Spill Affect Vegetation Cover?**

(030-010)

The comment follows:

“We recommend the Draft EIS include an evaluation of potential adverse impacts from pipeline leaks or spills. This should include potential adverse impacts to; surface waters, public or private water supplies, human health, vegetation, or wildlife. In this part of the analysis, it would be useful to discuss the probabilities and/or likely frequencies of different types of spill or leak events over the life of this type of pipeline. We expect this information would be useful in determining appropriate, safe corridor locations.” (030-010)

## **Visual Resources**

### **VIR 1: Would Construction Activity and the Long-Term Presence of the Pipeline Affect the Analysis Area's Viewshed and Sensitive Viewing Locations?**

(015-006, 022-005, 029-002, 032-020, 032-021, 033-010)

Commenters expressed concern about existing open spaces, scenic vistas, and other protected viewsheds that could be traversed or impacted by the identified corridors. Representative comments follow:

“CDTC recommends the mapping of visual resources and the impacts to these resources conducted in a manner consistent with the Scenery Management System to adequately protect the integrity and quality of the scenic resources in the areas traversed or impacted by the identified corridors.” (033-010)

“The BLM must ensure adequate consultation with tribes, particularly regarding traditional cultural properties, which may not be mapped, and any other resources of cultural or spiritual significance. The BLM should avoid designated and proposed National Historic Trails and their viewsheds. The current proposal sites corridors across the Mormon, California, and Oregon trails and through their protected viewsheds.” (032-020)

## **Wildlife, General**

### **WLF 1: How Would the Proposed Action Affect Big Game Migration Routes and Important Habitat Areas?**

(022-032, 025-001, 028-035, 028-036, 032-016)

Commenters requested that the analysis include potential impacts to big game designated migration routes and important habitat areas including crucial, winter, and year-long ranges. Representative comments follow:

“Segment 6 Location Concerns. The SER CD has major concerns with the location of Segment 6. As located in the Proposed Project, it cuts through mule deer crucial range and mule deer winter range; goes across a blue ribbon stream segment; crosses the North Platte River in the miracle mile area, an area with very high economic value for tourism and recreation (see circled area on Map 3 attachment); it crosses the North Platte River 3 times and appears to be in the river bed for nearly a mile (see circled area on Map 2 attachment); goes through winter and yearlong bighorn sheep area; goes through pronghorn crucial range; bisects the sage-grouse core area v4 west of Seminoe Reservoir and would be in close proximity to at least 2 leks (see circled area on Map 2 attachment).” (022-032)

“The current proposal sites corridors within stopovers in the famous and imperiled Red Desert to Hoback (Sublette) mule deer migration corridor and within the proposed Wyoming Range MDC. BLM should avoid crossing designated and proposed migration corridors, particularly in stopovers, and must incorporate the best available science on mule deer migrations in its draft EIS. The current proposal sites corridors within crucial winter range for at least eleven mule deer herd units including the Sublette herd. Given population declines and various environmental pressures on our mule deer herds, BLM should avoid mule deer CWR to the maximum extent possible.” (032-016)

### **WLF 2: How Would the Proposed Action Affect Wildlife Species?**

(021-004, 028-031, 028-32, 029-002, 030-010)

Commenters requested that the analysis include general impacts to wildlife species. Representative comment follows:

“The EIS must analyze the direct, indirect, and cumulative impacts of amending the RMPs on wildlife. Of particular concern are special status species [SSS] and wide-ranging species that are affected by habitat fragmentation.” (028-032)

### **WLF 3: How Would the Proposed Action Affect Wildlife Habitat?**

(004-002, 004-004, 020-005, 022-005, 022-009, 022-012, 029-011)

Commenters requested that the analysis include general impacts to wildlife habitat. Representative comments follow:

“Policy Ecosystem Services #3: The District, in agreement with Carbon County, wants to sustain scenic areas, wildlife habitat, and other important open spaces (Carbon County 2012).” (022-005)

“The SER CD is concerned with continued habitat fragmentation within the district including developing new installation roads, operation and maintenance roads, increasing native range disturbance, and expanding the spread of noxious/invasive plants as supported by SER CD Long Range Plan, Policy Wildlife #1: ‘The District promotes wildlife conservation, sustainability of healthy wildlife habitat and populations, and their contributions to the local economy.’ and Policy Range #6: ‘The District supports and strongly encourages the control of noxious weeds and pests by owners, managers, and users of all lands.’” (022-012)

## **5.2 BLM Internal Scoping**

### **5.2.1 BLM Internal Scoping Process**

The BLM Wyoming State Office coordinated with the nine BLM field offices (Buffalo, Casper, Cody, Kemmerer, Lander, Pinedale, Rawlins, Rock Springs, and Worland) to solicit feedback and comments on the Proposed Action during the internal scoping process. The BLM Wyoming State Office held a project kickoff meeting and conference call on August 8, 2019, to present proposed project information to selected representatives and resource specialists (collectively known as the interdisciplinary team [IDT]), from the nine field offices. Follow-up conference calls were held in late August and September 2019. The IDT provided comments and identified issues for their area of expertise and field office throughout the process, and comments were continually refined. The BLM Wyoming State Office also held IDT meetings in conjunction with the public scoping meetings to discuss and finalize comments. The comment tracking spreadsheets, comment documents, and IDT meeting notes are available in the project’s administrative record.

### **5.2.2 BLM Comments**

#### **Air Quality**

How would emissions from equipment and vehicles used during pipeline construction and operation affect air quality, including visibility?

How would storage of large quantities of CO<sub>2</sub> in the pipeline corridor affect Wyoming’s GHG emissions?

#### **Alternatives**

Corridor reroute possibilities include for Segment 7 to head west to U.S. Route 287 and follow the route north to the crossing and to shift Segment 6 to the east along Wyoming Highway 487 to pass east of Shirley Mountain and toward Medicine Bow.

The Rawlins Field Office is satisfied with where the existing corridors are placed in their region, but there are some issues with where the existing corridors cross into the Lander Field Office.

A proposed solar project in Section 24, Township 19 North, Range 109 West appears to conflict with the Proposed Action. The Proposed Action would need to be rerouted around this facility.

The establishment of a ROW corridor pursuant to Section 503 of FLPMA, the width needs to be consistent with the planned or established uses within the corridor. This includes the appropriate offsets for any pipeline placement to the appropriate industry and governmental standards. Five pipelines in 150 feet of corridor may require a wider corridor. Consider less pipelines and larger pipes instead. For instance, in place of 20-inch use 24-inch or 30-inch pipeline.

## **Avoidance, Minimization, and Mitigation**

Regardless of whether invasive plants are currently present or how much prevention control is conducted, it should be assumed that some level of new infestations will be introduced from potential construction activities. Seed mixes for reclamation are required to be noxious weed free; however, under state law, seed mixes can contain a 3% of other weeds. This alone can possibly create weed issues. There is no BLM statewide standard for the amount of invasive plants and other noxious weeds allowed in any given area.

## **Cultural Resources**

How would the Proposed Action physically (directly) affect both known and unknown cultural resources?

How would the proposed pipeline development indirectly affect known eligible cultural resources with integrity of setting?

How would the proposed pipeline development physically (directly) or indirectly (visually) impact both known and unknown cultural resources of Native American concern?

## **Cumulative Effects**

Approximately 5 miles of Segment 2 in the Rawlins Field Office area is located within the Red Rim-Daley WHMA, which parallels an existing transmission line. This would widen the existing disturbance in this area, further fragmenting habitat. This increased fragmentation could lead to increased predation because of adequate vegetation, e.g., large sagebrush or greasewood, cover.

Construction would be seasonal, and workers would be competing for limited temporary housing with workers on other projects as well as tourists and recreationists. The discussion of cumulative housing impacts would be important.

## **Environmental Justice**

Would construction, installation, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect environmental justice communities?

Would operations and maintenance of pipelines in the trunk and lateral corridors affect environmental justice communities?

Would reclamation following the abandonment of pipelines in the trunk and lateral corridors affect environmental justice communities?

## **Fire and Fuel Loads**

How would a human-made fire affect BLM management of wildfires and fuel loads?

## Geology and Minerals

Is the analysis area prone to geologic hazards (earthquakes, landslides/slumping) that could affect pipelines or that could be exacerbated by pipeline construction or oil and gas development (fracking) supported by the Proposed Action?

Would pipeline construction increase the likelihood of landslides in landslide-prone areas?

Would disturbance from pipeline construction affect cave and karst resources?

Would the pipeline corridors overlap and affect active mines in the analysis area?

Would the pipeline corridors make mineral locations inaccessible to exploration/development?

## Groundwater

Would construction activities associated with the pipelines in the designated corridors (including hydrostatic testing) increase the risk of surface water or groundwater (including seeps and springs) contamination from chemicals?

Would water-consumptive activities associated with Proposed Action construction affect the availability and quality of water resources, including groundwater and springs and seeps?

How would the Proposed Action affect groundwater, especially shallow groundwater resources?

## Land Use and Access

How would the Proposed Action affect other corridors, ROWs, and/or land use authorizations?

How would the Proposed Action affect agricultural land uses on private property and/or state lands?

How would construction, operation, and maintenance of the project affect land uses and land use plans?

## NEPA Analysis and Related Processes

A mining claim report needs to be run to determine potential impacts to existing mining claims.

As a direct competent to trails management, the National Trails Act identifies trail resources to include the landscape and noise that can be seen and/or heard from the trail. The trails visual protection corridor decisions found in the BLM land use plans are a direct result of the BLM protecting places on the trails where sensitive trail resources are present. Any proposal that is in direct conflict of the National Trails Act is considered interference with the nature and purpose of the trails.

For the socioeconomic analyses, it is reasonable to use the Riley Ridge to Natrona analysis as an example of economic impacts associated with short-term construction and long-term operation of the pipeline. There is a lot of uncertainty in when and where pipelines would be constructed; therefore, impact calculations should be the per-mile impacts associated with construction and operation phases from the Riley Ridge to Natrona analysis. Reporting total statewide impacts would inevitably inflate impacts and imply a false sense of precision. The Riley Ridge to Natrona analysis can also be used to estimate sales tax and lodging tax and to report potential tax revenue generated per worker.

Property taxes should be addressed qualitatively by saying that property taxes would be levied on pipelines and infrastructure in each county.

Severance taxes are levied on the extraction of minerals, not its transportation, so if the assumption is that no operators would employ EOR without the presence of a pipeline in these corridors, then severance taxes levied on the incremental reserves extracted from existing fields through EOR would be relevant to this analysis.

Impacts to SSS need to be analyzed individually as to which species or habitats could be impacted.

Impacts to Visual Resource Management (VRM) need to be evaluated in association to the Proposed Action and how it may contrast with the land use plan VRM Class objectives. The Visual Resource Inventory will be used to define the baseline data to help inform the contrast analysis and visual simulations in relation to the proposed action and its location on BLM lands. If the contrast to the landscape does not meet the current VRM objectives on the ground, then alternatives and BMPs would need to be developed to meet those objectives.

## **Noise**

How would noise generated by construction, operation, and maintenance of the pipeline affect sensitive receptors, and what impacts could remain after the mitigation is applied?

## **Paleontological**

How would construction related to ground-disturbing activities directly or indirectly affect known or unknown paleontological resources?

How would an increase in human activity during and after construction directly or indirectly affect known and unknown paleontological resources?

## **Proposed Action**

Segment 6 overlaps the Seminole-Alcova Backcountry Byway, Morgan Creek WHMA, Miracle Mile Blue Ribbon trout fishery and recreation area, sand dunes near Seminole State Park, North Platte River, and Dugway Campground. Many areas could have erosion and reclamation issues because of steep slope and poor soil stability. Sand dunes are also potential habitat for blowout penstemon.

Segment 7 could have erosion and reclamation issues because of poor soil quality and boggy soap holes, which would make it difficult to access some portions of the corridor.

Segment 3 overlaps the following no surface occupancy areas for sage-grouse leks: May Day, Fivemile Junction, Sourdough, Minex West, Discover, and Discover South. Segment 6 overlaps the following no surface occupancy areas for sage-grouse leks: Idaho Airstrip, Gooseberry Creek, 2783111, Kortess Road, Canyon Creek, Canyon Creek South, Meers Camp, Rattlesnake Spring, Canyon Creek North Fork Lower, Kortess Road, Canyon Creek, and Rattlesnake Spring. Segment 7 overlaps the following no surface occupancy for sage-grouse leks: Tin Can, Conners, and Frenchmen.

## **Public Health and Safety**

How would a hazardous materials spill affect public health and safety (e.g., contaminated soils or groundwater, near roadways)?

How would a fire affect public health and safety?

## **Range and Grazing**

How would vegetation removal and surface disturbance temporarily and permanently affect acres with suitable forage for grazing?

How would vegetation removal and surface disturbance affect the available animal unit months within each allotment crossed by the corridors, temporarily and permanently?

How would the pipeline impact the various range improvements it intersects during construction?

How would disturbance associated with the Proposed Action increase invasive species and reduce forage for livestock?

## **Recreation**

How would the proposed pipeline corridor network affect recreation management areas, recreation resources, special recreation and management areas, and extensive recreation and management areas?

How would the long-term presence of aboveground facilities and access roads affect recreational experience and access?

How would construction, operations, and maintenance activities in the ROW affect recreational experience and access?

How would restricting all pipeline ROWs and associated roads to energy-related vehicles only affect recreation resources and all other BLM resources given strong concern regarding route densities?

How would the Proposed Action impact national historic and scenic trails?

## **Socioeconomics**

How would construction, installation, operations and maintenance, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect the direct, indirect, and induced employment, earnings, and economic output from related expenditures within the analysis area?

How would construction, installation, operations and maintenance, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect the demand for short-term housing, long-term housing and public services, such as police, emergency response, and health services, within the analysis area?

How would construction, installation, operations and maintenance, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect state and county tax revenues, primarily from sales and lodging taxes?

How would operations and maintenance of pipelines in trunk and lateral corridors affect state and county tax revenues, primarily from property and severance taxes from oil, gas, and CO<sub>2</sub> production?

How would construction, operations and maintenance, installation, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect the tourism and recreation economy from the temporary closures of public land?

How would construction, installation, operations and maintenance, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect non-market values and property values?

How would construction, installation, operations and maintenance, cleanup, and reclamation of pipelines in the trunk and lateral corridors affect private land values near the corridors?

How would the pipeline corridors impact indirect socioeconomic resources (i.e., employment, earnings, and output) through EOR over the life of the project?

## **Soils**

Would construction associated with the Proposed Action result in soil compaction?

Would construction associated with the Proposed Action result in disturbance to sensitive soils (e.g., biological crusts)?

Would the Proposed Action result in increased erosion from lack of soil protection?

Would the Proposed Action result in temporary loss of soil productivity until successful reclamation?

Would the Proposed Action result in long-term loss of soil productivity in areas with soils that have low reclamation potential?

Would construction associated with the Proposed Action result in soil compaction?

Would construction associated with the Proposed Action result in disturbance to sensitive soils (e.g., biological crusts)?

Would the Proposed Action result in increased erosion from lack of soil protection?

Would the Proposed Action result in temporary loss of soil productivity until successful reclamation?

Would the Proposed Action result in long-term loss of soil productivity in areas with soils that have low reclamation potential?

## **Special Designations**

How would future corridor clearing and surface disturbance affect the relevant and important values of each of the following ACECs crossed by or within 150 feet of the corridors: Beaver Rim ACEC (scenic value), National Historic Trail ACEC (scenic value), Jackson Canyon ACEC, Greater Sand Dunes ACEC?

How would future corridor clearing and surface disturbance affect the relevant and important values of each of the following ACECs crossed: Beaver Rim ACEC (scenic value), Jackson Canyon ACEC, Greater Sand Dunes ACEC?

How would future corridor clearing and surface disturbance affect designated wilderness study areas?

## **Special-Status Species**

Would clearing vegetation decrease sage-grouse reproduction and recruitment, resulting in population declines at both the site scale and subpopulation scale?

Would decreased availability of cover and forage during winters contribute to long-term population declines?



Would pipeline corridors increase potential predation?

Would pipeline corridors increase habitat fragmentation that limits sage-grouse use?

Would the Proposed Action (clearing habitat, fragmentation, roads, increased activity, invasive weeds) result in SSS population declines?

Would pipeline corridors increase SSS habitat fragmentation or predation of SSS?

How would water use, noise, and increased activity impact SSS?

## **Surface Water**

Would construction associated with the Proposed Action lead to increases in erosion and resultant sedimentation with the potential to affect water quality?

Would water-consumptive activities associated with Proposed Action construction affect the availability and quality of water resources, including streams and wetlands?

Does the Proposed Action overlap with eligible or designated wild and scenic rivers, and, if so, would it affect the classification or alter its eligibility?

Would the Proposed Action result in the net loss of wetland areas?

Would the Proposed Action lead to alteration of stream channels and drainage flows and ultimately stream classification, groundwater recharge rates, and surface run-off rates?

What will the water quality and/or quantity impacts be from hydrostatic testing and other water-using activities associated with the proposed pipeline?

Would the Proposed Action lead to increased salinity levels in the Upper Colorado River Basin?

What are the local area and downstream impacts to the increase in salinity?

How would salinity alter the instream habitat and associated aquatic species?

## **Vegetation**

How would construction affect vegetation cover?

Would construction of the corridor remove forested vegetation for which BLM is directed under 43 CFR 5000 to receive fair market value?

Would removal of forested vegetation cause increased sediment delivery to streams and lakes?

Would reclamation efforts use seedlings grown from seed from the correct elevation and seed zones?

Would reforestation success be measured and additional plantings done to ensure reforestation is accomplished within the regulatory required timelines?

Would fuels created from the removal of vegetation be treated sufficiently to reduce the risk of fire?

Would construction cause the introduction and spread of noxious weeds and other invasive plants?

How would the introduction of noxious weeds and invasive species affect revegetation success?

## Visual Resources

How would construction activity and the long-term presence of the pipeline affect the analysis area's viewshed and sensitive viewing locations?

How would construction activity and the long-term presence of the pipeline affect the analysis area's viewshed and sensitive viewing locations?

## Wild Horses

Would wild horses be affected by fragmentation, reduced access to water, open trenches, and vehicular traffic during construction?

Would wild horse grazing affect revegetation efforts within corridors?

## Wildlife, General

How would construction and operations affect big game movement, migration routes, and parturition areas?

How would construction and operations affect raptor and migratory bird nesting activities?

Would construction across stream channels and/or other waters affect native fisheries/aquatic resources because of sedimentation, turbidity, and increase in salinity?

Would water withdrawals for hydrostatic testing and dust abatement reduce fisheries habitat?

## 6 FUTURE STEPS IN THE EIS PROCESS

Once alternatives are developed, the BLM will analyze the effects of each alternative on the environment. The analysis will consider the scoping feedback and finalized issues for analysis. The documentation of the process and the results will be included in the draft EIS.

Once the draft EIS is internally vetted with cooperating agencies, it will be made available for public review. The availability of the draft EIS will be announced in the *Federal Register* and advertised in the local and regional media. Public comments will be accepted for 90 days. The BLM will review and consider all comments received on the draft EIS. The document will be modified as appropriate based on public comments; all substantive comments and responses will be incorporated into the final EIS.

The notice of availability (NOA) of the final EIS will be announced in the *Federal Register* and advertised in local and regional media. The NOA will outline procedures to protest the final EIS during the 30-day period after the NOA is published in the *Federal Register*. A 60-day Governor's Consistency Review will occur concurrent with this protest period.

A record of decision selecting the alternative to be implemented will be issued following the 60-day Governor's Consistency Review and resolution of protests on the final EIS. Throughout the process the

public may continue to monitor the BLM's project website for updates and can request to be added to the BLM's project mailing list.

To be added to the mailing list:

**Email:** [hschultz@blm.gov](mailto:hschultz@blm.gov)

**Mail:** Heather Schultz, Project Manager  
BLM Wyoming State Office  
5353 Yellowstone Road  
Cheyenne, Wyoming 82009

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## **Appendix A**

### ***Federal Register* Notice of Intent**



**DEPARTMENT OF HOMELAND SECURITY****[Docket No. CISA-2019-0015]****Notice of the President's National Infrastructure Advisory Council Meeting****AGENCY:** Cybersecurity and Infrastructure Security Agency, DHS.**ACTION:** Announcement of meeting; request for comments.

**SUMMARY:** The Cybersecurity and Infrastructure Security Agency (CISA) announces a public meeting of the President's National Infrastructure Advisory Council (NIAC). To facilitate public participation, CISA invites public comments on the agenda items and any associated briefing materials to be considered by the council at the meeting.

**DATES:**

*Meeting Registration:* Individual registration to attend the meeting in person is required and must be received no later than 5:00 p.m. EST on December 12, 2019.

*Speaker Registration:* Individuals may register to speak during the meeting's public comment period must be received no later than 5:00 p.m. EST on December 4, 2019.

*Written Comments:* Written comments must be received no later than 12:00 p.m. EST on December 11, 2019.

*NIAC Meeting:* The meeting will be held on Thursday, December 12, 2019 from 9:00 a.m.–1:00 p.m. EST.

**ADDRESSES:** The NIAC meeting will be held at the Eisenhower Executive Office Building, 1650 Pennsylvania Ave. NW, Washington, DC 20502.

*Comments:* Written comments may be submitted on the issues to be considered by the NIAC as described in the **SUPPLEMENTARY INFORMATION** section below and any briefing materials for the meeting. Any briefing materials that will be presented at the meeting will be made publicly available on Friday, December 6, 2019 at the following website: <https://www.dhs.gov/national-infrastructure-advisory-council>.

Comments identified by docket number "CISA-2019-0015" may be submitted by any of the following methods:

- *Federal eRulemaking Portal:* [www.regulations.gov](http://www.regulations.gov). Follow the instructions for submitting written comments.
- *Email:* [NIAC@hq.dhs.gov](mailto:NIAC@hq.dhs.gov). Include docket number CISA-2019-0015 in the subject line of the message.
- *Fax:* 703-235-9707, ATTN: Ginger K. Norris.

- *Mail:* Ginger K. Norris, Designated Federal Officer, National Infrastructure Advisory Council, Cybersecurity and Infrastructure Security Agency, Department of Homeland Security, 245 Murray Lane, Mail Stop 0612, Arlington, VA 20598-0612.

*Instructions:* All submissions received must include the agency name and docket number for this notice. All written comments received will be posted without alteration at [www.regulations.gov](http://www.regulations.gov), including any personal information provided. For detailed instructions on sending comments and additional information on participating in the upcoming NIAC meeting, see the "PUBLIC PARTICIPATION" heading of the **SUPPLEMENTARY INFORMATION** section of this document.

*Docket:* For access to the docket and comments received by the NIAC, go to [www.regulations.gov](http://www.regulations.gov).

**FOR FURTHER INFORMATION CONTACT:**

Ginger K. Norris, 202-441-5885, [ginger.norris@cisa.dhs.gov](mailto:ginger.norris@cisa.dhs.gov).

**SUPPLEMENTARY INFORMATION:** The NIAC is established under Section 10 of E.O. 13231 issued on October 16, 2001. Notice of this meeting is given under the Federal Advisory Committee Act (FACA), 5 U.S.C. Appendix (Pub. L. 92-463). The NIAC shall provide the President, through the Secretary of Homeland Security, with advice on the security and resilience of the Nation's critical infrastructure sectors.

The NIAC will meet in an open meeting on December 12, 2019, to discuss the following agenda items with DHS leadership.

**Agenda**

- Call to Order
- Opening Remarks
- Insurance Panel Discussion
- Discuss and Deliberate Current Task
- Public Comment
- Closing Remarks
- Adjournment

**Public Participation***Meeting Registration Information*

Due to additional access requirements and limited seating, requests to attend in person will be accepted and processed in the order in which they are received. Individuals may register to attend the NIAC meeting by sending an email to [NIAC@hq.dhs.gov](mailto:NIAC@hq.dhs.gov).

*Public Comment*

While this meeting is open to the public, participation in FACA deliberations are limited to council members. A public comment period will be held during the meeting from approximately 12:45 p.m.–1:00 p.m.

EST. Speakers who wish to comment must register in advance and can do so by emailing [NIAC@hq.dhs.gov](mailto:NIAC@hq.dhs.gov) no later than Wednesday, December 4, 2019, at 5:00 p.m. EST. Speakers are requested to limit their comments to three minutes. Please note that the public comment period may end before the time indicated, following the last call for comments.

*Information on Services for Individuals With Disabilities*

For information on facilities or services for individuals with disabilities or to request special assistance at the meeting, contact [NIAC@hq.dhs.gov](mailto:NIAC@hq.dhs.gov) as soon as possible.

Dated: November 6, 2019.

**Ginger K. Norris,**

*Designated Federal Official, National Infrastructure Advisory Council, Cybersecurity and Infrastructure Security Agency, Department of Homeland Security.*

[FR Doc. 2019-24744 Filed 11-14-19; 8:45 am]

**BILLING CODE 9110-9P-P**

**DEPARTMENT OF THE INTERIOR****Bureau of Land Management**

**[LLWY925000.L13400000.PQ0000 20X]**

**Notice of Intent To Prepare Resource Management Plan Amendments for 9 BLM-Wyoming Resource Management Plans and an Associated Environmental Impact Statement**

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Notice of intent.

**SUMMARY:** In compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, and the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, the Bureau of Land Management (BLM) intends to prepare an Environmental Impact Statement (EIS) to analyze potential Resource Management Plan (RMP) amendments for BLM Wyoming's Cody, Worland, Buffalo, Casper, Lander, Pinedale, Kemmerer, Rawlins and Rock Springs field offices. The proposed amendments would designate pipeline corridors as part of the Wyoming Pipeline Corridor Initiative (WPCI) proposed by the State of Wyoming. By this notice, the BLM is announcing the beginning of the scoping process to solicit public comments and identify issues.

**DATES:** Comments on the RMP amendments and associated EIS may be submitted in writing until December 16, 2019. The date(s) and location(s) of any

scoping meetings will be announced at least 15 days in advance through local media, newspapers and the BLM website at <https://go.usa.gov/xpCMr>. To ensure the BLM can adequately consider and incorporate all comments, please submit written comments prior to the close of the 30-day scoping period or 15 days after the last public meeting, whichever is later. The BLM will provide additional opportunities for public participation upon publication of the Draft EIS.

**ADDRESSES:** You may submit comments on issues and planning criteria related to the EIS during public scoping meetings or on the WPCI ePlanning website at <https://go.usa.gov/xpCMr>.

Documents pertinent to this proposal may be examined in person at the BLM Wyoming State Office, 5353 Yellowstone Road, Cheyenne, WY 82009.

**FOR FURTHER INFORMATION CONTACT:**

Heather Schultz, Project Manager, telephone: 307-775-6084; address: 5353 Yellowstone Road, Cheyenne, Wyoming; email: [hschultz@blm.gov](mailto:hschultz@blm.gov). Contact Ms. Schultz to be added to the WPCI mailing list. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

**SUPPLEMENTARY INFORMATION:** The State of Wyoming is proposing a pipeline corridor network for carbon capture, utilization, and storage (CCUS) and enhanced oil recovery (EOR) to be designated on BLM-managed lands in Wyoming through the land use planning process. The State of Wyoming proposes that 2,000 miles and 25 segments of pipeline corridors be designated on BLM-managed lands and in those lands' associated RMPs. The proposed WPCI corridors are divided into segments based on proposed width and the regions they will service.

The BLM plans to analyze the State's proposal by preparing an EIS. Based on the findings of the EIS process, the BLM may amend the nine RMPs containing lands proposed for pipeline corridors to designate those corridors. If the BLM were to receive a right-of-way application for CCUS and EOR pipelines or related facilities in the future, project-specific NEPA would be completed separately at that time. The purpose of this public scoping process is to determine relevant issues that will influence the scope of the

environmental analysis, including alternatives, and guide the planning process. BLM and State of Wyoming personnel have identified preliminary issues to address within the planning area, including Greater Sage-Grouse; big game habitat (including migration corridors); potential conflicts with coal mining and other resource uses; air quality; transportation; vegetation and reclamation success; anticipated oil and gas development in the planning area; and opportunities to apply best management practices and design features.

The BLM also seeks input on planning criteria, which include compliance with laws and regulations and integration into affected plans. The BLM has identified the following preliminary planning criteria:

- The planning and environmental review processes will comply with FLPMA, the Endangered Species Act, the Clean Water Act, and all other applicable laws, regulations, and policies.
- Valid existing rights will continue to be recognized.
- The BLM will continue to manage other resources in the planning areas under pre-existing terms, conditions, and decisions in the applicable RMPs.
- The BLM will coordinate with Federal, State, and local agencies and tribal governments in the development of the EIS.

Any amendments to BLM RMPs will be consistent with the existing plans and policies of state and local governments, to the extent practicable.

Please follow the procedures identified above to submit comments on issues and planning criteria. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. The BLM will evaluate identified issues to be addressed in the plan, and will place them into one of three categories:

1. Issues to be resolved in the plan;
2. Issues to be resolved through policy or administrative action; or
3. Issues beyond the scope of this plan.

The BLM will provide an explanation in the Draft RMP/Draft EIS as to why an issue was placed in category 2 or 3. The public is also encouraged to help identify any management questions and

concerns that should be addressed in the plan. The BLM will work collaboratively with interested parties to identify the management decisions that are best suited to local, regional, and national needs and concerns.

The BLM will utilize and coordinate the NEPA scoping process to help fulfill the public involvement process under the National Historic Preservation Act (54 U.S.C. 306108) as provided in 36 CFR 800.2(d)(3). The information about historic and cultural resources within the area potentially affected by the proposed action will assist the BLM in identifying and evaluating impacts to such resources.

The BLM will use an interdisciplinary approach to develop the plan in order to consider the variety of resource issues and concerns identified. Specialists with expertise in the following disciplines will be involved in the planning process: Rangeland management, minerals and geology, forestry, outdoor recreation, archaeology, paleontology, wildlife and fisheries, lands and realty, hydrology, soils, sociology, and economics.

**Authority:** 40 CFR 1501.7, 43 CFR 1610.2.

**Duane Spencer,**

*Acting State Director.*

[FR Doc. 2019-24752 Filed 11-14-19; 8:45 am]

**BILLING CODE 4310-22-P**

## DEPARTMENT OF JUSTICE

### Agency Information Collection Activities; Proposed Collection; Comments Requested; Immigration Practitioner Complaint Form

**AGENCY:** Executive Office for Immigration Review, Department of Justice.

**ACTION:** 30-Day notice.

The Department of Justice (DOJ), Executive Office for Immigration Review, will be submitting the following information collection request to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995.

**DATES:** Comments are encouraged and will be accepted for an additional days until December 16, 2019.

**FOR FURTHER INFORMATION CONTACT:** If you have additional comments especially on the estimated public burden or associated response time, suggestions, or need a copy of the proposed information collection instrument with instructions or additional information, please contact Lauren Alder Reid, Assistant Director,



**Appendix B**

**Scoping Meeting Materials**





U.S. Department of the Interior  
Bureau of Land Management

# Wyoming Pipeline Corridor Initiative

## Public Scoping Open House

December 2019

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### About the Proposed Action

The Wyoming Pipeline Corridor Initiative is a proposal from the State of Wyoming to designate almost 2,000 miles of pipeline corridors across private, state and BLM-managed lands in Wyoming (Figure 1). Approximately 1,150 miles of the proposed corridors are located on BLM managed lands. The project would designate a statewide pipeline corridor network for future development of pipelines associated with carbon capture, utilization and storage, as well as pipelines and facilities associated with enhanced oil recovery. The project will not authorize any new pipelines or construction but will amend several BLM Resource Management Plans across the state to make future analysis of project specific proposals more efficient.

One of the primary purposes of the pipeline corridor network is to connect existing oil fields suitable for enhanced oil recovery (EOR) with anthropogenic and natural carbon dioxide (CO<sub>2</sub>) sources. The CO<sub>2</sub> will be injected into existing, often “played-out” oil fields, thereby increasing oil production beyond conventional recovery methods with little additional surface disturbance.

### About This Public Open House Meeting

The purpose of this public open house is to solicit and obtain public feedback regarding the Proposed Action to inform the development of a Draft Environmental Impact Statement (EIS). Resource specialists from the BLM are available to answer your questions.

### How to Comment

The comment period closes on **December 27, 2019**. All comments received during the comment period will be considered equally in the development of the Draft EIS. Scoping comments can be submitted in one of the following ways:

- By providing written comments in the comment forms available at this meeting. The comment station has comment boxes in which you can place your completed comment form. You may also give your completed form to any BLM or USFS employee. These comment forms will not be accepted beyond the conclusion of this meeting.
- If you wish to submit a comment at a later date, please do so via BLM’s ePlanning website: [go.usa.gov/xpCMr](https://go.usa.gov/xpCMr)

*Before including your personal information in your comment, you should be aware that your entire comment—including your personal information—may be made publicly available at any time. Although you can ask us in your comment to withhold your personal information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.*

Trunk Corridor  
Lateral Corridor

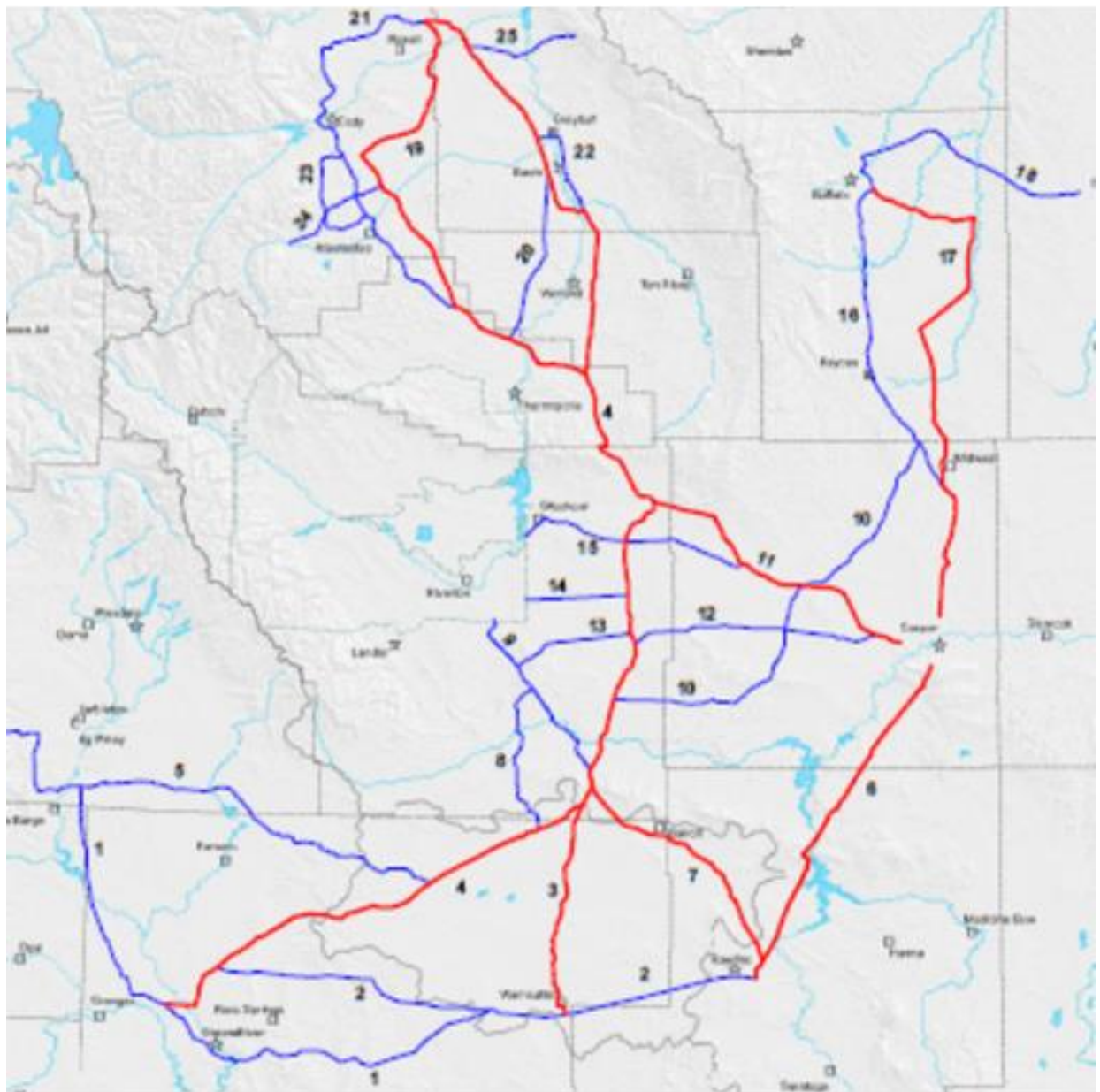


Figure 1. Project area



U.S. Department of the Interior  
Bureau of Land Management

## WYOMING PIPELINE CORRIDOR INITIATIVE

### Public Scoping Meeting Registration and Comment Form

Please be advised that your entire comment—including your personal information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal information from public review, we cannot guarantee that we will be able to do so.

MEETING LOCATION AND DATE (CHECK ONE):

☐ Cheyenne [Dec. 9](#) ☐ Casper [Dec. 10](#) ☐ Thermopolis [Dec. 11](#) ☐ Rock Springs [Dec. 12](#)

NAME/ORGANIZATION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

EMAIL: \_\_\_\_\_

☐ Yes, please include my information on the mailing list so I can receive information about the project.

PLEASE WRITE YOUR COMMENT ON THE BACK OF THIS FORM AND DEPOSIT IT IN THE COMMENT BOX BEFORE LEAVING THE MEETING TONIGHT. PUBLIC COMMENTS AFTER THIS MEETING WILL ONLY BE ACCEPTED VIA BLM'S EPLANNING WEBSITE.



U.S. Department of the Interior  
Bureau of Land Management

## WYOMING PIPELINE CORRIDOR INITIATIVE

### Public Scoping Meeting Registration and Comment Form

Please be advised that your entire comment—including your personal information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal information from public review, we cannot guarantee that we will be able to do so.

MEETING LOCATION AND DATE (CHECK ONE):

☐ Cheyenne [Dec. 9](#) ☐ Casper [Dec. 10](#) ☐ Thermopolis [Dec. 11](#) ☐ Rock Springs [Dec. 12](#)

NAME/ORGANIZATION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

EMAIL: \_\_\_\_\_

☐ Yes, please include my information on the mailing list so I can receive information about the project.

PLEASE WRITE YOUR COMMENT ON THE BACK OF THIS FORM AND DEPOSIT IT IN THE COMMENT BOX BEFORE LEAVING THE MEETING TONIGHT. PUBLIC COMMENTS AFTER THIS MEETING WILL ONLY BE ACCEPTED VIA BLM'S EPLANNING WEBSITE.



U.S. Department of the Interior  
Bureau of Land Management

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COMMENT

COMMENT

Do you wish to have your personal information withheld? ☐ Yes ☐ No

Do you wish to have your personal information withheld? ☐ Yes ☐ No

COMMENT

COMMENT

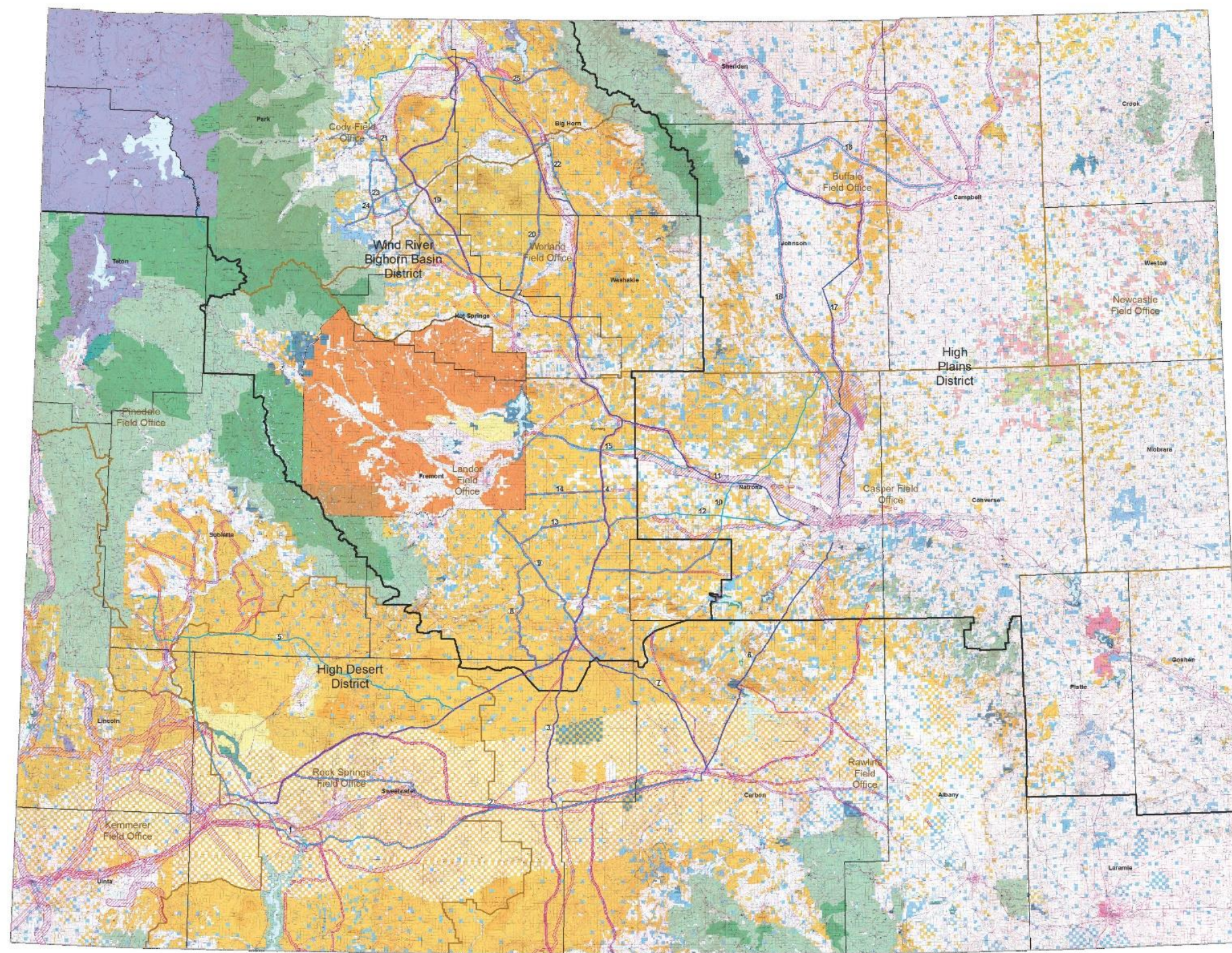
Do you wish to have your personal information withheld? ☐ Yes ☐ No

Do you wish to have your personal information withheld? ☐ Yes ☐ No





## WPCI Overview



WPCI BLM Statewide ROW Corridors Line Type	Surface Management Agency	
Lateral Line	Bankhead Jones	Department of Veterans Affairs
Trunk Line	Bureau of Land Management	Federal Aviation Administration
BLM Identified Utility Corridors	Bureau of Reclamation	Fish & Wildlife Service
	Corps of Engineers	Forest Service
	Department of Agriculture	General Services Administration
	Department of Defense	Local Government
	Department of Energy	National Grasslands
		National Park Service
Utility Corridors		State
		State (State Parks & Hist Sites)
		State (University of Wyoming)
		State (Wyoming Game & Fish)
		Wind River Indian Reservation

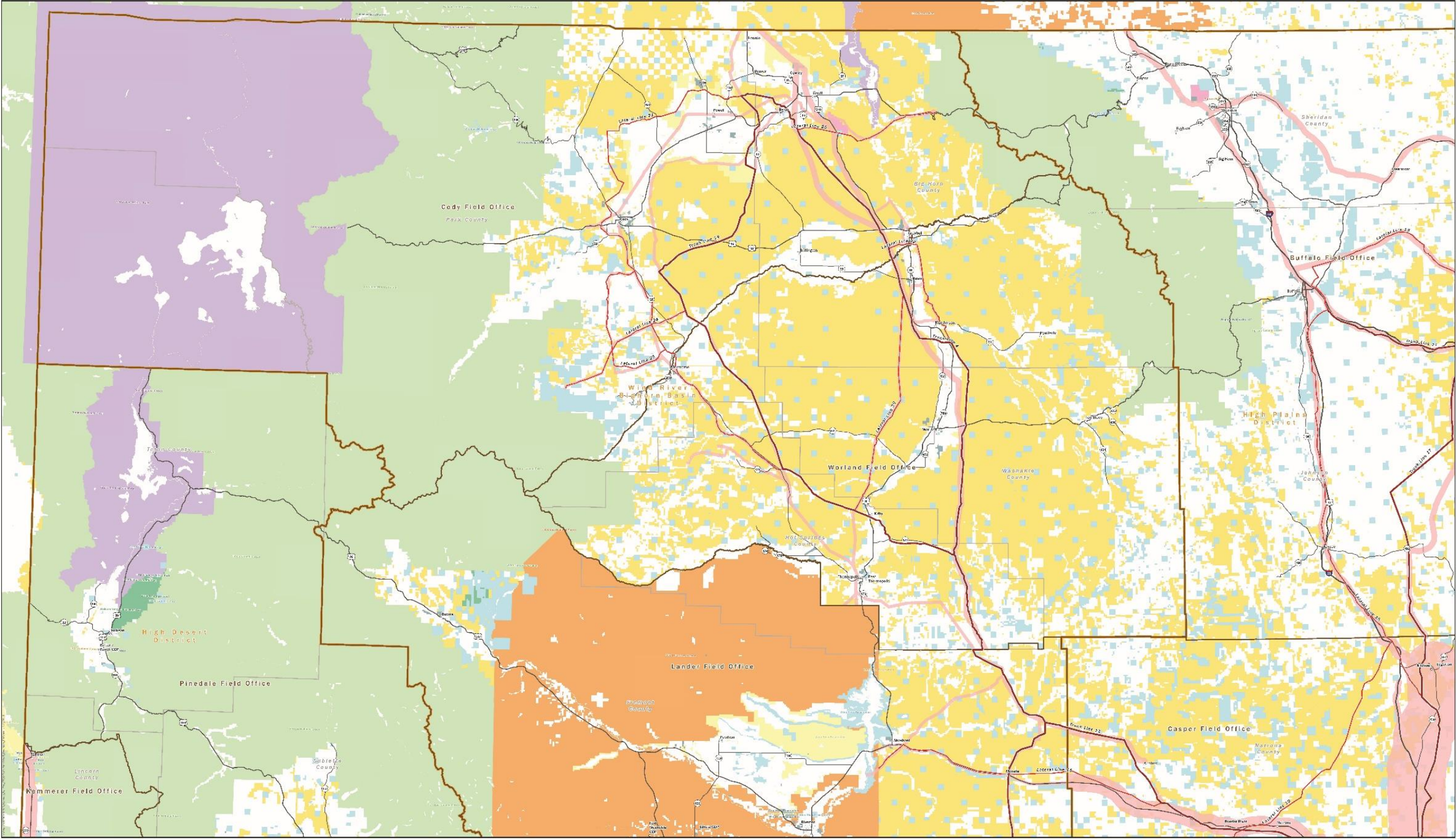


September 2019





# WPCI Project NW Wyoming



- Wyoming Pipeline Corridor Initiative Project**
- |   |                          |                 |                                  |                                  |                                    |   |
|---|--------------------------|-----------------|----------------------------------|----------------------------------|------------------------------------|---|
| <b>ROW Corridors Line Type</b>          | <b>BLM Field Offices</b> | <b>Highways</b> | <b>Surface Management Agency</b> | <b>Department of Agriculture</b> | <b>Fish &amp; Wildlife Service</b> | <b>State (State Parks &amp; Hist Sites)</b> |
| Proposed Trunk Line Corridor            | BLM Districts            | Interstate      | National Grasslands              | Department of Defense            | Forest Service                     | State (University of Wyoming)               |
| Proposed Lateral Line Corridor          | Counties                 | US Route        | Bureau of Land Management        | Department of Energy             | Local Government                   | State (Wyoming Game & Fish)                 |
| <b>BLM Identified Utility Corridors</b> |                          | State Route     | Bureau of Reclamation            | Department of Veterans Affairs   | National Park Service              | Wind River Indian Reservation               |
| Utility Corridors                       |                          |                 | Corps of Engineers               | Federal Aviation Administration  | State                              |   |



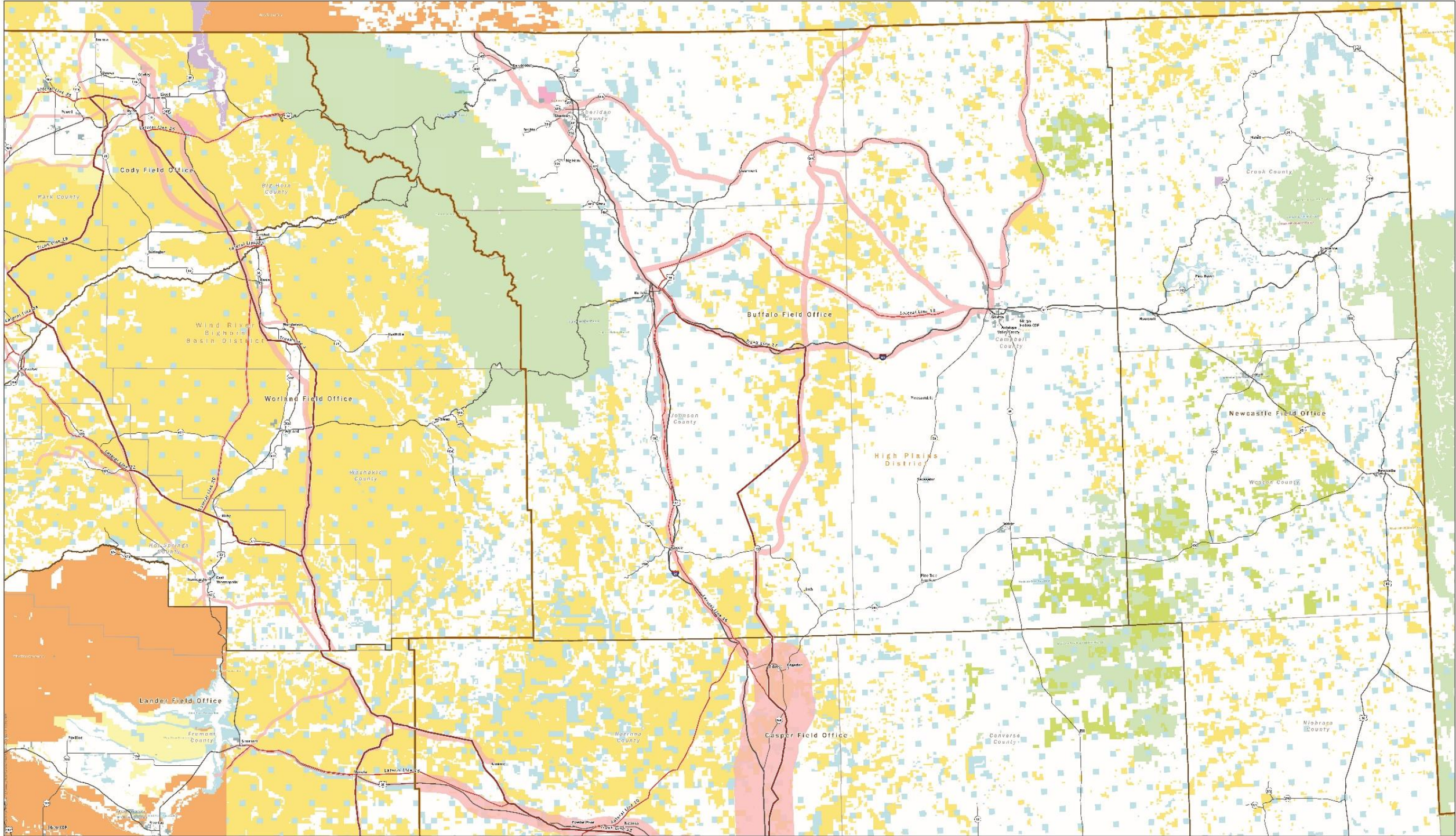
0 to 50 Miles Scale of Wyoming, BLM, 6/16/16, 16/16  
Last Updated: 11/20/2019







# WPCI Project NE Wyoming



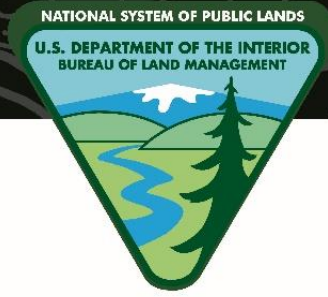
- Wyoming Pipeline Corridor Initiative Project**
- |   |                          |                 |                                  |                                  |                                    |   |
|---|--------------------------|-----------------|----------------------------------|----------------------------------|------------------------------------|---|
| <b>ROW Corridors Line Type</b>          | <b>BLM Field Offices</b> | <b>Highways</b> | <b>Surface Management Agency</b> | <b>Department of Agriculture</b> | <b>Fish &amp; Wildlife Service</b> | <b>State (State Parks &amp; Hist Sites)</b> |
| Proposed Trunk Line Corridor            | BLM Districts            | Interstate      | National Grasslands              | Department of Defense            | Forest Service                     | State (University of Wyoming)               |
| Proposed Lateral Line Corridor          | Counties                 | US Route        | Bureau of Land Management        | Department of Energy             | Local Government                   | State (Wyoming Game & Fish)                 |
| <b>BLM Identified Utility Corridors</b> |                          | State Route     | Bureau of Reclamation            | Department of Veterans Affairs   | National Park Service              | Wind River Indian Reservation               |
| Utility Corridors                       |                          |                 | Corps of Engineers               | Federal Aviation Administration  | State                              |   |



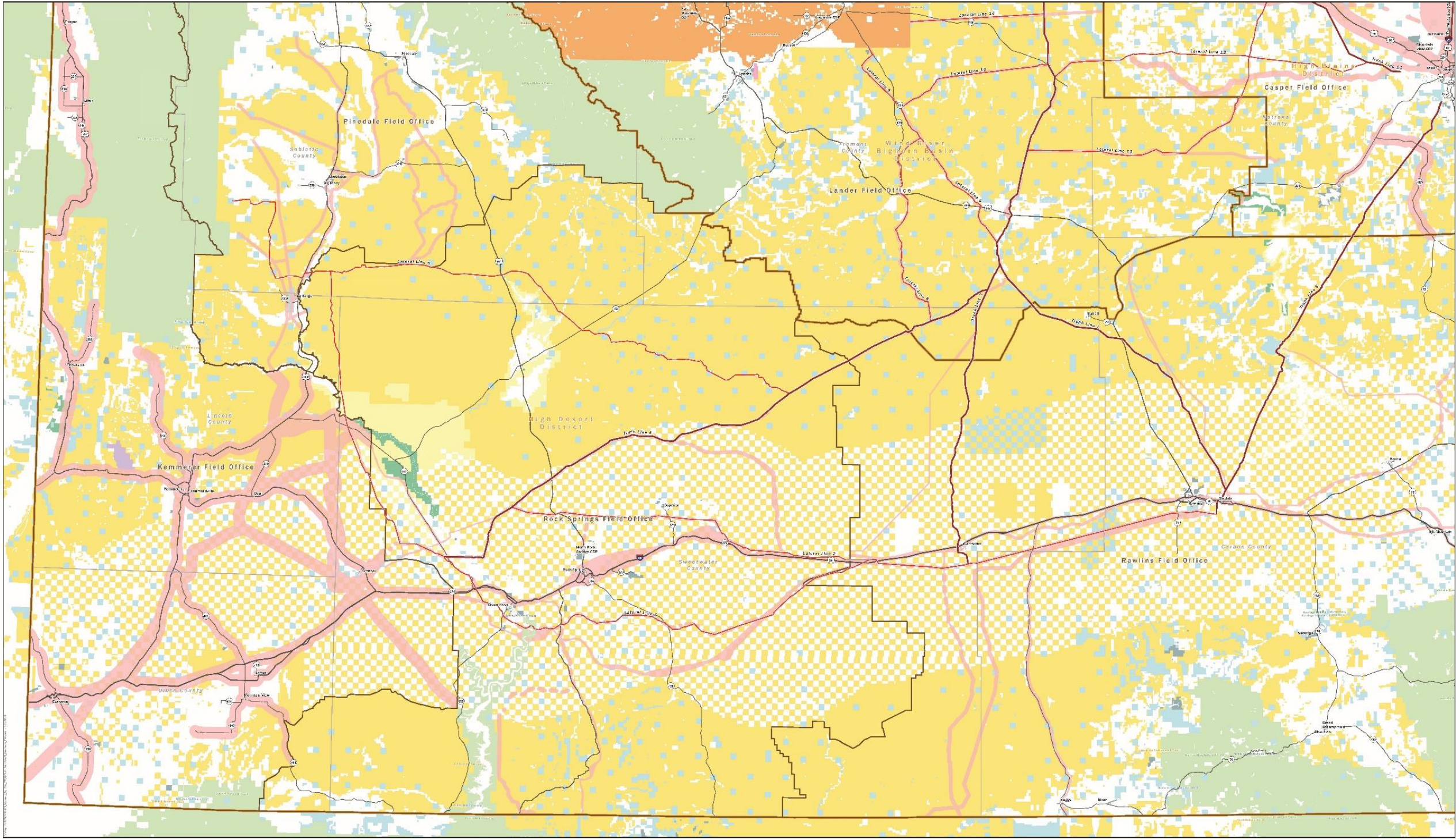
North Arrow  
N  
NAD83, WGS 84  
Data Source: State of Wyoming, FDOT, BLM, EAP, USGS  
Last Updated: 11/25/2019







# WPCI Project SW Wyoming



**Wyoming Pipeline Corridor Initiative Project**

**ROW Corridors Line Type**

- Proposed Trunk Line Corridor
- Proposed Lateral Line Corridor

**BLM Identified Utility Corridors**

- Utility Corridors

**BLM Field Offices**

- BLM Districts
- Counties

**Highways**

- Interstate
- US Route
- State Route

**Surface Management Agency**

- National Grasslands
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers

**Department of Agriculture**

- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- Federal Aviation Administration

**Fish & Wildlife Service**

- Forest Service
- Local Government
- National Park Service
- State

**State (State Parks & Hist Sites)**

- State (University of Wyoming)
- State (Wyoming Game & Fish)
- Wind River Indian Reservation

0 10 20 30 40 50 Miles

0 10 20 30 40 50 Miles

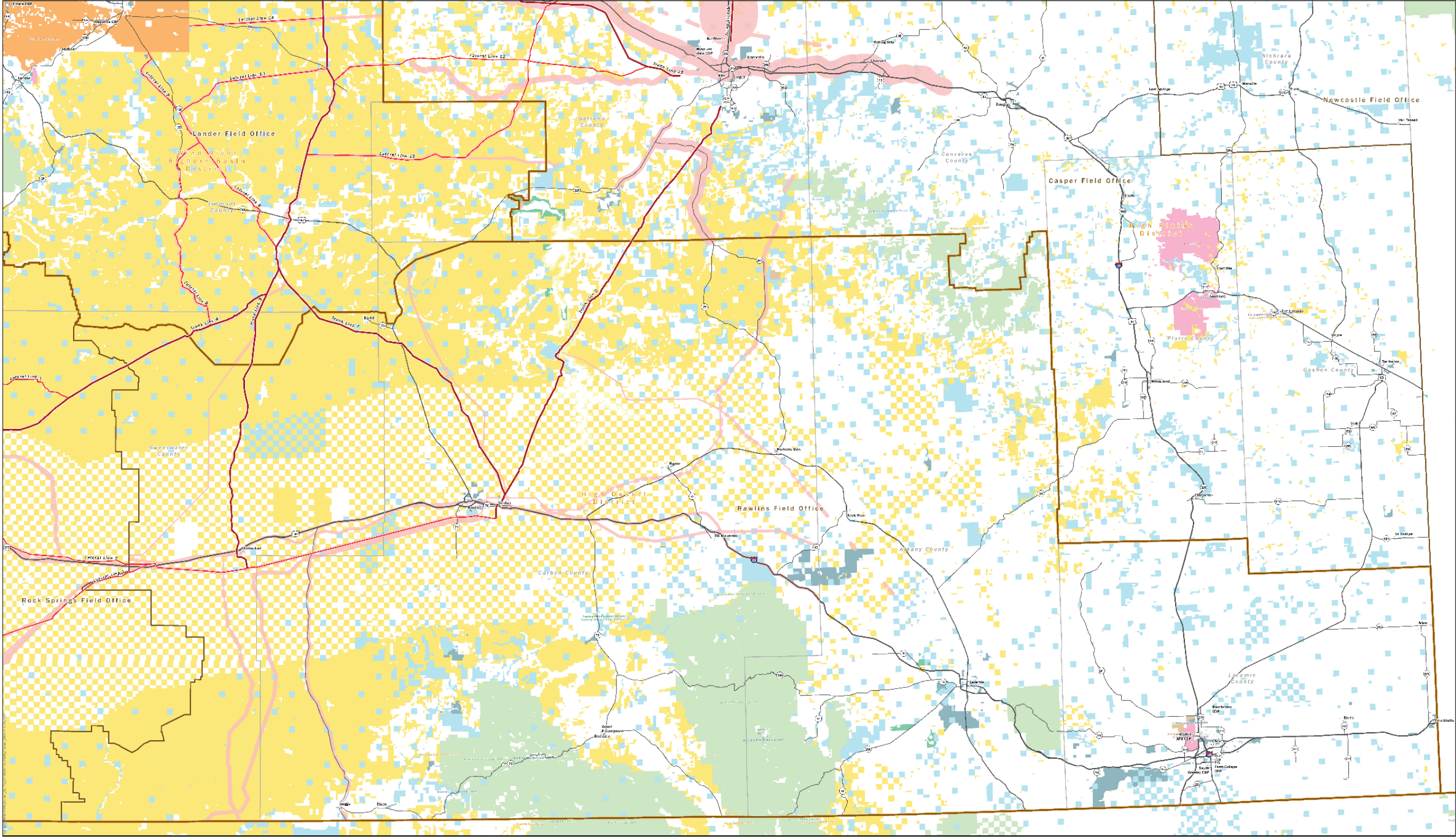
0 10 20 30 40 50 Miles

Octo Revision State of Wyoming, BLM, BLM, BLM, BLM, BLM  
Last Updated: 11/20/2023





# WPCI Project SE Wyoming



**Wyoming Pipeline Corridor Initiative Project**

**ROW Corridors Line Type**

- Proposed Trunk Line Corridor
- Proposed Lateral Line Corridor
- BLM Identified Utility Corridors

**BLM Field Offices**

- BLM Districts
- Counties

**Highways**

- Interstate
- US Route
- State Route

**Surface Management Agency**

- National Grasslands
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers

**Department of Agriculture**

- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- Federal Aviation Administration

**Fish & Wildlife Service**

- Forest Service
- Local Government
- National Park Service
- State

**State (State Parks & Hist Sites)**

- State (University of Wyoming)
- State (Wyoming Game & Fish)
- Wind River Indian Reservation

**Scale:** 0 10 20 30 40 50 Miles

**Legend:**

- BLM Field Offices
- BLM Districts
- Counties
- Interstate
- US Route
- State Route
- National Grasslands
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers
- Department of Agriculture
- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- Federal Aviation Administration
- Fish & Wildlife Service
- Forest Service
- Local Government
- National Park Service
- State
- State (State Parks & Hist Sites)
- State (University of Wyoming)
- State (Wyoming Game & Fish)
- Wind River Indian Reservation

**Legend:**

- BLM Field Offices
- BLM Districts
- Counties
- Interstate
- US Route
- State Route
- National Grasslands
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers
- Department of Agriculture
- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- Federal Aviation Administration
- Fish & Wildlife Service
- Forest Service
- Local Government
- National Park Service
- State
- State (State Parks & Hist Sites)
- State (University of Wyoming)
- State (Wyoming Game & Fish)
- Wind River Indian Reservation

**Legend:**

- BLM Field Offices
- BLM Districts
- Counties
- Interstate
- US Route
- State Route
- National Grasslands
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers
- Department of Agriculture
- Department of Defense
- Department of Energy
- Department of Veterans Affairs
- Federal Aviation Administration
- Fish & Wildlife Service
- Forest Service
- Local Government
- National Park Service
- State
- State (State Parks & Hist Sites)
- State (University of Wyoming)
- State (Wyoming Game & Fish)
- Wind River Indian Reservation



Base: National Data of Wyoming, SPOK, BLM, USGS  
Last Updated: 11/20/2019



## **APPENDIX D**

### **Wyoming Pipeline Corridor Initiative: State of Wyoming Proposal**





# Wyoming Pipeline Corridor Initiative

## State of Wyoming Proposal

July, 2019

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## List of Abbreviations and Acronyms

ACHP - Advisory Council on Historic Preservation  
AIS - Aquatic Invasive Species  
API - American Petroleum Institute  
ASME - American Society of Mechanical Engineers  
BA - Biological Assessment  
BBO - Billion Barrels of Oil  
BLM - Bureau of Land Management  
BMP - Best Management Practice  
BOR - Bureau of Reclamation  
CEQ - Council on Environmental Quality  
CFR - Code of Federal Regulations  
CFS - Cubic Feet per Second  
CO<sub>2</sub> - Carbon Dioxide  
CWA - Clean Water Act  
DOT - United States Department of Transportation  
EI - Environmental Inspector  
EO - Executive Order  
EOR - Enhanced Oil Recovery  
EORI - Enhanced Oil Recovery Institute, University of Wyoming  
EPA - U.S. Environmental Protection Agency  
ESA - Endangered Species Act of 1973  
ETWS - Extra Temporary Work Space  
FERC - Federal Energy Regulatory Commission  
FWS - U. S. Fish and Wildlife Service  
HDD - Horizontal Directional Drill  
HP - Horsepower  
IM - Instruction Memoranda  
ISO - International Standards Organization  
MBTA - Migratory Bird Treaty Act  
MBO - Million Barrels of Oil  
MMCFD - Million Cubic Feet per Day  
MP - Milepost  
NDE - Non-Destructive Evaluation  
NDT - Non-Destructive Test  
NEPA - National Environmental Policy Act  
NGL - Natural Gas Liquids  
NOI - Notice of Intent  
OHV - Off Highway Vehicle  
OSHA - Occupational Safety and Health Administration  
POD - Plan of Development  
RMP - Resource Management Plan  
ROW - Right-of-Way  
SCADA - Supervisory Control and Data Acquisition  
SHPO - State Historic Preservation Office  
SUP - Special Use Permit  
SWPPP - Stormwater Pollution Prevention Plan  
TCF - Trillion Cubic Feet  
TUP - Temporary Use Permit

USACE - U.S. Army Corps of Engineers  
USFS - United States Forest Service  
USFWS - United States Fish and Wildlife Service  
WDEQ – Wyoming Department of Environmental Quality  
WGFD – Wyoming Game and Fish Department  
WPA – Wyoming Pipeline Authority  
WPCI – Wyoming Pipeline Corridor Initiative  
W.S. – Wyoming Statute

# 1.0 Introduction

The State of Wyoming (State) is seeking regulatory approval from federal land management agencies in Wyoming for the Wyoming Pipeline Corridor Initiative (WPCI). Utilizing funding allocated by the Wyoming legislature, and through coordination with the University of Wyoming's Enhanced Oil Recovery Institute (EORI), industry representatives, and the Wyoming Pipeline Authority (WPA) , we have identified approximately 1914 miles of primarily existing pipeline corridors throughout the central and western portion of the state that are essential to future production and distribution of natural resources vital to the state's economy (see Appendix A, Figure 1). The WPCI design connects existing oil fields suitable for enhanced oil recovery (EOR) identified by EORI and industry (Appendix A, Figure 2) with anthropogenic and natural carbon dioxide (CO<sub>2</sub>) sources (Appendix A, Figure 3). WPCI is based on the need for future corridors on federal lands to accommodate construction of multiple, co-located pipelines of varying diameter and capacity.

The purpose of WPCI is to establish corridors on public lands dedicated to future use for pipelines associated with carbon capture, utilization and storage (CCUS), and enhanced oil recovery (EOR). In addition, other compatible uses (i.e. broadband infrastructure) at the outer boundaries of the corridors would be considered. In order to meet this purpose, 200 ft. (lateral ) or 300 ft. (trunk ) wide corridors are constrained to only transport CCUS and EOR products; however, other compatible uses may be considered that would not limit future use of the corridors for CCUS and EOR pipelines and facilities. When site-specific projects are proposed in the corridors they would be designed and constructed to reduce impacts through placement of facilities to avoid resources values, including placement adjacent to the corridor.

There are 1104.67 miles of BLM lands crossed by the WPCI corridors including lands managed by the Kemmerer, Buffalo, Rock Springs, Rawlins, Casper, Cody, Worland and Pinedale, Wyoming field offices (see Table 1-1 and Appendix B, Table 1).

WPCI consists of 25 segments in the western and central portions of the state. A list of the segments and their lengths is provided on Table 1-2. Narrative descriptions of each segment are provided in the text below (Section 2.1, Project Location).

<b>Table 1-1</b>	
<b>Miles of Federally-Managed Lands Crossed by WPCI Corridors<sup>1</sup></b>	
<b>Federal Land Management Agency</b>	<b>Miles Crossed</b>
BLM – Kemmerer Field Office	2.30
BLM – Buffalo Field Office	35.99
BLM – Rock Springs Field Office	223.65
BLM – Rawlins Field Office	130.66
BLM – Casper Field Office	101.49
BLM – Pinedale Field Office	27.08
BLM – Cody Field Office	134.31
BLM – Worland Field Office	159.14
BLM – Lander Field Office	290.05
<b>Total BLM</b>	<b>1104.67</b>
Private	690.03
State	118.37
Water Crossing	0.93
<b>Total All Ownership</b>	<b>1914.00</b>
<sup>1</sup> Federal land ownership of individual parcels are shown in the Map Book (see CD attached to the back of this POD).	

Of the 1914 miles of pipeline corridor that comprise WPCI, ~1105 miles occur on BLM managed lands. On BLM managed lands, ~745 miles (or ~65 percent) of WPCI are located in approved corridors designated by BLM in current or currently draft Resource Management Plans (RMPs). Additionally, ~291 miles of WPCI, which are outside of designated corridors are located adjacent (within 0.5 miles) to existing pipelines on federally-managed lands. Therefore, a total of ~1036 miles (or ~90 percent) of WPCI are either within designated corridors, or within 0.5 miles of existing pipeline infrastructure on federally managed lands. Private (690.03 miles) and state lands (118.37 miles) are also crossed by WPCI.

<b>Segment</b>	<b>Counties</b>	<b>Length (Miles)</b>
1	Lincoln, Sublette, Sweetwater	133.17
2	Carbon, Sweetwater	125.40
3	Freemont, Sweetwater	50.50
4	Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie	320.30
5	Sublette, Sweetwater	123.34
6	Carbon, Natrona	80.26
7	Carbon, Fremont, Sweetwater	58.96
8	Fremont, Sweetwater	38.22
9	Fremont	43.96
10	Fremont, Natrona	104.50
11	Fremont, Natrona	69.18
12	Fremont, Natrona	55.64
13	Fremont	27.60
14	Fremont	22.94
15	Sublette, Natrona	52.59
16	Johnson, Natrona	74.52
17	Johnson, Natrona	123.31
18	Campbell, Johnson	64.82
19	Bighorn, Hot Springs, Park	110.10
20	Bighorn, Hot Springs, Washakie	39.41
21	Hot Springs, Park	88.17
22	Bighorn	24.26
23	Park	30.99
24	Park	26.02
25	Bighorn	25.84
<b>Total</b>		<b>1914.00</b>

Wyoming has large, economically significant oil reserves in existing, often “played-out”, reservoirs that are good candidates for EOR using CO<sub>2</sub>. Currently, CO<sub>2</sub> is being injected into five fields in Wyoming to recover oil which has been left in the ground during conventional production. The oil currently being produced using CO<sub>2</sub> is unrecoverable using conventional production techniques (i.e., primary production or water-flooding). Between 2010 and 2012, CO<sub>2</sub> flooding in Wyoming produced over 23 million barrels of oil (MBO) – about 14 percent of Wyoming crude production during that time. Through the end of 2012 the combined incremental oil produced by CO<sub>2</sub> in Wyoming exceeded 95 MBO generating approximately \$180 million in government royalties, \$77 million in severance tax and \$94 million in property taxes to Wyoming counties.<sup>1</sup>

Wo *et al.* (2009) identified more than 500 existing oil reservoirs in Wyoming as potential CO<sub>2</sub> EOR candidates and estimated that 1.2 to 1.8 billion barrels of additional oil (BBO) might be recovered by CO<sub>2</sub> flooding and up to 20 trillion cubic feet (TCF) of CO<sub>2</sub> could be sequestered after CO<sub>2</sub> EOR in Wyoming’s oil basins.<sup>2</sup>

<sup>1</sup> Cook, B. R. 2013. Wyoming’s miscible CO<sub>2</sub> enhanced oil recovery potential from main pay zones: an economic scoping study. Enhanced Oil Recovery Institute, School of Energy Resources, University of Wyoming.

<sup>2</sup> Wo, S, L. D. Whitman, and J. R. Steidtmann. 2009. Estimates of potential CO<sub>2</sub> demand for CO<sub>2</sub> EOR in Wyoming

EOR using CO<sub>2</sub> is receiving national attention as a potential mechanism for sequestering greenhouse gas emissions. By their very nature, EOR projects can store large quantities of CO<sub>2</sub>. Because CO<sub>2</sub> used during EOR is a purchased commodity, it is recycled continuously in the reservoir rather than vented to the atmosphere. In essence, EOR projects can add value by maximizing oil recovery from existing, previously disturbed fields, while at the same time offering a bridge to a reduced carbon emissions future.<sup>3</sup> Many experts believe geologic sequestration is one of the best alternatives for dealing with carbon emissions because CO<sub>2</sub> EOR effectively reduces the cost of sequestering CO<sub>2</sub> by earning revenues for the CO<sub>2</sub> emitter from sales of CO<sub>2</sub> for EOR.

Known sources of CO<sub>2</sub> in Wyoming are shown on Figure 1-3. In addition to anthropogenic sources of CO<sub>2</sub> (principally power plants), Wyoming has nearly 150 TCF of naturally-occurring CO<sub>2</sub> in numerous formations in the western portion of the state. CO<sub>2</sub> occurs naturally in many hydrocarbon reservoirs and can be produced in quantities sufficient to support EOR. Two of these reservoirs (Shute Creek and Lost Cabin) currently serve as the source for CO<sub>2</sub> for ongoing EOR projects in the state. Shute Creek produces 7 Mpta (2016) of CO<sub>2</sub> and Lost Cabin produces 0.9 Mpta (2017) of CO<sub>2</sub>.

This POD describes the BMPs that may be taken by individual project proponents during construction, operation, maintenance and termination of pipeline facilities on federally-managed lands. The commitments made by the BLM and State in this POD, along with any conditions of approval included in federal authorizations, would become contractually binding on project proponents who develop infrastructure within the WPCI corridors.

## 1.1 WPCI Purpose and Need

Since 1978, oil production in Wyoming has been declining. This downward trend in production has resulted in significant reductions in revenues to the state and federal governments, adverse impacts to local government revenues and a loss of jobs. Although Wyoming is the 8<sup>th</sup> largest domestic source of oil production, annual crude production in the state has fallen 38 percent from the 1978 peak. This fall in production, coupled with lower oil prices from the mid-1980s through 1990s and the increasing importance of natural gas, reduced the contribution of crude oil to total state severance tax revenues from about 40 percent in the early 1990s to just 15 percent in 1999.<sup>4</sup> According to EORI, Wyoming mineral royalties and severance collections from oil are projected to be 16 to 23 percent below the 1978 peak in the coming years.<sup>5</sup>

Wyoming's experience with CO<sub>2</sub> flooding goes back to the 1980s when Amoco Production Company began injecting CO<sub>2</sub> in the Bairoil Field in south central Wyoming utilizing CO<sub>2</sub> from ExxonMobil's Shute Creek Gas Plant in southwestern Wyoming. Three additional projects have

---

Basins. SPE 122921

<sup>3</sup> National Energy Technology Laboratory, 2010. Carbon Dioxide Enhanced Oil Recovery – Untapped Domestic Energy Supply and Long Term Carbon Storage Solution. [www.netl.doe.gov](http://www.netl.doe.gov)

<sup>4</sup> Cook, B. R. 2013. Wyoming's miscible CO<sub>2</sub> enhanced oil recovery potential from main pay zones: an economic scoping study. Enhanced Oil Recovery Institute, School of Energy Resources, University of Wyoming.

<sup>5</sup> *Ibid*

subsequently come online utilizing CO<sub>2</sub> from Shute Creek: Anadarko began CO<sub>2</sub> flooding in the Salt Creek and Patrick Draw fields in 2003, and Devon initiated CO<sub>2</sub> flooding in the Beaver Creek Field in 2008.

Denbury constructed their 232-mile long Greencore Pipeline, which transports CO<sub>2</sub> from Lost Cabin to points in the Powder River Basin in Wyoming and on to the Bell Creek Field in Montana. In addition, Denbury and Elk Petroleum began injecting CO<sub>2</sub> in the Grieve Field, near Casper, in 2013.

EORI estimated that the five fields currently being CO<sub>2</sub> flooded in Wyoming account for nearly 2,000 jobs annually, paying a total of about \$326 million in labor income from 2010-2012 and adding \$1.65 billion to Wyoming gross state product.<sup>6</sup> EORI also estimates that 188 jobs are supported for every million barrels of incremental oil production, or 6.7 jobs per million cubic feet/day (MMCFD) of purchased CO<sub>2</sub>. EORI's assessment suggests that EOR can contribute thousands of Wyoming jobs annually in the coming decades.

Wo *et al.* (2009) estimated total CO<sub>2</sub> demand for EOR ranges from 6.1 to 9.2 TCF in the Powder River Basin, 4.8 to 7.2 TCF in the Bighorn Basin, 1.2 to 1.8 TCF in the Wind River Basin, 1 to 1.4 TCF in the Greater Green River Basin, 0.68 to 1.02 TCF in the Overthrust Belt, 0.09 to 0.13 TCF in the Laramie Basin, and 0.08 to 0.12 TCF in the Denver-Cheyenne Basins.<sup>7</sup> The purpose of WPCI is to provide federal authorization for a pipeline network to connect CO<sub>2</sub> sources with these basins.

Construction and operation of pipelines would be conducted by individual project proponents utilizing the WPCI corridors. The BLM and State intends this process to result in a system of integrated and preferred corridors for the construction of pipelines on federal lands throughout the state of Wyoming. Identifying integrated corridors across federal lands under the direction of the various field offices in Wyoming would lead to greater consistency among the individual field offices and would comprehensively address the desire to manage the location of future pipeline construction and operation activities across field offices, thereby minimizing the aggregate impact of future projects on federal lands in Wyoming.

## 1.2 Purpose and Content of Plan

This plan describes the location and types of BMPs for future projects that are proposed within the WPCI corridors. During the course of designing and constructing the individual projects, changes to the POD may be necessary and additional site-specific studies and information may be required by regulatory agencies. The federal land management agencies would consider and approve any changes necessary to address the site-specific needs of individual projects.

This POD and its appendices are a requirement for new or amended permits, approvals, clearances, and plans that may be issued prior to and during construction. The POD

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<sup>6</sup> *Ibid*

<sup>7</sup> Wo, S, L. D. Whitman, and J. R. Steidtmann. 2009. Estimates of Potential CO<sub>2</sub> Demand for CO<sub>2</sub> EOR in Wyoming Basins. SPE 122921

appendices contain additional construction information and mitigation measures, whereas the main body of the POD addresses the overall guidelines. Unless otherwise specified by the landowner or land management agency, the specifications in the POD will be implemented on all lands affected by construction in the WPCI corridors.

This POD describes the construction phase, mitigation measures, operation, and maintenance of future projects which be constructed in the WPCI corridors. Numerous appendices are incorporated into this POD:

- Appendix A – Figures and Construction Typical Drawings
- Appendix B – Tables
- Appendix C – Waste and Spill Management Specifications
- Appendix D – Hydrostatic Testing and Discharge Plan
- Appendix E – Upland Erosion Control, Revegetation, and Maintenance Plan
- Appendix F – Restoration and Revegetation Plan
- Appendix G – Wetland and Waterbody Construction and Mitigation Plan
- Appendix H – Noxious and Invasive Weed Control Plan
- Appendix I – Biological Resource Conservation Measure Plan
- Appendix J – Unanticipated Discoveries Plan for Cultural Resources
- Appendix K – Unanticipated Discoveries Plan for Paleontological Resources
- Appendix L – Fire Prevention and Suppression Plan
- Appendix M – Blasting Plan
- Appendix N – Fugitive Dust Control Plan
- Appendix O – Traffic and Transportation Plan

Attached to the back cover of this POD is a CD that contains maps of the WPCI corridors (hereafter the “Map Book”). The CD images are based on 7.5-minute quadrangle maps which show the location of WPCI corridors including segment identification and mileposts.

### **1.3 Regulatory Review and Construction Timing Restrictions**

The BLM and the State would require project proponents to obtain all federal, state, and local permits before constructing within the WPCI corridors. A list of authorizing actions which may be necessary to construct pipeline projects in the WPCI corridors is provided in Appendix B, Table 2.



## 2.0 Project Overview

The WPCI corridors were established based on reasonably foreseeable development of resources that will require pipeline construction for development. EOR was the principal development activity used to select the WPCI corridors. The specific types of pipelines that may utilize WPCI corridors – along with products and quantities delivered through the pipelines – will be identified in project-specific applications filed by individual project proponents.

For analysis purposes, two “sizes” of corridors are proposed as part of WPCI. Trunk corridors were designed to accommodate five lines, for example, a CO<sub>2</sub> pipeline, a crude pipeline, a natural gas pipeline, a natural gas liquids (NGL) pipeline, and one additional unspecified pipeline. Lateral corridors were designed to accommodate, for example, a CO<sub>2</sub> pipeline, a crude pipeline and a natural gas pipeline. Other combinations of pipelines can occur in any of the WPCI corridors. The appropriate corridor type designation is shown on Appendix A, Figure 1.

In determining the construction right-of-way width necessary for each of the two corridor sizes, a 50 foot offset from adjacent, existing pipelines and a 100-foot wide construction ROW was assumed. Based on these offset assumptions, the total ROW width necessary to construct three pipelines in the WPCI lateral corridors is 200 feet. Constructing five pipelines in the trunk corridors will require 300 feet.

Individual trunk pipelines may reach 24-inches in diameter. Smaller diameter pipelines, such as lines designed to supply CO<sub>2</sub> to individual fields, could be installed. At this point the exact number or diameter of pipelines which will be constructed in any given segment of WPCI is not known. To a large extent, use of the corridors will be driven by oil prices and CO<sub>2</sub> availability. The construction descriptions below and in Chapter 3 are based on what WPA considers the largest diameter pipeline (i.e., 24-inch diameter) that will be constructed in WPCI corridors. A typical dimensioned drawing of a 100-foot wide pipeline construction ROW is shown in Appendix A, Figure 4.

## 2.1 Project Location

The general location of the WPCI corridors is shown on Appendix A, Figure 1. More detailed maps of the corridor alignments on federally-managed lands can be found in the Map Book.

WPCI corridors are divided into segments based on their proposed ROW width and the regions they will service within the state. As previously mentioned, the majority of these corridor segments lie within pipeline corridors that were established in existing or proposed RMPs. Those proposed outside of designated corridors typically parallel existing pipelines and disturbance. Below are brief summaries of the 25 segments that make up the WPCI.

Segment 1 is a 200-foot lateral corridor. This segment is approximately 133 miles long and lies within Lincoln, Sublette, and Sweetwater counties.

Segment 2 is a 200-foot lateral corridor within Carbon and Sweetwater counties. This segment is approximately 125 miles long and generally follows the I-80 corridor between Rawlins and Rock Springs.

Segments 3, 4, 6, and 7 are a series of 300-foot trunk corridors that provide transportation between locations along the I-80 corridor in central Wyoming and northern termini. Segment 3 is approximately 51 miles long and lies within Fremont and Sweetwater counties. Segment 4 is approximately 320 miles long and traverses Big Horn, Fremont, Hot Springs, Park, Sweetwater, and Washakie counties. Segment 6 is an 80 mile long segment within Carbon and Natrona counties. Finally, Segment 7 is approximately 59 miles and lies within Carbon, Fremont, and Sweetwater counties.

Segment 5 is an approximately 123 mile long, 200-foot wide lateral corridor. This segment will provide transportation from Riley Ridge CO2 production facilities. This designated segment lies within Sublette and Sweetwater counties.

Segments 8, 9, 13, and 14 are relatively short segments of 200-foot lateral corridors that will provide for transportation into the region around Lander. They range in lengths between approximately 23 and 44 miles long. These segments are located primarily within Fremont County, with a small portion of Segment 8 within Sweetwater County.

Segment 10 is a 200-foot wide lateral corridor that provides transportation between the Lander area and the southern Powder River Basin. This segment is approximately 105 miles long, and lies within Fremont and Natrona counties.

Segment 11 is designated as a 300-foot wide trunk corridor. It is approximately 70 miles long, and would provide transportation services from Casper, to the southern end of the Bighorn Basin. Segment 11 segments will lie within Fremont and Natrona counties.

Segments 12 and 15 are both 200-foot lateral corridors that provide for resource transportation generally between Casper and Lander. The corridors are approximately 55 miles long. These segments will lie within Fremont and Natrona counties.

There is one, 300-foot trunk and two, 200-foot lateral corridors within the Powder River Basin, which are designated as Segments 17, 16, and 18, respectively. Segment 17 is a trunk corridor that is approximately 123 miles long. Segments 16 and 18 are lateral corridors that range in lengths between approximately 65 and 75 miles. These corridor segments lie within Campbell, Johnson, and Natrona counties.

There are seven WPCI segments proposed within the Bighorn Basin. These segments will lie within Big Horn, Hot Springs, Park, and Washakie Counties. Segment 19 is proposed as an approximately 110 mile long, 300-foot wide trunk corridor. Segments 20 through 25 are designated as 200-foot wide lateral corridors. They range in lengths between approximately 24 and 89 miles long.

## **2.2 Construction Right-of-Way and Temporary Work Spaces**

2.2.1 Construction Right-of-Way. Construction of a 24-inch diameter pipeline will utilize a nominal 100-foot-wide construction ROW. A dimensioned schematic of a typical 100-foot wide construction ROW is included in Appendix A, Figure 4. Half of the construction ROW (50 feet) will be located on the area previously disturbed during construction of the existing, adjacent pipeline.

In some areas resource constraints may require a narrowed construction ROW. These locations will be determined during the NEPA site-specific process and project specific permitting and could include cultural resource sites, wetlands, habitat for protected species, topography, etc. In these locations, the construction ROW may be narrowed to 75-feet. A restricted construction ROW configuration is shown in Appendix A, Figure 5.

2.2.2 Extra Temporary Work Spaces. In addition to the construction ROW, additional extra temporary work spaces (ETWS) will be required at a number of areas. Typically, these extra work spaces will be located at:

- stream crossings
- wetland crossings
- foreign pipeline crossings
- railroad crossings
- road crossings
- overhead utility crossings
- areas with side hill construction
- cathodic protection

Typically, ETWS of 50 x 50 to 100 feet, adjacent to one side of the construction ROW will be required in these locations for storage of spoil, additional specialized equipment (i.e., boring equipment), equipment staging, etc. necessary to safely complete the crossings. Appendix B, Table 4 lists locations where ETWS will likely be necessary to complete construction of pipelines in the WPCI corridors. Additional extra temporary work spaces will be determined during project-specific design.

## **2.3 Associated Aboveground Facilities**

While the pipelines constructed in the WPCI corridors will be buried, a few aboveground facilities could be installed in the WPCI corridor where necessary for safe and efficient operation of the pipeline. The project-specific components of the POD will show the location of these facilities, the size of the needed construction area and the size of the permanently disturbed area of the facility after construction. The POD will include plans for reclamation of disturbed areas not needed for pipeline operations.

2.3.1 Block Valves. A number of aboveground block valves will be required to isolate sections of the pipeline in an emergency or for maintenance activities (See Appendix A – Figure 6). The block valve locations will be determined during final project design and installed within the construction ROW. Spacing will be consistent with federal regulations and varies by the pipeline product. Each block valve will occupy an area of approximately 30 x 30 feet and will be graveled and fenced. Access will be year-round, depending upon winter weather.

2.3.2 Pigging equipment. Pipe pigging equipment will be installed as necessary to allow for pipeline maintenance. Typically, these facilities consist of a series of risers for inserting and catching scrapers used to clean the inside of the pipeline. The facilities are typically located at metering locations or at block valves. Their locations will be determined during design of individual projects.

2.3.3 Pump and Compressor Stations. Some pipeline projects constructed in the WPCI corridors may require the installation of pump or compressor stations. These pump or compressor stations will include valve manifolds, pumps, pigging equipment, power distribution, and control buildings. Pump stations, if required, will be within an approximate 3- to 10-acre fenced area.

2.3.4 Staging Areas and Storage Yards. Staging areas are temporary secured sites where pipe and equipment are located prior to delivery to the ROW. Vegetation is cleared from the areas to reduce fire danger. The project specific POD will show the location and dimensions.

2.3.5 Measurement Facilities. These sites vary in size from a few to tens of acres. They are located where the transfer or delivery of pipeline products is required. The project specific POD will show the location dimensions and equipment located at the site.

## **2.4 Land Requirements**

Appendix B, Table 5 summarizes land requirements for each corridor segment of WPCI. This table assumes that 3 and 5 pipelines are eventually constructed in all the lateral and trunk corridor segments (i.e., the entire 200- or 300-foot wide corridors are disturbed).

## **2.5 Access Roads**

Whenever practicable, proponents will use existing federal, state, county, private and BLM roads to gain access to the ROW during construction. It is not anticipated that new road construction will be required to access the construction ROW on federal lands, but if it is, roads will be built to minimum allowable federal standards. The first preference are roads that can be used with no improvements. Second preference are roads that require minor maintenance (i.e., grading, filling, graveling, installing drainage structures or culverts and minor widening of the road surface all activities within the existing disturbed area). Third preference are roads that require any surface disturbance outside of the existing disturbed area. On public lands, this work is authorized by temporary ROWs, associated with the primary ROW for the pipeline. The final preference are access roads that require new construction. After construction, roads on public lands will be left in place or completely reclaimed, at the direction of the BLM field office.

Use of access on private lands is at the landowner's discretion. Hauling equipment and materials will be conducted in accordance with the road owner's requirements. Following construction completion, roadways will be reclaimed in accordance with landowner requirements.

Permanent access crossing Public Land to aboveground facilities is authorized by the ROW grant for the pipeline.

## **2.6 Pipeline Markers**

The pipelines will be identified by pipeline markers placed at each public road crossing, railroad crossing and at other locations in accordance with CFR ¶195.410 and other applicable regulations. A typical pipeline marker is shown in Appendix A, Figure 7.

## **3.0 Pipeline Construction and Installation**

This section provides a description of standard pipeline construction BMPs that the State proposes project proponents should utilize as projects are constructed within the WPCI corridors. These BMPs are industry standards and should be implemented in conjunction with site-specific plans included in the POD appendices and permit conditions.

Pipeline construction typically follows the sequence of events shown in Appendix A, Figure 8 and as described below.

### **3.1 Preconstruction**

By the time of construction, all site-specific biological and cultural resources will be identified and permit stipulations will be determined. Project proponents will have identified avoidance areas and the locations of the ROW subject to seasonal restrictions (see Appendix B, Table 3). These designated areas will be included on the project-specific alignment sheets.

Civil engineering surveys will identify the centerline of the pipeline and the boundaries of both sides of the approved ROW working limits and ETWS before construction activities start. Construction inspectors will be responsible for verifying that the limits of authorized construction work areas are staked before construction. Flagged or painted lath will be set at approximately 200-foot intervals, or as required to maintain line of sight, along the proposed centerline. The edges of work limits will be marked at 200-foot intervals, or as required to maintain line of sight, with flagging or painted lath. All ETWS areas will be marked in a similar fashion with each of the four corners flagged. This staking will clearly demark the boundary of the area that can be used or accessed by construction personnel. Equipment and vehicles will not be parked or driven beyond these stakes and no other ground-disturbing activities will be allowed outside the staked boundaries of the work area.

Before earth-moving activities, best management practices (BMPs) will be installed to limit sediment transport and erosion consistent with regulatory approvals and the Upland Erosion Control and Sediment Control Plan (see Appendix E). Specific areas requiring BMPs will be designated on alignment sheets. Site-specific BMPs will be developed based on construction site characteristics and weather conditions. BMPs will be inspected routinely and maintained in good working order.

### **3.2 Construction Equipment**

Typical construction equipment will include pickup trucks, loaders, various sizes of dozers, shovels and backhoes, side booms, generators, welders, bending machines, etc. (see Appendix B, Table 6). Most of the equipment used during construction will consist of dozers, blades, and trackhoes. Typical schematics for construction are included in Appendix A.

### **3.3 Clearing, Grading and Topsoiling**

In addition to the ROW configurations shown in Appendix A, Figures 4 and 5, several additional construction configurations may be necessary depending on proximity to other lines and available working space. The nominal ROW for larger diameter pipelines will be 50 feet permanent and 50 feet temporary (see Appendix A, Figure 4).

During clearing, tree limbs and brush will be windrowed or piled for use during reclamation. Stumps will be left in place except over the trench line or removed as necessary to create a safe and level workspace. The environmental inspector (EI) will coordinate with the appropriate agency or landowner to locate areas for stump disposal. Trees will be felled inside the approved right-of-way boundaries under agreement with the landowner or land management agency. Grading will not occur over historic trails, drainages, wetlands or most ETWS.

Construction activity and ground disturbance will be limited to approved, staked areas. Whenever possible, grading will be limited to help preserve vegetation and to limit erosion and improve reclamation success. In hilly terrain, where slopes run across ROW, a level work area will be cut out of the hillside for safe construction. These areas will be returned to the natural contours to the extent possible.

Where grading is needed to create a safe, level working area, approximately 4-6 inches of topsoil (where available) will be stripped and stockpiled from the full construction ROW before cut, fill or other grading operations. In some areas, it may not be necessary to grade and stockpile topsoil. For example, level rangeland may not need to be graded for construction. In these cases, topsoiling will not be necessary, except over the trench line, which preserves the root system and increases reclamation success. Available topsoil will vary across the WPCI corridors. No matter the amount of topsoil removed, topsoil will be stockpiled separately (see Appendix A, Figure 5) from subsoil and will not be used to pad the trench or construct trench breakers. Topsoil will be used as the final layer of soil during the reclamation process.

In wetlands, only the topsoil on the trench line will be removed and segregated before digging and removing the subsoil (double-ditching method). The wetland boundaries will be flagged before construction. Topsoil removal in wetlands will generally range between 12-18 inches. In floodplains, the topsoil depth can range from 6-12 inches. Dry drainages or washes that cross the right-of-way will not be blocked with topsoil piles. Topsoil will be placed on the banks of the drainage (typically in ETWS) so natural flows are not impeded, and topsoil is not washed away.

Required dust control measures are described in the Fugitive Dust Control Plan (Appendix N). Dust abatement water would be obtained in compliance with both federal and state regulations, as well as existing water rights.

### **3.4 Survey Monuments**

All survey markers found within the right-of-way will be protected. Survey markers include, but are not limited to, Public Land Survey System line and corner markers, other property boundary line and corner markers, and horizontal and vertical geodetic monuments. In the event of obliteration or disturbance of any of the above, the proponent shall immediately

report the incident, in writing, to the BLM Authorized Officer or his delegate and the respective installing authority if known. Where any of the above survey markers are obliterated or disturbed during construction or maintenance of the project, the BLM Authorized Officer or his delegate will determine how the marker is to be restored. The proponent will be instructed to secure the services of a registered land surveyor or informed that an official survey will be executed by the BLM. All surveying activities will be in conformance with the Manual of Surveying Instructions and appropriate State laws and regulations. Surveys by registered land surveyors will be examined by the BLM Authorized Officer or his delegate and the BLM State Office Chief Cadastral Surveyor for conformance with the Manual of Surveying Instructions and State laws and regulations before being filed in the appropriate State or county offices of record. The proponent shall be responsible for all administrative and survey costs.

### 3.5 Trenching

Construction methods used to excavate a trench will vary depending on soils, rock, terrain, and related factors. Excavated subsoil will be stored separately from windrowed topsoil piles (Section 3.3). Like topsoil, subsoil will not be stored in flowing waterbodies, dry drainages or washes that cross the right-of-way. Gaps will be left periodically in the subsoil piles to avoid ponding and excess diversion of natural runoff during storm events.

Measures will be taken to ensure access is provided for private landowners or tenants to move vehicles, equipment, and livestock across the ditch. Adequate precautions will also be taken to ensure that livestock are not prevented from reaching water sources because of the open ditch. Measures to be taken include contacting livestock operators and providing adequate crossing locations. The EI will determine the need and placement of soft plugs for livestock and wildlife travel. The soft plugs will be of minimal compaction and installed with ramps.

The depth and width of the ditch will vary depending upon pipe diameter and soil types. A typical ditch will be excavated approximately 3-4 feet wide at the bottom and the sides will be sloped to Occupational Safety and Health Administration (OSHA) specifications (up to approximately 8 feet wide).

The minimum backfill will vary depending on soil type and existing conditions. Table 3-1 lists the different cover requirements. Minimum cover may change depending on the existence of other utilities.

Table 3-1 Minimum Pipeline Cover		
Minimum Cover	No Rock	Rock Trench
Standard trench	36"	30"
Agricultural land	60"	60"
Water crossings (> 100' wide)	60"	60"
Drainage or intermittent waterways	60"	60"
Road crossings	60"	60"
Drainage ditch at public road crossing	48"	48"

Occasionally, ditches could be excavated to depths greater than the minimum values specified to achieve specific cover. Greater depths of cover could be required at unpaved road crossings, foreign pipeline crossings, water bodies, railroads, etc. Machine excavation will not be performed closer than 5 feet from any existing pipeline encountered in the ROW unless



authorized by the pipeline owners/operators. Existing pipeline locations will be marked in the field and notification given to the operator of the underground utility consistent with federal and state requirements. Where the pipeline traverses locations for which there are definite plans to level the land for irrigation or other purposes, the pipe will be buried at a depth to accommodate these plans.

Trenches will not be left open longer than 21 days. In areas where a longer open trench period is necessary, livestock and wildlife crossovers will be constructed between 1,200 and 2,500 feet. Crossovers will be sloped on each side to act as an escape ramp for animals that enter the trench. Open trenches will be inspected daily for trapped animals. Areas where crossovers are needed include, water sources, active livestock or wildlife trails, wildlife migration corridors, existing roadways and tie-in locations.

### **3.6 Blasting**

Where rock is encountered, tractor-mounted mechanical rippers or rock trenching equipment may be used to facilitate excavation. In areas where rippers or trenchers are not practical or sufficient, blasting may be employed. Blasting will be used only where necessary and conducted by a fully licensed operator. All necessary authorizations will be obtained and all safety precautions observed. All blasting work will be conducted in compliance with federal, state, and local rules, and regulations.

### **3.7 Road and Railroad Crossings**

Installation of road crossings will be achieved by boring or open cut techniques depending upon local regulations, traffic, and construction equipment availability. Crossings at two track roads and gravel roads will typically be open cut. All paved county roads and state highways will be crossed via slick bore or small directional drill bore method.

All road and railroad crossings will be designed in accordance with ASME B31.4 and API RP 1102. A list of road and rail crossings is provided in Appendix B, Table 4. Typical drawings of a bored and open cut road crossing are shown in Appendix A, Figures 9 and 10. A typical two-track road/trail crossing drawing is provided in Appendix A, Figure 11.

### **3.8 Waterbody Crossings**

Wetland and waterbody crossings will be conducted consistent with the Federal Energy Regulatory Commission's (FERC) Wetland and Waterbody Construction and Mitigation Procedures (FERC's procedures) current at the time of construction.<sup>8</sup> A copy of FERC's Procedures is contained in Appendix G.

The State will require individual projects to comply with the FERC Procedures. Compliance with a U.S. Army Corps of Engineers (USACE) nationwide permit will be required for construction activities affecting jurisdictional waters. A 401 water quality certification may be required from the Wyoming Department of Environmental Quality (WDEQ) for construction activities on some WPCI

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<sup>8</sup> [www.ferc.gov/industries/gas/enviro/procedures.pdf](http://www.ferc.gov/industries/gas/enviro/procedures.pdf)

corridors.

### **3.9 Areas with Special Conditions**

To the extent feasible, individual projects will be routed to avoid impacts to environmental and cultural resources. However, it will not be possible to avoid some areas entirely. To construct through these areas, timing restrictions (see Appendix B, Table 3) and construction stipulations will be established to help protect these resources. It is anticipated that the stipulations will be developed in the NEPA and other regulatory processes.

#### **3.9.1 Close Proximity and Collocated Facilities**

WPCI was designed to maximize collocation of new pipelines with existing utilities. Adjacent utilities will be staked the entire length and their representative will be notified before the start of construction. Construction activity will be limited near adjacent utilities. In order to preserve the maximum useable width of the corridor, initial pipeline placement will be, where feasible, at one edge of the corridor and follow the alignment of the corridor boundary, not wandering through the corridor. Subsequent pipelines using the corridor will be located adjacent to, offset the required safety distance, and parallel to existing pipelines their entire length, to the extent possible. These subsequent pipelines also will not wander through the remaining width of the corridor when possible.

#### **3.9.2 Surface Slumping**

Prior to construction, the project ROW will be reviewed for surface slumping in the detailed engineering design phase. Impacts to the pipeline from slumping and other geohazards will be mitigated during project design.

#### **3.9.3 Bank Erosion**

Waterbody crossings will be reviewed during the detailed design phase to insure all potential bank erosion issues are addressed. Crossing approaches will be tapered to gradual slopes and water bars installed, where required, to eliminate small abrupt changes in elevation. The new gradual slope will taper to match the undisturbed terrain. BMPs will be initiated as described in the Upland Erosion Control, Revegetation and Maintenance Plan to reduce erosion and limit sediment transport (Appendix E). Additional reclamation measures are described in the Restoration and Revegetation Plan (Appendix F).

#### **3.9.4 Active Faults**

Active faults in the WPCI corridors will be evaluated during the detailed engineering phase of the project. If active faults exist, designs will be developed that will mitigate the effects from fault movement on the pipeline.

#### **3.9.5 Areas of Historic or Cultural Significance**

The WPCI corridors cross over and adjacent to numerous known cultural resources, including historic trails. Additional surveys and mitigation plans will be developed through the

subsequent site-specific NEPA process and in consultation with the Wyoming State Historic Preservation Officer (SHPO) as part of the Section 106 process.

### **3.9.6 Paleontological Resources**

Areas with potential paleontological resources may require construction monitoring and or recovery. Areas with potential paleontological resources will be identified in the NEPA process and site-specific mitigation measures (including trench monitoring) will be developed.

## **3.10 Pipe Installation**

Pipe installation includes stringing, bending for horizontal or vertical angles in the alignment, welding pipe segments together, inspection, coating joint areas to prevent corrosion, and then lowering-in and padding as described in greater detail below.

### **3.10.1 Stringing**

Line pipe will typically be shipped directly from the manufacturer by rail to off-loading areas and then hauled to staging areas where stringing trucks will collect and deliver the pipeline to the ROW. Each individual joint of pipe will be unloaded with a side-boom or trackhoe and placed (strung) parallel to the ditch in a continuous line. Sufficient pipe for road or waterbody crossings will be stockpiled at ETWAs near crossings.

Stringing operations will be coordinated with trenching and installation activities in order to properly manage the construction time at a particular tract of land. Gaps in excavation will be left to allow crossing of wildlife, livestock and other uses.

### **3.10.2 Bending**

After joints of pipe are strung along the ditch but before the joints are welded or pressed together, individual joints of pipe will be bent to accommodate horizontal and vertical changes in direction. Field bends will be made utilizing a hydraulically operated bending machine. Where the deflection of a bend exceeds the allowable limits for field-bent pipe, factory (induction) bends will be installed.

### **3.10.3 Welding**

After pipe joints are bent, the pipe joints will be lined up end-to-end and clamped into position. The pipeline joints will be welded together in conformance with standards applicable to the type of pipeline being installed. Welding activities will conform to requirements in the Fire Prevention and Suppression Plan (Appendix L).

### **3.10.4 Coating**

The coating of pipeline will be done in accordance with standards applicable to the specific type of pipeline being installed.

### **3.10.5 Cathodic Protection**

Cathodic protection will be installed in accordance with standards applicable to the specific type of pipeline being installed.

### **3.10.6 Lowering-in and Padding**

Before pipe sections are lowered into the ditch, inspections will be conducted to verify the pipe is properly fitted and installed into the ditch, minimum cover is provided, and the trench bottom is free of rocks and other debris that could damage the external pipe coating. Side-boom tractors will be used to simultaneously lift the pipe section, position it over the ditch, and lower it in place. Specialized padding machines may be used to sift soil fines from the excavated subsoil to provide rock-free pipeline padding and bedding. Sandbags may be used to pad the bottom of the ditch instead of, or in combination with, padding with soil fines. In rocky areas, padding material or a rock shield will be used to protect the pipe. No topsoil will be used to pad pipe.

### **3.11 Backfilling**

Backfilling will begin after a section of pipe has been successfully placed in the ditch. Trench breakers will then be installed, as needed. Before backfilling the trench, the equipment operator will check the trench for wildlife and/or livestock and will be sure any wildlife or livestock found in the trench is removed before backfilling begins. Backfilling will be conducted using a bulldozer, rotary auger backfiller, padding machine, or other suitable equipment. Backfilling will generally use the subsoil previously excavated from the trench, except in rocky areas where imported select fill material may be needed.

Backfill will be graded and compacted for ground stability, by tamping or walking with a wheeled or tracked vehicle. Compaction will be performed to the extent that no voids remain in the trench. Backfilling will not be performed with frozen soils to prevent the formation of large consolidated masses that will not break down. In irrigated agricultural areas, the backfill will be replaced at the same compaction density as the adjacent undisturbed soil. Any excavated materials or materials unfit for backfill either will be used elsewhere or properly disposed of in compliance with applicable regulations. A mound will be placed over the trench approximately 0.5-feet in height to account for subsidence (except in wetlands, waterbody crossings and at road crossings where compaction will be adequate to keep roadway flat).

### **3.12 Pressure Testing and Water Use**

Consumptive water uses may be required for horizontal directional drilling, dust abatement during construction and to pressure test the installed pipe. Consumptive water use will be acquired and discharged in accordance with the rules, regulations and best practices applicable to the type of pipeline being installed. A hydrostatic testing and discharge plan is included in Appendix D of this POD.

### **3.13 Cleanup and Reclamation**

All construction debris and miscellaneous items will be removed from the construction site and disposed of properly. No trash will be buried. All fences and roads will be replaced/rebuilt as negotiated with the landowner. Appendix C contains a waste and spill management plan for WPCI.

Disturbed portions of the construction workspace (including the ROW and ETWS) will be returned as closely as possible to pre-construction grades and contours. Original drainage patterns will be reestablished and contours will be returned as closely as possible to original condition. Topsoil will be replaced over the ROW from the approximate area in which it was stripped. Reseeding and mulching will be completed as soon as possible, depending upon permit stipulations, weather conditions, and guidance from the agencies and landowners. All disturbed areas will be seeded and mulched. Any temporary BMPs will be removed and final BMPs (waterbars, berms, slash material) will be installed as described in Appendix F.

Reclamation of lands disturbed by construction will be in accordance with applicable regulations and permit requirements. Species and seeding rates effective in controlling erosion will be used to revegetate the disturbed areas. Species will be selected after consideration of climatic adaptation, species adaptation to soil texture, possible adverse conditions such as drought or saline soils, palatability to wildlife, and shrub cover for wildlife (see Appendix F). Non-native species will not be used on public lands except where sterile annuals are required for cover crop. Seed will be planted by drilling or broadcasting. Prior to seeding, the reclaimed area will be roughened (typically by a Dozer with ripper blades) to provide microsites for seed deposition and snow (moisture) capture. A rangeland drill is the preferred seeding equipment. Areas not accessible to a rangeland drill will be broadcast-seeded. Broadcast-seeding rates will be double those of drill application. Seeding will be performed during the appropriate period when the seeds will receive the benefit of winter or spring moisture.

BMPs for final reclamation are described in the Upland Erosion Control, Revegetation, and Maintenance Plan (see Appendix E).

### **3.14 Livestock Barrier and Other Livestock Issues**

Fences crossing the ROW will be braced, cut, and temporarily fitted with gates to permit construction traffic passage. During construction, the opening will be controlled as necessary (including use of cattle guards) to prevent the passage of livestock and/or wild horses. Existing fences will be replaced and braces left in place upon completion of construction activities. Care will be taken not to obstruct or damage gates or cattle guards. Those damaged or made inoperable will be repaired to the land management agency and/or private landowner satisfaction. Any damage to livestock facilities (corrals, fences, water sources, etc.) will be repaired to the owner's specifications.

### **3.15 Health and Safety**

The following health and safety measures will be implemented:

- Construction activities will cease, with the exception of pneumatic or hydrostatic testing operations, boring or drilling, by sunset. Nighttime construction (with the exception of pneumatic or hydrostatic testing) will not be permitted without approval of the appropriate regulatory agency.
- No burning of brush or debris, and no campfires, lunch fires, or warming fires will be allowed on the ROW.
- Water or chemical soil binders will be used to control dust along the ROW and access roads during construction only in accordance with federal, state, and local requirements. Water for dust control will be obtained by permits or purchased through contracts with owners with valid, existing water rights.
- Equipment will be properly maintained to reduce emissions and noise. Vehicles and equipment will be operated at safe speeds at all times on the ROW and access roads.
- Camping will be prohibited on the ROW.

### **3.16 Waste Disposal**

Waste and spill management is discussed in Appendix C of this POD. The following waste disposal measures will be implemented:

- No littering will be allowed on the corridor. Construction and operations sites will be maintained in a sanitary condition at all times and waste materials at these sites will be disposed of promptly at an appropriate waste disposal site.
- Excess or unsuitable materials will be disposed of at commercial disposal sites, commercial recycling centers, or other approved disposal sites.
- Compliance will occur with all hazardous waste disposal requirements.
- Human wastes, temporarily located within self-contained facilities (portable toilets), will be removed from the corridors and disposed of according to applicable laws and regulations. These facilities will not be placed within 100 feet of a drainage or waterbody.

## **4.0 Operation and Maintenance Activities**

The pipeline systems installed in the WPCI corridors will be operated and maintained according to industry standards and federal regulations to ensure safe operation and to maintain the integrity of the pipeline system.

### **4.1 Surveillance**

Communications and detection systems will be designed and installed consistent with standards applicable to the type of pipeline being installed.

### **4.2 Right-of-Way Access**

Surface travel along the ROW generally will be limited to periodic valve inspections, leak surveys, erosion control (Stormwater Inspection), and any pipeline repairs that may be needed. In addition, access to the ROW for the corrosion control inspections and noxious weed surveys will be necessary. This will be conducted typically with a field service truck or

ATV. Specific ROW travel requirements will be described when a ROW grant is issued.

### **4.3 Pipeline and Site Maintenance and Repair**

Specialists and technicians will be on-call to service the pipeline. Surface traffic will be limited to workers performing pipeline and valve maintenance, periodic monitoring and inspection, and emergency repairs to the pipeline or associated equipment.

Repairs required because of minor corrosion and slight external mechanical damage to pipe and coating material can be made without interruption or with minimum interruption of service. Repairs are usually made under a reduced pipeline pressure and require a minimum amount of excavation and heavy equipment. Other minor repairs include BMP maintenance, pipeline marker replacement, and debris removal.

Some settling of the backfilled trench will occur, particularly after the first winter following construction. In this case, subsidence and potholes will be filled if necessary and the surface restored to normal grade and reseeded. If subsidence is discovered in subsequent years, the potholes will be filled, if necessary, and the surface restored to normal grade and reseeded.

Pipeline failures or external mechanical damage needing major repairs may require shutdown of the pipeline. In these instances, the pipeline segment could be isolated between mainline valves.

### **4.4 Environmental Inspections**

Individual project proponents will be responsible for monitoring pipeline operations after construction is completed. This will include post-construction inspection of stormwater management devices as stipulated in the stormwater permit from the WDEQ. Inspection personnel will have the qualifications necessary to conduct stormwater inspections and reporting for pipelines. Individual project proponents will also be responsible for noxious weed control for any issued ROW grants.

### **4.5 Wildlife Avoidance Periods**

General pipeline maintenance should be scheduled to avoid any wildlife construction closure periods. Emergency maintenance in these areas during the wildlife constraint periods will be coordinated with the land management agency.

## **Appendix A**

### **Figures and Construction Typical Drawings**

Figure 1 – Location of WPCI Corridors

Figure 2 – Existing Wyoming Oil Fields Suitable for Enhanced Oil Recovery Using CO<sub>2</sub> Flooding

Figure 3 – Instate Anthropogenic and Natural CO<sub>2</sub> Sources Which May be Suitable for CO<sub>2</sub> Flooding

Figure 4 – Typical 100-foot Wide Construction ROW

Figure 5 – Typical 75-foot Wide Restricted ROW

Figure 6 – Typical Block Valve Location

Figure 7 – Typical Pipeline Marker

Figure 8 – Typical Pipeline Construction Sequence

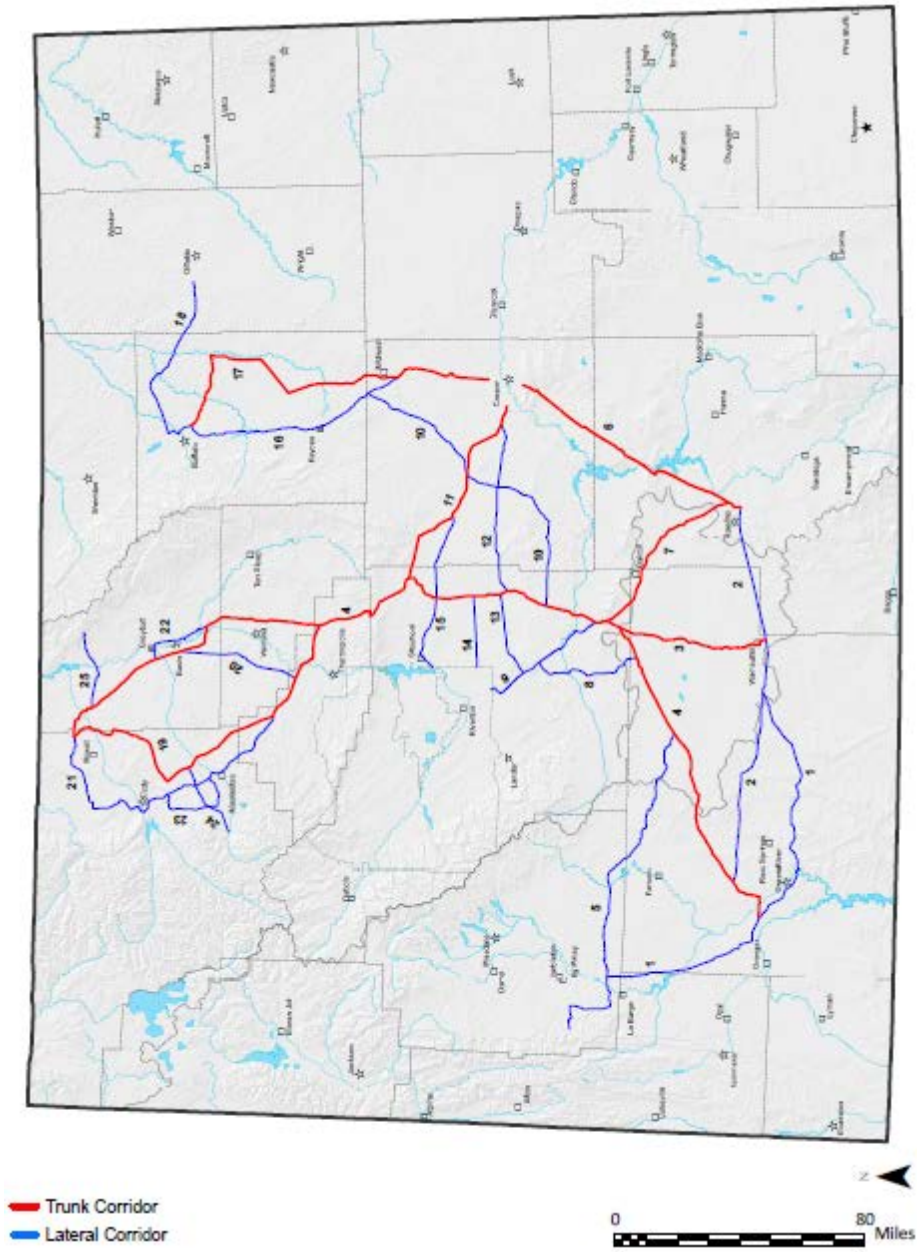
Figure 9 – Typical Uncased Road Crossing: Bored

Figure 10 – Typical Uncased Road Crossing: Open Cut

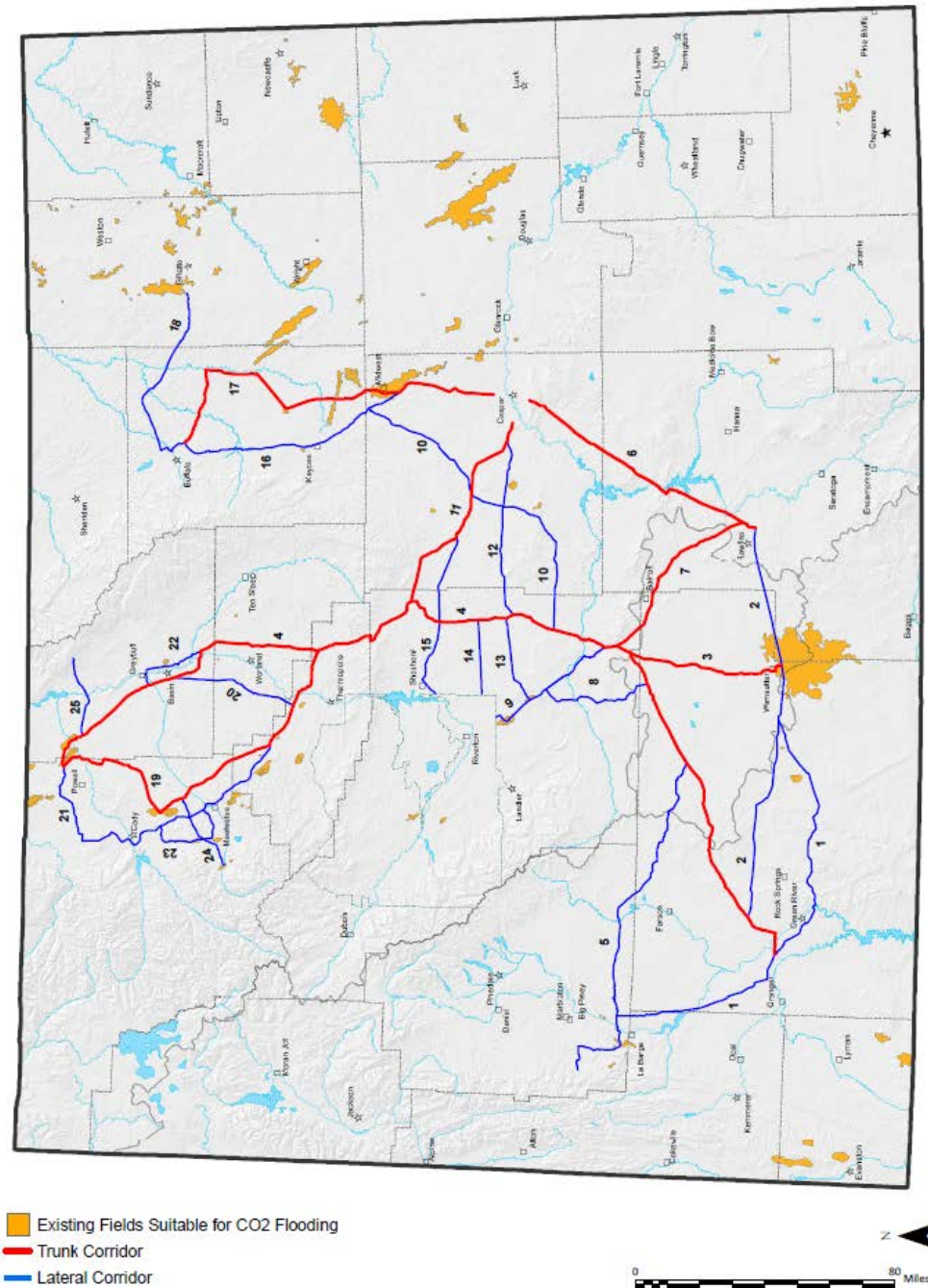
Figure 11 - Typical Trail and Two-Track Road Crossing



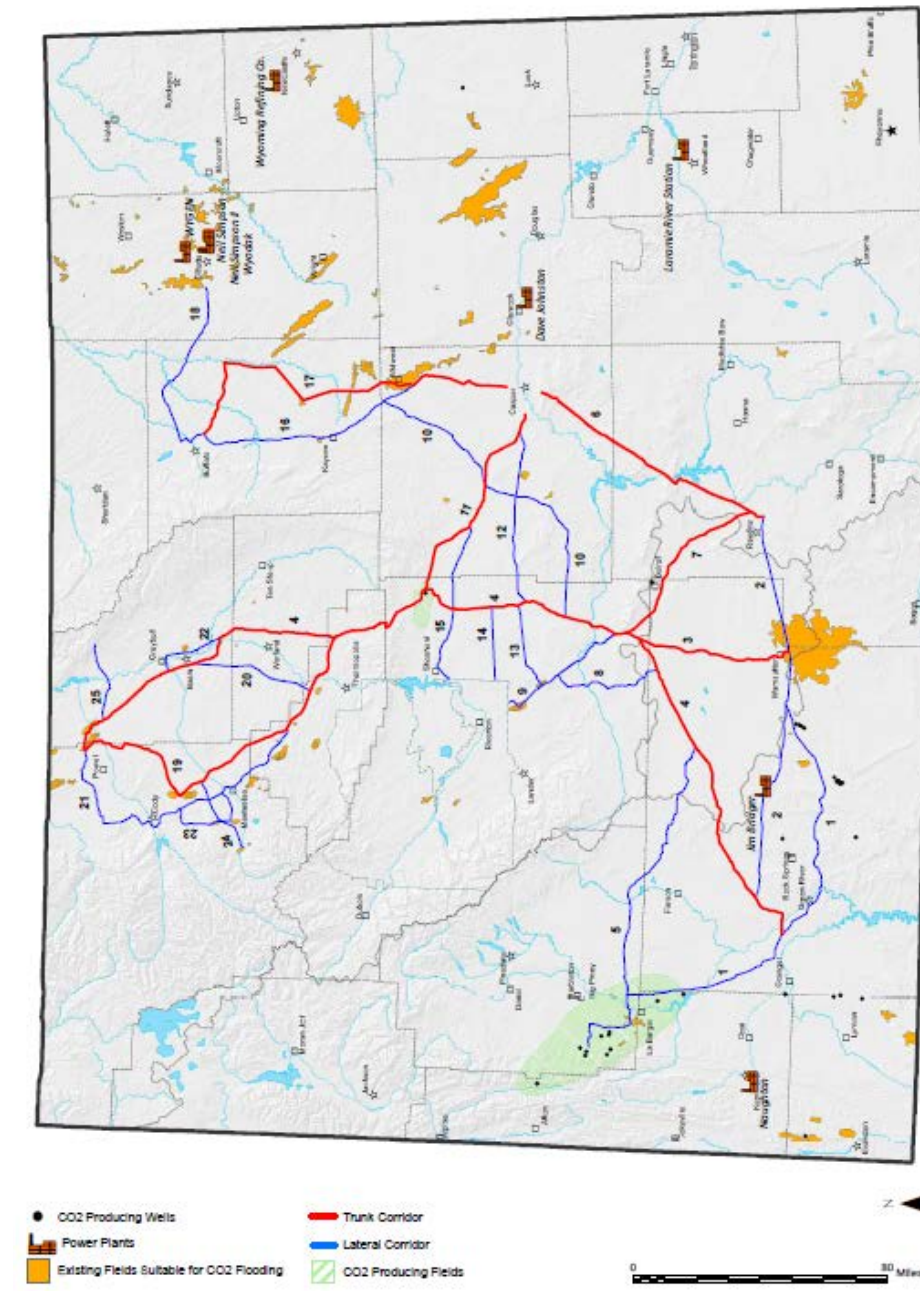
Appendix A  
Figure 1  
WPCI Trunk and Lateral Corridors

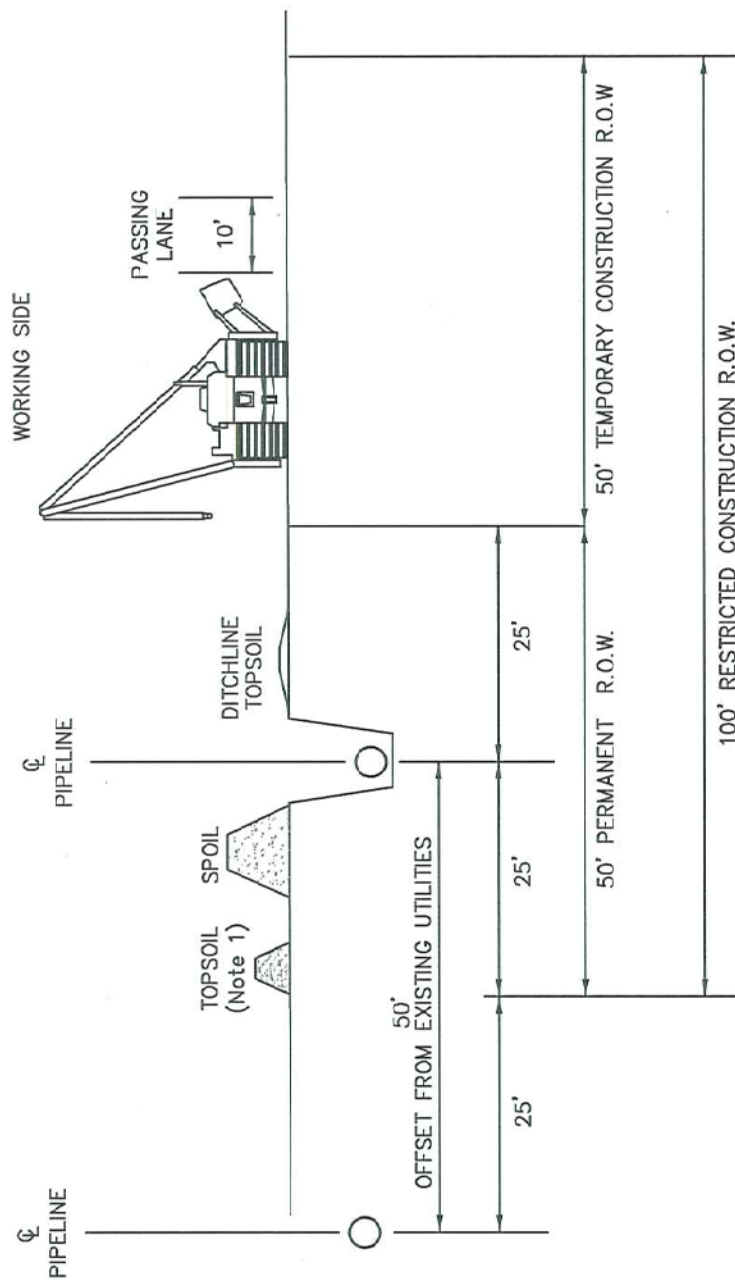


**Appendix A**  
**Figure 2**  
**Existing Wyoming Oil Fields Suitable for Enhanced Oil Recovery Using CO<sub>2</sub> Flooding**



**Appendix A**  
**Figure 3**  
**Instate Anthropogenic and Natural CO<sub>2</sub> Sources Which May be Suitable for CO<sub>2</sub> Flooding**

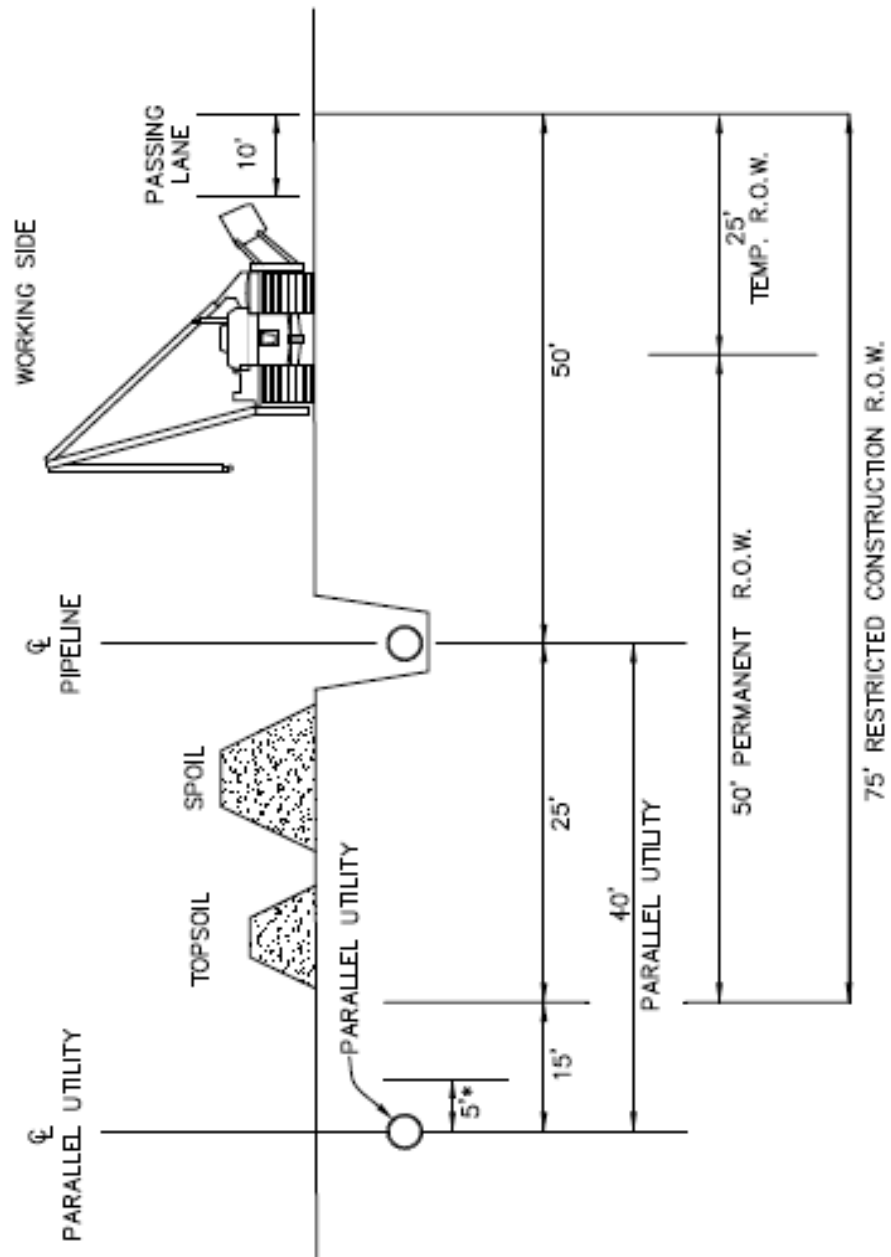




Wyoming Pipeline Corridor Initiative  
Appendix A  
Figure 4  
Typical 100-foot Wide Construction ROW

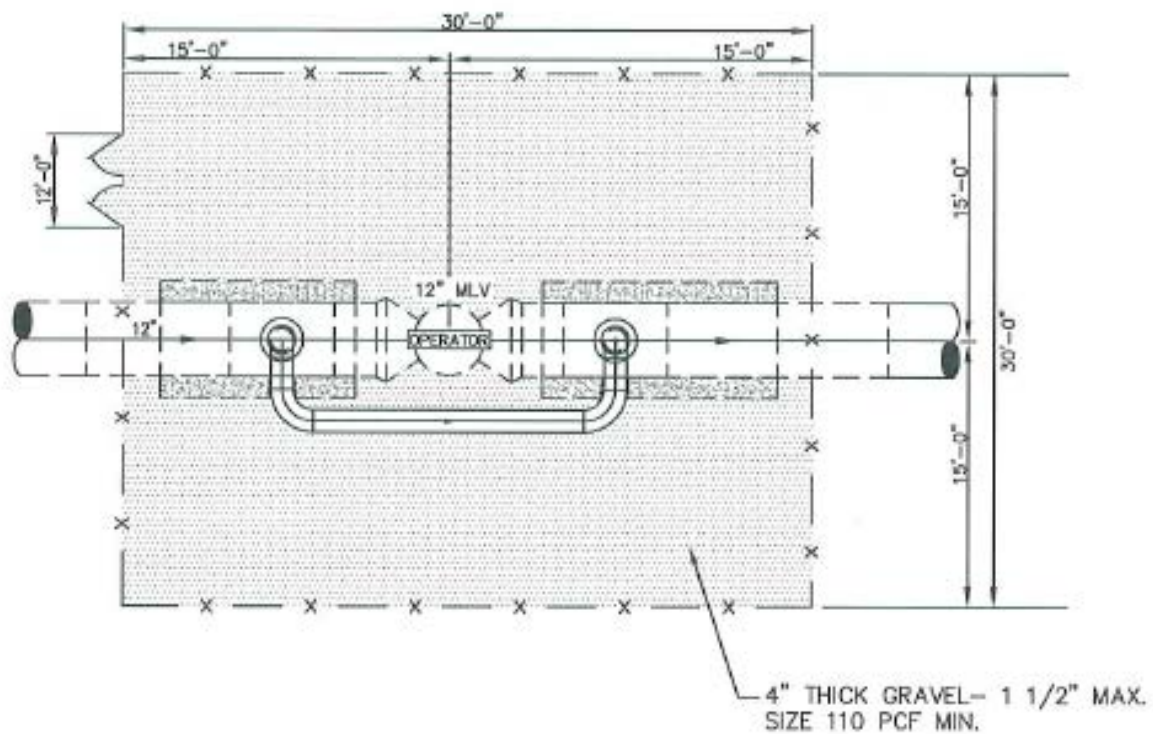






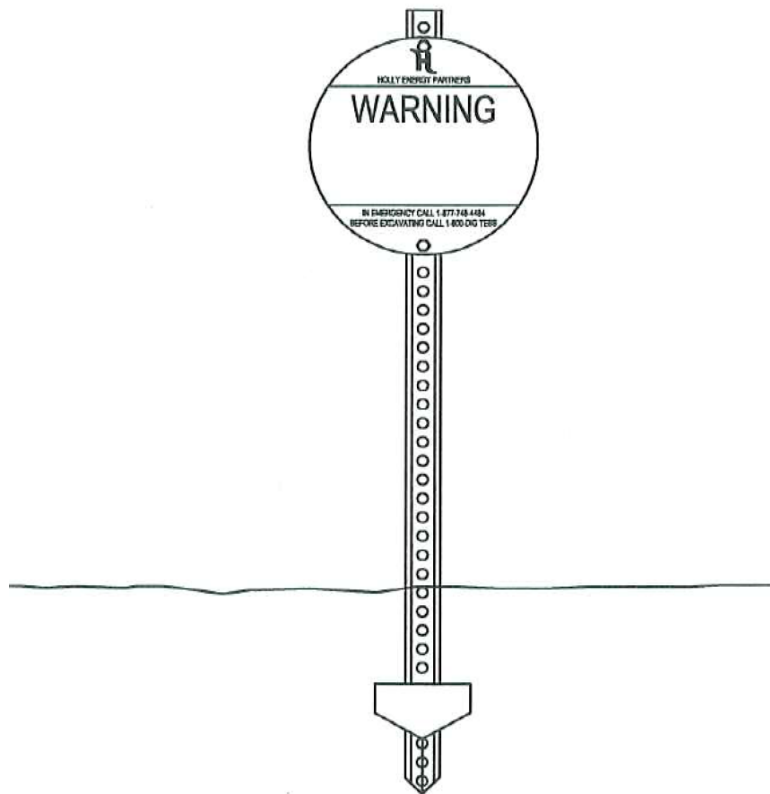
Wyoming Pipeline Corridor Initiative  
 Appendix A  
 Figure 5  
 Typical 75-foot Wide Restricted ROW





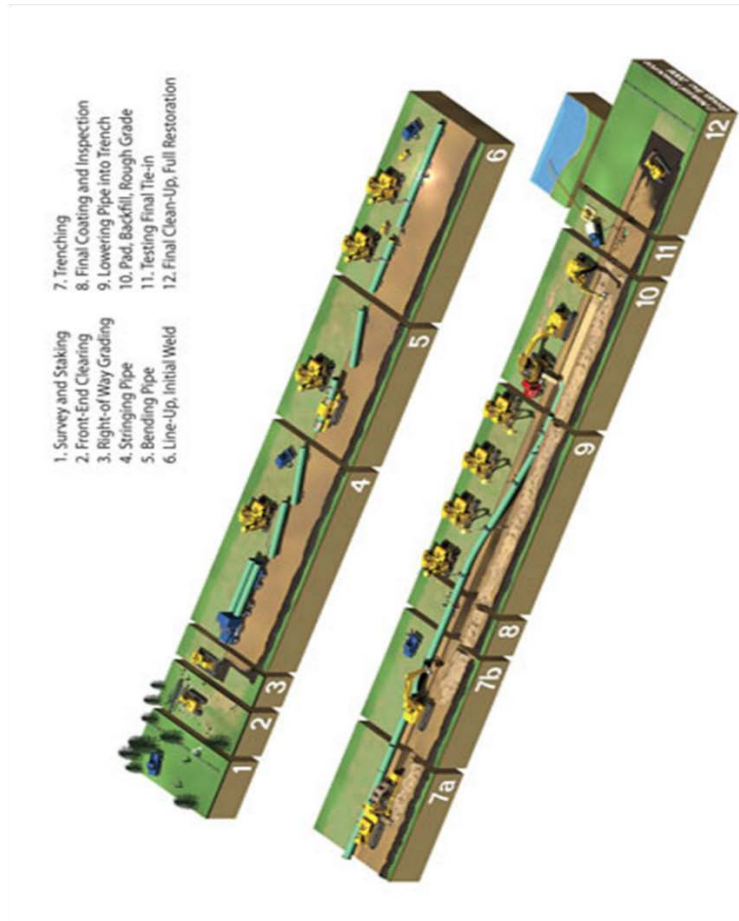
Wyoming Pipeline Corridor Initiative  
Appendix A  
Figure 6  
Typical Block Valve Location





Wyoming Pipeline Corridor Initiative  
Appendix A  
Figure 7  
Typical Pipeline Marker

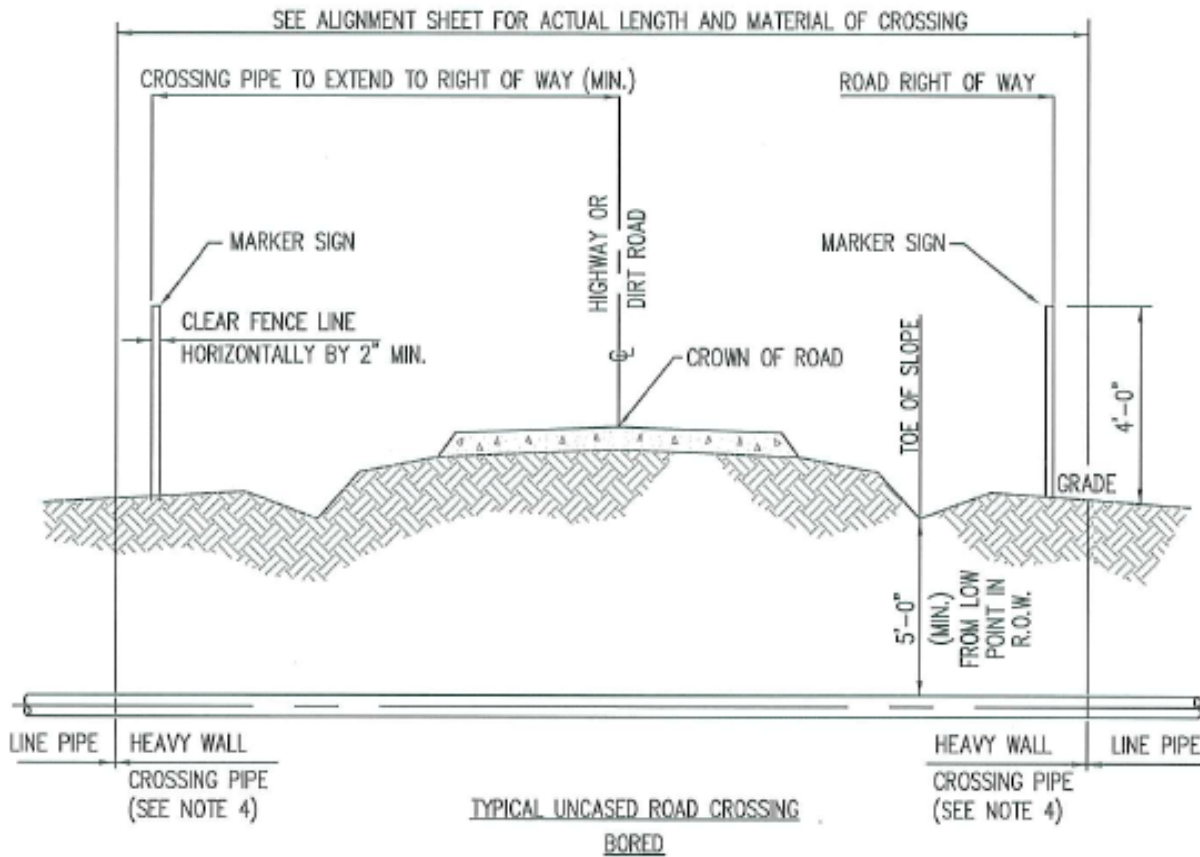




**Wyoming Pipeline Corridor Initiative**  
**Appendix A**  
**Figure 8**  
**Typical Pipeline Construction Sequence**

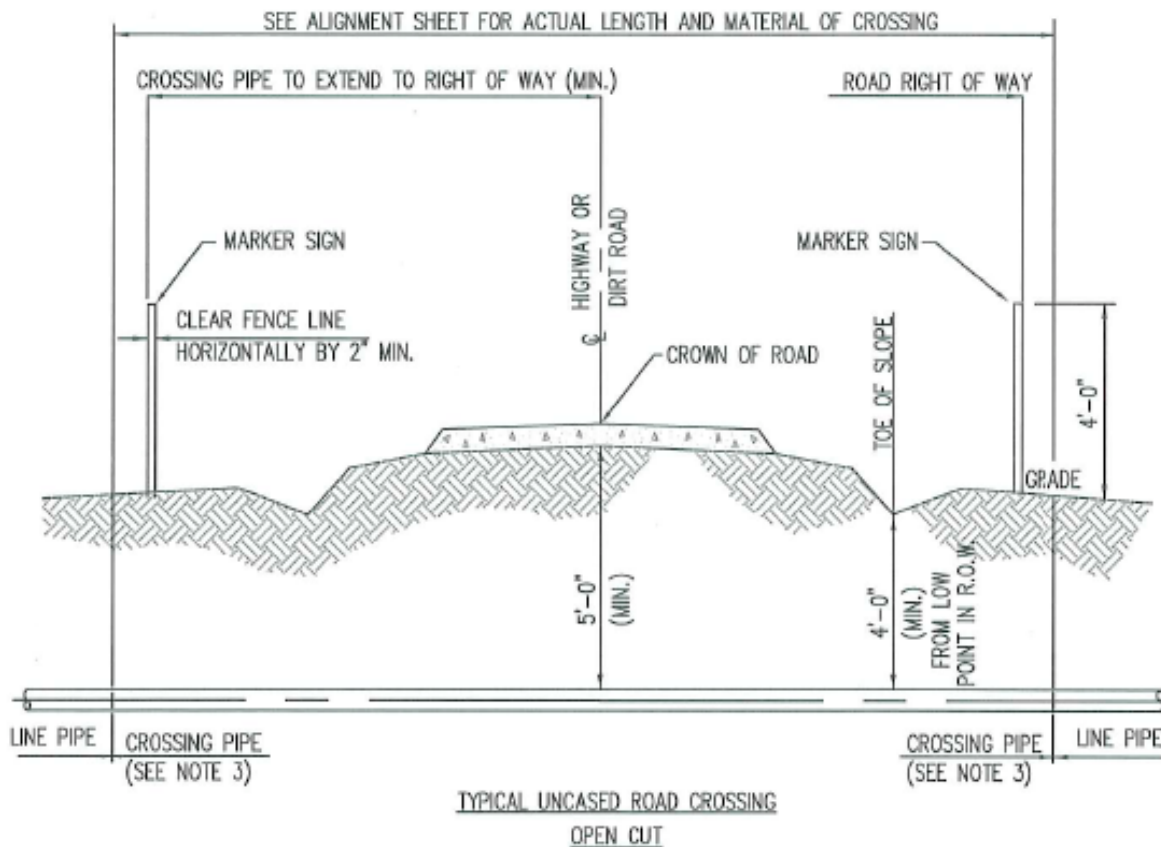






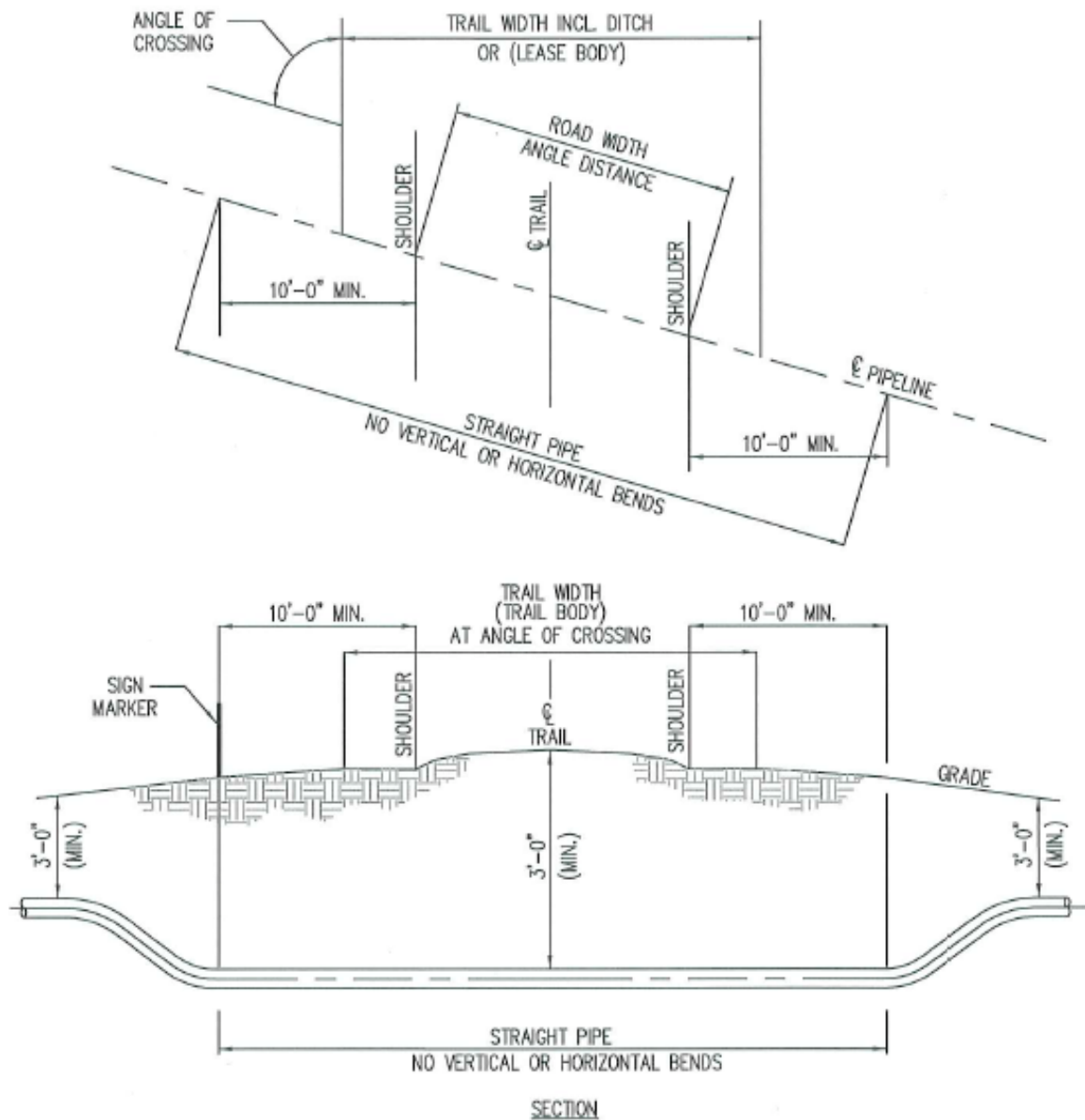
Wyoming Pipeline Corridor Initiative  
Appendix A  
Figure 9  
Typical Uncased Road Crossing: Bored





Wyoming Pipeline Corridor Initiative  
Appendix A  
Figure 10  
Typical Uncased Road Crossing: Open Cut





Wyoming Pipeline Corridor Initiative  
 Appendix A  
 Figure 11  
 Typical Trail and Two-Track Road Crossing



## **Appendix B**

### **Tables**

Table 1 - Landownership (Miles Crossed) of Each Segment of WPCI

Table 2 - Authorizing Actions Which May be Necessary to Construct Pipelines in the WPCI Corridors

Table 3 - Construction Timing Restrictions Which will be Observed for Construction Activities in the WPCI Corridors

Table 4 - Locations of Extra Temporary Work Spaces Necessary to Construct Pipelines in the WPCI Corridors

Table 5 - Land Requirements (Acres) for Each Segment of WPCI

Table 6 - Typical Construction Equipment List

Appendix B Table 1 Landownership (Miles Crossed) of Each Segment of WPCI									
Segment	Counties	WPCI Width (feet)	Miles Crossed						
			Private	State	BLM	USFS	BOR	DOD	Total
1	Lincoln, Sublette, Sweetwater	200	65.30	2.85	64.90	1.05	10.16	0.00	144.25
2	Carbon, Sweetwater	200	67.63	4.07	53.70	0.00	0.00	0.00	125.40
3	Fremont, Sweetwater	300	13.90	1.00	35.60	0.00	0.00	0.00	50.50
4	Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie	300	70.18	16.48	233.30	0.00	3.05	0.00	323.01
5	Sublette, Sweetwater	200	3.22	7.70	112.35	0.00	0.00	0.00	123.27
6	Carbon, Natrona	300	39.58	8.55	31.96	0.00	4.63	0.00	84.72
7	Carbon, Fremont, Sweetwater	300	10.70	3.26	45.00	0.00	0.00	0.00	58.96
8	Fremont, Sweetwater	200	2.01	1.94	34.25	0.00	0.00	0.00	38.20
9	Fremont	200	3.11	1.83	38.99	0.00	0.00	0.00	43.93
10	Fremont, Natrona	200	23.70	3.89	76.90	0.00	0.00	0.00	104.50
11	Fremont, Natrona	300	44.12	5.13	19.92	0.00	0.00	0.00	69.18
12	Fremont, Natrona	200	28.30	4.17	23.17	0.00	0.00	0.00	55.64
13	Fremont	200	3.62	1.52	22.45	0.00	0.00	0.00	27.60
14	Fremont	200	2.04	0.84	20.06	0.00	0.00	0.00	22.94
15	Freemont, Natrona	200	13.70	4.50	34.39	0.00	0.00	0.00	52.59
16	Johnson, Natrona	200	49.99	16.18	8.35	0.00	0.00	0.00	74.52
17	Johnson, Natrona	300	73.57	10.86	38.88	0.00	0.00	0.00	123.31
18	Campbell, Johnson	200	54.39	4.52	5.91	0.00	0.00	0.00	64.82
19	Bighorn, Hot Springs, Park	300	29.89	6.81	73.34	0.00	8.08	0.00	118.13
20	Bighorn, Hot Springs, Washakie	200	1.36	2.12	35.93	0.00	0.00	0.00	39.41
21	Hotsprings, Park	200	40.80	4.40	42.97	0.00	16.58	0.00	104.75
22	Bighorn	200	5.70	0.10	18.35	0.00	0.00	0.00	24.15
23	Park	200	23.92	3.44	3.64	0.00	0.00	0.00	30.99
24	Park	200	15.61	1.19	9.21	0.00	0.00	0.00	26.02
25	Bighorn	200	3.69	1.02	21.14	0.00	0.00	0.02	25.87
<b>Totals</b>			<b>690.03</b>	<b>118.37</b>	<b>1104.67</b>	<b>1.05</b>	<b>42.51</b>	<b>0.02</b>	<b>1956.64</b>

<b>Appendix B</b> <b>Table 2</b> <b>Authorizing Actions Which May be Necessary to Construct Pipelines in the WPCI Corridors</b>		
<b>Agency</b>	<b>Nature of Authorizing Action</b>	<b>Authority</b>
<b>Federal Permits, Approvals, and Reviews</b>		
Bureau of Land Management	Amends Resource Management Plan	Federal Land Policy and Management Act of 1976
	Grant right-of-ways and issue temporary use permits	Section 28 of the Mineral Leasing Act of 1920
	Issue materials sales contracts	Materials Act of 1947, as amended; 30 U.S.C. 601, 602; 43
	Issue antiquities and cultural resource use permit to excavate or remove cultural resources on federal lands	Antiquities Act of 1906, 16 U.S.C. Section 431-433; Archaeological Resources Public Protection Act of 1979, 16 U.S.C. Section 470aa-
	Approve herbicide use on federal lands	BLM Manual 9011.1, Guidelines for Conducting Chemical Pest Control Program
U.S. Fish and Wildlife Service	Section 7 Consultation process for endangered or threatened	Endangered Species Act of 1973; 16 U.S.C. 1531 et seq.
Federal Highway Administration	Issue permits to cross federal-aid highways	23 U.S.C. Sections 116, 123, 23 CFR Part 645 Subpart B
U.S. Army Corps of Engineers	Issue Section 404 permit (nationwide) for placement of dredged or filled material in waters of the U.S.	Section 404 of the Clean Water Act of 1972 (40 CFR 122-123); 33 U.S.C. Section 1344; 33 CFR Parts 323, 325
Bureau of Alcohol, Tobacco and Firearms	Issue permits to purchase, store, and use explosives	Section 1102(a) of the Organized Crime Control Act of 1970, 18 U.S.C. Section 841-848; 27 CFR Part 181
Advisory Council on Historic Preservation	Review and compliance activities related to cultural resources	Section 106 National Historic Preservation Act (16 U.S.C. 470) (36 CFR Part 80)
<b>State of Wyoming and Local</b>		
Department of Environmental Quality – Water Quality Division	Issue National Pollution Discharge Elimination System (NPDES) Permit for discharges; approve Storm Water Pollution Prevention Plan	Wyoming Environmental Quality Act, W.S. 35-11-301
	401 Water Quality Certification	Section 401 of the Clean Water Act
Wyoming Highway Department	Issue permits for oversize and overweight loads	Chapters 17 and 20 of the Wyoming Highway Department Rules and Regulations
	Issue encroachment permits for state highways	Chapter 12 of the Wyoming Highway Department Rules and Regulations
State Land Board	Issue easements to cross state lands	W.S. 35-20 and 36-20
Wyoming State Engineer's Office	Grant permit to appropriate water for hydrostatic testing, dust control, and other uses	W.S.41-121 through 147
State Historic Preservation Office	Review compliance activities related to cultural resources	Section 106 National Historic Preservation Act (16 U.S.C. 470)
County Commissioners	Road crossing permits, land use permits, and licenses	County zoning regulations
County Health Departments	Temporary sanitation facilities	County sanitation regulations

Appendix B Table 3 Construction Timing Restrictions Which will be Observed for Construction Activities in the WPCI Corridors		
Common Name	Spatial Buffer (miles)	Seasonal Stipulation
Golden Eagle	0.5	January 15 - July 31
Ferruginous Hawk	1	March 15 - July 31
Swainson's Hawk	0.25	April 1 - August 31
Bald Eagle	0.5	January 1 – August 15
Prairie Falcon	0.5	March 1 - August 15
Peregrine Falcon	0.5	March 1 - August 15
Short-eared Owl	0.25	March 15- August 1
Burrowing Owl	0.25	April 1 – September 15
Northern Goshawk	0.5	April 1 - August 15
Osprey	0.25	April 1 - August 31
Cooper's Hawk	0.25	March 15 – August 31
Sharp-shinned Hawk	0.25	March 15 – August 31
Red-tailed Hawk	0.25	February 1 – August 15
Rough-legged Hawk (winter resident only)	----	----
Northern Harrier	0.25	April 1 - August 15
Merlin	0.5	April 1 - August 15
American Kestrel	0.125	April 1 – August 15
Common Barn Owl	0.125	February 1 – September 15
Northern Saw-whet Owl	0.25	March 1 - August 31
Boreal Owl	0.25	February 1 – July 31
Long-eared Owl	0.25	February 1 – August 15
Great Horned Owl	0.125	December 1 – September 31
Northern Pygmy-Owl	0.25	April 1 – August 1
Eastern Screech -owl	0.125	March 1 – August 15
Western Screech-owl	0.125	March 1 – August 15
Great Gray Owl	0.25	March 15 – August 31
Sage Grouse Core Area Leks	0.6	No Surface Occupancy
Sage Grouse Non-Core Area Leks	0.25	No Surface Occupancy
Sage Grouse Core Area	Entire Delineated Area	March 15 – June 30
Sage Grouse Non-Core Area Leks	2	March 15 – June 30
Sage Grouse Winter Concentration Areas	Entire Delineated Area	November 15 – March 14
Deer, Elk, and Pronghorn Crucial Winter Range	Entire Delineated Area	November 15 – April 30
Sharp-tail Grouse Leks	0.25	No Surface Occupancy
Sharp-tail Grouse Leks	2	April 1 – July 15

\* **Note:** Construction stipulations will apply to species if previously collected data verifies their presence. Additional surveys will be conducted for species, as determined by applicable resource agencies.

Appendix B Table 4 Locations of Extra Temporary Workspaces Necessary to Construct Pipelines in the WPCI Corridors			
Segment	Milepost	Purpose	Feature Name
1	1.15	I 80	Interstate
1	1.41	Union Pacific Railroad	Railroad
1	1.78	Union Pacific Railroad	Railroad
1	15.30	Bitter Creek	StreamRiver - Perennial
1	39.27	SR 430	State Highway
1	40.20	Salt Wells Creek	StreamRiver - Intermittent
1	57.45	Little Bitter Creek	StreamRiver - Intermittent
1	59.55	US 191	US Highway
1	64.25	Green River	Artificial Path
1	70.81	SR 530	State Highway
1	77.44	Union Pacific Railroad	Railroad
1	77.47	Union Pacific Railroad	Railroad
1	77.85	SR 374	State Highway
1	78.01	I 80	Interstate
1	79.23	SR 372	State Highway
1	80.40	SR 372	State Highway
1	84.73	SR 372	State Highway
1	89.01	Union Pacific Railroad	Railroad
1	116.92	SR 372	State Highway
1	118.88	Green River	Artificial Path
2	6.70	SR 71	State Highway
2	8.98	Sugar Creek	StreamRiver - Intermittent
2	20.19	Separation Creek	StreamRiver - Intermittent
2	32.22	SR 789	State Highway
2	59.33	Union Pacific Railroad	Railroad
2	59.52		RAMP
2	59.54	I 80	Interstate
2	59.57		RAMP
2	85.01	Union Pacific Railroad	Railroad
2	98.20	SR 371	State Highway
2	113.21	Uss Company Railroad	Railroad
2	113.37	Killpecker Creek	StreamRiver - Intermittent
2	117.49	US 191	US Highway
3	3.27	Union Pacific Railroad	Railroad
3	4.10	I 80	Interstate
4	0.50	SR 372	State Highway
4	4.90	Green River	Artificial Path
4	25.82	US 191	US Highway
4	33.63	Uss Company Railroad	Railroad



4	35.01	Killpecker Creek	StreamRiver - Intermittent
4	79.26	Bush Creek	StreamRiver - Intermittent
4	80.60	Bear Creek	StreamRiver - Intermittent
4	82.49	Red Creek	StreamRiver - Perennial
4	99.09	Lost Creek	StreamRiver - Intermittent
4	103.59	Arapahoe Creek	StreamRiver - Intermittent
4	106.31	Arapahoe Creek	StreamRiver - Intermittent
4	108.27	Arapahoe Creek	StreamRiver - Intermittent
4	110.95	West Fork Crooks Creek	StreamRiver - Intermittent
4	113.44	Spring Creek	StreamRiver - Intermittent
4	116.98	Mason Creek	StreamRiver - Intermittent
4	117.68	Unnamed	StreamRiver - Intermittent
4	118.19	Unnamed	StreamRiver - Intermittent
4	124.72	US 287	US Highway
4	127.08	Sweetwater River	Artificial Path
4	130.44	Buffalo Creek	StreamRiver - Intermittent
4	145.55	Coyote Creek	StreamRiver - Intermittent
4	146.89	Dry Coyote Creek	StreamRiver - Intermittent
4	152.19	SR 136	State Highway
4	173.19	Poison Creek	StreamRiver - Intermittent
4	173.87	US 20	US Highway
4	180.37	Unnamed	StreamRiver - Intermittent
4	180.79	Alkali Creek	Artificial Path
4	181.13	Burlington Northern Railroad	Railroad
4	181.97	Unnamed	StreamRiver - Intermittent
4	184.33	South Fork Sand Creek	StreamRiver - Intermittent
4	185.25	Sand Creek	Artificial Path
4	186.39	South Fork Badwater Creek	Artificial Path
4	187.84	Badwater Creek	StreamRiver - Perennial
4	191.14	Cottonwood Creek	StreamRiver - Intermittent
4	193.54	Bridger Creek	StreamRiver - Perennial
4	200.56	Unnamed	StreamRiver - Intermittent
4	204.44	South Bridger Creek	StreamRiver - Perennial
4	207.66	West Bridger Creek	StreamRiver - Perennial
4	214.20	West Kirby Creek	StreamRiver - Perennial
4	220.08	Kirby Creek	StreamRiver - Intermittent
4	224.59	Lake Creek	StreamRiver - Intermittent
4	224.61	Lake Creek	StreamRiver - Intermittent
4	224.67	Lake Creek	StreamRiver - Intermittent
4	232.28	Nowater Creek	StreamRiver - Intermittent
4	239.47	East Fork Nowater Creek	StreamRiver - Intermittent

4	246.20	Slick Creek	StreamRiver - Intermittent
4	247.14	US 16	US Highway
4	262.73	US 20	US Highway
4	263.04	Burlington Northern Railroad	Railroad
4	264.14	Bighorn River	Artificial Path
4	264.86	Alamo Creek	StreamRiver - Intermittent
4	265.14	Alamo Creek	StreamRiver - Intermittent
4	265.26	Alamo Creek	StreamRiver - Intermittent
4	265.39	Alamo Creek	StreamRiver - Intermittent
4	265.72	SR 433	State Highway
4	266.58	Alamo Creek	StreamRiver - Intermittent
4	266.58	Alamo Creek	StreamRiver - Intermittent
4	266.64	Alamo Creek	StreamRiver - Intermittent
4	269.52	Dobie Creek	StreamRiver - Intermittent
4	272.46	Elk Creek	StreamRiver - Intermittent
4	272.51	Elk Creek	StreamRiver - Intermittent
4	272.62	Elk Creek	StreamRiver - Intermittent
4	276.16	Antelope Creek	StreamRiver - Intermittent
4	278.76	SR 30	State Highway
4	282.04	Greybull River	Artificial Path
4	282.17	Greybull River	Artificial Path
4	282.27	Greybull River	Artificial Path
4	286.79	Dry Creek	StreamRiver - Perennial
4	287.73	US 14	US Highway
4	290.07	Little Dry Creek	StreamRiver - Intermittent
4	302.16	Little Dry Creek	StreamRiver - Intermittent
4	309.61	Unnamed	StreamRiver - Intermittent
4	309.65	Unnamed	StreamRiver - Intermittent
4	309.69	Unnamed	StreamRiver - Intermittent
4	309.71	Unnamed	StreamRiver - Intermittent
4	309.76	Unnamed	StreamRiver - Intermittent
4	312.91	SR 32	State Highway
4	314.11	Shoshone River	Artificial Path
4	314.68	US 14A	US Highway
5	17.27	Bush Creek	StreamRiver - Perennial
5	19.25	Jack Parnell Creek	StreamRiver - Intermittent
5	25.38	Rock Cabin Creek	StreamRiver - Perennial
5	40.33	Pacific Creek	StreamRiver - Perennial
5	40.49	North Pacific Creek	StreamRiver - Intermittent
5	40.59	Uss Company Railroad	Railroad
5	42.06	SR 28	State Highway

5	44.60	Dry Sandy Creek	StreamRiver - Intermittent
5	46.44	Little Sandy Creek	StreamRiver - Perennial
5	60.25	Big Sandy River	Artificial Path
5	60.36	US 191	US Highway
5	94.49	Green River	Artificial Path
5	95.71	US 189	US Highway
5	100.96	Birch Creek	StreamRiver - Intermittent
5	103.61	Birch Creek	StreamRiver - Intermittent
5	105.28	Dry Piney Creek	StreamRiver - Perennial
5	108.33	Fogarty Creek	StreamRiver - Perennial
5	119.21	Beaver Creek	StreamRiver - Perennial
5	120.20	Spring Creek	StreamRiver - Perennial
6	2.03	Union Pacific Railroad	Railroad
6	2.16	SR 76	State Highway
6	2.35	I 80 Ramp	RAMP
6	2.39	I 80	Interstate
6	2.41	I 80 Ramp	RAMP
6	5.18	Sugar Creek	StreamRiver - Perennial
6	9.50	North Platte River	Artificial Path
6	11.12	North Platte River	Artificial Path
6	28.27	Hurt Creek	StreamRiver - Perennial
6	33.39	Morgan Creek	StreamRiver - Perennial
6	37.47	North Platte River	Artificial Path
6	40.72	Sage Creek	StreamRiver - Perennial
6	54.37	Canyon Creek	StreamRiver - Perennial
6	69.84	Bolton Creek	StreamRiver - Intermittent
6	73.94	Stinking Creek	Artificial Path
6	75.63	Bates Creek	StreamRiver - Perennial
6	75.97	SR 487	State Highway
7	0.23	Sugar Creek	StreamRiver - Perennial
7	32.88	US 287	US Highway
7	43.86	Lost Soldier Creek	StreamRiver - Intermittent
7	44.76	Lost Soldier Creek	StreamRiver - Intermittent
7	53.19	Crooks Creek	StreamRiver - Perennial
7	58.63	Crooks Creek	StreamRiver - Perennial
8	13.15	East Alkali Creek	StreamRiver - Intermittent
8	22.86	Warm Springs Creek	StreamRiver - Perennial
8	25.98	US 287	US Highway
8	26.19	Sweetwater River	Artificial Path
9	3.25	O'Brian Creek	StreamRiver - Intermittent
9	4.22	Nancy Creek	StreamRiver - Intermittent

9	7.32	US 287	US Highway
9	9.41	Ice Slough	StreamRiver - Intermittent
9	15.10	Sweetwater River	Artificial Path
9	25.44	West Fork Long Creek	StreamRiver - Intermittent
9	31.56	SR 135	State Highway
10	0.24	I 25	Interstate
10	3.41	Scott Creek	StreamRiver - Intermittent
10	3.66	Lane Creek	StreamRiver - Intermittent
10	7.16	Government Creek	StreamRiver - Intermittent
10	7.81	Government Creek	StreamRiver - Intermittent
10	39.97	Burlington Northern Railroad	Railroad
10	40.10	US 20	US Highway
10	49.33	Middle Fork Casper Creek	StreamRiver - Perennial
10	56.21	South Fork Casper Creek	StreamRiver - Intermittent
10	59.49	Poison Spider Creek	StreamRiver - Perennial
10	61.50	Soap Creek	StreamRiver - Intermittent
10	65.88	Cabin Creek	StreamRiver - Intermittent
10	69.77	Horse Creek	StreamRiver - Intermittent
10	78.04	Cottonwood Creek	StreamRiver - Intermittent
10	78.11	Dry Creek	StreamRiver - Intermittent
10	88.61	Sage Hen Creek	StreamRiver - Intermittent
10	94.13	West Sage Hen Creek	StreamRiver - Intermittent
10	97.44	Unnamed	StreamRiver - Intermittent
10	97.85	Unnamed	StreamRiver - Intermittent
10	103.93	Unnamed	StreamRiver - Intermittent
11	13.09	South Fork Casper Creek	StreamRiver - Intermittent
11	24.59	Middle Fork Casper Creek	StreamRiver - Perennial
11	33.00	South Fork Powder River	StreamRiver - Intermittent
11	35.07	US 20	US Highway
11	45.79	Poison Creek	StreamRiver - Intermittent
11	49.19	Alkali Creek	StreamRiver - Intermittent
11	50.06	Burlington Northern Railroad	Railroad
11	50.18	E-K Creek	StreamRiver - Intermittent
11	55.40	Red Creek	StreamRiver - Intermittent
11	63.97	South Fork Sand Creek	StreamRiver - Intermittent
11	66.65	Sand Creek	Artificial Path
11	67.27	Sand Creek	Artificial Path
11	67.39	Sand Creek	Artificial Path
12	19.57	South Fork Casper Creek	StreamRiver - Intermittent
12	19.64	South Fork Casper Creek	StreamRiver - Intermittent
12	19.66	South Fork Casper Creek	StreamRiver - Intermittent

12	27.11	Middle Fork Casper Creek	StreamRiver - Perennial
12	33.63	Wallace Creek	StreamRiver - Perennial
12	44.71	Deer Creek	StreamRiver - Perennial
12	47.54	East Canyon Creek	StreamRiver - Intermittent
12	48.81	West Canyon Creek	StreamRiver - Intermittent
12	55.56	SR 136	State Highway
13	0.13	SR 136	State Highway
13	1.48	Muskrat Creek	Artificial Path
13	7.11	Unnamed	StreamRiver - Intermittent
13	8.84	Unnamed	StreamRiver - Intermittent
13	9.56	Unnamed	StreamRiver - Intermittent
13	17.88	Rock Creek	StreamRiver - Perennial
13	19.09	Conant Creek	StreamRiver - Perennial
14	2.03	Muskrat Creek	Artificial Path
14	7.31	Horseshoe Creek	Artificial Path
14	12.09	Conant Creek	StreamRiver - Intermittent
14	15.81	Oil Springs Creek	StreamRiver - Intermittent
14	17.75	SR 136	State Highway
14	19.21	Dry Cheyenne Creek	StreamRiver - Intermittent
15	5.32	Poison Creek	StreamRiver - Intermittent
15	46.85	US 20	US Highway
15	47.06	Poison Creek	Artificial Path
16	0.07	Castle Creek	StreamRiver - Intermittent
16	4.31	Unnamed	StreamRiver - Intermittent
16	6.09	SR 387	State Highway
16	8.00	I 25	Interstate
16	10.44	I 25	Interstate
16	10.79	Dugout Creek	StreamRiver - Intermittent
16	11.10	Unnamed	StreamRiver - Intermittent
16	16.87	I 25	Interstate
16	23.95	I 25	Interstate
16	24.51	South Fork Powder River	StreamRiver - Intermittent
16	30.13	Middle Fork Powder River	Artificial Path
16	30.92	SR 191	State Highway
16	31.77	SR 196	State Highway
16	31.90	I 25	Interstate
16	35.92	North Fork Powder River	StreamRiver - Perennial
16	41.39	SR 196	State Highway
16	53.27	South Fork Crazy Woman Creek	StreamRiver - Perennial
16	56.56	North Fork Crazy Woman Creek	StreamRiver - Perennial
16	65.07	I 25	Interstate

17	21.65	East Teapot Creek	StreamRiver - Intermittent
17	28.00	Teapot Creek	StreamRiver - Intermittent
17	28.17	SR 259	State Highway
17	31.87	Castle Creek	StreamRiver - Intermittent
17	31.89	Castle Creek	StreamRiver - Intermittent
17	31.95	Castle Creek	StreamRiver - Intermittent
17	36.90	Unnamed	StreamRiver - Intermittent
17	37.70	SR 387	State Highway
17	48.51	Salt Creek	StreamRiver - Perennial
17	49.21	Meadow Creek	StreamRiver - Perennial
17	55.82	Salt Creek	StreamRiver - Perennial
17	57.32	Powder River	Artificial Path
17	58.30	SR 192	State Highway
17	102.07	I 90	Interstate
17	105.43	I 90	Interstate
17	113.45	Crazy Woman Creek	StreamRiver - Perennial
18	3.47	Wild Horse Creek	StreamRiver - Intermittent
18	24.96	Powder River	StreamRiver - Perennial
18	34.30	Crazy Woman Creek	StreamRiver - Perennial
18	51.76	Clear Creek	Artificial Path
18	59.19	Rock Creek	StreamRiver - Perennial
18	59.34	Rock Creek	StreamRiver - Perennial
18	59.44	Rock Creek	StreamRiver - Perennial
18	59.85	Clear Creek	StreamRiver - Perennial
18	62.99	I 90	Interstate
19	0.27	Kirby Creek	StreamRiver - Intermittent
19	3.94	Kirby Creek	Artificial Path
19	5.56	Kirby Creek	StreamRiver - Intermittent
19	6.99	Unnamed	StreamRiver - Intermittent
19	11.65	Kirby Creek	StreamRiver - Intermittent
19	11.72	SR 172	State Highway
19	16.39	Bighorn River	Artificial Path
19	16.60	Burlington Northern Railroad	Railroad
19	16.63	Unnamed	StreamRiver - Intermittent
19	17.57	US 20	US Highway
19	18.04		
19	19.79	Unnamed	StreamRiver - Intermittent
19	28.45	Cottonwood Creek	StreamRiver - Perennial
19	31.00	Grass Creek	StreamRiver - Perennial
19	31.09	Grass Creek	StreamRiver - Perennial
19	41.37	SR 431	State Highway

19	42.32	Gooseberry Creek	StreamRiver - Perennial
19	54.40	Fifteen mile Creek	StreamRiver - Intermittent
19	54.43	Fifteen mile Creek	StreamRiver - Intermittent
19	54.52	Fifteen mile Creek	StreamRiver - Intermittent
19	64.35	Greybull River	Artificial Path
19	70.76	Dry Creek	StreamRiver - Intermittent
19	83.22	North Fork Dry Creek	StreamRiver - Intermittent
19	88.03	US 14	US Highway
19	101.08	Whistle Creek	StreamRiver - Intermittent
19	106.42	SR 295	State Highway
19	109.18	Unnamed	StreamRiver - Intermittent
19	109.49	Unnamed	StreamRiver - Intermittent
19	109.92	Shoshone River	Artificial Path
19	110.90	Bitter Creek	Artificial Path
19	112.32	Unnamed	StreamRiver - Perennial
19	112.42	US 14A	US Highway
20	5.54	Cottonwood Creek	StreamRiver - Perennial
20	9.28	Little Gooseberry Creek	StreamRiver - Perennial
20	10.31	North Fork Little Gooseberry Creek	StreamRiver - Perennial
20	12.61	Gooseberry Creek	StreamRiver - Perennial
20	13.65	SR 431	State Highway
20	18.94	Fifteen mile Creek	Artificial Path
20	27.79	Sixmile Creek	StreamRiver - Intermittent
20	28.93	Fivemile Creek	StreamRiver - Intermittent
20	34.13	South Fork Elk Creek	StreamRiver - Intermittent
20	36.16	Elk Creek	StreamRiver - Intermittent
21	0.51	SR 120	State Highway
21	0.67	Grass Creek	StreamRiver - Perennial
21	1.45	Grass Creek	StreamRiver - Perennial
21	12.37	Gooseberry Creek	StreamRiver - Perennial
21	17.90	Little Buffalo Creek	StreamRiver - Intermittent
21	24.39	SR 120	State Highway
21	29.59	Greybull River	Artificial Path
21	30.02	SR 120	State Highway
21	31.52	Unnamed	StreamRiver - Intermittent
21	34.61	Cottonwood Creek	StreamRiver - Intermittent
21	36.66	South Fork Dry Creek	StreamRiver - Intermittent
21	46.20	Sage Creek	StreamRiver - Perennial
21	55.32	Sulphur Creek	StreamRiver - Perennial
21	55.52	SR 291	State Highway
21	57.66	US 14	US Highway

21	57.76	Shoshone River	Artificial Path
21	59.01	Trail Creek	StreamRiver - Perennial
21	60.74	Dry Creek	StreamRiver - Perennial
21	61.55	Heart Mountain Canal	Artificial Path
21	62.94	SR 120	State Highway
21	63.20	Cottonwood Creek	StreamRiver - Perennial
21	64.40	North Fork Cottonwood Creek	StreamRiver - Perennial
21	65.13	Idaho Creek	StreamRiver - Perennial
21	70.88	Iron Creek	StreamRiver - Intermittent
21	72.82	Buck Creek	StreamRiver - Intermittent
21	75.94	Alkali Creek Patch	StreamRiver - Intermittent
21	85.20	Unnamed	StreamRiver - Intermittent
21	87.40	SR 294	State Highway
21	98.32	SR 295	State Highway
21	102.14	SR 114	State Highway
21	102.94	Unnamed	StreamRiver - Perennial
21	102.95	Burlington Northern Railroad	Railroad
22	2.63	Nowood River	Artificial Path
22	4.12	SR 31	State Highway
22	20.27	Bighorn River	Artificial Path
22	20.52	Burlington Northern Railroad	Railroad
22	20.67	US 20	US Highway
23	1.74	Meeteetse Creek	StreamRiver - Perennial
23	5.59	Spring Creek	StreamRiver - Perennial
23	11.43	Spring Creek	StreamRiver - Perennial
23	13.35	Rush Creek	StreamRiver - Perennial
23	15.18	Short Fork Meeteetse Creek	StreamRiver - Perennial
23	16.14	Meeteetse Creek	StreamRiver - Perennial
23	19.46	South Fork Sage Creek	StreamRiver - Perennial
23	20.48	Sage Creek	StreamRiver - Perennial
23	23.10	Hoodoo Creek	StreamRiver - Perennial
24	1.56	South Fork Dry Creek	StreamRiver - Intermittent
24	3.76	SR 120	State Highway
24	6.18	South Fork Dry Creek	StreamRiver - Intermittent
24	8.19	Cottonwood Creek	StreamRiver - Intermittent
24	11.09	Unnamed	StreamRiver - Intermittent
24	11.88	Horse Creek	StreamRiver - Intermittent
24	12.71	Meeteetse Creek	Artificial Path
24	14.30	Rush Creek	StreamRiver - Perennial
24	15.82	Spring Creek	StreamRiver - Perennial
24	17.65	Unnamed	StreamRiver - Intermittent



24	17.76	Rawhide Creek	StreamRiver - Perennial
24	22.74	Rose Creek	StreamRiver - Perennial
24	25.03	Pickett Creek	StreamRiver - Perennial
24	25.77	Greybull River	Artificial Path
25	0.98	Five Springs Creek	StreamRiver - Perennial
25	2.60	Elk Springs Creek	StreamRiver - Intermittent
25	5.50	US 14A	US Highway
25	5.69	Five Springs Creek	StreamRiver - Perennial
25	12.47	Bighorn River	Artificial Path
25	12.49	Burlington Northern Railroad	Railroad
25	18.89	US 310	US Highway
25	18.97	Unnamed	StreamRiver - Intermittent
25	25.78	Unnamed	StreamRiver - Intermittent

Appendix B Table 5 Land Requirements for Each Segment of WPCI (Acres)								
Segment Name	Counties	Private	State	BLM	USFS	BOR	DOD	Total
1	Lincoln, Sublette, Sweetwater	1583.34	72.15	1565.48	25.36	247.37	0.00	3493.70
2	Carbon, Sweetwater	1642.51	98.61	1295.83	0.00	0.00	0.00	3036.95
3	Fremont, Sweetwater	505.31	36.43	1293.90	0.00	0.00	0.00	1835.64
4	Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie	2583.19	600.17	8451.91	0.00	110.91	0.00	11746.18
5	Sublette, Sweetwater	80.66	186.59	2719.96	0.00	0.00	0.00	2987.21
6	Carbon, Natrona	1439.88	311.58	1161.37	0.00	168.24	0.00	3081.06
7	Carbon, Fremont, Sweetwater	383.22	117.85	1637.79	0.00	0.00	0.00	2138.86
8	Fremont, Sweetwater	48.70	47.30	828.30	0.00	0.00	0.00	924.31
9	Fremont	73.46	44.46	945.95	0.00	0.00	0.00	1063.87
10	Fremont, Natrona	571.56	93.87	1863.83	0.00	0.00	0.00	2529.26
11	Fremont, Natrona	1605.42	186.71	723.20	0.00	0.00	0.00	2515.34
12	Fremont, Natrona	685.05	101.23	559.95	0.00	0.00	0.00	1346.23
13	Fremont	87.70	36.90	543.16	0.00	0.00	0.00	667.75
14	Fremont	48.72	20.26	486.40	0.00	0.00	0.00	555.38
15	Freemont, Natrona	331.47	108.67	832.52	0.00	0.00	0.00	1272.66
16	Johnson, Natrona	1212.65	388.98	202.74	0.00	0.00	0.00	1804.37
17	Johnson, Natrona	2675.09	395.09	1414.93	0.00	0.00	0.00	4485.11
18	Campbell, Johnson	1318.75	108.86	143.11	0.00	0.00	0.00	1570.72
19	Bighorn, Hot Springs, Park	1087.48	247.82	2664.48	0.00	293.01	0.00	4292.79
20	Bighorn, Hot Springs, Washakie	33.06	51.27	868.69	0.00	0.00	0.00	953.03
21	Hotsprings, Park	988.58	106.90	1041.03	0.00	400.97	0.00	2537.48
22	Bighorn	137.46	2.03	444.18	0.00	0.00	0.00	583.67
23	Park	579.15	83.38	87.74	0.00	0.00	0.00	750.27
24	Park	375.88	29.25	222.31	0.00	0.00	0.00	627.44
25	Bighorn	91.46	24.80	509.29	0.00	0.00	0.87	626.41
<b>Totals</b>		<b>20169.75</b>	<b>3501.15</b>	<b>32508.06</b>	<b>25.36</b>	<b>1220.50</b>	<b>0.87</b>	<b>57425.68</b>

<b>Appendix B</b> <b>Table 6</b> <b>Typical Construction Equipment List</b>
Dozer with Ripper
Dozer with Winch and Angle Blade
Tow Tractor
Sideboom
Back hoe (3/4-yard)
Ditching Machine
Padding Machine
Motor Grader
Motor Crane
Bending Machine
Boring Machine
Air Compressor
Pipe Coating Trucks
Pumps
Flatbed Truck w/ Winch
Pickup
Stringing Truck
Crew Truck
Skid Truck
Dump Truck
Tractor with Lowboy
Mechanic's Truck
Fuel/Grease Truck
Water Truck with Sprinkler
Office Trailer
Warehouse Trailer
Welding Machines (200 amp, tractor-mounted)
Welder's Trucks (1 ton )
Tractor (reclamation)
Disc ploughs (reclamation)
Chisel ploughs (reclamation)
Reseeding equipment (reclamation)

## **Appendix C**

### **Waste and Spill Management Specifications**

#### **Introduction**

These waste and spill specifications apply to all work within the WPCI where waste may be generated or a spill may occur. Project specific waste and spill specifications, beyond those outlined in this document, may be applied by individual project proponents.

Contractors will attend pre-construction meetings to review environmental issues and requirements relating to jobs, prior to initiating construction activities. During pre-construction meetings, requirements for proper waste management, spill reporting, and cleanup will be reviewed. Contractors will comply with requirements set forth below and identified in their contract's Scope of Work.

Waste and Spill Management Plan Templates will be completed by Proponents' Contractors. Contractors will comply with environmental guidance provided by Proponents, in addition to all applicable federal, state, and local regulations.

Contractors will be responsible for ensuring that applicable personnel, including subcontractors, understand spill prevention procedures and how to handle, store, transport, and dispose of wastes per these specifications. Contractors will keep records of training and provide copies of such records to Proponents and applicable regulatory agencies, upon request.

#### **Waste Management – Proponents Responsibilities**

##### **Before Work Begins**

For all wastes that are anticipated to be generated, Proponents will determine their classification (hazardous, non-hazardous, or special waste). Proponents will notify Contractors of waste classifications.

If waste classification is unknown, Proponents will arrange for sampling to determine waste classification as soon as possible, but this may occur after work has begun.

Contractors will review and approve Contractors' Waste management Plan, prior to pre-construction meetings.

Proponents will conduct pre-job meetings to review Waste Management Plans and responsibilities, and review authorized personnel and environmental contacts.

Proponents will make all required notifications, unless otherwise specified in Scopes of Work.

##### **Before Generating Waste**

Proponents will inspect all secondary containment provided by Contractors

Proponents will provide the U.S. Environmental Protection Agency (EPA) a generator number for all hazardous wastes generated and a hazardous waste contingency plan, if necessary.

#### During Waste Generation

For unanticipated wastes generated during construction activities, Proponents and Contractors will confer regarding classification responsibilities as soon as possible, after the waste is generated. Wastes will be managed in accordance with applicable federal, state, and local regulations. Proponents will obtain EPA hazardous waste ID numbers, if necessary.

#### After Waste Generation

Proponents will arrange for all hazardous and special wastes generated during construction activities to be transported by a licensed waste hauler, to a permitted waste disposal facility.

### **Waste Management – Contractor Responsibilities**

#### Before Work Begins

Contractors will develop Waste Management Plans for all wastes anticipated during projects and submit them to Proponents for approval. At the Proponents' discretion, Waste Management Plans may cover multiple activities of similar scope. Construction work will not commence prior to obtaining Proponents' approval of Waste Management Plans. If potentially hazardous wastes are addressed, Contractors will receive training in accordance with federal, state, and local requirements.

Contractors will minimize waste generated during projects by purchasing and using the appropriate amount of material. All excess materials purchased by Contractors will be removed by Contractors at the end of projects.

Contractors will furnish Proponents with copies of any permits, clearances, or authorizations obtained by Contractors.

#### Before Generating Waste

Contractors will be familiar with federal, state, and local environmental requirements.

Contractors will provide all drums (DOT Spec. 1A1 or 1A2), roll-off bins, or other containers necessary to contain wastes generated during the performance of work, including wastes generated in response to spill response and cleanup activities, unless otherwise specific in Scopes of Work. All containers will be approved by Proponents, as necessary.

Contractors will collect all waste near the close of each workday and place it in appropriate containers, which will be in Proponent approved locations.

### During Waste Generation

Contractors will be responsible for general housekeeping activities in work areas.

Contractors will notify Proponents prior to placing any potentially hazardous or special waste in storage so that Proponents may conduct sampling and analyses, if necessary.

Contractors will be responsible for proper packaging, labeling, marking, and storing of waste.

Contractors will keep hazardous, non-hazardous, special and general trash wastes separate. These specific waste streams will not be mixed.

Contractors will keep waste logs, identifying location at which wastes are generated, volume and type of waste generated, date waste generated, and where applicable location to which waste was transported or stored (general, non-hazard classified trash excluded). Contractors will provide waste logs to Proponents' authorized representative weekly. Any waste shipped will be accompanied by a log.

For unanticipated wastes generated during construction activities, Proponents and Contractors will confer on classification responsibilities as soon as possible, after waste is generated.

If classification of waste is unknown, all waste will be assumed to be hazardous until final classification is received by Proponents. Contractors will label, store, and transport waste accordingly.

In accordance with Contractors' approved Waste Management Plan, they will be responsible for handling, storing, and transporting non-hazardous wastes generated by Contractors during execution of their contract.

Any proposed changes to approved Waste Management Plans will be submitted in writing and agreed to by both Contractors and Proponents, prior to instituting the change.

### After Waste Generation

Contractors will notify Proponents prior to moving any waste off site.

Contractors will be responsible for ensuring that hazardous and special wastes are transported by Proponent authorized, licensed transporters only, and that all waste is accompanied by appropriate shipping papers, complete with required information and signatures.

**Contractors are prohibited from transporting hazardous waste.**

Contractors will submit all waste shipping papers to Proponents.

Contractors will supply disposal containers for general trash generated by their personnel and subcontractors associated with their projects, and will transport general trash to disposal facilities in accordance with their Waste Management Plan.

### **Spill Management – Proponent Responsibilities**

Proponents will review spill prevention and response as part of pre-construction meetings.

In the event of a reportable spill, or release which involves Proponents processed materials (e.g. pipeline liquids, used oil, etc.), Proponents will notify appropriate federal and state agencies.

Proponents will provide copies of release reports, required by federal or state agencies, to any jurisdictional land management agency.

### **Spill Management – Contractor Responsibilities**

Contractors will comply with spill prevention, control, and containment procedures set forth below, and in Scopes of Work for all work associated with execution of their contract.

Contractors will ensure that their personnel and subcontractors are aware of spill prevention and containment responsibilities.

Contractors will develop lists of all emergency contacts within Contractor's and subcontractors' organizations, and descriptions of emergency response equipment that will be provided by Contractors.

Contractors will have copies of Material Safety Data Sheets (MSDS) for each chemical to be used during their projects. They will be available for review, if requested by Proponents or regulatory entities.

### **Spill Prevention – Contractor Responsibilities**

Contractors will install lined, secondary containment, impervious to materials being stored, around liquids materials handling and storage areas to prevent spilled materials from reaching waters of the state. Areas that require containment structures include:

- Liquid and hazardous waste drum storage areas,
- Bulk storage tanks,
- Tanker trucks if parked at one location for more than two days, and
- Liquids handling and operations areas.

Proponents and Contractors will structure operations in a manner that reduces risk of spills or accidental exposure of fuels or hazardous materials to waterbodies or wetlands. Proponents and their contractors must, at a minimum, ensure the following:

- All employees handling fuels and other hazardous materials are properly trained;

- All equipment is in good operating order and inspected on a regular basis;
- Trucks transporting fuel to on-site equipment travel only on approved access roads;
- All equipment is parked overnight and/or fueled at least 500 feet from a water supply well or spring, a waterbody, or a wetland boundary. These activities can occur closer only if EI concludes, in advance, no reasonable alternative and Proponents and their Contractors have taken appropriate steps to prevent spills and provide for prompt cleanup, if necessary.
- Specifically, in certain instances, refueling or fuel storage may be unavoidable due to site specific conditions or unique construction requirements (e.g. continuously operating pumps). The following precautions will be taken within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries:
  - Adequate amounts of absorbent materials and containment booms must be kept on hand by each crew to enable rapid cleanup of any spill that may occur;
  - Fuel and lubricating oils may not be stored in wetlands or waterbodies;
  - Secondary containment structures must be lined with suitable plastic sheeting, provide a containment volume of at least 150 percent of the storage vessel, and allow for at least one foot of freeboard; and
  - Provide for adequate lighting of locations and activities.
- Hazardous materials are not stored within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries without prior approval of applicable governmental authorities.
- Concrete coating activities are not performed within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries, unless within an existing industrial site designated for such uses.
- Adequate amounts of absorbent materials and containment booms will be kept on crew to enable rapid cleanup of any spill that may occur.
- Secondary containment structures will be lined with suitable plastic sheeting and provide containment volume of at least 150 percent of storage vessels, and allow at least one foot of freeboard.
- Adequate lighting will be provided for all locations and activities.

Contractors will install drip pans or other suitable containment devices to collect all fluids when performing on-site maintenance. All waste fluids will be removed from work sites by Contractors and disposed of properly.

Contractors will inspect equipment for integrity, including but not limited to, valves, hoses, and fittings. Contractors will monitor all loading and unloading operations of chemicals and fuels to ensure proper response and to prevent spills. Contractors' personnel will inspect equipment prior to each use.



### **Spill Response – Contractor Responsibilities**

Contractors will provide immediate notice to Proponents' Authorized Representatives in the event of a spill, or other emergency. All spills occurring on land or in waterbodies (wet or dry) or wetlands, regardless of quantity will be cleaned up immediately.

If releases or spills occur, Contractors will stop operations and take immediate measures to control their release and prevent dispersal of spilled materials. For spills to land, Contractors will initiate cleanup of affected areas by removing the soil and placing it into new or reconditioned DOT approved drums, or other suitable containers, as determined appropriate by Proponents. Contractors will be deemed the generator of wastes resulting from spills. Contractors will excavate and remediate areas of spilled material. For spills that enter water, Contractors will contain spills and remove spilled material using pumps or absorbent materials.

With the exception of spills/releases that involve Proponent processed materials, Contractors will be responsible for making necessary notifications to the appropriate federal agencies for any release or spill of hazardous substances in excess of reportable quantities, established by 40 CFR 117, 40 CFR 302, and 40 CFR 355, or releases of oil as defined by 40 CFR 110, which occurs as a result of Contractors' or their subcontractors' activities.

Contractors will be responsible for making any necessary notifications to state agencies, as per state requirements.

Contractors will be responsible for making any necessary notifications to appropriate land management agencies or landowners' whose property may be impacted by spills.

Contractors will document and record all spills. Copies of the documentation will be provided to Proponents' Authorized Representatives.

## **Appendix D**

### **Hydrostatic Testing and Discharge Plan**

#### **Introduction**

Once Proponents construct pipelines, they must be pressure tested in accordance with Code of Federal Regulations (CFR) Part 192 requirements, in order to be in compliance with DOT regulations. Proponents will hydrostatically test their completed pipelines using water pressurized to the appropriate level, and in accordance with specifications outlined in this plan and any additional project specific information that will be required of Proponents.

#### **Agency Consultation**

Proponents will consult with state agencies regarding state requirements for water withdrawal and discharge. Proponents will consult with agencies regarding project specific requirements.

The following Wyoming Game and Fish Department (WGFD) recommendations for discharging surface waters used for hydrostatic testing will be followed for projects using the WPCI corridors:

Hydrostatic test waters released during pipeline construction could cause alterations of stream channels, increased sediment loads and introduction of potentially toxic chemicals into drainages, thereby resulting in adverse impacts to aquatic biota. Furthermore, release of water into drainages other than the source drainage can result in the introduction of aquatic invasive species (New Zealand mud snail, European ear snail, whirling disease spores, etc.). Introduction of aquatic invasive species can be devastating to the ecosystems of vast basins in the receiving waters. To minimize impacts, direct discharge of hydrostatic test waters to streams other than the source water will be prohibited. Discharge will occur into the source drainage in a manner that does not increase erosion or alter stream channels. Discharge will occur into temporary sedimentation basins and the dewatering of the temporary sedimentation basin will be done in a manner that precludes erosion.

To prevent the spread of aquatic invasive species (AIS), the following will be required:

- If equipment has been used in a high risk infested water [a water known to contain Dreissenid mussels (zebra/quagga mussels)], the equipment must be inspected by an authorized aquatic invasive species inspector recognized by the state of Wyoming prior to its use in any Wyoming water.
- Any equipment entering the state from March through November (regardless of where it was last used), must be inspected by an authorized aquatic invasive species inspector prior to its use in any Wyoming water.
- If aquatic invasive species are found, the equipment will be decontaminated by an authorized aquatic invasive species inspector.
- Any time equipment is moved from one 4<sup>th</sup> level (8-digit Hydrological Unit Code) watershed to another within Wyoming, the following will occur:

- DRAIN: Drain all water from watercraft, gear, equipment, and tanks. Leave wet compartments open to dry.
- CLEAN: Clean all plants, mud, and debris from vehicle, tanks, watercraft, and equipment.
- DRY: Dry everything thoroughly. In Wyoming, it is recommended that drying occur for 5 days in summer (June - August); 18 days in Spring (March - May) and Fall (September - November); or 3 days in Winter (December - February) when temperatures are at or below freezing.

## **Uptake**

Proponents will withdraw water for use during hydrostatic testing at project specific locations in the vicinity of the WPCI corridor. All surface water used in hydrostatic testing will be discharged within the same watershed (8-digit HUC) from which it is withdrawn.

Applications for withdrawal of hydrostatic test water will identify the following:

- Location (legal description and relation to closest pipeline milepost)
- Source (river, water body or well)
- County
- Amount withdrawn
- Sensitive fish species present in source, if any
- Known water quality issues (i.e., 303d listed waters or other pollutants present)
- Locations of potable water intakes within three miles of withdrawal site.

Surface water intakes will be set in areas of flowing water to avoid sedimentation and the rate of extraction will assure continued flow in surface water sources. Up to 2,500 gallons per minute (5.6 cfs) or no more than 10 percent of a waterbody's base flow will be withdrawn for testing purposes. Water will be drawn out with low pressure pumps, pumping into the suction side of a high pressure pump that moves water into pipelines. All pumps will be set in fuel/oil containment areas (see Appendix C).

In the instances where hydrostatic test waters are located at some distance from the construction ROW, Proponents will lay temporary pipelines to convey water from their source to hydrostatic test areas. There will also be instances where temporary hard piping is required to move water to Proponents' hydrostatic test locations. All temporary hard piping will be laid on the ground surface, unless regulatory or landowner requirements prohibit it.

Proponents will be aware and considerate of the concern that appropriation of groundwater could cause detrimental effects to areas with limited water resources. Proponents applying for temporary use of water rights for water sources will only utilize water sources that are authorized and approved by the Wyoming State Engineer's Office. Proponents will comply with all limitations or conditions on withdrawal imposed by the agencies. Any additional restrictions issued by appropriate federal, state, or local jurisdictions, regarding water withdrawal activities, will be observed by Proponents.

## **Discharge**

### **Hydrostatic Testing Water Discharge Locations**

Proponents will test their pipelines in as many sections as necessitated by elevation changes, watershed boundaries, and water source availability. Locations of water sources, watershed boundaries, and elevations changes will be used to locate manifolds for water uptake and discharge.

Moving water back across elevation changes following testing is only accomplished by using high pressure air. Compressor cannot efficiently maintain pressures required to move test water over large elevation changes and long distances. Further, high pressure air has a tendency to become entrained within discharge water, creating unpredictable and unsafe conditions at discharge locations. In the event that situations such as this arise, proponents will be permitted to use surface water from outside of the HUC-8 watershed in which they are located, for testing purposes, if it will mitigate dangers such as those previously described. Proponents will however have to return test water to the HUC-8 from which it was withdrawn for discharge.

### **Treatment**

Proponents will discharge hydrostatic test water to open ground. It may be possible at some discharge points for hydrostatic test water to migrate to nearby surface waterbodies, depending on the volume of water discharged and proximity of the surface water body source. When test water is obtained from potable water sources, or surface waters confirmed as not containing AIS and/or pathogens, AIS and pathogens will not be a concern for discharge, so only erosion and sedimentation controls will be employed. If surface water is used for testing that is either confirmed as containing AIS or is unknown as containing AIS, Proponents will employ measures to prevent their discharge and subsequent migration to other waterbodies.

Treatment methods used to prevent introduction or spread of AIS will be dependent upon the best available science at the time Proponents are developing their projects, which will be directed by WGFD, or other appropriate regulatory entities. Potential impacts associated with AIS treatment tools (e.g. biocide) will be determined prior to their selection and their effects will be mitigated to the greatest extent possible.

### **Discharge Permits and Monitoring**

Typically, hydrostatic test water will pick up some iron oxide (rust) from new pipelines, depending on the total time water remains in pipelines. Quantities are likely to be small, but may give discharge water a slightly red color. Test water may also pick up sand or dirt left over from installation.

Proponents will discharge hydrostatic test water in a manner that precludes erosion. If a discharge point is less than 0.5 miles from a perennial stream and/or flow is more than 0.5 cfs, Proponents will discharge test water into a temporary sediment basin, or other approved structure to minimize erosion and control sedimentation. Any contaminants in discharge water

will likely be below regulatory levels, however, test water will be collected and tested at a certified water testing laboratory. To minimize erosion concerns, discharge locations will be nearly level, or gently rolling, vegetated upland areas. Sites with restrictive drainage features (e.g. bedrock) will be avoided.

WDEQ authorizes hydrostatic testing of pipes under their General Permit to Discharge Wastewater. General Permits for Temporary Discharges require the following:

- Discharged water must be relatively uncontaminated and must not have the potential to contribute to non-conventional or toxic pollutant loadings to receiving waters;
- No trans-basin transfer of surface water will be allowed, in order to prevent spreading of AIS;
- Discharges must be of short duration, lasting no longer than one year.

Proponents will submit a Notice of Intent (NOI) of any anticipated discharge at least 30 days in advance of their proposed activity. NOIs are reviewed by WDEQ and a written response (facility certification form) will be provided, indicating that projects are covered under a General Permit. Facility certification forms list effluent limitations and monitoring requirements.

Once temporary discharge is completed, Proponents will be required to provide a Notice of Termination and water analytical results to WDEQ. WDEQ then terminates coverage, denies termination, or requests additional data.

## **Appendix E**

### **Upland Erosion Control, Revegetation, and Maintenance Plan**

#### **Introduction**

This Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) describes measures for minimizing erosion and enhancing revegetation. Alternative measures may be approved so long as they:

- Provide equal or better environmental protection;
- Are necessary due to a portion of this plan being infeasible or unworkable based on project specific conditions; or
- Are specifically required in writing by a federal or state land management agency for the portion of a project on their land or under their jurisdiction.

#### **Supervision and Inspection**

##### **Environmental Inspection**

- Proponents will participate in a third party compliance monitoring program for federal and non-federal land along the length of their projects;
- EIs will have peer status with all other activity inspectors; and
- EIs will have authority to stop activities that violate environmental conditions of the ROW agreement or project specific approval documents, federal and state environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

##### **Responsibilities of Environmental Inspectors**

At a minimum, EIs will be responsible for the following:

- Ensuring compliance with requirements of this Plan, environmental conditions of project authorizations, other environmental permits and approvals, and environmental requirements in landowner easement agreements;
- Identifying, documenting, and overseeing corrective actions, as necessary, to bring an activity back into compliance;
- Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
- Verifying the location of signs and highly visible flagging marking boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along construction work areas;
- Identifying erosion and sediment control and soil stabilization needs in all areas;
- Ensuring that locations of dewatering structures and slope breakers will not direct water onto known cultural resource sites or locations of sensitive species;

- Verifying that trench dewatering activities do not result in deposition of sand, silt, and/or sediment near points of discharge into wetlands or waterbodies. If such deposition occurs, dewatering activities will be stopped and the design of discharge changed to prevent reoccurrence;
- Ensuring that subsoil and topsoil are tested in agricultural areas to measure compaction and determine need for corrective action;
- Advising Chief Construction Inspectors when conditions (e.g. wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
- Ensuring restoration of contours and topsoil;
- Verifying that soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by private landowners;
- Determining need for and ensuring that erosion controls are properly installed and maintained, as necessary, to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
- Inspecting and ensuring the maintenance of temporary erosion control measures, at least:
  - On a daily basis in areas of active construction or equipment operation;
  - On a weekly basis in areas with no construction or equipment operation; and
  - Within 24 hours of each 0.5 inch of rainfall;
- Ensuring repair of all ineffective temporary erosion control measures within 24 hours of identification;
- Keeping records of compliance with environmental conditions in project authorizations, and mitigation measures during active construction and restoration; and
- Identifying areas that will be given special attention to ensure stabilization and restoration after construction phases.

### **Preconstruction Planning**

Proponents will do the following before construction activities commence:

#### **Construction Work Areas**

Identify all construction work areas that will be needed for safe construction and ensuring that appropriate cultural and biological resource surveys have been completed.

#### **Grazing Deferment**

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

### Road Crossings and Access Points

Develop plans for safe and accessible conditions at all roadway crossings and access points during construction and restoration activities.

### Disposal Planning

Determine methods and locations for disposal of construction debris consistent with the requirements of Appendix C.

### Agency Coordination

Proponents will coordinate with appropriate federal, state, and local agencies, as outlined in this Plan.

- Obtain written recommendations from local conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
- Develop specific procedures in coordination with appropriate agencies to prevent introduction and/or spread of invasive or noxious plants and soil pests that result from construction and restoration activities.

### Stormwater Pollution Prevention Plan (SWPPP)

Make available SWPPPs that are prepared for project specific compliance with the Clean Water Act's Stormwater Program General Permit requirements.

### **Installation**

#### Approved Areas of Disturbance

- Ground disturbance will be limited to construction of ROW, ETWSs, pipe storage yards, borrow and disposal areas, access roads, and other project specific approved areas. Any ground disturbing activities outside of these approved areas, except those required to comply with regulatory requirements (e.g. dewatering structures), will require approval by appropriate agencies. All construction or restoration outside of approved areas is subject to prescribed survey and mitigation requirements.
- Construction ROW width will not exceed that which is authorized by the grant. In the event that additional width is required, Proponents will make their requests through EIs, who will process them accordingly. At no time will ROW width be allowed to increase if the action is not consistent with applicable survey and mitigation requirements. Additional ROW areas will be explained in weekly and bi-weekly environmental reports.



## Topsoil Segregation

Mixing topsoil with subsoil will be prohibited without approval from applicable land management agencies or private landowners. In deep soils (greater than 12 inches of topsoil), at least 12 inches of topsoil will be segregated. Where topsoil segregation is required, separation will be maintained throughout all construction activities. Segregated topsoil cannot be used for padding pipelines.

The ditch-plus-spoil-side topsoiling is the preferred method for projects. There are a number of instances where this method may not be possible (e.g. steep slopes, weed infestations, etc.). Use of alternative topsoiling methods must be specifically identified and requested in the ROW application or supported by the project proponent's environmental analysis. A description of the various topsoiling methods follows.

- Ditch-Plus-Spoil-Side: Proponents will mow the working side of the ROW, leaving topsoil in place. There will be no additional ROW required for topsoil storage. Topsoil will be stored on undisturbed topsoil. If the working side is rough, light blading will be necessary to smooth the surface for safety purposes. This method will generally preserve most root structures.
- Full-ROW: Proponents will topsoil the full ROW, with the exception of the area necessary for topsoil placement. If topsoil is deep, then additional ROW may be needed for topsoil placement. If topsoil is shallow, there will be room to use the approved ROW to store topsoil. The additional ROW will only be used for topsoil storage, and no additional surface disturbance will be required.
- Ditch-Plus-Working-Side: Proponents will mow the entire construction ROW. They will topsoil the working side and ditch portions of the ROW. Topsoil will be stored on undisturbed topsoil at the outer edge of the working side of the construction ROW. No additional ROW will be necessary for workspace.
- Full-ROW: Proponents will mow the entire construction ROW. Proponents will then topsoil the entire ROW, with the exception of where topsoil is stored. Half of the topsoil will be stored on the working side and the other half on the spoil side, and it will be stored on undisturbed ROW.

In addition to topsoil segregation methods, other topsoil mitigation measures will be implemented during construction activities. Some examples include:

- If rutting occurs but topsoil and subsoil do not mix, Proponents will rip compacted topsoil up to 12 inches deep to de-compact topsoil after construction activities are complete and prior to reseeding ROWs.
- Prior to replacing segregated topsoil, Proponents will rip or disc compacted subsoil up to 12 inches deep, prior to replacing topsoil and reseeding.
- Where topsoil is lost, due to construction activities, Proponents will be responsible for replacing topsoil from a local source.

- No more than 12 inches of topsoil will be segregated. Ample native seed base is contained in the top 12 inches of topsoil, and additional topsoil depth segregated may inhibit native seed establishment (via dilution).
- Separation of topsoil and subsoil will be maintained throughout all construction activities. Topsoil cannot be used to pad pipelines.

### Irrigation

Water flow in crop irrigation systems will be maintained, unless shutoff is coordinated with affected parties.

### Temporary Erosion Control

Proponents will install temporary erosion controls immediately after initial disturbance of soil. Temporary erosion controls will be maintained daily, throughout construction, and reinstalled as necessary until replaced by permanent erosion controls, or restoration is complete.

- Temporary Slope Breakers (see Appendix E, Figure 1)
  - Temporary slope breakers are intended to reduce runoff velocity and diver water away from construction ROWs. They may be constructed of materials such as soil, silt fence, straw bales, or sand bags.
  - Temporary slope breakers will be installed on all disturbed areas, where necessary to avoid erosion. They must be installed on slopes greater than 5 percent where the base is less than 50 feet from waterbody, wetland, or road crossings, at the following spacing:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 – 15	300
>15 – 30	200
>30	100

- Outfalls from each temporary slope breaker will be directed to stable, well vegetated areas, or the Proponent will construct energy dissipating devices at the end of the slope breaker and off the ROW.
  - Outfalls of each temporary slope breaker will be located to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.
- Sediment Barriers
  - Sediment barriers will be installed, where necessary, to stop flow of sediments and prevent deposition of sediments onto sensitive resources. They may be constructed of materials such as soil, silt fence, straw bales, or sand bags.
  - At a minimum, they will be installed and maintained across entire ROWs at the base of slopes greater than 5 percent, where the base of is less than 50 feet from waterbody, wetland, or road crossings, until revegetation is successful as defined

in this Plan. Adequate room will be maintained between the base of slopes and sediment barriers to accommodate ponding water and sediment deposition.

- Sediment barriers will be installed along edges of wetlands or waterbodies to prevent sediment flow from entering these resources.
- Mulch
  - Mulch will be applied on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding. Mulch will be spread uniformly over seeded areas to cover at least 75 percent of the surface at a rate of up to 2 tons/acre, unless land management agencies or private landowners approve otherwise.
  - Mulch will consist of weed free straw or hay, wood fiber hydromulch, erosion control fabric, or a functional equivalent.
  - Mulch will be used before seeding if:
    - Final grading and installation of permanent erosion control measures will not be completed with 20 days of construction activities concluding; or
    - Construction or restoration activity is interrupted for extended periods.
  - If mulching is used before seeding, application rates will be increased to 3 tons/acre.
  - If wood chips are used as mulch, not more than 1 ton/acre will be used and the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release) will be added.
  - Mulch will be adequately anchored to minimize loss due to wind and water.
  - Liquid mulch binders will not be used within 100 feet of wetlands or waterbodies; manufacturer use rates will be followed.
  - Erosion control fabric will be installed on wetland and waterbody banks at the time of final contouring. Erosion control fabric will be anchored with staples or other appropriate devices.

## **Restoration**

### **Cleanup**

- Cleanup operations will commence immediately following backfill operations. Final grading, topsoil replacement, and installation of permanent erosion control structures will be completed with 20 days after backfilling trenches (10 days in residential areas). If weather conditions prevent compliance with these timeframes, temporary erosion control structures will be maintained until conditions allow for final measures.
- Travel lanes may be left open temporarily to allow access by construction traffic if temporary erosion control structures are installed and maintained. Travel lanes will be removed and ROWs reclaimed when access is no longer required.

- Rock excavated from trenches will only be used to backfill trenches to the top of existing bedrock profiles. Rock not returned to trenches can only be distributed in ROWs in a manner that emulates adjacent undisturbed areas. Remaining rock will be disposed of in a manner that must be approved by appropriate land management agencies or private landowners.
- Excess rock will be removed from at least the top 12 inches of soil in all actively cultivated or rotated croplands and pastures and hayfields, as well as at other areas requested by applicable land management agencies or private landowners.
- Construction ROWs will be graded to restore pre-construction contours and leave soil in proper condition for planting.
- Construction debris will be removed from all construction work areas.
- Temporary sediment barriers will be removed when replaced by permanent erosion control measures, or when revegetation is successfully established.

#### Permanent Erosion Control Devices

- Trench Breakers (see Appendix E, Figure 2)
  - Trench breakers are intended to slow the flow of subsurface water along pipeline trenches. They may be constructed of materials such as sand bags or polyurethane foam. Topsoil will not be used in trench breakers.
  - Engineers, or similarly qualified professionals, will determine the need for and spacing of trench breakers.
  - In agricultural fields, where slope breakers are not typically required, trench breakers will be installed at the same spacing as if permanent slope breakers were required.
  - At a minimum, trench breakers will be installed at the base of slopes greater than 5 percent where the base is less than 50 feet from waterbodies or wetlands.
- Permanent Slope Breakers
  - Permanent slope breakers are intended to reduce runoff velocity, divert water off of construction ROWs, and prevent sediment deposition into sensitive resources. They may be constructed of materials such as soil, sand bags, or some functional equivalent.
  - Permanent slope breakers will be constructed in all areas, except cultivated areas, using recommendations from land managing agencies or local conservation authorities. In the absence of recommendations, spacing will be the same as previously described for Temporary Slope Breakers.
  - Outfalls from permanent slope breakers will be directed to stable, well vegetated areas, or energy dissipating devices will be constructed at the end of the slope breaker and off the ROW.
  - Outfalls of permanent slope breakers will be positioned to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

- Soil Compaction Mitigation
  - Topsoil and subsoil will be tested for compaction at regular intervals in agricultural areas disturbed by construction activities, using penetrometers or similar devices. ROW soils will be compared to adjacent, undisturbed soils to determine mitigation needs.
  - Severely compacted agricultural areas will be plowed with deep tillage implements. In areas where topsoil is segregated, subsoil will be plowed prior to replacing topsoil.
  
- Revegetation
  - General
    - Proponents will be responsible for ensuring successful revegetation of soils disturbed by project related activities.
  - Soil Additives
    - Fertilizer and add soil pH modifiers will be used in accordance with written recommendations obtained from land management agencies, local conservation authorities, or private landowners. Recommended soil pH modifier and fertilizer will be incorporated into the top 2 inches of soil immediately after application.
  - Seeding Requirements – Seed mix recommendations are provided in Appendix F of this POD
    - Seedbeds in disturbed areas will be prepared to a depth of 3 to 4 inches using appropriate equipment to provide firm seedbeds. When hydroseeding will be used, seedbeds will be scarified to facilitate lodging and germination.
    - Disturbed areas will be seeded in accordance with written recommendations in Appendix F, or as prescribed by land management agencies or private landowners. Cultivated croplands will only be seeded if requested by landowners.
    - Seeding operations will be performed within species specific seeding dates. If timing does not allow for immediate seeding, temporary erosion control measures will be maintained until the beginning of appropriate seeding windows.
    - Seeding rates will be based on Pure Live Seed and seed will be used within 12 months of testing.

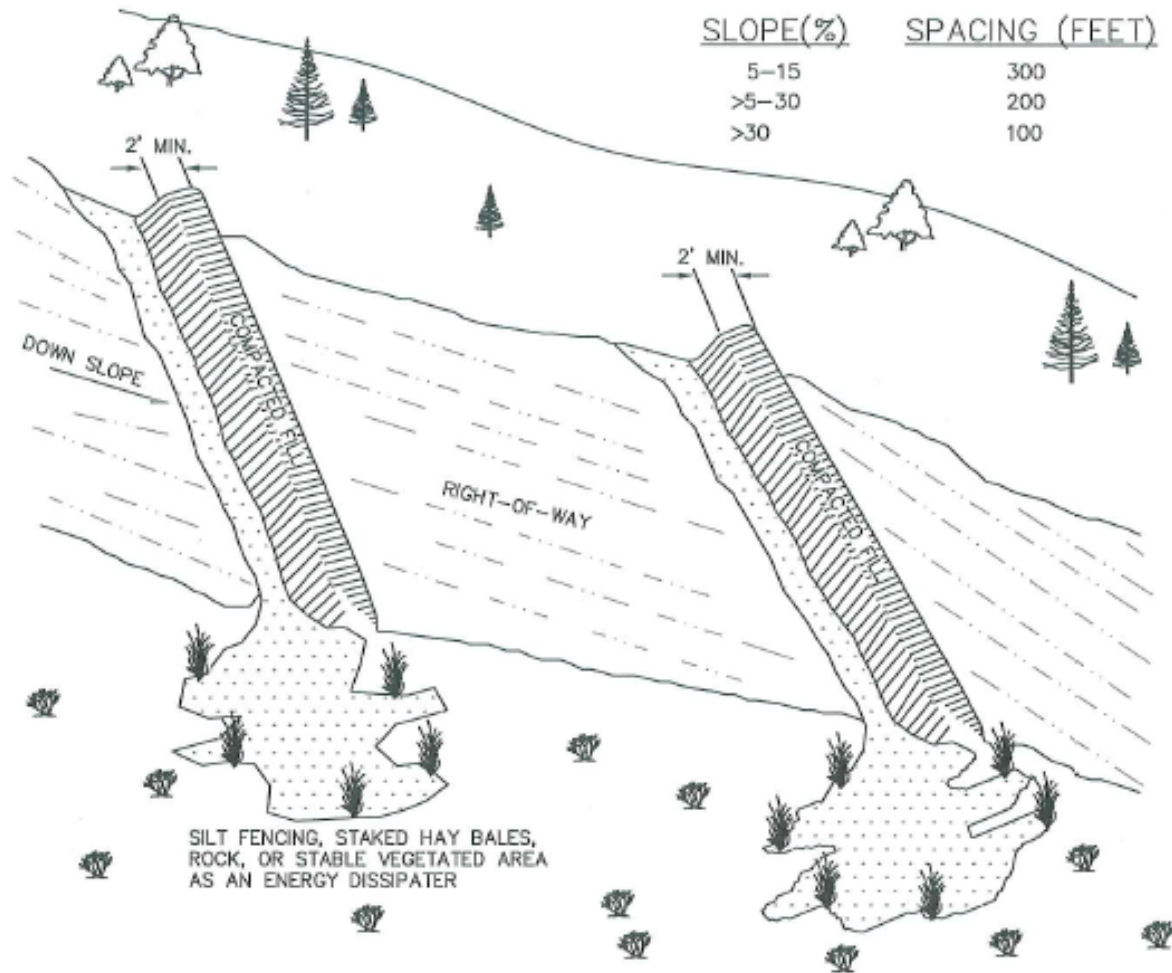
- Legume seed will be treated with a species specific inoculant in accordance with manufacturer's recommendations for the appropriate seeding method.
  - Seed drills, equipped with cultipackers will be used where possible for seed application. Broadcast or hydroseeding may be used, if necessary, at double the recommended seeding rates. If broadcasters are used, seedbeds will be firmed with cultipackers or imprinters after seeding. If site conditions limit the effectiveness of cultipackers and imprinters (e.g. rocky soil), alternative methods may be used to cover seed (e.g. chain drags).
- Off-Road Vehicle Control
  - Measures will be installed and maintained to control unauthorized vehicle access to ROWs, as prescribed by land management agencies or private landowners. These measures may include:
    - Signs;
    - Fences with locking gates;
    - Timber barriers, pipe barriers, or boulder barriers across ROWs; and
    - Trees or shrubs across ROWs.
- Post-Construction Activities
  - Proponents will cooperate with resource agencies and private landowners to provide protections that minimize disturbance of revegetation efforts, which may include the following:
    - Leaving ROW surfaces in roughened condition;
    - Including native, low palatable plant species in seeding mixes, such as sagebrush or western yarrow;
    - Negotiating with allotment permittees and agencies to limit grazing by ungulates in ROWs, by using options such as herding, salting, and fencing; or
    - Negotiating with allotment permittees and agencies to defer grazing, if appropriate.
- Monitoring and Maintenance
  - All disturbed areas will be inspected after the first and second growing seasons to determine success of revegetation.
  - Revegetation in non-agricultural areas will be considered successful if, upon visual survey, density and cover of non-nuisance vegetation are

similar in disturbed and adjacent undisturbed lands. In agricultural areas, revegetation will be considered successful if crop yields are similar in disturbed and adjacent undisturbed lands. In Sage Grouse Core Areas, revegetation will be considered successful if species composition, density, and cover meet the requirements established in Executive Order 2011-5, or applicable Executive Orders that may follow, and land management agency requirements.

- Proponents will continue revegetation efforts until appropriate vegetation is successfully established.
- Problems with drainage and irrigation systems that result from pipeline construction will be monitored and corrected.
- Routine vegetation maintenance will not be done more frequently than every 3 years. However, to facilitate routine pipeline corrosion and leak surveys, corridors not exceeding 10 feet in width, centered on pipelines, may be annually maintained in a native, herbaceous state.
- Unauthorized off-road vehicle access will be controlled throughout the life of pipelines.

- Reporting

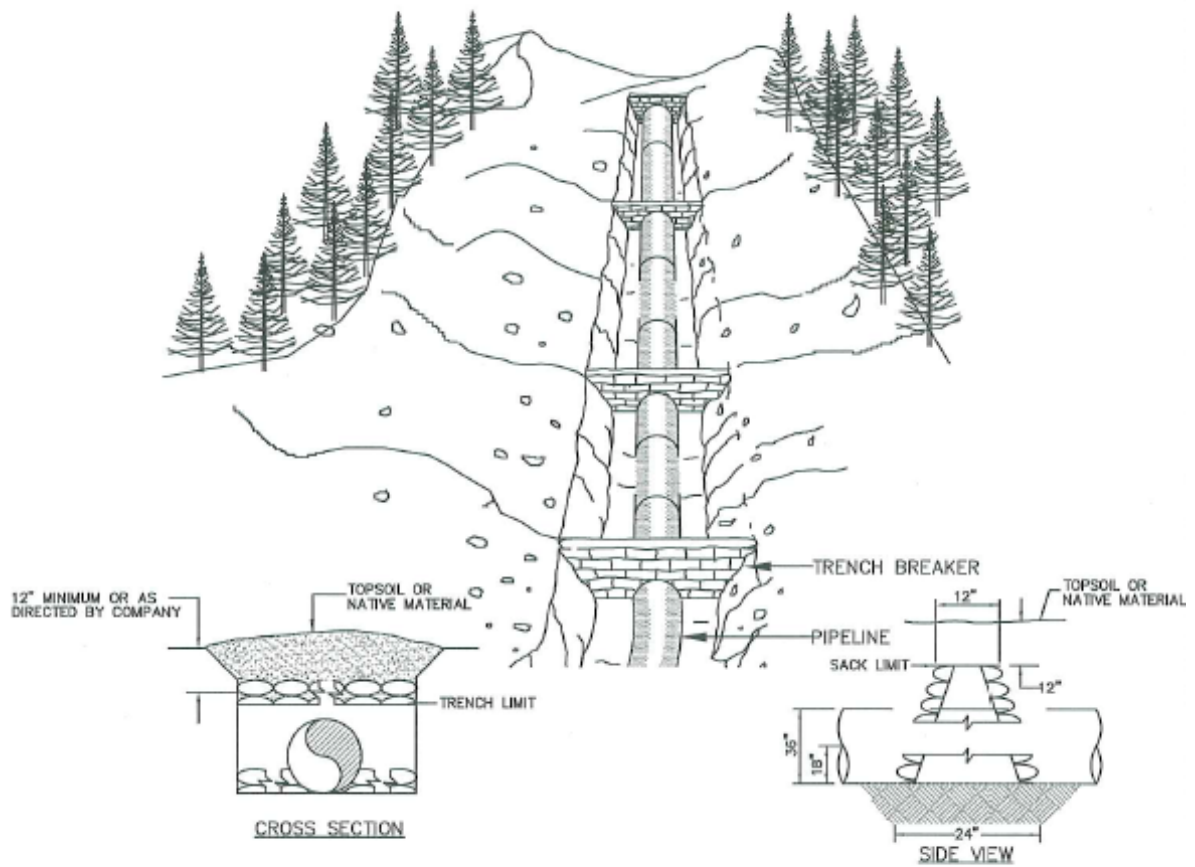
- Proponents will maintain records that identify the following, by project specific milepost:
  - Method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
  - Acreage treated;
  - Dates of backfilling and seeding;
  - Names of landowners that request special seed treatment and a description of follow-up actions; and
  - Problem areas, and how they are addressed.



Wyoming Pipeline Corridor Initiative  
Appendix E  
Figure 1  
Temporary Slope Breakers







Wyoming Pipeline Corridor Initiative  
Appendix E  
Figure 2  
Trench Breakers



## **Appendix F**

### **Upland Restoration and Revegetation Plan**

#### **Introduction**

This Restoration and Revegetation Plan (Plan) is specific to dominant ecological sites that will be encountered within the WPCI. Measures and methods in this plan will be applicable to all Proponents as they construct and operate within the WPCI. This Plan utilizes methods developed previously for pipeline projects that were approved within Wyoming. Proponents may adapt or update their methods using established and/or published protocols.

#### **Purpose**

This plan describes the measures and methods that should be implemented by Proponents to mitigate impacts to upland habitats that result from pipeline construction, within the WPCI. Riparian and wetland restoration will be described in Appendix G, in this POD.

The Plan is applicable to the ROW, ETWS, and sections of access roads that will be restored. Revegetation criteria standards are presented to judge plant establishment success.

#### **Goals and Objectives**

Short- and long-term restoration and revegetation goals will comply with BLM, Wyoming reclamation policy (**BLM IM No. WY-2012-032**: March 27, 2012, or more recent versions if applicable). Short- and long-term restoration goals will apply to the ROWs, ETWS, and access roads

The short-term goals of pipeline project restoration are to prevent weed infestations; stabilize disturbed areas using proper soil handling techniques and native plant species; and provide conditions necessary to achieve the long-term goal. The long-term goals of pipeline construction are to facilitate eventual native plant communities and ecosystem reconstruction to maintain a safe and stable landscape, and meet the desired outcomes of applicable land use plans. These goals will be met by implementing the following 10 Reclamation Requirements:

- Manage all waste materials;
- Ensure subsurface integrity, and eliminate sources of ground and surface water contamination;
- Re-establish slope stability, surface stability, and desired topographic diversity;
- Reconstruct and stabilize water courses and drainage features;
- Maintain the biological, chemical, and physical integrity of topsoil and subsoil;
- Prepare sites for revegetation;
- Establish desired self-perpetuating native plant communities;
- Reestablish a complementary visual composition;
- Manage invasive species; and
- Develop and implement a reclamation monitoring and reporting strategy.

In addition to BLM requirements for reclamation, the Governor of Wyoming has established greater sage grouse Core Areas for conservation of habitats, via Executive Order (EO) (State of Wyoming, Executive Order 2011-5: June 2, 2011). Proponents will comply with the directives set forth in the EO for all activities within Core Areas.

### **Schedule**

Restoration of pipeline projects will be initiated once trench closure is finalized in construction segments. Restoration will include cleaning up, backfilling, grading, topsoiling, installing erosion control devices, preparing seedbeds, and establishing cover. Areas that will not be seeded within 14 days following final grading, due to seasonal limitations, slopes greater than 10 percent, erosive soils, or aesthetically sensitive areas will be seeded with sterile annual grasses or select species that will not offer competition to desirable, native plant communities. Seeding of native plants to establish permanent vegetation cover will occur during late fall to early winter to take advantage of winter and spring precipitation. Temporary plant cover will be incorporated into soils before permanent plants are seeded.

### **Process**

#### **ROW Clearing, Grading, and Topsoil Removal**

Initial construction activities include surveying and staking construction ROWs, removal of vegetation and topsoil, and grading ROWs for safe construction passage. Dense stands of noxious and invasive weeds identified during pre-construction field surveys will be pretreated with approved herbicides before vegetation clearing begins. ROW surveying and staking will identify the width of excavation and blade work, including cut and fill locations. ROW vegetation will be removed along with topsoil and stockpiled.

Topsoil thickness will vary throughout construction ROWs, dependent upon soil type, etc. EIs will identify topsoil thickness for removal and stockpiling. Topsoil and vegetation mixtures will be stripped and stockpiled separately from subsoil stockpiles. Certified weed free erosion control blankets, straw bales, wood fiber, etc. will be used to limit erosion. Topsoil vegetation mixtures and subsoil will be replaced in proper order during backfilling and final grading operations. Topsoil vegetation mixtures will provide plant propagules to support plant re-establishment along ROWs, in addition to the seed mixtures or containerized seedlings that will be planted by Proponents.

Surface rocks, where present, will be windrowed adjacent to topsoil stockpiles. After seeding, rock will be separated from topsoil and then placed on the construction ROW in a manner that emulates adjacent undisturbed areas or OHV control if requested. Salvaged rock will be used to re-create rock outcrops and rock faces, to the extent possible. Excess rock will be removed and disposed of at approved locations.

During construction, all vehicle travel will be within approved construction ROWs and ETWSs, and on approved access roads. Cross-country vehicle travel outside of approved construction ROWs and workspaces on non-approved, existing access roads will not be allowed.

### ROW, ETWS, and Access Road Restoration

Restoration of ROWs will involve backfilling the excavated trench, restoring pre-existing terrain contours, replacing stockpiled subsoil and topsoil/vegetation mixtures, installing erosion control devices, preparing seedbeds, and seeding. Appropriate seed mixes will correspond with surrounding vegetation types. In visually sensitive areas, ROW alignments will have an uneven edge by either leaving shrubs in place when clearing, or seeding/planting “clumps” of shrubs along the perimeter. ETWS restoration will follow similar steps as ROW restoration.

Access roads will be reclaimed according to BLM and landowner directions. To discourage OHV use of restored temporary access roads, the following deterrents will be used in consultation with BLM and WGFD:

- Leave the ROW surface in a roughened condition, especially within 200 feet from entryways such as roads
- Establish “keep off” signs with an explanation at entryways onto the ROW;
- Install rock barriers, earthen berms, or other barricades at existing authorized OHV routes that cross the ROW;
- Work closely with the BLM and private landowners, grazing lessees, local law enforcement personnel, and adjacent landowners to monitor and eliminate unauthorized access to the ROW; and
- Maintain, repair, or replace countermeasures during the life of the project.

Restoration will follow similar steps as ROW restoration.

### Backfilling

Backfilling of subsoil materials will be required after pipelines are aligned in trenches and padded with screened subsoil, or other appropriate material. Excavated subsoil will be used to backfill trenches. Excessive subsoil will be feathered across construction ROWs, creating a roughened surface to capture precipitation, decrease erosion, and provide sites for plant establishment.

### Compacted Soils

Compacted soils will typically be associated with ROW travel lanes, pipe laydown locations, and access roads. Subsoil decompaction will reduce soil bulk density. Areas that have a soil bulk density of at least 25 percent greater than adjacent non-disturbed soils will be treated. Identified locations will be decompacted to a minimum depth of 6-12 inches prior to topsoil replacement. Soil ripping will occur along contours to minimize erosion and facilitate soil-water retention to aid revegetation. ETWS and access roads will be treated the same as construction ROWs.

### Terrain Contouring

Construction ROWs, ETWS, and access roads will be contoured to emulate their surrounding landscapes. Contouring will emphasize restoration of existing drainage and landform patterns, to the greatest extent possible.

### Topsoil and Vegetation Mixture Replacement

Stockpiled topsoil/vegetation mixtures will be spread over construction ROWs after recontouring is completed. Topsoil and vegetation mixtures will provide seeds, vegetative propagules, and soil microbiota to facilitate plant re-establishment.

### Mulch

Mulch cover will be used to minimize soil erosion, conserve soil moisture, and moderate surface temperatures to improve seed establishment success. Appropriate mulch materials will be selected dependent upon soil type, slope, etc. (see Appendix E).

### Erosion Control

Erosion will be controlled via vegetation establishment, certified weed-free mulch, soil tackifiers, and water control devices. Proponents will establish a permanent plant cover as quickly as possible following construction, however, erosion control devices will be implemented in the interim to limit soil loss.

Water bars will be installed to control surface water flow in all areas, except agricultural and pasture lands. The purposes of water bars are:

- Decrease overland water velocities by reducing slope lengths;
- Remove water from disturbed areas in a controlled manner to reduce erosive power;
- Direct water into stabilized locations to minimize surface scour; and
- Maximize water infiltration in disturbed areas.

Water bars will be installed using the following spacing unless directed to vary from those criteria by land management agencies or private landowners:

Typical Water Bar Spacing	
Slope	Spacing (feet)
<5 percent	None
5 to 15 percent	300
15 to 30 percent	200
>30 percent	100

Water bars will consist of a one-foot-high berm with an upslope swale. They will gently angle downslope to divert stormwater runoff to stable, upland discharge points or energy dissipating devices. They will be reseeded consistent with construction ROWs.

### Noxious and Invasive Weed Abatement

Noxious and invasive weeds reduce ROW revegetation success by competing for soil water, nutrients, space, and sunlight. Where project specific biological surveys identify noxious and/or invasive weed presence, control will occur prior to ground disturbance. Additionally, post

construction weed establishment will be controlled within project specific ROWs. The Noxious and Invasive Weed Control Plan (Appendix H) will address weed abatement specifically.

### Revegetation

Vegetation types within the WPCI area are variable, based on a number of factors. . All disturbed areas will be seeded using species and seeding rates for vegetation types that correspond to adjacent undisturbed areas along the WPCI, or consistent with private landowner requirements. Seed will be obtained from commercial vendors or collected locally, whichever is most feasible. Seeds will be tested for purity and viability, and certified weed free.

The following criteria will be used for selecting appropriate seed mixes:

- Erosion control capability;
- NRCS ecological site descriptions, where available;
- Sage-grouse or other sensitive species requirements, if applicable;
- Land use;
- Seed availability;
- Wildlife habitat characteristics; and
- Livestock management requirements.

### Seed Mixes

Pipelines will cross sagebrush-steppe, mountain big sagebrush, salt-desert shrub, shortgrass prairie, forested and agricultural based vegetation types. Native seed mixes will be used to restore vegetation on public lands. Forested vegetation community disturbance will be seeded as determined by appropriate land management agencies or landowners. Additionally, agricultural based private lands will be reseeded to the specifications of applicable landowners. All seed mixes on private lands will be consistent with adjacent undisturbed lands, and approved by applicable landowners.

### Seeding Methods

NRCS guidelines for seeding native plants in arid and semi-arid rangelands will be followed by Proponents. The guidelines call for at least 20 – 40 pure live seeds per square foot for drilled seed, and double that for broadcast seeding.

The primary goals of all seeding methods will be to place seed in direct contact with soil at average depths of 0.5-inch, but not greater than 1-inch, cover seed with soil, and firm surrounding soil to eliminate air pockets. Some methods of seeding are more effective than others; type of terrain and slope can dictate seeding methods. All disturbed areas will be seeded, with the exception of exposed rock faces.

Drill seeding will be the preferred seeding methods for Proponents, as it places seed at uniform depths. Seed drills are limited to use on slopes less than 15 percent, in most instances.

In areas where slopes do not allow drilling seed, broadcast seeding will be used. Broadcast seeding will be followed by harrowing to cover the seed with soil. Broadcast seeding may use hand operated, cyclone type seeders; mechanical, broadcast seeders attached to imprinting devices; or specially designed blowers (if applicable and as approved by land management agency or landowner).

Hydroseeding and hydromulching use water with a slurry of seed, mulch, and tackifier. This is not an ideal seeding method. However, for steep slopes that do not allow equipment access, this method may be used.

#### Seeding and Transplanting Timing

Seeds must be planted at the correct times. Proponents will follow applicable seeding guidelines and land management agency reclamation requirements to maximize reclamation success.

#### Soil Amendments and Weed Control

Soil amendments will consist of fertilizers, mulch, tackifying agents, or soil stabilizing emulsions. Ideally Proponents will not apply fertilizers, as they may encourage weed growth, but they may become necessary in site specific situations. Mycorrhizal fungi will be used to inoculate soils in order to aid shrub establishment. Application of mycorrhizal propagules will be in accordance with manufacturers' recommendations.

#### Erodible Soils Restoration Treatment

Erodible soils may occur within the WPCI, and may require additional restorative inputs to minimize erosion. If these conditions are discovered in project specific surveys, the restoration objective will be to rapidly stabilize the soils with erosion control measures, including vegetative cover. Erosion control measures will include one or more of the following:

- Sterile annual grasses (6 – 8 pounds pure live seed per acre);
- Certified weed free straw bales or wattles;
- Fiber mats on highly erosive surfaces and steep slopes,;
- Silt fencing;
- Water bars;
- Soil tackifier; and/or
- Wetting compounds.

Appropriate erosion control measures will be implemented immediately after trench closure.

#### Livestock Grazing Control

Pipeline projects will traverse livestock grazing allotments on BLM land. Succulent grass and forb growth could attract livestock. Excessive grazing may cause plant establishment efforts to fail. The following management practices for livestock grazing will be implemented.

- Leave the ROW surface in a roughened condition.
- Include low palatable plant species in the seed mix such as sagebrush and western yarrow.
- Negotiate with allotment permittees the need to limit livestock grazing in the ROW by implementing one or more of the following in areas where grazing becomes problematic: herding or placing salt licks and/or protein blocks one mile from the ROW, deferring grazing for three years, closing pastures, utilizing seasonal deferments, fencing, and/or reducing stocking preference. The pipeline proponent may compensate permittees if reduced stocking preference or pasture closures occur.

### **Monitoring and Maintenance**

The purpose of post restoration monitoring is to evaluate long-term soil stability, vegetative cover and density, habitat quality, and noxious and invasive weed densities. Proponents will monitor restoration success for a minimum of 5 years, or consistent with requirements of applicable land management agencies.

The primary requirements of monitoring will include the following:

- Assess the effectiveness of temporary and permanent erosion control structures to ensure stability of ROWs and ETWS, and to ensure that runoff is naturally controlled with no accelerated erosion or washouts. ROW monitoring for substantial and/or new erosion, or third party damage, will be completed by Proponents' aerial surveillance and will be completed throughout the life of their project.
- Monitor and assess, through quantitative analysis, the success of reseeding and transplanting efforts. Vegetation sample plots will be developed with appropriate land management agencies and/or private landowners, and used to measure plant density, cover, bare ground, and plant litter. Sample plots will be compared to appropriate control plots outside of the approved ROW.
- Monitor the survival of special plantings, and the extent to which the restored project are visually blends in with adjacent undisturbed areas.
- Monitor and assess weeds in accordance with the Noxious and Invasive Weed Control Plan (Appendix H). Weed colonies, which were not previously identified, will be reported to the appropriate land management agencies or landowners, and treated according to their specifications.
- Monitor and identify other situations that may hinder restoration success, and treat them appropriately.

### **Revegetation Performance Criteria**

Upland revegetation of non-agricultural lands will generally be considered successful when vegetation within the ROW supports non-noxious/invasive plants that are similar in forb, graminoid, and woody plant cover and density to those growing on adjacent undisturbed lands. Vegetation and erosion monitoring will occur for a minimum of five years. Additional monitoring and restoration activity will occur as deemed necessary by appropriate land management



agencies and/or landowners. Determination of restoration success will be determined, based on Proponent monitoring data, by appropriate land management agencies and/or landowners.

Quantitative vegetative monitoring programs will document Proponents' reclamation progress in their ROW. Appropriate land management agencies and/or landowners will participate in selection of monitoring and control plots.

Revegetation will be considered successful when ROW herbaceous and woody plant cover is 80 percent of herbaceous and woody plant cover in control plots, unless more rigorous project specific criteria are required. The severity of soil erosion and weed establishment will be judged in reference and control plots using respective indicators from the BLM Rangeland Health Assessment Procedures Manual. Negligible disturbance to soil, vegetation, and cultural resources will occur during sampling.

#### Remedial Action and Maintenance

Proponents will address erosion problems as soon possible. Additional erosion control work will be performed as necessary. Temporary erosion control structures will be removed when sites are deemed stable and restoration is determined to be successful.

Reseeding or replanting efforts will occur, as deemed necessary by appropriate land management agencies and/or landowners, when monitoring identifies a restoration failure. Noxious and invasive weed control is included in maintenance requirements, and will be performed in accordance with the Noxious Weed Control Plan (Appendix H).

#### Reporting

Proponents will document their observations of restoration success following field inspections and provide summary reports to appropriate land management agencies, resource management agencies, and landowners. Areas that require additional restoration work will be identified by project specific mile post. Reports, including a summary of corrective actions proposed, will be submitted as soon as possible after their discovery. Areas where noxious and/or invasive weed control is necessary will be reported as well.

**Appendix G**  
**Wetland and Waterbody Construction**  
**and Mitigation Plan**

Proponents will follow procedures established for the Federal Energy Regulatory Commission (FERC), which are attached below (*Wetland and Waterbody Construction and Mitigation Procedures*). Since projects within WPCI do not require oversight of FERC, Proponents will not be required to implement the “Filing” requirements described in the procedures manual. Additionally, in instances where state or local regulations are more stringent than those described in the attached manual, Proponents will be required to adhere to those more stringent regulatory requirements.



**Federal Energy  
Regulatory  
Commission**

**Office of  
Energy Projects**

**May 2013**

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# **WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES**

Washington, DC 20426

MAY 2013 VERSION

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# WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

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**WETLAND AND WATERBODY  
CONSTRUCTION AND MITIGATION PROCEDURES (PROCEDURES)**

**I. APPLICABILITY**

- A. The intent of these Procedures is to assist project sponsors by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. Project sponsors shall specify in their applications for a new FERC authorization, and in prior notice and advance notice filings, any individual measures in these Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and fully describe any alternative measures they would use. Project sponsors shall also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is authorized, project sponsors can request further changes as variances to the measures in these Procedures (or the applicant's approved procedures). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
  - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing;
  - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and
  - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

- A. The following information must be filed with the Secretary of the FERC (Secretary) prior to the beginning of construction, for the review and written approval by the Director:
  1. site-specific justifications for extra work areas that would be closer than 50 feet from a waterbody or wetland; and
  2. site-specific justifications for the use of a construction right-of-way greater than 75-feet-wide in wetlands.
- B. The following information must be filed with the Secretary prior to the beginning of construction. These filing requirements do not apply to projects constructed under the automatic authorization provisions in the FERC's regulations:
  1. Spill Prevention and Response Procedures specified in section IV.A;
  2. a schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally-listed threatened or endangered species. The project sponsor will revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice;

3. plans for horizontal directional drills (HDD) under wetlands or waterbodies, specified in section V.B.6.d;
4. site-specific plans for major waterbody crossings, described in section V.B.9;
5. a wetland delineation report as described in section VI.A.1, if applicable; and
6. the hydrostatic testing information specified in section VII.B.3.

### III. ENVIRONMENTAL INSPECTORS

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

### IV. PRECONSTRUCTION PLANNING

- A. The project sponsor shall develop project-specific Spill Prevention and Response Procedures that meet applicable requirements of state and federal agencies. A copy must be filed with the Secretary prior to construction and made available in the field on each construction spread. This filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.
  1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:
    - a. all employees handling fuels and other hazardous materials are properly trained;
    - b. all equipment is in good operating order and inspected on a regular basis;
    - c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;
    - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the

project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

- e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas;
  - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
  - g. pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and
  - h. bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination;
  - b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;
  - c. know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and



- d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in these Procedures and in the FERC's Orders.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.
4. Notify appropriate federal and state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in applicable permits.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where

the adjacent upland consists of cultivated or rotated cropland or other disturbed land.

- b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the conditions that will not permit a 50-foot setback and measures to ensure the waterbody is adequately protected.
- c. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.
- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
- c. Where pipelines parallel a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way, except where maintaining this offset will result in greater environmental impact.
- d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
- e. Maintain adequate waterbody flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
- f. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
- g. Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques in accordance with the Plan, provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for "waterbodies" as defined in section I.B.1.

4. Spoil Pile Placement and Control

- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.
- b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody.

5. Equipment Bridges

- a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.
- b. Construct and maintain equipment bridges to allow unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:
  - (1) equipment pads and culvert(s);
  - (2) equipment pads or railroad car bridges without culverts;
  - (3) clean rock fill and culvert(s); and
  - (4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

- c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
- d. Design and maintain equipment bridges to prevent soil from entering the waterbody.
- e. Remove temporary equipment bridges as soon as practicable after permanent seeding.
- f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove temporary equipment bridges as soon as practicable after final cleanup.

- g. Obtain any necessary approval from the COE, or the appropriate state agency for permanent bridges.

6. Dry-Ditch Crossing Methods

- a. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally-designated as critical habitat.

- b. Dam and Pump

- (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:
  - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
  - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
  - (iii) screen pump intakes to minimize entrainment of fish;
  - (iv) prevent streambed scour at pump discharge; and
  - (v) continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

- c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal);

- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and
- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill

For each waterbody or wetland that would be crossed using the HDD method, file with the Secretary for the review and written approval by the Director, a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) justification that disturbed areas are limited to the minimum needed to construct the crossing;
- (3) identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;
- (4) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (5) a contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

The requirement to file HDD plans does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours.

Streambanks and unconsolidated streambeds may require additional restoration after this period;

- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan must be developed in consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the waterbody or adjacent upland.

Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;
- b. where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the waterbody; and
- c. use temporary trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.
4. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament

mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.

5. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
6. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.
7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands.
8. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan.

In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

9. Sections V.C.3 through V.C.7 above also apply to those perennial or intermittent streams not flowing at the time of construction.

#### D. POST-CONSTRUCTION MAINTENANCE

1. Limit routine vegetation mowing or clearing adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.
3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.



## VI. WETLAND CROSSINGS

### A. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction. The requirement to file a wetland delineation report does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

This report shall identify:

- a. by milepost all wetlands that would be affected;
- b. the National Wetlands Inventory (NWI) classification for each wetland;
- c. the crossing length of each wetland in feet; and
- d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.
4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

5. Implement the measures of sections V and VI in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V and VI cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
  - a. spoil control;
  - b. equipment bridges;
  - c. restoration of waterbody banks and wetland hydrology;
  - d. timing of the waterbody crossing;
  - e. method of crossing; and
  - f. size and location of all extra work areas.
6. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

**B. INSTALLATION**

1. Extra Work Areas and Access Roads
  - a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land.
  - b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected.
  - c. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall

use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

- d. The only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland.

## 2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions.
- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use “push-pull” or “float” techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering in.
- e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.
- f. Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal.

The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal.

- g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.
- h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are

saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location.

- i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.
- j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.
- k. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c, maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. Restore pre-construction wetland contours to maintain the original wetland hydrology.
3. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
4. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency.
5. Consult with the appropriate federal or state agencies to develop a project-specific wetland restoration plan. The restoration plan shall include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.
6. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).
7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.
8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.4 of the Plan.

D. POST-CONSTRUCTION MAINTENANCE AND REPORTING

1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between HDD entry and exit points.
2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency.
3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of wetland areas.
4. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful.
5. Wetland revegetation shall be considered successful if all of the following criteria are satisfied:
  - a. the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);
  - b. vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;
  - c. if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and
  - d. invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.
6. Within 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in section VI.D.5, above. The requirement to file wetland restoration reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advance notice provisions in the FERC's regulations.

For any wetland where revegetation is not successful at the end of 3 years after construction, develop and implement (in consultation with a

professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.

## VII. HYDROSTATIC TESTING

### A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

### B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address secondary containment and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

### C. INTAKE SOURCE AND RATE

1. Screen the intake hose to minimize the potential for entrainment of fish.
2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission.
3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.
4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.



## **Appendix H**

### **Noxious and Invasive Weed Control Plan**

#### **Plan Purpose**

The purpose of this plan is to prescribe methods to prevent, mitigate, and control the spread of noxious and invasive weed (weed) species during and following construction of pipelines within the WPCI. Proponents will be responsible for implementing the methods described in this plan, in addition to any project specific requirements prescribed by applicable regulatory agencies. This plan is applicable to Proponents that construct pipeline in the WPCI both during construction and operations phases.

#### **Goals and Objectives**

Proponents' goals will be to prevent the spread of Weeds identified in the WPCI and avoid introduction of new weeds. Monitoring will be required to ensure the success of control measures.

#### **Weed Inventory**

Proponents will complete biological surveys of their project specific ROWs and work areas to identify Weed presence, prior to commencement of their projects. Inventories will include proposed access roads, ETWS, staging areas, contractor construction yards, aboveground facilities, and potential water sources. Data collected will include weed species and GPS locations, and will be collected using a combination of existing databases and field surveys.

#### **Weed Management**

Weeds will be treated prior to construction activities. However, it should be noted that widespread distributions of species such as cheatgrass (*Bromus tectorum*) cannot be effectively eradicated by currently available control measures. In these instances, unless new methods becomes available, exhaustive treatment activities will not be required by Proponents. Rather, Proponents' goal will be to preclude the spread of these species to areas where they do not currently exist.

Various regulatory agencies, with land management jurisdiction in the WPCI, may have different weed management requirements. Proponents will be required to follow weed management prescriptions of whichever land management agency has jurisdiction along their project. If there are overlapping jurisdictions, Proponents will be required to follow the most stringent management requirements.

#### **Identification of Problem Areas**

Prior to construction, Proponents will provide their contractors with information and training regarding weed management, weed identification, and potential impacts of weeds on agriculture, livestock, and wildlife. Contractors will be informed of the importance of preventing

the spread of weeds into uncontaminated areas and of controlling proliferation of existing weeds.

Before surface disturbance activities begin, areas of weed infestation will be identified and marked with signs. Areas of concern will include all locations where weeds need to be treated. Signs will also identify the locations of all equipment cleaning stations that will be setup along the ROW.

### **Preventative Measures**

Prevention is the most effective approach to weed management. Proponents will assist applicable regulatory agencies with control efforts, within their approved work areas. They will comply with all agency preventative requirements and implement weed control measures in areas of concern. The following general preventive measures should be implemented to minimize the spread of both terrestrial and aquatic weeds. Additional measures, or new technologies, may be required of Proponents if they become available prior to approval of their pipelines.

#### **General**

- Proponents will conduct Employee Environmental Awareness Programs (EEAP) before surface disturbance activities begin, in order to educate personnel about environmental concerns and requirements, including weed identification, prevention, and control methods. No personnel should be allowed to work within the WPCI before completing an EEAP. Qualified EIs will conduct trainings.
- Qualified EIs or contract weed control personnel will conduct on-site biological monitoring in areas of concern before, during, and after construction.

#### **Soil, Straw, and Mulch**

Contractors will ensure that all straw or hay bales used for sediment barriers or mulch are certified weed-free and obtained from state cleared sources. If certified weed-free bales are unavailable, alternative weed-free sediment barriers will be utilized.

#### **Cleaning Stations**

To prevent transport of weed seeds, roots, or other propagules along the ROW, or other project areas, Proponents will implement an equipment cleaning program in accordance with the following guidelines.

- All contractor vehicles and equipment arriving from out of state will be cleaned prior to beginning work in the ROW or other project areas.
- All equipment and vehicles that come into contact with vegetation or disturbed soil in areas of concern for weeds will be cleaned before allowing them to proceed along the ROW or other project areas. Initial clearing and grading crews will segregate contaminated topsoil along the edge of the ROW, and mark it accordingly, so crews that

follow will not need to clean their vehicles and equipment when traveling through areas of concern, with the exception of timber removal and restoration crews.

- Proponents will develop certification programs to ensure that all vehicles and equipment have been cleaned of weeds.
- Proponents will place cleaning stations along their project in locations where they can most effectively and efficiently clean applicable vehicles and equipment.
- Cleaning of vehicles and equipment will only occur at cleaning stations. Cleaning will be carried out using high pressure equipment to remove seeds, roots, and rhizomes. Cleaning efforts will be concentrated on tracks, feet, tires, and undercarriage. If weather conditions are exceptionally dry and vehicles are mud free, compress air may be used for cleaning.
- Vehicle cabs will be cleaned and refuse capable of transporting weeds will be placed in appropriate refuse bins.

### **Treatment Methods**

Proponents will implement weed control measures in accordance with existing regulations and jurisdictional land management agency or landowner agreements. Special attention will be given to designated noxious weeds, as eradication of all weeds will likely be beyond the controls of Proponents. Preventing the introduction or spread of other weed species will be the responsibility of Proponents.

### **General Methods**

Within project areas, weed control during the pre-construction and construction phases will be carried out primarily using herbicide treatment methods. Herbicide treatment will consist of spot application, or broad area application, as appropriate. While herbicide application will be the primary treatment method, other methods will be implemented if they are deemed more appropriate.

Control measures may utilize one or more of the following treatment methods:

- Manual Methods –Weeds pulled by hand. If seeds are present, plants will be removed and destroyed.
- Mechanical Methods – Equipment will mow or disk weed populations. Any mowing or disking will occur prior to seed development. Subsequent seeding with prescribed restoration seed mixes will occur as soon as possible following soil disturbance to re-establish suitable vegetation cover and slow the re-invasion of weeds.
- Herbicide Application – Herbicide application will be used to remove, reduce, or contain noxious weed populations. Only herbicides approved by applicable regulatory agencies or landowners will be used. Applications will be controlled to minimize impacts on surrounding native vegetation. In areas of dense infestation, or where impacts on native species will be difficult to avoid, broader application methods may be used and a follow-up seeding program implemented.

Treatment methods will be species specific and based on area specific conditions. Proponents will coordinate with applicable resource agencies during and after construction to ensure adequate weed control.

There is potential for spreading weeds as a result of withdrawing water for project related activities, as seeds could be present in water sources. Proponents will treat weeds within 200 feet of project water sources to minimize the threat of this vector of weed transport. Only herbicides, or other methods, approved for use in close proximity to water sources will be permitted.

### Treatment Schedule

Most perennial and biennial species are best controlled by applying herbicide twice per year: once during spring and once during the period from early August to early September. Late season treatments need to be timed so that living leaf and stem growth is still present, but after hot summer temperatures have passed.

Once Proponents have inventoried weed presence within their work areas, they will be required to establish an appropriate treatment schedule.

### Treatment Approach during Restoration and Revegetation

Successful restoration and revegetation will be vital to the overall success of Proponents' weed control programs. Proponents will have to establish protocols that minimize weeds, while allowing for the success of project area restoration. Proponents will consult with applicable resource agencies to develop the most efficient process for success.

### **Monitoring**

Proponents will develop weed monitoring programs to ensure their project areas are progressing toward appropriate vegetative cover and diversity, and that weed populations are appropriately managed. Ideally Proponents would eradicate weed populations in their work areas. However, more realistically, Proponents will be required to prevent the introduction of new weed populations and the spreading of existing weed populations.

### Monitoring During Construction

The majority of weed monitoring will occur before and after construction activities. Initial monitoring will occur in conjunction with pre-construction weed treatments to assure populations are addressed. Additionally, EIs will monitor clearing, grading, and soil segregation activities to ensure proper weed treatment. EIs will monitor project areas throughout the construction phase of projects to document weed presence or spread, and notify weed control staff to address populations, as appropriate.

### Monitoring After Construction

Proponents will begin their post-construction monitoring in the first growing season after construction activities have been completed. They will, at a minimum, monitor their sites in spring and late summer. In addition, equipment cleaning stations will be monitored to ensure they do not become infested. Result of monitoring will dictate additional treatment/control methods.

Below is an example of the minimum requirements for Proponents' monitoring schedules:

- Identify and evaluate weed conditions in the spring and late summer, paying particular attention to noxious weeds;
- Identify and evaluate locations, by milepost and GPS point, where additional treatment may be required and what will likely be the most appropriate treatment method;
- Disclose any treatment methods that are implemented;
- Assess reseeding efforts, their success, and competition with weed populations; and
- Identify areas where reseeding may be beneficial.

The above monitoring observations will be summarized in annual reports, which will be provided to applicable resource agencies. Reports will contain a minimum of the following:

- An assessment of the condition of known weed infestations;
- Identification of areas that require remedial action;
- Recommendations and schedules for additional treatment methods;
- Monitoring forms; and
- Photographs to further document any reported issues.

### Herbicide Application and Handling

Herbicide application will be conducted according to EPA standards, and information gathered from various land management agencies and weed management districts located in project areas. Prior to applying herbicides, Proponents' weed management staff will be licensed and will obtain all applicable permits. No herbicide application will occur without coordination with, and concurrence of, applicable regulatory agencies or landowners.

All herbicide applications will follow EPA label instructions. All OSHA requirements will be followed when applying herbicides. Application will be suspended if any of the following conditions arise:

- Wind velocity exceeds 6 mph during application of liquids or 15 mph during application of granular herbicides;
- Snow or ice cover foliage; or
- Precipitation is occurring, or imminent.

Vehicle mounted sprayers will be used primarily in open areas that are readily accessible by vehicles. Hand application that targets individual plants will be used to treat small or scattered weed populations. Calibration checks of equipment will be conducted at the beginning of spraying, and periodically per manufacturer recommendations, to ensure proper application rates.

Herbicides will be transported to work areas daily while being applied, with the following provisions:

- Only the quantity needed for that day will be transported;
- Concentrate will only be transported in approved containers, in a manner that prevents tipping or spilling, and in a compartment isolated from food, clothing, and safety equipment;
- Mixing will be done at a distance greater than 500 feet from any waterbody, wetland, or other sensitive area. No herbicide will be applied in these areas without written approval by applicable regulatory agencies; and
- All herbicide equipment and containers will be inspected daily for leaks.

### **Herbicide Spills and Cleanup**

All reasonable precautions will be taken to avoid spills. In the event of a spill, cleanup will occur immediately. Spill kits will be maintained in vehicles and in herbicide storage areas. All herbicide contractors will obtain and have readily available copies of Material Safety Data Sheets for herbicides they are using. All herbicide spills will be reported in accordance with applicable laws and requirements.

The following is a list of minimum requirements for spill kits:

- Protective clothing, eyewear, and gloves;
- Adsorptive clay, “kitty litter”, or other commercial adsorbent;
- Plastic bags and buckets;
- Shovel;
- Fiber brush and screw-in handle;
- Dust pan;
- Caution tape
- Highway flares; and
- Detergent

Response to spills will vary with their size and location, but general procedures will include the following:

- Controlling traffic;
- Dressing the clean-up team in protective clothing;
- Stopping leaks
- Containing spilled materials

- Cleaning up and removing spilled herbicide and contaminated adsorptive materials and soil; and
- Transporting spilled herbicide and contaminated material to an authorized disposal site.

## **Appendix I**

### **Biological Resources Conservation Measure Plan**

#### **Construction and Operation Mitigation**

This appendix outlines minimum conservation measures for construction and operation of pipeline projects to reduce impacts to vegetative communities, wildlife, and fisheries resources. Proponents may be required to implement additional measures for site specific impacts. Conservation and mitigation measures for federal threatened and endangered species will be addressed in a separate Biological Assessment (BA) developed through the project specific NEPA process. Mitigation approaches described in this appendix should be used for impacts associated with any pipeline construction and operation activities that will occur in the WPCI.

Through the NEPA process, lists of target species will be developed to focus field survey efforts. These lists will be developed based on known habitats and historic ranges of species that will be derived from literature, agency communication, and best professional judgment.

Numerous mitigation measures and BMPs have been developed and will be implemented by Proponents during pipeline construction to reduce impacts to sensitive plants, fisheries and wildlife. These BMPs may include:

- Throughout the permitting process, the various regulatory agencies, including the the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS) may require additional resource protection measures in addition to those presented in the following sections to ensure that federally listed and proposed species are not adversely affected.
- Standard construction techniques would be used unless conditions warranted special methods, including those required to minimize environmental damage and any other special methods determined through consultation with federal and state agencies.
- The Proponent would minimize impacts to paved roadways, wetlands and waterbodies, and railroads by using appropriate crossing methods.
- Prior to any construction activities, survey crews would stake the outside limits of the construction ROW, the centerline of the pipeline trench, and temporary workspace areas. Sensitive areas to be avoided would be flagged as appropriate, and wetland boundaries would be clearly delineated using easily identifiable temporary signage.
- Substantive cutting of steep terrain (as defined by the orientation and angle of the slope) would not be performed unless needed for the safe operation of the equipment and safety of personnel.
- During periods of precipitation when soil compaction and excessive rutting become significant, many construction activities may be required to cease.
- In other areas where compaction and rutting are unavoidable, measures would be taken to adequately prepare soils for successful reclamation, including replacement of topsoil with topsoil from a local source acceptable to the landowner or land management agency.
- In areas where segregation of soils is required, topsoil and subsoil would be separated using a two-pass excavation process. The native seed base is contained in the topsoil,



the depth of which varies along the project route. Therefore, topsoil would be removed in a manner that minimizes dilution of this seed base.

- The Proponent would adhere to its Noxious and Invasive Weed Control Plan (Appendix H of this POD) to minimize noxious weeds and invasive plants from establishing on the areas disturbed by construction activities.
- When trench dewatering is necessary, the Proponent would adhere to its Procedures to prevent heavily silt-laden water from flowing into wetlands or waterbodies. The rate of flow from dewatering pumps would be regulated to prevent erosion from runoff, and dewatering would be conducted in a manner designed to ensure that water is allowed to infiltrate into the ground rather than flow over the surface whenever possible.
- After backfilling is complete, disturbed areas would be final-graded, and erosion controls would be implemented, including site-specific contouring and reseeding with native species.
- The surface of the ROW would be graded to conform to preexisting contours, to the greatest extent possible.
- Erosion control measures would be implemented in accordance with Appendix E of this POD), other federal, state, and local agency requirements or landowner requirements, as applicable.
- The Proponent's Restoration and Revegetation Plans (Appendix E of this POD) would be implemented in accordance with applicable federal, state, local regulations, and landowner agreements.
- To the greatest extent possible, streambeds would be returned to their preconstruction contours, and stream and river banks would be restored to their preconstruction condition.
- Periodic aerial and ground inspections of the project route would be conducted, and further restoration measures would be implemented as needed.
- All test water used for pipeline hydrostatic testing would be discharged in accordance with the National Pollutant Discharge Elimination System permit.
- Wetlands would be crossed following the methods outlined by the U.S. Army Corps of Engineers.
- All disturbed stream channels would be restored with salvaged materials (plants and substrate where practical) from construction, or with similar local materials.

It is anticipated that some of these measures and BMPs will be modified during the NEPA process.

### **Sensitive Plants**

Proponents will survey their proposed construction ROWs, ETWS, roads, and aboveground facility locations prior to construction for sensitive plant species identified during the NEPA process. Observed plants will be mitigated during construction activities either by relocating the plants or the pipeline facilities or developing equivalent off-site mitigation in consultation with land management agencies, landowners and, where appropriate, the U. S. Fish and Wildlife Service (FWS).

## **Fisheries Resources**

### **In-Water Work Windows**

Proponents will adhere to in-water work windows developed by the WGFD, described below:

- July 1 – August 31 for coldwater fisheries.
- July 1 – November 15 for coolwater and warmwater fisheries.

A list of streams crossing subject to these in-water work windows will be developed during the NEPA process. If extraordinary events arise that require construction through waterbodies outside of an in-water work window, Proponents will consult with WGFD and the land management agency to obtain approval. Boring and horizontal directional drilling will not be subject to these in-water windows.

### **Stream Crossings**

- Proponents will implement their waterbody crossing plans consistent with FERC's Wetland and Waterbody Construction and Mitigation Plan (see Appendix G).
- Proponents will install pipelines at a vertical elevation in streambeds that will not be scoured, where practical.
- Proponents will locate ETWS at least 50 feet from waterbody boundaries.
- Proponents will maintain adequate flow rates throughout construction for aquatic life and to prevent interruption of existing downstream uses following FERC's Procedures.
- Proponents will restrict spoil placement within 10 feet of waterbodies.
- Proponents will be prohibited from storing hazardous materials within 500 feet of a wetland, waterbody, water supply well, spring, or designated municipal watershed.
- Proponents will be prohibited from refueling vehicles and equipment within 500 feet of a wetland, waterbody, water supply well, spring, or designated municipal watershed except as described in Appendix C.
- Proponents will return all waterbody banks to preconstruction contours.

Potential trapping of fish in isolated work areas, or inhibition of fish passage, could occur at stream crossings. The following mitigation measures will be employed to limit this impact:

- Experienced fish biologists, familiar with fish capture and handling techniques, will relocate fish that become trapped in isolated work areas to areas within the main channel or downstream of stream crossings;
- Proponents will attain necessary permits for fish capture and relocation activities;
- Uninhibited fish passage will be maintained around isolated work areas at all times; and
- Stress and mortality will be minimized through appropriate fish handling techniques.

## Wildlife Resources

Mitigation measures for habitat fragmentation fall into two broad categories: avoidance and vegetation management. Proponents will employ both measures, and use the following mitigation measures (at a minimum) to minimize fragmentation impacts to species:

- Limit the width of maintained ROW to the greatest extent possible;
- Minimize vegetation removal associated with construction to the greatest extent possible;
- Implement reclamation/restoration methods to enhance wildlife habitat within ROWs;
- Minimize “hard” edges in forested habitats by using “zig-zag” clearing patterns;
- Remove shrubs and saplings in prairie-grassland habitats in a manner that minimizes “hard” edges; and
- Prohibit mowing sagebrush in ROWs where it has been re-established.

Nesting migratory birds will be affected by habitat removal. The obligation to protect migratory birds under the Migratory Bird Treaty Act (MBTA) will be addressed through the NEPA process and site-specific mitigation strategies will be developed.

Proponents will implement the following measures (at a minimum), as applicable, to avoid or minimize impacts to wildlife:

- Reroute sections of pipelines;
- Restrict pipeline ROW widths in environmentally sensitive locations;
- Limit length of time trenches are open;
- Restore affected habitats to the greatest extent possible;
- Minimize future disturbances in project areas; and
- Construct any pipeline communication towers in accordance with USFWS’ requirements.

## Special Status Species

Proponents will survey their project areas prior to construction activities at times, and utilizing techniques, prescribed by applicable regulatory agencies. Results of these surveys will inform presence or absence within ROWs.

Greater sage grouse are not a listed species under the Endangered Species Act (ESA), however, they will be afforded special status consideration for pipelines that will be constructed within the WPCI. Unless the FWS determines that the species is warranted as either a Threatened or Endangered species, Greater sage grouse will be afforded the following construction and operational stipulations as directed by the Governor’s Executive Order 2015-4 (EO):

- All applicable stipulations and management prescriptions described in the most recent Wyoming Sage-Grouse Executive Order, or its accompanying guidance documents, will be implemented by project Proponents in order to minimize impacts to sage grouse.

- General Greater sage grouse stipulations include, but are not limited to, the following:
  - Sage-grouse leks: 1) Avoid surface disturbance activities or occupancy within ¼-mile (0.6 mile in Core Areas) of the perimeter of occupied sage-grouse leks. 2) Avoid human activity between 6 p.m. and 8 a.m. from March 15 – May 15 within ¼-mile of the perimeter of occupied sage-grouse leks (0.6 mile in Core Areas).
  - Sage-grouse nesting/early brood rearing habitat: Avoid surface disturbing activities, geophysical surveys, and organized recreational activities (events) that require a special use permit in suitable sage-grouse nesting and early brood rearing habitat within 2 miles of the perimeter of an occupied lek or within identified sage-grouse nesting and early brood rearing habitat March 15 – June 30 (within entire delineated Core Areas).
  - Sage-grouse winter concentration areas: Where it has been designated, avoid human activity in sage-grouse winter habitat from November 30 – March 15.

### Big Game

To protect big game crucial winter ranges, Proponents will comply with seasonal stipulations for construction and operation activities which prohibit construction in crucial winter ranges from November 15 to April 30. BLM can grant exceptions to seasonal stipulations if they, in consultation with WGFD biologists, determine that granting an exception will not jeopardize the population that is being protected.

In addition, Proponents will implement the following mitigation measures to protect big game crucial winter habitats, where appropriate:

- Within big game crucial winter ranges impacted by pipeline projects, Proponents will seed disturbed areas with preferred big game forage species listed in Appendix F, Table 1-3.
- Weeds will be controlled to help maintain native forage species as indicated in Appendix H.
- To minimize impacts from open trenches within crucial winter ranges, Proponents will install or leave crossovers where necessary with exit ramps. Proponents will also implement crossovers in areas around water sources and active livestock/wildlife trails. Proponents will also inspect open ditch lines daily to ensure that livestock/wildlife are not trapped in open trenches.
- A 10-foot gap will be left in spoil and topsoil stockpiles at all hard or soft plug locations, and a corresponding gap in welded pipe strings will be left in these locations.
- After construction, Proponents will install OHV barriers to reduce unauthorized public access to pipeline ROWs.

### Raptors and Migratory Birds

Proponents will comply with spatial and seasonal buffers in Appendix B, Table 3, where there are data that confirm presence of applicable species. If data are not available to justify seasonal stipulations, surveys will be completed only for those species evaluated and agreed upon during the project specific NEPA process (e.g. federal T&E species and federal agency special status species).

## **Appendix J**

### **Unanticipated Discoveries Plan for Cultural Resources**

#### **General**

Unanticipated discoveries consist of types of archaeological remains not typically encountered in the vicinity of a project ROW. These types of remains will also be outside the scope of projects' survey design. Examples of unanticipated discoveries include basin houses, large bison kill sites, or rock shelter containing perishable materials.

Once an unanticipated discovery is identified, measures will be taken to prevent further disturbances. Depending upon the nature and location, these measures may include halting construction in the vicinity, fencing off the discovery, or posting a guard. The BLM and SHPO will be contacted. Archaeological monitors will record the discovery as per standard operating procedures. Test excavations may be necessary to evaluate discoveries. Once the nature of the discovery and its vulnerability are understood, archaeologists will consult about site treatment.

Archaeological monitors will notify BLM Field Offices within one working day and provide written follow-up within three working days after discovery. Archaeologists will recommend site eligibility and identify treatment options.

#### **Discovery of Human Remains**

The discovery of known or suspected human remains, at anytime and anywhere in project areas, will result in immediate cessation of construction activity within a 300-foot buffer around the discovery location. If construction personnel make the discovery, they will immediately notify their supervisor, who will notify the EI of the discovery. EIs will notify archaeological monitors or other archaeological staff immediately. All project personnel have authority to halt construction if human remains are discovered.

After construction has been halted, construction personnel will promptly vacate a 300-foot buffer zone. Immediate measures will be implemented to protect discoveries from further disturbance until appropriate agencies have been notified, the discovery has been fully evaluated, treatment (if necessary) has been completed, and the location has been cleared by appropriate agency personnel. Care will be taken to prevent additional disturbance of remains.

If remains are human, measures to protect them and any associated artifacts will remain in effect until Proponents have received notice from the federal Authorized Officer, for discoveries on federal lands, or applicable law enforcement personnel on non-federal lands.

#### **Human Remains on Federal Lands**

Upon discovery of suspected or confirmed human remains on federal lands, agency archaeologists and administrators will be notified immediately by phone and with follow-up written notification. Project Proponents and EIs will also be notified. BLM personnel will

determine whether the remains are archaeological or whether they are a law enforcement issue. All agency and tribal consultation will be the responsibility of applicable federal agency staff. If remains are Native American, provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) apply.

#### Native American Remains on Federal Lands

For Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony discovered on federal land, agencies will meet the requirements of NAGPRA in accordance with 43 CFR 10. In accordance with 43 CFR 10, work may resume at the discovery location 30 days after certification by the Authorized Officer, if the resumption is otherwise lawful [43 CFR 10.4 (d and e)].

#### Human Remains on Non-Federal Lands

Upon discovery of confirmed or suspected human remains on non-federal lands, the county sheriff will be notified immediately. The sheriff may contact the coroner. The lead federal agency, SHPO, and EI will be notified as well. The sheriff and/or coroner will determine whether or not remains fall under law enforcement jurisdiction. Further work at the discovery will be at the discretion of law enforcement personnel, if there is an enforcement issue. If not, the BLM will consult with SHPO, and the landowner if on private land, to approve further work. If remains are Native American, SHPO will determine the appropriate course of action.

#### Coordination and Notification Procedures

Coordination among project archaeologists, construction personnel, EIs, and Proponents will be handled within projects' chain of command. Project EIs will likely be archaeologists' primary point of contact. Proponents will likely employ an archaeological contractor as a monitor and to be their lead archaeological point of contact.

Project EIs will be responsible for communicating between archaeological contractors and project construction personnel. Situations may arise where archaeological contractors need to communicate directly with construction personnel, but this will be minimal and EIs will always be notified.

## **Appendix K**

### **Unanticipated Discoveries Plan for Paleontological Resources**

#### **Introduction**

This Paleontological Resources Monitoring Plan provides monitoring procedures for Proponents to follow in their project areas where there are potentially significant fossil resources. Detailed guidelines are provided in BLM IM 2009-11. This plan also addresses the unanticipated discovery of significant fossil resources that may be encountered during construction.

#### **Qualified Paleontologist**

The Principal Investigator (PI), a qualified paleontologist, will be contracted by Proponents to oversee paleontological activities. Prior to construction PIs will obtain necessary Paleontological Use Permits for BLM lands. These permits will require a monitoring and recovery plan for fossils, as well as an agreement with a recognized institution for the curation and storage of scientifically significant fossils. PIs oversee the following:

- Training of construction personnel;
- Monitoring and spot checks of geologic formations classified as Potential Fossil Yield Classification (PFYC) 5 or 4, and some PFYC 3 ranked strata;
- Evaluate paleontological discoveries made by Proponents' construction contractors; and
- Determine appropriate actions regarding significant finds with BLM paleontologists and archaeologists.

#### **Training Contractors**

When qualified paleontologists are not present during construction, Proponents' EIs and contractors will be responsible for reporting fossil discoveries. Prior to constructions Proponents will train contractors to do the following:

- Understand what a fossil represents;
- Recognize a fossil;
- Know the procedures to be followed when fossils are discovered; and
- Refrain from collecting fossils, except as part of an emergency recovery procedure.
- 

Training will be conducted by a qualified paleontologist.

#### **Areas to Be Monitored or Spot Checked**

In the planning and surveying stages of pipeline project development, each geologic formation along pipeline routes will be ranked according to BLM PFYC. Following literature reviews, formations ranked PFYC 3 or higher will be field surveyed, as required. Spot checks during construction activities will be conducted according to the results disclosed by Proponents.



### **Unanticipated Discoveries of Paleontological Resources**

Fossils likely to be encountered during construction include plant compressions and petrifications, mollusk shells, and isolated or fragmentary vertebrate remains. If fossils are encountered, they will be evaluated and addressed appropriately by PIs. There is a small possibility that scientifically significant remains of vertebrate fossils may be encountered in excavations in areas that are classified as PFYC 2 or less, but are underlain by fossil bearing formations.

### **Procedures at Time of Discovery of Unanticipated Paleontological Resources**

In accordance with BLM IM 2009-11, if significant fossils are discovered, construction activity will cease in the immediate area of discovery, and the discovery will be immediately reported to Proponents' EI. The EI will ensure that the discovery is protected from damage and looting and will immediately report the discovery to Proponents' PI and the appropriate BLM office. Paleontologists will examine and record the paleontological resource and evaluate its significance to determine if additional mitigation is required. Construction activities will not resume in the immediate area of discovery until paleontologists concur that it can. Agencies may inform Proponents' PI of any required mitigation measures by telephone, with follow-up documentation by mail or email.

### **Recording Procedures for Unanticipated Paleontological Resources**

Paleontological materials of scientific significance will be recorded using methods consistent with standard operating procedures, as detailed in BLM IM 2009-11. Scientifically significant fossils will be collected and curated into an acceptable museum or academic repository. Collection methods will depend on the fossil and its condition.

### **Emergency Salvage of Paleontological Resources**

Unstable trench conditions and other unforeseen natural or work events could endanger paleontological resources discovered during construction of pipelines. In the event of imminent danger or destruction, Proponents will take prudent action to preserve as much paleontological information as possible. Salvage activities will follow standard procedures to the greatest extent possible, but human safety concerns may dictate less exact methods of material excavation.

### **Reporting**

After completion of paleontological surveys, Proponents will report the findings, significance, and recommendations to the appropriate BLM office for review. If mitigation, and an excavation of more than one square meter is required, a paleontological excavation permit application will be filed with the appropriate BLM office.

## **Appendix L**

### **Fire Prevention and Suppression Plan**

#### **Introduction**

The purpose of the Fire and Prevention and Suppression Plan is to prevent and suppress fires during pipeline project construction. The plan covers responsibilities for suppressing fire ignitions and reporting emergencies. It delineates minimum requirements that should be followed by Proponents.

This plan is intended to be compatible with laws, regulations, plans, and policies of local, state, and federal agencies. Prior to construction activities, Proponents should confirm that all employees associated with their projects have been trained in the requirements and provisions of this plan. A copy of the plan will be kept on site for the duration of pipeline construction.

#### **Objectives**

The first objective of this plan is to provide an implementation strategy to facilitate immediate actions to prevent and suppress fires that may occur during pipeline construction. The plan establishes protocols and lines of communication for reporting fires and other emergencies that may occur within the ROW. The plan requires commitment to fire prevention, fire protection equipment, fire monitoring efforts, and personnel during periods of fire danger or other emergencies.

The second objective is to ensure adequate and appropriate provision of safety equipment and fire extinguishing equipment to facilitate firefighting, protect employees, and minimize damage to public and private property. Proponents will evaluate work locations to determine appropriate protection and safety requirements.

#### **Responsibilities**

Responsibility for fire suppression, management, and investigation lies with the jurisdictional agency, and the operation requirements of Proponents. Contractors are required to follow all applicable laws and regulations regarding fire prevention and suppression. All contractors will follow the requirements disclosed in this plan, with the addition of any project specific requirements.

The primary persons responsible for fire prevention and suppression during pipeline construction are described below:

##### **Chief Inspector**

The Chief Inspector is responsible for oversight of all activities along pipeline projects. Chief Inspectors are responsible for general construction operations, for ensuring all contractors adhere to this plan, and that all provisions and restrictions are implemented. Chief Inspectors will coordinate with federal, state, and local fire management personnel during periods of high or

sever fire conditions to ensure that permit conditions are met and that preventive measures are in place.

In addition, Chief Inspectors will be responsible for:

- Conducting site surveys to identify fire hazards;
- Developing fire protection strategies;
- Selecting and locating the correct type and number of firefighting apparatus, and making them accessible;
- Ensuring that fire equipment is inspected and maintained in good condition; and
- Consulting with local fire and sheriff departments.

Additional responsibilities include the following:

- Immediately reporting all uncontrolled fires to the nearest fire dispatch office and county dispatch;
- Conducting weekly inspection of tools, equipment, personal protective equipment, and first aid kits;
- Developing and maintaining a register of emergency equipment;
- Conducting weekly inspections of flammable fuels and explosives storage areas;
- Posting signs and fire rules at appropriate locations;
- Providing initial fire response and supervising suppression activities until relieved;
- Providing and gaining approval of site specific burn management plans;
- Providing weekly written burning and blasting schedules to the appropriate federal, state, and local fire control jurisdictions;
- Monitoring construction areas that may present safety issues;
- Ensuring regulatory compliance with storage and handling of hazardous substances;
- Ordering and dispatching hazardous substances and maintaining a registry;
- Establishing facilities to manage chemicals held on site, and maintaining MSDS;
- Ensuring appropriate storage of explosives;
- Training workers on the use, handling, and storage of hazardous substances; and
- Ensuring that employees are knowledgeable of this plan and follow its directives.

### Fire Protection Agencies

Fire Protection Agencies are responsible for protecting the public from loss of life, property, or resources from fire. These agencies also enforce fire laws.

### Emergency Notification

In the event of a fire, construction personnel on scene will notify the Chief Inspector and the appropriate fire dispatch centers immediately, while ensuring they are safe.

## **Emergency Fire Protocols**

A major fire emergency is one requiring a coordinated response of one or more government levels, outside of pipeline contractors. When response is required, the Chief Inspector or person in charge will communicate with applicable response agencies and Proponents the circumstances of the emergency.

Fire danger rating is used by land management agencies to determine required fire prevention, control, and monitoring efforts. Based on fire danger ratings, certain activities may be restricted at the direction of the jurisdictional agency. Proponents or their contractors will be responsible for coordinating with jurisdictional agencies to ensure that their activities are appropriate for the fire restriction level.

## **Fire Precautions During Construction**

There are areas of public lands that may be restricted from heavy equipment use for fire suppression. Proponents and their contractors will be aware of these locations, and they will seek the necessary approval from jurisdictional agencies prior these activities.

### **Blasting**

Blasting sub-contractors will secure the required permits from applicable regulatory agencies. Following the required waiting periods after each shot, the blast area will be inspected for any indication of fire or fire hazard. Typically, explosives vaporize at the instant of detonation so there is no material left to be a source of concern. However, inspections will be conducted to ensure this is the case.

If blasting is allowed when fire danger is high, a two-person fire watch team will patrol each blast area for a period of one hour after ignition. All applicable equipment will be on-site and precautions will be followed by contractors in accordance with jurisdictional agency requirements.

### **Welding**

During fire season, vegetation must be cleared at a minimum diameter of 30 feet around work areas when welding, cutting, or drilling of metal, unless the vegetation is watered to eliminate fire danger. Each welding crew will be equipped with fire suppression equipment, and all applicable fire restriction measures will be met.

### **Equipment Provisions**

Contractors will develop lists of construction equipment to be used and kept on site. All equipment assigned to construction areas may be inspected by Authorized Officers, or other third party compliance inspectors prior to use. Equipment must be maintained in good operating order.

Fire extinguishers will be used in accordance with OSHA Standard 29 CFR 1910.157. Use of fire extinguishers by employees, residents, and visitors is voluntary, due to the danger to their personal safety. All extinguishers will be professionally inspected and tagged annually, or as required by regulation.

#### Spark Arrestors

Spark arrestors, in good working order, will be required for portable equipment such as chain saws and generators. Light trucks and cars will be required to operate with factory installed mufflers, or equivalent. Vehicles equipped with catalytic converters will be parked on areas cleared of vegetation.

#### Equipment Parking and Storage Areas

Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials. Gas and oil storage areas shall be cleared of extraneous flammable material and signed appropriately. Glass jug or bottles will not be used for gasoline or other flammable materials.

All discarded oil, oil filters, oily rags, or similar waste will be disposed of in approved and marked containers. Containers will be stored in approved locations, hauled away by licensed contractors, and disposed of at approved facilities.

#### Warning Devices

Highway flares, or other devices with open flames will not be allowed in project areas, due to fire danger. Only electric or battery operated warning devices will be used.

#### Warming and Cooking Fires

These activities will not be allowed

#### Smoking

Smoking is allowed only in areas designated by Chief Inspector. Smoking signs that are visible to all employees will be posted at designated areas, and they will be obeyed.

#### Refueling and Refueling Areas

All fuel trucks will be equipped with at least 35-pound ABC fire extinguishers. Fuel storage areas will be cleared of all extraneous flammable materials. Only approved and properly maintained containers will be used to store and transport flammable liquids.

## Burning

Burning slash or other combustible debris will require an approved burn and smoke management plan, and a permit from the applicable regulatory agencies. If a burn is approved, the appropriate agencies will be notified 24 hours prior to its ignition.

## **Fire and EMS Equipment**

Proponents and their contractors will coordinate with applicable regulatory agencies and fire authorities to ensure that they have the appropriate type and quantity of fire control equipment on-site. Based on this coordination, Proponents will design lists of equipment necessary for their project specific needs. The Chief Inspector will maintain required equipment and ensure that it is available in good working order, at all times.

## **Mandatory Training**

### Field Crew Training Requirements

All field crews must complete site specific fire prevention and suppression training, which will include the following:

- Chain of command and fire reporting process;
- Emergency contacts and numbers;
- Basic fire prevention behavior controls;
- Basic training and uses of hand tools, water backpacks, etc.;
- Specific actions and expectations when a fire occurs; and
- Evacuation procedures.

Record of the subject, date, and attendees at all trainings will be maintained.

## **Appendix M** **Blasting Plan**

### **Scope of Blasting Project**

Blasting may be required along the WPCI corridors. Proponents will only blast in areas where rock cannot be economically excavated by conventional means. Blasting could occur at any point along the ROW where impacts to other resources do not preclude the technique.

### **Types of Blasting**

Blasting will be used primarily for trench excavation. However, blasting may also be required during ROW grading operations. The type of explosives used will be determined by geotechnical strength of underlying rock.

### **Location of Shots and Proximity to Existing Facilities**

No blasting will occur within 10 feet, or an agency approved distance, of existing pipelines or other structures. All blasting adjacent to powerline ROWs will be conducted in a manner that will not cause damage to the adjacent property and facilities. Blast areas will be backfilled or covered by blasting mats and/or other material to protect nearby facilities, structures, highways, railroads, or significant natural resources.

### **Flyrock Control Plan**

All shots will be carefully designed by licensed blasters to control flyrock. All hole loading activities will be supervised by licensed blasters. Licensed blasters will also communicate with their drillers to obtain geological information for each shot. Matting and/or padding will be used at the discretion of licensed blasters.

### **Monitoring, Reporting, and Controlling Ground Cracking and Displacement**

It is not anticipated that blasting activities will cause any kind of ground displacement. Following blasts, the area will be examined for signs of ground cracking. Any indication of overbreak will be brought to the attention of the blaster and noted on the blast report. Shot patterns and/or loading will be adjusted to minimize or eliminate overbreak.

### **Explosives Storage and Transportation Procedures**

Explosives storage and transportation will be outlined in Proponents' safety programs, and will follow the requirements of applicable state and federal regulations.

**Environmental Concerns**

All residents within 750 feet of blasts will be notified 24 hours prior to blasting. All necessary measures will be taken to exclude livestock and wildlife from blasting areas. Areas will be checked prior to blasting, and detonation will not be initiated until areas are clear.



## **Appendix N**

### **Fugitive Dust Control Plan**

#### **Introduction**

This fugitive dust control plan is designed to identify potential dust emission sources and provide guidance to construction and field personnel on measures to control the generation of fugitive dust during pipeline construction. EIs will be responsible for identifying all activities generating fugitive dust, implementing feasible control measures, and ensuring compliance with fugitive dust regulations.

#### **Fugitive Dust Sources**

Fugitive dust could be generated directly from pipeline installation and aboveground facility construction. The following construction activities have the potential to generate fugitive dust:

- Vehicle and motorized equipment movement on access roads;
- Vegetation removal;
- Topsoil removal;
- Cutting and filling;
- Trenching;
- Backfilling;
- Blasting;
- Track-out onto roads;
- Bulk material loading, hauling, and unloading;
- Use of material storage piles; and
- Use of parking, staging, and storage areas.

All areas of pipeline construction will be monitored for fugitive dust generation. Control measures will be used to suppress dust in areas of concern. A listing of potential fugitive dust control measures is discussed later in this appendix.

Proponents will identify potential water sources that may be used for the purposes of dust control during construction of their pipelines. Proponents will obtain all necessary water rights to withdraw from these sources.

#### **Applicable Regulatory Requirements**

The Wyoming air quality fugitive dust regulations are found in Chapter 3, Section 2, Subsection (f) of the WDEQ regulations.

### **Fugitive Dust Control Measures**

Generation of fugitive dust during construction will be reduced through the application of appropriate control measures. The following abatement measures will be used where applicable:

- Apply water one or more times per day to affected unpaved roads, unpaved haul/access roads, and staging areas.
- Where appropriate, apply water/magnesium chloride mixture as a dust suppressant. The use of magnesium chloride will be restricted in sensitive vegetation areas, where alternative measures may be used.
- Reduce vehicle speeds on all unpaved roads, and unpaved haul/access roads. Proponents will set speed limits where necessary.
- Clean carry-out areas at paved road access points, a minimum of once every 48 hours.
- Cover all haul truck loads, or maintain at least six inches of freeboard space in each cargo compartment. Ensure that haul truck cargo compartments are constructed and maintained to minimize spillage and loss of materials. Haultruck loads of sand, gravel, solid trash, or other loose material will be covered.
- Apply water to active construction areas as needed. Areas will be pre-watered and soils maintained in a stabilized condition where equipment and vehicles will operate. Water disturbed soils to form a crust.
- For temporary work surfaces, during periods of inactivity, restrict vehicular access and comply with stabilized surface requirements.

Water trucks will be the primary means of dust abatement during construction. Water spray will be controlled so that over spraying and pooling will be minimized.

### **Inspection, Monitoring, and Recordkeeping**

EIs will be primarily responsible for monitoring and enforcing implementation of needed dust control measures. EIs will also be responsible for making sure that dust control is effective and proper documentation is maintained. Construction personnel will be educated on the measures necessary for fugitive dust control.

Field inspections for dust control will occur daily. EIs will be responsible for recording the following information on a daily basis:

- Weather conditions (temperature, wind speed, direction, and precipitation);
- Number of water trucks in use;
- Cases where visible dust was at a concentration that required abatement measures be implemented;
- Condition of project soils (crusted, damp, or unstable);
- Condition of project access roads (crusted, damp, or unstable);
- Presence of track-out and when it was cleaned; and
- Overall status of dust control compliance.

The above information will be incorporated into EIs daily reports.

## **Appendix O**

### **Traffic and Transportation Plan**

#### **Introduction**

The Traffic and Transportation Plan is designed to:

- Describe how Proponents will use, improve, and maintain roads for construction of their pipeline projects; and
- Evaluate potential impacts of construction traffic at contractor yards, storage/staging yards, and compressor stations.

This plan also describes how Proponents will implement equipment access to and from their ROWs, drainage improvement procedures, dust control and maintenance measures, and abandonment and reclamation of roads.

After Proponents complete pipeline construction, roads will be restored to their original status, unless directed otherwise by applicable regulatory agencies and/or landowners.

#### **Pipeline Road Crossings**

Pipeline construction will require crossing paved and unpaved roads with varying levels of traffic. Crossing techniques will be determined by the appropriate regulatory authority. Typically, smaller unpaved roads are crossed by open trenching and restored back to original status. Detours, or other measures, will be implemented to permit traffic flow during construction. Proponents must coordinate road closures and detours with federal, state, and local transportation departments and emergency responders. Major paved highways, interstate highways, railroads, paved roads, and unpaved roads where traffic cannot be interrupted will be crossed by boring under the roadbed. Pipelines will be buried to depths required by applicable road crossing permits and approvals, and will be designed to withstand anticipated loads.

#### **Construction Traffic**

Vehicle movements will generally occur during daylight hours. Primary movements will occur between 5:00 and 6:00 in the morning and evening. Typically, work weeks are five days, but may be extended to six or seven depending on construction scheduling. During boring, directional drilling, and hydrostatic testing, work will be conducted 24-hours a day until the process is complete.

In some instances, access roads will need to be graded, bladed, or widened to allow for use by large trucks. Landowner or land management agency permission will be obtained prior to making any modifications to roads. Individual permission will be required from landowners in project areas.

Watering for dust control may be necessary during grading and hauling operations. On federal lands all road improvements will be in accordance with agency handbooks and manuals. At a

minimum, roads will be constructed using the crown-and-ditch method. After construction, all roads will be repaired and returned to their original status, unless directed otherwise by applicable land management agencies or landowners. It is not anticipated that construction of new roads will be required to access the WPCI Corridors.

Wear and tear may occur to unpaved roads during pipeline construction. Roads that are being used by construction crews will be inspected daily. Vehicular use of unpaved roads may be temporarily halted in the case of excessively wet soil conditions. Proponents will make appropriate repairs to roads during construction.

Wear and tear impacts to paved surfaces will be minimal. Proponents will ensure that roads are inspected and maintained in safe condition throughout construction. To limit wear and tear, Proponents will adhere to all state and county vehicle weight limit regulations. Additionally, all vehicle length, width, and height regulation will be adhered to, or special use permits will be obtained.

All vehicles associated with pipeline construction will be parked within their construction ROW boundary, ETWS, or within the boundaries of staging yards, storage yards, or other approved project areas. Personnel will not park vehicles outside of designated areas. Also, personnel will not park within 500 feet of a wetland or waterbody, unless EIS determines there is no reasonable alternative. In that instance, spill prevention measures will be on-site.

Proponents will place signs at appropriate locations to direct traffic. All signs on federal lands will require approval by the applicable agency.

#### Dust Control

Fugitive dust can be generated from vehicle and equipment movement on access roads. To minimize the generation of fugitive dust, Proponents will implement the measures described in Appendix N of this POD.

## **APPENDIX E**

### **Resource-Specific Stipulations, Project Design Features, and Best Management Practices from Existing Resource Management Plans**



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WYOMING PIPELINE CORRIDOR INITIATIVE RESOURCE MANAGEMENT PLAN STIPULATIONS, REQUIRED DESIGN FEATURES, BEST MANAGEMENT PRACTICES, AND OTHER GUIDELINES

This appendix includes stipulations, required design features, best management practices (BMPs), and other guidelines applicable to the Wyoming Pipeline Corridor Initiative (WPCI). These various measures would apply to potential projects within the Bureau of Land Management (BLM) field office planning areas overlapped by the WPCI. These measures were pulled directly from the applicable BLM field offices’ resource management plans (RMPs). When the field offices’ RMPs did not include specific lists of stipulations as appendices to the RMPs, the reader is referred to applicable stipulations that may be found in the RMPs’ specific resource sections. This appendix is divided into sections that represent each BLM field office, and each has its own literature cited section.

BUFFALO FIELD OFFICE

Stipulations (BLM 2015a)

Management Action	Stipulation Type	Protected Resource	Stipulation Description
Soil-1006	NSO	Soil: slopes greater than 50%	<p>No surface occupancy (NSO) or use is allowed on slopes greater than 50%.</p> <p>On the lands described below: NSO (1) as mapped by the USGS 1:24,000 scale topographic maps, USGS Digital Elevation Models, and/or as determined by a BLM evaluation of the area.</p> <p>For the purpose of: NSO (2) preventing mass slope failure and accelerated erosion.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action will not result in a mass slope failure or accelerated erosion, or if the action is located entirely within an existing surface disturbance.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation of the area. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area does not include slopes greater than 50%. This determination shall be based upon USGS mapping and/or BLM evaluation of the area</p>
WL-4015	NSO	Wildlife: Big game habitat management areas	<p>NSO or use is allowed within WGFD Big Game Habitat Management Areas (Ed O. Taylor, Kerns, Bud Love, and Amsden Creek).</p> <p>On the lands described below: NSO (1) as mapped by the WGFD.</p> <p>For the purpose of: NSO (2) ensuring the function and suitability of WGFD Big Game Habitat Management Areas.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not impair the function or suitability of WGFD Big Game Habitat Management Areas.</p> <p><b>Modification:</b> The BLM-authorized officer may modify the area subject to the stipulation based upon a WGFD and BLM evaluation, in coordination with the WGFD. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within a WGFD big game habitat management area. This determination shall be based upon a BLM evaluation, in coordination with the WGFD.</p>
WL-4017	TLS	Wildlife: big game crucial winter range	<p>Surface-disturbing and disruptive activities are prohibited or restricted from (1) November 15 to April 30 within big-game crucial winter range, or from May 1 to June 15 within elk calving areas (WGFD 2009).</p> <p>On the lands described below:</p> <p>TLS (2) as mapped by the WGFD and evaluated by the BLM. For the purpose of:</p> <p>TLS (3) ensuring the function and suitability of crucial big game winter ranges.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the crucial habitat is not occupied during the period of concern, subject to confirmation by the WGFD and BLM; or it is determined that the action will not impair the function or suitability of the crucial habitat.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation, in coordination with the WGFD, to determine that the big game crucial winter range is not present or boundaries of the subject winter range areas have been refined. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within big game crucial winter range or an elk calving area. This determination shall be based upon a BLM evaluation of the area, in coordination with the WGFD.</p>
WL-4017	TLS	Wildlife: elk calving areas	<p>Surface-disturbing and disruptive activities are prohibited or restricted from (1) May 1 to June 15 within elk calving areas (WGFD 2009).</p> <p>On the lands described below:</p> <p>TLS (2) as mapped by the WGFD and evaluated by the BLM. For the purpose of:</p> <p>TLS (3) ensuring the function and suitability of elk calving areas.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the crucial elk calving habitat is not occupied during the period of concern, subject to confirmation by the WGFD and BLM; or it is determined that the action will not impair the function or suitability of the crucial habitat.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation, in coordination with the WGFD, to determine that the elk calving habitat is not present or boundaries of the subject calving areas have been refined. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within an elk calving area. This determination shall be based upon a BLM evaluation of the area, in coordination with the WGFD.</p>

Management Action	Stipulation Type	Protected Resource	Stipulation Description
WL-4018 WL-4021	CSU	Wildlife: crucial elk ranges	<p>Surface disturbance is prohibited or restricted within WGFD designated elk crucial winter range and calving areas.</p> <p>CSU (1): (a) Fluid mineral production and byproducts shall be piped out of and (b) permanent above ground facilities will be located outside of WGFD designated elk crucial winter range and calving areas unless a mitigation plan (Plan) submitted by the applicant and approved by the BLM as a component of the APD (BLM Form 3160-3) or Sundry Notice (BLM Form 3160-5) – Surface Use Plan of Operations. The operator shall not initiate surface-disturbing activities unless the BLM authorized officer has approved the Plan (with conditions, as appropriate). (c) The Plan must demonstrate to the authorized officer's satisfaction that the function and suitability of elk crucial winter range and elk calving areas will not be impaired.</p> <p>On the lands described below:</p> <p>CSU (2) as mapped by the WGFD. For the purpose of:</p> <p>CSU (3) ensuring the function and suitability of elk crucial winter range and elk calving areas.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not impair the function or suitability of the crucial habitat.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation, in coordination with the WGFD. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within elk crucial winter range or a calving area. This determination shall be based upon a BLM evaluation, in coordination with the WGFD.</p>
WL-4026	TLS	Wildlife: sharp-tailed grouse nesting	<p>Surface-disturbing and disruptive activities are prohibited or restricted from April 1 to July 15 (WGFD 2009) within 2 miles of the perimeter of occupied sharp-tailed grouse leks.</p> <p>On the lands described below:</p> <p>TLS (2) as mapped by the WGFD and evaluated by the BLM. For the purpose of:</p> <p>TLS (3) ensuring the function and suitability of sharp-tailed grouse nesting habitat.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable sharp-tailed grouse habitat may be exempted from this timing limitation. The determination may include coordination with the WGFD, so that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The BLM authorized officer may modify the size and shape of the TLS area or the TLS criteria if it is determined that the actual habitat suitability for seasonal sharp-tailed grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the sharp-tailed grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined, in coordination with the WGFD, that the described lands are incapable of serving the long-term requirements of sharp-tailed grouse breeding, nesting, and early brood-rearing habitat.</p>
WL-4030	TLS	Wildlife: non-special status species raptor nesting	<p>Surface-disturbing and disruptive activities are prohibited or restricted within (1) the USFWS Wyoming Ecological Service's recommended spatial buffers and dates of active non-special status species raptor nests. (Appendix Q (p. 633) or <a href="http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html">http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html</a>).</p> <p>On the lands described below:</p> <p>TLS (2) as mapped on the BFO GIS database or determined by, BLM from field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>TLS (3) ensuring raptor nest productivity.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action will not disturb (likely to cause physical injury; a decrease in productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior) nesting raptors. The determination may include consultation with the WGFD or USFWS.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation. Spatial buffers may be modified based on auditory and visual impacts, as well as the topography and other ecological characteristics surrounding the nest site. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. The confirmation may include consultation with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area does not include spatial buffers for raptor nests. This determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM.</p>
SS Plant-4008	NSO	SS Plants: populations	<p>NSO or use allowed within special status species plant populations.</p> <p>On the lands described below:</p> <p>NSO (1) as mapped on the BFO GIS database, or determined by BLM from field evaluation, in coordination with the Wyoming Natural Diversity Database and/or USFWS.</p> <p>For the purpose of:</p> <p>NSO (2) protecting special status species plant populations.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not adversely affect special status species plant populations.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation, in coordination with the USFWS. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area does not contain a special status species plant population. This determination shall be based upon a BLM evaluation, in coordination with the USFWS.</p>

Management Action	Stipulation Type	Protected Resource	Stipulation Description
SS Fish-4008	NSO	SS Fish: occupied habitat	<p>NSO or use is allowed within 0.25 mile of any waters containing special status fish species.</p> <p>On the lands described below:</p> <p>NSO (1) as mapped on the BFO GIS database or from field evaluation, in consultation with the WGFD.</p> <p>For the purpose of:</p> <p>NSO (2) protecting special status fish populations and habitat.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in a local decline in special status species fish abundance or range.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based upon a BLM evaluation, in consultation with the WGFD. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within 0.25 mile of any waters containing special status fish species. This determination shall be based upon WGFD mapping and field evaluation of the area.</p>
SS WL-4024	NSO	SS Wildlife: Greater Sage-Grouse Core Population Areas and Connectivity Corridors	<p>Occupied Greater Sage-Grouse leks inside designated Priority Habitat Management Area (PHMA) (Core and Connectivity). This area encompasses occupied Greater Sage-Grouse leks inside designated PHMA (Core and Connectivity). NSO or use is allowed within a six-tenths (0.6) mile radius of the perimeter of occupied Greater Sage-Grouse leks inside designated Core Population Areas and Connectivity Corridors, as mapped on the BFO GIS database.</p> <p><b>Purpose:</b> To protect occupied Greater Sage-Grouse leks and associated seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss and Greater Sage-Grouse populations from disturbance inside designated Core Population Areas and Connectivity Corridors.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
SS WL-4024	CSU	SS Wildlife: Greater Sage-Grouse Core Population Areas and Connectivity Corridors	<p>Greater Sage-Grouse Core Population Areas and Connectivity Corridors (Priority Habitat). This area encompasses BLM-administered surface within Greater Sage-Grouse Core Population Areas and Connectivity Corridors (Priority Habitat). All applicable surface disturbances (existing or future, and not limited to fluid mineral disturbances) must be restored, as described in the BFO RMP, to the approval of the BLM authorized officer.</p> <p><b>Purpose:</b> To restore functional Greater Sage-Grouse habitat to support core Greater Sage-Grouse populations.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the CSU area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the needs of the Greater Sage-Grouse. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
SS WL-4024	TLS	SS Wildlife: Greater Sage-Grouse winter concentration areas that support nesting in Core Population Areas (Priority Habitat Area and general habitat)	<p>Greater Sage-Grouse winter concentration areas. This area encompasses designated Greater Sage-Grouse winter concentration areas. No surface use is allowed during December 1 – March 14, within mapped Greater Sage-Grouse Winter concentration areas in designated PHMA (Core and Connectivity), and outside designated PHMA (Core and Connectivity) when supporting wintering Greater Sage-Grouse that attend leks within designated PHMA (Core only).</p> <p><b>Purpose:</b> To seasonally protect Greater Sage-Grouse winter concentration areas from disruptive activities.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function and suitability of the winter concentration area, or it is determined that the winter concentration area is not occupied by concentrated populations of Greater Sage-Grouse during the period of concern. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Management Action	Stipulation Type	Protected Resource	Stipulation Description
SS WL-4024	TLS	SS Wildlife: Greater Sage-Grouse Core Population Area nesting habitat	<p>Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside designated PHMA (Core only). This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside designated PHMA (Core only). No surface use is allowed during March 15 – June 30, inside designated PHMA (Core only).</p> <p>Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Purpose:</b> To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats from disruptive activities inside designated Core Population Areas.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
SS WL-4024	TLS	SS Wildlife: Greater Sage-Grouse Connectivity Corridor nesting habitat	<p>Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat within PHMA (Connectivity only). This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat within PHMA (Connectivity only). No surface use is allowed during March 15 – June 30, inside PHMA (Connectivity only), within four miles of an occupied lek (independent of habitat suitability).</p> <p><b>Purpose:</b> To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside Connectivity Corridors from disruptive activities, within four miles of an occupied lek.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p>Waiver: This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
SS WL-4024	NSO	SS Wildlife: general Greater Sage-Grouse breeding habitat	<p>Occupied Greater Sage-Grouse leks outside designated PHMA (Core and Connectivity). This area encompasses occupied Greater Sage-Grouse leks outside designated Core Population Areas and Connectivity Corridors. NSO or use is allowed within a one-quarter (0.25) mile radius of the perimeter of occupied Greater Sage-Grouse leks outside designated PHMA (Core and Connectivity), as mapped on the BFO GIS database.</p> <p><b>Purpose:</b> To protect occupied Greater Sage-Grouse leks and associated seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss and Greater Sage-Grouse populations from disturbance outside designated Core Population Areas and Connectivity Corridors.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
SS WL-4024	TLS	SS Wildlife: general Greater Sage-Grouse nesting and early brood-rearing habitat	<p>Greater Sage-Grouse breeding, nesting and early brood-rearing habitat outside designated PHMA (Core and Connectivity). This area encompasses Greater Sage-Grouse breeding, nesting and early brood-rearing habitat outside designated PHMA (Core and Connectivity). No surface use is allowed during March 15 – June 30, in Greater Sage-Grouse breeding, nesting and early brood-rearing habitats outside designated PHMA (Core and Connectivity), within two miles of an occupied lek.</p> <p>Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Purpose:</b> To seasonally protect Greater Sage-Grouse nesting and early brood-rearing habitats from disruptive activities outside designated Core Population Areas and Connectivity Corridors, within two miles of an occupied lek.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Management Action	Stipulation Type	Protected Resource	Stipulation Description
SS WL-4026	NSO	SS Wildlife: bald eagle nesting habitat	<p>NSO or use allowed within 0.5 mile of bald eagle nests.</p> <p>On the lands described below:</p> <p>NSO (1) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>NSO (2) ensuring productivity of bald eagles.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not disturb (as defined by the Bald and Golden Eagle Protection Act) nesting bald eagles. Bald eagles will not be agitated or bothered to a degree that causes or is likely to cause:</p> <ul style="list-style-type: none"><li>Physical injury, or</li><li>A decrease in productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or</li><li>Nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.</li></ul> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within 0.5 mile of a bald eagle nest. Confirmation may include coordination with the WGFD or USFWS.</p>
SS WL-4026	TLS	SS Wildlife: bald eagle nesting	<p>Surface-disturbing and disruptive activities are prohibited or restricted from February 1 to August 15 within 1.0 mile of active bald eagle nests.</p> <p>On the lands described below:</p> <p>TLS (2) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>TLS (3) ensuring productivity of bald eagles.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if a staff review determines that the action will not disturb nesting bald eagles. This determination shall be based upon field study by a qualified representative, subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within 1.0 mile of a bald eagle nest. Confirmation may include coordination with the WGFD or USFWS.</p>
SS WL-4028	NSO	SS Wildlife: bald and golden eagle winter roosts	<p>NSO or use is allowed within 0.5 mile from the edge of consistently used bald or golden eagle winter roosts and the following consistently used riparian corridors: Clear Creek, Crazy Woman Creek, Piney Creek, Powder River, and Tongue River.</p> <p>On the lands described below:</p> <p>NSO (2) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>NSO (3) protecting wintering bald and golden eagles.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not harm roosting eagles.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within 0.5 mile of a consistently used eagle roost or riparian corridor.</p>
SS WL-4028	TLS	SS Wildlife: bald and golden eagle winter roosting habitat	<p>Surface-disturbing and disruptive activities are prohibited or restricted from (1) November 1 to April 1 within 1.0 mile from the edge of consistently used eagle winter roosts and the following consistently used riparian corridors: Clear Creek, Crazy Woman Creek, Piney Creek, Powder River, and Tongue River.</p> <p>On the lands described below:</p> <p>TLS (2) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>TLS (3) protecting roosting eagles.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designated so that the action will not harm roosting eagles.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within 1.0 mile of a consistently used bald or golden eagle winter roost or riparian corridor.</p>

Management Action	Stipulation Type	Protected Resource	Stipulation Description
SS WL-4031	TLS	SS Wildlife: special status raptor nesting	<p>Surface-disturbing and disruptive activities are prohibited or restricted (1) within USFWS recommended spatial buffers and dates (Appendix Q (p. 633) or <a href="http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html">http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html</a>) of active raptor nests of special status species.</p> <p>On the lands described below:</p> <p>TLS (2) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>TLS (3) ensuring productivity of nesting special status raptors.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action will not disturb nesting special status raptors.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within the USFWS recommended spatial buffer of a sensitive species raptor nest. This determination shall be based upon field studies of the area by a qualified representative and reviewed by BLM. The determination may include coordination with the WGFD or USFWS.</p>
SS WL-4032	NSO	SS Wildlife: special status raptor nests	<p>NSO or use is allowed within a species-specific spatial buffer of special status species raptor nests using USFWS Wyoming Ecological Service's recommendations (Appendix Q (p. 633) or <a href="http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html">http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html</a>).</p> <p>On the lands described below:</p> <p>NSO (1) as mapped on the BFO GIS database or determined by field evaluation, in coordination with the WGFD and/or USFWS.</p> <p>For the purpose of:</p> <p>NSO (2) protecting nest sites of special status raptors.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, or sited in a location, or a site-specific evaluation determines that nesting special status raptors will not be disturbed (agitated or bothered to a degree that causes or is likely to cause: physical injury; or a decrease in productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.) The determination may include coordination with the WGFD or USFWS.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation including topography, visibility, disturbance and human activity levels, and other factors. The stipulation may be modified based on monitoring results. The determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM. Confirmation may include coordination with the WGFD or USFWS.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area is not within the USFWS recommended spatial buffer of a sensitive species raptor nest. This determination shall be based upon field studies of the area by a qualified representative and reviewed by BLM. The determination may include coordination with the WGFD or USFWS.</p>
Cultural-5006	NSO	Cultural: historic properties	<p>NSO or use (NSO) (1) is allowed within the following historic properties: Pumpkin Buttes, Cantonment Reno, Dull Knife Battle, Crazy Woman Battle, contributing and unevaluated segments of the Bozeman Trail, all rock art sites, all rock shelter sites, all Native American burials.</p> <p>On the lands described below:</p> <p>NSO (2) as mapped on the BFO GIS database.</p> <p>For the purpose of:</p> <p>NSO (3) protecting historic properties.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so it will not be placed within the actual boundaries of or will not disturb the site within the defined NSO area.</p> <p><b>Modification:</b> The BLM authorized officer may modify the stipulation in consultation with State Historic Preservation Office (SHPO), applicable tribes, and other interested parties, if the site is no longer considered eligible under National Register of Historic Places (NRHP) or if, in consultation with SHPO, applicable Indian tribes, and other interested parties it is determined that the identified property's sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined in consultation with SHPO, applicable Indian tribes, and other interested parties, that the identified site is no longer considered sacred, spiritual, and/or traditional.</p>
Cultural-5011	NSO	Cultural: traditional cultural properties	<p>NSO or use is allowed on lands containing traditional cultural properties.</p> <p>NSO (1) On the lands described below:</p> <p>NSO (2) as mapped on the BFO GIS database.</p> <p>For the purpose of:</p> <p>NSO (3) protecting traditional cultural properties.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so it will not be placed within the actual boundaries of or will not disturb the site within the defined NSO area.</p> <p><b>Modification:</b> The BLM authorized officer if, in consultation with SHPO, applicable tribes, and other interested parties, the site is no longer considered eligible under NRHP or if, in consultation with SHPO, applicable Indian tribes, and other interested parties it is determined that the identified property's sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined, in consultation with SHPO, applicable Indian tribes, and other interested parties, that the identified site is no longer considered sacred, spiritual, and/or traditional.</p>



Management Action	Stipulation Type	Protected Resource	Stipulation Description
Cultural-5011	CSU	Cultural: traditional cultural property setting	<p>Surface disturbance is restricted within three miles of traditional cultural properties.</p> <p>CSU (1) (a) Prior to surface disturbance within three miles of traditional cultural properties a mitigation plan (Plan) must be submitted by the applicant. The Plan must be approved or approved with conditions by the BLM authorized officer prior to surface-disturbing activities after consultation with SHPO, applicable Indian tribes, and other interested parties. (b) The Plan must demonstrate there will be no adverse effects to NRHP eligible or listed historic properties (i.e., proposed infrastructure is either not visible or will result in a weak contrast rating)</p> <p>On the lands described below:</p> <p>CSU (2) as mapped on the BFO GIS database.</p> <p>For the purpose of:</p> <p>CSU (3) ensuring the setting of traditional cultural properties.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception, after consultation SHPO, applicable Indian tribes, and other interested parties, it is determined that the proposed action will result in a no adverse effect determination to the sacred, spiritual, and/or traditional nature of the property(s).</p> <p><b>Modification:</b> The BLM authorized officer may modify the stipulation, if in consultation with SHPO, applicable Indian tribes, and other interested parties, the site is no longer considered eligible under NRHP or if, in consultation with Indian tribes and/or SHPO, it is determined that the identified property's sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined, in consultation with SHPO, applicable Indian tribes, and other interested parties, that the identified site is no longer considered sacred, spiritual, and/or traditional.</p>
Paleo-5007	NSO	Paleontology: high quality or important resources	<p>NSO or use is allowed on lands containing paleontological resources of high quality or importance.</p> <p>On the lands described below:</p> <p>NSO (1) as mapped on the BFO GIS database.</p> <p>For the purpose of:</p> <p>NSO (2) protecting paleontological resources of high quality or importance.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will protect paleontological resources of high quality or importance.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation. The stipulation may be modified based on monitoring results.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area does not contain paleontological resources of high quality or importance.</p>
ACEC-7003	NSO	ACEC: Pumpkin Buttes	<p>NSO or use is allowed within the Pumpkin Buttes Area of Critical Environmental Concern.</p> <p>On the lands described below:</p> <p>NSO (2) as mapped or determined by BLM.</p> <p>For the purpose of:</p> <p>NSO (3) protecting the relevant and important values.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in a failure to protect the relevant and important values. The Plan may be subject to consultation with Wyoming SHPO, applicable tribes, and other interested parties.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation based on local evaluation. The stipulation may be modified based on monitoring results, or if a portion of the lease is no longer located in the Pumpkin Buttes ACEC.</p> <p><b>Waiver:</b> The BLM authorized officer may waive this stipulation if it is determined that the entire lease area does not contain relevant and important Area of Critical Environmental Concern (ACEC) values, subject to consultation with Wyoming SHPO, applicable tribes, and other interested parties.</p>

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# Required Design Features (BLM 2015b)

## ***Fluid Minerals***

- Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.
- Locate man camps outside priority Greater Sage-Grouse habitats.
- Roads (Priority Habitat Area)
  - Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
  - Locate roads to avoid important areas and habitats.
  - Coordinate road construction and use among ROW holders.
  - Construct road crossing at right angles to ephemeral drainages and stream crossings.
  - Establish slow speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
  - Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
  - Do not issue ROWs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
  - Restrict vehicle traffic to only authorized users on newly constructed routes (use signing, gates, etc.).
  - Apply dust abatement practices on roads and pads.
  - Close and rehabilitate duplicate roads.
- Roads (General Habitat)
  - Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
  - Do not issue ROWs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
  - Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
  - Coordinate road construction and use among ROW holders.
  - Construct road crossing at right angles to ephemeral drainages and stream crossings.
  - Apply dust abatement practices on roads and pads.
  - Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.
- Reclamation
  - Include objectives for ensuring habitat restoration to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.
  - Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
  - Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

- Implement irrigation during interim or final reclamation for sites where establishment of seedlings has been shown or is expected to be difficult due to dry conditions.
- Use mulching, soil amendments, and/or erosion blankets to expedite reclamation and to protect soils

## ***Rights-of-Ways and Corridors***

- Where new ROWs are necessary, co-locate new ROWs within existing ROWs where possible.

## **Best Management Practices**

No BMPs listed in RMP.

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 3-29 of the Buffalo FO RMP (BLM 2015c).

Rights-of-Way Exclusion Areas:

- Burnt Hollow Special Recreation Management Area (SRMA)
- Dry Creek/Petrified Tree SRMA
- Hole-In-The-Wall SRMA
- Middle Fork Powder River SRMA
- Mosier Gulch SRMA
- Welch Ranch SRMA
- Weston Hills SRMA
- Cabin Canyon Extensive Recreation Management Area (ERMA)
- North Fork Wilderness Study Area (WSA) and lands with wilderness characteristics (LWC) unit
- Gardner Mountain WSA
- Fortification Creek WSA
- Pumpkin Buttes Area of Critical Environmental Concern (ACEC)
- Welch Ranch ACEC
- Other areas identified on Map 3-29

Rights-of-Way Avoidance Areas:

- Greater sage-grouse priority habitat management areas (PHMA)
- Other areas identified on Map 3-29

## Literature Cited

- Bureau of Land Management (BLM). 2015a. *Appendix B. Fluid Mineral Lease Notices; Lease Stipulations; and the Process for Exceptions, Modifications, and Waivers*. In *Bureau of Land Management Buffalo Field Office Approved Resource Management Plan*. Buffalo, Wyoming: BLM Buffalo Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/36597/20009049/250010641/BFO\\_ARMP\\_2015\\_0914\\_full\\_print.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/36597/20009049/250010641/BFO_ARMP_2015_0914_full_print.pdf). Accessed March 9, 2020.
- . 2015b. *Appendix C. Best Management Practices and Required Design Features*. In *Bureau of Land Management Buffalo Field Office Approved Resource Management Plan*. Buffalo, Wyoming: BLM Buffalo Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/36597/20009049/250010641/BFO\\_ARMP\\_2015\\_0914\\_full\\_print.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/36597/20009049/250010641/BFO_ARMP_2015_0914_full_print.pdf). Accessed March 9, 2020.
- . 2015c. Map 3-29 Land Resources Rights-of-Way Avoidance and Exclusion. In *Bureau of Land Management Buffalo Field Office Approved Resource Management Plan*. Buffalo, Wyoming: BLM Buffalo Field Office. Available at [https://eplanning.blm.gov/public\\_projects/lup/36597/63105/68347/BFO\\_ARMP\\_CHAP3\\_MAPS\\_25-36.pdf](https://eplanning.blm.gov/public_projects/lup/36597/63105/68347/BFO_ARMP_CHAP3_MAPS_25-36.pdf). Accessed July 15, 2020.

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# **CASPER RESOURCE MANAGEMENT PLAN**

## **Stipulations**

Refer to individual resource sections of the Record of Decision and Approved Casper Resource Management Plan for any applicable stipulations (BLM 2007a).

## **Required Design Features**

No required design features listed in RMP.

## **Best Management Practices**

No BMPs listed in the RMP.

## **Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities (BLM 2007a)**

### ***Surface Disturbance Mitigation Guideline***

Surface disturbance will be prohibited in any of the following areas or conditions. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis, by the authorized officer.

- Slopes in excess of 25 percent.
- Within important scenic areas (Class I and II Visual Resource Management Areas).
- Within 500 feet of surface water and/or riparian areas.
- Within either one-quarter mile or the visual horizon (whichever is closer) of historic trails.
- Construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.

### ***Wildlife Mitigation Guideline***

- To protect important big game winter habitat, activities or surface use will not be allowed from November 15 to April 30 within certain areas encompassed by the authorization. The same criteria apply to defined big game birthing areas from May 1 to June 30.
- Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 within certain areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 to April 30. Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- No activities or surface use will be allowed on that portion of the authorization area identified within (legal description) for the purpose of protecting (e.g., sage/sharp-tailed grouse breeding grounds, and/or other species/activities) habitat. Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- Portions of the authorized use area legally described as (legal description), are known or suspected to be essential habitat for (name) which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and U.S. Fish and Wildlife Service guidelines to verify the presence or absence of this species. In the event that (name) occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

### ***Cultural Resource Mitigation Guideline***

When a proposed discretionary land use has potential for affecting the characteristics which qualify a cultural property for the National Register of Historic Places (NRHP), mitigation will be considered. In accordance with Section 106 of the Historic Preservation Act, procedures specified in 36 Code of Federal Regulations (CFR) Part 800 will be used in consultation with the Wyoming State Historic Preservation Officer and the Advisory Council on Historic Preservation in arriving at determinations regarding the need and type of mitigation to be required.

### ***Special Resource Mitigation Guideline***

To protect (resource value), activities or surface use will not be allowed (i.e., within a specific distance of the resource value or between date to date) in (legal description).

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

Example Resource Categories (Select or identify category and specific resource value):

- Recreation areas.
- Special natural history or paleontological features.
- Special Management Areas.
- Sections of major rivers.
- Prior existing rights-of-way.
- Occupied dwellings.
- Other (specify).



## **No Surface Occupancy Guideline**

No Surface Occupancy (NSO) will be allowed on the following described lands (legal description) because of (resource value).

Example Resource Categories (Select or identify category and specific resource value):

- Recreation Areas
- Major reservoirs/dams
- Special Management Areas (e.g., known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation)
- Other (specify)

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 12 of the Casper FO RMP (BLM 2007b). Rights-of-way exclusion areas comprise 442,040 acres of public land in the Casper FO. Rights-of-way avoidance areas comprise 539,799 acres of public land in the Casper FO.

## **Literature Cited**

- Bureau of Land Management (BLM). 2007a. *Appendix I. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities*. In *Record of Decision and Approved Casper Resource Management Plan*. Casper, Wyoming: BLM Casper Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63199/77980/87303/06\\_appx\\_i-MitigationGuidelines.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63199/77980/87303/06_appx_i-MitigationGuidelines.pdf). Accessed March 23, 2020.
- . 2007b. *Map 12 – Land Resources Rights-of-Way and Corridors Including Renewable Wind Energy*. In *Record of Decision and Approved Casper Resource Management Plan*. Casper, Wyoming: BLM Casper Field Office. Available at [https://eplanning.blm.gov/public\\_projects/lup/63199/77982/87336/map12-ROWSandCorridors.pdf](https://eplanning.blm.gov/public_projects/lup/63199/77982/87336/map12-ROWSandCorridors.pdf). Accessed July 15, 2020.

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CODY RESOURCE MANAGEMENT PLAN

Stipulations (BLM 2015a)

Record Number	Stipulation Type	Protected Resource	Stipulation Description
2040	NSO	Big Horn Front MLP analysis area: Wildlife migration corridors	<p>No surface occupancy is permitted (1) within ½ mile of big game migration corridors within the Big Horn Front MLP analysis area; (2) as mapped by the WGFD.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of big game. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if an environmental record of review finds that a portion of the area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of big game migration. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, if it is determined that the entire leasehold is greater than ½ mile from big game migration corridors within the Big Horn Front MLP Analysis Area or if there are no big game migration corridors within the lease boundary. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p>
2041	TLS	Big Horn Front MLP analysis area – Big game winter range	<p>Avoid surface-disturbing and disruptive activities within big game winter range (1) from November 15 to April 30; (2) as mapped by the WGFD; (3) protecting big game winter range.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the big game winter range areas are not occupied during the period of concern, subject to confirmation by the BLM, in coordination with WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon BLM evaluation in coordination with WGFD to determine that the big game winter range is not present or boundaries of the subject winter range areas have been refined. The BLM authorized officer may modify the area subject to the stipulations based upon BLM evaluation in coordination with WGFD to determine that big game winter range is not present or boundaries of the subject winter range areas have been refined.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is no longer within big game winter range, in coordination with WGFD</p>
4036	NSO	Water, Riparian/Wetland: Within 500 feet perennial surface water, and riparian/wetland areas	<p>No surface occupancy (1) within 500 feet of perennial surface water, riparian/wetland areas, and playas; (2) as mapped on the Cody Field Office GIS database.</p> <p><b>Exception:</b> The authorized officer may grant an exception if, based upon an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian/wetland areas and/or playas.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if, based upon an evaluation by the BLM, it is determined that portion of the lease is not located within 500 feet of perennial surface waters, riparian/wetland areas and/or playas or if impacts can be adequately mitigated.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian/wetland areas and/or playas. This determination will be based upon an evaluation by the BLM.</p>
4061	NSO	Fish and Wildlife: Bighorn River HMP/RAMP tracts and the BLM-administered tracts in Yellowtail WHMA	<p>No surface occupancy is permitted (1) within Bighorn River HMP/RAMP tracts and the BLM-administered tracts in Yellowtail WHMA (2) protecting fish and wildlife resources.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if, in coordination with the WGFD, it is determined that the action as proposed or conditioned would meet the HMP/RAMP and/or WHMA management objectives.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation or surface occupancy criteria if, in coordination with the WGFD, it is determined that a portion of the lease is not located within the Bighorn River HMP/RAMP tracts or BLM-administered tracts in Yellowtail WHMA.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if, in coordination with the WGFD, it is determined that the entire lease area is no longer located within the Bighorn River HMP/RAMP tracts or BLM-administered tracts in Yellowtail WHMA.</p>
4075	TLS	Fish and Wildlife: Big game crucial winter range habitat outside of Oil and Gas Management Areas	<p>No surface use is allowed during the following time periods.</p> <p>Timing Limitation Stipulation (TLS) (1) November 15 to April 30; (2) as mapped by WGFD; (3) protecting big game on crucial winter range.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the crucial winter range areas are not occupied during the period of concern. This determination shall be based upon a BLM evaluation of the area in coordination with WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon a BLM evaluation of the area, in coordination with WGFD, to determine any change in boundary/status of big game crucial winter range(s).</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is no longer supports crucial winter range. This determination shall be based upon a BLM evaluation of the area in coordination with WGFD.</p>
4076	TLS	Fish and Wildlife: Federal mineral estate within the Absaroka Front Management Area	<p>No surface use is allowed during the following time periods.</p> <p>Timing Limitation Stipulation (TLS) (1) November 15 to April 30; (2) as mapped on the Cody Field Office GIS database; (3) protecting big game on crucial winter range. (1) within overlapping migration corridors and big game crucial winter range in the Absaroka Front Management Area (2) as mapped on the Cody Field Office GIS database.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the crucial winter range areas or migration corridors are not occupied during the period of concern, subject to confirmation by the BLM, in coordination with WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon BLM evaluation in coordination with WGFD to determine any change in boundary/status of big game crucial winter range(s) or migration corridors or portions that are not within the Absaroka Front Management Area.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is no longer managed as crucial winter range or does not contain migration corridors, in coordination with WGFD, or is no longer within the Absaroka Front Management Area.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
4107	NSO	Special Status Species: Within 0.6-mile radius of the perimeter greater sage-grouse leks within PHMAs	<p>No surface occupancy is allowed within an 0.6-mile radius of the perimeter of occupied greater sage-grouse leks inside designated PHMA (Core only) (1) as mapped by the WGFD; (2) to seasonally protect Greater Sage-Grouse breeding, nesting and early brood-rearing habitats from disruptive activities.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4107	NSO	Special Status Species: Within ¼-mile radius of the perimeter of greater sage-grouse leks outside of PHMAs	<p>No surface-disturbing activities or surface occupancy is allowed within an 0.25-mile radius of Description the perimeter of occupied greater sage-grouse leks outside PHMA (Core only) (1) as mapped by the WGFD; (2) to protect occupied greater sage-grouse leks and associated seasonal habitat, life-history, or behavioral needs of greater sage-grouse in proximity to leks from habitat fragmentation and loss, and protect greater sage-grouse populations from disturbance outside designated PHMA (Core only).</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4108	TLS	Special Status Species: Greater sage-grouse nesting and early brood-rearing habitats inside PHMAs	<p>Surface-disturbing and disruptive activities are prohibited (1) March 1 – June 30; (2) as mapped by the WGFD; (3) to seasonally protect Greater Sage-Grouse breeding, nesting and early brood-rearing habitats from disruptive activities inside PHMA (Core only). Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> No Waiver.</p>
4108	TLS	Special Status Species: Greater Sage-Grouse nesting and early brood-rearing habitat outside PHMAs Decision	<p>Surface-disturbing and disruptive activities are prohibited within 2 miles of occupied Greater Sage Grouse lek outside of designated PHMA (Core only) (1) from March 1 to June 30; (2) as mapped by the WGFD; (3) to seasonally protect Greater Sage-Grouse breeding, nesting and early brood-rearing habitats from disruptive activities.</p> <p>Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4109	TLS	Special Status Species: Greater Sage-Grouse winter habitats/concentration areas	<p>Surface-disturbing and disruptive activities are restricted or prohibited (1) December 1 – March 14; (2) as mapped by the WGFD (3) to seasonally protect Greater Sage-Grouse winter concentration areas.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function and suitability of the winter concentration area, or it is determined that the winter concentration area is not occupied by concentrated populations of Greater Sage-Grouse during the period of concern, or it is determined the project area is within unsuitable habitat. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse.</p> <p><b>Waiver:</b> No Waiver</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
4119	TLS	Special Status Species: Nesting Raptors	<p>No surface use is allowed within ¼ mile of active raptor nests and ½ mile of active golden eagle, bald eagle, northern goshawk, merlin, and prairie and peregrine falcon nests and 1 mile of active ferruginous hawk nests during specific species nesting period or until young birds have fledged. This stipulation does not apply to operation and maintenance of production facilities. Timing Limitation Stipulation (1) during the following time periods:</p> <ul style="list-style-type: none"> <li>American Kestrel April 1 – August 15</li> <li>Bald Eagle January 1 – August 15</li> <li>Boreal Owl February 1 – July 31</li> <li>Burrowing Owl April 1 – September 15</li> <li>Common Barn Owl February 1 – September 15</li> <li>Cooper's Hawk March 15 – August 31</li> <li>Eastern Screech-owl March 1 – August 15</li> <li>Ferruginous Hawk March 15 – July 31</li> <li>Golden Eagle January 15 – July 31</li> <li>Great Gray Owl March 15 – August 31</li> <li>Great Horned Owl December 1 – September 31</li> <li>Long-eared Owl February 1 – August 15</li> <li>Merlin April 1 – August 15</li> <li>Northern Goshawk April 1 – August 15</li> <li>Northern Harrier April 1 – August 15</li> <li>Northern Pygmy-Owl April 1 – August 1</li> <li>Northern Saw-whet Owl March 1 – August 31</li> <li>Osprey April 1 – August 31</li> <li>Peregrine Falcon March 1 – August 15</li> <li>Prairie Falcon March 1 – August 15</li> <li>Red-tailed Hawk February 1 – August 15</li> <li>Sharp-shinned Hawk March 15 – August 31</li> <li>Short-eared Owl March 15 – August 1</li> <li>Swainson's Hawk April 1 – August 31</li> <li>Western Screech-owl March 1 – August 15</li> <li>All other raptors February 1 – July 31</li> </ul> <p>(2) as mapped by the WGFD, on the Cody Field Office GIS database or as determined by field evaluation; (3) protecting active raptor nests.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the raptor nest(s) are not active or the proposed action is of a scale, sited in a location, or otherwise designed so that the proposed action would not disturb (be likely to cause: physical injury; a decrease in productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior) nesting raptors of conservation concern. The determination may include consultation with the WGFD or USFWS.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon a BLM evaluation in coordination with WGFD and/or USFWS, as necessary. The stipulation may be modified based on negative or positive monitoring results; or if it is determined that the action will not impair the function or the suitability of the habitat, or cause nest abandonment.</p> <p><b>Waiver:</b> The stipulation may be waived if the BLM authorized officer determines that the entire lease area does not include seasonal buffer zones for nests of raptor species of conservation concern. This determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM, in coordination with the WGFD and/or USFWS, as necessary.</p>
4121 and 7052	NSO	Special Status Species: Chapman Bench Management Area	<p>No surface occupancy or use is allowed (1) within the Chapman Bench Management Area as mapped on the Cody Field Office GIS database; (2) protecting mountain plover, long-billed curlew, and other sensitive species habitat.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action, as proposed or conditioned, would not impair the function or utility of sensitive species habitats, in coordination with the WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation or surface occupancy criteria if after coordination with the WGFD is the BLM determines that the NSO area is not located in habitat for sensitive species.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined by the BLM, in coordination with the WGFD, that the lease area is not located within the Chapman Bench Management Area.</p>
4127	NSO	Special Status Species: Sage Creek Prairie Dog Town	<p>No surface occupancy is permitted within the Sage Creek Prairie Dog Town (1) as mapped on the Cody Field Office GIS database; (2) protection of black-tailed prairie dog habitat.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the action, as proposed or conditioned, would not impair the function or utility of sensitive species habitats, in coordination with the WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation or surface occupancy criteria if after coordination with the WGFD is the BLM determines that the NSO area is not located in habitat for sensitive species.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined by the BLM, in coordination with the WGFD, that the lease area is not located within complexes are suitable for black-footed ferret reintroduction.</p>
4151	TLS	Wild Horses: McCullough Peaks HMA foaling season	<p>No surface use is allowed (1) February 1 to July 31; (2) McCullough Peaks HMA as mapped on the Cody Field Office GIS database; (3) protecting McCullough Peaks HMA foaling season.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception the BLM determines the area is not likely to be occupied during the period of concern and the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon BLM determination that suitable foaling range is not present or boundaries of the HMA have changed.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is not within the HMA, or is not located within suitable foaling range.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
6065	NSO	Recreational Resources: Campgrounds, trailheads, day use areas, and similar recreation sites	<p>No surface occupancy or use is permitted (1) on developed recreation sites (2) for the protection of designated campgrounds, trailheads, day use areas, and similar recreation sites.</p> <p><b>Exception:</b> An exception to this stipulation may be granted by the BLM authorized officer if the BLM determines that the function and utility of the recreational resources are not adversely affected.</p> <p><b>Modification:</b> The BLM authorized officer may modify the stipulation if the boundaries of recreational sites are changed or a portion of the lease area is determined not to be located within a designated recreational site.</p> <p><b>Waiver:</b> This BLM authorized officer may waive this stipulation if it is determined that the entire leasehold no longer contains developed recreation areas.</p>
6075	NSO	Scenic and Recreational Resources: Areas within the Bighorn River SRMA	<p>No surface occupancy is permitted (1) on lands within the Bighorn River SRMA (2) protecting the Bighorn River SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Bighorn River SRMA are changed. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Bighorn River SRMA.</p>
6093	NSO	Scenic and Recreational Resources: Within ¼ mile of campgrounds, trailheads, day use areas, river access sites, and similar recreational sites in The Rivers SRMA	<p>No surface occupancy is permitted (1) Within ¼ mile of campgrounds, trailheads, day use areas, river access sites, and similar recreational sites in The Rivers SRMA (2) for protection of developed recreation sites.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of The Rivers SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within The Rivers SRMA.</p>
6100	NSO	Scenic and Recreational Resources: McCullough Peaks SRMA	<p>No surface occupancy is permitted (1) within the McCullough Peaks SRMA (2) for the protection of Scenic and Recreational Resources.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the McCullough Peaks SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the McCullough Peaks SRMA.</p>
6108	CSU	Scenic and Recreational Resources: Beck Lake SRMA	<p>Surface occupancy or use will be restricted or prohibited within the Beck Lake SRMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Cody Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Beck Lake SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Newton Lake Ridge SRMA.</p>
6116	CSU	Scenic and Recreational Resources: Newton Lake Ridge SRMA	<p>Surface occupancy or use will be restricted or prohibited within the Newton Lake Ridge SRMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Cody Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Newton Lake Ridge SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Newton Lake Ridge SRMA.</p>
7009	NSO	Special Designations (Geologic Resources): Center of the Sheep Mountain Anticline ACEC	<p>No surface occupancy is permitted (1) within the center of the Sheep Mountain Anticline ACEC (2) protection of geologic resources.</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Sheep Mountain Anticline ACEC are changed.</p> <p><b>Waiver:</b> This stipulation may be waived, if the authorized officer determines that the entire leasehold is no longer within a designated ACEC.</p>
7009	CSU	Special Designations (Geologic Resources): Northern and southern portions of the Sheep Mountain Anticline ACEC	<p>Surface occupancy or use will be restricted or prohibited within the Northern and southern portion of the Sheep Mountain Anticline ACEC (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Cody Field Office GIS database; (3) protecting Special Designations (Geologic Resources).</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the Sheep Mountain Anticline ACEC boundaries are changed.</p> <p><b>Waiver:</b> This stipulation may be waived, if the authorized officer determines that the entire leasehold is no longer within an ACEC.</p>
7073	NSO	Special Designations (Geologic; Paleontological): Paleocene, Eocene Thermal Maximum ACEC	<p>No surface occupancy is permitted (1) within the PETM ACEC (2) protection of geologic and paleontological resources.</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the Paleocene, Eocene Thermal Maximum ACEC boundaries are changed.</p> <p><b>Waiver:</b> This stipulation may be waived, if the authorized officer determines that the entire leasehold no longer within a designated ACEC.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
7090	CSU	Special Designations (Cultural Resources): Within the viewshed from the Heart Mountain Relocation Camp National Historic Landmark toward Heart Mountain	<p>Surface occupancy or use will be restricted or prohibited within the viewshed of the Heart Mountain Relocation Camp National Historic Landmark (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Cody Field Office GIS database; (3) protecting the viewshed from the Heart Mountain Relocation Camp National Historic Landmark toward Heart Mountain.</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if a portion of the lease is found to not be within the viewshed of the Heart Mountain Relocation Camp National Historic Landmark.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not within the viewshed from t</p>
7093	CSU	Special Designations (Scenic and Cultural Resources): Up to 3 miles from the Nez Perce (Neeme-poo) NHT	<p>Surface occupancy or use will be restricted or prohibited within 3 miles from the Nez Perce (Neeme-poo) NHT or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate proposed infrastructure is either not visible or will result in a weak contrast rating.</p> <p>(2) as mapped on the Cody Field Office GIS database; (3) protecting Special Designations (Scenic and Cultural Resources) the Nez Perce (Neeme-poo) NHT</p> <p><b>Exception:</b> The authorized officer may consider a lease stipulation exception within the National Trails Management Corridor if 1) an action is at least 3 miles from a National Trail, a significant National Trail historical or recreational site, or Trail-related recreational activities; or, 2) all components and effects of the action are in compliance with the RMP-designated VRM standard in consultation with appropriate federal agency. The proposal must be capable of attaining a no adverse-affect determination in consultation with SHPO.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if it is determined by the BLM, after consultation with the appropriate federal and/or agency that a portion of the NSO area does not contribute, as determined by Section 106, to the trails' nature and purpose or their setting or if the proposed action can be developed in a way that meets the management objectives for the NHTs. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if it is determined, in consultation with the appropriate federal and/or state agency, that the area is no longer considered to contribute to the trails' nature and purpose or setting or if the proposed action can be developed in a way that meets the management objectives for the NHTs. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p>
7097	CSU	Special Designations (Scenic and Cultural Resources): Up to 2 miles from Other Trails	<p>Surface occupancy or use will be restricted or prohibited up to 2 miles where setting is an important aspect of the integrity for the trail. (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate proposed infrastructure is either not visible or will result in a weak contrast rating.</p> <p>(2) as mapped on the Cody Field Office GIS database; (3) protecting other historic trails.</p> <p><b>Exception:</b> The authorized officer may grant an exception if surveys determine that other historic trail remnants are not present or it is determined that the section of trail is sufficiently compromised that the action will not result in an adverse effect to the trail.</p> <p><b>Modification:</b> If surveys determine that a portion of the lease area does not contain contributing trail segments, then the stipulation may be modified. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if surveys determine that the entire lease area does not contain contributing trail segments. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p>

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# Required Design Features (BLM 2015b)

## **Roads**

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among federal fluid mineral lessees and ROW or Surface Use Agreement (SUA) holders.
- Construct road crossings of ephemeral, intermittent, and perennial streams to minimize impacts to the riparian habitat, such as by crossing at right angles to ephemeral drainages and stream crossings.
- Establish slow speed limits on BLM and Forest Service system-administered roads or design roads for slower vehicle speeds to reduce Greater Sage-Grouse mortality.
- Establish trip restrictions or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions including this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)
- Apply dust abatement on roads, well pads, and other surface disturbances.
- Close and rehabilitate duplicate roads by restoring original landform and establishing a desirable plant community.
- Do not issue ROWs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document

## **Operations**

- Site and/or minimize linear ROWs or SUAs to reduce disturbance and fragmentation of sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Collocate powerlines, flowlines, and small pipelines under or immediately adjacent to existing roads/transportation corridors.
- Control the spread and effects of invasive non-native plant species, including treating weeds prior to surface disturbance and washing vehicles and equipment at designated wash stations when constructing in areas with weed infestations.
- Clean up refuse.
- Place infrastructure in already disturbed locations where the habitat has not been fully restored.
- Apply a phased development approach with concurrent reclamation.
- Pipelines must be under or immediately adjacent to the road.
- Design or site permanent structures to minimize impacts to Greater Sage-Grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid storage tanks) in a manner that will minimize disturbance of Greater Sage-Grouse or interference with habitat use.

## **Noise**

- Limit noise to less than 10 decibels above ambient measures (20 to 24 decibels) at sunrise at the perimeter of a lek during active lek season.
- Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
- Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

## **Reclamation**

- Include objectives for ensuring habitat restoration to meet Greater Sage-Grouse habitat needs in reclamation practices/sites. Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling, and revegetating cut-and-fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Implement irrigation during interim or final reclamation for sites where establishment of seedlings has been shown or is expected to be difficult due to dry conditions. Utilize mulching techniques to expedite reclamation.
- Use mulching, soil amendments, and/or erosion blankets to expedite reclamation and to protect soils.
- Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.
- Minimize surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal Greater Sage-Grouse habitats. Apply these measures during project level planning.
- When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in priority Greater Sage-Grouse habitat, address (and apply conservation measures as appropriate) the direct and indirect effects to Greater Sage-Grouse populations and habitat.
- During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.
- Identify and work with partners to increase native seed availability and work with plant material centers to develop new plant materials, especially the forbs needed to restore Greater Sage-Grouse habitat.
- Consider potential changes in climate when proposing seedings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed.
- Use Ecological Site Descriptions (ESDs) or other protocols could be used (e.g., TEUI or LSI) to identify the understory species and sagebrush subspecies needed to restore desirable habitat conditions.

## **Best Management Practices (BLM 2015b)**

### ***Important Cultural Resource and Trail Settings***

The BLM should use standard measures to reduce the visual impact of proposed actions within trail settings, where setting is a contributing element of eligibility to the National Register of Historic Places and the setting has integrity. Standard measures should be used as stipulations or conditions of approval attached to authorizations. Standard measures, or BMPs, for reducing the visibility of proposed actions include, but are not limited to:

- Apply a controlled surface use (CSU) stipulation to surface-disturbing activities or surface occupancy.
- Visual Contrast Ratings and, as appropriate, require visual simulations.
- Consolidate project facilities among oil and gas developers; maximize use of existing locations.
- Develop coordinated road and pipeline systems.
- Reduce the amount of surface development by consolidating facilities.
- Use low-profile facilities.
- Locate projects to maximize the use of topography and vegetation to screen development.
- Design projects to blend with topographic forms and existing vegetation patterns.
- Use environmental coloration or camouflage techniques to reduce the visual impact of facilities that cannot be completely hidden.
- Use broken linear patterns for road developments to screen roads as much as possible. This can include feathering or blending of the edges of linear ROWs to soften the dominant line form.
- Design linear facilities and seismic lines to run parallel to key observation points rather than perpendicular.
- Position facilities to present less of a visual impact (e.g., a facility with several tanks lined up so that one obscures the visibility of the others).

### ***Aquatic Invasive Species***

To prevent the spread of aquatic invasive species, the Wyoming Game and Fish Department recommends following the guidelines outlined in the Aquatic Invasive Species in Wyoming brochure ([link below](#)).

Specific BMPs to aquatic invasive species spread prevention include, but are not limited to:

- Decontamination should first occur before arrival at a project site, so aquatic invasive species are not transferred from the last visited area. Decontamination should occur again before leaving a project site, so aquatic invasive species are not transferred to the next site.
- Decontamination may consist of either:
  - Drain all water from equipment and compartments, clean equipment of all mud, plants, debris, or animals, and dry equipment for five days in summer (June, July, and August); 18 days in spring (March, April, and May) and fall (September, October, and November); or three days in winter (December, January, and February) when temperatures are at or below freezing, or
  - Use a high pressure (2,500 pounds per square inch [psi]) hot water (140°F) pressure washer to thoroughly wash equipment and flush all compartments that may hold water.

## ***Reseeding***

The following recommendations may be required depending on the project size and location.

- Proposed actions where native brush species located on lands proposed to be disturbed are unique and desirable for interim and final reclamation purposes, and the seed supply for these desirable brush species is not commercially available, will be collected from the area and stored using the procedures of the Seeds of Success program. Seedlings or plugs of common dominant species will be propagated, preferably locally, in preparation for use in portions of area to be reclaimed to expedite vegetation recovery.
- Areas of sustainable plant communities and populations (where they do not conflict with other allowable resource uses) will be identified as sources for native plant material and will be managed under consideration of the need to consistently produce seed stocks of non-commercially available materials for use in reclamation and restoration work (e.g., to support reclamation of abandoned mine lands or well pads or to supplement commercially available seeds in high fire years).

## ***Engineering***

Road maintenance, construction, and any other related travel and transportation management will be mandated by BLM Manual 9113. BLM Manual 9113 provides for BMPs to be used in evaluating, maintaining, and constructing BLM travel and transportation routes. As stated in Manual 9113, “Bureau roads must be designed to an appropriate standard no higher than necessary to accommodate their intended functions adequately (timber hauling administrative access, public travel); and design, construction, and maintenance activities must be consistent with national policies for safety, aesthetics, protection and preservation of cultural, historic, and scenic values, and accessibility for the physically handicapped. The following is a list of BMPs that are recommended but not binding for road maintenance practices:

- Design roads to minimize total disturbance, to conform with topography, and to minimize disruption of natural drainage patterns.
- Base road design criteria and standards on road management objectives such as traffic requirements of the proposed activity and the overall transportation planning, economic analysis, safety requirements, resource objectives, and minimizing damage to the environment.
- Locate roads on stable terrain such as ridge tops, natural benches, and flatter transitional slopes near ridges, and valley bottoms, and moderate side slopes and away from slumps, slide prone areas, concave slopes, clay beds, and where rock layers dip parallel to the slope. Locate roads on well-drained soil types; avoid wet areas when possible.
- Construct cut and fill slopes to be approximately 3 horizontal (h):1 vertical (v) or flatter where feasible. Locate roads to minimize heights of cutbanks. Avoid high, steeply sloping cutbanks in highly fractured bedrock.
- Avoid headwalls, midslope locations on steep, unstable slopes, fragile soils, seeps, old landslides, side slopes in excess of 70 percent, and areas where the geologic bedding planes or weathering surfaces are inclined with the slope. Implement extra mitigation measures when these areas cannot be avoided.
- Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars and in-sloping to ditches as appropriate.
- Sloping the road base to the outside edge for surface drainage is normally recommended for local spurs or minor collector roads where low-volume traffic and lower traffic speeds are anticipated.

This is also recommended in situations where long intervals between maintenance will occur and where minimum excavation is wanted. Out-sloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep side slopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.

- Crown and ditching is recommended for arterial and collector roads where traffic volume, speed, intensity and user comfort are considerations. Recommended gradients range from 0 to 15 percent where crown and ditching may be applied, as long as adequate drainage away from the road surface and ditch lines is maintained.
- Minimize excavation, when constructing roads, through the use of balanced earthwork, narrowing road widths, and end hauling where side slopes are between 50 and 70 percent.
- If possible, construct roads when soils are dry and not frozen. When soils or road surfaces become saturated to a depth of 3 inches, BLM-authorized activities should be limited or ceased unless otherwise approved by the authorized officer.
- Consider improving inadequately surfaced roads that are to be left open to public traffic during wet weather with gravel or pavement to minimize sediment production and maximize safety.
- Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Roadside brushing of vegetation should be done in a way that prevents disturbance to root systems and visual intrusions (i.e., avoid using excavators for brushing).
- Retain adequate vegetation between roads and streams to filter runoff caused by roads.
- Avoid riparian/wetland areas where feasible; locate in riparian/wetland areas only if the roads do not interfere with the attainment of resource objectives.
- Minimize the number of unimproved stream crossings. When a culvert or bridge is not feasible, locate drive-through (low water crossings) on stable rock portions of the drainage channel. Harden crossings with the addition of rock and gravel if necessary. Use angular rock if available.
- Locate roads and limit activities of mechanized equipment within stream channels to minimize their influence on riparian areas. When crossing a stream is necessary, design the approach and crossing perpendicular to the channel, where practicable. Locate the crossing where the channel is well defined, unobstructed, and straight.
- Avoid placing fill material in floodplain unless the material is large enough to remain in place during flood events.
- Use drainage dips instead of culverts on level 2 roads where gradients will not present a safety issue. Locate drainage dips in such a way so that water will not accumulate or where outside berms prevent drainage from the roadway. Locate and design drainage dips immediately upgrade of stream crossings and provide buffer areas and catchment basins to prevent sediment from entering the stream.
- Construct catchment basins, brush windrows, and culverts in a way to minimize sediment transport from road surfaces to stream channels. Install culverts in natural drainage channels in a way to conform with the natural streambed gradients with outlets that discharge onto rocky or hardened protected areas.
- Design and locate water crossing structures in natural drainage channels to accommodate adequate fish passage, provide for minimum impacts to water quality, and to be capable of handling a 100-year event for runoff and floodwaters.
- Use culverts that pass, at a minimum, a 25-year storm event or have a minimum diameter of 24 inches for permanent stream crossings and a minimum diameter of 18 inches for road cross drains.

- Replace undersized culverts and repair or replace damaged culverts and downspouts. Provide energy dissipaters at culvert outlets or drainage dips.
- Locate culverts or drainage dips in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or road surfaces. Culverts should be placed on solid ground to avoid road failures.
- Proper sized aggregate and riprap should be used during culvert construction. Place riprap at culvert entrance to streamline waterflow and reduce erosion.
- Establish adapted vegetation on all cuts and fill immediately following road construction and maintenance.
- Remove berms from the downslope side of roads, consistent with safety considerations.
- Leave abandoned roads in a condition that provides adequate drainage without further maintenance. Close abandoned roads to traffic. Physically obstruct the road with gates, large berms, trenches, logs, stumps, or rock boulders as necessary to accomplish permanent closure.
- Abandon and rehabilitate roads that are no longer needed. Leave these roads in a condition that provides adequate drainage. Remove culverts.
- When plowing snow for winter use of roads, provide breaks in snow berms to allow for road drainage. Avoid plowing snow into streams. Plow snow only on existing roads.
- Maintenance should be performed to conserve existing surface material, retain the original crowned or out-sloped self-draining cross section, prevent or remove rutting berms (except those designed for slope protection) and other irregularities that retard normal surface runoff. Avoid wasting loose ditch or surface material over the shoulder where it can cause stream sedimentation or weaken slump-prone areas. Avoid undercutting back slopes.
- Do not disturb the toe of cut slopes while pulling ditches or grading roads. Avoid sidecasting road material into streams.
- Grade roads only as necessary. Maintain drain dips, waterbars, road crown, in-sloping and out-sloping, as appropriate, during road maintenance.
- Maintain roads in special areas according to special area guidance. Generally, retain roads within existing disturbed areas and sidecast material away from the special area.
- When landslides occur, save all soil and material usable for reclamation or stockpile for future reclamation needs. Avoid sidecasting of slide material where it can damage, overload, and saturate embankments, or flow into down-slope drainage courses. Reestablish vegetation as needed in areas where vegetation has been destroyed due to sidecasting.
- Strip and stockpile topsoil ahead of construction of new roads, if feasible. Reapply soil to cut and fill slopes prior to revegetation.

## ***Visual Resources***

The following BMPs would be considered to reduce impacts to all visual resource management classes within the planning area:

- Burying of distribution power lines and flow lines in or adjacent to access roads;
- Repeating elements of form, line, color, and texture to blend facilities and access roads with the surrounding landscape;

- Painting all above-ground structures, production equipment, tanks, transformers, and insulators not subject to safety requirements to blend with the natural color of the landscape, using paint that is a non-reflective “standard environmental color” approved by the BLM visual resource management (VRM) specialist:
  - All new equipment brought onto the sites should be painted the same color(s);
  - Semi-gloss paints will stain and fade less than flat paints;
  - Typically, the background is a vegetated background, and seldom a solid background;
  - The selected color should be one or two shades darker than the background; and
  - Consider the predominant season of public use; however, never paint an object to match snow.
- Performing final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography;
- Avoiding facility placement on steep slopes, ridge tops, and hilltops;
- Screening facilities from view;
- Following contours of the land to reduce unnecessary disturbance;
- Recontouring and revegetating disturbed areas to blend with the surrounding landscape;
- Reclaiming unnecessary access roads as soon as possible to the original contour;
- Using gravel of a similar color to adjacent dominant soil and vegetation colors for road surfacing;
- Use dust abatement to reduce fugitive dust, as well as minimize the light colors of the routes;
- Using subsurface or low-profile facilities to prevent protrusion above horizon line when viewed from any primary road;
- Locating facilities far enough from the cut and fill slopes to facilitate recontouring for interim reclamation;
- Completing an annual transportation plan for entire area before beginning construction, and making a layout that will minimize disturbance and visual impact;
- Designing and constructing all new roads to a safe and appropriate standard “no higher than necessary” to accommodate their intended use;
- Locating roads far enough off the back of ridgelines so they aren’t visible from state, county, or BLM roads;
- Using remote monitoring to reduce traffic and road requirements;
- Removing unused equipment, trash, and junk immediately.

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 3-24 of the Cody FO RMP (BLM 2015c).

Rights-of-Way Exclusion Areas:

- Areas identified on Map 3-24

#### Rights-of-Way Avoidance Areas:

- Little Mountain ACEC
- Clarks Fork Canyon ACEC
- Chapman Bench Management Area
- Greater sage-grouse PHMA
- Cave and karst areas
- Absaroka Front Management Area
- Sage Creek Prairie Dog Town
- Other areas identified on Map 3-24

## Literature Cited

- Bureau of Land Management (BLM). 2015a. *Appendix B. Oil and Gas Lease Notices and Lease Stipulations, including Exception, Modification, and Waiver Criteria*. In *Bureau of Land Management Cody Field Office Approved Resource Management Plan*. Cody, Wyoming: BLM Cody Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/9506/63298/68540/CYFO\\_Final\\_ARMP.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/9506/63298/68540/CYFO_Final_ARMP.pdf). Accessed March 9, 2020.
- . 2015b. *Appendix C. Required Design Features and Best Management Practices*. In *Bureau of Land Management Cody Field Office Approved Resource Management Plan*. Cody, Wyoming: BLM Cody Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/9506/63298/68540/CYFO\\_Final\\_ARMP.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/9506/63298/68540/CYFO_Final_ARMP.pdf). Accessed March 9, 2020.
- . 2015c. *Map 3-24 Land Resources Rights-of-Way and Corridors Bighorn Basin Planning Area Cody Field Office*. In *Bureau of Land Management Cody Field Office Approved Resource Management Plan*. Cody, Wyoming: BLM Cody Field Office. Available at [https://eplanning.blm.gov/public\\_projects/lup/9506/63312/68584/BB-ARMP\\_CYFO\\_Map3-24\\_ROW\\_508.pdf](https://eplanning.blm.gov/public_projects/lup/9506/63312/68584/BB-ARMP_CYFO_Map3-24_ROW_508.pdf). Accessed July 15, 2020.



# KEMMERER RESOURCE MANAGEMENT PLAN

## Stipulations

Refer to individual resource sections of the Record of Decision and Approved Kemmerer Resource Management Plan for any applicable stipulations (BLM 2010a).

## Required Design Features

No required design features listed in RMP.

## Best Management Practices

No BMPs listed in RMP.

## Wyoming BLM Mitigation Guidelines for Surface Disturbing and Disruptive Activities (BLM 2010a)

### ***Surface Disturbance Mitigation Guideline***

Surface disturbance will be prohibited in any of the following areas or conditions. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis, by the authorized officer.

- Slopes in excess of 25 percent.
- Within important scenic areas (Class I and II Visual Resource Management Areas).
- Within 500 feet of surface water and/or riparian areas.
- Within either one-quarter mile or the visual horizon (whichever is closer) of historic trails.
- Construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.

### ***Wildlife Mitigation Guideline***

- To protect important big game winter habitat, activities or surface use will not be allowed from November 15 to April 30 within certain areas encompassed by the authorization. The same criteria apply to defined big game birthing areas from May 1 to June 30.
- Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 within certain areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 to April 30.

- Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- No activities or surface use will be allowed on that portion of the authorization area identified within (legal description) for the purpose of protecting (e.g., sage/sharp-tailed grouse breeding grounds, and/or other species/activities) habitat.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- Portions of the authorized use area legally described as (legal description), are known or suspected to be essential habitat for (name) which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and U.S. Fish and Wildlife Service guidelines to verify the presence or absence of this species. In the event that (name) occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

### ***Cultural Resource Mitigation Guideline***

When a proposed discretionary land use has potential for affecting the characteristics, which qualify a cultural property for the National Register of Historic Places (NRHP), mitigation will be considered. In accordance with Section 106 of the Historic Preservation Act, procedures specified in 36 Code of Federal Regulation (CFR) 800 will be used in consultation with the Wyoming State Historic Preservation Officer and the Advisory Council on Historic Preservation in arriving at determinations regarding the need and type of mitigation to be required.

### ***Special Resource Mitigation Guideline***

To protect (resource value), activities or surface use will not be allowed (i.e., within a specific distance of the resource value or between date to date) in (legal description).

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

Example Resource Categories (Select or identify category and specific resource value):

- Recreation areas.
- Special natural history or paleontological features.
- Other management areas.
- Sections of major rivers.
- Prior existing rights-of-way.
- Occupied dwellings.
- Other (specify).

## **No Surface Occupancy Guideline**

No Surface Occupancy (NSO) for fluid minerals will be allowed on the following described lands (legal description) because of (resource value).

Example Resource Categories (Select or identify category and specific resource value):

- Recreation Areas (e.g., campgrounds, historic trails, national monuments).
- Major reservoirs/dams.
- Other management area (e.g., known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation).
- Other (specify).

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 13 of the Kemmerer FO RMP (BLM 2010b).

Rights-of-Way Exclusion Areas:

- Emigrant Spring/Slate Creek cultural resources site
- Emigrant Spring/Dempsey cultural resources site
- Johnston Scout Rock cultural resources site
- Alfred Corum and Nancy Hill emigrant gravesites
- Pine Grove emigrant camp
- Rocky Gap trail landmark
- Bear River Divide trail landmark
- Other areas identified on Map 13

Rights-of-Way Avoidance Areas:

- Areas where special status plants are known to exist
- Other areas identified on Map 13

## **Literature Cited**

Bureau of Land Management (BLM). 2010a. *Appendix N. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities*. In *Record of Decision and Approved Kemmerer Resource Management Plan*. Kemmerer, Wyoming: BLM Kemmerer Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63198/77650/86677/AppendixN-Guidelines\\_Surface\\_Disturbing\\_Activities.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63198/77650/86677/AppendixN-Guidelines_Surface_Disturbing_Activities.pdf). Accessed March 9, 2020.

———. 2010b. *Map 13 – Land Resources Rights-of-Way and Corridors*. In *Record of Decision and Approved Kemmerer Resource Management Plan*. Kemmerer, Wyoming: BLM Kemmerer Field Office. Available at [https://eplanning.blm.gov/public\\_projects/lup/63198/77651/86691/Map13-ROWS\\_Corridors-revised.pdf](https://eplanning.blm.gov/public_projects/lup/63198/77651/86691/Map13-ROWS_Corridors-revised.pdf). Accessed July 15, 2020.

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LANDER RESOURCE MANAGEMENT PLAN

Stipulations (BLM 2014a)

Decision	Stipulation Type	Protected Resource	Stipulation Description
1013	CSU	Limited reclamation potential soils	<p>Surface occupancy or use will be restricted in areas identified as limited reclamation potential soils (1) as mapped on the Lander Field Office GIS database and (2) to protect sensitive soil resources.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the action will meet the designated RMP performance standards identified in Appendix B (p. 185). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation based on a NRCS soil survey or BLM evaluation or monitoring results, or if it is determined that the lease action(s) is/are not located within identified limited reclamation potential soils. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not include limited reclamation potential soils as determined from NRCS mapping and/or BLM evaluation of the area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
1014	CSU	Slopes between 15 and 24 percent	<p>Surface occupancy or use will be restricted on slopes between 15 and 24 percent (1) as mapped on the Lander Field Office GIS database and (2) to protect areas containing slopes between 15 and 24 percent.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action will meet the designated RMP performance standards as identified in Appendix B (p. 185), through engineered construction and/or reclamation plans. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation based on a BLM evaluation or monitoring results that show that the action is not located within sensitive soil areas or that the action can meet the RMP-designated performance standards identified in Appendix B (p. 185). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not include soils with slopes between 15 percent and 24 percent or that the lease action(s) can meet the RMP-designated performance standards identified in Appendix B (p. 185). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
1014	NSO	Slopes greater than 25 percent	<p>No surface occupancy or use is allowed on slopes greater than 25 percent (1) as mapped on the Lander Field Office GIS database and (2) to protect areas containing slopes greater than 25 percent.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action will meet the RMP-designated performance standards identified in Appendix B (p. 185) through engineering, construction, and/or reclamation plans. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation based on a BLM evaluation or monitoring results that show that the lease action(s) is/are not located within sensitive soil areas or that the lease action(s) can meet the RMP-designated performance standards identified in Appendix B (p. 185). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if a BLM evaluation of the area determines that the entire lease area does not include slopes greater than 25 percent or that the lease action(s) can meet the RMP-designated performance standards identified in Appendix B (p. 185). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
1045	NSO	Sole source aquifers	<p>No surface occupancy or use is allowed within identified sole source aquifers (1) as mapped on the Lander Field Office GIS database and (2) to protect identified sole source aquifers.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action would not impair Wyoming DEQ designated uses, in coordination with the Wyoming DEQ. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if it is determined that the lease action(s) is/are not within a mapped sole source aquifer, in coordination with the Wyoming DEQ. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not include sole source aquifers, in coordination with the Wyoming DEQ. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
2024	NSO	Unique plant communities, cultural sites, viewshed, and geologic resources of the Beaver Rim Master Leasing Plan area.	<p>No surface use or occupancy is allowed on 29,567 acres of the Beaver Rim Master Leasing Plan area (1) as mapped on the Lander Field Office GIS database and (2) to protect unique plant communities, cultural sites, viewshed, and geologic resources in the Beaver Rim Master Leasing Plan area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action is of a scale, sited in a location, or otherwise designed so that the action will not result in adverse impacts to the unique plant communities, cultural sites, viewshed, and geologic resources within the Beaver Rim Master Leasing Plan area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if it is determined that the lease action(s) is/are not located within the NSO area or if it is determined that the action is of a scale, sited in a location, or otherwise designed so that the action will not result in adverse impacts to the unique plant communities, cultural sites, viewshed, and geologic resources within the Beaver Rim Master Leasing Plan area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area is no longer located within the defined Beaver Rim Master Leasing Plan NSO area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
2024	CSU	100-year floodplains within the Beaver Rim Master Leasing Plan area	<p>No surface use or occupancy is allowed within 100-year floodplains (1) as mapped on the Lander Field Office GIS database and (2) to protect 100 year floodplains within the Beaver Rim Master Leasing Plan area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action is of a scale, sited in a location, or otherwise designed so that the action will not result in adverse impacts to water or riparian-wetland quality within the Beaver Rim Master Leasing Plan area 100-year floodplain, or if the proposed action is not located within a mapped 100-year floodplain based on a BLM field evaluation. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if it is determined that the lease action(s) is/are of a scale, sited in a location, or otherwise designed so that the action will not result in adverse impacts to water or riparian-wetland quality or is not located within a mapped Beaver Rim Master Leasing Plan area 100-year floodplain based on a BLM field evaluation. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not include Beaver Rim Master Leasing Plan area 100-year floodplains based on a BLM field evaluation. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
2024	CSU	Unique plant communities, cultural sites, viewshed, geologic resources, wild horse migration routes, and riparian-wetland resources of the Beaver Rim Master Leasing Plan area.	<p>Surface occupancy or use will be restricted on 121,255 acres in the Beaver Rim Master Leasing Plan area (1) as mapped on the Lander Field Office GIS database and (2) for the protection of unique plant communities, cultural sites, viewshed, geologic resources, wild horse migration routes, and riparian-wetland resources of the Beaver Rim Master Leasing Plan area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the proposed action will not result in loss of setting for cultural resources or degrade the viewshed or geologic resources, unique plant communities and riparian-wetland areas, or impede wild horse migration. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if it is determined that the lease action(s) would not result in a loss of setting of cultural resources or degrade the viewshed or geologic resources, or does not contain wild horse migration areas, riparian-wetland resources, or unique plant communities, or if a portion of the leasehold is not located within the Beaver Rim Master Leasing Plan area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain wild horse migration areas or unique plant communities, and does not contribute to the setting of cultural resources or important visual resources, or if the entire leasehold is not located within the Beaver Rim Master Leasing Plan area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
2031	NSO	Native American spiritual and/or cultural values.	<p>No surface use or occupancy is allowed within 0.25 mile of National Register of Historic Places-eligible Native America cultural resource sites (1) as mapped on the Lander Field Office GIS database and (2) for the protection of Native American spiritual and/or cultural values.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if, after consultation with Native American tribes and the State Historic Preservation Office, it is determined that the proposed action will result in a determination of no adverse effect on the sacred, spiritual, and/or traditional nature of the property(ies). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if the lease action(s) will result in a determination of no adverse effect, or if the site is no longer considered eligible under National Register of Historic Places, or if in consultation with Native American tribes and the State Historic Preservation Office, it is determined that the identified property's sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined, in consultation with Native American tribes and the State Historic Preservation Office, that the identified site is no longer considered sacred, spiritual, and/or traditional, or if it is determined that the entire lease area does not include sites known to be of interest to Native American tribes and/or have spiritual or cultural values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4031	NSO	Perennial surface waters, riparian-wetland areas, and playas in Designated Development Areas.	<p>No surface occupancy or use is allowed within 500 feet of perennial surface waters, riparian-wetland areas, and/or playas within Designated Development Areas unless a lesser distance is determined to provide equivalent protection (1) as mapped on the Lander Field Office GIS database and (2) to protect perennial surface waters, riparian-wetland areas, and/or playas.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if, based on an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian-wetland areas, and/or playas. The Authorized Officer may grant an exception within Designated Development Areas if it is determined that less distance would provide equivalent protection to perennial surface waters, riparian-wetland areas, and/or playas. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if, based on an evaluation by the BLM, it is determined that the proposal is not located within 500 feet of perennial surface waters, riparian-wetland areas, and/or playas. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian-wetland areas, and/or playas. This determination will be based on an evaluation by the BLM. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
4031	NSO	Perennial surface waters, riparian-wetland areas, and playas	<p>No surface occupancy or use is allowed within 500 feet of perennial surface waters, riparian-wetland areas and/or playas (1) as mapped on the Lander Field Office GIS database and (2) to protect perennial surface waters, riparian-wetland areas, and/or playas.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if, based on an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian-wetland areas, and/or playas. The Authorized Officer may grant an exception outside Designated Development Areas if it is determined that less distance would provide equivalent protection to perennial surface waters, riparian-wetland areas, and/or playas. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if, based on an evaluation by the BLM, it is determined that the proposal is not located within 500 feet of perennial surface waters, riparian-wetland areas, and/or playas. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian-wetland areas, and/or playas. This determination will be based on an evaluation by the BLM. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4045	NSO	Wildlife, viewsheds, cultural resources, and other values in the Hudson to Atlantic City area	<p>No surface use or occupancy is allowed within the Hudson to Atlantic City area (1) as mapped on the Lander Field Office GIS database and (2) for the protection of wildlife, cultural resources, viewshed, and/or recreational use(s) in the Hudson to Atlantic City area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the action, as proposed or conditioned, would not adversely impact the wildlife, cultural resources, viewshed, and/or recreational use(s) of the area, in coordination with the appropriate state agency (State Historic Preservation Office and/or the WGFD). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or surface occupancy criteria if after consultation with the appropriate state agency (State Historic Preservation Office or WGFD) it is determined that a portion of the NSO area is not essential to the protection of the wildlife, cultural resource, viewshed and recreational use values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined by the BLM, in coordination with the National Park Service in the case of the national historic trails, the U.S. Forest Service in connection with the national scenic trail, or the WGFD in connection with wildlife species, that the area is no longer considered to contribute to sensitive resource values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4053	TLS	Spring spawning habitat in fish-bearing streams	<p>Surface-disturbing and disruptive activities are prohibited within the identified bankfull channel width of fish-bearing streams (1) as mapped on the Lander Field Office GIS database, (2) from March 15 to July 31, and (3) for the protection of spring spawning habitat in fish bearing streams.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that spawning habitat is not occupied during the period of concern, subject to confirmation by the BLM, in coordination with the WGFD, as appropriate, or if it is determined that the action will not impair the function or suitability of the habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The BLM Authorized Officer may modify the area subject to the stipulations based on a determination by the BLM, in coordination with WGFD, as appropriate, that the lease area does not contain fish-bearing streams or suitable fish spawning habitat or stream segments compatible with fish passage. The stipulation may also be modified based on negative or positive monitoring results. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain fish-bearing streams, suitable fish spawning habitats, or stream segments compatible with fish passage. This determination shall be based on a BLM evaluation, in coordination with the WGFD. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4053	TSL	Fall spawning habitat in fish-bearing streams	<p>Surface-disturbing and disruptive activities are prohibited within the identified bankfull channel width of fish-bearing streams (1) as mapped on the Lander Field Office GIS database, (2) from September 15 to November 30 and (3) to protect fall spawning habitat in fish-bearing streams.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that spawning habitat is not occupied during the period of concern, subject to confirmation by the BLM, in coordination with WGFD, as appropriate, or if it is determined that the action will not impair the function or the suitability of the habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The BLM Authorized Officer may modify the area subject to the stipulations based on a determination by the BLM, in coordination with WGFD, as appropriate, that the lease area does not contain fish-bearing streams, suitable fish spawning habitat, or stream segments compatible with fish passage. The stipulation may also be modified based on negative or positive monitoring results. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain fish-bearing streams or suitable fish spawning habitat or fish passage compatible stream segments. This determination shall be based on a BLM evaluation, in coordination with the WGFD, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4061	TLS	Big Game Crucial Winter Range and Parturition Areas	<p>Surface-disturbing and disruptive activities are prohibited in identified big game crucial winter range and within big game parturition areas (1) as mapped on the Lander Field Office database, (2) from November 15 to April 30 for big game crucial winter range and (3) from May 1 to June 30 for big game parturition areas, and (4) to protect big game crucial winter range and parturition areas.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that the crucial winter or parturition areas are not occupied during the period of concern, subject to a determination by the BLM in coordination with the WGFD, in consideration of the factors described in Appendix C (p. 191). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The BLM Authorized Officer may modify the area subject to the stipulations based on an evaluation by the BLM, in coordination with WGFD, to determine that crucial winter range or parturition areas are not present or boundaries of the subject parturition areas have been refined. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain crucial winter range or parturition areas. This determination shall be based on an evaluation by the BLM, in coordination with the WGFD. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
4062	TLS	Elk winter range	<p>Surface-disturbing and disruptive activities are prohibited in identified elk winter ranges (1) as mapped on the Lander Field Office GIS database, (2) from November 15 to April 30, and (3) to protect elk winter range.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that the elk winter range areas are not occupied during the period of concern, subject to confirmation by the BLM, in coordination with the WGFD, in consideration of the factors described in Appendix C (p. 191). Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulations based on BLM evaluation, in coordination with the WGFD, to determine that the elk winter range is not present or boundaries of the subject winter range areas have been refined. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area is no longer managed as elk winter range. This determination shall be based on BLM evaluations of the area, in coordination with the WGFD. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4071 and 4093	TLS	Raptors	<p>Surface-disturbing and disruptive activities are restricted or prohibited within 1 mile of bald eagle and ferruginous hawk nests and 0.75 mile of all other active raptor nests (1) as mapped on the Lander Field Office GIS database, (2) during the following time periods:</p> <ul style="list-style-type: none"><li>• April 1 to August 31 for northern goshawk</li><li>• April 1 to September 15 for burrowing owl</li><li>• February 1 to August 15 for bald and/or golden eagles</li><li>• February 1 to July 31 for all other raptors and (3) for the protection of active raptor nests.</li></ul> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that there are no active or occupied nests during the period of concern, subject to confirmation by the BLM, in coordination with the WGFD and/or USFWS, as necessary. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The BLM Authorized Officer may modify the area subject to the stipulations based on a BLM evaluation, in coordination with the WGFD and/or the USFWS, as necessary. The stipulation may be modified based on negative or positive monitoring results, or if it is determined that the action will not impair the function or the suitability of the habitat, or cause nest abandonment. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain active raptor nests or suitable habitat for raptors. This determination shall be based on a BLM evaluation of the area, in coordination with the WGFD and/or the USFWS, as necessary. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4084	NSO	Yermo xanthocephalu	<p>No surface occupancy or use is allowed within desert yellowhead population management areas (1) as mapped on the Lander Field Office GIS database and (2) for the protection of desert yellowhead.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception only following USFWS consultation and concurrence with a BLM determination of not likely to adversely affect the species or its designated critical habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation only following USFWS consultation and concurrence with a BLM determination of not likely to adversely affect the species or its designated critical habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined by the BLM, in coordination with the USFWS, that the leasehold is no longer capable of supporting managed populations of desert yellowhead. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4088	NSO	Occupied pygmy rabbit habitat	<p>No surface occupancy or use within 200 feet of occupied pygmy rabbit habitat (1) as mapped in the Lander Field Office GIS database and (2) for the protection of occupied pygmy rabbit habitat.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that pygmy rabbits are not present or it is determined that the action is not sited within 200 feet of occupied pygmy rabbit habitat, or if it is determined that the action is sited in a location where the action will not cause physical injury or a decrease in productivity by interfering with normal breeding, feeding, and sheltering, or cause site abandonment. This determination shall be based on evaluation by a qualified biologist, subject to confirmation by the BLM in coordination with the WGFD and/or the USFWS, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulations based on a BLM evaluation in coordination with the WGFD and/or the USFWS, as appropriate, if it is determined that a portion of the NSO area is not occupied. The stipulation may be modified based on negative or positive monitoring results. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain occupied pygmy rabbit habitat. This determination shall be based on a BLM evaluation of the area in coordination with the WGFD and/or the USFWS, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4094	TLS	Mountain plover nesting habitat	<p>Surface-disturbing and disruptive activities are restricted or prohibited within 0.25 mile of identified mountain plover habitat (1) as mapped on the Lander GIS database, (2) from April 10 to July 10, and (3) for the protection of mountain plover nesting habitat.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the operator demonstrates that there are no active or occupied mountain plover nests during the period of concern, subject to confirmation by the BLM, in coordination with the WGFD, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulations based on a BLM evaluation, in coordination with the WGFD and/or the USFWS, as necessary. The stipulation may be modified based on negative or positive monitoring results, or if it is determined that the action will not impair the function or the suitability of the habitat, or cause nest abandonment. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain suitable mountain plover habitat. This determination shall be based on a BLM evaluation of the area in coordination with WGFD and/or USFWS, as necessary. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>



Decision	Stipulation Type	Protected Resource	Stipulation Description
4095	NSO	Identified bat maternity roosts and hibernation sites	<p>No surface occupancy or use within 0.25 mile of bat maternity roosts and hibernation sites, (1) as mapped in the LFO database, (2) for the protection of identified bat maternity roosts and hibernation sites.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that bat species are not present or it is determined that the action is not sited within 0.25 mile of identified maternity roosts and/or hibernation sites. Or if it is determined that the action is sited in a location where the action will not cause physical injury or a decrease in productivity by interfering with normal breeding, feeding, sheltering, or cause site abandonment. This determination shall be based on evaluation by a qualified biologist, subject to confirmation by the BLM in coordination with the WGFD and/or USFWS, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulations based on a BLM evaluation, in coordination with the WGFD and/or the USFWS, as appropriate, if it is determined that a portion of the NSO area is not occupied. The stipulation may be modified based on negative or positive monitoring results. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire lease area does not contain suitable bat maternity or hibernation habitat. This determination shall be based on a BLM evaluation of the area in coordination with the WGFD and/or the USFWS, as appropriate. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4104	NSO	Occupied greater sage-grouse leks inside designated Core Area	<p>No surface-disturbing activities or surface occupancy is allowed within an 0.6-mile radius of the perimeter of occupied greater sage-grouse leks in Core Area (1) as mapped on the Lander Field Office GIS database and (2) to protect occupied greater sage-grouse leks and associated seasonal habitat, life-history, or behavioral needs of greater sage-grouse in proximity to leks from habitat fragmentation and loss, and protect greater sage-grouse populations from disturbance inside designated Core Area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the as seasonal habitat. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD and in consideration of the factors identified in Appendix C (p. 191), determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is not essential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the habitat needs of the greater sage-grouse. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the WGFD, it is determined that the site is no longer considered in the land use plan to be within greater sage-grouse designated Core Area, or if greater sage-grouse are no longer a BLM sensitive or special status species and is not listed by the USFWS as threatened or endangered under the Endangered Species Act. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4104	NSO	Occupied greater sage-grouse leks outside Core Area	<p>No surface occupancy activities or surface occupancy is allowed within an 0.25-mile radius of the perimeter of occupied greater sage-grouse leks (1) as mapped on the Lander Field Office GIS database and (2) to protect occupied greater sage-grouse leks and associated seasonal habitat, life-history, or behavioral needs of greater sage-grouse in proximity to leks from habitat fragmentation and loss, and to protect greater sage-grouse populations from disturbance outside designated Core Area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site as seasonal habitat. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD and in consideration of the factors identified in Appendix C (p. 191), determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is not essential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for seasonal habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the WGFD, it is determined that the described lands are incapable of serving the long-term requirements of greater sage-grouse breeding, nesting, or brood-rearing habitat and that these ranges no longer warrant consideration as components of greater sage-grouse breeding, nesting, or brood-rearing habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4105	TLS	Greater sage-grouse breeding, nesting, and early brood-rearing habitat inside designated Core Area	<p>Surface-disturbing and disruptive activities are restricted or prohibited in Core Area (1) as mapped on the Lander Field Office GIS database, (2) from March 15 to June 30, and (3) to seasonally protect greater sage-grouse breeding, nesting, and early brood-rearing habitats from disruptive activities inside designated Core Area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable greater sage-grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the size and shape of the Timing Limitation Stipulation area or the Timing Limitation Stipulation criteria if an environmental record of review indicates the actual habitat suitability for seasonal greater sage-grouse activities is more or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the WGFD, it is determined that the described lands are no longer considered in the land use plan to be within a greater sage-grouse designated Core Area or are incapable of serving the long-term requirements of greater sage-grouse breeding, nesting, or early brood-rearing habitat, and that these ranges no longer warrant consideration as components of greater sage-grouse breeding, nesting, or brood-rearing habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
4105	TLS	Greater sage-grouse breeding, nesting and early brood-rearing habitat outside designated greater sage-grouse Core Area	<p>Surface-disturbing and disruptive activities are restricted or prohibited within 2 miles of the perimeter of occupied greater sage-grouse leks outside of Core Area (1) as mapped on the Lander Field Office GIS database, (2) from March 15 to June 30, and (3) to seasonally protect greater sage-grouse breeding, nesting and early brood-rearing habitats from disruptive activities within 2 miles of an occupied lek outside designated Core Area.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable greater sage-grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the size and shape of the Timing Limitation Stipulation area or the Timing Limitation Stipulation criteria if an environmental record of review indicates the actual habitat suitability for seasonal greater sage-grouse activities is more or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the WGFD, it is determined that the described lands are incapable of serving the long-term requirements of greater sage-grouse breeding, nesting, or brood-rearing habitat and that these ranges no longer warrant consideration as components of greater sage-grouse breeding, nesting, or brood-rearing habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4108	TLS	Greater sage-grouse winter concentration areas	<p>Surface-disturbing and disruptive activities are restricted or prohibited in greater sage-grouse winter concentration areas (1) as mapped on the Lander Field Office GIS database, (2) from December 1 to March 14, and (3) to seasonally protect greater sage-grouse winter concentration areas.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function and suitability of the winter concentration area, or it is determined that the winter concentration area is not occupied by concentrated populations of greater sage-grouse during the period of concern. Actions designed to enhance the long-term utility or availability of suitable greater sage-grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the size and shape of the Timing Limitation Stipulation area or the Timing Limitation Stipulation criteria if an environmental record of review indicates the actual habitat suitability for seasonal greater sage-grouse activities is more or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of greater sage-grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the WGFD, it is determined that the described lands are incapable of serving the long-term requirements of greater sage-grouse winter habitat and that these ranges no longer warrant consideration as components of greater sage-grouse winter habitat. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5018	CSU	RHT&EHs and their settings	<p>Surface use or occupancy will be restricted within a 2-mile buffer of RHT&amp;EHs (1) as mapped on the Lander Field Office GIS database and (2) for the protection of the RHT&amp;EHs and their settings.</p> <p><b>Exception:</b> An exception may be granted if the Authorized Officer, in consultation with the State Historic Preservation Office, determines that the action, as proposed or conditioned, would not adversely impact RHT&amp;EHs and their settings. No exception will be granted unless the BLM, in consultation with the State Historic Preservation Office, determines that granting an exception would not adversely impact trails' settings. The Authorized Officer may grant an exception if it is determined that a proposed action would not result in an adverse effect on the integrity of the trail. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if, in consultation with the State Historic Preservation Office, the BLM determines that modification would not affect the trail, and that the area no longer contributes to the setting. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived if, in consultation with the State Historic Preservation Office, the BLM determines that waiver would not affect the trail and that the area no longer contributes to the trail's setting. The stipulation may be waived if, in consultation with the State Historic Preservation Office, the BLM determines that the property is no longer considered National Register eligible. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5024	NSO	Cedar Ridge TCP	<p>No surface use or occupancy is allowed within the Cedar Ridge TCP, (1) as mapped on the Lander Field Office GIS database and (2) for the protection of the Cedar Ridge TCP.</p> <p><b>Exception:</b> An exception may be granted if the Authorized Officer, in consultation with Native American tribes and the State Historic Preservation Office, determines that the action, as proposed or conditioned, would not adversely affect the sacred, spiritual, and/or traditional nature of the Cedar Ridge TCP. No exception will be granted unless the BLM, in consultation with the appropriate Native American tribes and the State Historic Preservation Office, determines that granting an exception would not adversely affect the area's spiritual and cultural resources and their settings. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if, in consultation with the appropriate tribes and the State Historic Preservation Office, the BLM determines that a modification would not adversely affect the TCP, and that the area no longer contributes to the TCP's important values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined by the BLM, in consultation with the appropriate Native American tribes and the State Historic Preservation Office, that a waiver would not affect the TCP, and that the area no longer contributes to the TCP's important values or that the TCP is no longer considered sacred, spiritual, and/or traditional. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
5025	CSU	Cedar Ridge TCP periphery	<p>Surface use or occupancy will be restricted within the designated Cedar Ridge TCP periphery (1) as mapped on the Lander Field Office GIS database and (2) for the protection of the Cedar Ridge TCP periphery.</p> <p><b>Exception:</b> An exception may be granted if the Authorized Officer in consultation with Native American tribes and the State Historic Preservation Office, determines that the action, as proposed or conditioned, would not adversely affect the sacred, spiritual, and/or traditional nature of the Cedar Ridge TCP and periphery. No exception will be granted unless the BLM, in consultation with the appropriate tribes and the State Historic Preservation Office, determine that granting an exception would not adversely impact the area’s spiritual and cultural resources and their settings. The Authorized Officer may grant an exception if the BLM determines that a proposed action would not result in an adverse effect on the integrity of the property. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if, in consultation with the appropriate tribes and State Historic Preservation Office, the BLM determines that modification would not affect the TCP periphery, and that the area no longer contributes to the TCP’s sacred, spiritual, and/or traditional values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived if, in consultation with the appropriate tribes and State Historic Preservation Office, the BLM determines that waiver would not affect the TCP, and that the area no longer contributes to the TCP’s important values. The stipulation may be waived if consultation with Native American tribes and State Historic Preservation Office determines that the property is no longer considered sacred, spiritual, and/or traditional. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5034 and 5035	NSO	Castle Gardens cultural site	<p>Surface use or occupancy will be restricted within the Castle Gardens site and periphery (1) as mapped on the Lander Field Office GIS database and (2) for the protection of the Castle Gardens cultural site.</p> <p><b>Exception:</b> An exception may be granted if the Authorized Officer in consultation with Native American tribes and the State Historic Preservation Office, determines that the action, as proposed or conditioned, would not adversely affect the sacred, spiritual, and/or traditional nature of the Castle Gardens site and periphery. No exception will be granted unless the BLM, in consultation with the appropriate tribes and the State Historic Preservation Office, determine that granting an exception would not adversely impact the area’s spiritual and cultural resources and their settings. The Authorized Officer may grant an exception if the BLM determines that a proposed action would not result in an adverse effect on the integrity of the property. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if, in consultation with the appropriate tribes and State Historic Preservation Office, the BLM determines that modification would not affect the Castle Gardens site and periphery, and that the area no longer contributes to the site’s sacred, spiritual, cultural and/or traditional values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived if, in consultation with the appropriate tribes and State Historic Preservation Office, the BLM determines that waiver would not affect the Castle Gardens site, and that the area no longer contributes to the site’s important values. The stipulation may be waived if consultation with Native American tribes and State Historic Preservation Office determines that the property is no longer considered sacred, spiritual, and/or traditional. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5050	NSO	Sacred, Spiritual, and TCPs.	<p>No surface occupancy or use is allowed within designated Sacred, Spiritual, and TCPs, (1) as mapped on the Lander Field Office GIS database, (2) for the protection of Sacred, Spiritual, and TCPs.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if consultation with Native American tribes or appropriate cultural group for the TCP, and the State Historic Preservation Office, determines that a proposed action would not result in an adverse effect to the sacred, spiritual, and/or traditional nature of the property. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if consultation with Native American tribes, or appropriate cultural group for the TCP, and the State Historic Preservation Office, determine that the identified property’s sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined, in consultation with Native American tribes, or appropriate cultural group for the TCP, and the State Historic Preservation Office, that the identified site is no longer considered sacred, spiritual, and/or traditional. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5058	CSU	Very high or high potential fossil areas	<p>Surface use or occupancy will be restricted within designated “very high” or “high” potential fossil yield classification areas (1) as mapped on the Lander Field Office GIS database and (2) for the protection of fossil resources.</p> <p><b>Exception:</b> An exception may be granted if the Authorized Officer determines that the action, as proposed or conditioned, would not adversely affect fossil resources. The Authorized Officer may grant an exception if the BLM determines that a proposed action would not result in an adverse effect on the integrity of the property. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> This stipulation may be modified if the BLM determines that modification would not affect the fossil resources, and that the area no longer contains fossil resource values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> This stipulation may be waived if the BLM determines that waiver would not affect fossil resources. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
5066	CSU	VRM Class I and II areas	<p>Surface occupancy or use is restricted within designated VRM Class I and II areas (1) as mapped on the Lander Field Office GIS database and (2) for the protection of VRM Class I and II areas.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is demonstrated through a BLM-approved visual simulation and contrast rating worksheet that the project or identified mitigation will meet or exceed VRM Class I or II objectives. This restriction does not apply to temporary structures such as drilling rigs. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or use restriction if it is demonstrated that VRM Class I or II objectives have been modified through appropriate RMP planning procedures, or if a portion of the lease is not located within a VRM Class I or II area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the entire leasehold is no longer managed for VRM Class I or II objectives based on planning, or if the entire leasehold is not located within a Class I or II area. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

Decision	Stipulation Type	Protected Resource	Stipulation Description
6086 and 6092	NSO	Recreation Areas and Developed Recreation Sites	<p>No surface use or occupancy is allowed within developed recreation sites (1) as mapped on the Lander Field Office GIS database and (2) for the protection of developed recreation sites.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the action can be developed in a way that meets the management objectives for the developed recreation site. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation if the lease action(s) is/are no longer located within the mapped boundary of the subject recreation site, or if the proposed action can be developed in a way that meets the management objectives for the developed recreation site. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the area is no longer managed under the Lander Approved RMP as a developed recreation site. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
6124	CSU	Sweetwater Rocks Periphery	<p>Surface use or occupancy is restricted within the Sweetwater Rocks viewshed (1) as mapped on the Lander Field Office GIS database and (2) to protect the Sweetwater Rocks periphery</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if the proposed project will maintain or enhance the scenic values of the Sweetwater Rocks periphery. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the stipulation, or the area subject to the stipulation, if the lease action(s) can be shown to maintain or enhance the scenic values of the Sweetwater Rocks periphery. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the Sweetwater Rocks periphery is no longer managed under the Lander Approved RMP to maintain the scenic values of the area or if it is found that the entire leasehold is not located within the Sweetwater Rocks periphery. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
7002	NSO	National Trails Management Corridor	<p>No surface use or occupancy is allowed within the designated National Trails Management Corridor (1) as mapped on the Lander Field Office GIS database and (2) for the protection of Congressionally Designated Trails and their settings.</p> <p><b>Exception:</b> The Authorized Officer may consider a lease stipulation exception within the National Trails Management Corridor if (1) an action is at least 3 miles from a Congressionally Designated Trail, a significant Congressionally Designated Trail historical or recreational site, or Congressionally Designated Trail-related recreational activities or (2) all components and effects of the action are in compliance with the RMP-designated VRM standard in consultation with appropriate federal agencies. The proposal must be capable of attaining a no adverse-affect determination in consultation with the State Historic Preservation Office. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or surface occupancy criteria if it is determined by the BLM, after consultation with the appropriate federal and/or state agency, that a portion of the NSO area does not contribute, as determined by Section 106 of the National Historic Preservation Act, to the Congressionally Designated Trails' nature and purpose or their settings, or if the proposed action can be developed in a way that meets the management objectives for the National Trails Management Corridor. This determination shall be based on field evaluation of the area by a qualified archeologist/historian, landscape architect, and recreation specialist and is subject to confirmation by the BLM. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined, in consultation with the appropriate federal and/or state agency, that the area is no longer considered to contribute to the Congressionally Designated Trails' nature and purpose or settings, or if the proposed action can be developed in a way that meets the management objectives for the National Trails Management Corridor. This determination shall be based on field evaluation of the area by a qualified archeologist/historian, landscape architect, and recreation specialist and subject to confirmation by the BLM. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
7059, 7068, 7095, 7106, 7117, 7126	NSO	ACECs	<p>No surface use or occupancy is allowed within designated ACECs (1) as mapped on the Lander Field Office GIS database and (2) for purposes of protecting the relevant and important ACEC values.</p> <p><b>Exception:</b> The Authorized Officer may grant an exception if it is determined that the action, as proposed or conditioned, would not adversely impact the relevant and important values of the ACEC. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Modification:</b> The Authorized Officer may modify the area subject to the stipulation or surface occupancy criteria if it is determined that a portion of the NSO area is not essential to the protection of the ACEC's relevant and important values. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p> <p><b>Waiver:</b> The Authorized Officer may grant a waiver if it is determined that the area is no longer considered to contribute to the ACEC's relevant and important values or if the entire leasehold is no longer managed as an ACEC. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>

## Required Design Features (BLM 2014b)

### ***Greater Sage-Grouse Protection Required Design Features for All Projects***

The following measures, and others as they are identified, will be required for all BLM-authorized development. As appropriate, they may be required as part of the design of the project or as a mandatory condition of approval. Other greater sage-grouse protections are identified below as BMPs, which will be evaluated on a site-specific basis for inclusion as a mandatory condition of approval.

#### General:

- In applying protections for greater sage-grouse, all projects must evaluate (1) whether the conservation measure is reasonable (see 43 Code of Federal Regulations [CFR] 3101.1-2 for the definition of “reasonable” for fluid mineral leases) and consistent with valid existing rights, and (2) whether the action is in conformance with the RMP. Each conservation measure will be evaluated on a site-specific basis for likely effectiveness on a cost-benefit basis.
- In Core Area, where development would result in the long-term loss of greater sage-grouse habitat, identify effective mitigation that will be applied for a sufficient term as to constitute replacement habitat. Example: Purchase private land and mineral rights in the priority area and deed to the United States, or obtain a conservation easement in perpetuity. Consider compensatory mitigation and monitoring of significant direct, indirect, and cumulative impacts on, and loss of habitat for, greater sage-grouse.
- When additional mitigation is necessary, conduct it in Core Area, in the same greater sage-grouse population area. If Core Area does not provide appropriate mitigation, conduct offsite mitigation in general greater sage-grouse habitat with the ability to increase greater sage-grouse populations.
- Designate a qualified biologist who will be responsible for overseeing compliance with all design features related to the protection of ecological resources throughout all project phases, particularly in areas requiring avoidance or containing concentrated greater sage-grouse populations. This person shall be approved by the BLM.

#### Facilities and Surface Disturbance:

- Give overall consideration to minimizing the adverse impact to greater sage-grouse through a project design that avoids, minimizes, reduces, rectifies, and/or adequately compensates for direct and indirect impacts to greater sage-grouse habitat or use. Apply a phased development approach with concurrent interim reclamation. Locate and design individual project facilities to minimize disruption of animal movement patterns and connectivity of habitats.
- Subject to topographic and other environmental constraints, require development for a project wholly or partially in Core Area to be placed in the area least harmful to greater sage-grouse based on vegetation, topography, or other habitat features.
- Co-locate new development (facilities, pipelines, etc.) in existing disturbances or in areas where reclamation success has not been fully achieved unless the proponent establishes that this is technically infeasible. Cluster disturbances, operations (hydraulic fracture stimulation, liquids gathering, etc.), and facilities. Co-locate powerlines, flow lines, and small pipelines under or immediately adjacent to existing roads. Design or site permanent structures to minimize impacts to greater sage-grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid storage tanks) in a manner to minimize disturbance of greater sage-grouse or interference with habitat use.

- Locate new compressor stations outside priority habitats and require a design that reduces noise directed toward priority habitat unless the proponent can establish that this requirement would preclude development of the lease.
- Properly contain and promptly remove refuse to avoid attracting predators.
- Use mats for drilling activities where topography permits to reduce vegetation disturbance, and as temporary roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment.
- Restrict the construction of tall facilities, distribution powerlines, fences, and other infrastructure to the minimum number and amount needed. Place facilities, such as tanks, which could serve as greater sage-grouse predator perches, outside of Core Area unless the proponent establishes that this is technically infeasible. Equip tanks and other aboveground facilities with structures or devices that discourage nesting of ravens and raptors.
- Site and/or minimize linear features to reduce disturbance and fragmentation of greater sage-grouse habitats.
- Install greater sage-grouse safe fences around sumps, pits, and other trenching.
- Evaluate whether the benefits to greater sage-grouse from burying powerlines would outweigh the potential loss of habitat from the disturbance associated with burying the line, considering the potential threat from invasive nonnative species, low reclamation potential, and other factors. If the benefits outweigh potential adverse impacts, require that the powerlines be buried unless the applicant establishes that burying the lines is not technically feasible.
- Use remote monitoring techniques for production facilities, where applicable, and develop a plan to reduce vehicular traffic and human presence.
- Properly contain and promptly remove refuse to avoid attracting predators.
- Cover all fluid-containing pits and open tanks with netting (maximum 1.5-inch mesh size).
- Locate all residential development for employees and contractors (“man camps”) outside of Core Area.
- When a well is plugged and abandoned, avoid the use of above ground dry hole markers.

## ***Reclamation***

- Where native shrubs located on lands proposed to be disturbed are unique and desirable for interim and final reclamation purposes, and the seed supply for these desirable brush species is not commercially available, seeds will be collected from the area and stored using the procedures of the Seeds of Success program. Seedlings or plugs of common dominant species will be propagated, preferably locally, in preparation for use in portions of area to be reclaimed to expedite vegetation recovery.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling, and revegetating cut-and-fill slopes.
- Identify areas of sustainable plant communities and populations appropriate for the project as sources for native plant material and manage for use in reclamation and restoration work. Prioritize native seed allocation for use in priority greater sage-grouse habitat in years when preferred native seed is in short supply.

- Utilize enhanced reclamation if needed to support more rapid interim and final reclamation including irrigation, mulching, soil amendments, and erosion blankets.
- When reseeding, use appropriate seed mixes and consider the use of appropriate subspecies of sagebrush seed. Continue to evaluate seed mixtures over time, considering potential changes in climate (Miller et al. 2011) when proposing seedings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed (Kramer and Havens 2009).
- Include reclamation or post-fire restoration objectives requiring that greater sage-grouse habitat needs are adequately addressed, and monitoring protocol to verify that the objectives are accomplished. Include greater sage-grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007), or if available, state greater sage-grouse conservation plans and appropriate local information in habitat restoration objectives. Make maintaining these objectives in priority greater sage-grouse habitat areas a high restoration priority.
- Identify and work with partners to increase native seed availability and work with plant material centers to develop new plant materials, especially the forbs needed to restore greater sage-grouse habitat.
- Choose native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success, and the vegetation management objectives for the area covered by the treatment. Prioritize native seed allocation for use in Core Area in years when preferred native seed is in short supply.
- Make reestablishment of sagebrush and desirable understory plant cover (relative to ecological site potential) a high priority for restoration efforts. Write specific vegetation objectives to reestablish sagebrush cover and desirable understory cover.
- Implement interim reclamation as soon as feasible for all disturbed soils to the side of roadways and other long-term disturbances, reducing the disturbance to the smallest area possible.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling, and revegetating cut-and-fill slopes.

## **Roads**

- Locate roads to avoid important habitats for greater sage-grouse and other wildlife. Construct, improve, and maintain access roads to minimize potential wildlife/vehicle collisions and facilitate wildlife movement through the project area.
- Apply dust abatement on roads, well pads, and other surface disturbances. Use of dust abatement with limited adverse impacts to vegetation, cultural resources, water quality, and other resources.
- When responding to a request for a road, develop a transportation plan on a landscape scale so as to consider all parties who will be authorized to use the road.
- Limit route construction to realignments of existing designated routes if that realignment has a minimal impact on greater sage-grouse habitat, eliminates the need to construct a new road, or is necessary for motorist safety.
- Identify measures to reduce the use of motorized vehicles to reduce adverse impacts to wildlife.

- Design roads to minimize total disturbance to the smallest amount possible and to the lowest standard while meeting road objectives or purpose including safety. Establish speed limits that will reduce vehicle speed to reduce greater sage-grouse mortality.
- If road crossings of linear water features (such as ephemeral, intermittent, and perennial streams) cannot be avoided, construct crossings to minimize impacts to the riparian-wetlands habitat. Usually this will mean crossing the feature at right angles. Temporary, portable bridges should be considered.
- Limit the use of new roads associated with development including not making it part of the public road network or implementing seasonal closures. Restrict motorized vehicle use to authorized users using signage, gates, and other devices.
- Establish slow speed limits on BLM-administered roads or design roads for slower vehicle speeds to reduce greater sage-grouse mortality and other wildlife conflicts.

## ***Mineral Development***

- Give overall consideration to impacts to greater sage-grouse in applying technically feasible conditions of approval. Selection and application of these measures shall be based on current science and research on the effects to important breeding, nesting, brood-rearing, and wintering areas. The Plan of Development or Plan of Operations, as applicable, shall address, at a minimum, the anticipated noise, density and amount of disturbance, mechanical movement (e.g., pump jacks), permanent and temporary facilities, traffic, phases of development over time, offsite mitigation, and expected periods of use associated with the proposed project. The NEPA analysis and authorization should identify seasonal habitats or typical project features related to potential greater sage-grouse impacts, such as drill mats that are not made a part of the conditions of approval, based on site-specific or project-specific considerations and the explanation of why these protections were not included.
- Where feasible, co-locate new development (facilities, pipelines, etc.) in existing disturbances. Cluster disturbances, operations (hydraulic fracture stimulation, liquids gathering, etc.), and facilities. Use drilling techniques to reduce surface disturbance in relation to the number of wells, where feasible. Place liquid-gathering facilities and compressor stations outside Core Area, unless the proponent can establish that this requirement would preclude development of the lease. Identify measures to reduce traffic in Core Area.
- To ensure comprehensive planning relative to greater sage-grouse conflicts, complete Master Development Plans or Plans of Development during planning and review of projects involving multiple proposed disturbances in Core Area.
- In Core Area, require closed-loop systems for drilling operations, with no reserve pits unless technically infeasible.
- Require noise shields or other noise abatement devices when drilling during the lek, nesting, brood-rearing, and wintering seasons. Locate new compressor stations outside of Core Area if feasible, and require a design directed toward priority habitat that reduces noise.

## **Best Management Practices**

No BMPs listed in RMP.



## Rights-of-Way Allocations

Locations of rights-of-way allocations are depicted on Map 33 of the Lander FO RMP (BLM 2014c). Rights-of-way exclusion areas comprise 567,476 acres of public land in the Lander FO. Rights-of-way avoidance areas comprise 1,282,773 acres of public land in the Lander FO.

## Literature Cited

- Bureau of Land Management (BLM). 2014a. *Appendix I. Stipulations and Conditions of Approval in Designated Development Areas and in Non-Designated Development Areas*. In *Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area*. Lander, Wyoming: BLM Lander Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/18602/84390/100999/Ch.\\_5-6,\\_Gloss,\\_and\\_Apndx\\_LFO\\_PRMP\\_FEIS\\_Feb\\_2013.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/18602/84390/100999/Ch._5-6,_Gloss,_and_Apndx_LFO_PRMP_FEIS_Feb_2013.pdf). Accessed March 9, 2020.
- . 2014b. *Appendix E. Exception, Modification, and Waiver Criteria, Avoidance Criteria, and Special Management for Designated Corridors*. In *Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area*. Lander, Wyoming: BLM Lander Field Office. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/18602/84390/100999/Ch.\\_5-6,\\_Gloss,\\_and\\_Apndx\\_LFO\\_PRMP\\_FEIS\\_Feb\\_2013.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/18602/84390/100999/Ch._5-6,_Gloss,_and_Apndx_LFO_PRMP_FEIS_Feb_2013.pdf). Accessed March 9, 2020.
- . 2014c. *Map 33 Rights-of-Way Management*. In *Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area*. Lander, Wyoming: BLM Lander Field Office. Available at [https://eplanning.blm.gov/public\\_projects/lup/18602/57735/62508/Rights-of-Way\\_Management.pdf](https://eplanning.blm.gov/public_projects/lup/18602/57735/62508/Rights-of-Way_Management.pdf). Accessed July 15, 2020.

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# **PINEDALE RESOURCE MANAGEMENT PLAN**

## **Stipulations**

Refer to individual resource sections of the Record of Decision and Approved Pinedale Resource Management Plan for any applicable stipulations (BLM 2008a).

## **Required Design Features**

No required design features listed in RMP.

## **Best Management Practices (BLM 2008a)**

### ***Big Game Crucial Winter Range***

- Transportation planning (i.e., to reduce road density and traffic volumes)
- Habitat enhancement
- Seasonal restriction of public vehicular access
- Using Bureau of Land Management (BLM) standard wildlife fences
- Compensation mitigation

### ***Sage-Grouse Habitat***

- Seasonal restriction of public vehicular access
- Reduce truck traffic via car-pooling or transportation planning within sage grouse habitats to reduce human disruptive activities
- Noise reduction techniques and designs
- Installation of raptor anti-perch devices
- Habitat enhancement
- Avoidance of surface disturbance or occupancy within one-quarter mile of the perimeter of occupied sage-grouse leks
- Avoidance of human activity between 8:00 p.m. and 8 a.m. from March 1 through May 15 within one-quarter mile of the perimeter of occupied sage-grouse leks
- Avoidance of surface disturbing and disruptive activities in suitable sage-grouse nesting and early brood-rearing habitat within 2 miles of an occupied lek, or in identified sage-grouse nesting and early brood-rearing habitat outside the 2-mile buffer from March 15 through July 15.
- Avoidance of disturbance and disruptive activities in sage-grouse winter habitat from November 15 through March 14

## ***Wildlife Habitat***

- Seasonal restriction of public vehicular access
- Noise reduction techniques and designs
- Installation of raptor anti-perch devices
- Limiting pipeline crossings to 1 corridor to limit habitat fragmentation for pygmy rabbits
- Avoiding known white-tailed prairie dog, burrowing owl, and pygmy rabbit burrowing systems
- Habitat enhancement
- Transportation planning to reduce road density

## ***Visual Resource Management Class II, III, and IV Areas***

- Burying of distribution power lines and flow lines in or adjacent to access roads
- Repetition of elements of form, line, color, and texture to blend facilities with the surrounding landscape
- Painting of all new facilities a color, or colors that best allow the facility to blend with the background, typically a vegetated background
- Final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography
- Avoidance of facility placement on steep slopes, ridge tops, and hilltops
- Screening of facilities from view
- Following of the contours of the land to reduce unnecessary disturbance
- Recontour and revegetation of disturbances to blend with the surrounding landscape
- Reclamation of unneeded roads to the original contour
- Thinning and feathering of vegetation to disrupt linear lines created by clearing activities.
- Site selection adjustment to minimize visibility
- Other BMPs as applicable from Gold Book and BLM BMP website

## ***Air Quality***

- Use water and dust suppressant on roads to achieve 50% control of road dust on 90% of BLM resource roads
- Consider air quality levels in the approval of current actions
- Post speed limits on roads
- Implement transportation planning to reduce/vehicle traffic

## ***Fluid Mineral Construction, Operation, and Reclamation***

- Transportation planning (i.e., to reduce road density and traffic volumes)
- Burying of distribution power lines and flow lines in or adjacent to access roads

- Design and construction of all new roads to a safe and appropriate standard, “no higher than necessary” to accommodate their intended use
- Avoidance of facility placement on steep slopes, ridge tops, and hilltops
- Removal of trash, junk, waste, and other materials not in current use

## **Mitigation Guidelines and Operating Standards Applied to Surface Disturbing and Disruptive Activities (BLM 2008b)**

### ***Air Quality***

Air quality mitigation will be voluntary or required by the BLM.

In accordance with Wyoming Air Quality Standards and Regulations, Chapter 3, Section 2(f), the emission of fugitive dust will be limited by all persons handling, transporting, or storing any material to prevent unnecessary amounts of particulate matter from becoming airborne to the extent that ambient air standards described in these regulations are exceeded.

Necessary air quality permits to construct, test, and operate facilities will be obtained from the Wyoming Department of Environmental Quality-Air Quality Division (WDEQ-AQD). All internal combustion equipment will be kept in good working order. Best available control technology (BACT) will be implemented as required by WDEQ-AQD.

Operators will comply with all applicable local, state, tribal, and federal air quality laws, statutes, regulations, standards, and implementation plans, including Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS).

To avoid the incremental risk of exposure to carcinogenic toxins from producing wells, no well will be located closer than 0.25 mile from a dwelling or residence. At 0.25 mile, the incremental risk increase for the most likely exposure scenario is below the designated threshold level of less than 1 additional person per million.

To avoid incremental risk of exposure to carcinogenic toxins from compressor facilities, any compressor facility located closer than 4 miles to a dwelling or residence will require additional NEPA analysis prior to the final selection of the site and authorization to construct.

### ***Cultural/Paleontological Resources***

If effects to paleontological values, or objects of historic or scientific interest are observed, the operator will be required to immediately contact the BLM and the operator will be required to cease any operations that would result in the destruction of or adverse impact to these values.

In areas of paleontological sensitivity, the BLM will make a determination as to whether a survey by a qualified paleontologist is necessary prior to the disturbance. In some cases, construction monitoring, project relocation, data recovery, or other mitigation will be required to ensure that significant paleontological resources are avoided or recovered during construction.

If paleontological resources are uncovered during surface-disturbing activities, operators will suspend operations at the site that would further disturb such materials and immediately contact the BLM AO, who will arrange for a determination of significance, and, if necessary, recommend a recovery or avoidance plan. Mitigation of impacts to paleontological resources will be conducted on a case-by-case basis, and operators will either avoid or protect paleontological resources.

Areas underlain by either the Wasatch or Green River formations have a high potential for containing vertebrate paleontological resources (fossils) and must be surveyed by a qualified paleontologist before surface disturbing activities will be authorized. Based on the results of the paleontological survey, additional monitoring and/or mitigation will be necessary. All major pipelines (12" and larger) will have paleontological open trench inspections and geologic research to resolve mapping issues discovered during the paleontological overview in the Jonah Field. Other actions, such as onsite project monitors by professional paleontologists while surface disturbing activities are occurring, and/or spot-checks of spoil piles, pits, and trenches prior to backfilling will become more common and will be considered standard stipulations within the Blue Rim-Ross Butte Management Area.

Operators will follow the Section 106 compliance process prior to any surface-disturbing activity and will either avoid or protect cultural resource properties as determined through consultation with the Wyoming State Historic Preservation Office (SHPO).

Operators will halt construction activities at the site of previously undetected cultural resources discovered during construction. The BLM will be notified immediately, and consultation with SHPO and, if necessary, the Advisory Council, will be initiated to determine proper mitigation measures pursuant to 36 Code of Federal Regulations (CFR) 800.11 or other treatment plans, programmatic agreements, or discovery plans that may direct such efforts. Construction will not resume until a Notice to Proceed is issued by the BLM.

In culturally sensitive soils, if cultural resources are located within frozen soils or sediments precluding the ability to adequately record or evaluate the find, construction work will cease and the site will be protected for the duration of frozen soil conditions. Following natural thaw, recordation, evaluation and recommendations concerning further management will be made to the BLM AO, who will consult with affected parties. Construction work will be suspended until management of the threatened site has been finalized.

Should future work identify any traditional Native American religious or sacred sites, consultation among the BLM, the affected Native American group, the Wyoming SHPO and the project proponent will occur to resolve conflicts. This consultation will occur on a case-by-case basis or in conformance with an approved Native American Concerns Agreement Document.

Operators should inform their employees, contractors, and subcontractors about relevant federal regulations intended to protect archaeological and cultural resources. All personnel should be informed that collecting artifacts (including arrowheads) is a violation of federal law and that employees engaged in this activity may be subject to disciplinary action, which could include dismissal.

Equipment operators should be informed that a cultural resource could be found anywhere; and if they uncover a site during construction, surface disturbing activities at the site must be halted immediately and the BLM notified.

Historic trails will be avoided. Surface disturbing activities will avoid areas within one-quarter mile of a trail unless such disturbance will not be visible from the trail or will occur in an existing visual intrusion area. Historic trails will not be used as haul roads. Placement of facilities outside one-quarter mile that are within view of the Lander Trail will be located to blend the site and facilities in with the background.

The selective use of locked gates, where practicable, could be used to protect any significant cultural sites found during inventories. This approach is more commonly used as a seasonal restriction to protect wildlife during winter months, but some applications may also present themselves from a cultural resources standpoint.

## ***Roads and Transportation***

The project proponent could be required to develop a coordinated travel management plan before surface disturbing activities are authorized.

Transportation plans will be required to maintain the largest undisturbed blocks of habitat possible and to minimize the acres of disturbance from roads, pipelines, power lines, and other facilities within and/or associated with the proposed project area.

Closure and reclamation of unnecessary roads will be required to reduce fragmentation and restore habitat integrity while reducing the potential for wildlife disturbances.

All new roads will be constructed to meet the design requirements of the BLM Manual 9113. New main artery roads will be designed to reduce sediment, salt, and phosphate loading to the Green and New Fork Rivers. Where necessary, running surfaces of the roads will be graveled if the base does not already contain sufficient aggregate.

If necessary, roads will be treated to suppress dust. Treatment could include gravel, mag-water, or in rare cases, paving of roads.

The use of existing two-track and unconstructed roads will be encouraged where such roads would withstand the proposed access activity, would provide a safe route for ingress and egress, would not result in offsite sediment discharge, could be effectively reclaimed, and would result in minimal, if any, new surface disturbance.

The operator will regularly maintain all lease roads in a safe, usable condition. A regular maintenance program will include, but not be limited to, blading, ditching, culvert installation, drainage installation, surfacing, and cattleguards, as needed. Design, construction, and maintenance of the road will be in compliance with the standards contained in BLM Manual, Section 9113 (Roads), and in the latest version of the "Gold Book," Oil and Gas Surface Operating Standards for Oil and Gas Exploration and Development.

At the discretion of the BLM AO, road construction may be required to be monitored by a qualified individual agreed to by the BLM AO and the operator. A certified civil engineer is to submit a statement that the road was built as designed within 15 days after the road has been constructed. Compaction of the subgrade with water and heavy equipment to a density higher than the surrounding subsurface is required during construction.

Project-related travel will be limited to only that necessary for efficient project operation during periods when soils are saturated and excessive rutting could occur.

Where deemed necessary and effective by the BLM AO, locked gates will be installed on oil field roads (with structures added to prevent drive-arounds) to reduce traffic and protect other resources (e.g., wildlife, cultural resources) from impacts caused by increased vehicle traffic and human presence. The need and location of locked gates will be determined during the transportation planning process. To control or reduce sediment from roads, guidance involving proper road placement and buffer strips to stream channels, graveling, proper drainage, seasonal closure, and in some cases, redesign or closure of old roads will be developed when necessary. Construction may also be prohibited during periods when soil material is saturated, frozen, or when watershed damage is likely to occur.

Available topsoil will be stripped from all road corridors prior to commencement of construction activities and will be redistributed and reseeded on backslope areas of the borrow ditch after completion of road construction activities. Borrow ditches will be reseeded in the first appropriate season after initial disturbance.

On newly constructed roads and permanent roads, the placement of topsoil, seeding, and stabilization will be required on all cut and fill slopes unless conditions prohibit this (e.g., rock). No unnecessary sidecasting of material (e.g., maintenance) on steep slopes will be allowed. Snow removal plans may be required so that snow removal does not adversely affect reclamation efforts or resources adjacent to the road.

Reclamation of abandoned roads will include requirements for reshaping, recontouring, resurfacing with topsoil, installation of water bars, and seeding on the contour. Road beds, well pads, and other compacted areas will be ripped to a 2-foot depth on 1.5-foot centers to reduce compaction prior to spreading the topsoil across the disturbed area. Stripped vegetation will be spread over the disturbance for nutrient recycling, where practical. Fertilization or fencing of these disturbances will not normally be required. Additional erosion control measures (e.g., fiber matting) and road barriers to discourage travel may be required. As deemed necessary by the BLM AO, graveled roads, well pads, and other sites will be stripped of usable gravel and hauled to new construction sites prior to ripping. The removal of structures such as bridges, culverts, cattleguards, and signs usually will be required.

Road closures may be implemented during crucial periods (e.g., wildlife winter periods, spring runoff, calving and fawning seasons, saturated soil conditions).

Individual road design plans for new and/or improved roads will be submitted for approval as components of APDs or ROW permits. Plans must be approved prior to initiation of work. Operators will schedule a review of plans with sufficient time to obtain BLM approval prior to commencement of work.

Existing roads will be used to the maximum extent possible and upgraded as necessary.

Operators will comply with existing federal, state, and county requirements and restrictions to protect road networks and the traveling public.

Roads and pipelines will be located adjacent to existing linear facilities wherever practical.

As deemed necessary by the BLM AO, operators and/or their contractors will post appropriate warning signs and require project vehicles to adhere to appropriate speed limits on project-required roads.

The application of produced water on roads for use in dust suppression activities on BLM-administered public lands will not be allowed unless total dissolved solids (TDS) are less than 400 mg/l (state standard for the Colorado River drainage), the water does not contain hazardous material, and prior approval is obtained from BLM and WDEQ.

Appropriate dust suppressants will be applied to oil and gas field and other roads as necessary. Depending on the site and amount of traffic, suppressants could include water or mag water. In some cases, paving of roads could be required to control dust, provide all-weather access, and reduce road maintenance.

## ***Pipelines***

Channel crossings by pipelines will be constructed so that the pipe is buried at a depth sufficient to ensure the pipeline does not become exposed.



Channel crossings by roads and pipelines will be constructed perpendicular to flow. Streams/channels crossed by roads will have culverts installed at all appropriate locations as specified in the BLM Manual 9112-Bridges and Major Culverts (USDI, BLM 1990) and Manual 9113-Roads (USDI, BLM 1985). All stream crossing structures will be designed to carry the 25-year discharge event or other capacities as directed by the BLM.

Wetland areas will be crossed during dry conditions (i.e., late summer, fall, or dry winters); winter construction activities will occur only prior to soil freezing or after soils have thawed.

On ditches exceeding 24 inches in width, 6 to 12 inches of surface soil will be salvaged where possible on the entire right-of-way. When pipelines and communication lines are buried, at least 30 inches of backfill will be on top of the pipe. Backfill should not extend above the original ground level after the fill has settled. Guides for construction and water bar placement are found in "Surface Operating Standards for Oil and Gas Exploration and Development" (USDA 1978). Bladed surface materials will be re-spread on the cleared route once construction is completed. Disturbed areas that have been reclaimed may need to be fenced when the route is near livestock watering areas.

Pipeline ROWs will be located to minimize soil disturbance. Mitigation will include locating pipeline ROWs adjacent to access roads to minimize ROW disturbance widths, or routing pipeline ROWs directly to minimize disturbance lengths. In some cases, it may be appropriate to place pipelines directly on the surface.

Existing crowned and ditched roads will be used for access where possible to minimize surface disturbances. Clearing of pipeline and communication line rights-of-way will be accomplished with the least degree of disturbance to topsoil. Where topsoil removal is necessary, it will be stockpiled (windrowed) and re-spread over the disturbance after construction and backfilling are completed. Vegetation removed from the right-of-way will also be re-spread to provide protection, nutrient recycling, and a seed source.

Temporary disturbances that do not require major excavation (e.g., small pipelines and communication lines) may be stripped of vegetation to ground level using mechanical treatment, leaving topsoil intact and root mass relatively undisturbed.

Trees, shrubs, and ground cover (not to be cleared from rights-of-way) will require protection from construction damage. Backfilling to preconstruction condition (in a similar sequence and density) will be required. The restoration of normal surface drainage also will be required.

To promote soil stability, the compaction of backfill over the trench will be required (not to extend above the original ground level after the fill has settled). Wheel or other method of compacting the pipeline trench backfill will be required at two levels to reduce trench settling and water channeling; once after 3 feet of fill has been replaced and once within 6 to 12 inches of the surface. Water bars, mulching, and terracing will be required, as needed, to minimize erosion. In-stream protection structures (e.g., drop structures) may be required in drainages crossed by a pipeline to prevent erosion. The fencing of linear disturbances near livestock watering areas may be required.

During saturated soil conditions vehicular activity will be confined to roads designed and constructed for all-weather access (e.g., paved, graveled, and "mag-water" surfaced roads).

Crossings of ephemeral, intermittent, and perennial streams associated with road and utility line construction will generally be restricted until after spring runoff, when normal flows are established.

Pipeline projects should be conducted to allow natural movement of livestock through the field. Gaps should be provided in the trenching process to allow cows to move, or get pipeline projects completed while cattle are not on the allotment.

## ***Project Siting and Operation***

Wells, pipelines, and ancillary facilities will be designed and constructed such that they will not be damaged by moderate earthquakes. Any facilities defined as critical according to the Uniform Building Code will be constructed in accordance with applicable Uniform Building Code Standards for Seismic Risk Zone 2B.

Slope, grade, and other construction control stakes (e.g., exterior boundary centerline) will be placed, as necessary, to ensure construction in accordance with the surface use plan. The cut and fill slopes and spoil storage areas will be marked with a stake and/or lath at a minimum of 50-foot intervals. The tops of the stakes or laths will be painted or flagged in a distinctive color. All boundary stakes and/or laths will be maintained in place until final construction cleanup is completed. If stakes are disturbed, they will be replaced before proceeding with construction.

## ***Recreation***

Operators will restrict off-road vehicle (OHV) activity by employees and contract workers to the immediate area of authorized activity or existing roads and trails.

## ***Soils***

Soil retention measures, such as silt fencing, contour furrows, or hydromulching, shall be implemented on erosive soils at the time of disturbance.

Revegetation shall be initiated on exposed soils on portions of the disturbance no longer needed for operations (e.g., cut and fill slopes, portions of well pads not needed for production operations) within one growing season of the time the disturbance is no longer needed for operations. Interim reclamation (i.e., site stabilization/soil retention seeding) shall be conducted on disturbed areas that are needed for future planned operations but will not be occupied for one or more growing seasons.

Upland soils classified as highly erodible in the order three soil survey will be avoided.

Slopes greater than 10 percent and with south-facing aspects with sensitive or highly erosive soils and areas with biological crusts will be avoided.

Before a surface disturbing activity is authorized, topsoil depth will be determined. The amount of topsoil to be removed, along with topsoil placement areas, will be specified in the authorization. The uniform distribution of topsoil over the area to be reclaimed will be required, unless conditions warrant a varying depth. On large surface-disturbing projects (e.g., gas processing plants) topsoil will be stockpiled and seeded to reduce erosion. Where feasible, topsoil stockpiles will be designed to maximize surface area to reduce impacts to soil microorganisms. Stockpiles remaining less than 2 years are best for soil microorganism survival and native seed viability.

Emphasis will be placed on the reduction of soil erosion and sediment into the Green River Basin watershed. Of particular importance will be those areas with saline soils or those areas with highly erodible soils. Critical erosion condition areas will continue to be identified during soil surveys, monitoring, site specific project analysis, and activity plan development for the purpose of avoidance and special management.

Operators will avoid adverse impacts to soils by—

- Minimizing disturbance, avoiding construction with frozen soil material
- Avoiding areas with high erosion potential (e.g., unstable soil, dunal areas, slopes greater than 25 percent, floodplains), where possible
- Salvaging and selectively handling topsoil from disturbed areas
- Adequately protecting stockpiled topsoil and replacing it on the surface during reclamation
- Leaving the soil intact (scalping only) during pipeline construction, where possible
- Using appropriate erosion and sedimentation control techniques, including, but not limited to, diversion terraces, riprap, and matting
- Promptly revegetating disturbed areas using adapted species
- Applying temporary erosion control measures (e.g., temporary vegetation cover)
- Applying biodegradable mulch, netting, or soil stabilizers
- Constructing barriers as appropriate in certain areas to minimize wind and water erosion and sedimentation prior to vegetation establishment.

Management of the soil resource will continue to be based on the following: 1) evaluation and interpretation of soils in relation to project design and development; 2) identification and inventory of soils for baseline data; and 3) identification and implementation of methods to reduce accelerated erosion.

Evaluation and interpretation involve identifying soil properties that influence their use and recommendations for development while minimizing soil loss. Projects will be examined on a site-specific basis, evaluating the potential for soil loss, and the compatibility of soil properties with project design. Stipulations and mitigating measures are provided on a case-by-case basis to ensure soil conservation and practical management. Projects requiring soil interpretations include construction of linear right-of-way facilities (i.e., pipelines, roads, railroads, and power transmission lines); construction of water impoundments; rangeland manipulation through fire or mechanical treatments; construction of plant site facilities, pump stations, well pads and associated disturbances; and reclamation projects.

BLM will require each individual right-of-way, APD, or other application to include a reclamation plan approved by the BLM. Each Master Development Plan for projects that cumulatively disturb more than 10 acres will be required to submit an Erosion, Revegetation and Restoration Plan (ERRP) consistent with BLM guidance. Prior to new disturbance, ERRPs will be approved by the BLM Authorized Officer.

Notice of any spill or leakage, as defined in BLM NTL 3A, will be immediately reported by the operator to the AO and other such federal and state officials (e.g., WDEQ) as required by law. Verbal notice will be given as soon as possible, but within 24 hours, and verbal notices will be confirmed in writing within 72 hours of any such occurrence. Any accidental soil contamination by spills of petroleum products or other hazardous materials will be cleaned up and the soil disposed of or rehabilitated according to WDEQ Solid Waste Guidelines (#2) for petroleum contaminated soils.

## ***Visual Resource Management***

Visual Resource Management (VRM) class objectives and design considerations should be considered early in the project planning process. Approval of well pad locations, new roads, buried pipelines, or other facilities will be conditioned upon the operator developing a visual resource protection plan, acceptable to BLM, for the mitigation of anticipated impacts. To minimize visual impacts, authorization of well pad

locations, new roads, CPFs, buried pipelines, etc. will require the operator to demonstrate to the AO's satisfaction that the location and/or facilities have reasonably incorporated visual design considerations that mitigate unnecessary visual impacts.

Within VRM Class II and III areas, during onsite reviews, the BLM and the operator will evaluate potential disturbances and impacts to visual resources using the VRM Contrasting Rating Process and forms as required and described in Handbook H-8431-1. Identify appropriate mitigation and reevaluate until it is demonstrated that VRM management class objectives are met. Three-dimensional design and visual analysis software could be used to analyze impacts, develop mitigation plans, and prepare visual simulations. Digital terrain information could cover the project area viewshed with engineered site plans being entered into the Geographic Information System (GIS) 3D model allowing for comprehensive analysis and determining cumulative impacts. Mitigation techniques will include, but not be limited to new roads that are designed so that they conform with the landscape, incorporating curves to eliminate distant, straight line impacts; every opportunity will be taken to reclaim existing road ROWs that are not used when new roads are designed over them; revegetation will be initiated as soon as possible after disturbance; pipeline ROWs will be located within existing ROWs whenever possible; and aboveground facilities not requiring safety coloration will be painted with appropriate BLM-specified nonreflective standard environmental colors (i.e., Carlsbad Canyon, Shale Green or Desert Brown, or other specified standard environmental color). Topographic screening, vegetation manipulation, project scheduling, and traffic control procedures will all be employed as deemed appropriate by the BLM to further reduce visual impacts.

Low profile tanks will be required wherever visual sensitivity is an issue and/or wherever deemed appropriate mitigation to help maintain the visual integrity and basic characteristics of the landscape.

Within VRM Class IV areas, the BLM and operators will implement BMPs including, but not limited to the following: utilize existing topography to screen roads, pipeline corridors, drill rigs, wells, and production facilities from view, where practical. Operators will paint all aboveground production facilities with appropriate colors (Carlsbad Canyon, Shale Green or Desert Brown, or other specified standard environmental color) specified by the BLM to blend with adjacent terrain, except for structures that require safety coloration in accordance with OSHA requirements.

Avoid the introduction of new, linear visual intrusions on the landscape. New roads and pipeline corridors, to the extent practicable, will follow contours and use topography as screening. New pipelines will be combined with existing or proposed roads and, wherever possible, new cross-county pipeline corridors will be avoided.

If BLM allows a well pad to be developed in any area managed for visual resources, roads and well pads may need to be surfaced with materials that reduce visual contrast. For example, in the VRM Class II area near Pinedale, the subsoil material (Wasatch Formation) can be very light in color and thus contrasts with surrounding undisturbed areas. Mixing topsoil with gravel (1-inch deep) in highly visible areas will help to reduce contrast. Operators will be required to investigate the feasibility of applying this opportunity of surfacing roads and well pads with materials closer in color and texture to the surrounding landscape.

## ***Watershed and Water***

Approved surface disturbing management actions in stream corridors (within the "high bank" of any ephemeral or intermittent stream course, or within the high bank +50 feet of any perennial stream) shall be designed and implemented to protect fish spawning, fry, and other important fish life stages and habitats within the stream or connected streams and to maintain fish passage.

All disturbance occurring within the high bank +50 feet shall be reclaimed to meet the PFC standards.

Crossings of perennial streams will be located within existing “linear disturbance corridors” where possible. Should such a corridor not exist on a particular stream or with a reasonable distance of the proposed crossing, the crossing shall be located at a point to minimize disturbance to the stream channel and associated riparian habitat and maintain an adequate amount of unrestricted water flow to maintain fish passage during and after construction.

Upland erosion from surface disturbing activities must be controlled effectively and not allowed to be transported to stream systems.

Prudent use of erosion control measures, including diversion terraces, riprap, matting, temporary sediment traps, and water bars will be employed as necessary. The type and location of sediment control structure, including construction methods, will be described in APD and ROW plans. If necessary, to reduce suspended sediment loads and remove potential contaminants, Operators may treat diverted water in detention ponds prior to release to meet applicable state or federal standards.

BMP project proponents/operators/permittees will be required to control sediment from all construction sites.

Operators will prepare Stormwater Pollution Prevention Plans (SWPPP) for their respective areas of field development as required by WDEQ National Pollution Discharge Elimination System (NPDES) permit requirements.

Any industrial water wells and any tanks, pumps, hoses, pipes, or other associated connections will include check valves, backflow preventers, or other devices that secure the well against discharge of fluids into the well.

All water used in association with this project will be permitted through the Wyoming State Engineer’s Office.

## ***Wetlands, Riparian Areas, and Floodplains***

All surface disturbance, permanent facilities, etc., will remain a minimum of 500 feet away from the edge of surface waters, riparian areas, wetlands, and 100-year floodplains unless it is determined through site-specific analysis, approved in writing by the BLM AO, that no practicable alternative to the proposed action exists. If such a circumstance exists, then all practicable measures to mitigate possible harm to these areas must be employed. These mitigating measures will be determined on a case-by-case basis and may include, but are not limited to, diking, lining, screening, mulching, terracing, and diversions.

Floodplains by their very nature are unsafe locations for permanent structures. With an inundation of flood waters, soils disturbed by construction could experience a rate of erosion greater than undisturbed sites. Additional concern exists over the potential for floodwaters to aid in the dispersal of hazardous materials that may be stored within such structures. Therefore, floodplains will have no permanent structures constructed within their boundaries unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases in which floodplain construction is approved, additional constraints could be applied.

Floodplain Executive Order 11988 (Section 2.a.(2)) states in summary that if the HEAD OF THE AGENCY finds that the only practicable alternative consistent with the law and the policy set forth in the Order requires siting in a floodplain, the agency will, prior to taking action, 1) design or modify its action in order to minimize potential harm...and 2) prepare and circulate a notice containing an explanation of why the action proposed is to be located in the floodplain.

Floodplain Executive Order 11988 (Section 3), in reference to federal real property and facilities, states that agencies will, if facilities are to be located in a floodplain (i.e., no practicable alternative), apply flood protection measures to new construction or rehabilitate existing structures, elevate structures rather than fill the land, provide flood height potential markings on facilities to be used by the public, and when the property is proposed for lease, easement, right of way, or disposal, the agency has to attach restriction on uses in the conveyance, etc., or withhold from such conveyance.

Any disturbances to wetlands and/or waters of the U.S. will be coordinated with the COE, and 404 permits will be secured as necessary prior to disturbance.

Operators will evaluate all project facility sites for occurrence of waters of the U.S. special aquatic sites, and wetlands, per COE requirements. All project activities will be located outside these sensitive areas, where practical.

Where disturbance of wetlands, riparian areas, streams, and ephemeral/intermittent stream channels cannot be avoided, COE Section 404 permits will be obtained by the operator as necessary.

## ***Wildlife***

### **GENERAL WILDLIFE**

Avoid activities and facilities that create barriers to the seasonal movements of big game and livestock.

Wildlife-proof fencing will be used on reclaimed areas, in accordance with standards specified in BLM Fencing Handbook 1741-1, if it is determined that wildlife species are impeding successful vegetation establishment.

ROW fencing associated with this project will be kept to a minimum; if necessary, fences will consist of four-strand barbed wire meeting WGFD approval and BLM Fencing Handbook 1741-1 standards for facilitating wildlife movement.

For all breeding birds observed, additional surveys will be conducted immediately prior to construction activities to search for active nest sites.

To avoid potentially significant noise impacts, compressor engines will be located 2,500 feet or more from a dwelling or residence and from sage-grouse leks.

Activities in crucial habitats will be avoided when practicable.

Wildlife habitat mitigation will be carried out as quickly as possible or at the same time as the disturbance.

Crucial wildlife winter ranges and nesting habitats could be treated with nitrogen fertilizers.

For additional wildlife mitigation measures, the Wyoming Game and Fish's document titled Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats (WGFD 2004) may be consulted.

### **T&E AND SPECIAL STATUS SPECIES**

If while conducting operations, substantial unanticipated environmental effects to listed, proposed, or candidate species are observed (whether effects are direct or indirect), formal consultation with U.S. Fish and Wildlife Service (USFWS) will be initiated immediately in addition to cessation of all such operations.

USFWS and WGFD consultation and coordination will be conducted for all mitigation activities relating to raptors and threatened and endangered (T&E) species and their habitats, and all permits required for movement, removal, and/or establishment of raptor nests will be pursued if they meet USFWS migratory bird office requirements.

Areas containing open, streamside deciduous woodlands with low scrub vegetation, deciduous riparian woodlands, cottonwood stands or willow thickets must be surveyed for the Yellow-billed cuckoo. A minimum of three and a maximum of five censuses should be carried out from June 15 to August 10, with at least 12 days between successive census attempts.

Surveys for T&E and candidate wildlife species will be implemented in areas of potential habitat by a qualified biologist prior to disturbance. Findings will be reviewed by the BLM prior to or as components of ROW applications and APD review processes. If T&E and/or candidate species are found in the area, consultation with the USFWS will be initiated, and construction activities will be curtailed until there is concurrence between BLM and USFWS, on what activities can be authorized.

Proposed construction sites in the development area will be examined prior to surface-disturbing activities to confirm the presence or absence of prairie dog colonies. Confirmation will be made of white-tailed prairie dog colony/complex size, burrow density, and any other data to indicate whether the criteria for black-footed ferret habitat, established in the USFWS guidelines, are present. If prairie dog colony/complex meets the USFWS criteria, a qualified biologist will locate all project components to avoid direct, indirect and cumulative impacts to the colony/complex. If this is not practical or possible, black-footed ferret surveys of the prairie dog colony/complex, where required by the USFWS, will be conducted in accordance with USFWS guidelines and requirements. The results of the survey will be provided to the USFWS in accordance with Section 7 of the ESA, as amended, and Interagency Cooperation Regulations. If a black-footed ferret or its sign is found during the survey, the BLM AO will stop all action on the application in hand. New roads and trails should not cross colonies.

A survey for black-footed ferret is required prior to approval of construction activities within nonblock cleared habitats.

The USFWS has determined that any withdrawal of water from the Colorado River System (surface or groundwater) will jeopardize the endangered Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. The USFWS Colorado River Endangered Fish Recovery Program requires a depletion fee be paid by the proponent to help support the recovery program. The fee is required for each acre-foot of water depletion where the depletion of water is in excess of 100 acre-feet from the Colorado River system.

Operators will finance site-specific surveys for special status plant species (SSPS) prior to any surface disturbance in areas determined by the BLM to contain potential habitat for such species (Directive USDI-BLM 6840). These surveys will be completed by a qualified botanist as authorized by the BLM and this botanist will be subject to BLM's SSPS survey policy requirements. Data from these surveys will be provided to the BLM, and if any SSPS or habitats are found, BLM recommendations for avoidance or mitigation will be implemented.

Areas containing moist soils in mesic or wet meadows, sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers or perennial streams between 1,780 and 6,800 feet in elevation must be avoided for Ute ladies' tresses.

## **MIGRATORY BIRDS**

Bald eagles roost, perch, feed, and nest along the Green and New Fork Rivers. To ensure continued protection of this species, no surface disturbing or human activities will be authorized between November 1 and April 1 within 1 mile of known bald eagle winter use areas. All surface-disturbing or human

activity, including construction of roads, pipelines, well pads, drilling, completion, or workover operations, will be seasonally restricted from February 1 through August 15 within 1.0 mile of all active eagle nests. An active eagle nest is one that has been occupied once in the past 5 years.

Permanent (life of the project) and high profile structures such as well locations, roads, buildings, storage tanks, overhead power lines, etc., and other structures requiring repeated human presence will not be constructed within 1,000 feet (1,400 feet for ferruginous hawks; 2,600 feet for bald eagles) of active raptor nests. Wells that must be located closer than 2,600 feet (but will not be allowed closer than 2,000 feet) of a bald eagle nest will be out of the direct line of sight of the nest; will have no human activity at the well site from February 1 through August 15 except in the case of an emergency; and will locate production facilities off-site or at a central production facility location at a distance of 2,600 feet or more from the nest. In these cases, the USFWS will be contacted to ensure compliance under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

All surface-disturbing activity (e.g., road, pipeline, well pad construction, drilling, completion, workover operations) will be seasonally restricted from February 1 through July 31 within a 0.5-mile radius of all active raptor nests, except that ferruginous hawk nests will be seasonally restricted from March 1 through July 31 and the seasonal buffer will be 1.0 mile. An active raptor nest is defined as a nest that has been occupied within the past 3 years. The seasonal buffer distance and exclusion dates applicable may vary depending on such factors as the activity status of the nest, species involved, prey availability, natural topographic barriers, line-of-site distance(s), and other conflicting issues such as cultural values, steep slopes, etc.

Raptor nest surveys will be conducted for active nests within a 0.5- to 1.0-mile radius of proposed surface use or activity areas if such activities are proposed to be conducted between February 1 and July 31 or as required in the Pinedale Field Office raptor survey protocol.

The buffer distance for raptors may vary depending on the species involved, prey availability, natural topographic barriers, line-of-sight distances, and other conflicting issues (e.g., cultural values, steep slopes). Linear disturbances such as pipelines and seismic activity could be granted exceptions as long as they will not adversely affect the raptor(s).

Surface disturbing and human activities are not allowed between November 1 and April 1 within one mile of known bald eagle winter use areas.

Surface disturbing and human activities within one mile of an active bald eagle nest will be restricted from February 1 to August 15.

Activities or surface use are not allowed from March 15 to August 15 for the protection of migratory bird nests in accordance with the Migratory Bird Treaty Act. A nest survey must be conducted prior to construction from March 15 to August 15. If a nest is present and active, monitoring will need to be done until the young have fledged. Contact a BLM wildlife biologist prior to conducting nest surveys.

Habitat alterations within 2.5 miles of a bald eagle nest, or 0.5 miles from the stream bank of all streams within 2.5 miles of the nest, will be restricted to protect bald eagle foraging/concentration areas year-round.

Surface disturbing and disruptive activities will be prohibited within 0.5 miles of burrowing owl nesting habitat from April 1 through August 15.

For surface disturbing activities, surveys will be conducted within suitable plover habitat by a qualified biologist in accordance with USFWS 1999 guidelines. (A copy of the guidelines may be obtained from the USFWS, BLM, or WGFD). Two types of surveys may be conducted: 1) surveys to determine the presence/absence of breeding plovers (i.e., displaying males and foraging adults), or 2) surveys to determine nest density.



If surface disturbing activity is requested to take place in mountain plover habitat between April 10 and July 10, presence/absence surveys are required. Survey results will determine when activities are proposed.

Surveys to determine presence/absence of the plover will be conducted between April 10 through July 10 throughout the breeding range.

Visual observation of the area should be made within 0.25 mile of the proposed action to detect the presence of plovers.

A site must be surveyed for plover three times during the survey window, with each survey separated by at least 14 days.

Initiation of the project should occur as near to completion of the plover survey as possible (within 2 days for seismic exploration; a 14-day period may be appropriate for other projects).

If active plover nest is found in the survey area, the planned activity should be delayed 37 days, or one-week post-hatching. If a brood of flightless chicks is observed, activities should be delayed at least 7 days.

Plover surveys will be conducted during early courtship and territorial establishment. Throughout the breeding range, this period extends from approximately mid-April through early July. However, the specific breeding period depends on latitude, elevation, and weather.

Plover surveys will be conducted between local sunrise and 10:00 a.m., and between 5:30 p.m. and sunset (periods of horizontal light to facilitate spotting the white breast of the adult plovers).

Drive transects within the project area to minimize early flushing. Flushing distances for mountain plovers may be within 3 meters (9 to 10 feet) for vehicles, but plovers often flush at 50 to 100 meters (164 to 328 feet) when approached by humans on foot.

In cases where an exception will be provided to the proponent during the April 10 to July 10 breeding and nesting time period, BLM personnel will adhere to approved protocols describing survey protocol for exceptions.

To control the population of mosquitos that might spread West Nile virus, larvicidal briquettes will be placed in standing water pools as appropriate. Adult mosquitos could also be treated with insecticides if necessary.

## **GREATER SAGE-GROUSE**

No surface disturbance within one-quarter mile of an occupied greater sage-grouse lek will be permitted. Linear disturbances such as pipelines and seismic activity could be granted exceptions outside the breeding season if they are determined not to have associated long-term, continuous activity that could impact breeding success.

Permanent, high-profile structures such as buildings and storage tanks will not be constructed within 0.25 mile of an occupied greater sage-grouse lek.

In selecting a site for a compressor facility, a well pad or other permanent facility, the distance from the edge of an occupied greater sage-grouse lek will be sufficient to result in a noise level increase from operating facilities no greater than 10 decibels (dBA) above background (i.e., 39 dBA background + 10 dBA = 49 dBA). Further restrictions may be required if the species is determined by the USFWS to be eligible for listing as either threatened or endangered pursuant to the Endangered Species Act. Monitoring

will be required by BLM to determine which leks in the PAPA are occupied and which have been abandoned.

If existing information is not current, field evaluations for greater sage-grouse leks and/or nests will be conducted by a qualified biologist prior to the start of activities in potential greater sage-grouse habitat. These field evaluations for leks and/or nests will be conducted if project activities are planned in potential greater sage-grouse habitat between March 15 and July 15. BLM wildlife biologists will ensure that such surveys are conducted using proper survey methods.

Wyoming Executive Order 2008-2, and the Wyoming Stipulations for Development in Core Sage-Grouse Population Areas, will be considered when permitting activities.

## ***Reclamation***

All disturbances will be limited to the minimum necessary to enable production of the resource.

All disturbances will be returned to the approximate pre-disturbance contour of the land.

Pre-disturbance land use will be returned to the maximum extent practicable.

Where approved disturbance prohibits maintenance of use, offsite mitigation could be considered.

Reclamation will be designed to restore the affected lands to pre-disturbance land uses once a project is completed. While surface-disturbing or disruptive activities continue, land uses will be mitigated using revegetation, stabilization, erosion control, and habitat enhancement.

Experimental methods to maintain or reclaim wildlife habitat or improve reclamation science are encouraged to be tested on small areas within the planning area. When scientifically proven effective for a reclamation objective, these methods may be incorporated into proven reclamation methods.

All reclamation of disturbed lands will be conducted with a diverse mix of noninvasive, certified weed-free seed demonstrated effective for post-disturbance land uses and approved by the AO. In designated crucial and important wildlife habitats, this seed mix should be designed to restore pre-disturbance wildlife use.

A site-specific reclamation plan should be prepared for each well pad, pipeline, road, or other surface disturbing activities prior to authorization and should include the following:

- Topsoil storage techniques
- Description of native vegetation disturbed, including species and composition
- Need to collect native seed
- Need for irrigation and fertilization
- Need for fencing
- Proposed recontouring plans and seeding/planning procedures
- Definition of success
- Plans for reseeding if reclamation fails.

BLM will require each individual right-of-way, APD, or other application to include a reclamation plan approved by the BLM.

## **Site Stabilization**

Disturbed channel beds will be reshaped to their approximate original configuration.

Streams, wetlands, and riparian areas disturbed during project construction will be restored to as near pre-project conditions as practical, and if impermeable soils contributed to wetland formation, soils will be compacted to reestablish impermeability.

Areas will be recontoured and BLM-approved species will be used for reclamation.

Reclamation activities will begin on disturbed wetland areas immediately after completion of project activities.

Upon completion of construction and/or production activities, operators will restore the topography to near preexisting contours at well sites, access roads, pipelines, and other facility sites.

All roads on federal lands not required for routine operation and maintenance of producing wells, ancillary facilities, livestock grazing administration, or necessary recreation access will be reclaimed as directed by the BLM. These roads will be permanently blocked, recontoured, reclaimed, and revegetated by the operators, as will disturbed areas associated with permanently plugged and abandoned wells.

Disturbances should be reclaimed or managed for zero sediment discharge. All excavations and pits should be closed by backfilling and contouring to conform to surrounding terrain. On well pads and larger locations, the surface use plan will include objectives for successful reclamation such as soil stabilization, plant community composition, and desired vegetation density and diversity.

All reclamation is expected to be accomplished as soon as possible after the disturbance occurs with efforts continuing until a satisfactory revegetation cover is established and the site is stabilized (3 to 5 years). Only areas needed for construction will be allowed to be disturbed.

On all areas to be reclaimed, seed mixtures will be required to be site specific and composed of native species. Seed mixtures also will be required to include species promoting soil stability. A pre-disturbance species composition list must be developed for each site if the project encompasses an area in which several different plant communities present. Livestock palatability and wildlife habitat needs will be given consideration in seed mix formulation. BLM guidance for native seed use is BLM Manual 1745 (Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants), and Executive Order No. 11987 (Exotic Organisms).

If deemed necessary, approved sterile seed mix could be considered for use in site stabilization during reclamation.

Interseeding, secondary seeding, or staggered seeding may be required to accomplish revegetation objectives. During rehabilitation of areas in important wildlife habitat, provision will be made for the establishment of native browse and forb species, if determined to be beneficial for the habitat affected. Follow-up seeding or corrective erosion control measures may be required on areas of surface disturbance which experience reclamation failure.

Any mulch and mineral material (sand and gravel) used will be certified weed free and free from mold or fungi. Mulch may include native hay, small grain straw, wood fiber, live mulch, cotton, jute, synthetic netting, and rock. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover.

## **Noxious Weeds**

Operators will monitor noxious weed occurrence on the project area and implement a noxious weed control program in cooperation with the BLM and Sublette County to ensure noxious weed invasion does not become a problem. Weed-free certification by county extension agents will be required for grain or straw used for mulching revegetated areas. Gravel and other surfacing materials used for the project will be free of noxious weeds.

The operator, grantee, or lessee will be responsible for the control of all noxious weed infestations on surface disturbances. Prior to any treatment, the operator, grantee, or lessee will be responsible for submission of Pesticide Use Proposals and subsequent Pesticide Use Reports. Control measures will adhere to those allowed in the Final Vegetation Treatments Using Herbicides on BLM in 17 Western States Programmatic EIS (June 2007) and ROD (September 2007), Rock Springs District Noxious Weed Control EA (USDI 1982a), or the Regional Northwest Area Noxious Weed Control Program EIS (USDI 1987). Herbicide approvals and treatments will be monitored by the BLM AO. Herbicide applications will be kept at least 500 feet from known SSPS populations. Aerial application of chemicals is prohibited within one-quarter mile of special status plant locations, or other distance deemed safe by the BLM AO.

## **Hazardous Waste Disposal**

In accordance with 29 CFR 1910.1200, a Material Safety Data Sheet for every chemical or hazardous material brought on-site will be kept on file at the operator's field office.

Chemical and hazardous materials will be inventoried and reported in accordance with the SARA Title III (40 CFR 335). If quantities exceeding 10,000 pounds or the threshold planning quantity are to be produced or stored, the appropriate Section 311 and 312 forms will be submitted at the required times to the State and County Emergency Management Coordinators and the local fire departments.

Any hazardous wastes, as defined by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, will be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.

SPCC Plans will be implemented and adhered to in a manner such that any spill or accidental discharge of oil will be remediated. An orientation should be conducted by the operators to ensure that project personnel are aware of the potential impacts that can result from accidental spills and that they know the appropriate recourse if a spill occurs. Where applicable and/or required by law, streams at pipeline crossings will be protected from contamination by pipeline shutoff valves or other systems capable of minimizing accidental discharge. If reserve pit leakage is detected, operations at the site will be curtailed, as directed by the BLM, until the leakage is corrected.

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 2-32 of the Pinedale FO RMP (BLM 2008c). Rights-of-way exclusion areas comprise 41,500 acres of public land in the Pinedale FO. Rights-of-way avoidance areas comprise 487,370 acres of public land in the Pinedale FO

Rights-of-Way Exclusion Areas:

- Visual Resources Management (VRM) Class I areas
- Rock Creek ACEC
- East Fork River Wild and Scenic River (WSR) unit

- Scab Creek WSR unit
- Silver Creek WSR unit
- All WSAs
- Elk feedgrounds
- Active greater sage-grouse leks (within 200 feet)
- Other areas identified on Map 2-32

Rights-of-Way Avoidance Areas:

- VRM Class II areas
- Lander Trail
- Sublette Cutoff Trail
- U.S. Air Force Seismic Monitoring Station (6-mile radius)
- Known paleontological sites
- All SRMAs
- Highly erodible and/or fragile soils
- Known locations of special status plant species
- Potential habitat for special status plant species
- Floodplains, riparian areas, and wetlands
- Lynx analysis units
- Active raptor nests (within 1 mile)
- Big game migration routes
- Active sage-grouse leks (within one-quarter mile)
- All ACECs
- Green River WSR unit
- Other areas identified on Map 2-32

## Literature Cited

- Bureau of Land Management (BLM). 2008a. *Appendix 5. Fluid Mineral Best Management Practices*. In *Record of Decision and Approved Pinedale Resource Management Plan*. Pinedale, Wyoming: BLM Pinedale Field Office Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63200/78620/89700/Appendix05\\_BestManagementPractices.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63200/78620/89700/Appendix05_BestManagementPractices.pdf). Accessed March 9, 2020.
- . 2008b. *Appendix 3. Mitigation Guidelines and Operating Standards Applied to Surface Disturbing and Disruptive Activities*. In *Record of Decision and Approved Pinedale Resource Management Plan*. Pinedale, Wyoming: BLM Pinedale Field Office Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63200/78620/89699/Appendix03\\_MitigationGuidelinesandOperatingStandards.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63200/78620/89699/Appendix03_MitigationGuidelinesandOperatingStandards.pdf). Accessed March 9, 2020.

———. 2008c. *Map 2-32 Rights-of-Way*. In *Record of Decision and Approved Pinedale Resource Management Plan*. Pinedale, Wyoming: BLM Pinedale Field Office Available at [https://eplanning.blm.gov/public\\_projects/lup/63200/78621/89722/10\\_Map2-32-ROW.pdf](https://eplanning.blm.gov/public_projects/lup/63200/78621/89722/10_Map2-32-ROW.pdf). Accessed July 15, 2020.

# RAWLINS RESOURCE MANAGEMENT PLAN

## Stipulations

Refer to individual resource sections of the Record of Decision and Approved Rawlins Resource Management Plan for any applicable stipulations (BLM 2008a).

## Required Design Features

No required design features listed in RMP.

## Best Management Practices (BLM 2008a)

### ***Big Game Crucial Winter Range***

The following BMPs will be considered to reduce impacts to big game crucial winter range:

- Transportation planning (to reduce road density and traffic volumes)
- Compensation mitigation
- Seasonal restriction of public vehicular access

### ***Sage-Grouse Habitat***

The following BMPs will be considered to reduce impacts to sage-grouse habitat:

- Seasonal restriction of public vehicular access
- Noise-reduction techniques and designs
- Transportation planning to align roads out of sight and sound of leks, and to schedule traffic to avoid sage-grouse activity periods
- Roads designed to minimum safe standard for intended use
- Partial reclamation of high-standard roads needed for project construction to lower standards necessary for maintenance operations
- Prohibition of surface disturbance or occupancy within one-quarter mile of the perimeter of occupied sage-grouse leks
- Avoidance of human activity between 6:00 p.m. and 9:00 a.m. from March 1 through May 20 within one-quarter mile of the perimeter of occupied sage-grouse leks. These times and dates reflect recommendations from the Wyoming Game and Fish Department (WGFD) based on site-specific data for the Resource Management Plan Planning Area (RMPPA)
- Avoidance of surface disturbance or other disruptive activity from March 1 through July 15 up to 2 miles from an “active” lek in suitable greater sage-grouse nesting habitat. These dates reflect recommendations from WGFD based on site-specific data for the RMPPA.

## ***Wildlife Habitat***

The following BMPs will be considered to reduce impacts to wildlife habitat:

- Seasonal restriction of public vehicular access
- Noise reduction techniques and designs
- Installation of raptor anti-perch devices
- Implementation of the Wyoming Bird Conservation Plan from Wyoming Partners In Flight.

The Bureau of Land Management (BLM) will consider management actions in the WGFD Minimum Programmatic Standards Recommended by the WGFD to sustain important wildlife habitats affected by oil and gas development.

## ***Visual Resource Management Class II and III Areas***

The following BMPs will be considered to reduce impacts to visual resource management Class II and III areas:

- Burying of distribution power lines and flow lines in or adjacent to access roads
- Repeating elements of form, line, color, and texture to blend facilities and access roads with the surrounding landscape
- Painting all above-ground structures, production equipment, tanks, transformers, and insulators not subject to safety requirements to blend with the natural color of the landscape, using paint that is a nonreflective “standard environmental color” approved by BLM’s visual resource management (VRM) specialist
- Performing final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography
- Avoiding facility placement on steep slopes, ridge tops, and hilltops
- Screening facilities from view
- Following contours of the land to reduce unnecessary disturbance
- Recontouring and revegetating disturbed areas to blend with the surrounding landscape
- Reclaiming unnecessary access roads as soon as possible to the original contour
- Using gravel of a similar color to adjacent dominant soil and vegetation colors for road surfacing
- Using subsurface or low-profile facilities to prevent protrusion above the horizon line when viewed from any primary road
- Locating facilities far enough from the cut and fill slopes to facilitate recontouring for interim reclamation
- Completing an annual transportation plan for the entire area before beginning construction, and making a layout that will minimize disturbance and visual impact
- Designing and constructing all new roads to a safe and appropriate standard “no higher than necessary” to accommodate their intended use
- Locating roads far enough off the back of ridgelines so they are not visible from state, county, or BLM roads
- Using remote monitoring to reduce traffic and road requirements
- Removing unused equipment, trash, and junk immediately.



## ***Fluid Mineral Construction, Operation, and Reclamation***

The following BMPs will be considered to reduce impacts from fluid mineral construction, operation, and reclamation:

- Transportation planning (to reduce road density and traffic volumes)
- Burying of distribution power lines and flow lines in or adjacent to access roads
- Design and construction of all new roads to a safe and appropriate standard “no higher than necessary” to accommodate their intended use
- Avoidance of facility placement on steep slopes, ridge tops, and hilltops
- Removal of trash, junk, waste, and other materials not in use.

## **Wyoming BLM Mitigation Guidelines for Surface Disturbing and Disruptive Activities (BLM 2008b)**

### ***Surface Disturbance Mitigation Guideline***

Surface disturbance will be prohibited in any of the following areas or conditions. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis, by the authorized officer.

- Slopes in excess of 25 percent.
- Within important scenic areas (Class I and II Visual Resource Management Areas).
- Within 500 feet of surface water and/or riparian areas.
- Within either one-quarter mile or the visual horizon (whichever is closer) of historic trails.
- Construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.

### ***Wildlife Mitigation Guideline***

- To protect important big game winter habitat, activities or surface use will not be allowed from November 15 to April 30 within certain areas encompassed by the authorization. The same criteria apply to defined big game birthing areas from May 1 to June 30.
- Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 within certain areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 to April 30.
- Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- No activities or surface use will be allowed on that portion of the authorization area identified within (legal description) for the purpose of protecting (e.g., sage/sharp-tailed grouse breeding grounds, and/or other species/activities) habitat.
- Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.
- Portions of the authorized use area legally described as (legal description), are known or suspected to be essential habitat for (name) which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and U.S. Fish and Wildlife Service guidelines to verify the presence or absence of this species. In the event that (name) occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

### ***Cultural Resource Mitigation Guideline***

When a proposed discretionary land use has potential for affecting the characteristics, which qualify a cultural property for the National Register of Historic Places (NRHP), mitigation will be considered. In accordance with Section 106 of the Historic Preservation Act, procedures specified in 36 Code of Federal Regulation (CFR) 800 will be used in consultation with the Wyoming State Historic Preservation Officer and the Advisory Council on Historic Preservation in arriving at determinations regarding the need and type of mitigation to be required.

### ***Special Resource Mitigation Guideline***

To protect (resource value), activities or surface use will not be allowed (i.e., within a specific distance of the resource value or between date to date) in (legal description).

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

Example Resource Categories (Select or identify category and specific resource value):

- Recreation areas.
- Special natural history or paleontological features.
- Other management areas.
- Sections of major rivers.
- Prior existing rights-of-way.
- Occupied dwellings.
- Other (specify).

## **No Surface Occupancy Guideline**

No Surface Occupancy (NSO) for fluid minerals will be allowed on the following described lands (legal description) because of (resource value).

Example Resource Categories (Select or identify category and specific resource value):

- Recreation Areas (e.g., campgrounds, historic trails, national monuments).
- Major reservoirs/dams.
- Other management area (e.g., known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation).
- Other (specify).

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Map 2-33b of the Rawlins FO RMP (BLM 2008c). Rights-of-way exclusion areas comprise 68,160 acres of public land in the Rawlins FO. Rights-of-way avoidance areas comprise 599,373 acres of public land in the Rawlins FO.

Rights-of-Way Exclusion Areas:

- WSAs/VRM Class I

Rights-of-Way Avoidance Areas:

- Blowout Penstemon ACEC
- Cave Creek Cave ACEC
- Sand Hills/JO Ranch ACEC
- Encampment River WSR
- Continental Divide National Scenic Trail SRMA
- North Platte River SRMA
- OHV SRMA
- Shirley Mountain SRMA
- Cow Butte/Wild Cow Wildlife Habitat Management Area (WHMA)
- Jep Canyon WHMA
- Upper Muddy Creek Watershed/Grizzly WHMA
- Pennock Mountain WHMA
- Laramie Plains Lakes WHMA
- Chain Lakes WHMA
- Como Bluffs National Natural Landmark
- High Savery Dam and Reservoir Site
- Historic Trails Management Area

- Shamrock Hills RCA
- Stratton Sagebrush Steppe Research Area
- Areas within ¼ mile of a cultural property or the visual horizon, whichever is closer, if the setting contributes to National Register of Historic Places eligibility
- Existing and new recreation sites
- Gibben's beardtongue site
- Other special status plant sites
- VRM Class II areas

## Literature Cited

- Bureau of Land Management (BLM). 2008a. *Appendix 15. Best Management Practices For Reducing Surface Disturbance And Disruptive Activities*. In *Record of Decision and Approved Rawlins Resource Management Plan*. Rawlins, Wyoming: BLM Rawlins Field Office Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63197/78289/88531/Appendix15\\_Best\\_Management\\_Practices.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63197/78289/88531/Appendix15_Best_Management_Practices.pdf). Accessed March 9, 2020.
- . 2008b. *Appendix I. Wyoming Bureau Of Land Management Mitigation Guidelines For Surface Disturbing And Disruptive Activities*. In *Record of Decision and Approved Rawlins Resource Management Plan*. Rawlins, Wyoming: BLM Rawlins Field Office Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/63197/78289/88518/Appendix01\\_Wyoming\\_Mitigation\\_Guidelines.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/63197/78289/88518/Appendix01_Wyoming_Mitigation_Guidelines.pdf). Accessed March 9, 2020.
- . 2008c. *Map 2-33b Linear Utility/Transportation Systems/Communication Site Exclusion and Avoidance Areas*. In *Record of Decision and Approved Rawlins Resource Management Plan*. Rawlins, Wyoming: BLM Rawlins Field Office Available at [https://eplanning.blm.gov/public\\_projects/lup/63197/78290/88589/51\\_Map2-33b\\_Linear-Utility-Transportation-CommSite\\_Avoidance\\_Exclusion.pdf](https://eplanning.blm.gov/public_projects/lup/63197/78290/88589/51_Map2-33b_Linear-Utility-Transportation-CommSite_Avoidance_Exclusion.pdf). Accessed July 15, 2020.

# ROCK SPRINGS RESOURCE MANAGEMENT PLAN

## Stipulations

Refer to individual resource sections of the Record of Decision and Green River Resource Management Plan for any applicable stipulations (BLM 1997a).

## Required Design Features

No required design features listed in RMP.

## Standard Practices, Best Management Practices, and Guidelines for Surface Disturbing Activities (BLM 1997a)

### *Pipelines and Communication Lines*

On ditches exceeding 36 inches in width, 6 to 12 inches of surface soil should be salvaged where possible on the entire right-of-way. When pipelines and communication lines are buried, there should be at least 30 inches of backfill on top of the pipe. Backfill should not extend above the original ground level after the fill has settled. Guides for construction and water bar placement are found in “Surface Operating Standards for Oil and Gas Exploration and Development” (USDI 1978). Bladed surface materials would be re-spread upon the cleared route once construction is completed. Disturbed areas that have been reclaimed may need to be fenced when the route is near livestock watering areas.

Existing crowned and ditched roads would be used for access where possible to minimize surface disturbances. Where possible, clearing of pipeline and communication line rights-of-way would be accomplished with the least degree of disturbance to topsoil. Where topsoil removal is necessary, it would be stockpiled (wind-rowed) and re-spread over the disturbance after construction and backfilling are completed. Vegetation removed from the right-of-way would also be required to be re-spread to provide protection, nutrient recycling, and a seed source.

To promote soil stability, the compaction of backfill over the trench would be required (not to extend above the original ground level after the fill has settled). Water bars, mulching, and terracing would be required, as needed, to minimize erosion. Instream protection structures (e.g., drop structures) may be required in drainages crossed by a pipeline to prevent erosion. The fencing of linear disturbances near livestock watering areas may be required.

### *Reclamation*

Current BLM policy recognizes that there may be more than one correct way to achieve successful reclamation, and a variety of methods may be appropriate to the varying circumstances. BLM should continue to allow applicants to use their own expertise in recommending and implementing construction and reclamation projects. These allowances still hold the applicant responsible for final reclamation standards of performance.

BLM reclamation goals emphasize: 1) protection of existing native vegetation; 2) minimal disturbance of existing environment; 3) soil stabilization through establishment of ground cover; and 4) establishment of native vegetation consistent with land use planning.

All reclamation is expected to be accomplished as soon as possible after the disturbance occurs with efforts continuing until a satisfactory revegetation cover is established and the site is stabilized (3 to 5 years).

Only areas needed for construction would be allowed to be disturbed. Reclamation (by the lessee or grand holder) would be initiated as soon as possible after a disturbance occurs.

On all areas to be reclaimed, seed mixtures would be required to be site-specific, composed of native species, and would be required to include species promoting soil stability. A pre-disturbance species composition list must be developed for each site if the project encompasses an area where there are several different plant communities present. Livestock palatability and wildlife habitat needs would be given consideration in seed mix formulation. BLM guidance for native seed use is BLM Manual 1745 (Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants), and Executive Order 11987 (Exotic Organisms).

Interseeding, secondary seeding, or staggered seeding may be required to accomplish revegetation objectives. During rehabilitation of areas in important wildlife habitat, provision would be made for the establishment of native browse and forb species, if determined to be beneficial for the habitat affected. Follow-up seeding or corrective erosion control measures may be required on areas of surface disturbance which experience reclamation failure.

Trees, shrubs, and ground cover (not to be cleared from rights-of-way) would require protection from construction damage. Backfilling to preconstruction condition (in a similar sequence and density) would be required. The restoration of normal surface drainage would also be required.

Any mulch used would be free from mold, fungi, or noxious weed seeds. Mulch may include native hay, small grain straw, wood fiber, live mulch, cotton, jute, synthetic netting, and rock. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover.

The grantee or lessee would be responsible for the control of all noxious weed infestations on surface disturbances. Aerial application of chemicals would be prohibited within ¼ mile of special status plant locations, and hand application would be prohibited within 500 feet. Control measures would adhere to those allowed in the Rock Springs District Noxious Weed Control EA (USDI 1982a) or the Regional Northwest Area Noxious Weed Control Program EIS (USDI 1987). Herbicide application would be monitored by the BLM authorized officer.

## **Roads**

Roads would be constructed as described in BLM Manual 9113. New main artery roads would be designed to reduce sediment, salt, and phosphate loading to the Green River. Where necessary, running surfaces of the roads would be graveled if the base does not already contain sufficient aggregate.

Existing roads would be upgraded where necessary.

Recognized roads, as shown on the Rock Springs District Office Transportation Plan, would be used when the alignment is acceptable for the proposed use. Generally, roads would be required to follow natural contours; provide visual screening by constructing curves etc.; and be reclaimed to BLM standards.

To control or reduce sediment from roads, guidance involving proper road placement and buffer strips to stream channels, graveling, proper drainage, seasonal closure, and in some cases, redesign or closure of old roads would be developed when necessary. Construction may also be prohibited during periods when soil material is saturated, frozen, or when watershed damage is likely to occur.

On newly constructed roads and permanent roads, the placement of topsoil, seeding, and stabilization would be required on all cut and fill slopes unless conditions prohibit this (e.g., rock). No unnecessary side-casting of material (e.g., maintenance) on steep slopes would be allowed. Snow removal plans may be required so that snow removal does not adversely affect reclamation efforts or resources adjacent to the road.

Reclamation of abandoned roads would include requirements for reshaping, recontouring, resurfacing with topsoil, installation of water bars, and seeding on the contour. The removal of structures such as bridges, culverts, cattleguards, and signs usually would be required. Stripped vegetation would be spread over the disturbance for nutrient recycling, where practical. Fertilization or fencing of these disturbances would not normally be required. Additional erosion control measures (e.g., fiber matting) and road barriers to discourage travel may be required.

Main artery roads, regardless of primary user, would be crowned, ditched, drained, and surfaced with gravel to reduce sediment, salt, and phosphate loading to the Green River.

Road closures may be implemented during crucial periods (e.g., wildlife winter periods, spring runoff, and calving and fawning seasons).

## **Soils**

Current objectives focus on soil conservation planning for surface disturbance actions. Soil conservation should be addressed during the initial phase of any surface disturbing action, thereby maintaining soil productivity and stability levels through the use of existing guidelines and techniques. Some areas may require more thorough soil management practices than others, however, this is dependent on the type and duration of the action and the effect on site-specific soil characteristics.

Some examples of standards applied throughout the Resource Area based on soil management criteria are:

1. Closures due to saturated soil conditions when soil resource damage would occur due to wheel rutting or compaction on wet soils.
2. Salvage and subsequent replacement of topsoil whenever possible on surface disturbing activities.
3. Limiting disturbance on slopes greater than 25 percent.

Emphasis should continue to be placed on the reduction of soil erosion and sediment into the Green River Basin watershed. Of particular importance would be those areas with saline soils such as the Little Colorado Desert or those areas with highly erodible geology and soils such as Red Creek drainage.

Management of the soil resource would continue to be based upon the following: 1) Evaluation and interpretation of soils in relation to project design and development; 2) Identification and inventory of soils for baseline data; and 3) Identification and implementation of methods to reduce accelerated erosion.

Evaluation and interpretation involve identification of soil properties which would influence their use and recommendations for development while minimizing soil loss. Projects would be examined on a site-specific basis, evaluating the potential for soil loss and the compatibility of soil properties with project design. Stipulations and mitigating measures are provided on a case-by-case basis to ensure soil conservation and practical management. Projects requiring soil interpretations include: construction of linear right-of-way facilities (i.e., pipelines, roads, railroads, and power transmission lines); construction of water impoundments; rangeland manipulation through fire or mechanical treatments; construction of plant site facilities, pump stations, well pads and associated disturbances; and reclamation projects.

The current Order 3 soil survey is designed to update general soils information and provide data to those areas lacking soil inventories. A baseline soil inventory is ongoing to provide information on productivity, soil engineering properties, and soil erosion potentials. Proposed “T” category allotments and areas impacted by oil and gas projects receive priority in the soil survey process.

Identification of critical erosion condition areas would continue during soil surveys, monitoring, site specific project analysis, and activity plan development for the purpose of avoidance and special management.

Before a surface disturbing activity is authorized, topsoil depth would be determined. The amount of topsoil to be removed, along with topsoil placement areas, would be specified in the authorization. The uniform distribution of topsoil over the area to be reclaimed would be required, unless conditions warrant a varying depth. On large surface-disturbing projects (e.g., gas processing plants) topsoil would be stockpiled and seeded to reduce erosion. Where feasible, topsoil stockpiles would be designed to maximize surface area to reduce impacts to soil microorganisms. Stockpiles remaining less than two years are best for soil microorganism survival and native seed viability. It is recommended that stockpiles be no more than 3 to 4 feet high. Areas used for spoil storage would be stripped of topsoil before spoil placement. The replacement of topsoil after spoil removal would be required.

Temporary disturbances which do not require major excavation (e.g., small pipelines and communication lines) may be stripped of vegetation to ground level using mechanical treatment, leaving topsoil intact and root mass relatively undisturbed.

In support of the Bureau’s mission, soil management is committed to sustaining the productivity of soils.

## ***Watershed***

Stream sediment, phosphate, and salinity load would be reduced where possible.

To protect watershed resource during wet periods, vehicle travel, particularly large or heavy truck traffic, would not be allowed unless travel occurs on roads that are graveled for all-season use.

Crossings of ephemeral, intermittent, and perennial streams associated with road and utility line construction would generally be restricted until after spring runoff and normal flows are established.

Floodplains by their very nature are unsafe locations for permanent structures. With an inundation of flood waters, soils disturbed by construction could experience a rate of erosion greater than undisturbed sites. There is an additional concern over the potential for flood waters to aid in the dispersal of hazardous materials that may be stored within such structures. Therefore, floodplains should have no permanent structures constructed within their boundaries unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases where floodplain construction is approved, additional constraints could be applied.

Section 2.a.(2) of Executive Order 11988 states in summary that “...if the HEAD of THE AGENCY finds that the only practicable alternative consistent with the law and with the policy set forth in the Order requires siting in a floodplain, the agency shall, prior to taking action, 1) design or modify its action in order to minimize potential harm...and 2) prepare and circulate a notice containing an explanation of why the action proposed is to be located in the floodplain.

Also, Section 3 of Executive Order 11988, in reference to Federal real property and facilities states that agencies shall, if facilities are to be located in a floodplain (i.e., no practicable alternative), flood protection measures are to be applied to new construction or rehabilitate existing structures, elevate



structures rather than fill the land, provide flood height potential markings on facilities to be used by the public, and when the property is proposed for lease, easement, right-of-way, or disposal, the agency has to attach restriction on uses in the conveyance, etc., or withhold from such conveyance.

Disturbances to the soils, such as roads and well pads, can easily concentrate the flow of water increasing its erosive potential. A 500-foot buffer provides an opportunity for such flows to be disbursed before they reach a stream and often precludes construction in riparian zones. Therefore, there should be no construction within 500 feet of a stream unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases where construction within the 500-foot zone is approved, additional constraints could be applied.

All surface disturbance, permanent facilities, etc., shall remain a minimum of 500 feet away from the edge of surface waters, riparian areas, wetlands, and 100-year floodplains unless it is determined through site specific analysis and the Area Manager approves in writing, that there is no practicable alternative to the proposed action. If such a circumstance exists, then all practicable measures to mitigate possible harm to these areas must be employed. These mitigating measures would be determined case by case and may include, but are not limited to, diking, lining, screening, mulching, terracing, and diversions.

## ***Facilities***

No surface disturbance is recommended on slopes in excess of 25 percent unless erosion controls can be ensured and adequate revegetation is expected. Engineering proposals and revegetation and restoration plans would be required in these areas.

No sour gas lines would be located closer than one mile to a populated area or sensitive receptor. The applicants must use the best available engineering design (e.g., alignment, block valve type and spacing, pipe grade), and best construction techniques (e.g., surveillance, warning signs) as approved by the Authorized Officer to minimize both the probability of rupture and radius of exposure in the event of an accidental pipeline release of sour gas. A variance from the one-mile distance may be granted by the Authorized Officer based on detailed site-specific analysis that would consider meteorology, topography, and special pipeline design and (or) construction measures. This analysis would ensure that populated areas and sensitive receptors would not be exposed to an increased level of risk.

## ***Wilderness***

A controlled surface use stipulation would be applied for activities within 1.4 mile or the visual horizon of the WSA boundary. Actions within or adjacent to the WSAs would be evaluated on a case-by-case basis to determine if appropriate mitigation would be necessary.

## **Rights-of-Way Allocations**

Locations of rights-of-way allocations are depicted on Maps 7 and 8 of the Green River RMP (BLM 1997b). Rights-of-way exclusion areas comprise 208,228 acres of public land in the Rock Springs FO. Rights-of-way avoidance areas comprise 554,935 acres of public land in the Rock Springs FO.

Rights-of-Way Exclusion Areas:

- Big Sandy River (1/2-mile wide corridor, 1.5 mile long)
- Cedar Canyon Petroglyphs
- Dry Sandy Swales

- Dug Springs Stage Station
- Greater Red Creek ACEC – Current Creek Drainage (from headwaters west to Currant Creek Ranch)
- Greater Red Creek ACEC – original Red Creek ACEC
- LaBarge Bluffs Petroglyphs
- LaClede Stage Station
- Native American Burial Sites
- Natural Corrals ACEC
- Pine Butte
- Prehistoric Quarry Site
- South Pass Historic Landscape ACEC (vista within landscape)
- Special Status Plant ACECs
- Steamboat Mountain ACEC (Communication sites)
- Sugarloaf Petroglyphs
- Sweetwater River Wild, Scenic, and Recreational Segments (1/2-mile corridor, 9.7 miles long)
- Tolar Petroglyphs
- Tri-Territory Marker
- White Mountain Petroglyphs
- Wind River Front (Eastern Portion)

Rights-of-Way Avoidance Areas:

- Boars Tusk
- Cedar Canyon Petroglyphs (vista)
- Crookston Ranch
- Dry Sandy Swales (1/4-mile buffer)
- Emmons Cone
- 14-Mile Recreation Area
- Greater Red Creek ACEC – Sage Creek Drainage
- Greater Sand Dunes ACEC (& lands within 1 mile or visual horizon)
- Historic Trails (1/4-mile buffer)
- Horse Herd Viewing Area (1/2-mile buffer)
- I-80 Point of Rocks to Green River (limited to local service lines)
- LaBarge Bluffs Petroglyphs (vista)
- Monument Valley (erosive soil areas and slopes >25%)

- North and South Table Mountains
- Oregon Buttes ACEC
- Pilot Butte
- Pine Mountain
- Pine Springs ACEC
- Sage Grouse Leks (1/4-mile buffer)
- South Pass Historic Landscape ACEC (within landscape not in vista)
- Special status plants (actual sites)
- Special status plants (potential sites)
- Steamboat Mountain ACEC
- Sugarloaf Basin
- Sugarloaf Petroglyphs (vista)
- Tolar Petroglyphs (vista)
- White Mountain Petroglyphs (vista)
- Wind River Front (Eastern Portion)

## Literature Cited

- Bureau of Land Management (BLM). 1997a. *Appendix 5-1 Standard Practices, Best Management Practices, and Guidelines for Surface Disturbing Activities*. In *Record of Decision and Green River Resource Management Plan*. Available at <https://eplanning.blm.gov/epl-front-office/projects/lup/63096/75581/83689/greenriver-rmp.pdf>. Accessed March 9, 2020.
- . 1997b. *Map 7 Rights-of-Way Exclusion Areas and Map 8 Rights-of-Way Avoidance Areas*. In *Record of Decision and Green River Resource Management Plan*. Available at [https://eplanning.blm.gov/public\\_projects/lup/63096/75581/83689/greenriver-rmp.pdf](https://eplanning.blm.gov/public_projects/lup/63096/75581/83689/greenriver-rmp.pdf). Accessed July 15, 2020.

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WORLAND FIELD OFFICE RESOURCE MANAGEMENT PLAN

Stipulations (BLM 2015a)

Record Number	Stipulation Type	Protected Resource	Stipulation Description
2036	TLS	Absaroka Front MLP analysis area: Recreation	<p>Timing Limitation Stipulation (TLS). Avoid surface-disturbing and disruptive activities within Absaroka Mountain Foothills SRMA (1) September 1 to November 15; (2) as mapped on the Worland Field Office GIS database; (3) protecting recreational settings.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resource use, considering health and safety.</p> <p><b>Modification:</b> This stipulation may be modified if a portion of the lease is determined by the BLM authorized officer to not be located within the Absaroka Mountain Foothills SRMA.</p> <p><b>Waiver:</b> This stipulation may be waived if the BLM authorized officer determines that the entire lease is no longer managed for recreational settings for hunting or is not located within the Absaroka Mountain Foothills SRMA.</p>
2042 and 4078	NSO	Big Horn Front MLP analysis area: Wildlife migration corridors	<p>No surface occupancy (NSO). No surface occupancy is permitted (1) within ½ mile of big game migration corridors within the Big Horn Front MLP analysis area; (2) as mapped on the Worland Field Office GIS database.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of big game. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if an environmental record of review finds that a portion of the area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of big game migration. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, if it is determined that the entire leasehold is greater than ½ mile from big game migration corridors within the Big Horn Front MLP Analysis Area or if there are no big game migration corridors within the lease boundary. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p>
2043	TLS	Big Horn Front MLP analysis area – Big game winter range	<p>Timing Limitation Stipulation (TLS). Avoid surface-disturbing and disruptive activities within big game winter range (1) from Nov 15 to Apr 30; (2) as mapped on the Worland Field Office GIS database; (3) protecting big game winter range.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the big game winter range areas are not occupied during the period of concern, subject to confirmation by the BLM, in coordination with WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon BLM evaluation in coordination with WGFD to determine that the big game winter range is not present or boundaries of the subject winter range areas have been refined. The BLM authorized officer may modify the area subject to the stipulations based upon BLM evaluation in coordination with WGFD to determine that big game winter range is not present or boundaries of the subject winter range areas have been refined.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is no longer within big game winter range, in coordination with WGFD.</p>
4035	NSO	Water, Riparian/Wetland: Within 500 feet perennial surface water, and riparian/wetland areas	<p>No surface occupancy (NSO). No surface occupancy (1) within 500 feet of perennial surface water, riparian/wetland areas, and playas; (2) as mapped on the Worland Field Office GIS database.</p> <p><b>Exception:</b> The authorized officer may grant an exception if, based upon an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian/wetland areas and/or playas.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if, based upon an evaluation by the BLM, it is determined that portion of the lease is not located within 500 feet of perennial surface waters, riparian/wetland areas and/or playas or if impacts can be adequately mitigated.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian/wetland areas and/or playas. This determination will be based upon an evaluation by the BLM.</p>
4053	NSO	Water, Riparian/Wetland, Fish and Wildlife	<p>No surface occupancy (NSO). No surface occupancy (1) within 500 feet waters rated by the WGFD as Class 1 or 2 fisheries; (2) as mapped on the Worland Field Office GIS database.</p> <p><b>Exception:</b> The authorized officer may grant an exception if, based upon an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian/wetland areas and/or playas.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if, based upon an evaluation by the BLM, it is determined that portion of the lease is not located within 500 feet of perennial surface waters, riparian/wetland areas and/or playas or if impacts can be adequately mitigated.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian/wetland areas and/or playas. This determination will be based upon an evaluation by the BLM.</p>
4060	NSO	Fish and Wildlife: Bighorn River HMP/RAMP tract	<p>No surface occupancy (NSO). No surface occupancy is permitted (1) within Bighorn River HMP/RAMP tracts (2) protecting fish and wildlife resources.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if, in coordination with the WGFD, it is determined that the action as proposed or conditioned would meet the HMP/RAMP management objectives.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation or surface occupancy criteria if, in coordination with the WGFD, it is determined that a portion of the lease is not located within the Bighorn River HMP/RAMP tracts.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if, in coordination with the WGFD, it is determined that the entire lease area is no longer located within the Bighorn River HMP/RAMP tracts.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
4074	TLS	Fish and Wildlife: Big game crucial winter range habitat outside of Oil and Gas Management Areas	<p>Timing Limitation Stipulation (TLS). No surface use is allowed during the following time periods. (1) Nov 15 to Apr 30; (2) as mapped on the Worland Field Office GIS database; (3) protecting big game on crucial winter range.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if the operator demonstrates that the crucial winter range areas are not occupied during the period of concern. This determination shall be based upon a BLM evaluation of the area in coordination with WGFD.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon a BLM evaluation of the area, in coordination with WGFD, to determine any change in boundary/status of big game crucial winter range(s).</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is no longer supports crucial winter range. This determination shall be based upon a BLM evaluation of the area in coordination with WGFD.</p>
4075	NSO	Fish and Wildlife: Federal mineral estate within the Absaroka Front Management Area	<p>No surface occupancy (NSO). No surface occupancy (1) within overlapping wildlife migration corridors and big game crucial winter range in the Absaroka Front Management Area (2) as mapped on the Worland Field Office GIS database.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if, in coordination with the WGFD, it is determined that the action as proposed or conditioned would meet wildlife management objectives.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulation or surface occupancy criteria if, in coordination with the WGFD, it is determined that a portion of the lease is not located within migration corridors or overlapping big game crucial winter range or within the Absaroka Front Management Area.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if, in coordination with the WGFD, it is determined that the entire lease area is no longer located within migration corridors or overlapping big game crucial winter range or within the Absaroka Front Management Area.</p>
4106	NSO	Special Status Species: Within 0.6-mile radius of the perimeter Greater Sage-Grouse leks within PHMAs	<p>No surface occupancy (NSO). (1) as mapped on the Worland Field Office GIS database; (2) to protect occupied greater sage-grouse leks and associated seasonal habitat, life-history, or behavioral needs of greater sage-grouse in proximity to leks from habitat fragmentation and loss, and protect greater sage-grouse populations from disturbance within an 0.6-mile radius of the perimeter of occupied greater sage-grouse leks inside designated PHMAs (Core).</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4106	NSO	Special Status Species: Within ¼-mile radius of the perimeter of Greater Sage-Grouse leks outside of PHMAs	<p>No surface occupancy (NSO). (1) as mapped on the Worland Field Office GIS database; (2) to protect occupied greater sage-grouse leks and associated seasonal habitat, life-history, or behavioral needs of greater sage-grouse in proximity to leks from habitat fragmentation and loss, and protect greater sage-grouse populations from disturbance within an 0.25-mile radius of the perimeter of occupied greater sage-grouse leks outside designated PHMAs (Core)</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4107	TLS	Special Status Species: Greater Sage-Grouse nesting and early brood-rearing habitats inside PHMAs	<p>Timing Limitation Stipulation (TLS). (1) Mar 15 to Jun 30; (2) as mapped on the Worland Field Office GIS database; (3) no surface use to seasonally protect Greater Sage-Grouse breeding, nesting and early brood-rearing habitats (independent of habitat suitability) inside designated PHMAs (Core only).</p> <p>Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> No Waiver.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
4107	TLS	Special Status Species: Greater Sage-Grouse nesting and early brood-rearing habitat outside PHMAs	<p>Timing Limitation Stipulation (TLS). (1) Mar 15 to Jun 30; (2) as mapped on the Worland Field Office GIS database; (3) no surface use to seasonally protect Greater Sage-Grouse breeding, nesting and early brood-rearing habitats outside designated PHMA (Core), within two miles of an occupied lek.</p> <p>Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting.</p> <p><b>Waiver:</b> This stipulation may be waived over the entire lease if, in coordination with the State wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the State wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)</p>
4108	TLS	Special Status Species: Greater Sage-Grouse winter habitats/concentration areas	<p>Timing Limitation Stipulation (TLS). (1) Dec 1 to Mar 14; (2) as mapped by the WGFD; (3) no surface use to seasonally protect Greater Sage-Grouse winter concentration areas in designated PHMAs (Core only), and outside designated PHMAs (Core only) when supporting wintering Greater Sage-Grouse that attend leks within designated PHMAs (Core only).</p> <p><b>Exception:</b> The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function and suitability of the winter concentration area, or it is determined that the winter concentration area is not occupied by concentrated populations of Greater Sage- Grouse during the period of concern, or it is determined the project area is within unsuitable habitat. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected.</p> <p><b>Modification:</b> The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse.</p> <p><b>Waiver:</b> No Waiver</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
4118	TLS	Special Status Species: Nesting Raptors	<p>Timing Limitation Stipulation (TLS). No surface use is allowed within ¼ mile of active raptor nests and ½ mile of active golden eagle, bald eagle, northern goshawk, merlin, and prairie and peregrine falcon nests and 1 mile of active ferruginous hawk nests during specific species nesting period or until young birds have fledged. This stipulation does not apply to operation and maintenance of production facilities. Timing Limitation Stipulation (1) during the following time periods:</p> <ul style="list-style-type: none"><li>• American Kestrel April 1 – August 15</li><li>• Bald Eagle January 1 – August 15</li><li>• Boreal Owl February 1 – July 31</li><li>• Burrowing Owl April 1 – September 15</li><li>• Common Barn Owl February 1 – September 15</li><li>• Cooper's Hawk March 15 – August 31</li><li>• Eastern Screech-owl March 1 – August 15</li><li>• Ferruginous Hawk March 15 – July 31</li><li>• Golden Eagle January 15 – July 31</li><li>• Great Gray Owl March 15 – August 31</li><li>• Great Horned Owl December 1 – September 31</li><li>• Long-eared Owl February 1 – August 15</li><li>• Merlin April 1 – August 15</li><li>• Northern Goshawk April 1 – August 15</li><li>• Northern Harrier April 1 – August 15</li><li>• Northern Pygmy-Owl April 1 – August 1</li><li>• Northern Saw-whet Owl March 1 – August 31</li><li>• Osprey April 1 – August 31</li><li>• Peregrine Falcon March 1 – August 15</li><li>• Prairie Falcon March 1 – August 15</li><li>• Red-tailed Hawk February 1 – August 15</li><li>• Sharp-shinned Hawk March 15 – August 31</li><li>• Short-eared Owl March 15 – August 1</li><li>• Swainson's Hawk April 1 – August 31</li><li>• Western Screech-owl March 1 – August 15</li><li>• All other raptors February 1 – July 31</li></ul> <p>(2) as on the Worland Field Office GIS database or as determined by field evaluation; (3) protecting active raptor nests.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if it is determined that the raptor nest(s) are not active or the proposed action is of a scale, sited in a location, or otherwise designed so that the proposed action would not disturb (be likely to cause: physical injury; a decrease in productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior) nesting raptors of conservation concern. The determination may include consultation with the WGFD or USFWS.</p> <p><b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon a BLM evaluation in coordination with WGFD and/or USFWS, as necessary. The stipulation may be modified based on negative or positive monitoring results; or if it is determined that the action will not impair the function or the suitability of the habitat, or cause nest abandonment.</p> <p><b>Waiver:</b> The stipulation may be waived if the BLM authorized officer determines that the entire lease area does not include seasonal buffer zones for nests of raptor species of conservation concern. This determination shall be based upon field studies of the area by a qualified representative and subject to confirmation from BLM, in coordination with the WGFD and/or USFWS, as necessary.</p>
4128	NSO	Surface Water: Riparian habitat supporting special status fish species	<p>No surface occupancy (NSO). No surface occupancy (1) within 500 feet of perennial surface water, riparian/wetland areas, and playas; (2) as mapped on the Worland Field Office GIS database.</p> <p><b>Exception:</b> The authorized officer may grant an exception if, based upon an evaluation by the BLM, it is determined that the proposal would not adversely affect perennial surface waters, riparian/wetland areas and/or playas.</p> <p><b>Modification:</b> The authorized officer may modify the area subject to the stipulation if, based upon an evaluation by the BLM, it is determined that portion of the lease is not located within 500 feet of perennial surface waters, riparian/wetland areas and/or playas or if impacts can be adequately mitigated.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if it is determined that the entire lease area is not within 500 feet of perennial surface waters, riparian/wetland areas and/or playas. This determination will be based upon an evaluation by the BLM.</p>
4148	TLS	Wild Horses: Fifteenmile HMA foaling season	<p>Timing Limitation Stipulation (TLS). No surface use is allowed (1) Feb. 1 to July 31; (2) within Fifteenmile HMA as mapped on the Worland Field Office GIS database; (3) protecting Fifteenmile HMA foaling season.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception the BLM determines the area is not likely to be occupied during the period of concern and the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated. <b>Modification:</b> The BLM authorized officer may modify the area subject to the stipulations based upon BLM determination that suitable foaling range is not present or boundaries of the HMA have changed.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined that the entire lease area is not within the HMA, or is not located within suitable foaling range.</p>



Record Number	Stipulation Type	Protected Resource	Stipulation Description
5014	NSO	Cultural Resources: Legend Rock Petroglyph Site	<p>No Surface Occupancy (NSO) (1) within the designated Legend Rock Petroglyph site as mapped on the Worland Field Office GIS database; (2) for the protection of cultural resources.</p> <p><b>Exception:</b> The BLM authorized officer may grant an exception if, after consultation with Native American tribes and SHPO, it is determined that the proposed action will result in a no adverse effect determination to the sacred, spiritual, and/or traditional nature of the property(s).</p> <p><b>Modification:</b> This stipulation may be modified by the BLM authorized officer if, in consultation with Native American tribes and SHPO, the site is no longer considered eligible for NRHP or if, in consultation with Native American tribes and SHPO, it is determined that the identified property's sacred, spiritual, and/or traditional values have been downgraded and/or the tribes have reduced the previous avoidance distance around the site.</p> <p><b>Waiver:</b> The BLM authorized officer may grant a waiver if it is determined, in consultation with Native American tribes and SHPO, that the identified site is no longer considered sacred, spiritual, and/or traditional.</p>
6059	NSO	Recreational Resources: Campgrounds, trailheads, day use areas, and similar recreation sites	<p>No surface occupancy (NSO). No surface occupancy or use is permitted (1) on developed recreation sites (2) for the protection of designated campgrounds, trailheads, day use areas, and similar recreation sites.</p> <p><b>Exception:</b> An exception to this stipulation may be granted by the BLM authorized officer if the BLM determines that the function and utility of the recreational resources are not adversely affected.</p> <p><b>Modification:</b> The BLM authorized officer may modify the stipulation if the boundaries of recreational sites are changed or a portion of the lease area is determined not to be located within a designated recreational site.</p> <p><b>Waiver:</b> This BLM authorized officer may waive this stipulation if it is determined that the entire leasehold no longer contains developed recreation areas.</p>
6069	CSU	Scenic and Recreational Resources: Absaroka Mountain Foothills SRMA and Absaroka ERMA.	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted within the Absaroka Mountain Foothills SRMA and Absaroka ERMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Absaroka Mountain Foothills SRMA or Absaroka ERMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Absaroka Mountain Foothills SRMA or Absaroka ERMA.</p>
6077	NSO	Scenic and Recreational Resources: Areas within the Bighorn River ERMA	<p>No surface occupancy (NSO). No surface occupancy is permitted (1) on lands within the Bighorn River ERMA (2) protecting the Bighorn River ERMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Bighorn River ERMA are changed. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Bighorn River ERMA.</p>
6098	CSU	Scenic and Recreational Resources: Tatman Mountain RMZ	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Tatman Mountain RMZ (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Tatman Mountain RMZ are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Tatman Mountain RMZ.</p>
6108	CSU	Scenic and Recreational Resources: Canyons RM	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Trapper Creek Area of the Canyons RMZ (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA.(2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Canyons RMZ are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Canyons RMZ</p>
6129	CSU	Scenic and Recreational Resources: Brokenback/Logging Road RMZ	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Brokenback/Logging Road RMZ (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA.(2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Brokenback/Logging Road RMZ are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Brokenback/Logging Road RMZ.</p>

Record Number	Stipulation Type	Protected Resource	Stipulation Description
6140	CSU	Scenic and Recreational Resources: Middle Fork of the Powder River SRMA	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Middle Fork of the Powder River SRMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Middle Fork of the Powder River SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Middle Fork of the Powder River SRMA.</p>
6151	CSU	Scenic and Recreational Resources: Canyon Creek SRMA	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Canyon Creek SRMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts;</p> <p>The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Scenic and Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Canyon Creek SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Canyon Creek SRMA.</p>
6168	CSU	Recreational Resources: Basin Gardens Play Area SRMA	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Basin Gardens Play Area RMZ (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Basin Gardens Play Area RMZ are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Basin Gardens Play Area RMZ.</p>
6186	CSU	Recreational Resources: Horse Pasture SRMA.	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited within the Horse Pasture SRMA (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; The Plan must demonstrate to the authorized officer's satisfaction that the proposed action is consistent with the prescribed management for the SRMA. (2) as mapped on the Worland Field Office GIS database; (3) protecting Recreational Resources and ensuring the recreational opportunities and setting of the SRMA.</p> <p><b>Exception:</b> Consider exceptions if exploration and development would not impair identified scenic and primitive or semi primitive recreational resources.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the boundaries of the Horse Pasture SRMA are changed.</p> <p><b>Waiver:</b> A waiver may be granted if the lease is not located within the Horse Pasture SRMA.</p>
7007	NSO	Special Designations (Paleontological Resources): Fossil concentration area in the Big Cedar Ridge ACEC	<p>No surface occupancy (NSO). No surface occupancy is permitted (1) on the 264-acre fossil concentration area in the Big Cedar Ridge ACEC (2) protection of paleontological resources.</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the Big Cedar Ridge ACEC boundaries are changed.</p> <p><b>Waiver:</b> This stipulation may be waived, if the authorized officer determines that the entire leasehold is no longer within a designated ACEC.</p>
7021	NSO	Special Designations (Paleontological Resources): Sundance Formation of the Red Gulch Dinosaur Tracksite ACEC	<p>No surface occupancy (NSO). No surface occupancy is permitted (1) within Sundance Formation of the Red Gulch Dinosaur Tracksite ACEC (2) protection of paleontological resources.</p> <p><b>Exception:</b> An exception to this restriction or stipulation may be granted by the authorized officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.</p> <p><b>Modification:</b> The stipulated area may be modified by the authorized officer if the Red Gulch Dinosaur Tracksite ACEC boundaries are changed.</p> <p><b>Waiver:</b> This stipulation may be waived, if the authorized officer determines that the entire leasehold is no longer within designated ACEC.</p>
7044	CSU	Special Designations (Scenic and Cultural Resources): Up to 2 miles from Other Trails	<p>Controlled Surface Use (CSU). Surface occupancy or use will be restricted or prohibited up to 2 miles where setting is an important aspect of the integrity for the trail. (1) unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; The Plan must demonstrate proposed infrastructure is either not visible or will result in a weak contrast rating.(2) as mapped on the Worland Field Office GIS database; (3) protecting other historic trails.</p> <p><b>Exception:</b> The authorized officer may grant an exception if surveys determine that other historic trail remnants are not present or it is determined that the section of trail is sufficiently compromised that the action will not result in an adverse effect to the trail.</p> <p><b>Modification:</b> If surveys determine that a portion of the lease area does not contain contributing trail segments, then the stipulation may be modified. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p> <p><b>Waiver:</b> The authorized officer may grant a waiver if surveys determine that the entire lease area does not contain contributing trail segments. This determination shall be based upon field evaluation of the area by a qualified archaeologist/historian and subject to confirmation by the BLM.</p>

# Required Design Features (BLM 2015b)

## **General**

- Evaluate and take advantage of opportunities to remove or modify existing power lines within priority Greater Sage-Grouse habitat areas. When possible, require perch deterrents on existing or new overhead facilities. Encourage installation of perch deterrents on existing facilities.
- Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.
- Locate man camps outside priority Greater Sage-Grouse habitats.
- Work cooperatively with permittees, lessees, and other landowners to develop grazing management strategies that integrate both public and private lands into single management units.
- Coordinate BMPs and vegetative objectives with the Natural Resources Conservation Service (NRCS) for consistent application across jurisdictions where the BLM and NRCS have the greatest opportunities to benefit Greater Sage-Grouse, particularly as it applies to the NRCS's National Sage-Grouse Initiative:  
(<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/initiatives/?cid=STELDEVB1027671>).
- When conducting NEPA analysis for water developments or other rangeland improvements address the direct and indirect effects to Greater Sage-Grouse populations and habitat.
- Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to priority Greater Sage-Grouse habitats to determine if they should be restored to sagebrush or habitat of higher quality for Greater Sage-Grouse. If these seedings are part of an Allotment Management Plan/Conservation Plan or if they provide value in conserving or enhancing the rest of the priority habitats, then no restoration would be necessary. Assess the compatibility of these seedings for Greater Sage-Grouse habitat or as a component of a grazing system during land health assessments. For example, some introduced grass seedings are an integral part of a livestock management plan and reduce grazing pressure in important sagebrush habitats, or serve as a strategic fuels management area.
- Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate BMPs to surface development.

## **Roads**

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among federal fluid mineral lessees and ROW or Surface Use Agreement (SUA) holders.
- Construct road crossings of ephemeral, intermittent, and perennial streams to minimize impacts to the riparian habitat, such as by crossing at right angles to ephemeral drainages and stream crossings.
- Establish slow speed limits on BLM and Forest Service system-administered roads or design roads for slower vehicle speeds to reduce Greater Sage-Grouse mortality.

- Establish trip restrictions or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions including this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)
- Apply dust abatement on roads, well pads, and other surface disturbances.
- Close and rehabilitate duplicate roads by restoring original landform and establishing a desirable plant community.
- Do not issue ROWs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

## **Operations**

- Site and/or minimize linear ROWs or SUAs to reduce disturbance and fragmentation of sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Collocate powerlines, flowlines, and small pipelines under or immediately adjacent to existing roads/transportation corridors.
- Control the spread and effects of invasive non-native plant species, including treating weeds prior to surface disturbance and washing vehicles and equipment at designated wash stations when constructing in areas with weed infestations.
- Require Greater Sage-Grouse-safe fences.
- Clean up refuse.
- Place infrastructure in already disturbed locations where the habitat has not been fully restored.
- Apply a phased development approach with concurrent reclamation.
- Pipelines must be under or immediately adjacent to the road.
- Restrict the construction of tall facilities, distribution powerlines, and fences to the minimum number and amount needed.
- Design or site permanent structures to minimize impacts to Greater Sage-Grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid storage tanks) in a manner that will minimize disturbance of Greater Sage-Grouse or interference with habitat use.

## **Noise**

- Limit noise to less than 10 decibels above ambient measures (20 to 24 decibels) at sunrise at the perimeter of a lek during active lek season.
- Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

## ***Reclamation***

- Include objectives for ensuring habitat restoration to meet Greater Sage-Grouse habitat needs in reclamation practices/sites. Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling, and revegetating cut-and-fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Implement irrigation during interim or final reclamation for sites where establishment of seedlings has been shown or is expected to be difficult due to dry conditions. Utilize mulching techniques to expedite reclamation.
- Use mulching, soil amendments, and/or erosion blankets to expedite reclamation and to protect soils.
- Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.
- Minimize surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal Greater Sage-Grouse habitats. Apply these measures during project level planning.
- Identify and work with partners to increase native seed availability and work with plant material centers to develop new plant materials, especially the forbs needed to restore Greater Sage-Grouse habitat.
- Consider potential changes in climate when proposing seedlings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed.
- Use Ecological Site Descriptions (ESDs) or other protocols could be used (e.g., TEUI or LSI) to identify the understory species and sagebrush subspecies needed to restore desirable habitat conditions.

## **Best Management Practices (BLM 2015b)**

### ***Important Cultural Resource and Trail Settings***

The BLM should use standard measures to reduce the visual impact of proposed actions within trail settings, where setting is a contributing element of eligibility to the National Register of Historic Places and the setting has integrity. Standard measures should be used as stipulations or conditions of approval attached to authorizations. Standard measures, or BMPs, for reducing the visibility of proposed actions include, but are not limited to:

- Apply a controlled surface use stipulation to surface-disturbing activities or surface occupancy.
- Visual Contrast Ratings and, as appropriate, require visual simulations.
- Consolidate project facilities among oil and gas developers; maximize use of existing locations.
- Develop coordinated road and pipeline systems.
- Reduce the amount of surface development by consolidating facilities.

- Use low-profile facilities.
- Locate projects to maximize the use of topography and vegetation to screen development.
- Design projects to blend with topographic forms and existing vegetation patterns.
- Use environmental coloration or camouflage techniques to reduce the visual impact of facilities that cannot be completely hidden.
- Use broken linear patterns for road developments to screen roads as much as possible. This can include feathering or blending of the edges of linear rights-of-way to soften the dominant line form.
- For livestock control, use electric fencing with low-visibility fiberglass posts and environmental colors.
- Design linear facilities and seismic lines to run parallel to key observation points rather than perpendicular.
- Position facilities to present less of a visual impact (e.g., a facility with several tanks lined up so that one obscures the visibility of the others).

## ***Aquatic Invasive Species***

To prevent the spread of aquatic invasive species, the Wyoming Game and Fish Department recommends following the guidelines outlined in the Aquatic Invasive Species in Wyoming brochure (link below).

Specific BMPs to aquatic invasive species spread prevention include, but are not limited to:

- Decontamination should first occur before arrival at a project site, so aquatic invasive species are not transferred from the last visited area. Decontamination should occur again before leaving a project site, so aquatic invasive species are not transferred to the next site.
  - Decontamination may consist of either:
    - 1. Drain all water from equipment and compartments, clean equipment of all mud, plants, debris, or animals, and dry equipment for five days in summer (June, July, and August); 18 days in spring (March, April, and May) and fall (September, October, and November); or three days in winter (December, January, and February) when temperatures are at or below freezing,
    - or-
    - 2. Use a high pressure (2,500 pounds per square inch [psi]) hot water (140°F) pressure washer to thoroughly wash equipment and flush all compartments that may hold water.
- [https://wgfd.wyo.gov/WGFD/media/content/PDF/Fishing/AIS\\_INSPECTIONMANUAL.pdf](https://wgfd.wyo.gov/WGFD/media/content/PDF/Fishing/AIS_INSPECTIONMANUAL.pdf)

## ***Reseeding***

The following recommendations may be required depending on the project size and location.

- Proposed actions where native brush species located on lands proposed to be disturbed are unique and desirable for interim and final reclamation purposes, and the seed supply for these desirable brush species is not commercially available, will be collected from the area and stored using the procedures of the Seeds of Success program. Seedlings or plugs of common dominant species will be propagated, preferably locally, in preparation for use in portions of area to be reclaimed to expedite vegetation recovery.

- Areas of sustainable plant communities and populations (where they do not conflict with other allowable resource uses) will be identified as sources for native plant material and will be managed under consideration of the need to consistently produce seed stocks of non-commercially available materials for use in reclamation and restoration work (e.g., to support reclamation of abandoned mine lands or well pads or to supplement commercially available seeds in high fire years).

## ***Engineering***

Road maintenance, construction, and any other related travel and transportation management will be mandated by BLM Manual 9113. BLM Manual 9113 provides for BMPs to be used in evaluating, maintaining, and constructing BLM travel and transportation routes. As stated in Manual 9113, “Bureau roads must be designed to an appropriate standard no higher than necessary to accommodate their intended functions adequately (timber hauling administrative access, public travel); and design, construction, and maintenance activities must be consistent with national policies for safety, aesthetics, protection and preservation of cultural, historic, and scenic values, and accessibility for the physically handicapped. The following is a list of BMPs that are recommended but not binding for road maintenance practices:

- Design roads to minimize total disturbance, to conform with topography, and to minimize disruption of natural drainage patterns.
- Base road design criteria and standards on road management objectives such as traffic requirements of the proposed activity and the overall transportation planning, economic analysis, safety requirements, resource objectives, and minimizing damage to the environment.
- Locate roads on stable terrain such as ridge tops, natural benches, and flatter transitional slopes near ridges, and valley bottoms, and moderate side slopes and away from slumps, slide prone areas, concave slopes, clay beds, and where rock layers dip parallel to the slope. Locate roads on well-drained soil types; avoid wet areas when possible.
- Construct cut and fill slopes to be approximately 3 horizontal (h):1 vertical (v) or flatter where feasible. Locate roads to minimize heights of cutbanks. Avoid high, steeply sloping cutbanks in highly fractured bedrock.
- Avoid headwalls, midslope locations on steep, unstable slopes, fragile soils, seeps, old landslides, side slopes in excess of 70 percent, and areas where the geologic bedding planes or weathering surfaces are inclined with the slope. Implement extra mitigation measures when these areas cannot be avoided.
- Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars and in-sloping to ditches as appropriate.
- Sloping the road base to the outside edge for surface drainage is normally recommended for local spurs or minor collector roads where low-volume traffic and lower traffic speeds are anticipated. This is also recommended in situations where long intervals between maintenance will occur and where minimum excavation is wanted. Out-sloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep side slopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.

- Crown and ditching is recommended for arterial and collector roads where traffic volume, speed, intensity and user comfort are considerations. Recommended gradients range from 0 to 15 percent where crown and ditching may be applied, as long as adequate drainage away from the road surface and ditch lines is maintained.
- Minimize excavation, when constructing roads, through the use of balanced earthwork, narrowing road widths, and end hauling where side slopes are between 50 and 70 percent.
- If possible, construct roads when soils are dry and not frozen. When soils or road surfaces become saturated to a depth of 3 inches, BLM-authorized activities should be limited or ceased unless otherwise approved by the authorized officer.
- Consider improving inadequately surfaced roads that are to be left open to public traffic during wet weather with gravel or pavement to minimize sediment production and maximize safety.
- Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Roadside brushing of vegetation should be done in a way that prevents disturbance to root systems and visual intrusions (i.e., avoid using excavators for brushing).
- Retain adequate vegetation between roads and streams to filter runoff caused by roads.
- Avoid riparian/wetland areas where feasible; locate in riparian/wetland areas only if the roads do not interfere with the attainment of resource objectives.
- Minimize the number of unimproved stream crossings. When a culvert or bridge is not feasible, locate drive-through (low water crossings) on stable rock portions of the drainage channel. Harden crossings with the addition of rock and gravel if necessary. Use angular rock if available.
- Locate roads and limit activities of mechanized equipment within stream channels to minimize their influence on riparian areas. When crossing a stream is necessary, design the approach and crossing perpendicular to the channel, where practicable. Locate the crossing where the channel is well defined, unobstructed, and straight.
- Avoid placing fill material in floodplain unless the material is large enough to remain in place during flood events.
- Use drainage dips instead of culverts on level 2 roads where gradients will not present a safety issue. Locate drainage dips in such a way so that water will not accumulate or where outside berms prevent drainage from the roadway. Locate and design drainage dips immediately upgrade of stream crossings and provide buffer areas and catchment basins to prevent sediment from entering the stream.
- Construct catchment basins, brush windrows, and culverts in a way to minimize sediment transport from road surfaces to stream channels. Install culverts in natural drainage channels in a way to conform with the natural streambed gradients with outlets that discharge onto rocky or hardened protected areas.
- Design and locate water crossing structures in natural drainage channels to accommodate adequate fish passage, provide for minimum impacts to water quality, and to be capable of handling a 100-year event for runoff and floodwaters.
- Use culverts that pass, at a minimum, a 25-year storm event or have a minimum diameter of 24 inches for permanent stream crossings and a minimum diameter of 18 inches for road cross drains.
- Replace undersized culverts and repair or replace damaged culverts and downspouts. Provide energy dissipaters at culvert outlets or drainage dips.



- Locate culverts or drainage dips in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or road surfaces. Culverts should be placed on solid ground to avoid road failures.
- Proper sized aggregate and riprap should be used during culvert construction. Place riprap at culvert entrance to streamline waterflow and reduce erosion.
- Establish adapted vegetation on all cuts and fill immediately following road construction and maintenance.
- Remove berms from the downslope side of roads, consistent with safety considerations.
- Leave abandoned roads in a condition that provides adequate drainage without further maintenance. Close abandoned roads to traffic. Physically obstruct the road with gates, large berms, trenches, logs, stumps, or rock boulders as necessary to accomplish permanent closure.
- Abandon and rehabilitate roads that are no longer needed. Leave these roads in a condition that provides adequate drainage. Remove culverts.
- When plowing snow for winter use of roads, provide breaks in snow berms to allow for road drainage. Avoid plowing snow into streams. Plow snow only on existing roads.
- Maintenance should be performed to conserve existing surface material, retain the original crowned or out-sloped self-draining cross section, prevent or remove rutting berms (except those designed for slope protection) and other irregularities that retard normal surface runoff. Avoid wasting loose ditch or surface material over the shoulder where it can cause stream sedimentation or weaken slump-prone areas. Avoid undercutting back slopes.
- Do not disturb the toe of cut slopes while pulling ditches or grading roads. Avoid sidecasting road material into streams.
- Grade roads only as necessary. Maintain drain dips, waterbars, road crown, in-sloping and outsloping, as appropriate, during road maintenance.
- Maintain roads in special areas according to special area guidance. Generally, retain roads within existing disturbed areas and sidecast material away from the special area.
- When landslides occur, save all soil and material usable for reclamation or stockpile for future reclamation needs. Avoid sidecasting of slide material where it can damage, overload, and saturate embankments, or flow into down-slope drainage courses. Reestablish vegetation as needed in areas where vegetation has been destroyed due to sidecasting.
- Strip and stockpile topsoil ahead of construction of new roads, if feasible. Reapply soil to cut and fill slopes prior to revegetation.

## ***Visual Resources***

The following BMPs would be considered to reduce impacts to all visual resource management classes within the planning area:

- Burying of distribution power lines and flow lines in or adjacent to access roads;
- Repeating elements of form, line, color, and texture to blend facilities and access roads with the surrounding landscape;

- Painting all above-ground structures, production equipment, tanks, transformers, and insulators not subject to safety requirements to blend with the natural color of the landscape, using paint that is a non-reflective “standard environmental color” approved by the BLM visual resource management (VRM) specialist:
  - All new equipment brought onto the sites should be painted the same color(s);
  - Semi-gloss paints will stain and fade less than flat paints;
  - Typically, the background is a vegetated background, and seldom a solid background;
  - The selected color should be one or two shades darker than the background; and
  - Consider the predominant season of public use; however, never paint an object to match snow.
- Performing final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography;
- Avoiding facility placement on steep slopes, ridge tops, and hilltops;
- Screening facilities from view;
- Following contours of the land to reduce unnecessary disturbance;
- Recontouring and revegetating disturbed areas to blend with the surrounding landscape;
- Reclaiming unnecessary access roads as soon as possible to the original contour;
- Using gravel of a similar color to adjacent dominant soil and vegetation colors for road surfacing;
- Use dust abatement to reduce fugitive dust, as well as minimize the light colors of the routes;
- Avoiding locating pads in areas visible from primary roads;
- Using subsurface or low-profile facilities to prevent protrusion above horizon line when viewed from any primary road;
- Co-locating wells when possible;
- Locating facilities far enough from the cut and fill slopes to facilitate recontouring for interim reclamation;
- Locating wells away from prominent features, such as rock outcrops;
- Completing an annual transportation plan for entire area before beginning construction, and making a layout that will minimize disturbance and visual impact;
- Designing and constructing all new roads to a safe and appropriate standard “no higher than necessary” to accommodate their intended use;
- Locating roads far enough off the back of ridgelines so they aren’t visible from state, county, or BLM roads;
- Using remote monitoring to reduce traffic and road requirements;
- Removing unused equipment, trash, and junk immediately.

## Rights-of-Way Allocations

Locations of rights-of-way allocations are depicted on Map 3-24 of the Worland FO RMP (BLM 2015c). Rights-of-way exclusion areas comprise 111,790 acres of public land in the Worland FO. Rights-of-way avoidance areas comprise 932,940 acres of public land in the Worland FO.

### Rights-of-Way Exclusion Areas:

- Big Cedar Ridge ACEC
- Other areas identified on Map 3-24

### Rights-of-Way Avoidance Areas:

- Greater sage-grouse PHMA
- Cave and karst areas
- Areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreational sites
- Absaroka Mountain Foothills SRMA
- Absaroka ERMA
- Bighorn River ERMA
- Tour de Badlands Recreation Management Zone (RMZ)
- Tatman Mountain RMZ
- Trapper Creek area of the Canyons RMZ
- Paint Rock area of the Canyons RMZ
- Brokenback/Logging Road RMZ
- Powder River SRMA
- Southern Bighorns ERMA
- Canyon Creek SRMA
- Red Canyon Creek ERMA
- Basin Gardens Play Area SRMA
- Horse Pasture SRMA
- Spanish Point Karst ACEC
- Upper Owl Creek ACEC
- All WSAs
- Other areas identified on Map 3-24

## Literature Cited

- Bureau of Land Management (BLM). 2015a. *Appendix I. Standard Oil and Gas Stipulations*. In *Bighorn Basin Resource Management Plan Revision Project Proposed Resource Management Plan and Final Environmental Impact Statement*. Cody and Worland, Wyoming: BLM Cody and Worland Field Offices. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB\\_PRMP\\_FEIS.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB_PRMP_FEIS.pdf). Accessed March 9, 2020.
- . 2015b. Appendix L. Required Design Features and Best Management Practices. In *Bighorn Basin Resource Management Plan Revision Project Proposed Resource Management Plan and Final Environmental Impact Statement*. Cody and Worland, Wyoming: BLM Cody and Worland Field Offices. Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB\\_PRMP\\_FEIS.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB_PRMP_FEIS.pdf). Accessed March 9, 2020.
- . 2015c. Map 3-24 Land Resources Rights-of-Way and Corridors Bighorn Basin Planning Area Worland Field Office. In Bureau of Land Management Worland Field Office Approved Resource Management Plan. Available at [https://eplanning.blm.gov/public\\_projects/lup/9506/63315/68634/BB-ARMP\\_WFO\\_Map3-24\\_ROW\\_508.pdf](https://eplanning.blm.gov/public_projects/lup/9506/63315/68634/BB-ARMP_WFO_Map3-24_ROW_508.pdf). Accessed July 15, 2020.

# **WYOMING GREATER SAGE-GROUSE APPROVED RESOURCE MANAGEMENT PLAN AMENDMENT AND RECORD OF DECISION (BLM 2019)**

## **Required Design Features**

### ***Roads***

Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose. Locate roads to avoid important areas and habitats.

Construct road crossings of ephemeral, intermittent, and perennial streams to minimize impacts on the riparian habitat, such as by crossing at right angles to ephemeral drainages and stream crossings.

Establish slow speed limits on BLM-administered roads or design roads for slower vehicle speeds to reduce Greater Sage-Grouse mortality.

Close and rehabilitate duplicate roads by restoring original landform and establishing desirable habitat conditions.

### ***Operations***

Conduct reclamation on unused roads as soon as possible using appropriate Greater Sage-Grouse seed mixes. Reclaim the permitted ROWs used in the construction of the running surface immediately.

Site and/or minimize linear ROWs or special use authorizations to reduce disturbance and fragmentation of sagebrush habitats.

Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

Bury distribution power lines to the extent technically feasible.

Control the spread and effects of invasive nonnative plant species, including treating weeds prior to surface disturbance and washing vehicles and equipment at designated wash stations when constructing in areas with weed infestations.

Require Greater Sage-Grouse-safe fences. Clean up refuse.

Place infrastructure in already disturbed locations where the habitat has not been fully restored. Apply a phased development approach with concurrent reclamation.

Pipelines must be under or immediately adjacent to the road.

### ***Noise***

Within PHMA (core only), new project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L50) above baseline noise at the perimeter of the lek from 6:00 pm to 8:00 am during the breeding season (March 1–May 15).

## **Reclamation**

Include objectives for ensuring habitat restoration to meet Greater Sage-Grouse habitat needs in reclamation practices/sites. Address post-reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.

Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

Implement irrigation during interim or final reclamation for sites where establishment of seedlings has been shown or is expected to be difficult due to dry conditions.

Use mulching, soil amendments, and/or erosion blankets to expedite reclamation and to protect soils.

Identify and work with partners to increase native seed availability and work with plant material centers to develop new plant materials, especially the forbs needed to restore Greater Sage-Grouse habitat.

Consider potential changes in climate when proposing seedlings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed.

Use Ecological Site Descriptions or other protocols (e.g., Terrestrial Ecological Unit Inventory or Lands System Inventory) to identify the understory species and sagebrush subspecies needed to restore desirable habitat conditions.

Design or site permanent structures to minimize impacts on Greater Sage-Grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid storage tanks) in a manner that will minimize disturbance of Greater Sage-Grouse or interference with habitat use.

## **Literature Cited**

Bureau of Land Management (BLM). 2019. Appendix B Required Design Features. In Bureau of Land Management Wyoming Greater Sage-Grouse Approved Resource Management Plan Amendment and Record of Decision. Available at <https://eplanning.blm.gov/eplanning-ui/project/103347/570>. Accessed July 23, 2020.

## **APPENDIX F**

### **Cultural Resource Narrative**





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# CULTURE HISTORY

## Prehistoric Era

The area of potential effect (APE) for the Wyoming Pipeline Corridor Initiative extends across the northern portion of the Wyoming Basin physiographic province (Bighorn Basin, Wind River Basin, and Green River Basin), and the southwestern portion of the Northwestern Plains physiographic province (Powder River Basin). A prehistoric cultural chronology for the Wyoming Basin was proposed by Metcalf (1987). Though minor adjustments to the chronology have been suggested (McNees et al. 2006; McNees et al. 2010; Thompson and Pastor 1995), Metcalf's chronology remains the primary structure for discussing changes in prehistoric settlement, subsistence, and technology in the region. This chronology is based on the temporal distribution of 199 radiocarbon-dated components from southwestern Wyoming plotted on a smoothed frequency graph. Although the method may reflect biases in preservation and research foci through time, it provides a functional framework that can be refined as new data become available (Bandy 2008; McKibbin et al. 1989; McNees et al. 1994; Thompson and Pastor 1995; Wheeler et al. 1986).

For the Northwestern Plains, the cultural chronology developed by Frison (1991; Kornfeld et al. 2010) is the primary structure for discussing changes in prehistoric activities in the region. Although Metcalf's (1987) chronology was based on radiocarbon dates within the region, Frison's chronology is largely based on projectile point typology and other stone tools to identify cultural affiliation. As a frame of reference, the evolution of regional chronologies for both the Wyoming Basin and Northwestern Plains is presented in Figure F-1, which includes paleo-environmental periods and trends.

Human occupation has occurred in the Bighorn Basin, Wind River Basin, Green River Basin, and Powder River Basin for minimally the past 11,500 radiocarbon years before present (RCBP). The chronologies for the Wyoming Basin and Northwestern Plains can generally be divided into four major eras based on adaptive strategies and technological developments: Paleoindian (11,500–8000 RCBP); Archaic (8000–1500 RCBP), with Early Archaic, Middle Archaic, and Late Archaic subperiods; Late Prehistoric (1500–250 RCBP); and Protohistoric (250–150 RCBP).

Prehistoric use of the area is heavily influenced by the distribution of resources. People traversed the landscape and obtained economic resources in the river valleys, basin interiors, foothills, and mountains as they became available by season, likely overwintering with the aid of stored resources (Binford 1980). Prehistoric inhabitants accessed various resources, including widely available lithic resources.

Across the APE several sources of lithic resources are present, including lithic landscapes and quarries. The APE intersects 10 identified lithic landscapes: Washakie Basin (48CR8414/48SW15978), Elk Creek (48BH1762), Five Mile Creek (48BH1762), Fifteen Mile Creek (48BY1820/48WA1289), Bison Basin (48FR6028), Yellow Point Ridge (48LN3162/48SU1334), Black's Fork Landscape (48SW9241), Green River Terraces Archaeological Landscape (48LN2596/48SW9516), Cottonwood Creek (48WA1182), and Shute Creek (48LN2444). The APE also intersects three quarry sites (48CR872, 48FR4192, and 48SW3319). Within the Powder River Basin, although no identified lithic landscapes or quarries are identified within the APE, there is evidence of quarrying in the Bighorn Mountains (Kornfeld et al. 2010).

Radio-carbon Years Before Present	REGIONAL CHRONOLOGIES of PREHISTORIC PERIODS and PHASES							PALEO-ENVIRONMENTAL PERIODS and TRENDS			
	WYOMING BASIN					NORTHWEST PLAINS					
	0	Absent	Proto-Historic		Proto-Historic	Proto-Historic	Proto-Historic			Late-Late Neogl Little Ice Age	Dry
Firehole			Firehole	Firehole	Firehole	Moist					
500	Uinta	Late Prehistoric	Firehole	Uinta	Uinta	Late Prehistoric	Uinta	Late Prehistoric	Late Prehistoric	Middle-Late Neogl Little Altitheamal	Very Dry
1000			Uinta								
1500		Transition									
2000		Deadman Wash	Late Archaic	Deadman Wash	Deadman Wash	Late Archaic	Deadman Wash	Late Middle Prehistoric	Late Plains Archaic	Middle Neoglacial	Moist
2500											
3000	Pine Spring	Late Archaic	Pine Spring	Pine Spring	Late Archaic	Pine Spring	Early Middle Prehistoric	Middle Plains Archaic	Early Neoglacial	Dry	
3500											
4000	Opal	Early Archaic	Green River	Opal / Green River	Early Archaic	Opal	Hiatus	Early Plains Archaic	Middle Holocene	Very Dry	
4500											
5000	Paleoindian	Early Archaic	Great Divide	Great Divide	Early Archaic	Great Divide	?	Early Plains Archaic	Early Holocene	Drying Trend and Maximum Holocene Seasonality	
5500											
6000		Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Early Prehistoric	Paleoindian	Latest Pleistocene/ Earliest Holocene	Very Moist	
6500											
7000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Deglaciation	Dry (Clovis Drought)		
7500											
8000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	
8500											
9000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	
9500											
10000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	
10500											
11000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	
11500											
12000	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	Paleoindian	
	Wheeler et al. 1986	Metcalf 1987	McKibbin et al. 1989	McNees et al. 1992	Thompson & Pastor 1995	Mulloy 1958, 1965	Frison 1991	Eckerle 1997			

**Figure F-1. Summary of cultural chronologies for the Wyoming Basin and Northwestern Plains and paleo-environmental periods and trends.**

Prehistoric populations in the greater region were not restricted to low-lying basin land use. High altitude mountain and foothill settings were used throughout prehistory and protohistory. Mountain adaptations began in the Paleoindian period as recognized most notably by stylistically unique projectile points (Kornfeld et al. 2010:95–106), as well as evidence for specialized hunting techniques suited for high

elevations (Frison et al. 1986). Numerous Paleoindian and Early and Middle Archaic sites have been identified in both open and foothill rockshelters (Frison and Walker 1984; Frison and Walker 2007; Husted and Edgar 2002; Kornfeld et al. 2001), and sizeable high-altitude residential village sites have been identified dating to the Late Archaic and Late Prehistoric (Morgan et al. 2012; Stirn 2014). Specialized procurement of high-altitude materials is evidenced by obsidian quarrying throughout regional prehistory (Scheiber and Finley 2011); steatite quarrying, which may date to as early as the Middle Archaic (Frison 1982:1973); soapstone quarrying in the Late Prehistoric and Protohistoric (Adams 2006); and use of mountain sheep horns in bow manufacturing (Frison 1980). Evidence is also growing with regard to high-altitude bighorn sheep trapping (Eakin 2005) and bison hunting (Cannon et al. 2015). The diversity of high-altitude land use and site types is continually adding to a growing base of knowledge related to mountain settlement and subsistence patterns and organization of technology (Cannon et al. 2015; Eakin 2005; Finley et al. 2015; Frison and Walker 1984; Kornfeld et al. 2001; Lee et al. 2014; MacDonald and Hale 2011, 2013; Scheiber and Finley 2010, 2011; Todd 2015). As Todd (2015:355) notes, high-elevation archaeology in Wyoming presents a “record of overwhelming complexity.” Acknowledging this, the following discussion of culture periods is primarily based on the better understood and more synthetically established data stemming from research on Bighorn Basin, Green River Basin, Powder River Basin, Wind River Basin, and Wyoming Basin populations. Temporal changes in adaptations associated with these groups are discussed in turn below.

## ***Paleoindian Period***

The Paleoindian period in Wyoming is dated between 11,500 and 8500 RCBP (Metcalf 1987; McKibbin et al. 1989; McNees et al. 1994), spanning the transition from terminal Pleistocene glacial conditions to the warmer and drier early Holocene epoch (Eckerle 1997). The period is typically divided into Early Paleoindian (11,500–10,000 RCBP) and Late Paleoindian (10,000–8500 RCBP). Techno-complexes of Early Paleoindians consist of Clovis, Goshen, and Folsom, whereas the Late Paleoindian consist of Agate Basin, Hell Gap, Alberta, Cody, Frederick, Lusk, Pryor Stemmed, Lovell Constricted, James Allen, and Angostura (Frison 1992; Kornfeld et al. 2010; McNees et al. 2006; Thompson and Pastor 1995). These are primarily defined by patterns of projectile point morphology and manufacturing techniques.

People have occupied the Wyoming Basin and Northwestern Plains since at least the terminal Pleistocene epoch as evidenced by surface Clovis and Folsom projectile point finds. It is assumed that Clovis groups in western North America practiced a high level of residential mobility due to a procurement focus on Pleistocene megafauna like mammoth and bison (Kelly and Todd 1988; Kornfeld et al. 2010). Direct evidence for utilization of other game animals is sparse (Cannon and Meltzer 2004). Flexible and portable toolkits based on bifacial core technology of high-quality tool stone were a hallmark of Paleoindian populations.

The Wyoming Basin region contains sites that yield radiocarbon dates contemporaneous with Paleoindian traditions (McNees et al. 2006; Thompson and Pastor 1995), although many typically lack diagnostic artifacts and contain only limited faunal remains. Evidence of large game hunting, generally viewed as a signature of Great Plains Paleoindian adaptations, is seemingly absent in the Wyoming Basin region (Thompson and Pastor 1995). Numerous isolated Paleoindian projectile points have been found in the Wyoming Basin, but most localities lack buried contexts containing preserved faunal deposits. This indicates that preservation of buried sites is a biasing factor influential to the paucity of Paleoindian-aged sites in the Wyoming Basin (Thompson and Pastor 1995).

In the greater Wyoming Basin, the Union Pacific Mammoth site (48CR182) yielded a radiocarbon age of  $11,280 \pm 280$  RCBP but lacked diagnostic Clovis artifacts (Irwin 1971). The Pine Springs site (48SW101) yielded late Pleistocene/early Holocene dates ( $11,830 \pm 410$  RCBP and  $9695 \pm 195$  RCBP) and multiple Pleistocene species (e.g., camel, horse, and bison) (Sharrock 1966), but geoarchaeological evidence

suggests no association between humans and these fauna (Kelly et al. 2006). The Porter Hollow site (48UT401), dated to 10,090 RCBP, contained only a single archaeological feature and a sparse assemblage of lithic artifacts, but no faunal material (Hoefer III 1987). The Morgan site (48SW773), Mud Springs site (48FR132), Krmpotich site (48SW9826), and Allen site (48SW13624) all contain Folsom materials (Thompson and Pastor 1995).

Specific to the Bighorn Basin, the Colby site (48WA322), a mammoth kill site, includes Clovis projectile points, the oldest identified in the Bighorn Basin (Frison and Todd 1986). The Hanson site (48BH329) is a Folsom secondary quarry and workshop that yielded a radiocarbon age of  $10,260 \pm 90$  RCBP (Frison and Bradley 1980; Haynes Jr. et al. 1992; Ingbar 1992).

More recent investigations of sites within the Powder River Basin indicate that the La Prele Mammoth site (48CO1401), also known as the Hinrichs Mammoth site, contains evidence of human use of mammoth remains (Mackie et al. 2017). Also within the Powder River Basin, the Sheaman site (48NO211), contained a Clovis Complex projectile point and an ivory projectile point and was dated to about 11,400 RCBP (Reider 1982). The Folsom Complex has a more documented presence in the Powder River Basin. One notable Folsom site in the Powder River Basin is the Carter/Kerr-McGee site (48CA12), which provided a radiocarbon date of  $10,400 \pm 600$  RCBP (Frison 1983). The Sisters Hill site near Buffalo, Wyoming, contains later Paleoindian components including Hell Gap (ca. 11,000 RCBP) and Cody components (10,300 and 9600 RCBP) (Newton et al. 2019).

The Late Paleoindian/Foothills-Mountain traditions range from approximately 10,000 to 8000 RCBP. Foothills-Mountain Paleoindians are interpreted as employing a broader, more “Archaic” subsistence base than their Plains counterparts, who were focused on bison procurement (Frison 1976, 1997; Willey and Phillips 1958:104–111). Plant gathering took on a higher importance for Foothills-mountain groups, whereas Late Paleoindians of the Plains maintained a heavier reliance on hunting. Grinding stones found in association with charred seeds, fire pits, storage pits, and parallel-oblique lanceolates in Late Paleoindian deposits at Medicine Lodge Creek are indicative of plant processing during the Foothills-Mountain era (Frison 1976). Grinding stones found at the Betty Greene site (48NO203) in eastern Wyoming were associated with Plains Late Paleoindian diagnostics (Frison 1991:67), indicating that grinding stones were not unique to the Foothills-Mountain group. The Foothills-Mountain tradition includes various named and unnamed lanceolate projectile points, often with parallel-oblique flaking. A few stemmed points are also associated with this period. Common types include Alder (Davis et al. 1988), Lovell Constricted or fishtail (Husted 1969:12–13), and Pryor Stemmed points (Husted 1969:51–52).

Large game procurement remained a facet of later Paleoindian adaptations, but these adaptations are also characterized by more diverse, spatially dependent lithic techno-complexes and a broadening and more diverse range of subsistence options. For the early Holocene epoch, Eckerle and Hobey (1995) posit that Late Paleoindian populations grew in the Green River Basin in response to the onset of warmer, drier conditions. At the same time, a collector adaptation developed, possibly contemporaneous with the Great Plains Cody Complex, in response to an increased need for winter storage of foods. This shift is aligned with what led to the adaptations that characterize the following Archaic period.

Late Paleoindian components, such as those in Component 2 at 48UT786 (Rood and Pope 1993), and 48LN373 (Wheeler et al. 1986) and the Vegan site (48LN1880) (McKern and Creasman 1991), provide evidence of small game utilization and an increased reliance on plant resources. These sites reflect a shift toward a more broad-spectrum hunting and gathering adaptation around 8,500 RCBP in western Wyoming.

In general, the Late Paleoindian record is well represented across Wyoming. Although this may reflect past land use preferences, it is likely also a reflection of oil and gas exploration and the related increase in archaeological surveys. Paleoindian components in the region include Folsom, Goshen, Hell Gap,

Scottsbluff, and possible Great Basin stemmed types (McNees et al. 2006). Agate Basin or Agate Basin-like lanceolate projectile points appear to be the most prevalent of the Paleoindian projectile point types found across the region (Bureau of Land Management [BLM] 2003).

Eckerle and Hobey (1993) suggest that as the environment became dryer and populations grew in the region in the Late Paleoindian period, a collector adaptation emerged in response to a greater need for winter storage and as a result of reduced abundance of high return rate faunal resources. This subsistence pattern continued throughout the Archaic period that followed.

## ***Archaic Period***

The Archaic period spans from the end of the Paleoindian to the Late Prehistoric period (ca. 8500–1800 RCBP). The onset of the Archaic period in Wyoming corresponds with an increase in aridity and warmer temperatures, known as the Altithermal (Späth 1989; Thompson and Pastor 1995), followed by the later more mesic Neoglacial conditions (Creasman 1987). Throughout the Archaic period, the frequency of archaeological sites increased as a result of more intensive use of the basin by resident populations. The Archaic period across Wyoming is commonly differentiated from the preceding Paleoindian period by a decrease in specialized large game hunting as people replaced that specialization with a pattern of broad-spectrum resource exploitation, including broader procurement of medium to small fauna and various plant resources (Kornfeld et al. 2010; Thompson and Pastor 1995). The Early Archaic period is further characterized in the Wyoming Basin, specifically, by the appearance of distinctive housepit structures (McNees et al. 2006).

Beginning with the Archaic period, increasing numbers of sites were created as a result of more intensive use of the region by the indigenous population, especially as evidenced in mountain/basin interface areas (Burnett 2005). A generalized seasonal round has been defined within Wyoming for the Archaic period, framed in terms of resource availability and human group size (Thompson and Pastor 1995). All environmental zones, from the high montane areas to the basin interiors, were inhabited during this period (Burnett 2005; Martin 1999). Individual “residential units” functioned as the core of each group; groups aggregated and dispersed throughout the cycle in response to resource availability. This basic pattern remained largely unchanged throughout the Archaic.

Archaic groups in Wyoming appear to have shifted between a variety of ecological settings based on resource availability. In winter, groups occupied camps situated according to the availability and accessibility of critical resources. These were concentrated in foothill and riparian settings where fuel, game, water, and natural shelter were more abundant. Seasonality is difficult to determine from the Archaic archeological record at sites across the region, although winter-to-early-spring sites have been identified at the Birch Creek housepits (48SU595), the Trappers Point site (48SU1006), the Taliaferro site (48LN1468) (Smith and Creasman 1988), Maxon Ranch (48SW2590) (Harrell and McKern 1986), and Split Rock Ranch (48FR1484) (Eakin 1987). Small winter camps were likely a more common site type than larger winter villages in the region following the assumption that groups lived off stored food, supplemented by encounter hunting and trapping. Evidence of seasonal habitation strategies is also visible in the Hawken site (48CK303) in the Powder River Basin (Kornfeld et al. 2010). Notably, the Hawken Site also has the earliest assemblage of side-notched points found in association with a bison kill in the Powder River Basin and wider Northwestern Plains region.

Spring climatic conditions exhibit drastic inter-annual variation. In high-altitude semiarid regions, extreme variability in temperature and precipitation during the early spring affects the availability, abundance, and condition of floral and faunal resources. Furthermore, elevation affects the timing of plant growth, with the earliest growth occurring in the basin interiors. Ethnographic evidence suggests that hunter-gatherer groups often used interior basin areas to procure newly sprouted edible greens and roots

(Shimkin 1947, 1986; Steward 1938). Plant growth occurs later throughout the spring with increases in elevation and latitude. As such, spring was a critical time for the Archaic hunter-gatherers in Wyoming. Locating food was of paramount importance, as was the need to replenish other supplies depleted over the course of the winter (e.g., tool stone, bone, wood, etc.).

Conditions across the Wyoming Basin and Northwestern Plains supported concentrations of critical spring and early summer resources. Roots, such as biscuitroot, wild onion, sego lily, and wild parsley, favor wet meadow or subirrigated floodplain settings. Floodplains of major drainages and tributaries of those drainages appear to have been intensively used by Archaic populations for root procurement during the spring and summer months. Archaeological evidence indicates that intensive root procurement occurred throughout the Archaic and Late Prehistoric periods, although in some areas recent agricultural cultivation has removed much of the archaeological evidence of these procurement activities (Francis 1994).

Another important Archaic resource usually available during the spring and early summer in the Wyoming Basin, in particular, was pronghorn. During the spring, pronghorn passed along a major migration corridor that led through the Green River Basin. The Trappers Point site is a pronghorn kill site west of Pinedale that provides evidence of large pronghorn kills extending back to the Early Archaic period. Pronghorn were trapped during their seasonal migration. Several other pronghorn procurement and processing sites in the region appear to be associated with migration routes between winter and summer ranges (Miller et al. 1999). Another significant finding from analysis of the Trappers Point faunal assemblage comes from the first, and perhaps only, study to date to address the potential for pronghorn size diminution over time (Adams et al. 1999:278–289). Certain elements of the Trappers Point pronghorn assemblage were compared to like elements from Protohistoric-aged pronghorn from the Eden-Farson site, located 60 miles south, and a large sample of modern pronghorn, and revealed that pronghorn did experience Holocene dwarfing, likely caused by a combination of climate change, human interaction, and animal behavior (Adams et al. 1999:289).

Access to large pronghorn herds, bison herds, and edible roots allowed Archaic populations to aggregate in areas of the Wyoming Basin and Northwestern Plains during the spring and early summer months. Whether or not Archaic groups aggregated on a few large sites or a series of smaller residential sites is unknown. In either case, during the summer, residential units appear to have dispersed into small groups in response to spatially diverse resource availability. Also, migrations between summer resource patches are thought to have been more frequent than among winter patches. A variety of subsistence resources would have been available to Archaic hunter-gatherers by summer. It is assumed that these smaller, dispersed groups engaged in encounter hunting of small and large animals; procurement of birds, reptiles, and amphibians; collection of bird eggs; fishing in mountain streams; and gathering a variety of plant resources throughout all ecological zones.

The importance of elevation to the seasonal round cannot be ignored. Archaic populations exploited resources in higher elevation locales during the summer after the snow melted. In the mountains, roots and other plants would have ripened later than in lower elevations, making a whole new suite of late-season resources available. Unfortunately, there is a paucity of investigations in high-elevation settings, thus, archaeological data to support these inferred patterns are scant.

With the autumn season, other food resources became available to Archaic residents of the Wyoming Basin and Northwestern Plains. Berries ripened in the mountains as grass and weedy seeds matured in the mountain basins. In addition, herd animals aggregated for the rut in the late summer and early fall. Human groups might have congregated again into large groups in response to the spatial concentration of critical resources. Specialized task groups might have been organized to acquire other spatially disparate resources with the goal of stockpiling for the winter months.



## EARLY ARCHAIC PERIOD

The Early Archaic period in the Wyoming Basin dates to 8500 and 3600 RCBP and is divided into the Great Divide phase (8500–6000 RCBP) and the Opal (also known as Green River) phase (6000–3600 RCBP; (Metcalf 1987; Thompson and Pastor 1995). Due to a paucity of sites in the Great Divide phase, the first 2 millennia of the Archaic period are poorly understood in the Wyoming Basin. The under-representation of the Great Divide phase over much of the region may be due to harsh environmental conditions characteristic of the early-to-middle Holocene epoch as evidenced by the increase in dune activity and soil calcification during this period (Ahlbrandt et al. 1983; Eckerle 1997; Späth 1989). It was once thought that population densities were extremely low because the area was uninhabitable during this climatic episode, thus resulting in low site frequency (Reeves 1973), but subsequent interpretations indicate that, as a result of increased aridity and sediment transport, sites dating to the Early Archaic were simply less likely to be preserved (Späth 1989).

The Great Divide phase (8500–6000 RCBP) is characterized by side-notched and stemmed projectile points, the use of small mammalian fauna, and the appearance of nondescript “basin features” and housepits (Thompson and Pastor 1995). The frequency of radiocarbon dates throughout the Great Divide phase is low, suggesting small populations or poor archaeological preservation during this time (Byers and Smith 2007; McNees et al. 2006; Thompson and Pastor 1995). In the greater western Wyoming Basin, Great Divide phase cultural remains are evident at: 48UT786, dating from 8460 to 8220 RCBP (Rood and Pope 1993); 48CR4492, dated to 8020 RCBP (Creasman et al. 1983); 48LN1185, dated to 8180 RCBP (McDonald 1993); the lower levels at the Deadman Wash site (48SW1455) (Armitage et al. 1982); 48UT1447, dated to 7580 RCBP (Rood and Pope 1993); the Vegan site (48LN1880), dating from 8400 to 7570 RCBP (McKern and Creasman 1991); 48SW6911, dated to 7130 RCBP; and 48UT186, dated to 6740 RCBP (Rood and Pope 1993). Most of these Great Divide phase components consist of dated hearth remains with little associated material culture.

The Great Divide phase is well-represented in terms of housepits (McNees et al. 2006). Seven housepit sites (J. David Love [48SU4479], McKeve Ryka [48SU2094], Jonah’s House [48SU2324], the Stud Horse Butte Housepit [48SU3835], 48SU3519, 48SU2317, and 48SU3291) date between 8240 and 5320 RCBP, with most predating 6920 RCBP. These represent some of the oldest residential structures in the Wyoming Basin (McNees et al. 2006). Structure D at the J. David Love housepit site also yielded a human burial dated to 7290 RCBP and appears to have been built specifically for the internment (McNees et al. 2006).

Many of the Early Archaic housepit sites in Fremont and Sublette Counties occurred adjacent to streams; Crooks Creek in the case of the Fremont County sites, and Sand Draw in the case of the Sublette County sites. But, it is also noted that many Early (and Late) Archaic sites occur within dunes, especially between 8500 and 8000 RCBP and 6000 to 3000 RCBP (Smith and McNees 2005). Dunes can contain water in the form of small playas and interdunal ponds, a trait beneficial to both plants and animals. Occupations within dunes appeared to be short duration, yet repeated reuse over millennia suggests they were important locations (Smith and McNees 2005).

There is a robust set of well-documented and well-dated sites dating to the Opal phase (6000–3600 RCBP) throughout the Wyoming Basin. Even prior to full awareness of the high site density of Early Archaic sites in the Jonah Gas Field, more than 50 housepits from approximately 30 sites in the Upper Green River Basin region had been documented by the mid-1990s (Larson 1997). After 6500 RCBP, site densities drastically increase, as do the number of radiocarbon dates obtained from the sites (Thompson and Pastor 1995). These increases may be a function of archaeological preservation, as well as cultural factors such as population increase or changes in settlement and mobility patterns. The Opal phase is characterized by an increase in the frequency of housepit structures and slab-lined basin features; the

appearance of large corner-notched and side-notched projectile points, similar to Northern Side-notched points; the appearance of large side-notched knives, named the Altithermal Knife (Creasman et al. 1983); an increase in the frequency of ground stone use; reliance on small- and medium-sized mammalian resources; and the use of a variety of plant materials (McNees et al. 2006; Späth 1989; Thompson and Pastor 1995). Opal phase housepits are generally large and basin-shaped with subfloor hearths and storage features (Späth 1989; Thompson and Pastor 1995).

Patterns of site density and radiocarbon date frequencies across the APE suggest a preferential use of interior rolling plains and upland settings by Opal phase populations rather than the riparian settings. As such, use of these areas might have been facilitated by the onset of moister Neoglacial conditions, permitting groups to expand away from the centralized riverine settings on which they may have focused during the more extreme aridity of the Altithermal.

In the Northwestern Plains, the Early Plains Archaic period dates from approximately 8000 to 5500 RCBP (Kornfeld et al. 2010). Within this region, the Early Archaic is largely recognized by side-notched projectile points, along with a changing subsistence strategy as supported by increased ground stone artifacts and stone-lined roasting pits found on sites associated with this era. Rockshelter and cave habitation sites have been documented in the Early Plains Archaic, as well as habitation sites on mountain slopes in open areas near springs (Kornfeld et al. 2010). Within the Northwestern Plains, few Early Archaic sites have been documented, though it is unknown if this is due to a low number of human populations or due to increased erosion during the period (BLM 2010a).

Diagnostic projectile points of this period are large, side-notched points with a triangular outline (i.e., “Early Side-Notched” [Frison 1991:Figure 2.4]). Although rare compared to side-notched points, large corner-notched and stemmed points have been documented in Early Archaic stratigraphic contexts at Laddie Creek (48BH345) (Frison 1991:Figure 2.45; Larson 1990), Medicine Lodge Creek (48BH499) (Frison 1991:Figure 2.46), Sorenson (24CB202) (Husted 1969:Plate 9), Southsider Cave (48BH364) (Frison 1991:Figure 2.45), Wedding of the Waters Cave (48HO301) (Frison 1962), and Mummy Cave (Husted and Edgar 2002:Plate 13).

## **MIDDLE PLAINS ARCHAIC PERIOD**

The Middle Plains Archaic period is a Northwestern Plains designation that is omitted from the Wyoming Basin chronology (see Figure F-1). The Middle Plains Archaic is generally synonymous with the McKean complex, which dates between 5000 and 3000 RCBP on the Northwestern Plains (Kornfeld et al. 2010). On the Northwestern Plains, the McKean complex is characterized by a bison-oriented economy, but as described above, the entirety of the Archaic period in the Wyoming Basin is characterized by broad-spectrum resource exploitation involving a varied focus on medium to small fauna and plant resources. The most significant difference between the Wyoming Basin and the Northwestern Plains during this time period is the degree to which bison played into the subsistence regime. Whereas the Wyoming Basin saw a continued focus on medium and small game procurement, in addition to a high importance of plant resources, the archaeological record of the Northwestern Plains suggests a significant increase in bison kills, perhaps related to the early stages of the moist Neoglacial period. Though small-scale bison hunting continued through the Middle Plains Archaic period, there is little evidence for the large-scale hunting that occurred in the Early Plains Archaic. In addition to the bison-oriented economy of peoples during this period, the earliest stone circles recorded are attributed to the Early Archaic as well, which could indicate a change in housing structures (Kornfeld et al. 2010).

The McKean complex is associated with three projectile point styles: the McKean lanceolate, the stemmed/notched Duncan-Hanna, and the tri-notched Mallory point (Davis and Keyser 1999). McKean lanceolates and Duncan-Hanna points both have indented bases and typically co-occur in assemblages

(Davis and Keyser 1999; Frison and Walker 1984). This has led researchers to suggest that the same groups used the different point styles contemporaneously, but for different purposes (Davis and Keyser 1999). Davis and Keyser (1999) draw upon morphological and breakage patterns to suggest that the lanceolates were used on thrusting spears and the Duncan-Hanna points were atlatl dart points. Duncan and Hanna varieties were originally considered typologically distinct (Wheeler 1954), but Davis and Keyser (1999) have shown that there is morphological overlap between these varieties and that Duncan points are likely re-sharpened Hanna points. Thus, the two varieties have been compressed into the Duncan-Hanna type. Assuming that this functional dichotomy between the lanceolate and Duncan-Hanna points is correct, it appears that both thrusting spears and atlatl darts were commonly employed in McKean hunting strategies.

## LATE ARCHAIC PERIOD

The Late Archaic in the Wyoming Basin dates to between 3600 and 1800 RCBP, and is divided into the Pine Springs phase (3600 to 2900 RCBP) and the Deadman Wash phase (2900 to 1800 RCBP) (see Figure F-1). The transition from the Early Archaic period to Late Archaic period in the Wyoming Basin is defined primarily by a decrease in radiocarbon dates between 4600 and 4300 RCBP. The precise cause of this is not known. It could be factors of differential preservation or changes in population density, settlement, and mobility patterns, or some combination of the two (Metcalf 1987). An interesting exception to the reduction in radiocarbon-dated sites is seen in the western APE between the Green and Big Sandy Rivers. Here, the Pine Springs phase is represented by more sites than all other prehistoric phases and periods (McNees et al. 2006); however, throughout the region as a whole, Late Archaic Pine Springs phase sites occur in relatively low frequencies.

The transition to the Late Archaic is marked by shifting climatic conditions from the warm, dry conditions typical of the Altithermal to cooler, moister conditions of the Neoglacial (Thompson and Pastor 1995). Although no profound change is seen in the subsistence record between the Early and Late Archaic in the Wyoming Basin (Thompson and Pastor 1995), Late Archaic archaeological site components generally contain more bison remains, yet still maintain large quantities of pronghorn, rabbit, and other small game. Ground stone use persists during the Late Archaic period, suggesting a continued plant-processing focus.

The Pine Springs phase is characterized by a greater diversity of architectural features, increased intensity in the exploitation of resources within defined settlement ranges, and more complex social organization. This pattern extends into the Deadman Wash phase. Medium- to small-game and plant resources continue to be exploited (Thompson and Pastor 1995). Some of the more significant Pine Spring phase sites include the Taliaferro site (48LN1468) (Smith and Creasman 1988), Cow Hollow Creek (48LN127) (Schock et al. 1982), Pine Spring (48SW101) (Sharrock 1966), and 48SW1091 (O'Brien 1982).

Deadman Wash phase (2900–1800 RCBP) sites occur at lower frequencies than Pine Spring phase sites in the western Wyoming Basin (McNees et al. 2006), although no clear cause for a corresponding reduction in resident populations exists (Metcalf 1987; Thompson and Pastor 1995). The Deadman Wash phase is characterized by moist climatic Neoglacial conditions, which may have assisted a split in subsistence focus between hunting and collecting activities (Thompson and Pastor 1995). Procurement of bison and pronghorn increased slightly during this phase.

Medium-sized corner-notched projectile points characterize the Deadman Wash phase. In the Great Basin, similar types are recognized as Elko projectile points; however, similar projectiles from the Great Plains are usually designated as Pelican Lake types. Corner-notched Elko Series points in the Great Basin are common throughout the Archaic period, whereas Pelican Lake types are presently limited to the time span between 3000 and 1500 RCBP. Cultural affiliation of Wyoming Basin corner-notched points is

problematic given the location of this basin relative to both the Great Basin and the Great Plains. These points are ubiquitous across the Wyoming Basin and it seems plausible that this is a clear indicator of increased population use or increased use of the basin interior, or both during the period. In the Wyoming Basin, key archaeological data for Deadman Wash phase sites come from the Porter Hollow site (48UT401) (Hoefler III 1987), the Arthur site (48SW1023) (Thompson and Pastor 1991), Component III at the Vegan site (48LN1880) (McKern and Creasman 1991), Component III at the Taliaferro site (48LN1468) (Smith and Creasman 1988), and Occupation I at the Mayfly site (48SW6926) (Darlington and Hoefler III 1992).

In the northern Wyoming Basin, a wider range of environmental zones was regularly exploited during the Late Archaic period. Basin sites tend to have a higher frequency of plant processing implements such as ground stone, whereas Late Archaic sites in the mountains tend to reflect a hunting focus. Sites in the Big Horn Basin that reflect combined hunting and plant processing activities include Bottleneck Cave (48BH206) (Husted 1969:62), Daugherty Cave (48WA302) (Frison 1968), Spring Creek Cave (48WA1) (Frison 1965), and Wedding of the Waters Cave (Frison 1962). These dry cave sites occasionally preserve basketry and digging sticks indicative of plant processing. Stone circles increased in both frequency and size throughout the period, perhaps even replacing housepits in some instances. One notable Late Plains Archaic stone circle site is 48NA83 (the Cedar Gap site), a multi-component stone circle site, consisting of approximately 100 stone circles, one projectile point dated to the Middle Archaic, and one Late Plains Archaic point (Späth 1988).

In the Northwestern Plains, the Late Plains Archaic period dates to between 3000 and 1450 RCBP. In the both the Northwestern Plains and the northern Wyoming Basin, the Late Archaic period is generally defined based on the appearance of corner-notched dart points, which appear to represent a continuation of point manufacture associated with the Middle Archaic McKean complex (Kornfeld et al. 2010). These points, typically referred to as Pelican Lake or Pelican Lake-like points, dominate most assemblages until the introduction of the bow and arrow around 1500 RCBP. Late Archaic Yonkee Corner-notched and Besant Side-notched projectile points typically post-date Pelican Lake varieties in the Northwestern Plains and Powder River Basin in particular, but these are not common in the northern Wyoming Basin and Big Horn Basin assemblages. This is not unexpected, given that Yonkee and Besant points are typically associated with bison hunting and bison were not known to occur in the Big Horn Basin in as great a number as they did on the plains. Yonkee points are primarily found within the Powder River Basin, with the Besant variant present across the Northwestern Plains (Kornfeld et al. 2010). Sites within the Powder River Basin that reflect the Yonkee and Besant presence in the Powder River Basin and the wider Northwestern Plains include the Powder River site (48SH312), the Mavrikaz-Bentzen site (48SH311), and the Ruby site (48CA 302).

Near the end of the Late Plains Archaic, small amounts of ceramics from the Intermountain Pottery tradition and Woodland tradition first appear in the archaeological record (Kornfeld et al. 2010). The Intermountain Pottery tradition is more prevalent in the Northwestern Plains and may be associated with Shoshonean groups (Kornfeld et al. 2010). The Woodland tradition is largely associated with Besant sites in southeastern Wyoming, near the border of Wyoming and Nebraska and northeastern Colorado (Kornfeld et al. 2010). Though both traditions are documented in Late Plains Archaic sites, both are more prevalent in the Late Prehistoric.

## ***Late Prehistoric Period***

The Late Prehistoric period in the Wyoming Basin is dated between 1800 and 300 RCBP and is segregated into the Uinta phase (1800–900 RCPB) and the Firehole phase (900–300 RCPB). Within the Northwestern Plains, the Late Prehistoric period is dated between 1500 and 275 RCBP. Although aspects of shifts in settlement and subsistence patterns play into the designation of a separate period, the most

salient key trait marking the beginning of this period is the introduction of bow and arrow technology. Otherwise, the basic patterns of seasonal land use and broad-spectrum hunting and gathering are consistent. That being the case, there is a notable spike in the number of radiocarbon-dated components. The coincidence of this trait with the introduction of bow and arrow technology and an increase in ceramics cannot be overlooked (Kornfeld et al. 2010; Metcalf 1987; McNees et al. 2006; Thompson and Pastor 1995). Environmental and technological changes usher in heightened exploitation of seeds, pronghorn procurement, and increased numbers of bison kills.

Although there is a dramatic rise in the number of sites dating to the Uinta phase in the Wyoming Basin, it is unclear how this relates to actual population increase (Byers and Smith 2007) versus factors of archaeological site preservation and visibility (Surovell and Brantingham 2007). During the Firehole phase (1000–300 RCBP), however, the number of dated components drops drastically across the region. Within the Northwestern Plains, the early portion of the Late Prehistoric also exhibits a peak in the number of radiocarbon-dated components, and ceramics begin to be introduced into the region (Frison 1991:116–122).

If there was indeed an increase in human populations in Wyoming during the Late Prehistoric period, it may have ushered in significant changes to resident group size and mobility. First, population increase likely restricted seasonal rounds compared to that experienced by earlier groups, which would have likely caused constricted access to resources (Byers and Smith 2007) and a concomitant shift toward more intensive resource exploitation. This may have necessitated more frequent residential moves by groups within previously established ranges as local resources were depleted. Furthermore, as home ranges decreased, long-distance interaction and exchange systems were probably more appealing to facilitate access to a wider array of resources.

As a result of increased territoriality, it has been postulated that groups may have employed seed broadcasting and manipulation of plant species around campsites, possibly demonstrating the first evidence of artificial husbanding of vegetal resources in the area (Smith and Creasman 1988). Furthermore, bison hunting appears to have intensified as seen at Late Prehistoric bison kills including Big Goose Creek (48SH313) (Frison et al. 1978), Piney Creek (48JO311 and 48JO312) (Frison 1967), Bessie Bottom (48UT1186) (McKern 1988), Woodruff (42RI1) (Shields 1978), Barnes (48LN350) (Thompson and Pastor 1995), and Wardell (48SU301) (Drucker 2006; Frison 1973; Kornfeld et al. 2010). Wardell represents Avonlea people who originated in Canada, made their way south through Montana and Wyoming, and on to the southwest. Coordinated bison drives and traps such as Wardell demonstrate a high degree of cohesive community organization, likely reflecting several different groups working in a coordinated fashion. With the exception of the Paleoindian Finley and Archaic Scoggins sites, most bison kills in western Wyoming date to the Uinta phase (Smith et al. 2008).

The Uinta phase may have been a time of increased inter-group tension and stress as a result of increased population density, increased territoriality, the introduction of new weaponry (e.g., the bow and arrow), regional faunal resource depression (Byers and Smith 2007), and possible incursions of foreign groups from the Eastern Woodlands, Northwestern Plains, Great Basin, and northern Colorado Plateau into the Wyoming Basin. This assumption is supported by evidence of violence at several burials, including the Robbers Gulch (48CR3595), Bairoil (48SW7101), and Deer Butte burials (48SW10878) (Gill 1991).

The archaeological record suggests that Fremont populations entered southwestern Wyoming during the Uinta phase (Thompson and Pastor 1995). This assumption is supported by the presence of calcite-tempered pottery, distinct rock art styles, manos and metates, disk beads, and farmsteads and granaries (Metcalf 1987), all of which are indicative of the introduction of exogenous Fremont populations into the region. Notably, the Mucray Rock Art site (48SW7787), located within the APE, includes three panels of petroglyphs that, although the affiliation is unknown, have been identified as possibly Fremont. The exact nature and extent of the interaction between Uinta phase and Fremont groups is unknown (Thompson and Pastor 1995).

According to Thompson and Pastor (1995), Uinta phase sites typically contain Rosegate points, Desert and Uinta Side-notched points, and small, triangular, corner-notched points. Specialized hearths are also present, interpreted as vegetal/seed processing features. Pottery is present and is interpreted to be most typically of local manufacture. Intermountain Ware ceramics were recovered at 48SU1443, and brown-gray pottery sherds with sand tempering from the site show a distinct similarity to ceramics from the nearby Wardell bison kill site.

During the subsequent Firehole phase, the paucity of cultural components does not appear to be the result of abandonment of the Wyoming Basin and Powder River Basin, but rather that populations decreased in response to climatic changes associated with the Medieval Warm Period (ca. 900–500 RCBP), prior to the Little Ice Age (Thompson and Pastor 1995). During this interval, marginal arid environments were unsuitable to support the higher human population densities experienced during the previous phase.

Firehole phase sites are characterized by Tri-notched, Desert Side-notched, and Cottonwood Triangular projectile points (Thompson and Pastor 1995). Pottery assemblages are diverse and include Intermountain Ware pottery; steatite vessels also appear during this period (Adams 1992). These artifact types are often attributed to Shoshone populations; however, the timing of the arrival of Numic groups such as the Shoshone into western Wyoming is unclear. Therefore, it is unknown if the transition from the Uinta to Firehole phase represents the arrival of Shoshone populations or the result of more complex ecological and cultural dynamics (Thompson and Pastor 1995). Key Firehole phase sites in the Wyoming Basin include Cow Hollow Creek (48LN127) (Schock et al. 1982), Skull Point (48LN317) (McGuire 1977), Archery (48SW5222) (Hakiel et al. 1987), South Baxter Brush Shelter (48SW5176) (Hoefler III et al. 1992), and Eden-Farson (Frison 1971, 1991).

Stone circle sites, many of which may date to the Late Prehistoric period, are known across the Northwestern Plains and Wyoming Basin. There are a variety of uses and a range of morphologies for these features. Some may be the remains of dwellings (tipi rings), whereas others may have served spiritual purposes. The flanks and bluffs of the major river uplands have produced numerous stone circle sites, rock alignments, cairns, and other (presumably) Late Prehistoric stone archeological sites. It is possible that these are representative of complex hunting strategies (drive lines, game observation points, blinds) involving prehistoric manipulation of game. Many of these features and sites are traditionally considered sensitive and are respected areas for modern-day Native American tribes.

### ***Protohistoric Period (Late 1600s–Early 1800s)***

The Protohistoric period in the region lacks concise beginning and ending dates. It likely began sometime in the late seventeenth or early eighteenth century when native groups in the region became aware of colonizing European empires through acquisition of European-derived trade goods and livestock. Contact with these goods and animals, as well as epidemic diseases from Europe (Dobyns 1993; Ramenofsky 1987), almost certainly preceded direct contact with Europeans in the APE. The end of the Protohistoric period is roughly coincident with the beginnings of the fur trade era, which is marked by the beginning of annual rendezvous and slightly later by the establishment of permanent trading posts, which resulted in a relatively permanent Euro-American presence.

Introduction of horses and trade goods such as glass trade beads, in all likelihood, preceded direct contact with Europeans by many decades. An articulated horse skeleton found at 48SW8319 in the Bridger Basin near Flaming Gorge Reservoir produced radiocarbon dates that indicate this animal may date to the seventeenth century (Eckles et al. 1994), although these dates are difficult to interpret given the calibration curve plateaus and reversals during this time. This animal was found with extreme hack marks and placed with three coyote skulls, which may indicate a treatment similar to early accounts from the DeSoto expedition (1540–1542), in which horses were initially killed because of association with the

Spanish (Haines 1938a:114). In the Powder River Basin, the campsite area at the Big Goose Creek (48SH313) site yielded an iron awl and brass arrow point (Frison et al. 1978). Radiocarbon dates from the site calibrate into the sixteenth and seventeenth centuries; however, it is not clear if the trade goods are associated with the dated components. Based on the pottery, this site is associated with the Crow and provides evidence of their early western expansion from the Middle Missouri Region.

Based on the historical accounts, Francis Haines (1938b) presented a model of the northward dispersal of horses and acquisition by native groups that is still the basis for understanding the development of equestrianism in western North America (Roe 1955). Horses became available in the south after the establishment of stock-raising centers around Santa Fe, New Mexico, and particularly after the Pueblo Revolt of 1680 drove out the Spanish colonists and made available large numbers of animals. Equine species were disseminated north by various means (e.g., trading and raiding). Later, John Ewers (1955:11) describes a horse-trading locus in the Wyoming Basin of Wyoming, through which horses from the south were funneled to the Shoshone and traded to northern and western groups such as the Crow and Nez Perce. The actual route by which the horses moved is hypothetical. It could be that the Comanche or Ute were funneling horses to the Shoshone or possibly to the Crow. Pekka Hämäläinen (1998) postulates that there was a Comanche trading center on the Arkansas River in the Big Timbers region whereby Southern Plains goods were traded to Central and Northern Plains groups and vice versa. Based on this model, Native American groups north of the Southern Plains and in the adjacent Rocky Mountain regions would have likely obtained horses by the early 1700s. With the acquisition of the horse, groups had increased mobility, which resulted in increased interaction with other groups, likely altering hunting strategies and political structures as well (Aaberg et al. 2006:192).

In the winter of 1787–1788, while wintering with the Piegan in the foothills of the Northern Rockies, David Thompson (1916:328–334) was told by an adopted Cree named Saukamapee, whom he estimated to be 75 to 80 years old, of battles in the 1730s against mounted Eastern Shoshone groups that were the first contact the Piegan and other northern groups had with horses. These animals were initially the property of Shoshone groups. It is believed that the Shoshone gained early access to horses through their Comanche brethren, who began to acquire equine herds on the Southern Plains at the beginning of the eighteenth century. This access allowed the Shoshone to expand their territory in the eighteenth century. This expansion was relatively short-lived, because groups to the north and east (such as the Blackfoot and Lakota) began acquiring guns, which effectively trumped the advantage that equestrian Shoshonean groups maintained by the beginning of the nineteenth century (Secoy 1953). This Shoshonean expansion may be marked by the appearance of tri-notched arrow points, which, for example, are found in the upper kill level at the Glenrock Buffalo Jump (48CO304), which postdates the fifteenth century (Frison 1970; Newton 2011:59). The River Bend site (48NA202) on the North Platte River just west of Casper is a seventeenth or eighteenth century Shoshone occupation containing iron fragments and a single horse cranium indicative of early and limited access to trade goods that characterize this period (Buff 1983; McKee 1988).

Linguistic evidence suggests that the Crow, a Siouan-speaking tribe, moved into the northern Wyoming Basin region sometime after the 1500s (during the terminal Late Prehistoric era), after splitting with the Hidatsa (Hollow Jr. and Parks 1980). They acquired horses around 1730 AD (Haines 1938b), and by the 1820s, the Mountain Crow were recorded as hunting in the Big Horn Basin and adjacent areas (Voget 2001). The introduction of the horse to the region fundamentally altered subsistence and settlement practices at this time.

Little historical evidence exists of contact between Europeans and tribes in the region. Beginning in the eighteenth century, it is likely that European traders were impinging on the region. It is clear that native groups were beginning to make sporadic contact with European traders in the eighteenth century. Cheyenne tradition indicates that traders from places such as Santa Fe and Taos, New Mexico, were

coming as far north as the Bighorn Mountains in the eighteenth century to exchange iron for bison products (Branch 1997:21). From 1742 to 1743, the Vérendrye brothers met native people in the Northern Plains who spoke Spanish (Nasatir 2002:33–34), and Jacque D'Eglise, who was the first documented Spaniard to visit the Mandan villages beginning in 1790, saw “saddles and bridles in Mexican style” (Nasatir 1927:49; 2002:161).

This trade and the effects it had on native groups in the region fall largely outside of historical documentation, because this area was basically insulated from sustained direct economic and physical contact by native groups in the intervening areas who acted as middlemen and even discouraged direct access to European trading centers. Such is the case in the Northwestern Plains and Wyoming Basin where acquisition of British, French, or Spanish, or all of the above goods was primarily through indirect trade with native middlemen such as the Lakota or Cheyenne, who, for example, were located between the Shoshone and the Middle Missouri village trading centers (Jablow 1950). But, the trading acquisition models vary, and other types of trade that relied on ethnic ties were carried out. In an account from 1805, François-Antoine Larocque describes this relationship based on an encounter with a Shoshone group near the Bighorn Mountains (Wood and Thiessen 1985). This account describes the value placed on glass trade beads as well as the various means by which goods were acquired. Larocque describes “a few of those blue Glass Beads they have from the Spaniard, and on which they set such value that a horse is given for 100 grains” and states that these beads are acquired “by the second and third han[d]” (Wood and Thiessen 1985:192, 217). Larocque later encounters a Shoshone who “had been absent since the spring and had seen part of his nation [Comanche?] who trade with the Spaniards; he brought a Spanish B[r]idle and Battle ax, a large thick blanket, striped white and black and a few other articles, such as Beads &c” (Wood and Thiessen 1985:189).

The profound effects of European-derived materials and technologies, particularly horses and metal, on native societies and economies is understood in a nominal or first-order sense; however, how specific tribes occupying the APE were particularly affected by these processes is not entirely clear.

The archaeological record of this period is elusive given its relatively short duration and light footprint compared to the archaeological record of the Prehistoric and Historic periods. Furthermore, the material culture from this period is largely homogenous and lacking in diagnostic attributes, which is compounded with the issues in radiocarbon calibration after the fifteenth century. Unequivocal evidence of a Protohistoric occupation is difficult to discern given that the most prominent and widespread trade goods, such as glass beads, changed little up even into the later Historic period. Differentiating the Protohistoric archaeological record may require directed research and particular methodologies, including metal detecting. It is also important to recognize that Protohistoric period sites may not contain European trade goods and can differ little assemblage-wise from Prehistoric sites, which appears to be the case at 48SW2590 and 48FR1419, where dated Protohistoric components contained no European trade goods (Martin 1999; Pool and Graham 2005). Of note is the Piney Creek site (48JO311 and 48JO312), which has radiocarbon dates that fall within the dates generally defined as the Protohistoric period; however, the site is considered to be Late Prehistoric due to the absence of Protohistoric artifacts (BLM 2010a). Within the Northwestern Plains and Wyoming Basin, several sites have been documented that include components with association to multiple periods. One such site is the Arapahoe and Lost Creek site (48SW4882), which is listed on the National Register of Historic places and located within the current project APE. The Arapahoe and Lost Creek site includes components from the Late Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Late Prehistoric, and Protohistoric periods, with a historic component as well.



## Historic Period (Early/Mid-1800s–Mid-1900s)

The advent of what can be considered the Historic period begins in earnest with the introduction of the fur trade economy in the region. Trade in animal skins in North America was the impetus behind some of the earliest native-European interactions. On the North Atlantic coast in the seventeenth century, Europeans traded metal and glass items for a variety of animal furs, which fueled exploration and colonization (Sleeper-Smith 2009). In Wyoming, Spanish trappers venturing out of Santa Fe and Taos likely carried out intermittent trapping and trading ventures, but direct accounts of these interactions are not recorded (Branch 1997; Weber 1970). The influx of Europeans and the establishment of permanent or semi-permanent trading centers, however, was not noted until the early nineteenth century (Wishart 1992).

Following the establishment of Fort Astoria along the Columbia River in 1811, which included a western overland journey by a party of trappers and traders led by Wilson Price Hunt that passed through northern Wyoming (Irving 2004a; Murray 1976), a Euro-American party led by Robert Stuart returned east overland through the Wyoming Basin and southern Powder River Basin. The passage of Stuart's group through South Pass is the first documented non-indigenous use of the travel route (Rollins 1995). Stuart, while on the left fork of Pocket Creek in October 1812, met a group of Shoshone and traded "a Pistol, a Breechclout an axe, a Knife a tin Cup two Awls and a few Beads they gave us the only Horse they had & for a few trinkets we got Buffaloe meat and leather for mogasins, an article we much want" (Rollins 1995:161).

The Astorian expedition is generally viewed as the event that ushered in the western fur trade; but even prior to this, trade was established on the upper Yellowstone River beginning with the post Manuel Lisa built in 1807 (Douglas 1964). In the northern Wyoming Basin, it is thought that John Colter's expedition into the Bighorn Basin in 1807 and 1808 was the first known Euro-American exploration into the area, at which time he described a location now known as Colter's Hell (48PA77) (National Park Service 1973). In 1824, the fur trade came directly to the Wyoming Basin with the establishment of annual trapping rendezvous initially developed by William Ashley, who was the first to bring a brigade of company trappers to the region (Dale 1991). The system developed by Ashley eschewed permanent trading posts for annual meetings where goods were brought to trappers working in the Rocky Mountain region. The Rocky Mountain Trapping System as characterized by Wishart (1992) consisted of both "company" and "free" trappers pursuing beaver and, to a lesser degree, other furbearing animals, in the central and southern Rocky Mountains, which were traded for goods at an annual rendezvous with vendors that included St. Louis companies and even occasional representatives from Hudson's Bay Company (Topham 2007). Noted mountain men and traders, including the Sublette brothers, Jedediah Smith, Jim Bridger, Thomas Fitzpatrick, Robert Campbell, and Nathaniel Wyeth attended these events (DeVoto 1947; McNees et al. 2006; Morgan and Harris 1987).

These rendezvous, which also attracted Indian groups, were held in the Wind River, Green River, or Snake River basins and lasted from 1824 to 1840 (Friedman 1988; McNees et al. 2006). A multitude of factors, including falling beaver prices and overhunting, ultimately spelled the demise of this system (Wishart 1992:198). By the early 1830s, permanent posts (albeit many short-lived) had been established in the Central and Southern Rocky Mountains, including Fort Davy Crockett (1837–ca. 1841) along the Green River in Brown's Park, and several at the confluence of the Laramie and North Platte Rivers, most notably Fort William, established by William Sublette in 1834 (Eddy 1982; Robertson 1999). Captain Benjamin Bonneville brought wagons west to the Green River Rendezvous in 1832 and established an overwintering post known as Fort Bonneville in the western Wyoming Basin (Irving 2004b). This was the first wagon train brought through South Pass, which would later be used by westering Euro-American settlers.

The fur-trade era in the region initiated an era of direct contact between tribes and Euro-Americans in the region. Trade with tribes such as the Shoshone, Crow, and Arapaho was integrated into the fur trade economy with tribes providing items such as bison robes and horses to the traders. As the beaver-based fur trade economy waned, trade in bison robes and other goods acquired from tribes became more prevalent, particularly on the western Great Plains (Newton 2012). In the Upper Green River basin, which saw a large amount of fur trade activity, the era is commemorated at the Green River Rendezvous National Monument (48SU52) and the Trappers Point Site (48SU350) located at the confluence of Horse Creek and the Green River (McNees et al. 2006).

In the late 1830s, economic difficulties, including the Panic of 1837 (McGrane 1924), led many in the eastern and midwestern United States to seek new opportunities in the Oregon and California territories. By the 1840s, emigrants followed wagon routes traversed in 1836 by the Whitman-Spaulding evangelistic mission and pioneered new routes as well (DeVoto 1947). Later, the discovery of gold in California in 1849 spurred this emigration. The main routes to the west pass through the Green River Valley, which was traversed by tens of thousands of Euro-American settlers. The main travel corridor on which collocated trails used by emigrants travelling to California, Oregon, and Utah crossed along the Platte River just south of the Powder River Basin, and through the Wyoming Basin. Beginning in the 1840s existing infrastructure such as Fort William or Fort John (1834–1849), and especially Fort Bridger (1842–1857) located in southwest Wyoming were economically dependent on these travelers (Robertson 1999). Both of these posts figured prominently in the later history of the region because both became U.S. military posts with personnel involved in the Plains Indian wars (1860s–1870s) and the campaign against the Mormons (1857–1858). Fort William became known as Fort Laramie after purchase by the military in 1849, and Fort Bridger became a military post in 1857; both lasted until 1890 (Robertson 1999). The Wyoming Basin, following the fur-trade era and up into the later nineteenth century, can be characterized by the prominent travel corridors used by American settlers.

From the 1840s through the 1860s, the east–west emigrant trail system was heavily used, and it produced the first clear evidence of historic use in the proposed corridors. These trails include the Oregon Trail (1843–1868), the California Trail (1841–1868), and the Mormon Trail (beginning 1847), as well as variations or “cutoffs” such as the Sublette Cutoff (1841–1868). The Oregon/California/Mormon Trails (48CO183, 48FR736, 48NA293, and 48SW827) and associated cutoffs—Sublette Cutoff (48LN225/48SW1841), Slate Creek Cutoff (48LN948), Baker–Davis Road (48SW4197), Kinney Cutoff (48SW4195), West-side Kinney Cutoff, Deep Sand Route (48FR736), Deep Sand Route Alternate (48FR736), Seminoe Cutoff (48FR1276), Child’s Cutoff (48NA579), and Emigrant Gap Route (48NA293)—cross through the APE.

The Sublette Cutoff (48LN225/48SW1841) became the popular route after 1844, particularly by California-bound emigrants (Larson 1978:9). This cutoff departs from the main route at the Parting of the Ways (48SW4198), shortening travel distances by approximately 50 miles by crossing the waterless, rugged Little Colorado Desert. Despite being more prominently known for Oregon-bound emigrants, 9 out of 10 settlers using the Sublette Cutoff were, in fact, bound for California or Utah (Larson 1978:9). The Pony Express also used the trail from 1860 to 1861.

In 1864, the Bozeman trail (48JO134/48JO1599) was opened, turning north off the main emigrant trail system at Fort Laramie and traveling north through the Powder River Basin to eventually arrive at gold mining operations in Virginia City, Montana (Doyle 2000). An initial attempt to find a shorter trail to the Virginia City gold mines through the Powder River Basin was made by John Bozeman and a small wagon train in 1863, but they turned back just north of present day Buffalo after being stopped by a group of Northern Cheyenne and Sioux. Bozeman made a second attempt in 1864, and at that time was able to successfully complete the journey to Virginia City (Doyle 2000). To provide protection for emigrants from Cheyenne, Sioux, and Arapahoe peoples who were unhappy with the Bozeman Trail encroaching on

their homelands, the U.S. Government established Fort Reno in 1865, and Fort Phil Kearny and Fort C.F. Smith in 1866 (Doyle 2000). The military presence did not prevent the attacks, and the military closed the Bozeman Trail in 1866.

At the same time, the Bridger Trail (48BH262/48FR717/48HO207/48NA207/48PA215), an alternative route to the Bozeman Trail, was established by Jim Bridger in 1864 (Gray 1977). The Bridger Trail followed a route north to the Montana gold fields through the Wind River and Bighorn basins. “Over 700 wagons, 1,000 head of stock and 2,500 men women and children traveled over the Bridger Trail to Montana in the spring and summer of 1864. In fact, 25 percent of the population of Virginia City in 1864 arrived thereafter traveling the Bridger Trail” (Wyoming State Parks and Cultural Resources 2000). The government closed the trail to the public in 1865.

During this era, military expeditions (following the emigrant trails) explored, surveyed, and gathered information for the U.S. Government about the western portion of the continent. The first of these forays into the region were the Fremont expeditions of 1842 to 1843 that, guided by Kit Carson, surveyed the Emigrant Trail (Jackson and Spence 1970). In 1849 and 1853, respectively, the Stansbury and Simpson expeditions traveled the Emigrant Trail to the Salt Lake territory and were followed in 1857 by Alexander’s Utah Expedition for the so-called Mormon War. By 1857, Frederick Lander began road surveys across the upper Wyoming Basin in development of what would be known commonly as the Lander Trail, an alternate route on the Emigrant Trail system (BLM and U.S. Forest Service [USFS] 1998). The Lander Road, as well as other trail variants, received later use as stage and express routes until the coming of the railroad, after which most stage and supply wagons ran regionally to and from the railroad arteries. Emigrant travel on the Lander Road dropped during the 1860s after the Transcontinental Railroad (Union Pacific mainline) was constructed.

Congress authorized the building of the Transcontinental Railroad in 1862, in the middle of the Civil War. The Homestead Act of 1862 followed soon after. Increasing traffic on the emigrant trails and the perceived need of the United States to protect its western citizens and maintain territories led to the establishment of military forts in the region. The Reservation system was established with policies first executed in what is now Wyoming with the 1851 Treaty of Fort Laramie (Larson 1978). It was after the building of the Transcontinental Railroad, which was completed in 1869, that effectively all Native Americans were limited to what is now western Wyoming. The Wind River Reservation was established for the Eastern Shoshone in 1868 under the Treaty of Fort Bridger; the Northern Arapaho were received there in 1877 (Larson 1978).

In 1868, Wyoming became an official U.S. Territory, following the Transcontinental Railroad’s opening of the region to settlement (Larson 1978:64). Euro-American settlement in the Wyoming Basin beginning in 1870s was accompanied by the development of transportation infrastructure between towns, railheads, and outlying agrarian communities. Particularly in the APE, wagon roads are prominent as the movement of people and goods through the largely environmentally marginal area to more agriculturally viable settings in the region. These include the Bryan-South Pass Road (48SW3869), which began in the late 1860s as a stage road from the Union Pacific Railroad (Johnson 1998). By the 1880s, several wagon roads were in use through the area, including the Waltman to Sweetwater Road (48FR2623), the Rawlins–Ft. Washakie Road (48FR415), the Green River to South Pass Road (48SW3864), the Casper to Lander Road (48FR1783, 48NA4218), and the Rock Springs to Lander Road (48SW4163), which began use in 1894 (Gardner 1982). Many of these roads were stagecoach routes and had stage stations associated with them, such as the Crooks Gap Station (48FR1435), located along the Rawlins–Ft. Washakie Road, and the Bird Stage Station (48SU1715), established in 1890s along the Opal Wagon Road (48SU852). The Opal Wagon Road, which began use in 1882, was an important freight/stage wagon route between the shipping railhead in Opal to the upper Green River Valley that saw use until ca. 1924, when construction of the U.S. 189 auto route was completed (Rosenberg 1985).

Around this time gold was discovered in the area around South Pass City initiating a gold rush that brought thousands of people into the area. After decades of rumors and some limited success prospecting in the area, the South Pass area was not rushed by fortune seekers until 1867, when a party of prospectors led by Lewis Robinson returned to Salt Lake City with a substantial amount of gold that they had removed from ore in a short period of time (Bagley 2015). Although there were earlier claims in the area and even the organization of a nearby mining district, what came to be known as the Carissa Lode discovered by Robison and his partners catalyzed the development and Euro-American population of the South Pass area. The fear of Indian attacks that kept most away in the preceding decades was forgotten in the rush to stake claims.

Soon the fully equipped mining town of South Pass City (48FR434) was established near the Carissa Lode, as were the nearby towns of Atlantic City (48FR711) and Miner's Delight (48FR435), which were associated with other gold deposits. Accounts indicate that there may have been as many as 2,000 people living in the area in the summer of 1868; an 1869 summer census showed 1,517 in the mining area, followed by a regular census of 1870 that showed a population of 1,166 (Larson 1978:113). By 1872, the three towns probably each had populations of less than 100; the dwindling population reflects the lack of success most had in the area (Bagley 2015). The South Pass gold rush was small and relatively short-lived compared to those in places such as Colorado and California. Most mining ceased by 1873. The size of the gold is a direct reflection of the overall lack of gold deposits in the South Pass area and a twentieth century study indicates that no more than \$2,000,000 in gold was recovered from the mines from 1867 to 1873 (Larson 1978:113).

Although short-lived, the South Pass gold rush, during its heyday, did bring considerable amounts of people into this territory and result in a permanent population base. Given the threat of Indian hostilities, this population was provided with military protection and in 1870 Camp Stambaugh (48FR436) was established near the South Pass mining towns (Miller 2012:113). The camp was strategically located near both the mining communities and the Oregon/California/Mormon trails that used South Pass. The camp was named after Lieutenant Charles Stambaugh, who was killed in a battle with some Arapahos near Miner's Delight earlier that year. The post had a 156-man garrison and a post office, but a rather uneventful history compared to the ongoing military actions elsewhere in the region. Camp Stambaugh was abandoned in 1878 (Miller 2012:113).

Much like Camp Stambaugh, Camp Augur (48FR718) was established as a subpost of Fort Bridger along the Popo Agie River in 1869 to protect peaceful Shoshone on the Wind River Reservation, as well as the mining population in the region (McDermott 1993). It was reorganized as a separate post in 1870 and renamed Camp Brown in honor of Captain Frederick Brown who was killed in the Fetterman Battle (Miller 2012:112). In 1871 the camp was relocated to the Little Wind River on the reservation where it remained and was renamed Fort Washakie (48FR430) in 1878. Fort Washakie eventually became the location of a settlement and center of commerce because it was connected to the Union Pacific Railroad via the Rawlins to Fort Washakie Road. It was turned over to the Interior Department in 1909 and became the headquarters for the Shoshone Agency (Frazer 1972).

Regional cattle ranching essentially began with Fort Bridger in 1843, when Jim Bridger bought trail-weary stock from those passing on the Emigrant Trail, grazed them back to better condition on a bounty of native grasses, and sold them at a profit to other emigrants (Rosenberg 1984). Aridity is a major reason why open-range livestock ranching was the primary industry of permanent settlement in the upper Wyoming Basin and Powder River Basin. Although dryland farming had resurged in many areas of the West by the early twentieth century, conditions of altitude and length of growing season meant this type of agriculture was largely unsuccessful in this region. The Homestead Act of 1862 and its successors, which allowed cattlemen to homestead a base ranch and pastures in prime bottomland and at water sources, aided this system. As with much of the West, area ranches tended toward consolidation into large ranches as a more sustainable way to maintain profitable herd sizes.

Early Wyoming ranchers perpetuated the system of open range livestock ranching, imported from the formerly Mexican territories of the Southwest and Texas. When ranching was initiated in the territory, cattle were generally grazed on surrounding public lands, ranging to surrounding mountains in the summers and to lowland basins in the winters. The open-range system faded after disastrous winters in 1886 and 1887 caused the deaths of an estimated 40 to 60 percent of the cattle in Wyoming (Abbot and Smith 1955; Larson 1978); coincident to this catastrophe the cattle market also plummeted, bursting a bubble of market speculation that was largely fueled by foreign and other non-local investors. When many Wyoming ranches went bust after the killing winters and market fall, small ranchers were again able to viably build independent holdings. By the 1890s, still recovering from the season of terrible winter die-offs and market collapse, cattlemen began to more widely feed their cattle through the winters, to keep them strong and to keep them from wandering too dispersedly. Ranchers accomplished this by pasturing cattle and cultivating grass hay in their bottomland holdings. This management of the range and ever-increasing population around established settlements led to both private and government fencing of the lands. In the Powder River Basin, tensions between small livestock owners and large cattle ranchers boiled over into hostilities in 1892, culminating in the Johnson County Cattle War (Larson 1978). Johnson County was known to be home to many small livestock owners who were opposed to and competitive with large cattle operations. At this time, detectives and inspectors hired by the Wyoming Stock Growers Association, who represented large cattle operations, apprehended and killed suspected cattle rustlers (usually small-scale livestock owners), often without filing charges (Larson 1978).

In many areas of Wyoming, cattle ranching originally had been established to the exclusion of any sheep herding operations. The earliest sheep herding in the Wyoming region was more focused on the mutton market, in direct competition with beef cattle, than upon wool production. Because cattle were available from cheap sources in the late 1860s and were worth much more per head than sheep, it was probably more profitable to be a cattle rancher as Wyoming Territory was settled. But, by the 1890s, most sheep ranching had reoriented toward wool production. By 1907, the University of Wyoming had a wool technology department, led by John Arthur Hill, influencing the study of wool production and processing through the 1940s (Field and Kercher 2014), when synthetic fibers began to displace wool. Sheep camps can be found throughout the area and were operated up into the second half of the twentieth century.

Range management practices, violent rancher conflicts, and public land abuses all contributed to the reservation of public lands and minerals for management purposes when it became clear that initial extractive and settlement approaches were negatively affecting broad areas of western lands. In 1895, U.S. forestlands were withdrawn into Forest Reserves; however, federal legislation was still maintained to encourage the growth of individual family agricultural holdings. Forestlands were then placed under USFS management in 1905 and the first division of (summer) grazing rights into a permitted allotment system was developed. The USFS also dictated which allotments could be used for sheep herding and which were meant for cattle herding, which were types of herding often known to come into physical conflict in the region.

Historic homesteads or ranches that reflect the range permitting system in the upper Wyoming Basin and seasonal grazing restrictions can be found throughout the region, including the Bailey Homestead (48SU941), the Mills Homestead (48SU1277), and the Morton Ranch (48NA1090). These sites date from the 1910s into the 1940s; both home ranches and associated line camps were used by ranchers as they moved their livestock to and from winter range, a process known as the Green River Drift (McNees et al. 2006). These sites contain log structures and water management features, like wells, windmills, and stock ponds.

As the livestock industry shrank in the 1890s, the oil industry was just beginning. The first oil well in the Salt Creek Oil Basin (48NA296) north of Casper was developed in 1889, with the first oil field in the Powder River Basin developed in 1887 near Moorcroft (Larson 1978). Energy development extended into

the western part of Wyoming as well in the early 1900s, with developments in the Oregon Basin Oil Field (48PA639), Byron Oil Field (48BH1616), the Garland Oil Field (48BH751), and the Sand Draw/Big Sand Draw Oil and Gas Field (48FR6135). This development is also demonstrated by the historic 1920s to 1930s oil camp (48SU1206) recorded on Birch Creek. A notable site related to energy development is the Parco Historic District (48CR1197), which the APE crosses. The town of Parco was founded to support an oil refinery built by the Producers and Refiners Oil Company in 1922 to 1923, after whom the town was named.

In 1934, the Taylor Grazing Act completed the reserve desert and other remaining non-forest lands, which were held federally by the General Land Office (GLO). GLO lands were also divided into grazing allotments with restricted range access, managed by the National Grazing Service, which was formed pursuant to the Taylor Grazing Act (Merchant 1993:321). Depression-era federal relief programs like the New Deal's Civilian Conservation Corps and the Soil Conservation Service were also established in the 1930s to perform range improvement projects and wilderness access projects, heralding a new era of progress for range and forest management practices. In 1935, the Soil Conservation Service was founded (renamed as the Natural Resources Conservation Service in 1994) and began work to assist ranch owners with range development projects such as water catchments and erosion control measures. After its inception in 1946, the BLM (formed through the federal merger of the GLO and the National Grazing Service) also began building stock tanks, water wells and pipelines, and stock ponds on its desert lands to serve the cattle industry and wildlife.

Modern highways and historic automobile roads mark a progressive improvement of earlier wagon roads, often straightening and altering their paths for the different considerations of automobile traffic as distinguished from earlier horse traffic. Modern vehicle routes often directly follow atop historic routes when possible, because the older routes commonly provide existing upgraded or improved access corridors. Often these historic routes have been reused or upgraded by other later historic routes ranging in periods from wagon trails to early to more modern automobile roads. Modern routes typically differ from previous routes based on road conditions, which are related to drainage channel crossings, erosion, and a wide range of topographical considerations.

By World War I, the "Lincoln Highway" had been built following the route of the Transcontinental Railroad through the Wyoming Basin. The Rock Springs Automobile Road extended north from the Lincoln Highway to Pinedale, as an internal combustion vehicle alternative to the New Fork Wagon Road (Huston 2000:35–36; Vlcek 1999). The highway system that had been growing since the 1920s, and was expanded after each World War, essentially replaced the need for many of the alternate rural routes. The spread of transportation and automobiles post-World War II also diminished the need for railroad networks and was complicit in the reduction of small-town populations in the West.

The Rock Springs Automobile Road (48SU3508) was used between 1907 and 1934 (McNees et al. 2006) and was first surfaced for all-weather use in 1926 (Huston 2000:40). U.S. Highway 187 (48SU1281) was later developed between 1934 and 1952, in yet another alignment similar to that of the Rock Springs Automobile Road, in response to the needs of more modern automobile traffic (McNees et al. 2006). Today that highway route has been redesignated as Highway 191, although the current Highway 191 route does not totally overlap the earlier Highway 187 route (Huston 2000:36).

The National Register of Historic Places (NRHP)-eligible Opal Wagon Road began use in 1882 as an important freight/stage wagon route between the shipping rail head in Opal to the Upper Green River Valley. It was used as a freight/stage road until 1924, when a new road was constructed providing access to the area (Rosenberg 1985). Thus, 1924 marks the end of the period of significance for the Opal Wagon Road. Following the numbering convention of the surveyors, the updated road was designated Sublette County Road No. 20, and it was named the Opal-Horse Creek Road (48SU7034). This road is

recommended as not eligible for NRHP nomination. Previous recordings of the Opal Wagon Road have falsely identified segments of the Opal to Horse Creek Road as the Opal Wagon Road, and this issue persists in the SHPO data. The correct Opal Wagon Road alignment is the eastern alignment in this area, located between the Opal to Horse Creek Road and the Green River (BLM 2010b). This road is documented as 48SU1595, and it has been recommended as not eligible for NRHP nomination. Wyoming 287 was recommissioned as U.S. 89 in 1936, and in 1939 this highway was abandoned and replaced by modern U.S. 189, which is in use today (Field and Nitzman 2009).

Other notable road sites in Wyoming are the Cody-Meeteetse-Thermopolis Freight Road (48HO472), the Lost Cabin to Nowood Road (48FR2284), and the Rock Springs to Vernal Road (48SW4164)

Well-developed transportation networks and an expanding energy (primarily hydrocarbon and uranium) market have helped the growth of larger population centers like Rock Springs and Gillette, and often helped suburbanize their immediate radii. Hard-rock mining also continued to play a role in the regional economy. From 1960 to the 1980s, U.S. Steel built and operated a 77-mile railroad spur from the Atlantic City Iron Mine at South Pass to Rock Springs. The spur transported iron ore pellets to the Union Pacific Railroad and on to the Geneva Steel Foundry in Utah. This railroad spur parallels Highways 28 and 191. To the east, the APE passes Jeffrey City, which was a center of uranium production from 1960 to 1980 (Moulton 1995:189). Reclaimed mines are in the APE vicinity north of Jeffrey City. Today, cattle ranches, fluid mineral developments, and uranium mines remain visible directly around the APE.

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         <http://wyomuseum.state.wy.us/pdf/dttrails.pdf>. Accessed February 26, 2020.

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## **APPENDIX G**

### **Maps**



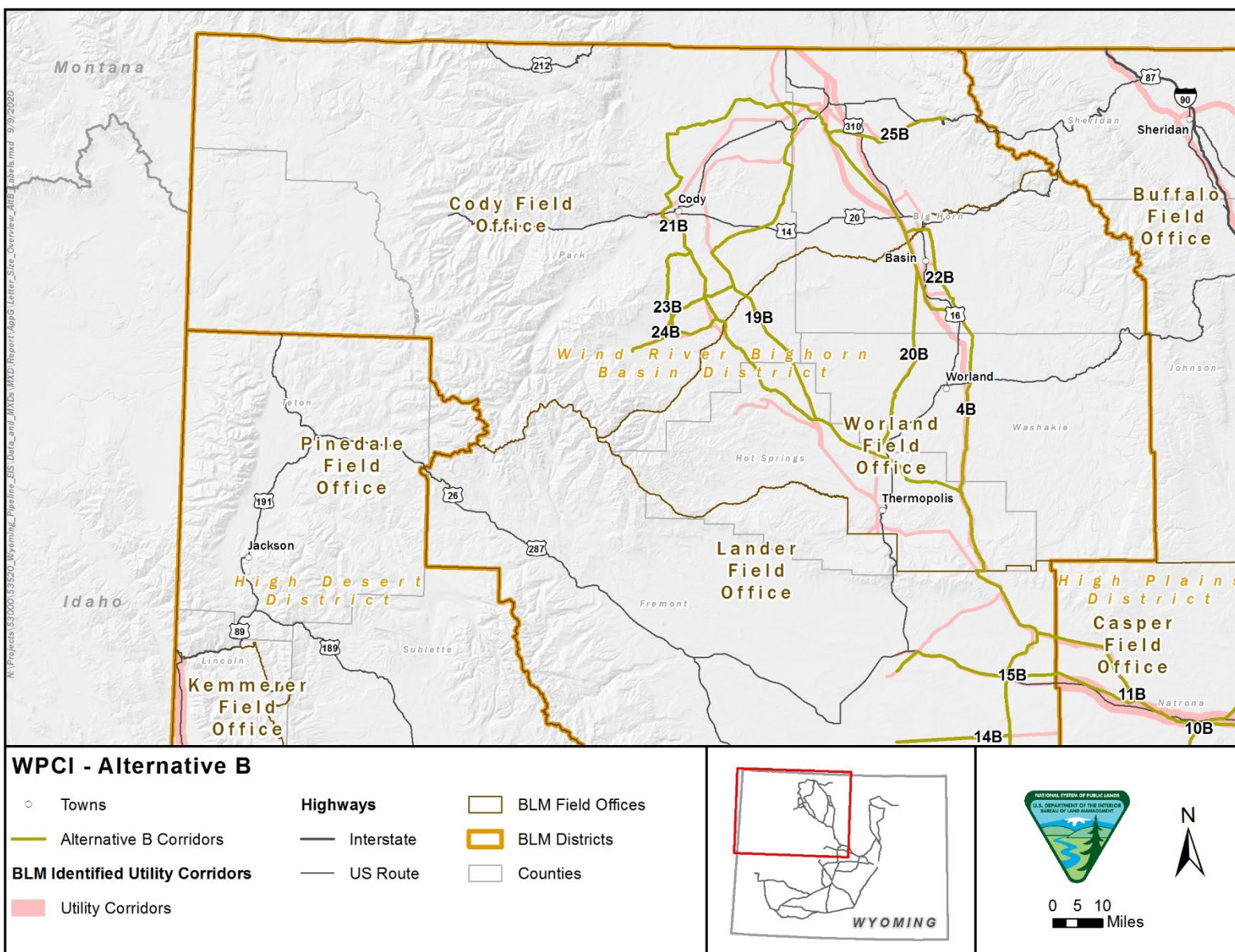


Figure G-1a. WPCI proposed corridors – Alternative B (map 1 of 4).

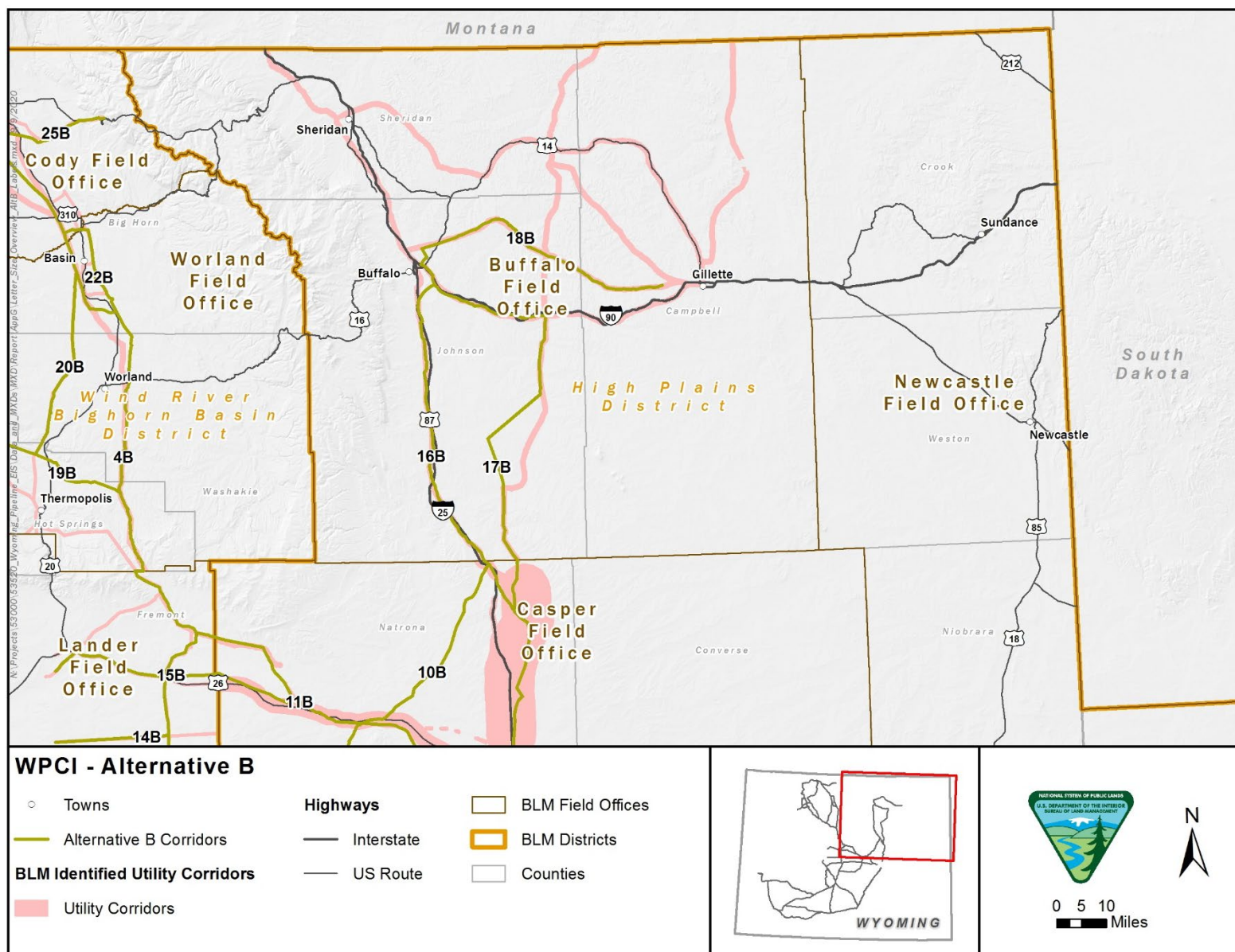


Figure G-1b. WPCI proposed corridors – Alternative B (map 2 of 4).



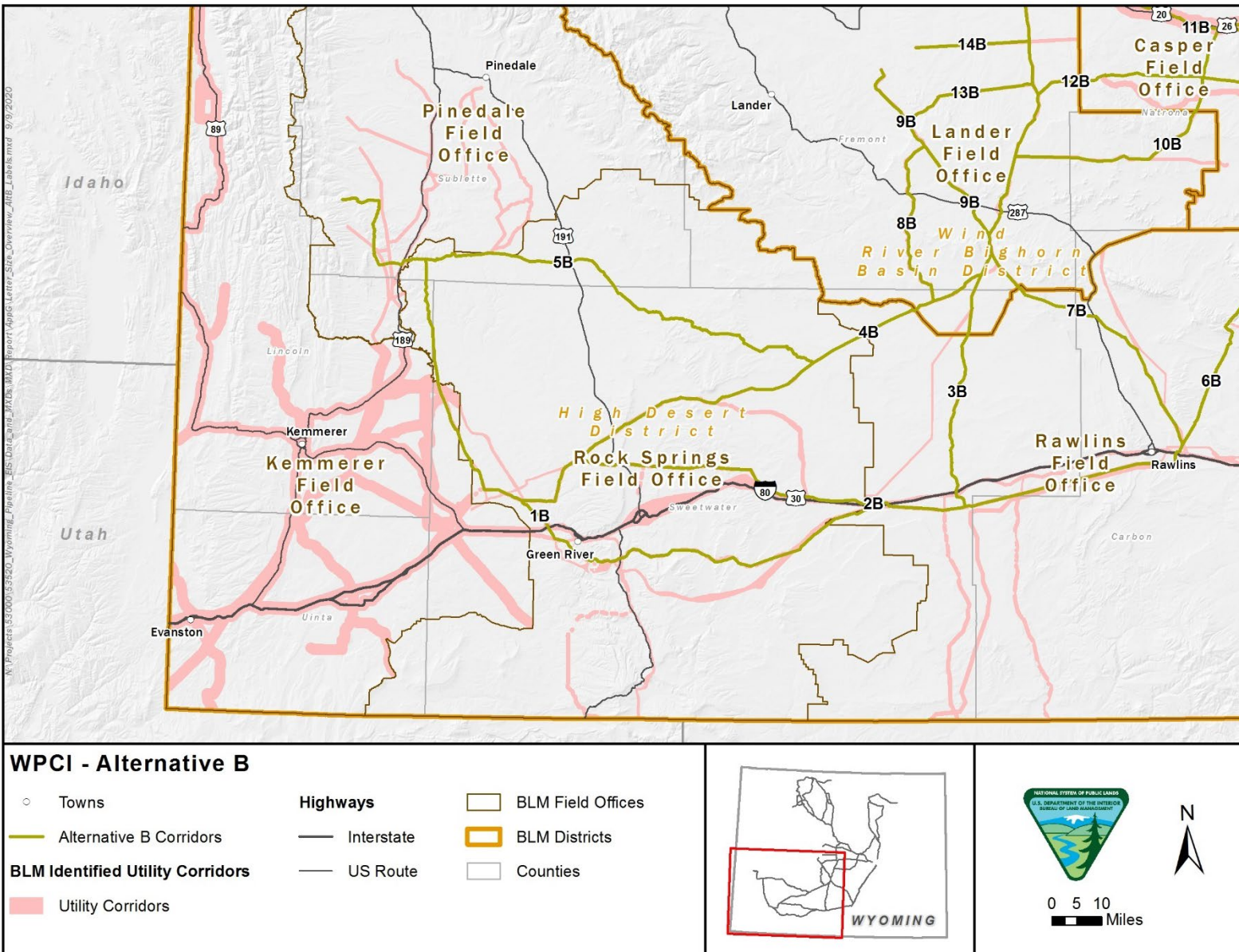


Figure G-1c. WPCI proposed corridors – Alternative B (map 3 of 4).

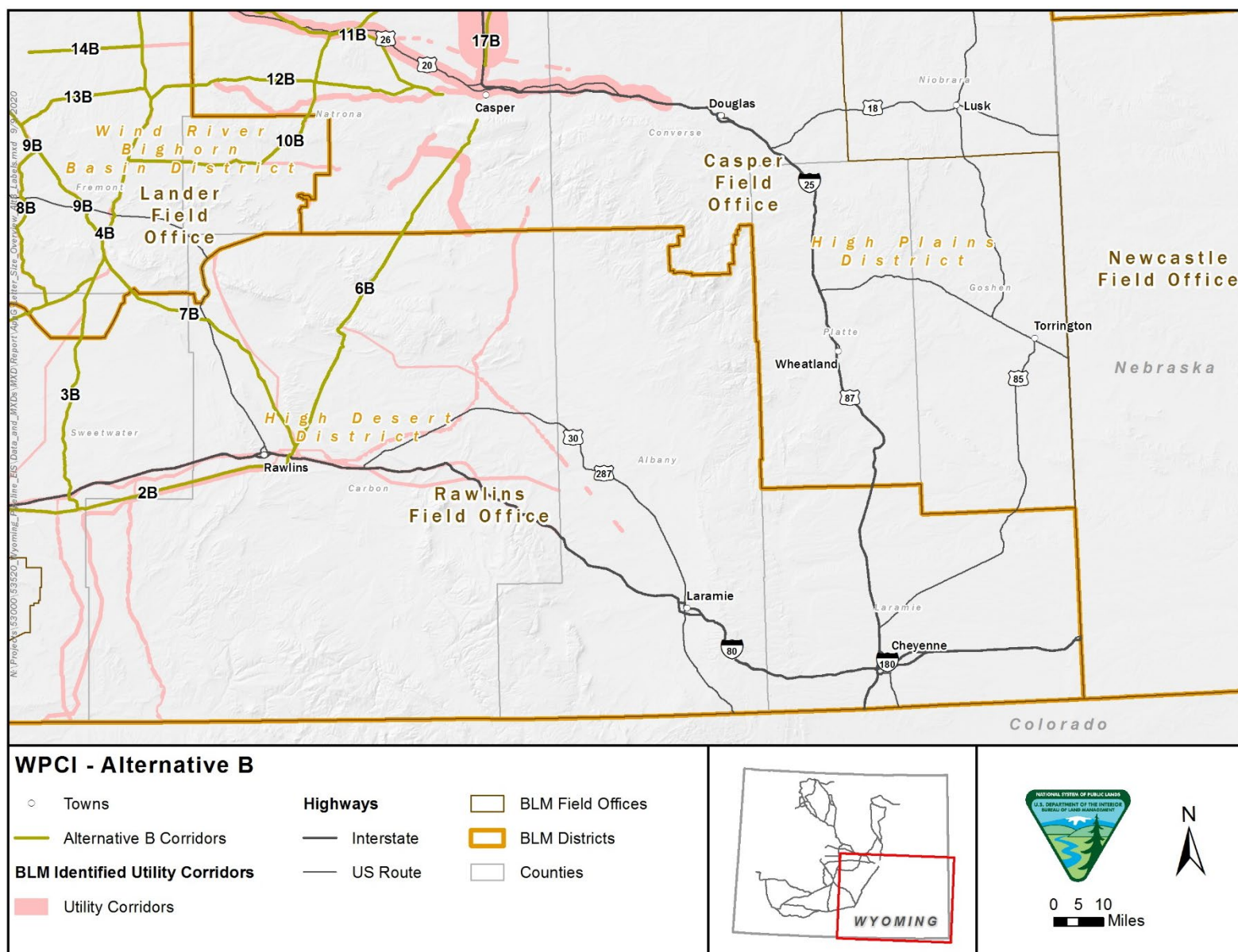


Figure G-1d. WPCI proposed corridors – Alternative B (map 4 of 4).



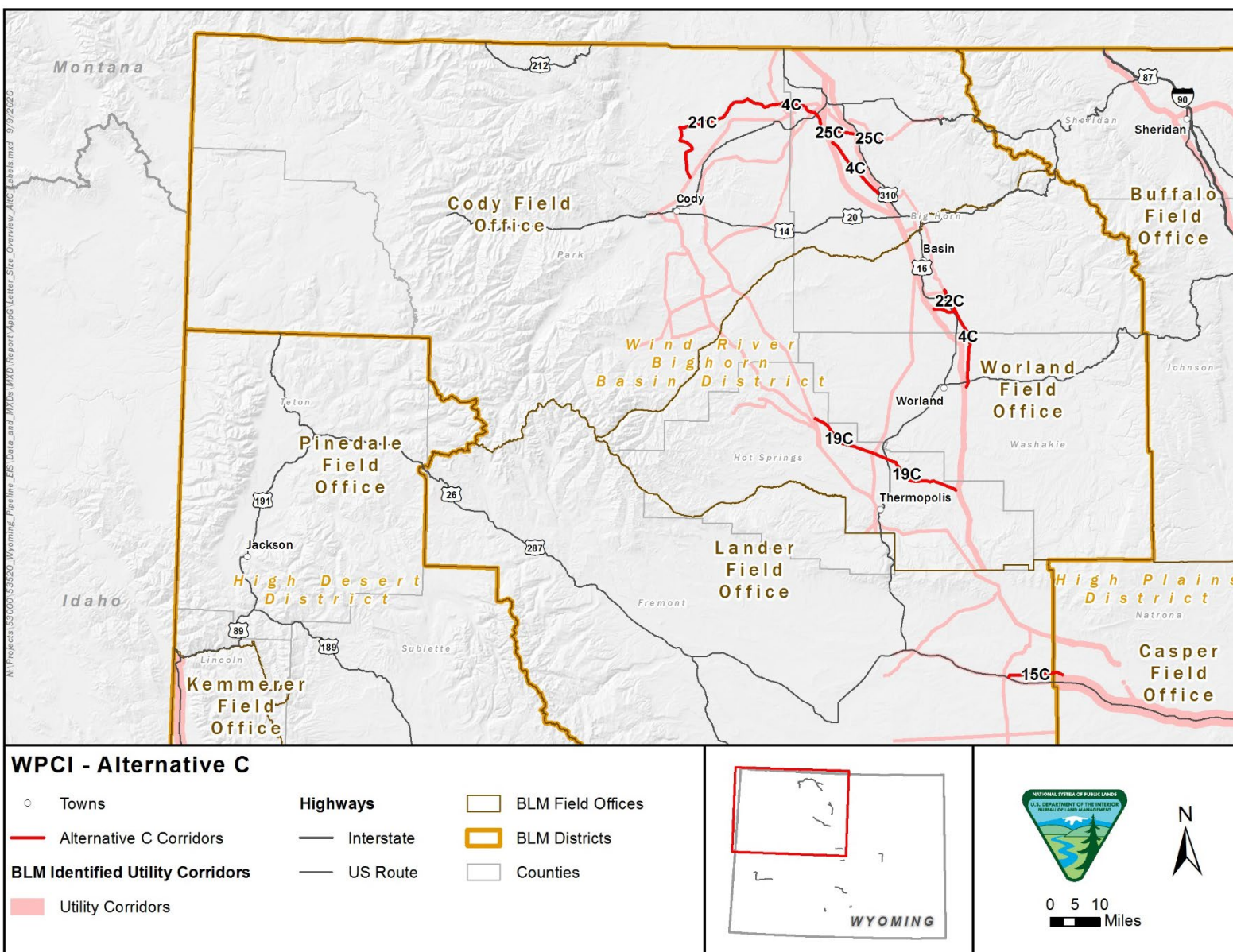


Figure G-2a. WPCI proposed corridors – Alternative C (map 1 of 4).

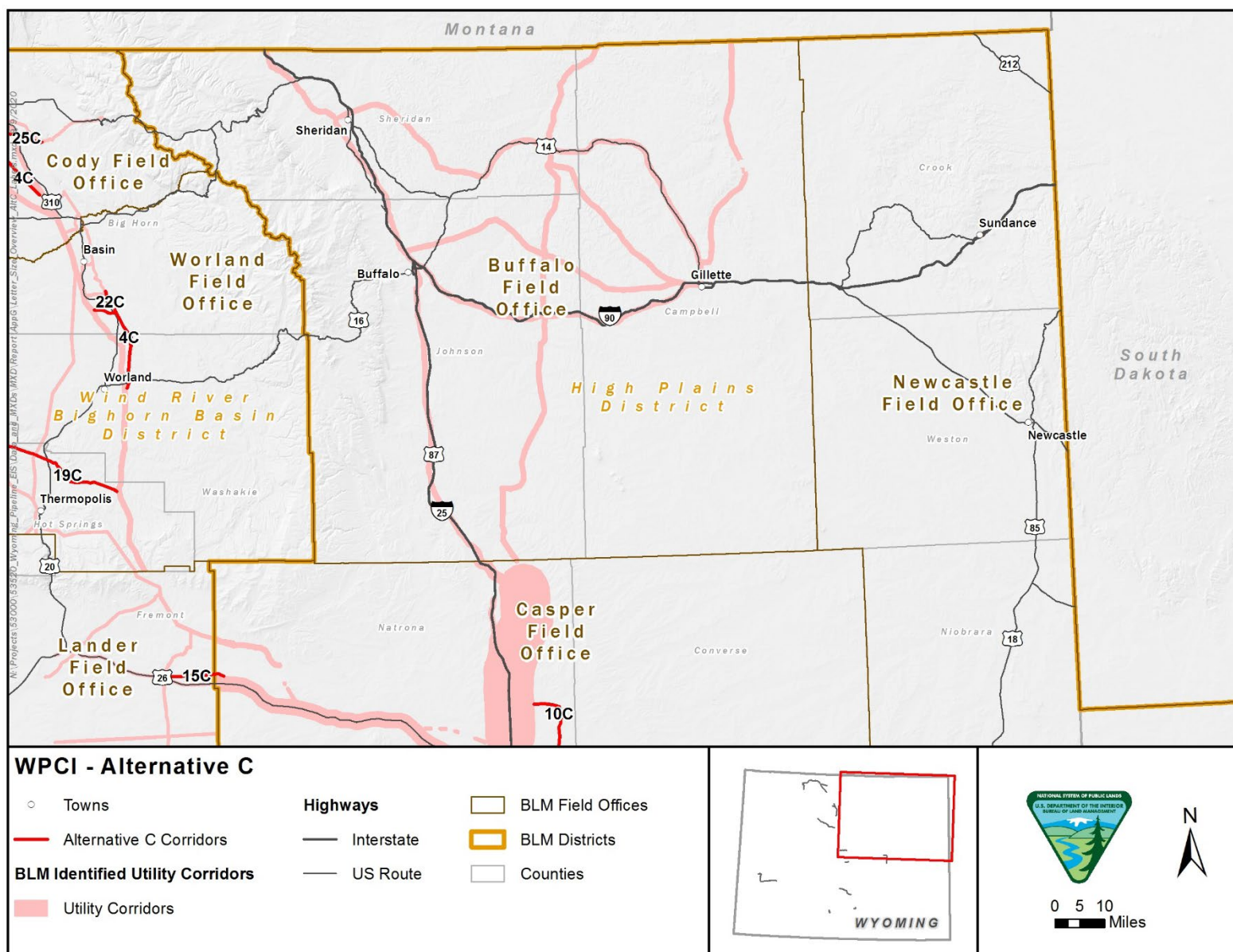


Figure G-2b. WPCI proposed corridors – Alternative C (map 2 of 4).



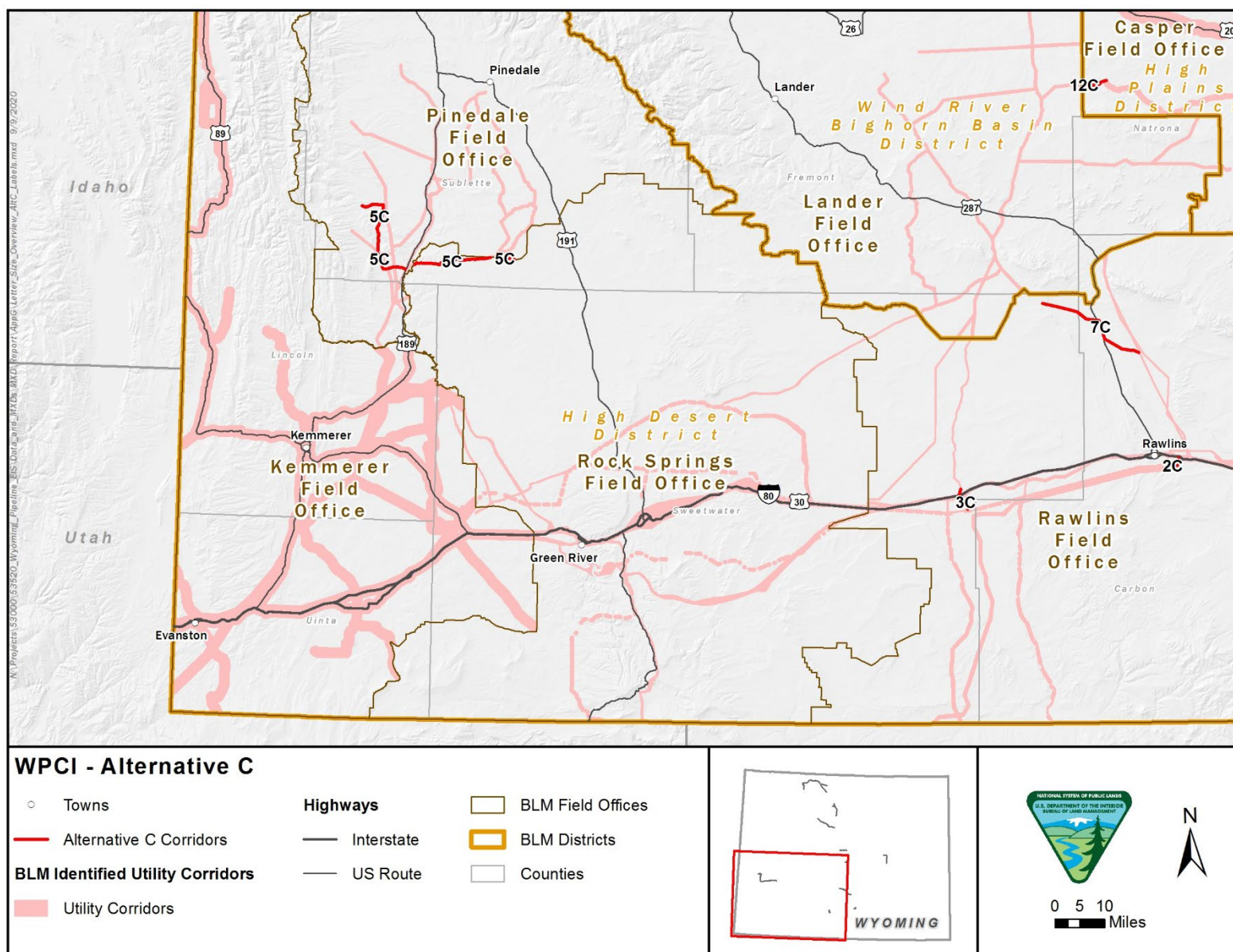


Figure G-2c. WPCI proposed corridors – Alternative C (map 3 of 4).

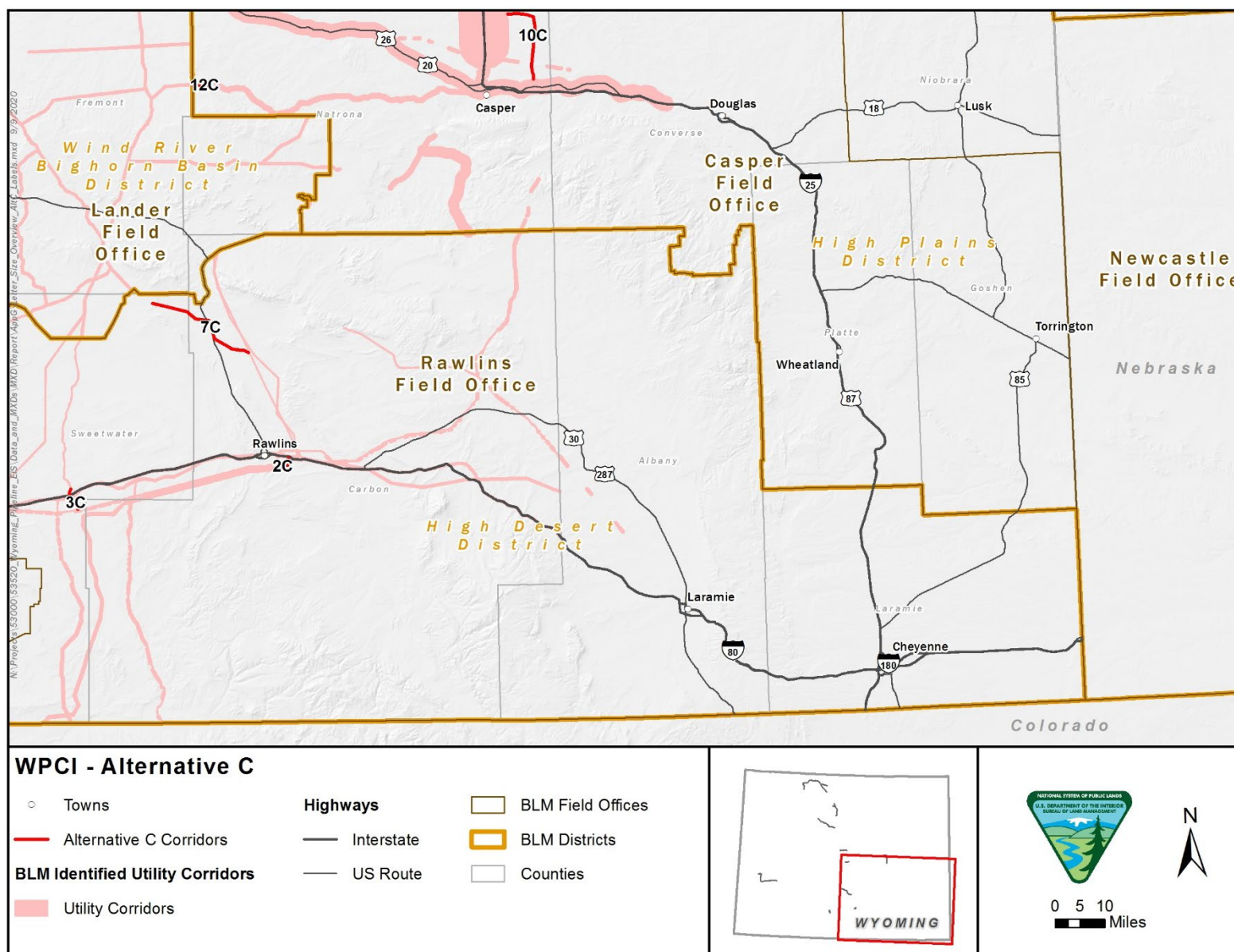


Figure G-2d. WPCI proposed corridors – Alternative C (map 4 of 4).



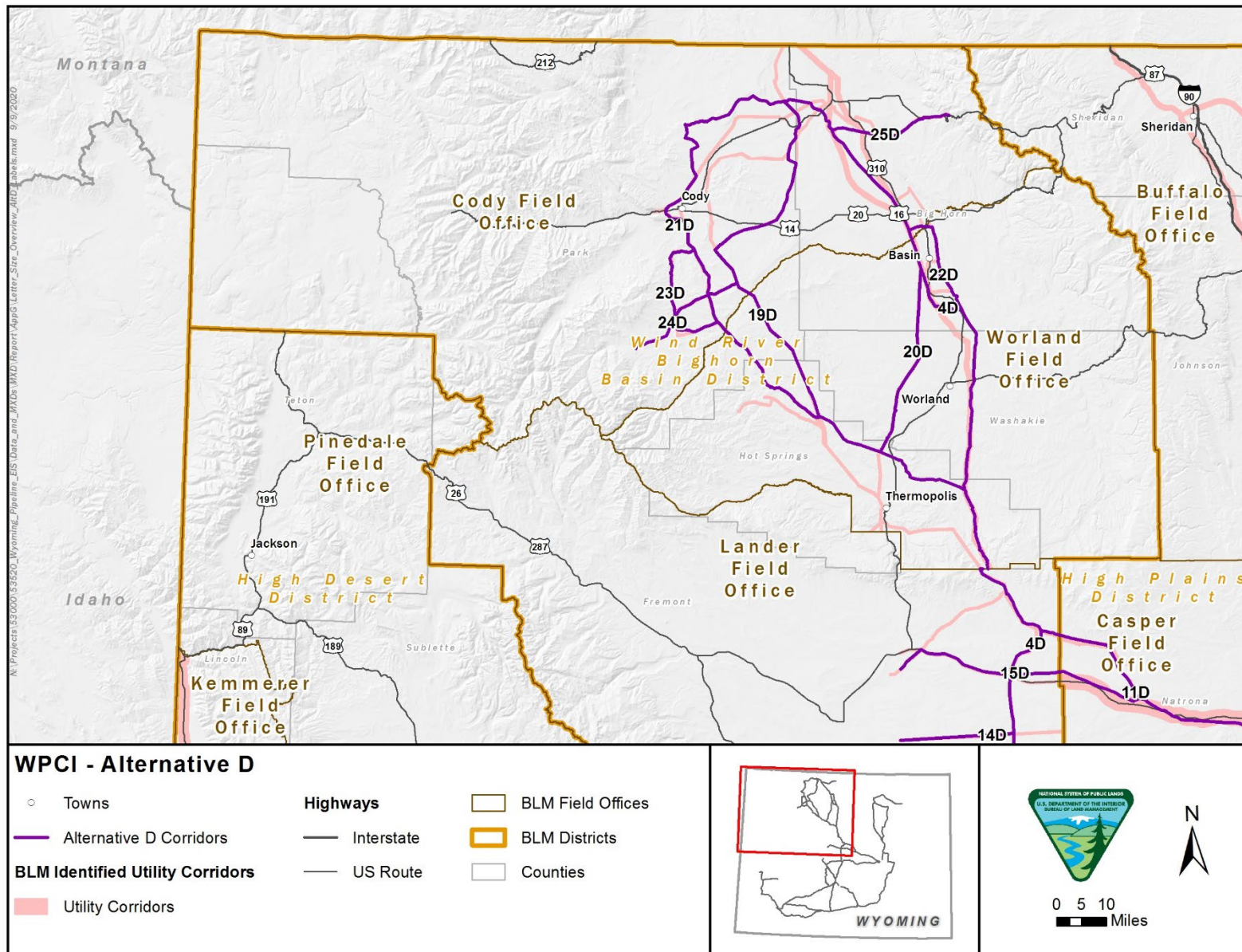


Figure G-3a. WPCI proposed corridors – Alternative D (map 1 of 4).

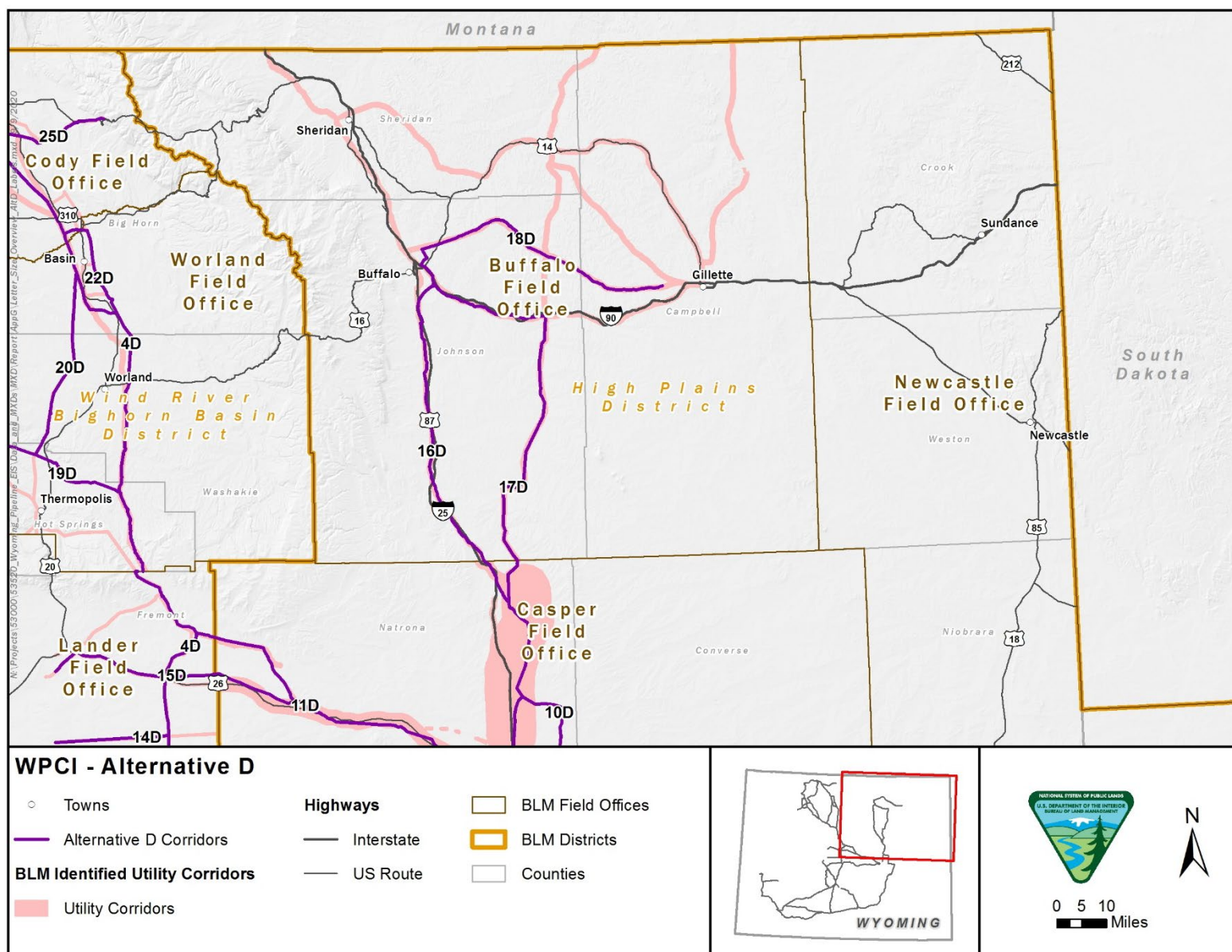


Figure G-3b. WPCI proposed corridors – Alternative D (map 2 of 4).



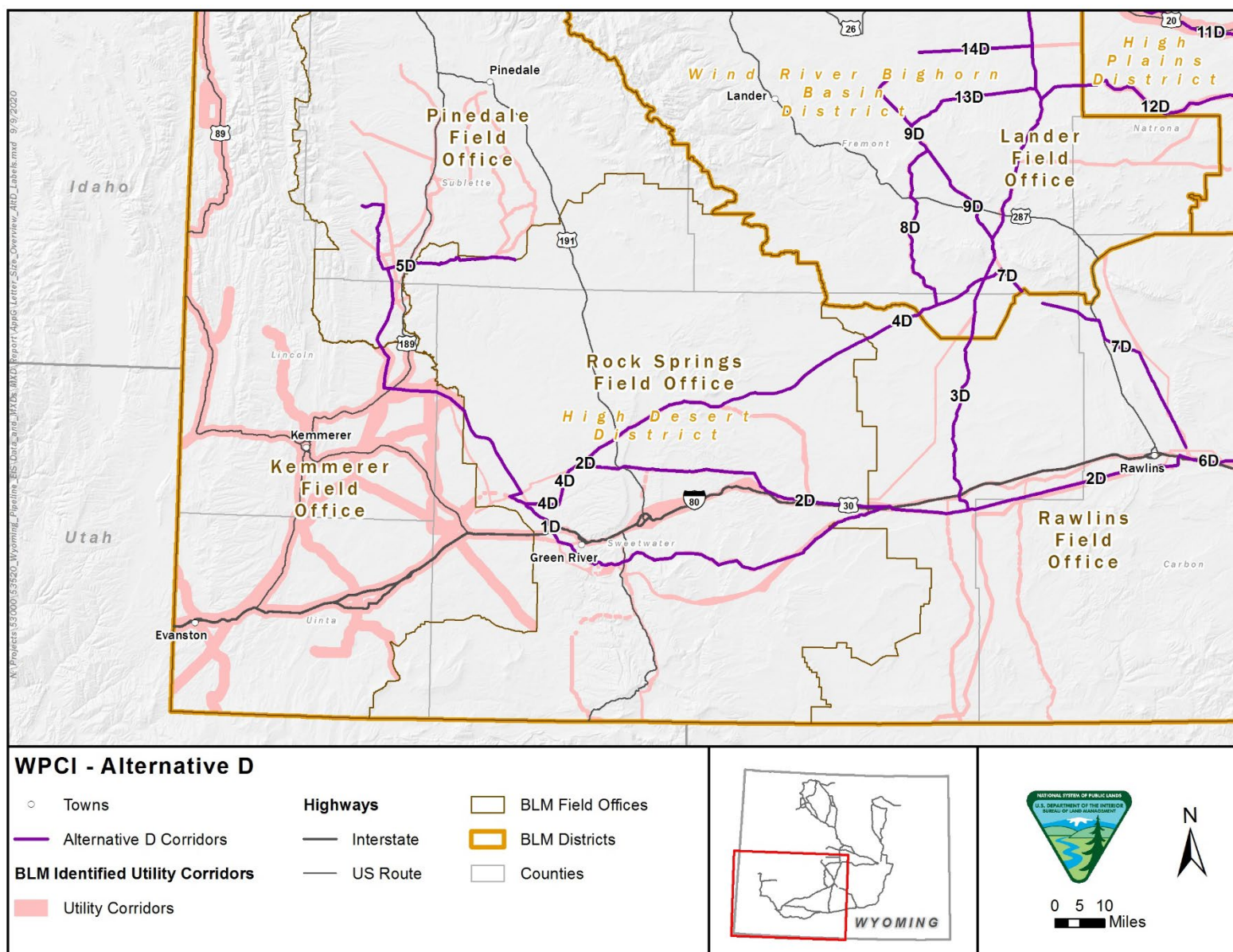


Figure G-3c. WPCI proposed corridors – Alternative D (map 3 of 4).

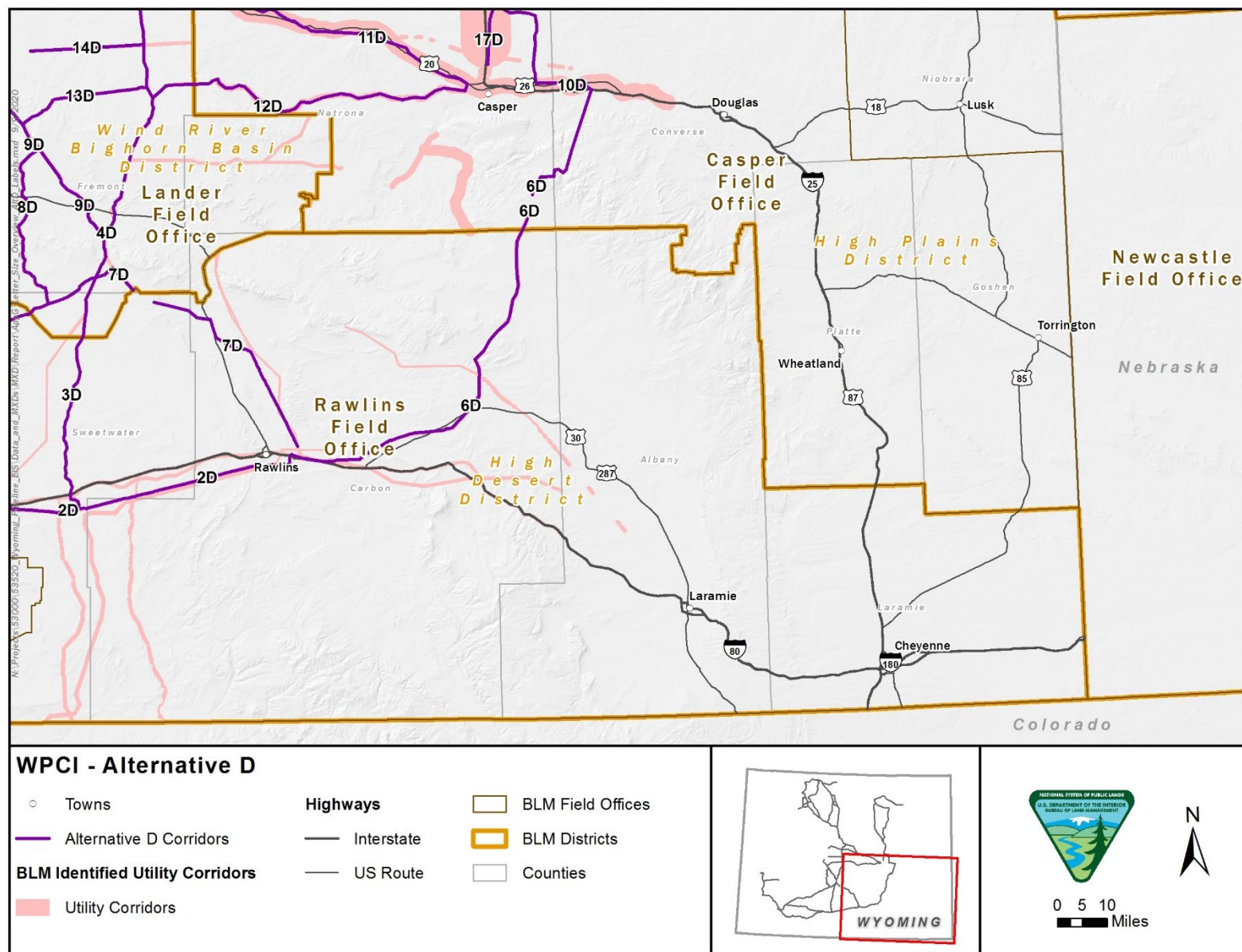


Figure G-3d. WPCI proposed corridors – Alternative D (map 4 of 4).



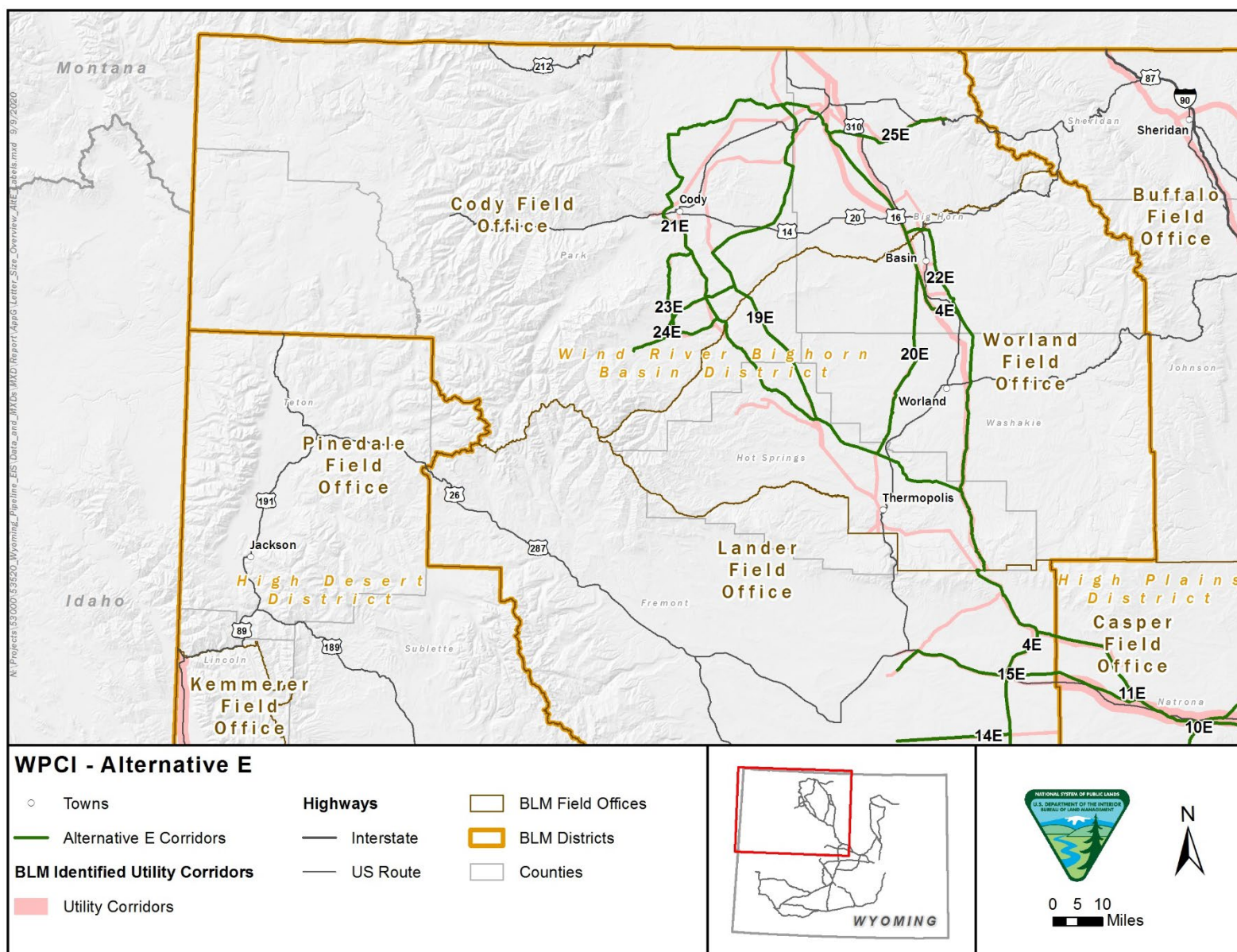


Figure G-4a. WPCI proposed corridors – Alternative E (map 1 of 4).

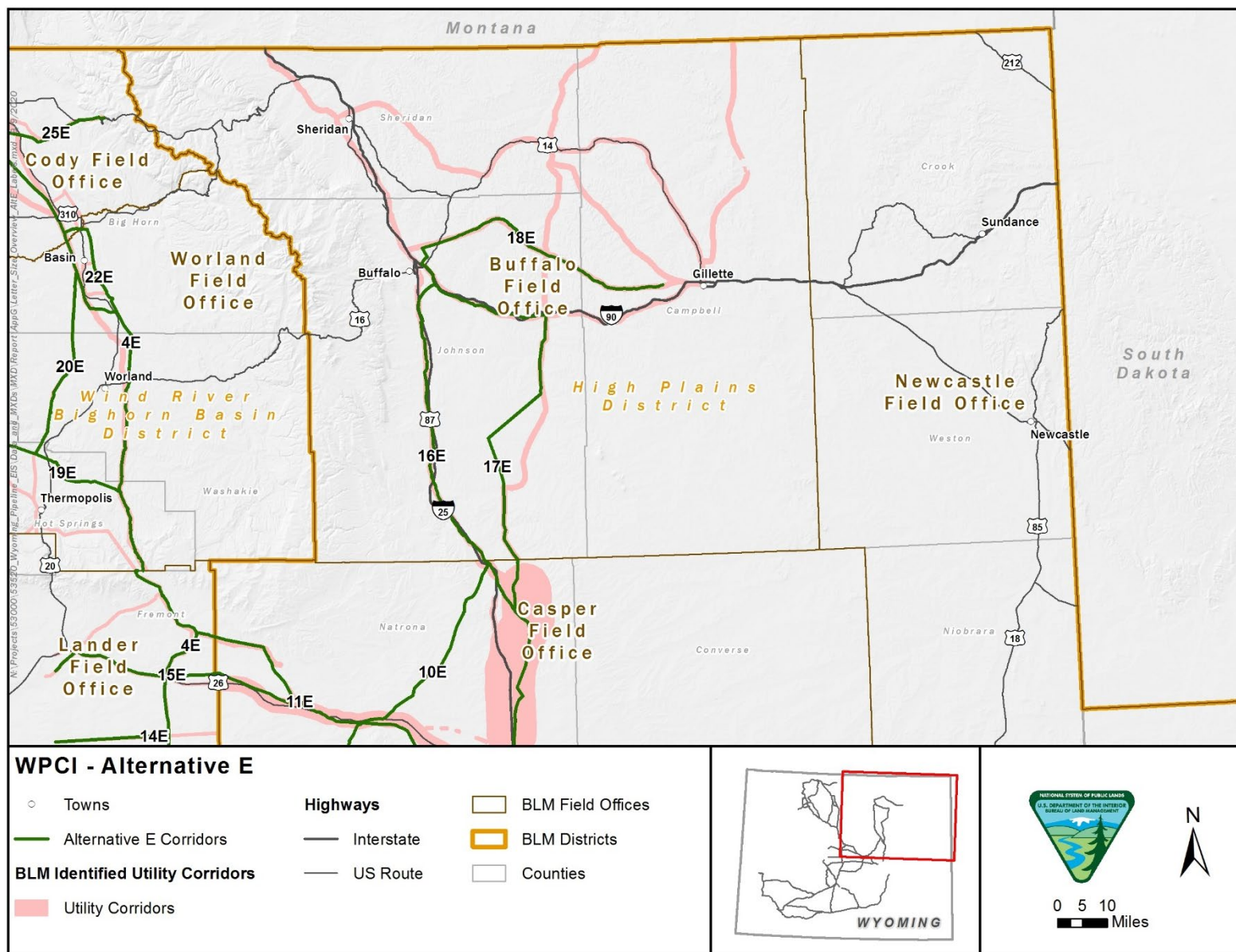
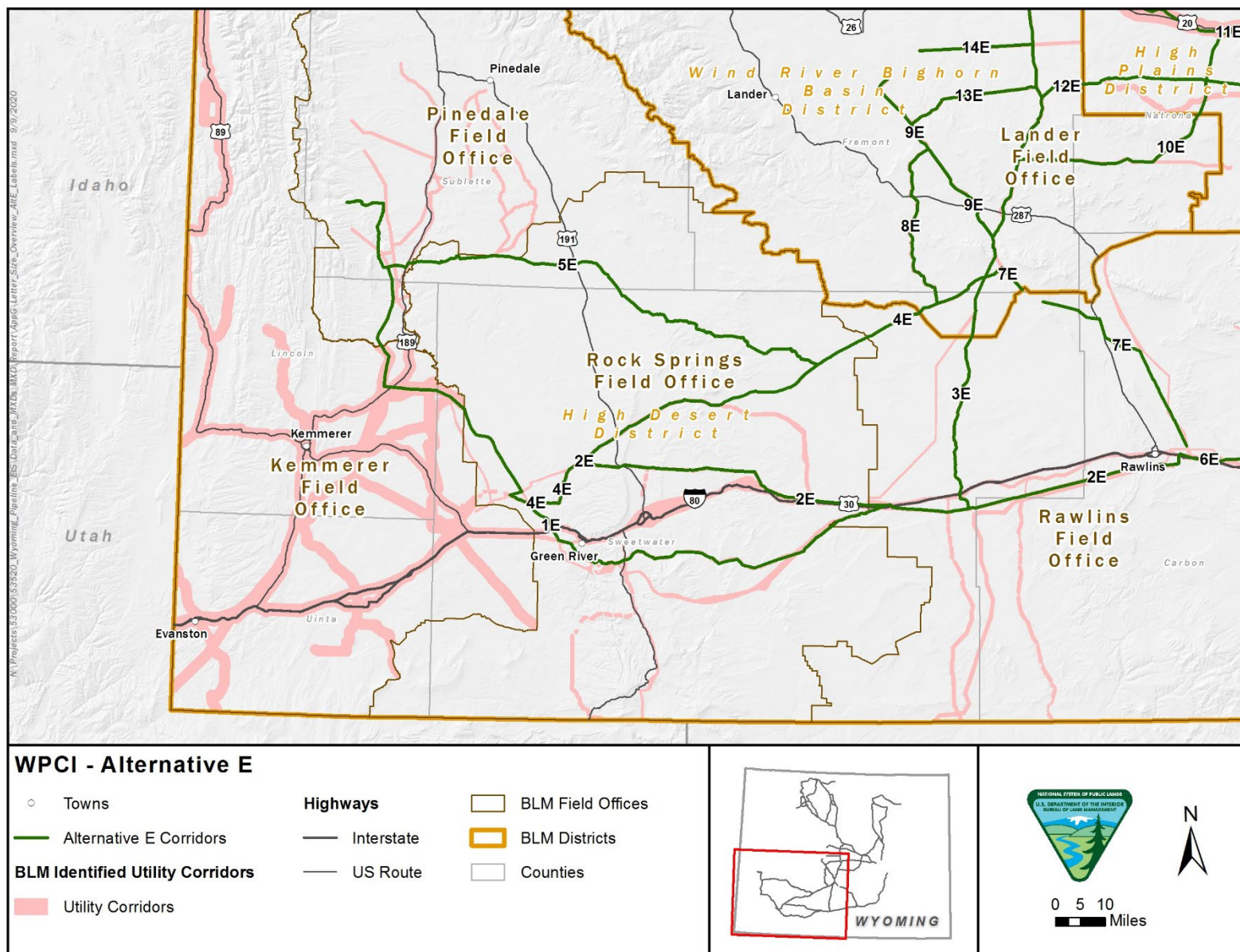


Figure G-4b. WPCI proposed corridors – Alternative E (map 2 of 4).





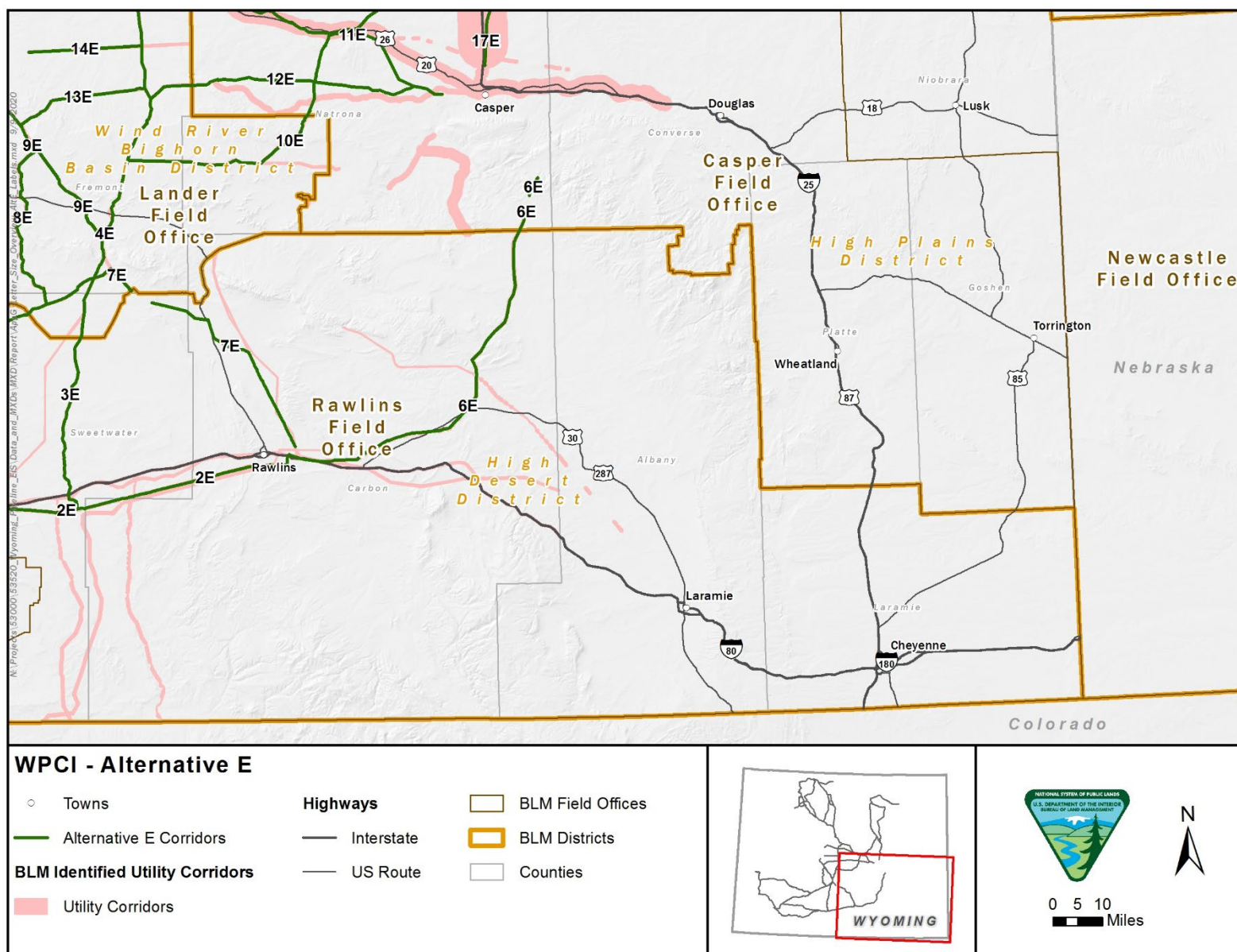


Figure G-4d. WPCI proposed corridors – Alternative E (map 4 of 4).



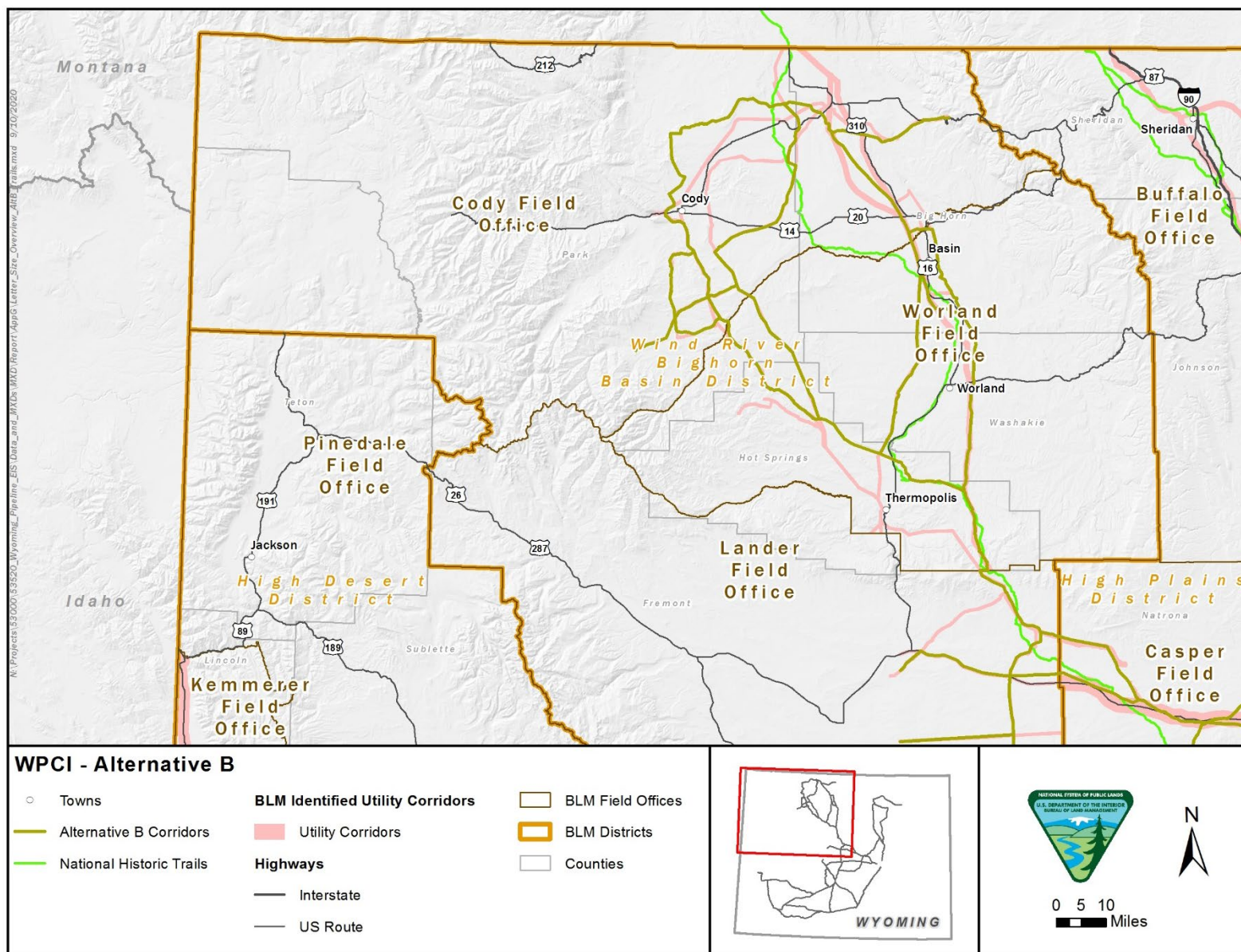


Figure G-5a. WPCI proposed corridors – Alternative B trail crossings (map 1 of 4).

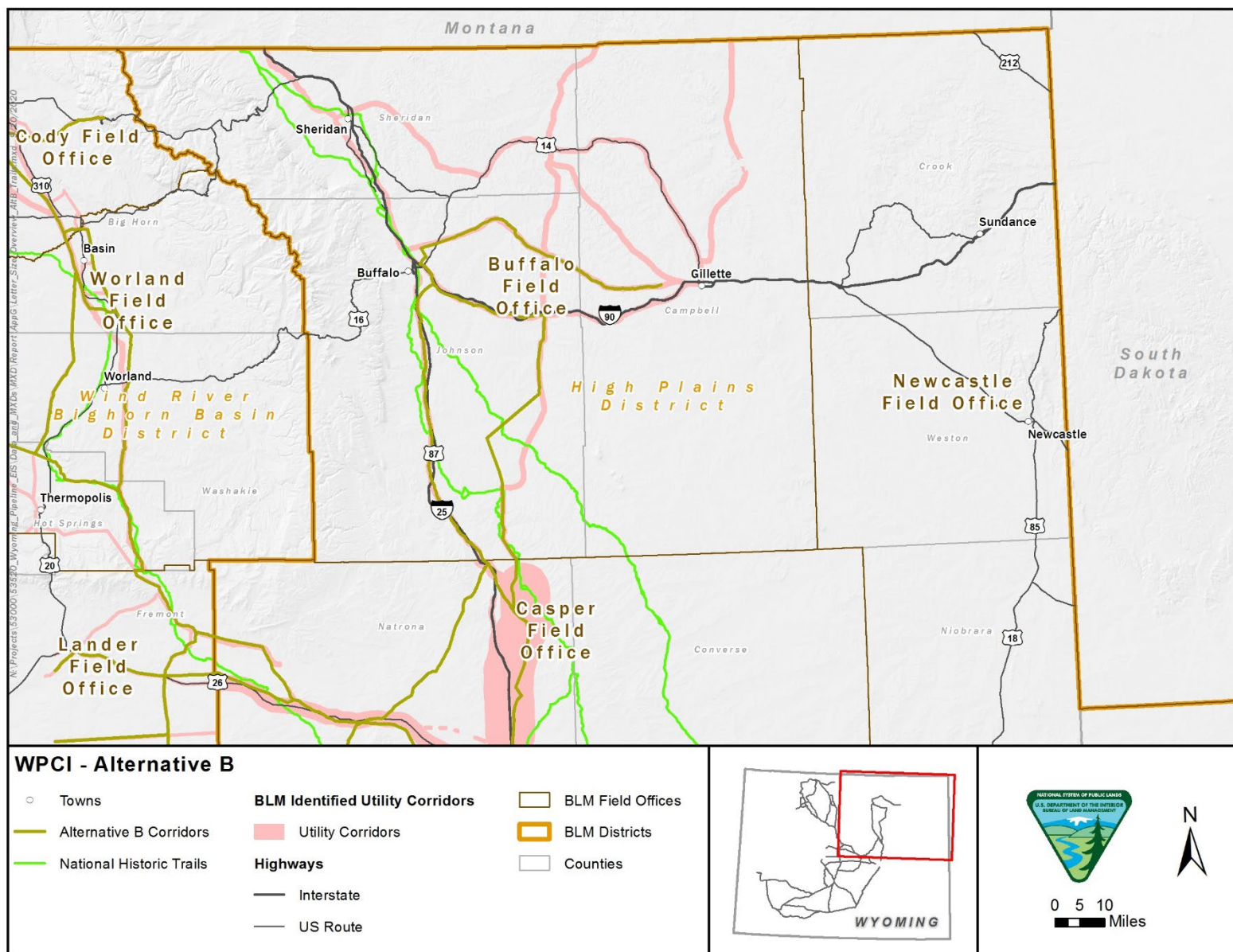


Figure G-5b. WPCI proposed corridors – Alternative B trail crossings (map 2 of 4).



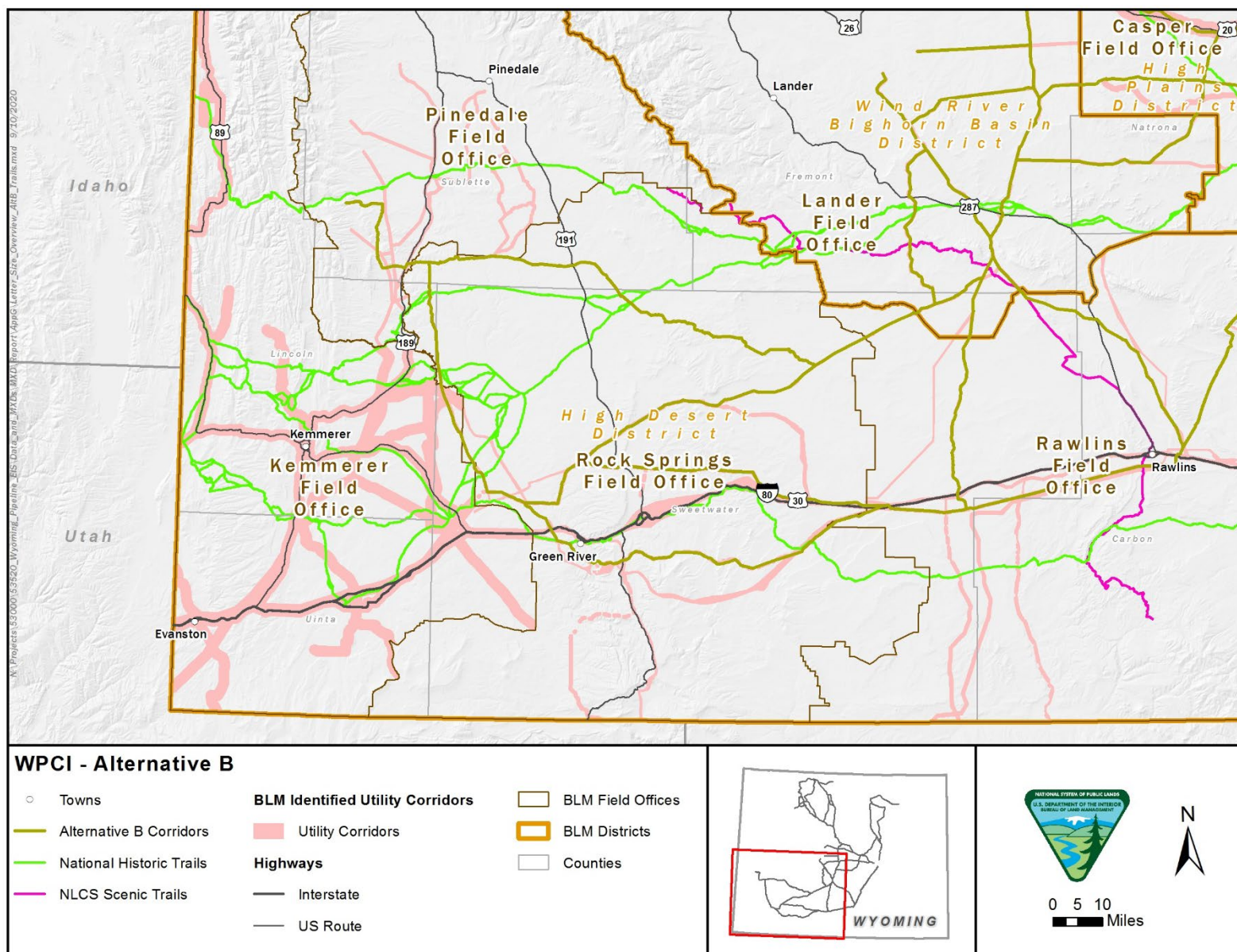
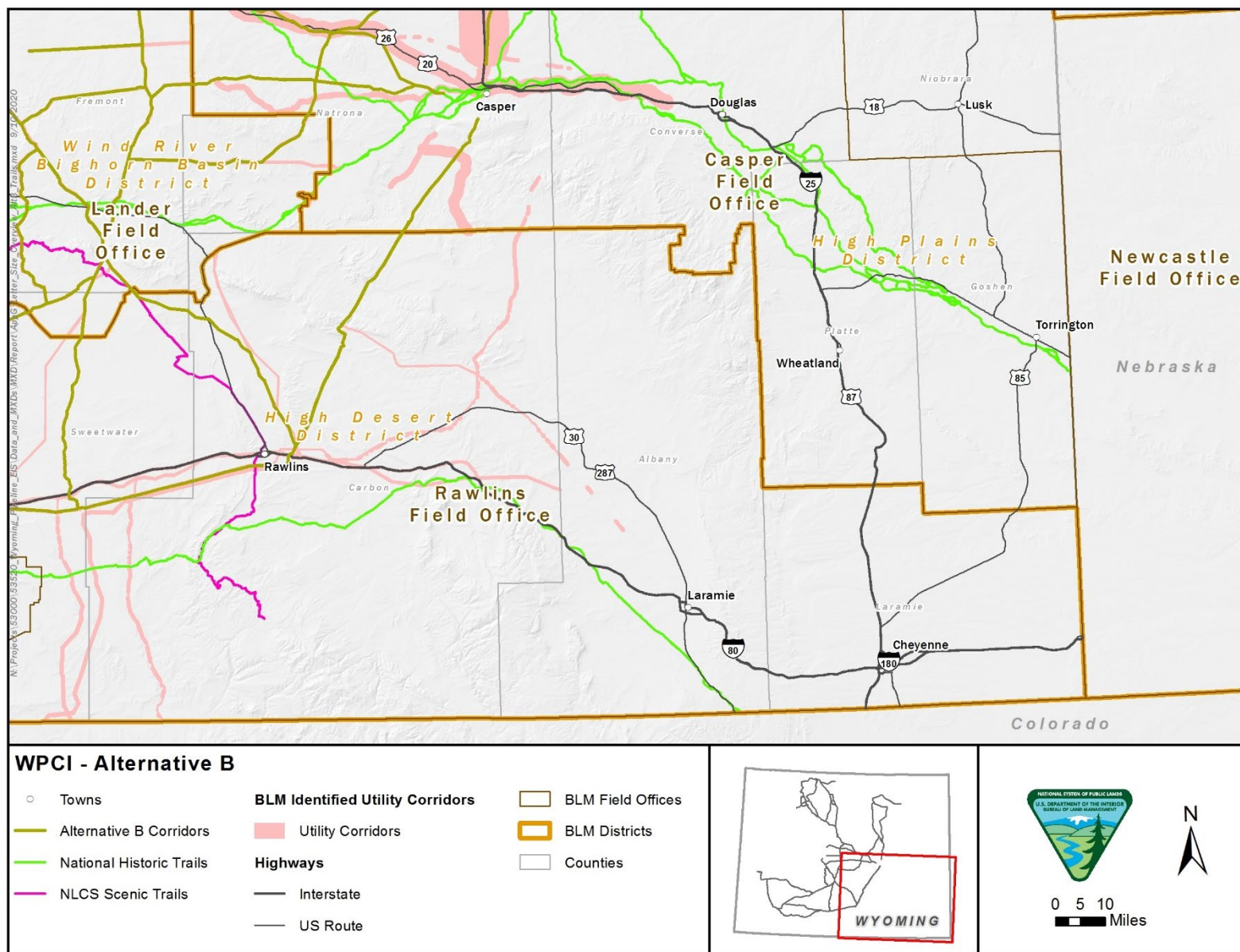


Figure G-5c. WPCI proposed corridors – Alternative B trail crossings (map 3 of 4).





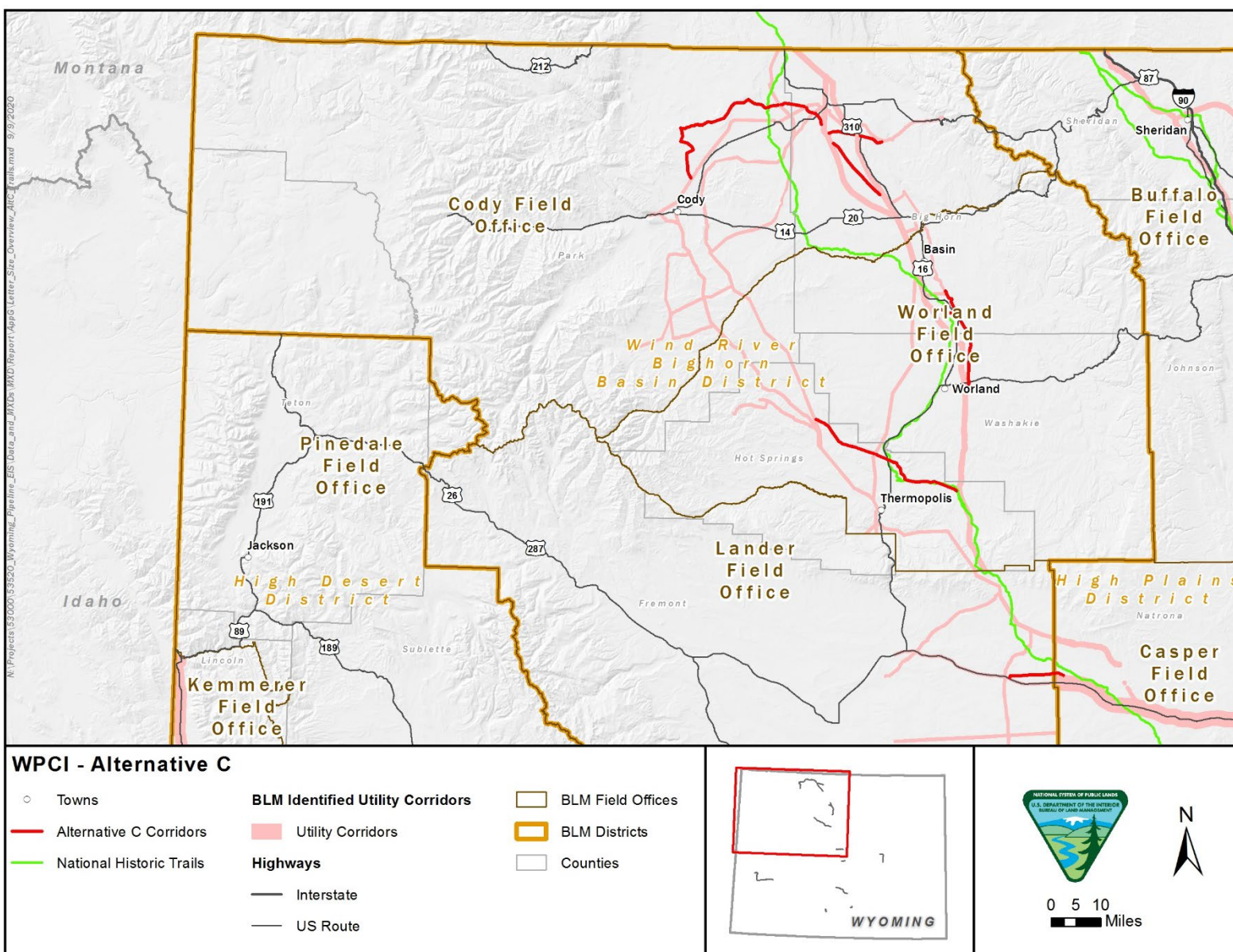


Figure G-6a. WPCI proposed corridors – Alternative C trail crossings (map 1 of 4).

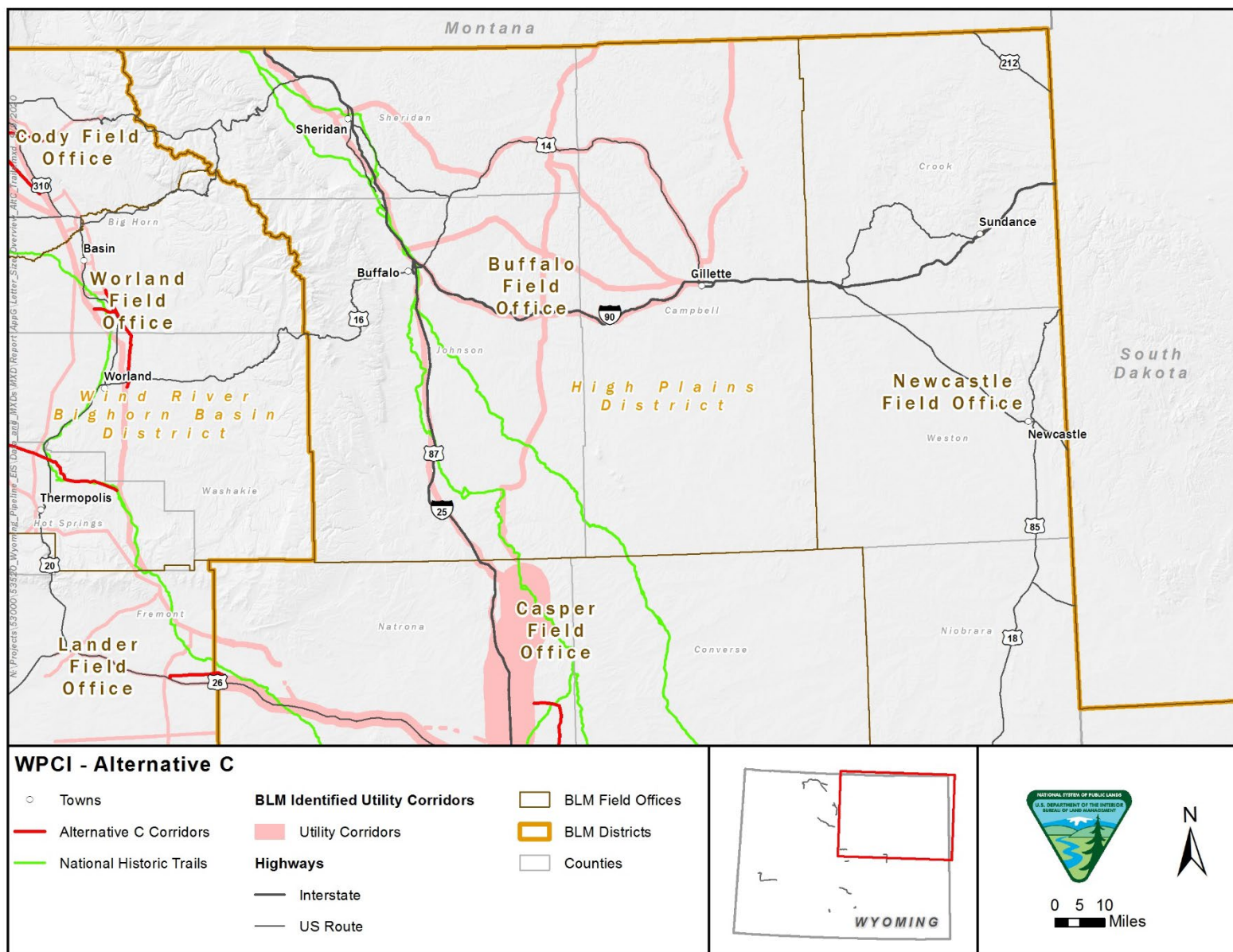


Figure G-6b. WPCI proposed corridors – Alternative C trail crossings (map 2 of 4).



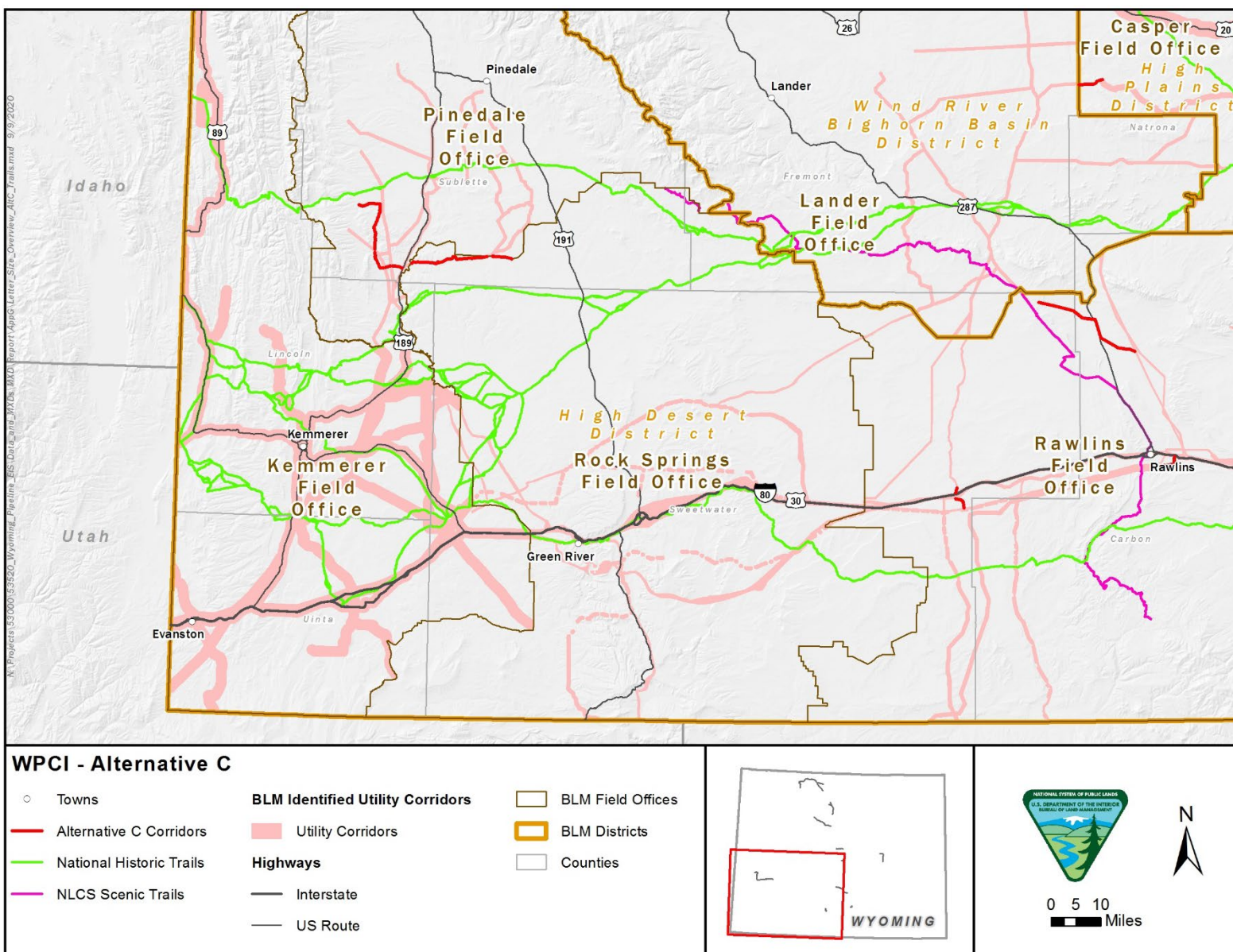


Figure G-6c. WPCI proposed corridors – Alternative C trail crossings (map 3 of 4).

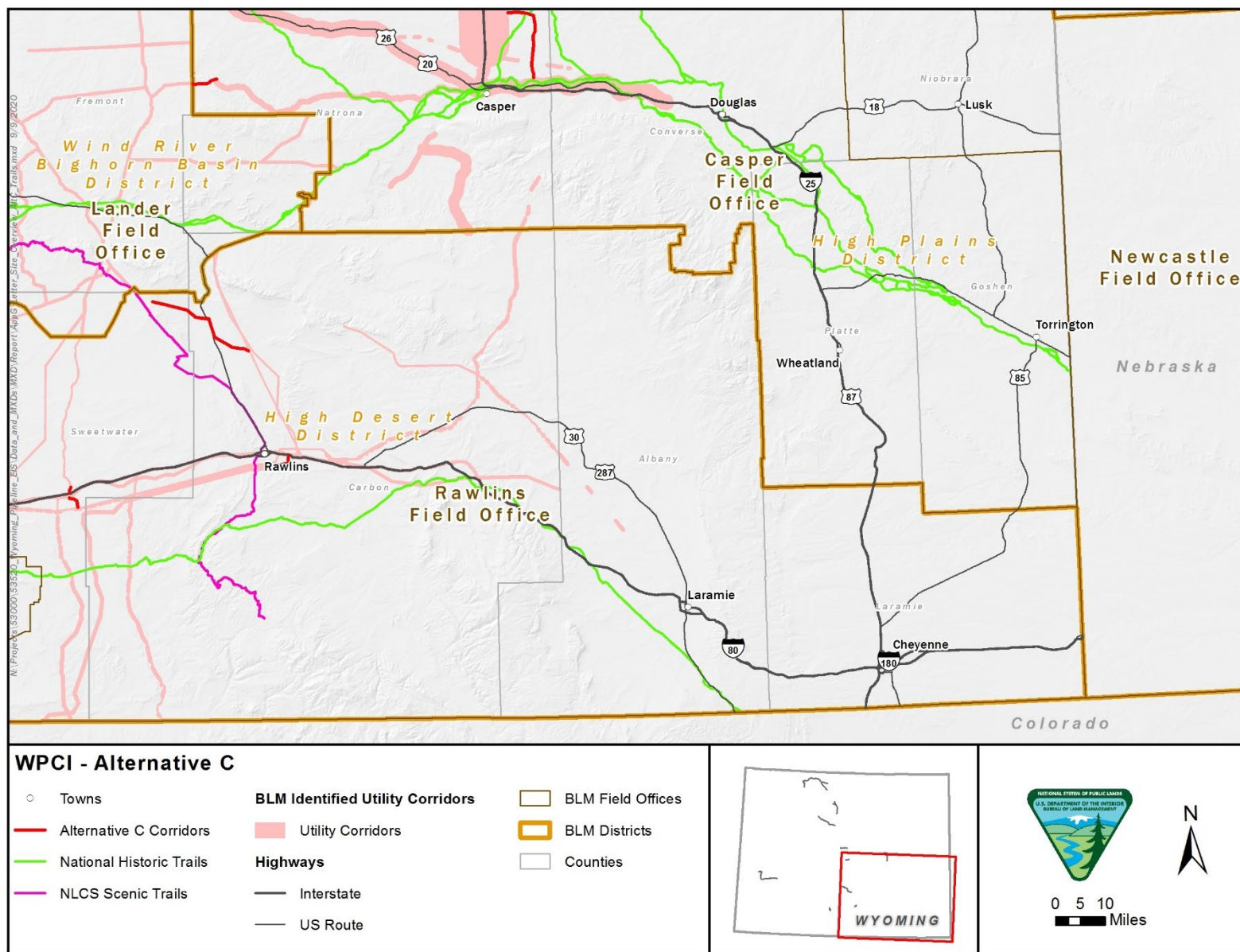


Figure G-6d. WPCI proposed corridors – Alternative C trail crossings (map 4 of 4).



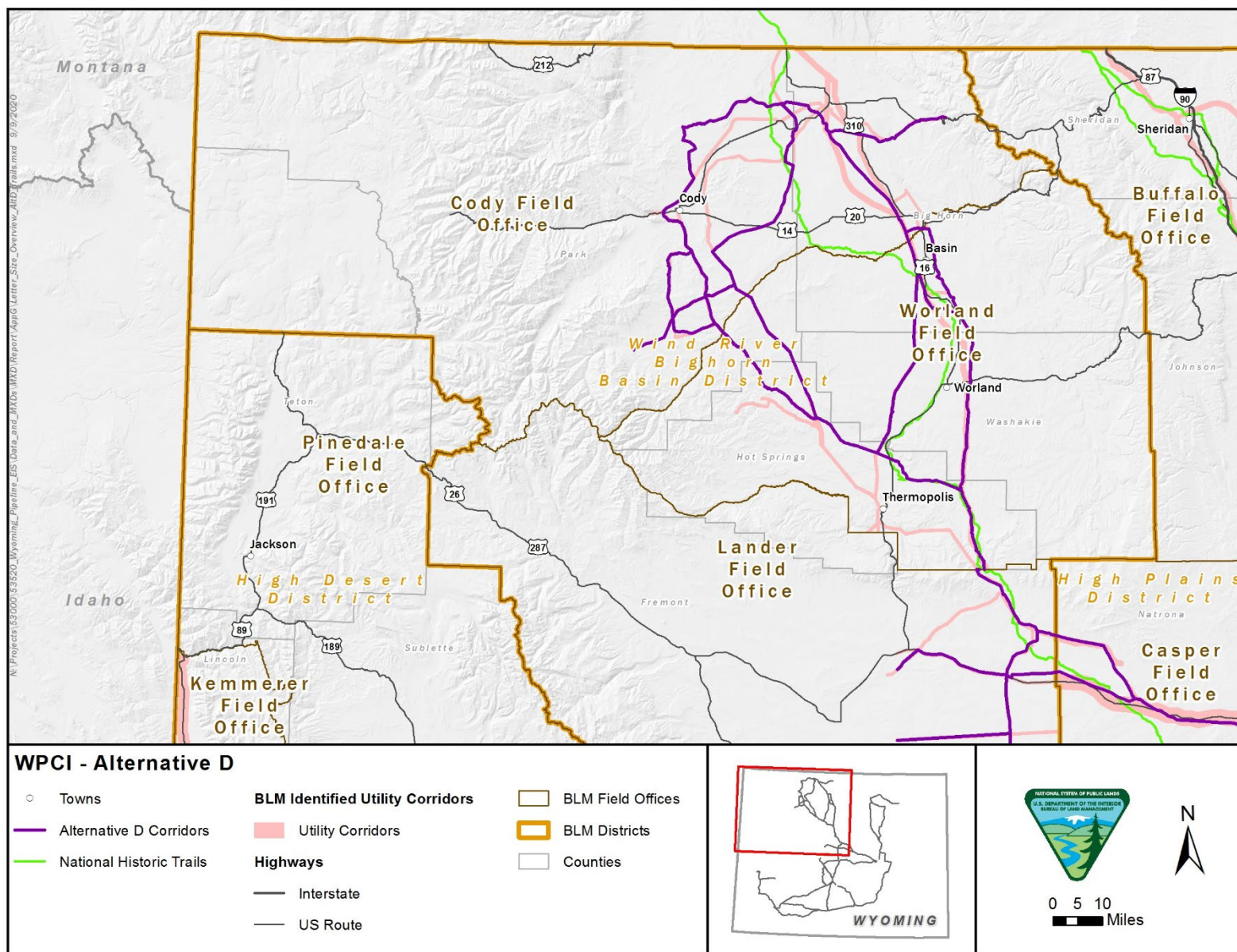


Figure G-7a. WPCI proposed corridors – Alternative D trail crossings (map 1 of 4).

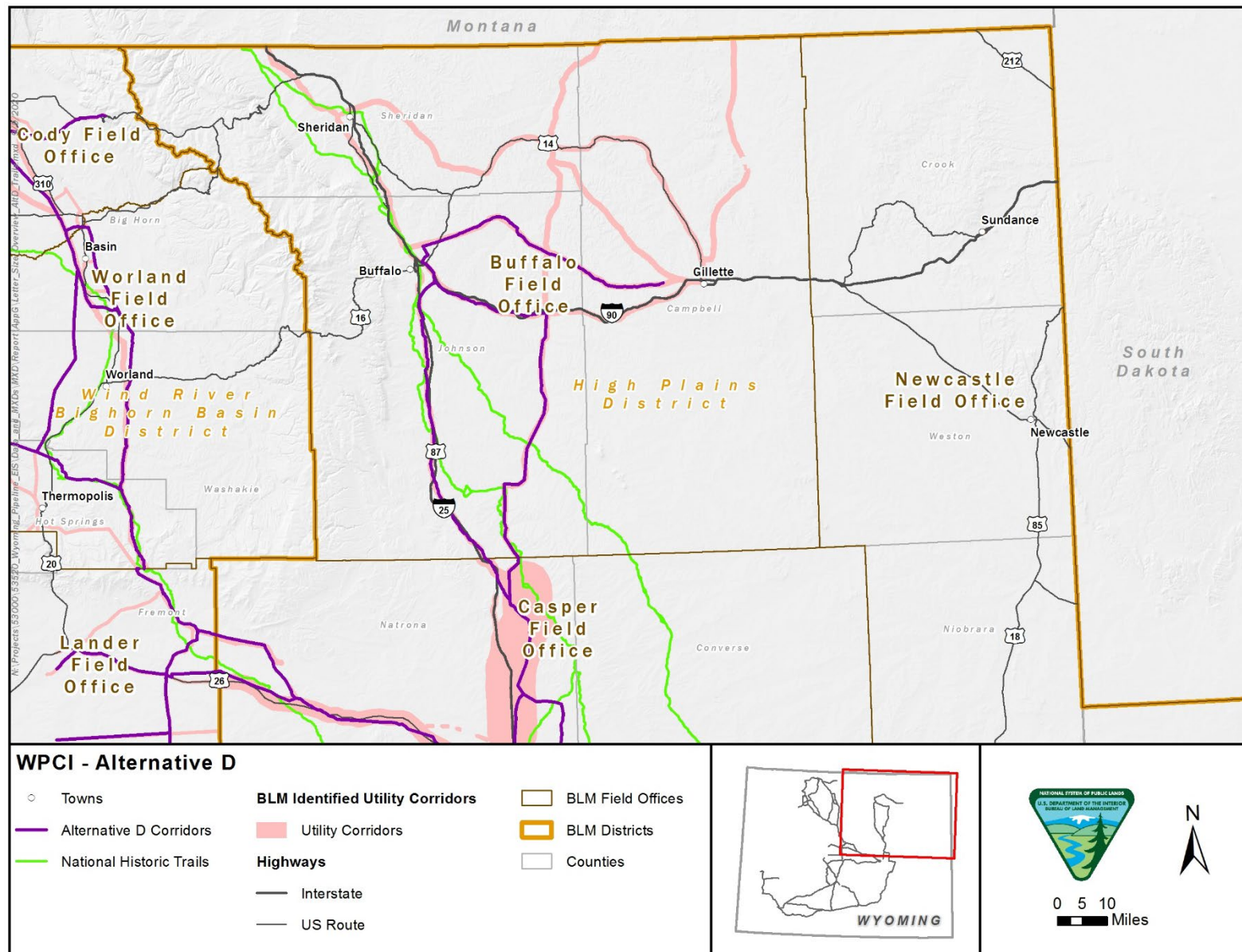


Figure G-7b. WPCI proposed corridors – Alternative D trail crossings (map 2 of 4).



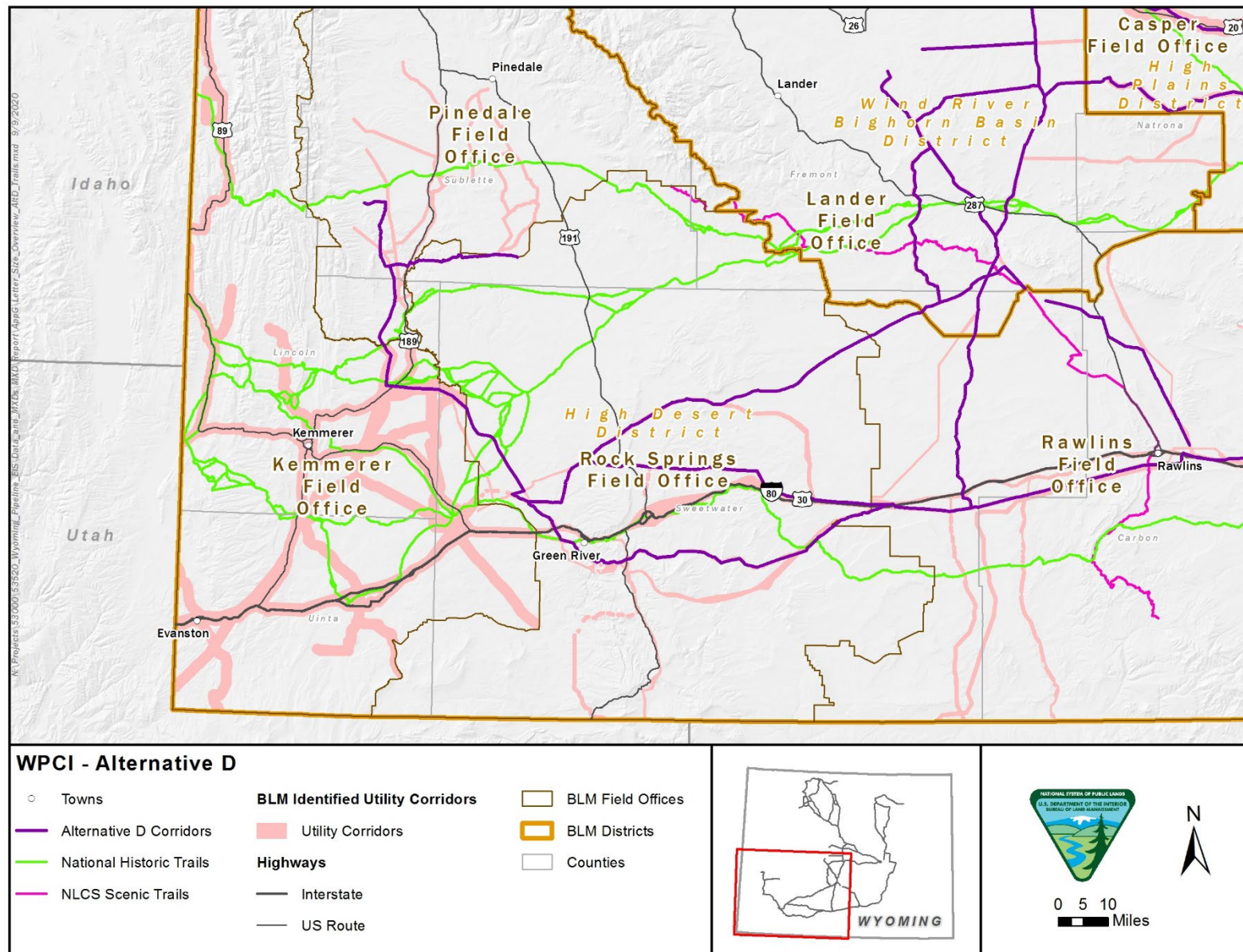


Figure G-7c. WPCI proposed corridors – Alternative D trail crossings (map 3 of 4).

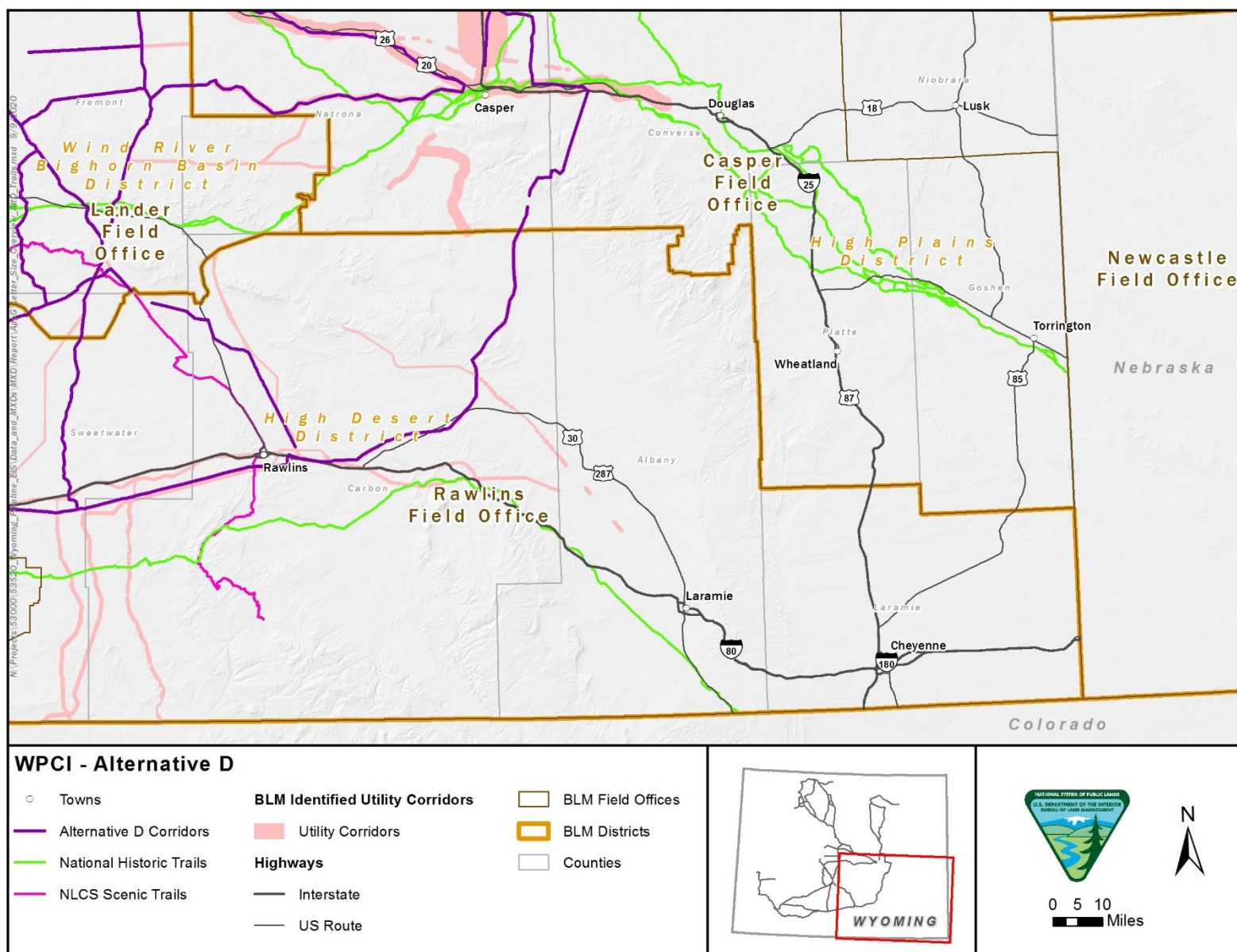


Figure G-7d. WPCI proposed corridors – Alternative D trail crossings (map 4 of 4).



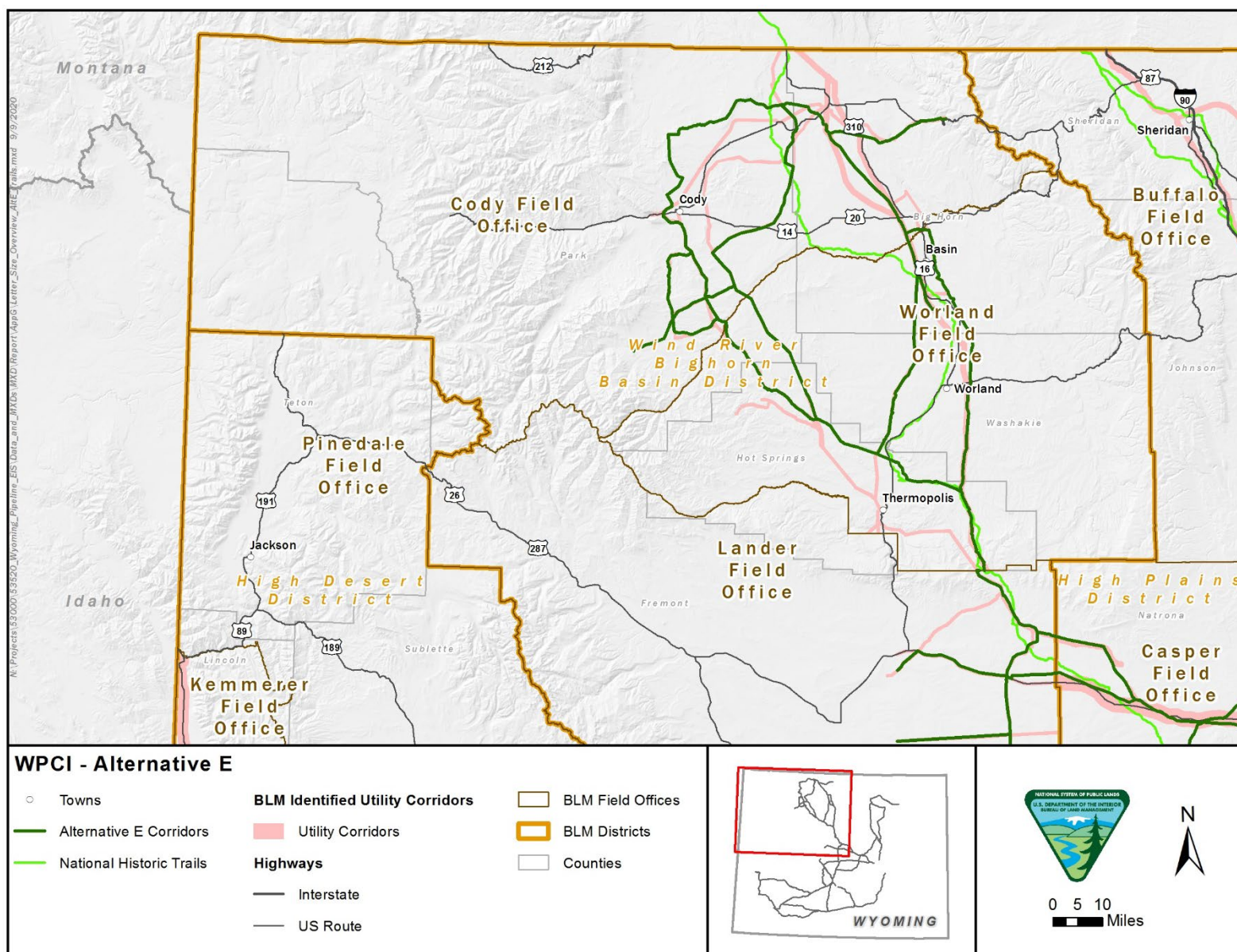


Figure G-8a. WPCI proposed corridors – Alternative E trail crossings (map 1 of 4).

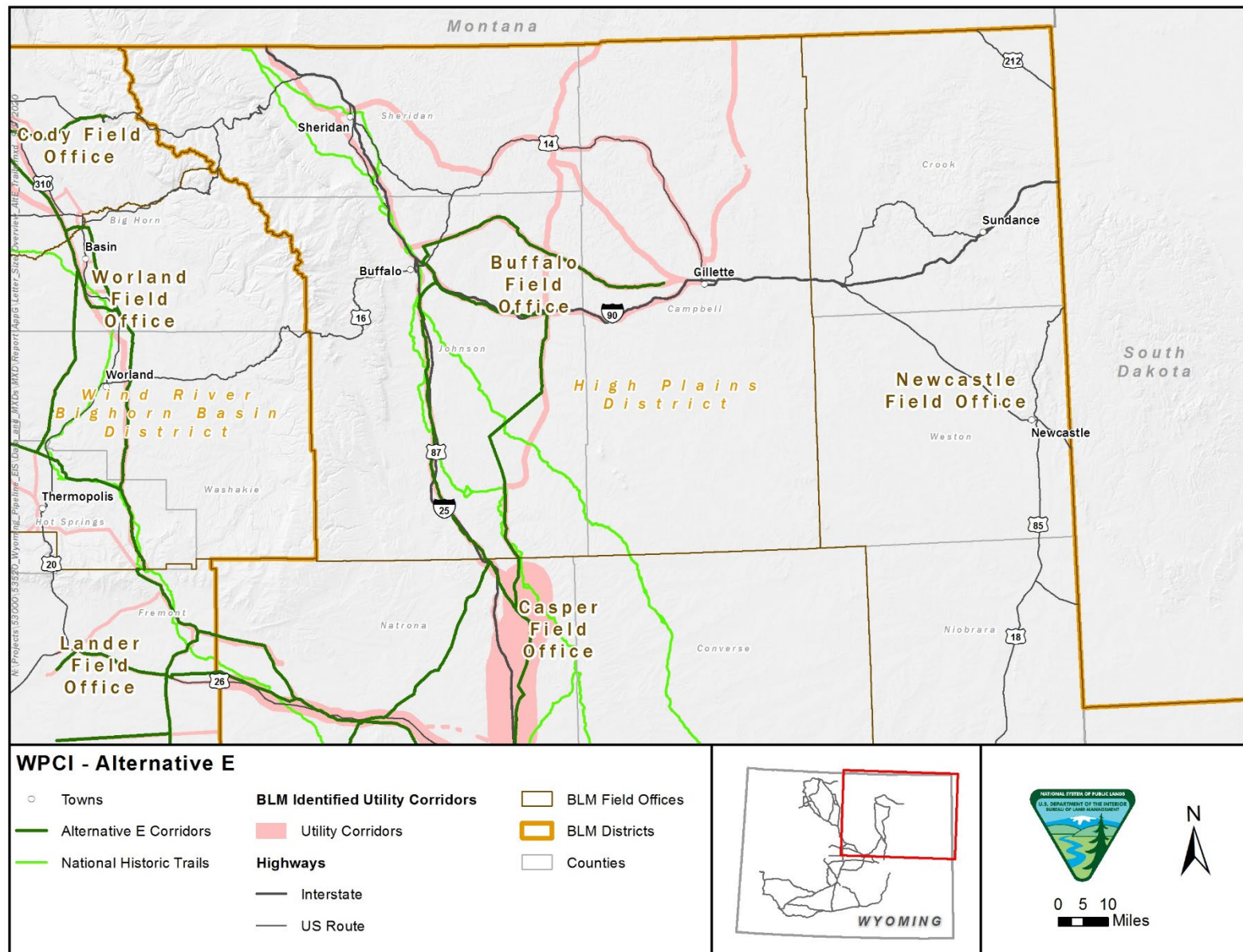


Figure G-8b. WPCI proposed corridors – Alternative E trail crossings (map 2 of 4).



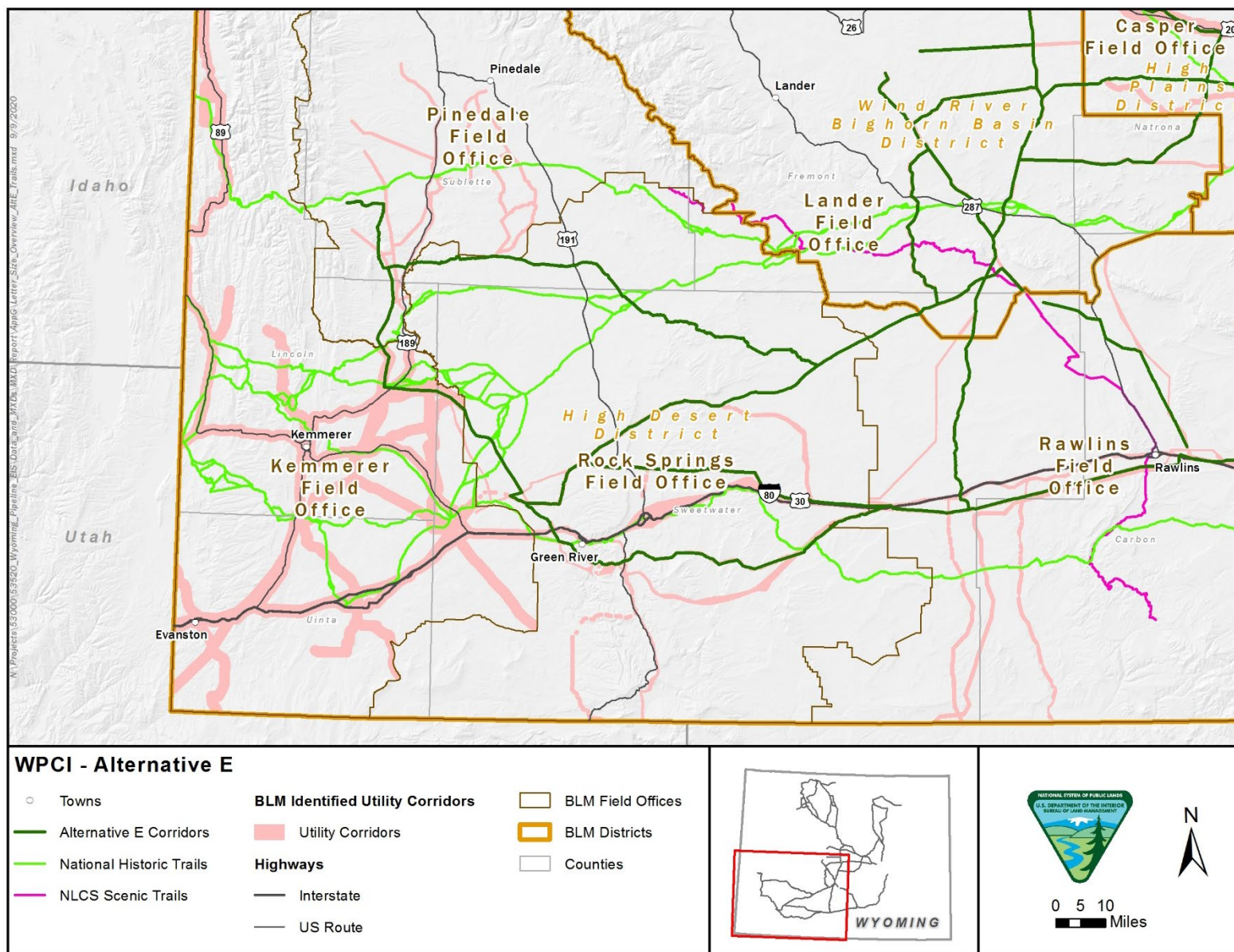


Figure G-8c. WPCI proposed corridors – Alternative E trail crossings (map 3 of 4).

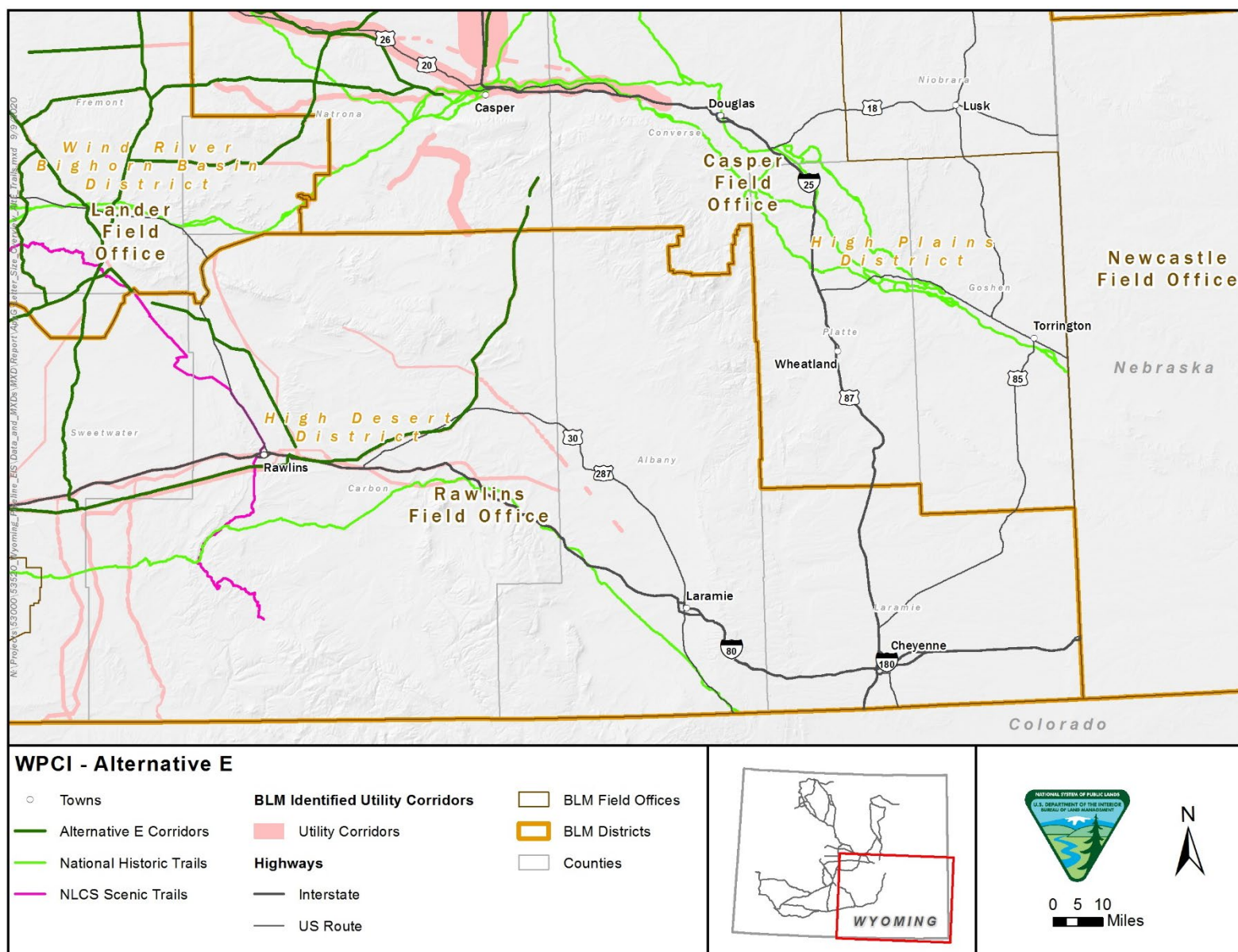


Figure G-8d. WPCI proposed corridors – Alternative E trail crossings (map 4 of 4).



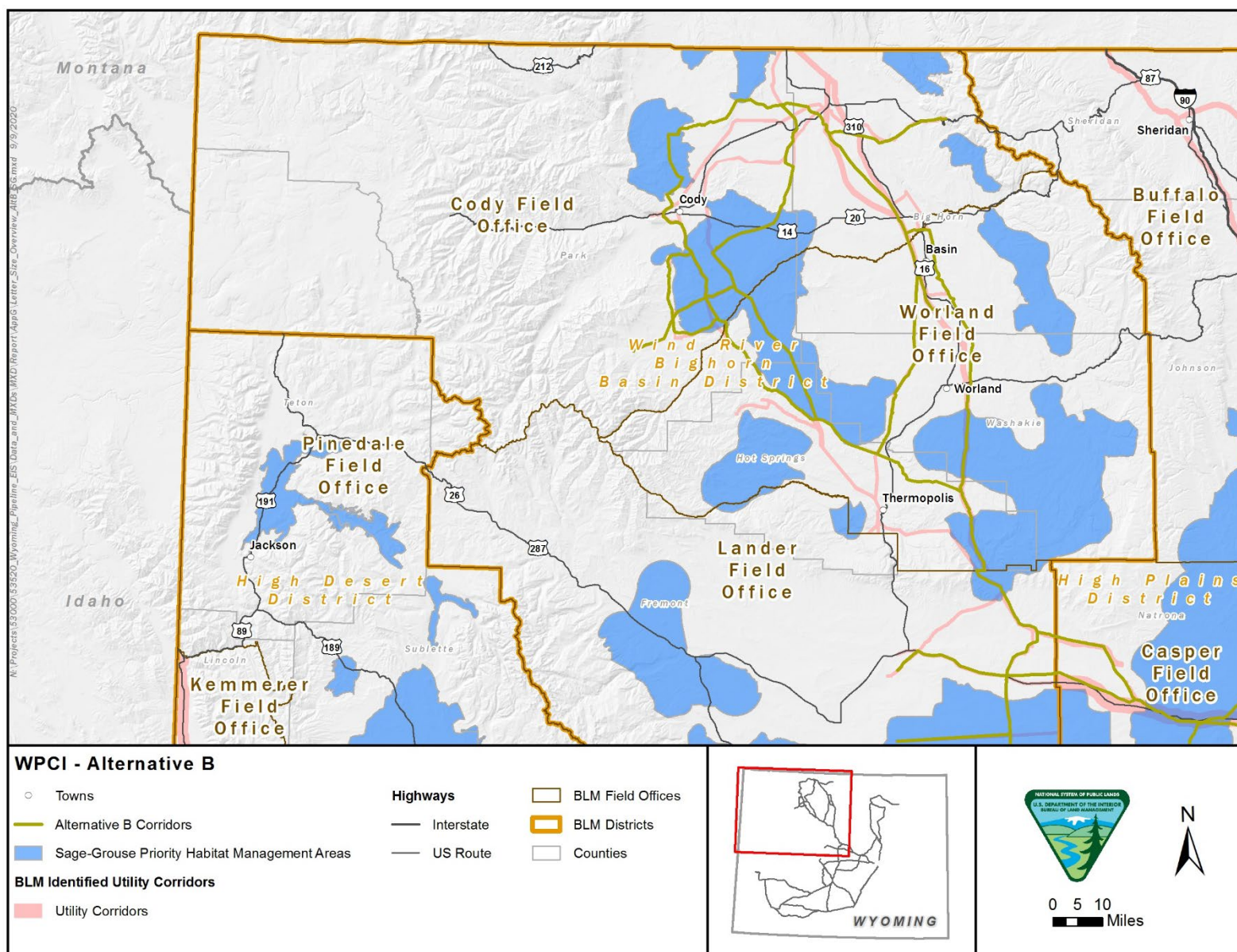


Figure G-9a. WPCI proposed corridors – Alternative B in priority habitat management areas (map 1 of 4).

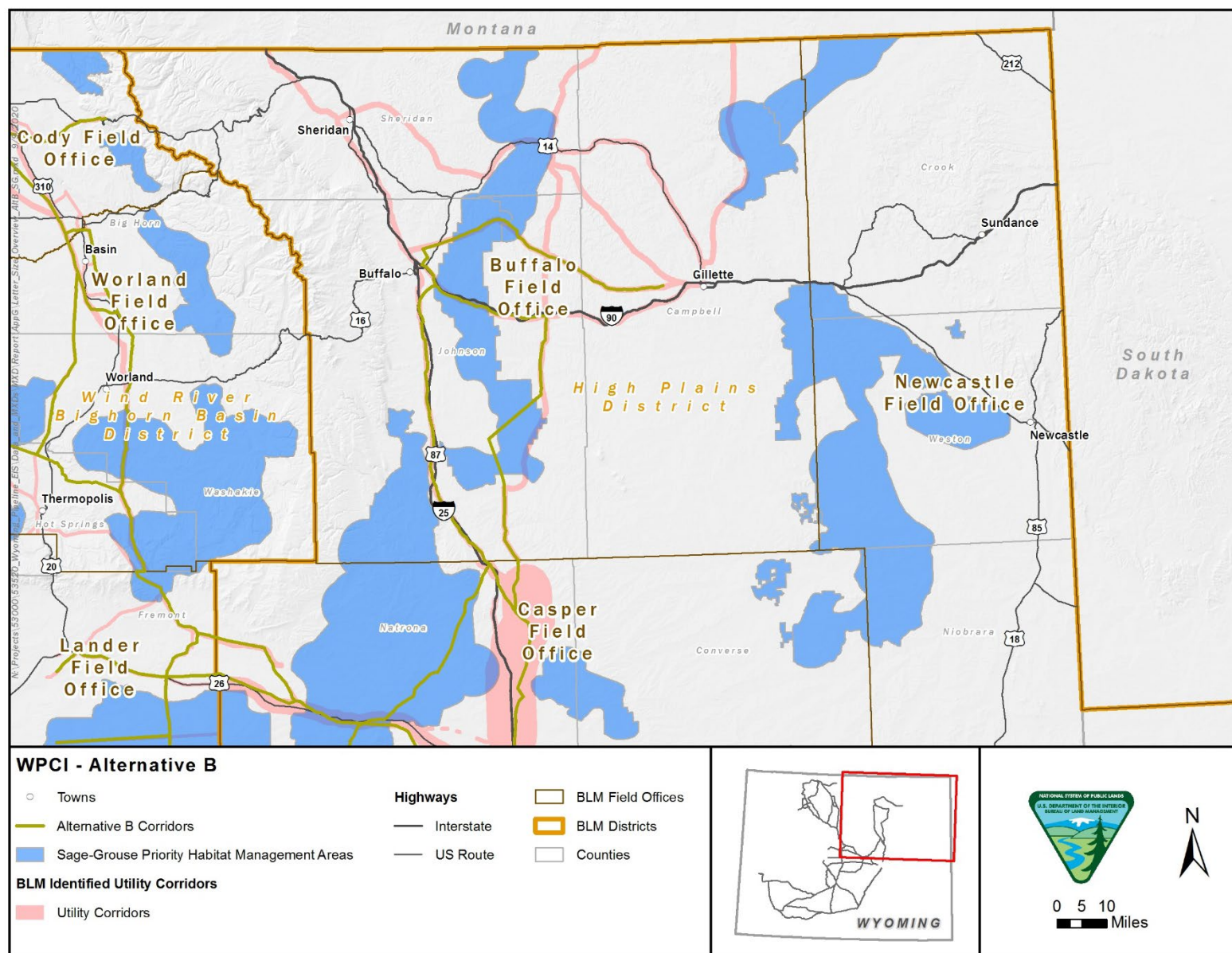


Figure G-9b. WPCI proposed corridors – Alternative B in priority habitat management areas (map 2 of 4).



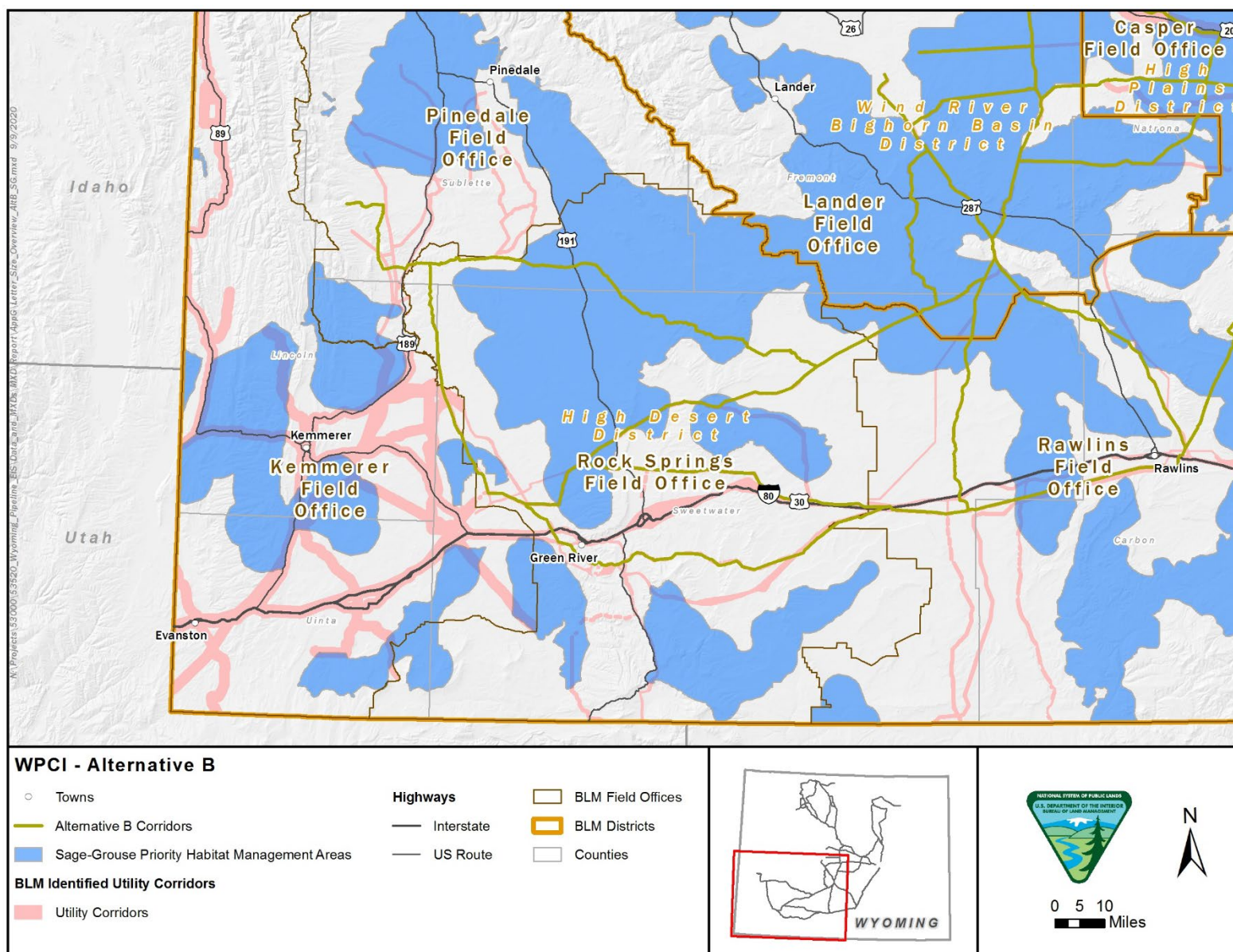


Figure G-9c. WPCI proposed corridors – Alternative B in priority habitat management areas (map 3 of 4).

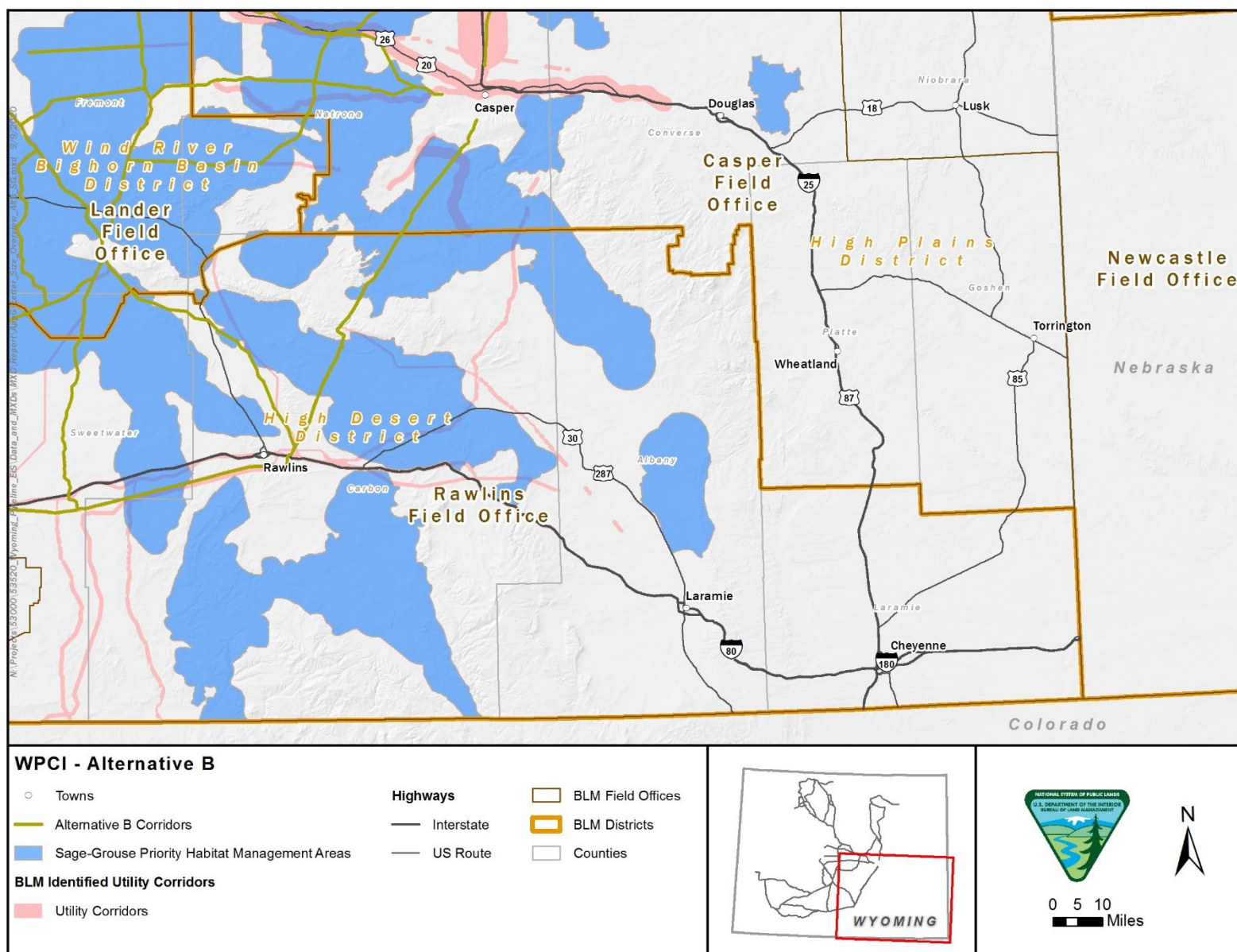


Figure G-9d. WPCI proposed corridors – Alternative B in priority habitat management areas (map 4 of 4).



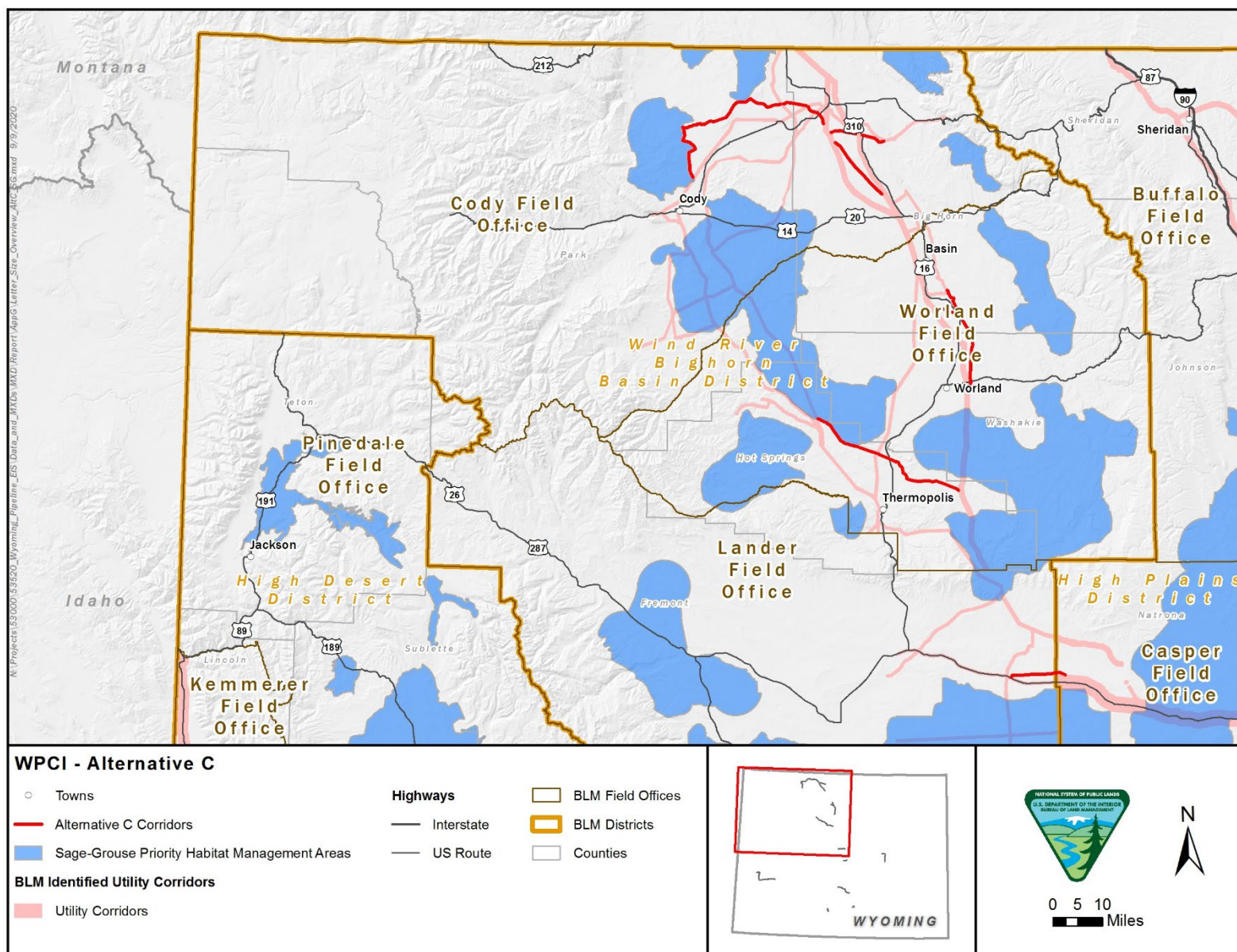


Figure G-10a. WPCI proposed corridors – Alternative C in priority habitat management areas (map 1 of 4).

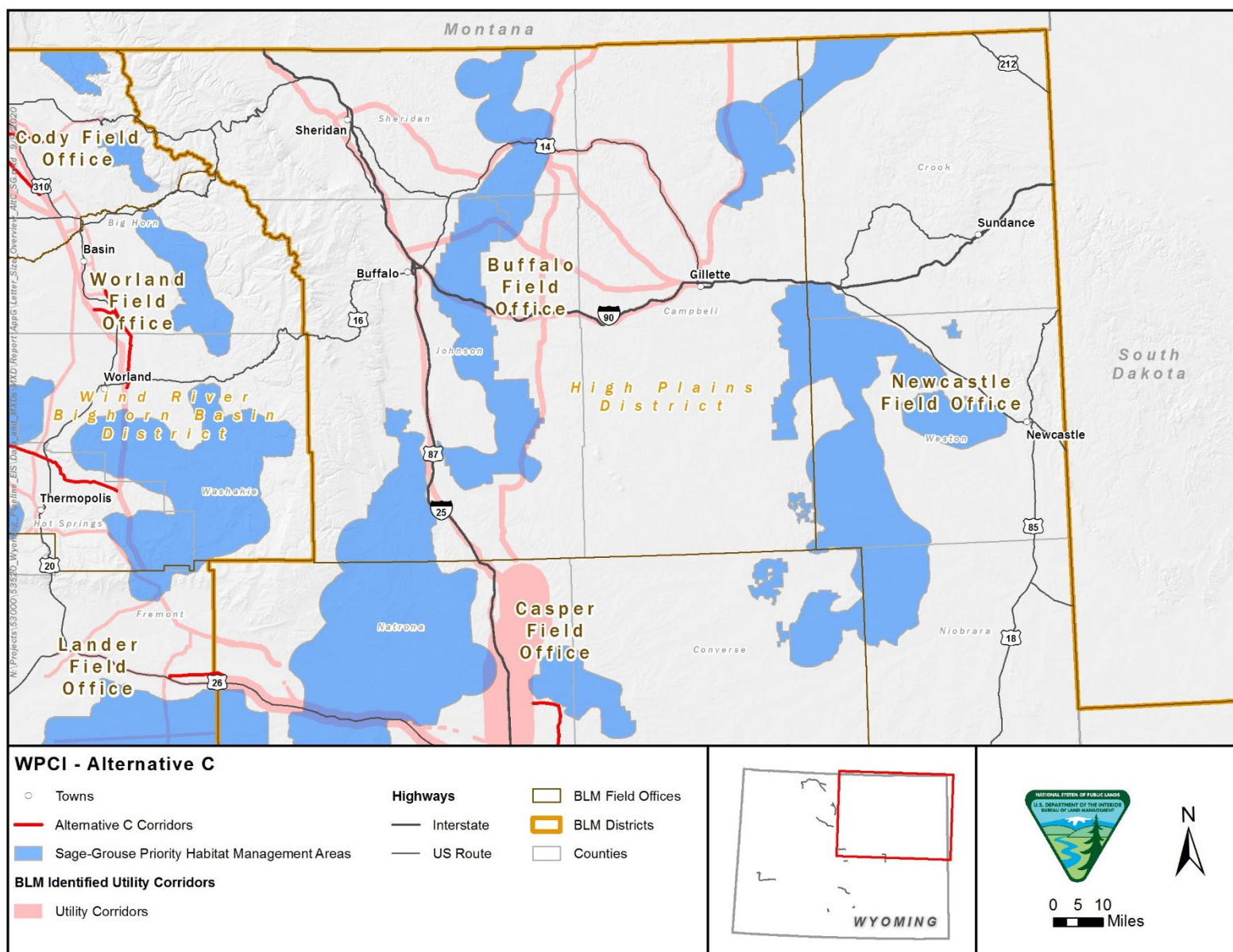


Figure G-10b. WPCI proposed corridors – Alternative C in priority habitat management areas (map 2 of 4).



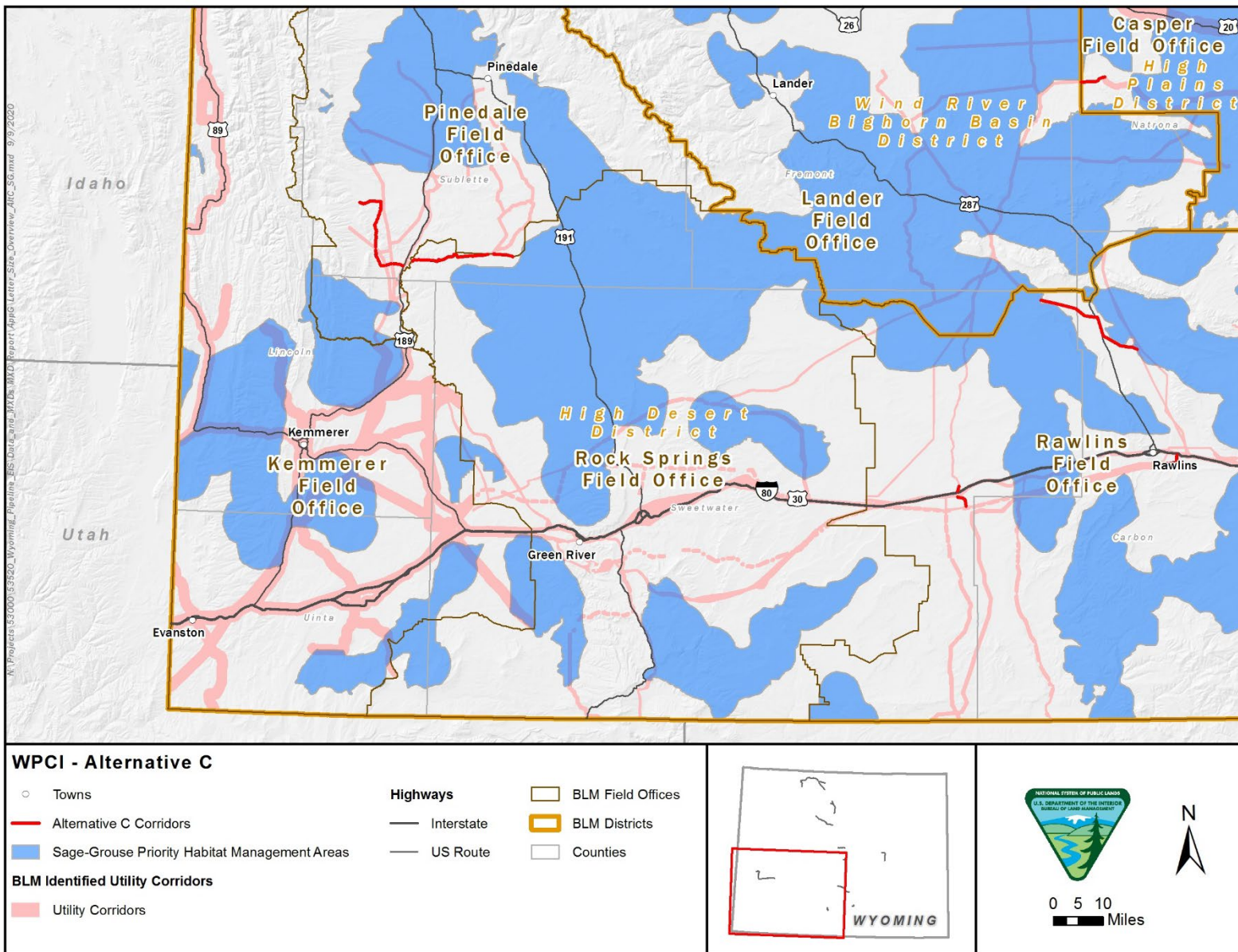


Figure G-10c. WPCI proposed corridors – Alternative C in priority habitat management areas (map 3 of 4).

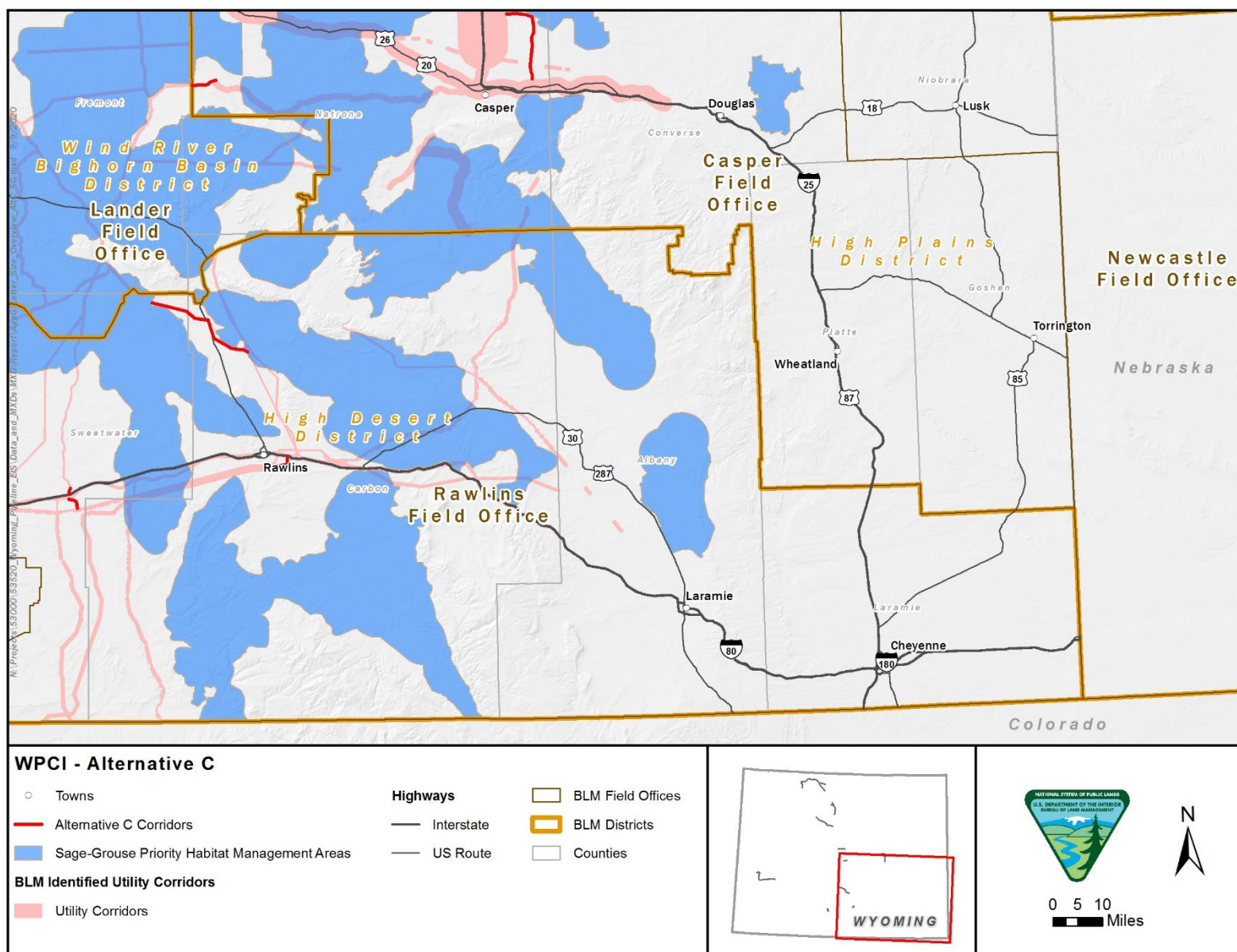
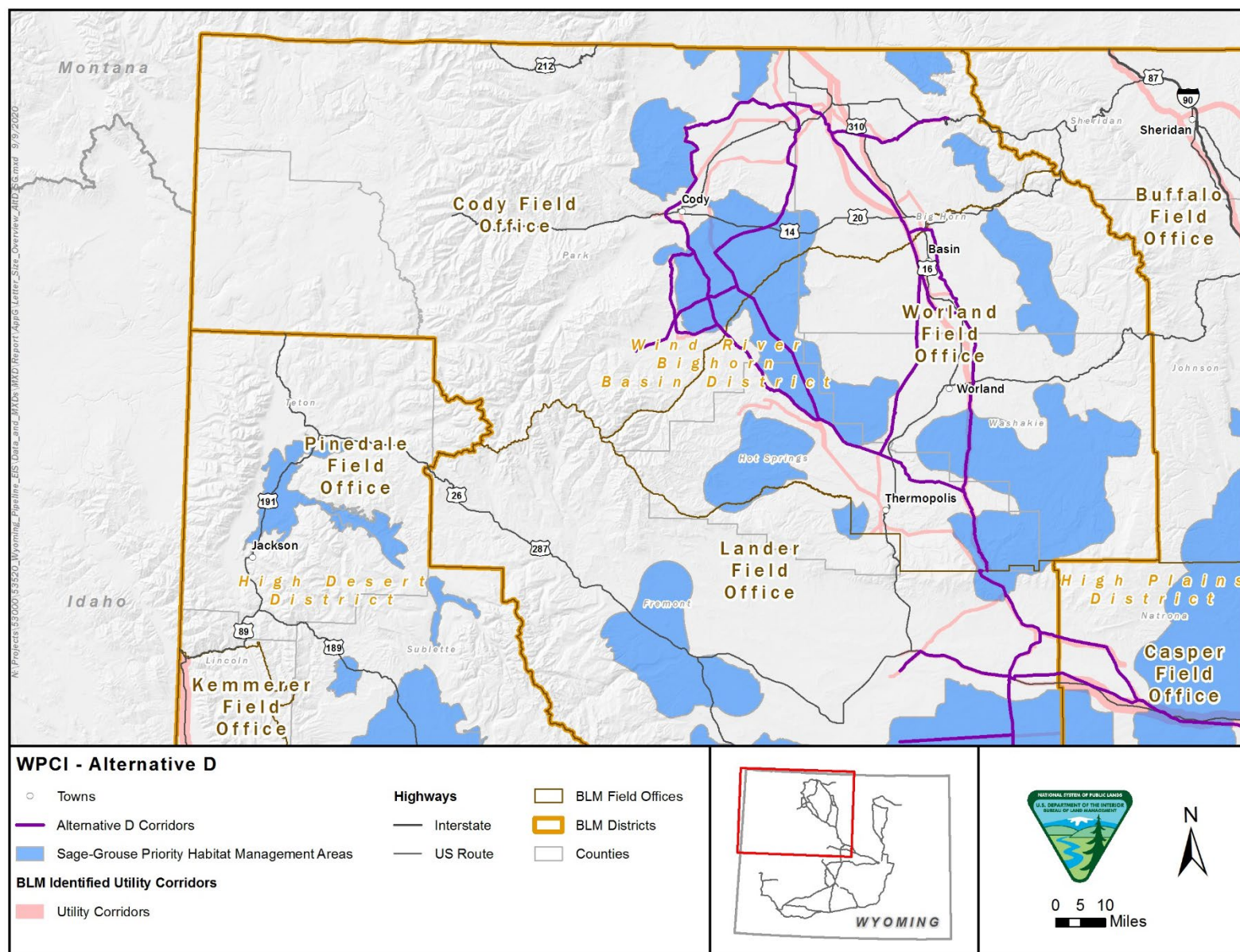


Figure G-10d. WPCI proposed corridors – Alternative C in priority habitat management areas (map 4 of 4).





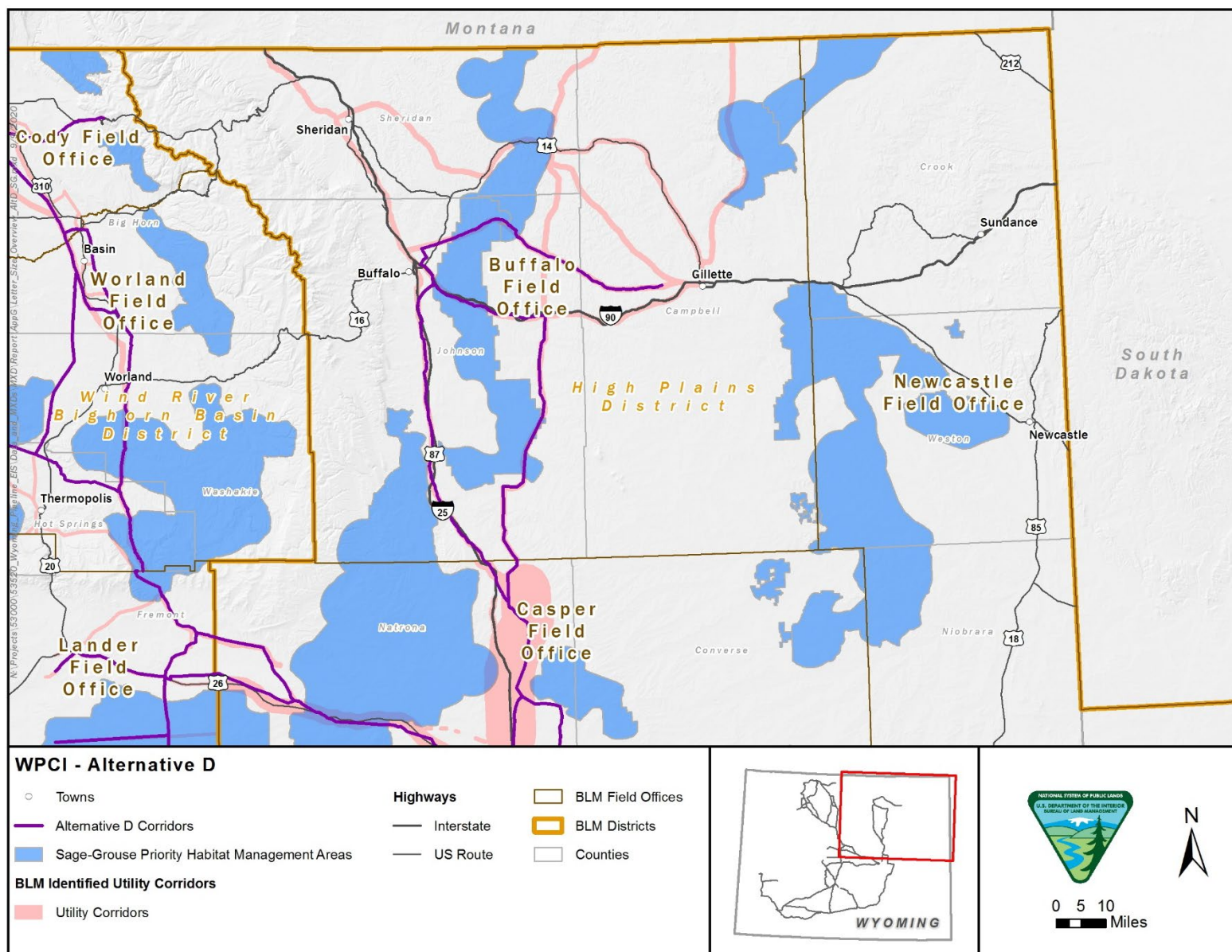
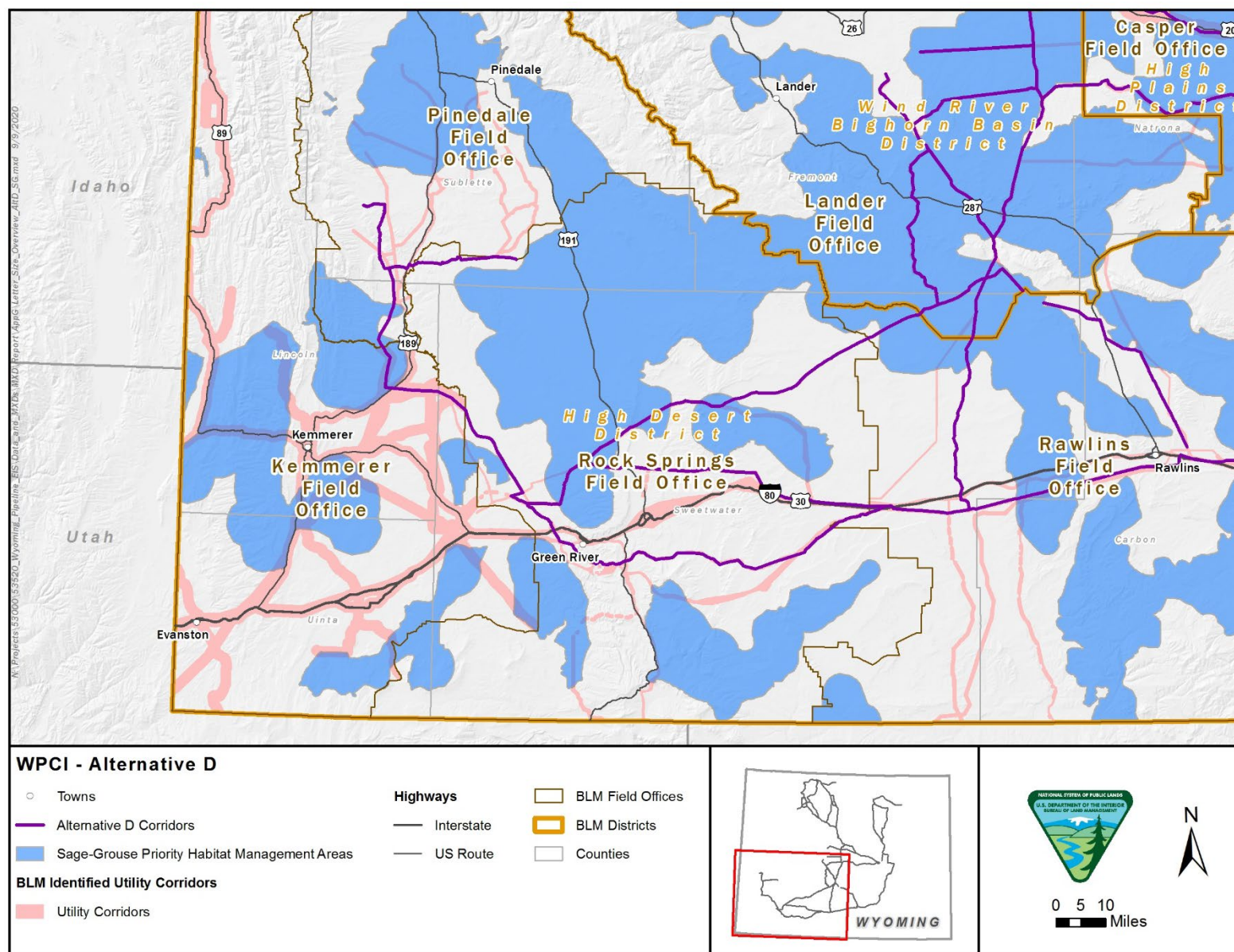


Figure G-11b. WPCI proposed corridors – Alternative D in priority habitat management areas (map 2 of 4).





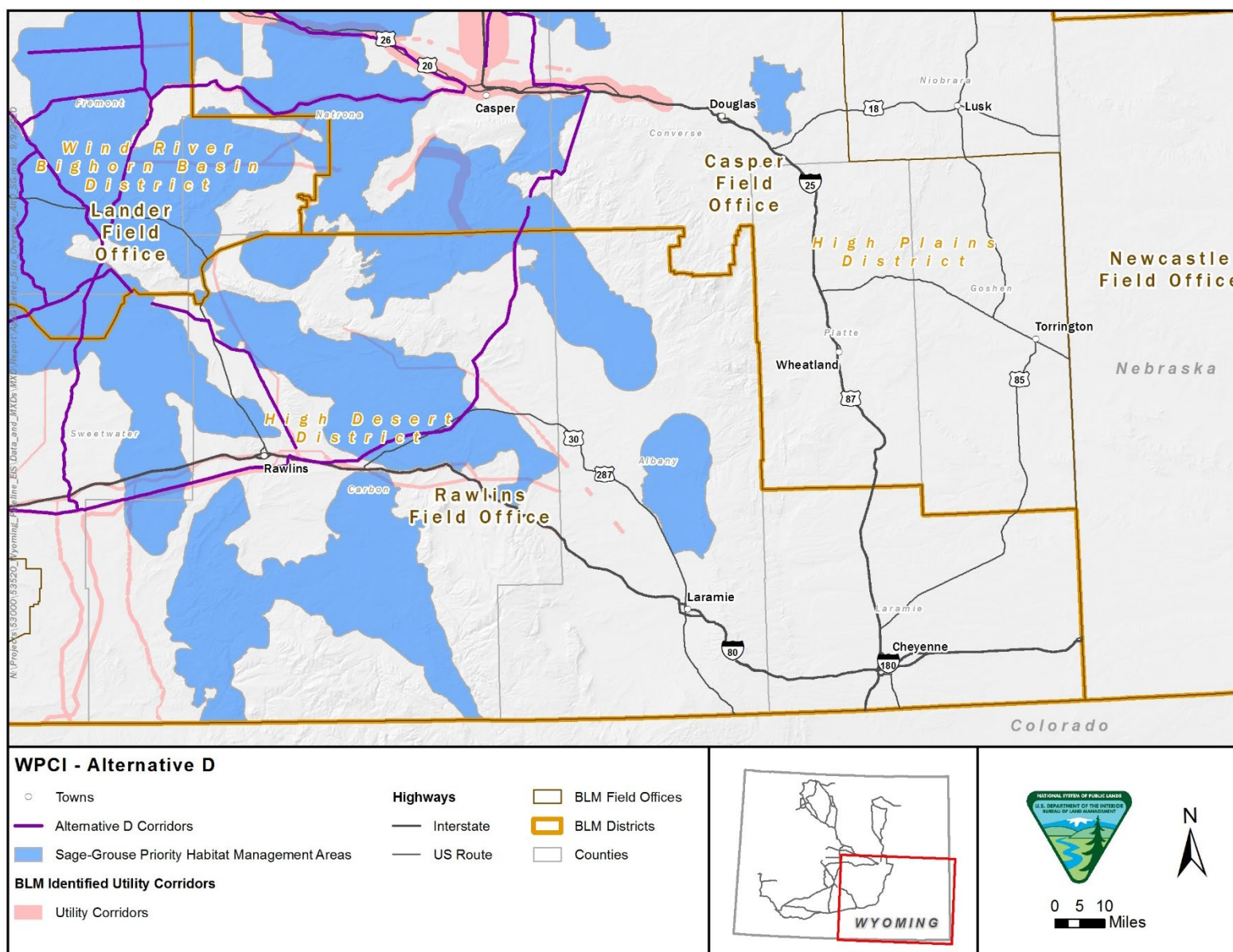


Figure G-11d. WPCI proposed corridors – Alternative D in priority habitat management areas (map 4 of 4).



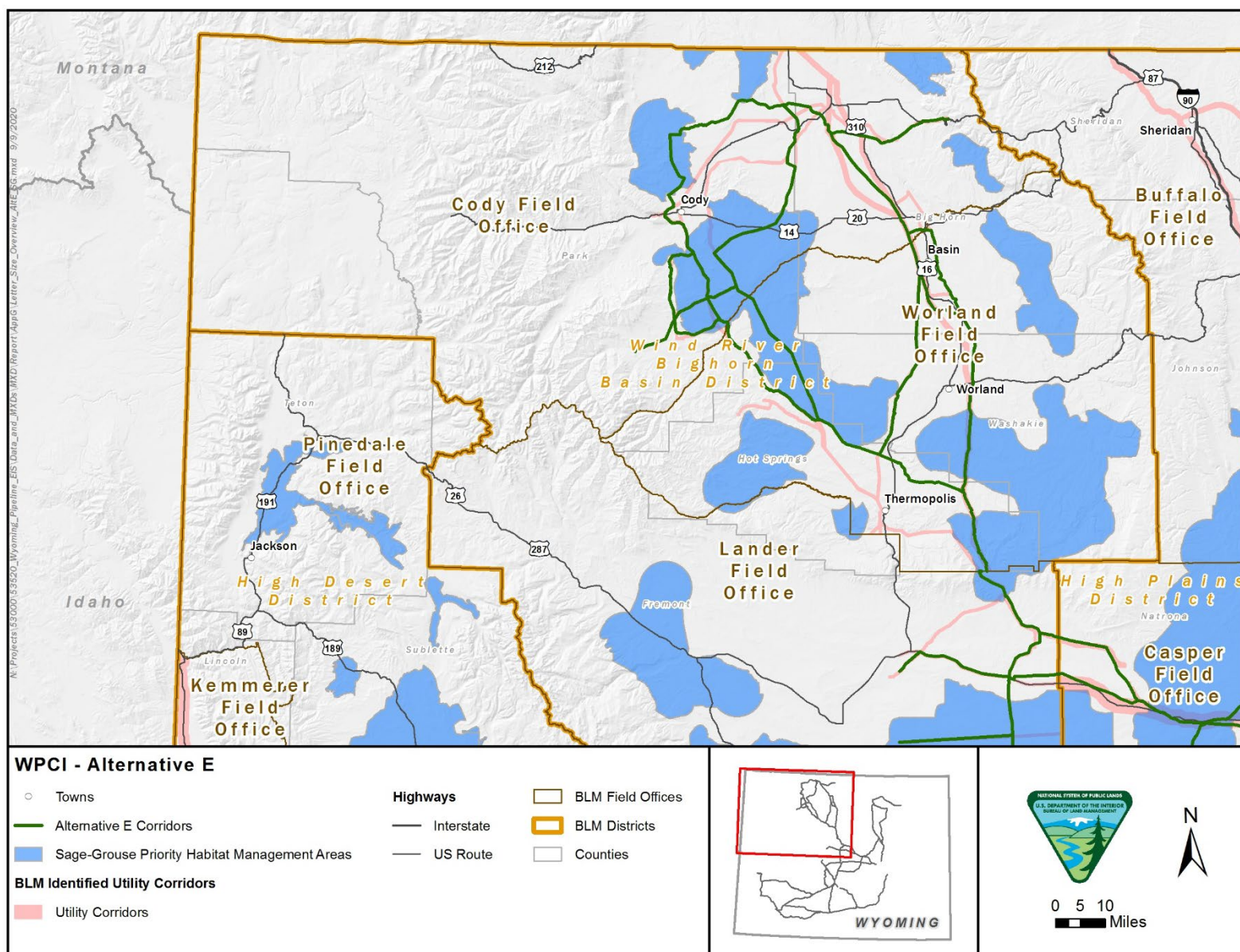


Figure G-12a. WPCI proposed corridors – Alternative E in priority habitat management areas (map 1 of 4).

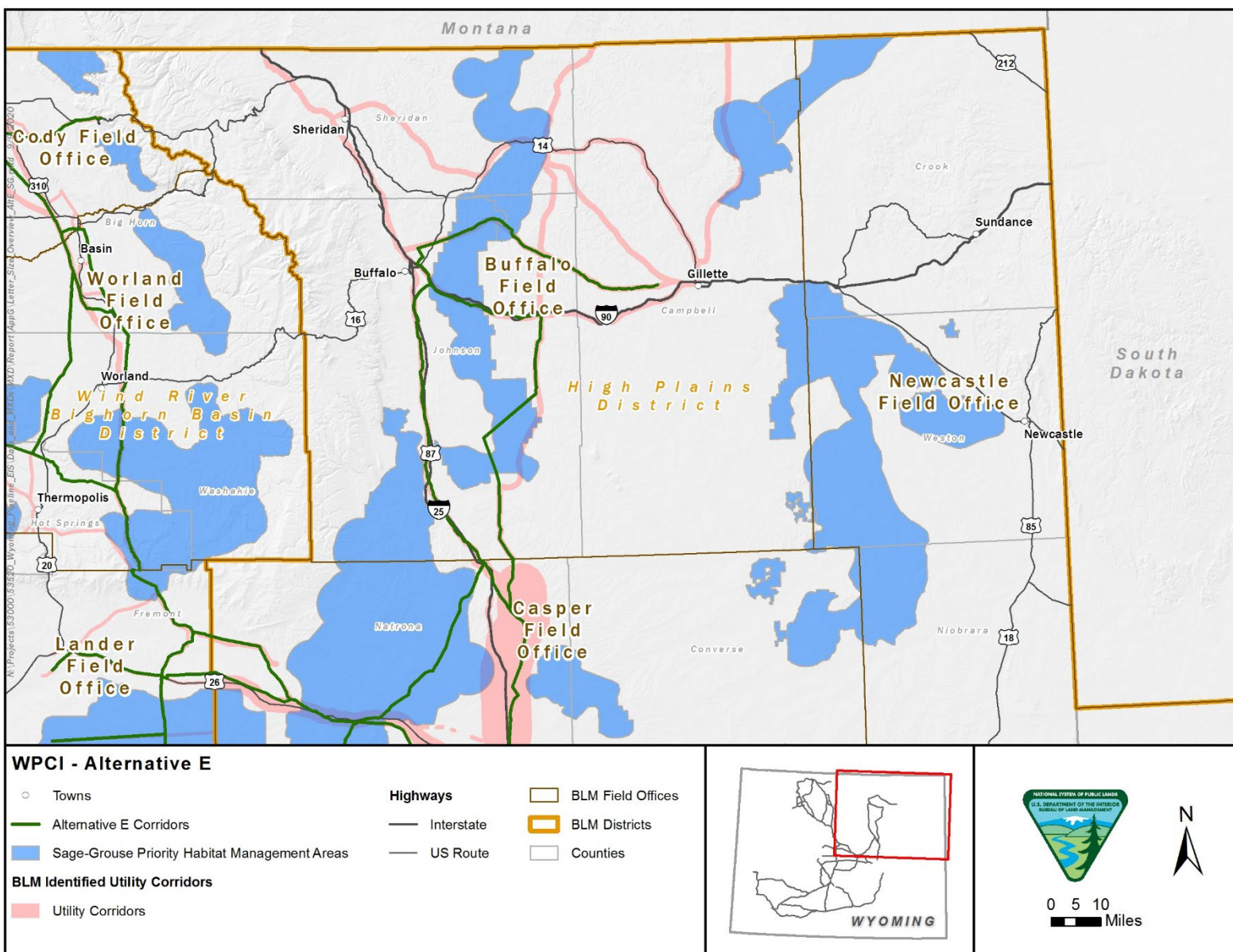


Figure G-12b. WPCI proposed corridors – Alternative E in priority habitat management areas (map 2 of 4).



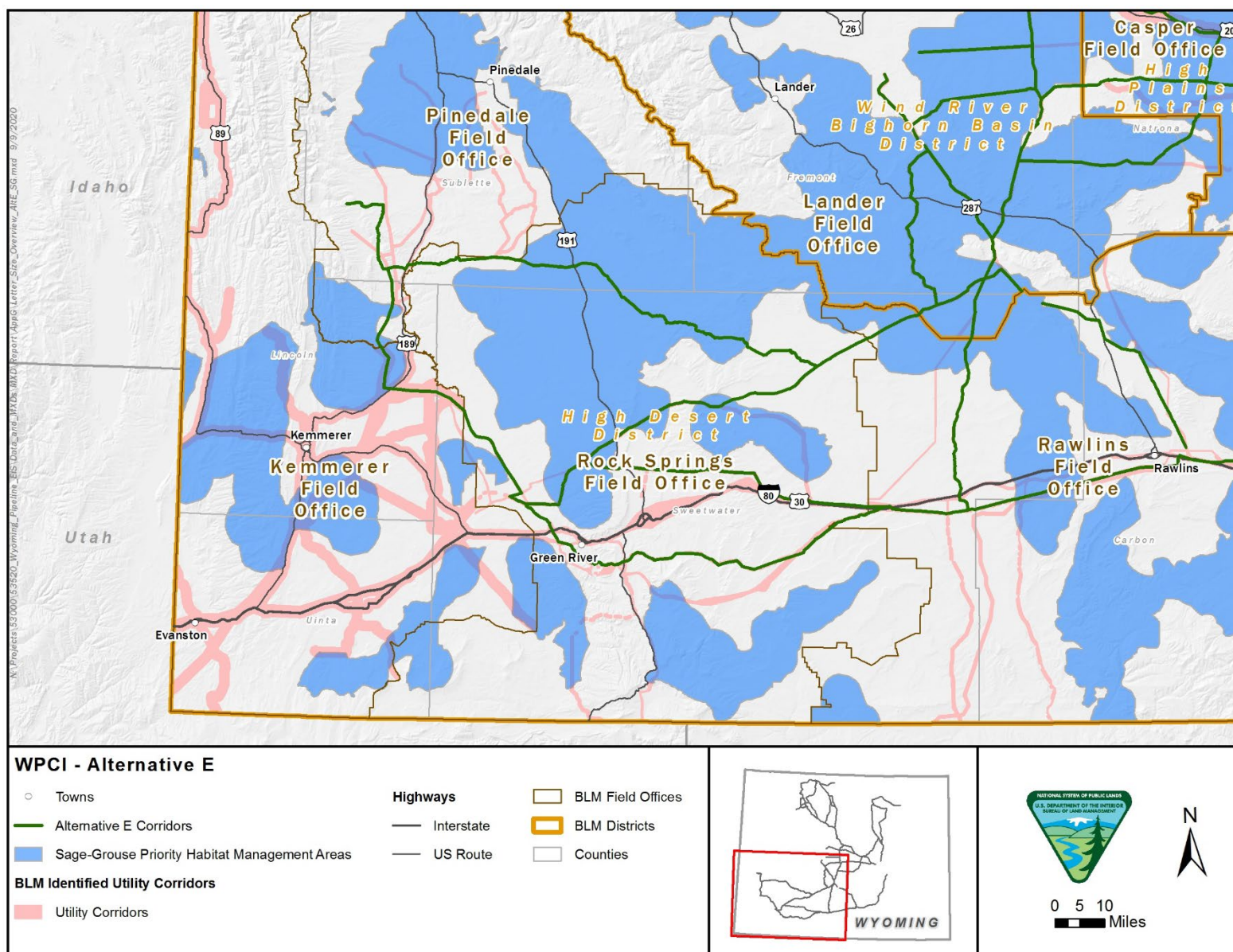


Figure G-12c. WPCI proposed corridors – Alternative E in priority habitat management areas (map 3 of 4).

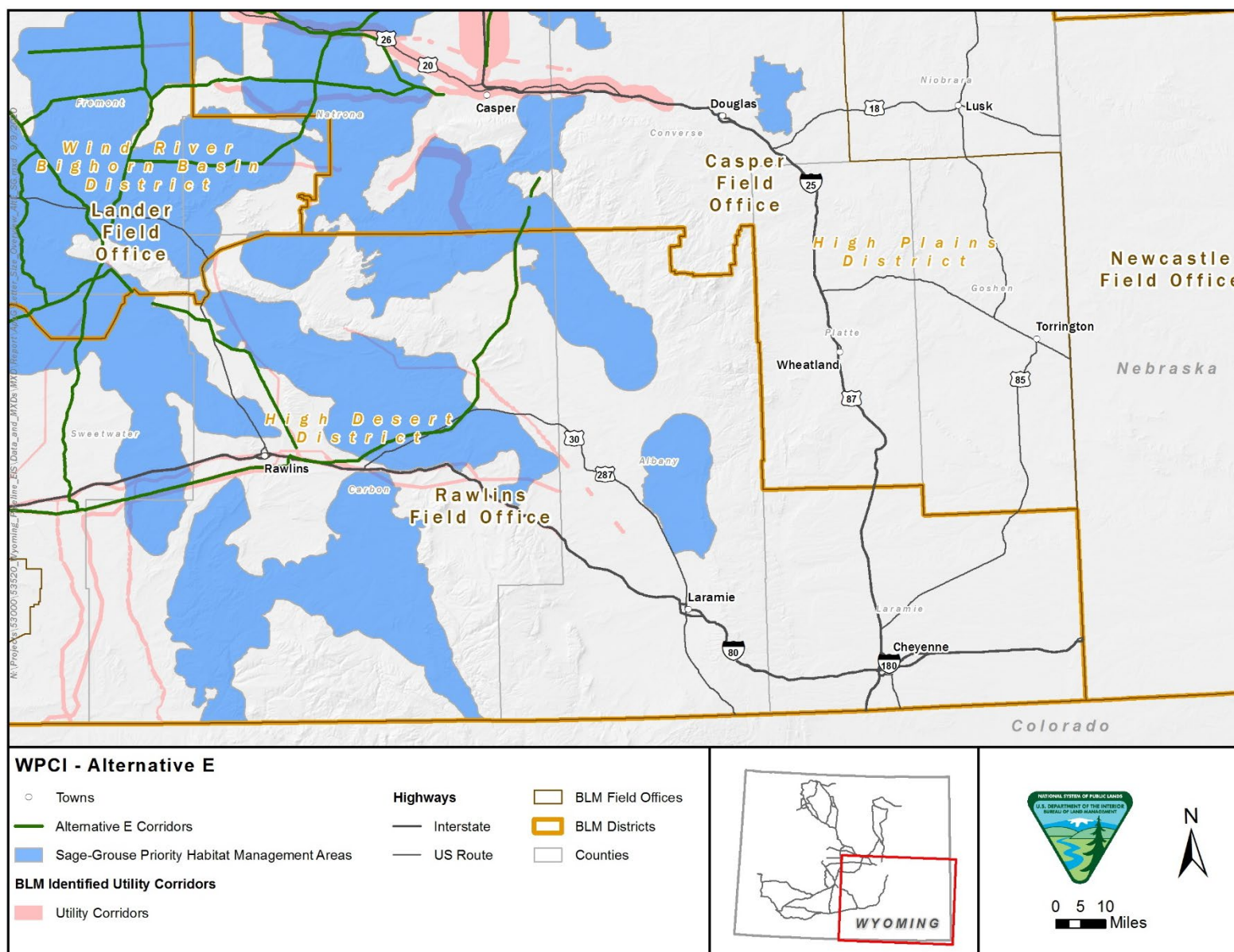


Figure G-12d. WPCI proposed corridors – Alternative E in priority habitat management areas (map 4 of 4).



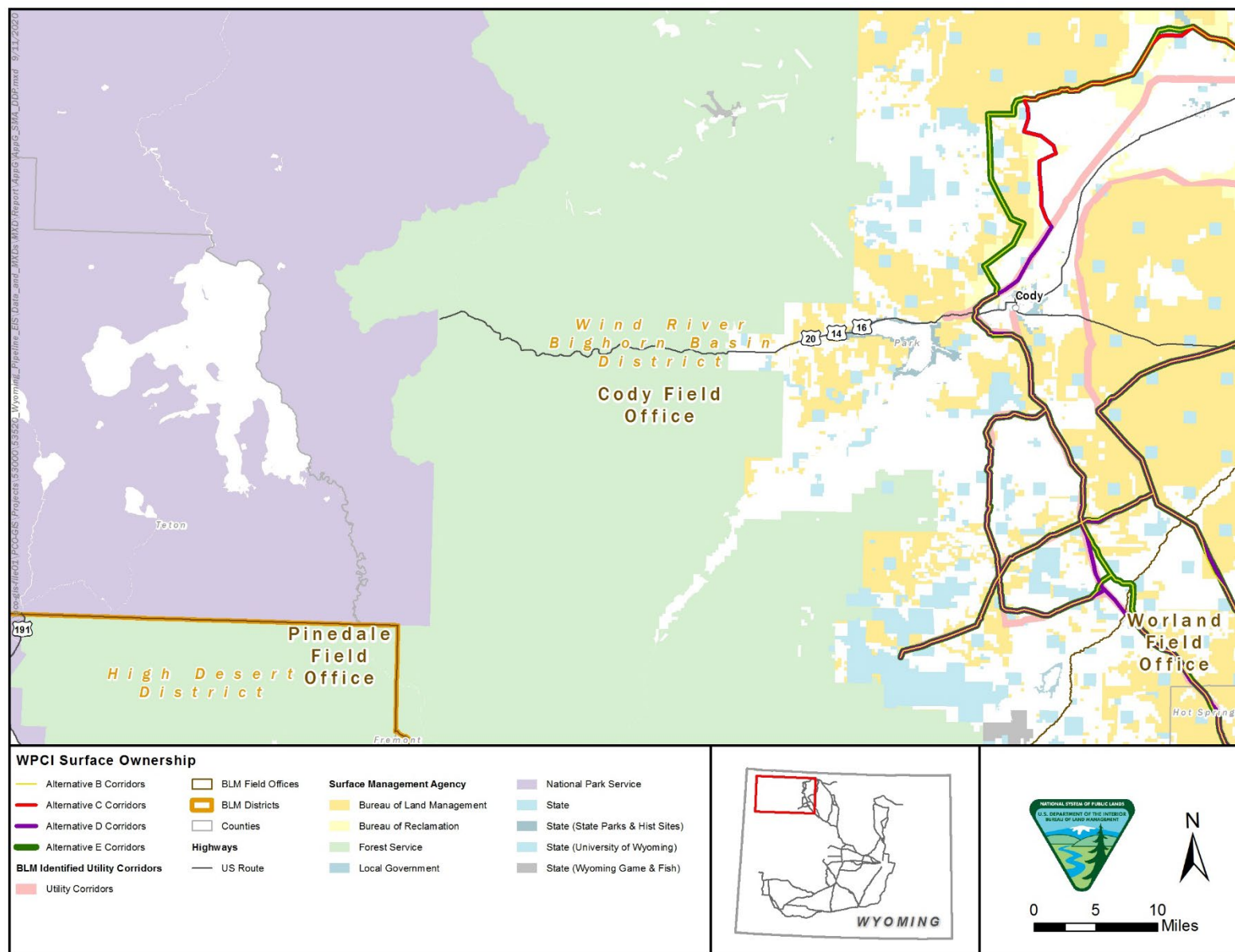


Figure G-13a. WPCI proposed corridors – Surface ownership (map 1 of 16).

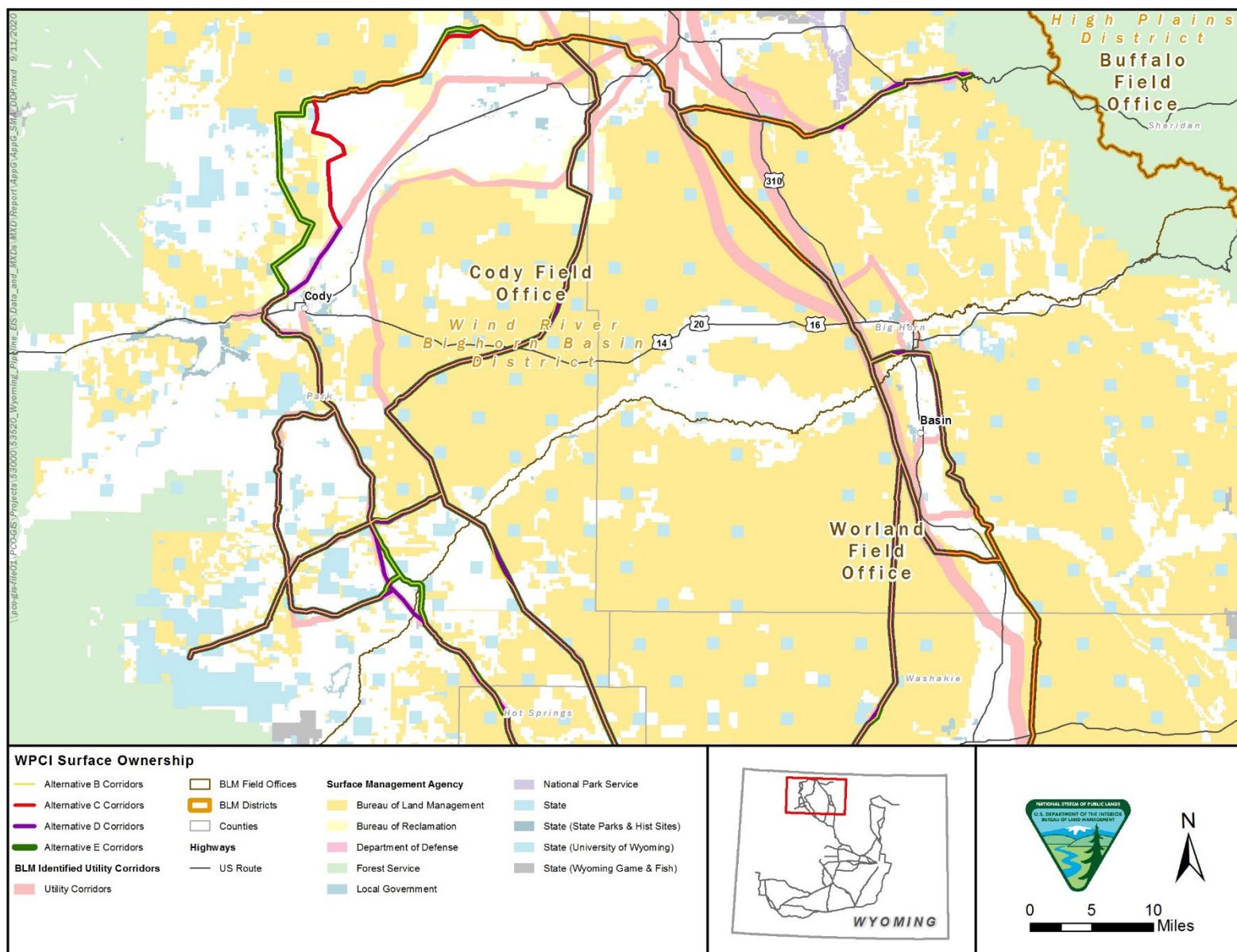


Figure G-13b. WPCI proposed corridors – Surface ownership (map 2 of 16).



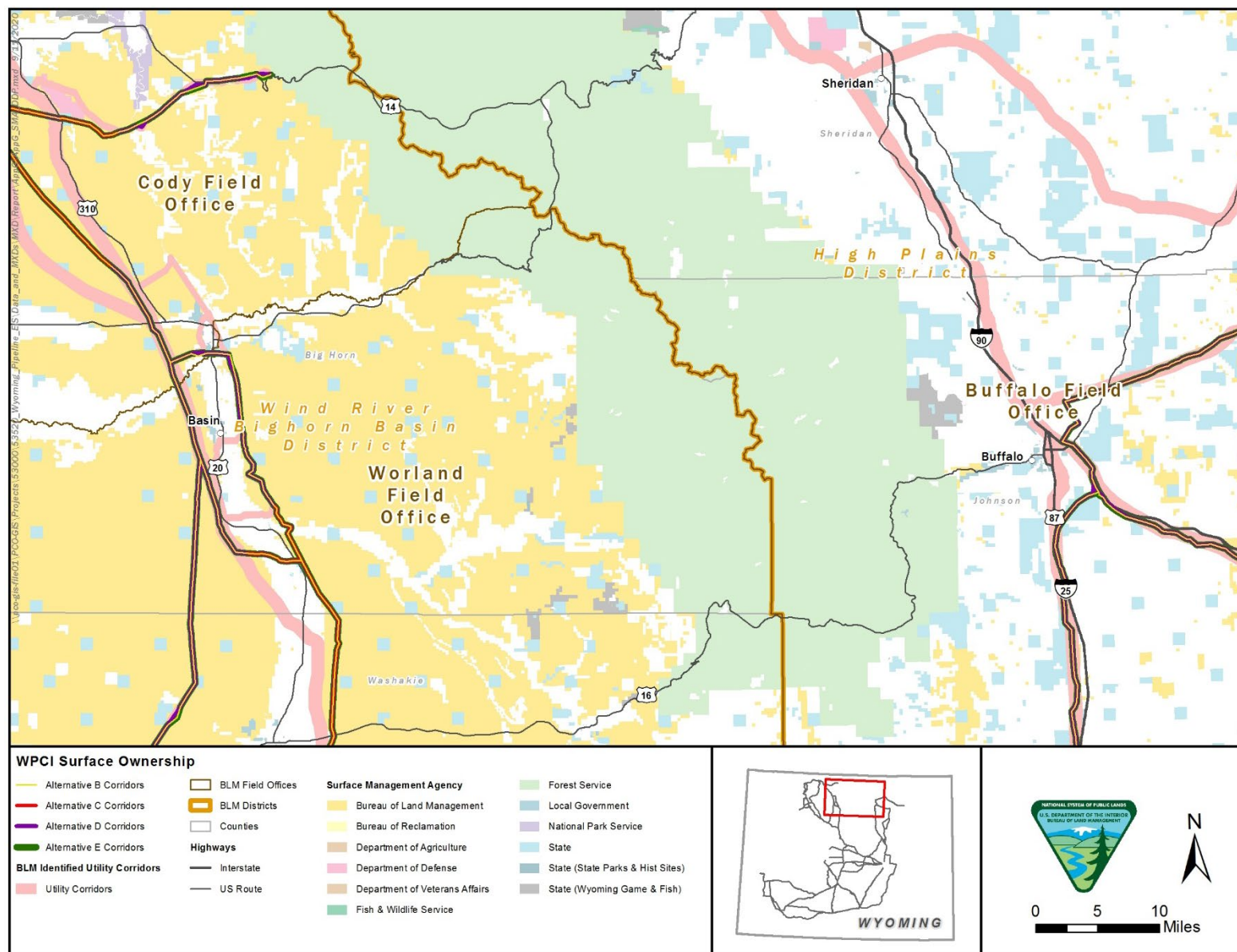


Figure G-13c. WPCI proposed corridors – Surface ownership (map 3 of 16).

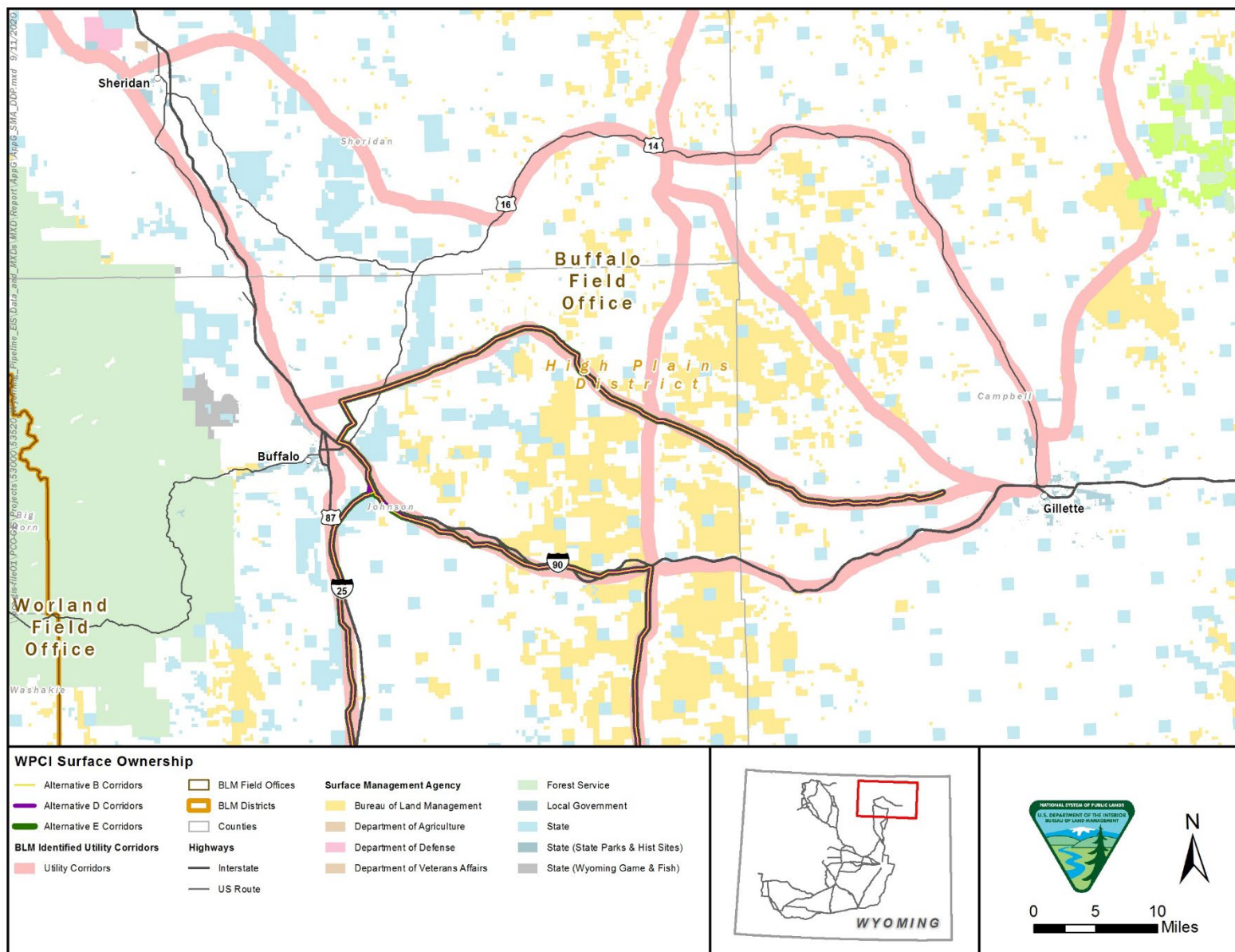


Figure G-13d. WPCI proposed corridors – Surface ownership (map 4 of 16).

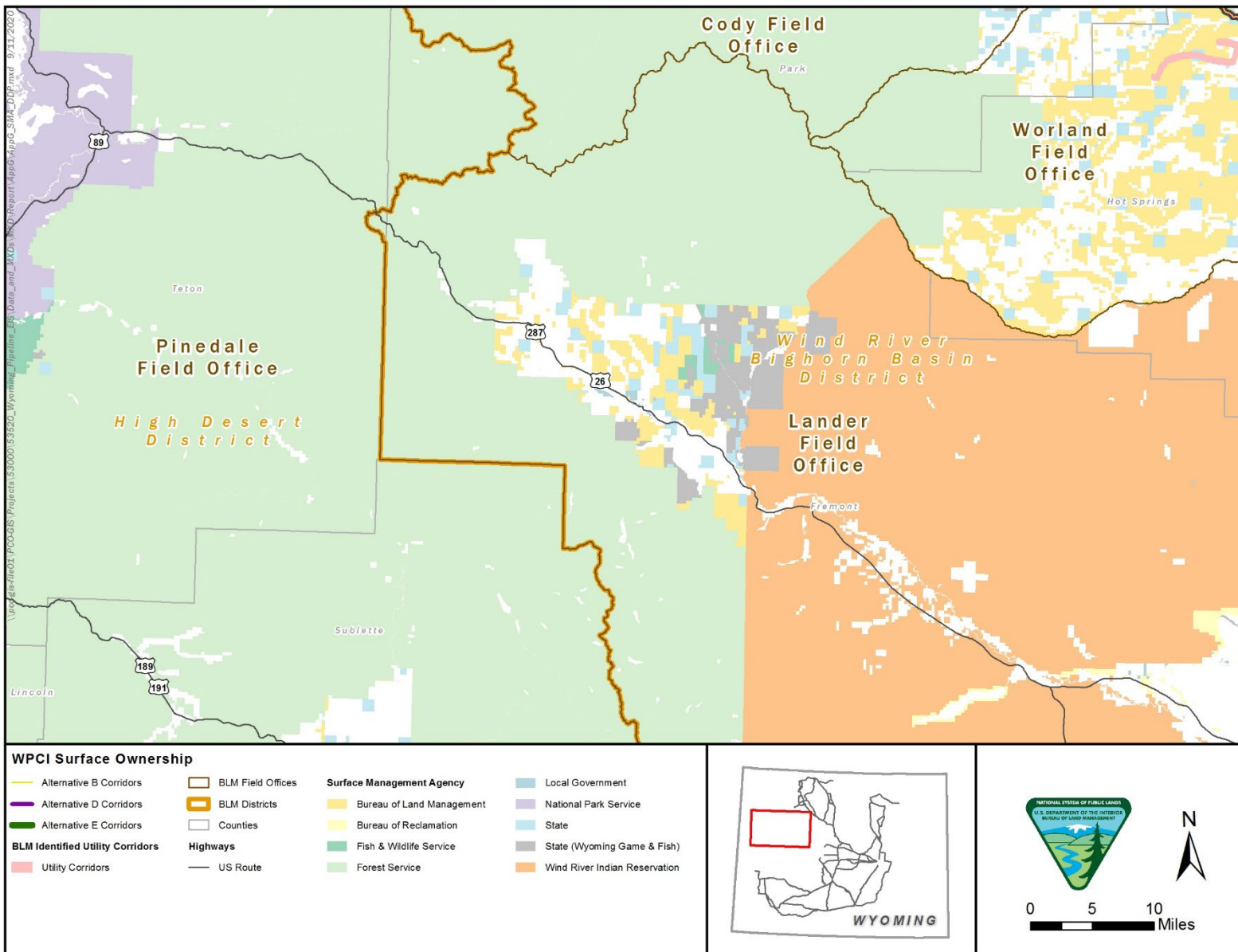


Figure G-13e. WPCI proposed corridors – Surface ownership (map 5 of 16).



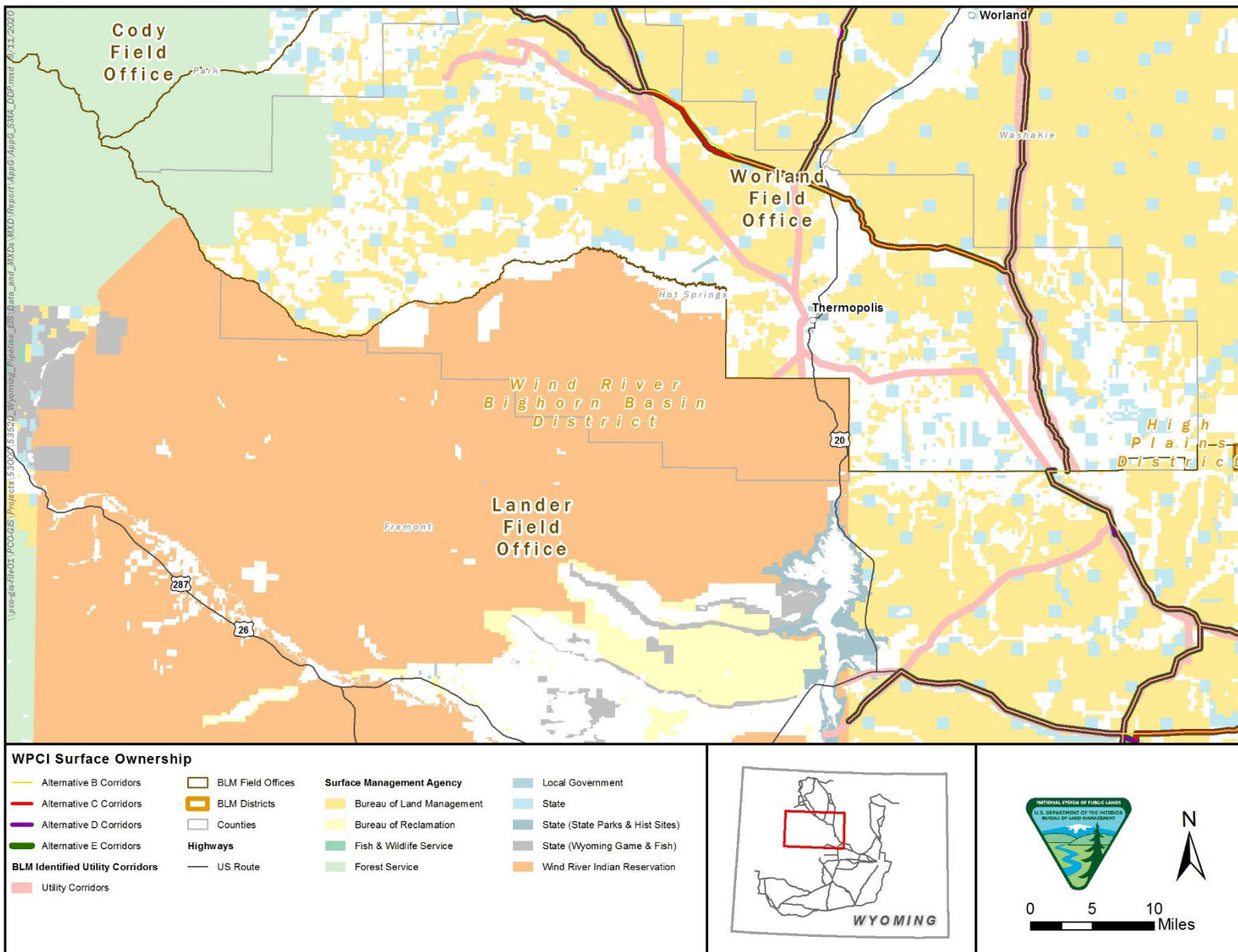


Figure G-13f. WPCI proposed corridors – Surface ownership (map 6 of 16).



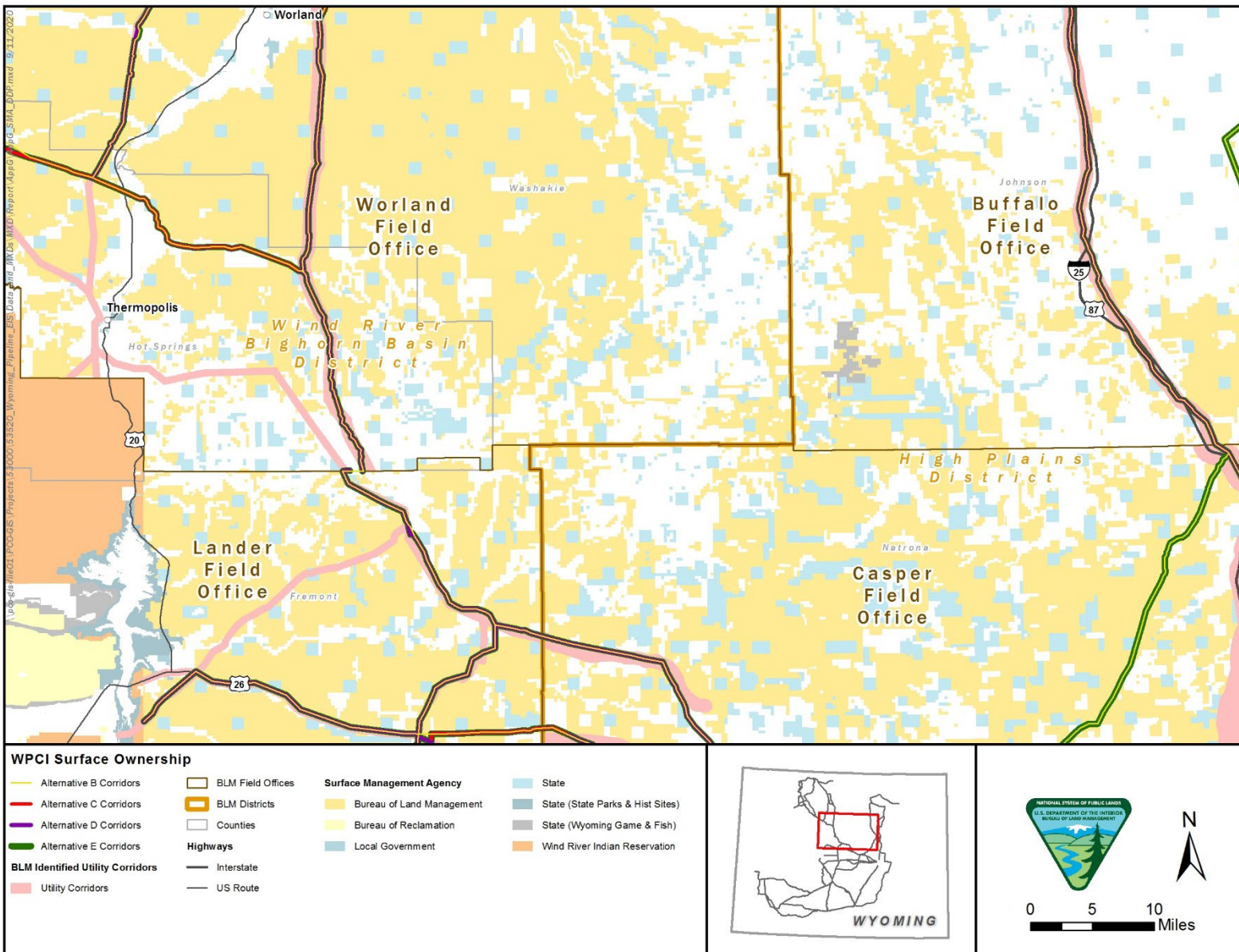


Figure G-13g. WPCI proposed corridors – Surface ownership (map 7 of 16).

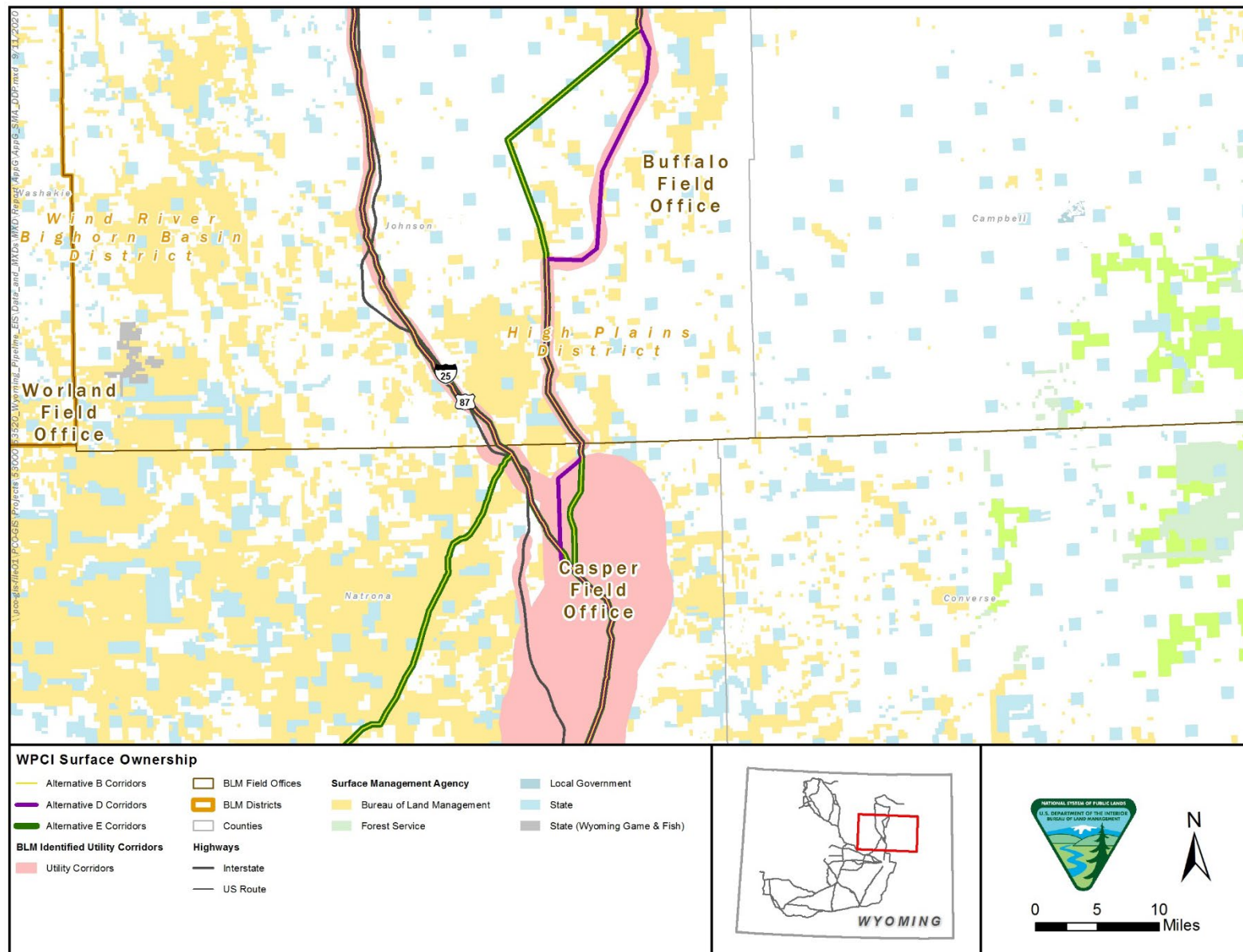


Figure G-13h. WPCI proposed corridors – Surface ownership (map 8 of 16).



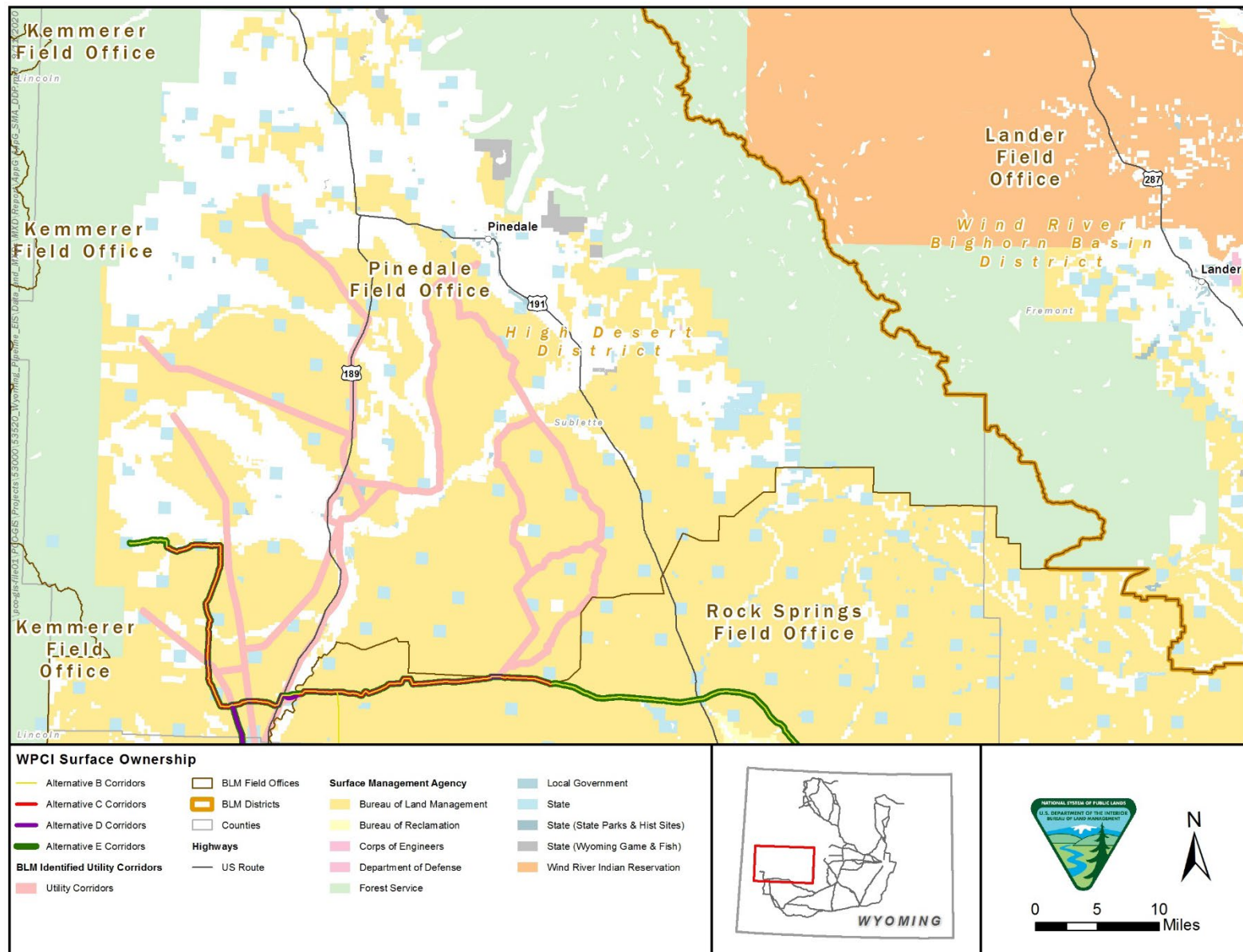


Figure G-13i. WPCI proposed corridors – Surface ownership (map 9 of 16).

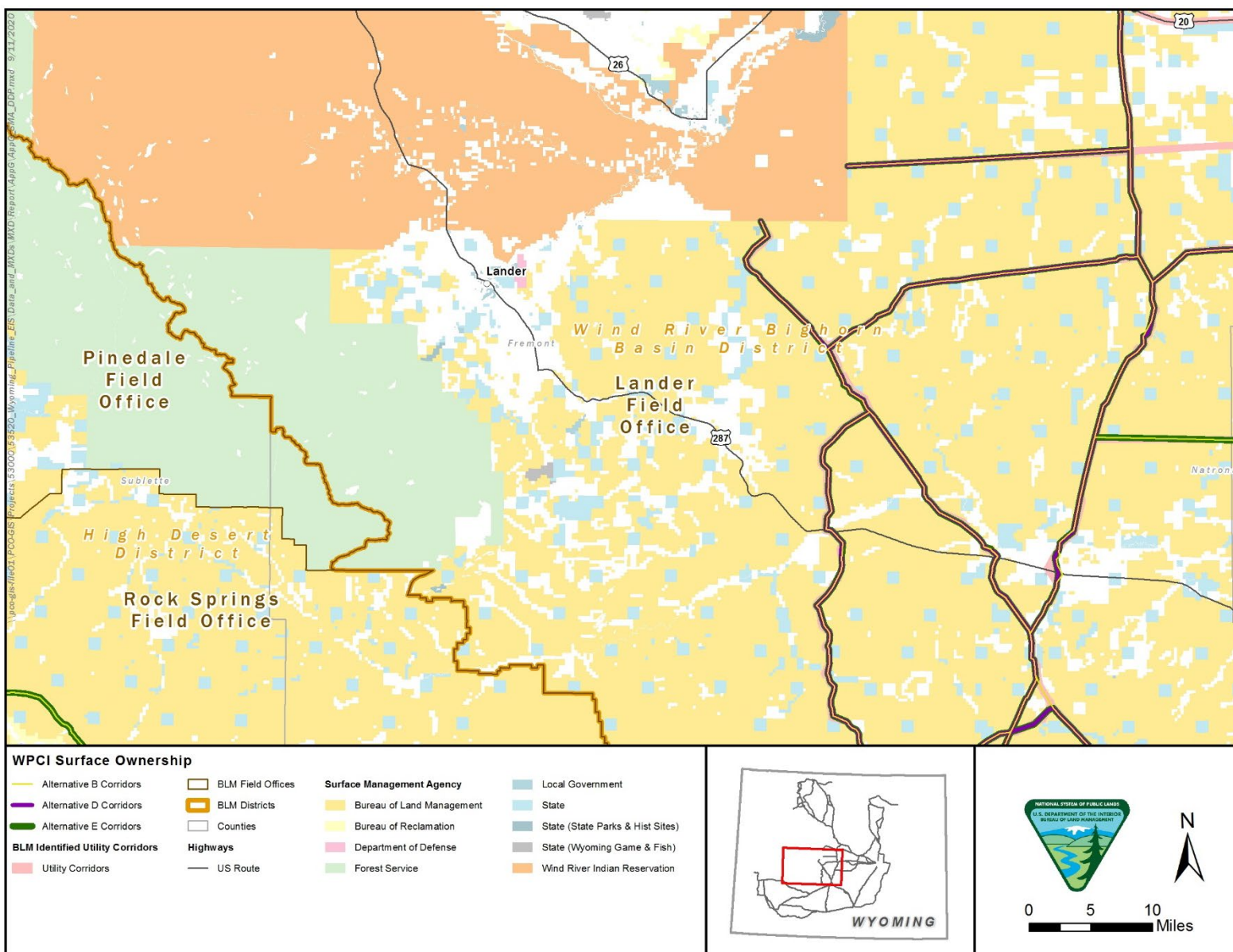


Figure G-13j. WPCI proposed corridors – Surface ownership (map 10 of 16).



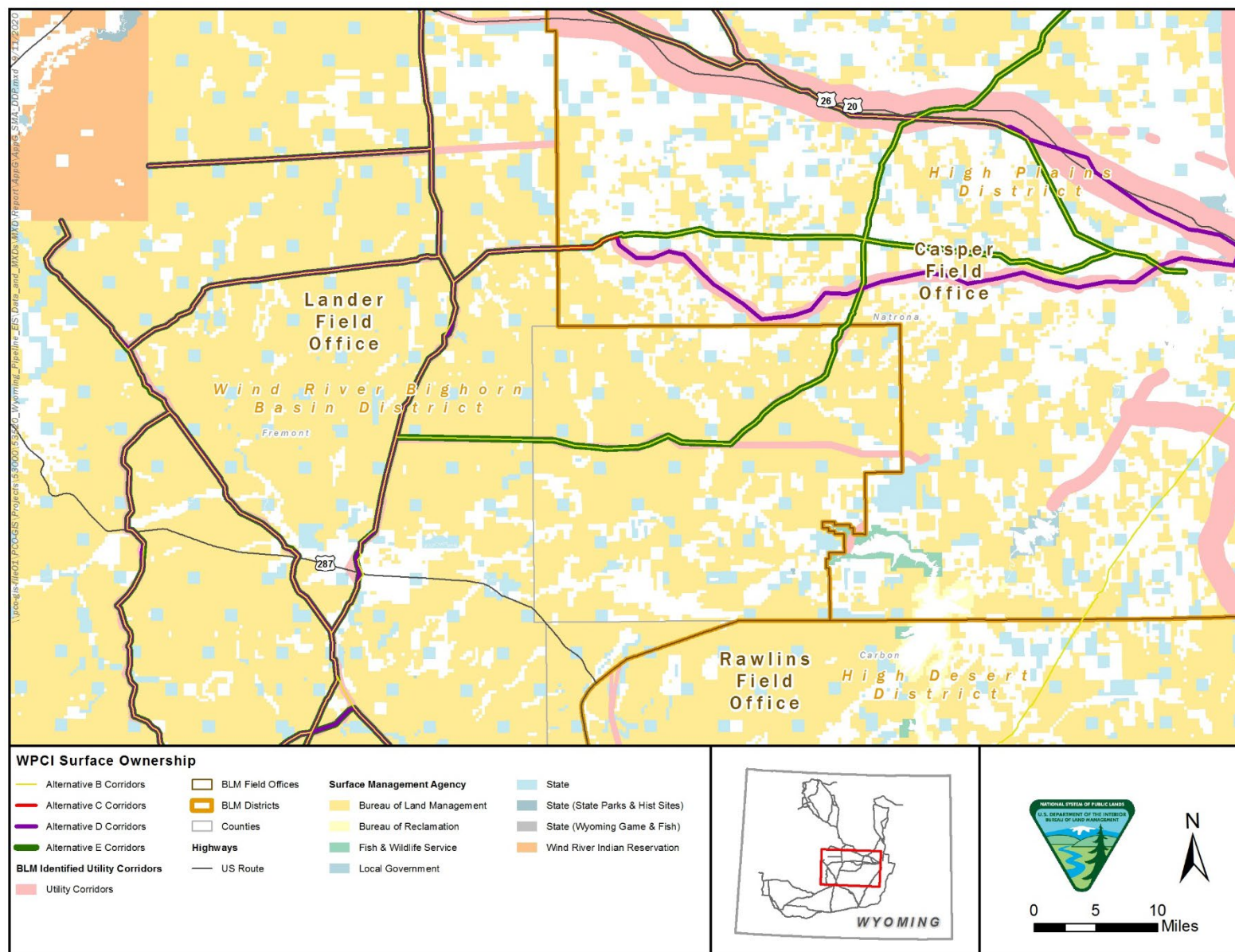


Figure G-13k. WPCI proposed corridors – Surface ownership (map 11 of 16).

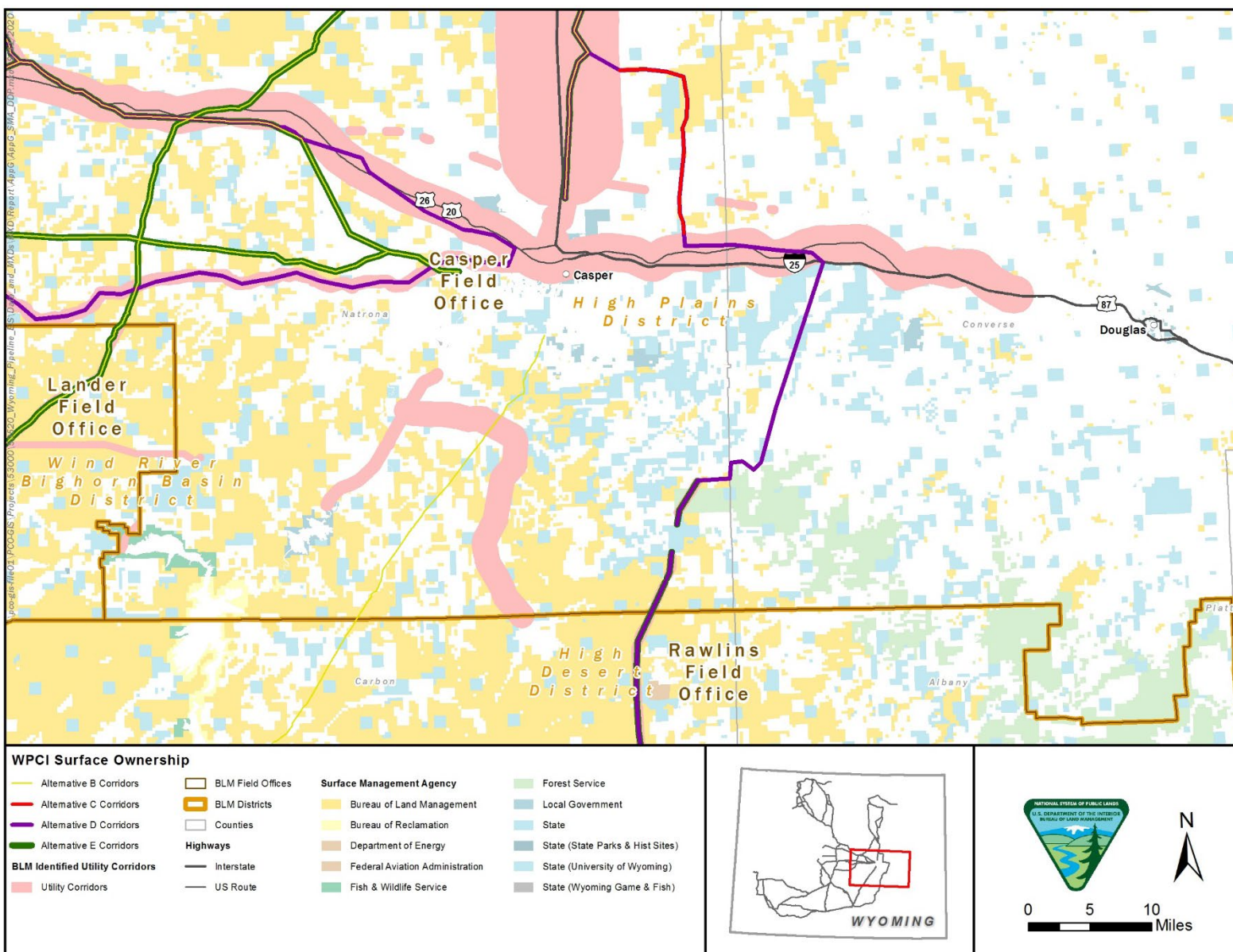


Figure G-13I. WPCI proposed corridors – Surface ownership (map 12 of 16).



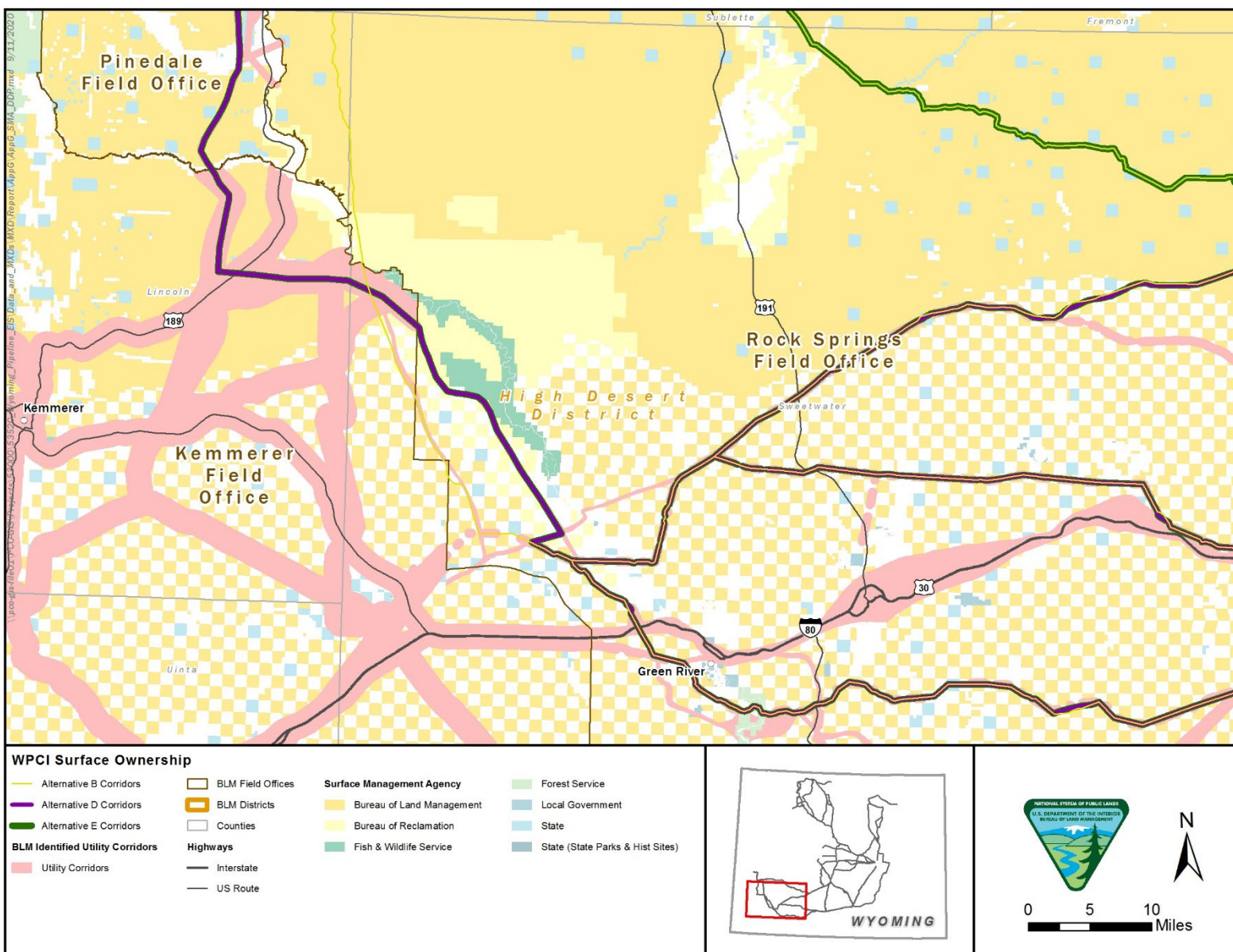


Figure G-13m. WPCI proposed corridors – Surface ownership (map 13 of 16).

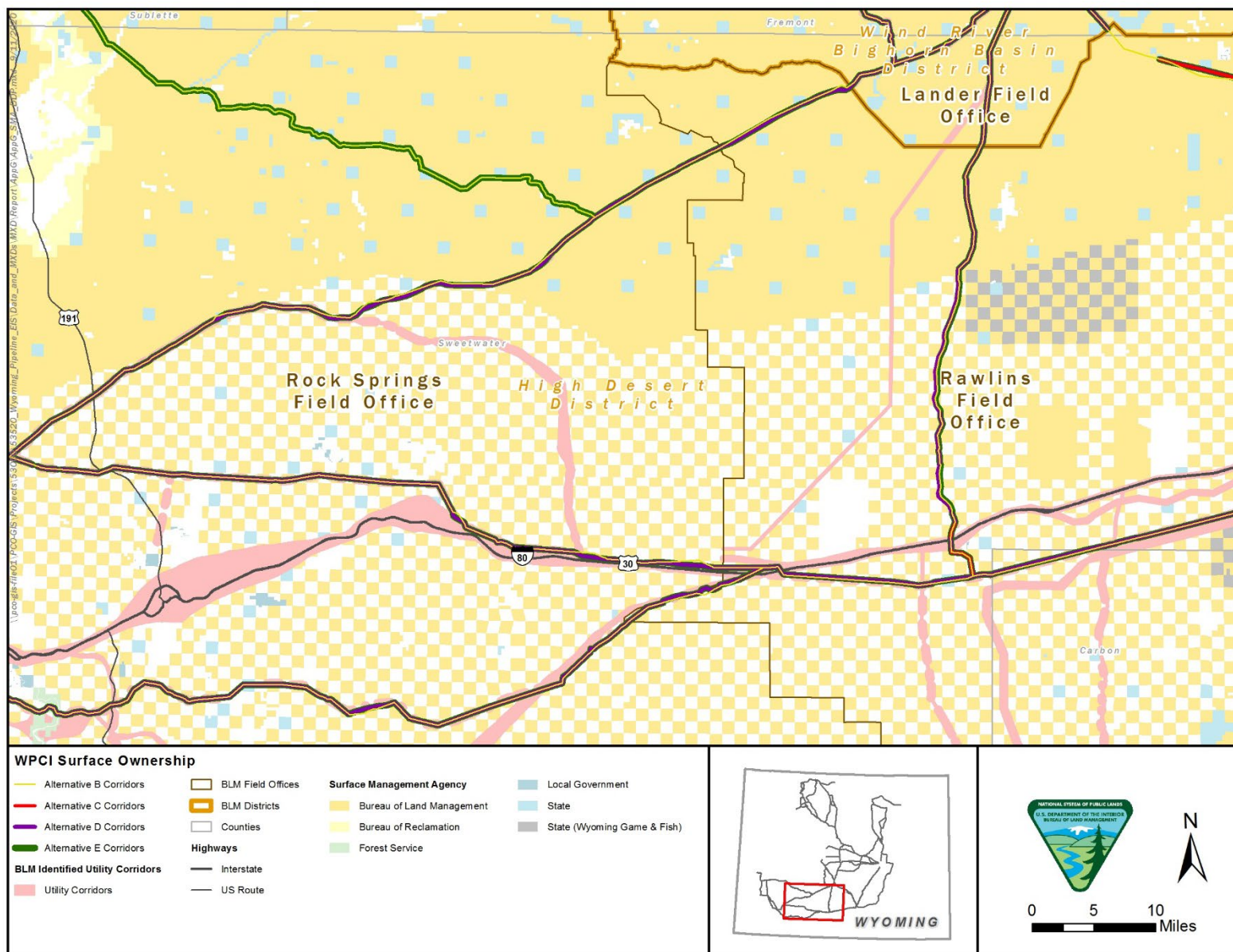


Figure G-13n. WPCI proposed corridors – Surface ownership (map 14 of 16).



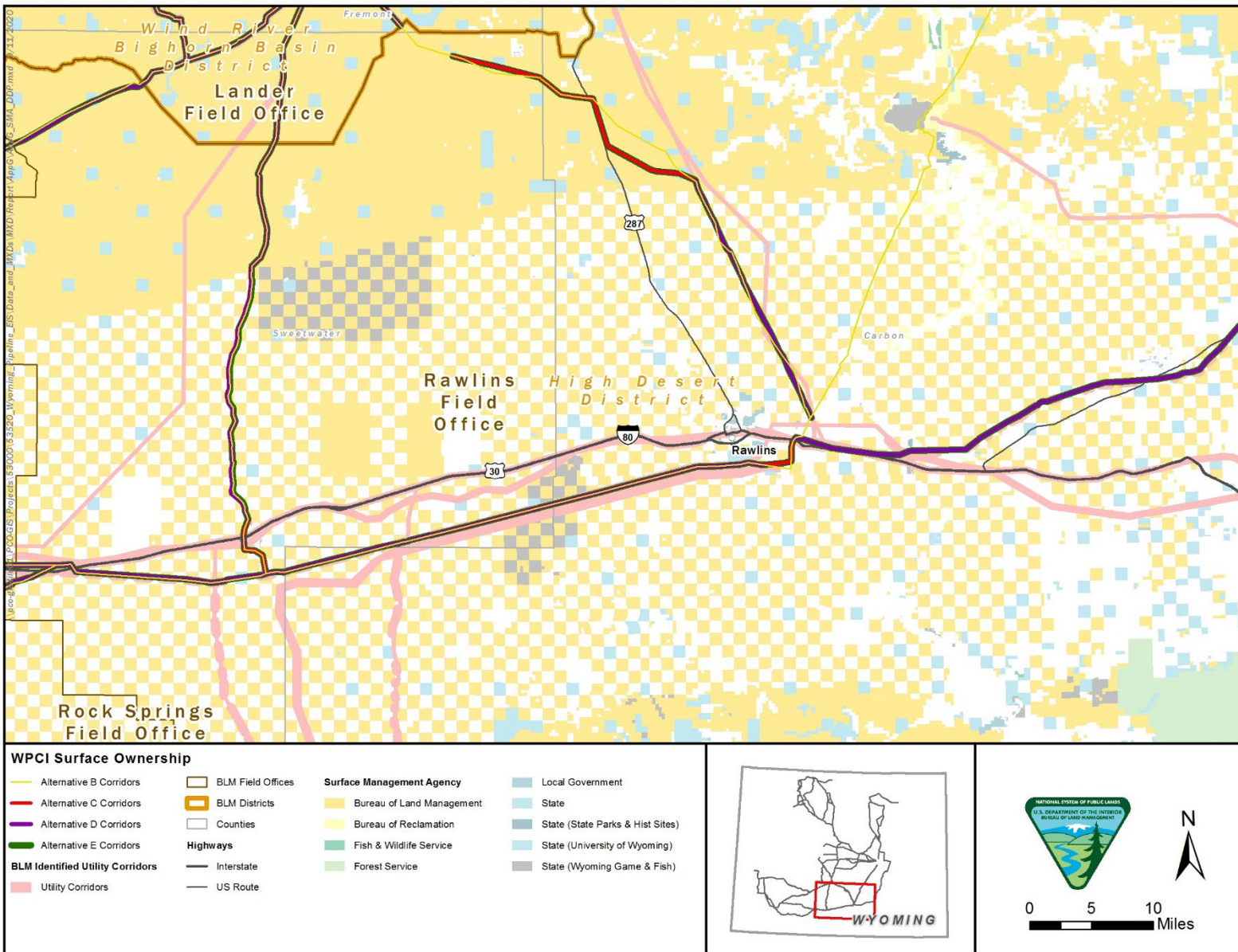


Figure G-13o. WPCI proposed corridors – Surface ownership (map 15 of 16).





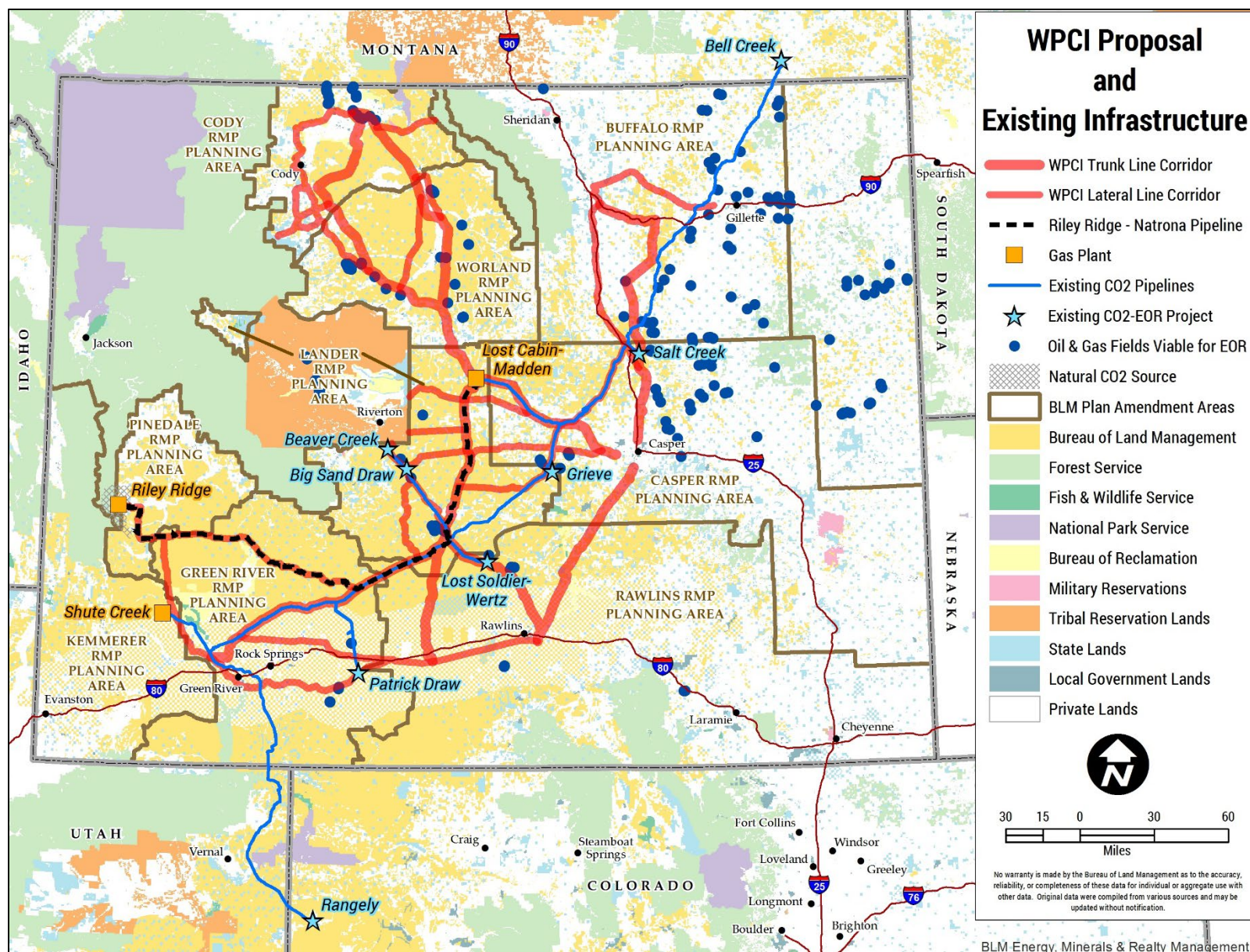


Figure G-14. Existing Infrastructure and Oil Fields that are Potential Candidates for CO<sub>2</sub>-EOR.

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## **APPENDIX H**

### **Past, Present, and Reasonably Foreseeable Future Actions**



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# INTRODUCTION

This section presents the cumulative effects associated with the proposed corridors, including 1) a general definition of cumulative effects, 2) elements that were considered in the cumulative effects analysis, and 3) the assessment approach.

Cumulative impact, as defined by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1508.7), is the effect on the environment that results from the incremental impact of the action when added to other past and present actions and reasonably foreseeable future actions (RFFAs), regardless of what agency (federal and non-federal) or person undertakes other such action. Cumulative impacts could result from individually minor, but collectively significant actions taking place over a period of time. The purpose of the cumulative effects analysis is to ensure that the decision-makers consider the full range of consequences of a Proposed Action and alternative routes, including the No Action alternative.

The Council on Environmental Quality has defined the resulting effects of a Proposed Action and its alternative routes as direct and indirect. Direct effects are caused by the Proposed Action and occur at the same time and place. Indirect effects also are caused by the Proposed Action but are later in time or farther removed in distance yet are still reasonably foreseeable (40 CFR 1508.8). Cumulative effects, discussed in this environmental impact statement (EIS), are the total effects on a given resources or ecosystem of all actions taken or proposed.

## Elements Considered in Cumulative Effects Analysis

The cumulative effects assessment process considered 1) scoping and resource issues; 2) cumulative effect time frames and the resources (or receptors) that could be affected by the Proposed Action and alternative routes; 3) the geographical area in which the impacts would occur; and 4) other past and present actions and RFFAs that have, or could be expected to cause, impacts to these resources when considered with development of the proposed corridors.

## Geographic and Temporal Scope

The geographic scope is the spatial extent where cumulative effects may occur on a resource. It is generally based on the natural boundaries of the resource affected. For the purposes of the analysis in this EIS, geographic scope is the state of Wyoming. The geographic scope is substantially larger for cumulative impacts than the study area for environmental consequences so that an area large enough to encompass likely effects from other projects on the same resource are considered.

The temporal scope is established by the time frame for cumulative effects issue—that is, the duration of short-term and long-term effects anticipated. The temporal scope for this analysis is the duration of potential development of the proposed corridors. Together, the geographic and temporal scopes make up the cumulative impact analysis area (CIAA).

## General Study Approach

In general, quantitative analyses were performed for issues where the relevant data were available for the CIAA. For purposes of this assessment, quantitative estimates of cumulative effects on resources are based on the estimated spatial extent of development for the proposed corridors and each past and present action and other RFFAs.

## **Past, Present, and Reasonably Foreseeable Future Actions**

In general, a cumulative action is a past, present, or other Proposed Action or RFFA that potentially has a cumulatively significant impact when combined with the Proposed Action. For purposes of this analysis, RFFAs are proposed projects or actions that have either applied for a permit from local, state, or federal authorities or which are publicly known.

### ***Past and Present Actions***

The primary past and present actions with surface disturbance affecting the resources analyzed in this EIS include mineral development; road development and other land development such as ROWs for pipelines, transmission lines or other developments. Other past and present actions, such as agriculture, livestock grazing, and vegetation treatments also may affect resources considered in this EIS. Table H-1 provides a comparison of current vegetation cover types with historical vegetation coverage across the state of Wyoming. As shown in Table H-1, there has been a loss of approximately 1.7-million acres (3%) of vegetation cover over the last 10 years, primarily in shrubland, desert scrub, grassland and forest-woodland cover types.

Table H-2 lists the past, present, and known RFFAs actions in the CIAA. Cumulatively, the projects listed in Table H-2 would result in 434,700 acres of surface disturbance. RFFA projects includes 34,863 proposed wells and associated oil and infrastructure, including pipelines; coal and uranium mining projects; solar and wind projects; and transmission line development. Table H-2 also includes several projects with countervailing impacts on some resources, such as vegetation managements projects, and land use planning projects that propose mineral withdrawals.

**Table H-1. Past and Present Vegetation Cover**

Cover Type	Current Coverage		10-year Historic Coverage		Change	
	Acres	Percent	Acres	Percent	Acres	Percent
Shrubland, desert scrub, grassland	47,284,685	75%	48,225,683	75%	940,998	2%
Riparian-wetland	436,486	1%	436,486	1%	-	0%
Agricultural	2,770,529	4%	2,781,754	4%	11,225	0%
Forest-woodland	10,525,663	17%	11,356,218	18%	830,555	8%
Cliff, rock, scree	300,095	0%	300,128	0%	33	0%
Developed, disturbed	1,340,960	2%	1,344,300	2%	3,340	0%
TOTAL	62,658,418	100%	64,444,569	100%	1,786,151	3%

Current coverage calculated using USGS National Gap Analysis Program (GAP) landcover data. Historic coverage calculated by using Landfire 10-year historic disturbance data (contained in the “change” column in this table) and adding to current coverage. Disturbance types include the following: clear-cut, disease, harvest, insects, insects/disease, mastication, non-disturbed, other mechanical, prescribed fire, thinning, unknown, weather, wildfire, and wildland fire. More information is can be found at <https://www.landfire.gov/DataDictionary/hdist.pdf>.

**Table H-2. Past and Present Actions and Known Reasonably Foreseeable Future Actions**

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>Buffalo Field Office</b>						
Hornbuckle 1 and 2 Oil and Gas Field Project	Drilling a maximum of 192 additional wells on the 48 well pads previously approved and evaluated in the original Hornbuckle environmental assessment (EA). Under the Proposed Action, some of the existing 48 pads could be used to drill up to six horizontal wells per pad, resulting in up to 192 additional wells.	Converse County	Unknown	1,920 acres	Table W-1 of BLM 2020a	Approved. Finding of no significant impact (FONSI) issued 2011.
Buffalo Field Office RMP EIS	Management actions as part of the resource management plan (RMP) EIS for the Buffalo Field Office and total project surface disturbance from reasonably foreseeable actions in the Buffalo planning area.	Johnson, Campbell, and Sheridan Counties	Buffalo planning area	130,621 acres of long-term from BLM actions; 357,048 total acres of long-term disturbance from non-BLM actions	Table 212 RFA-1A Appendix G of BLM 2012	Approved. Record of decision (ROD) issued in 2015.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>Casper Field Office</b>						
Converse County Oil and Gas Project	Up to 5,000 oil and gas wells on 1,500 pads over 10 years. Although actual operations are subject to change as the project proceeds, the operators would drill wells at an average rate of approximately 500 wells per year for 10 years.	Converse County	1,413,683 acres	52,667 acres	Table W-1 of BLM 2020a, BLM 2020b	The Draft EIS was issued January 2018 and a Supplemental Draft EIS in April 2019. The Final EIS is anticipated in March 2020.
Spearhead Ranch Exploratory Oil and Gas Development Project	Fifty-six new well pads that would accommodate 79 wells using all known drilling techniques, including—but not limited to—vertical, directional, and horizontal. The project proposal also includes installing equipment necessary to produce the resource if it proves to be commercially productive.	Converse County	240,268 acres	540 acres	Table W-1 of BLM 2020a	FONSI and decision record (DR) signed November 20, 2012.
Salt Creek Fieldwide Expansion, 2012 Update	Continued field-wide expansion in the Salt Creek Field through tertiary enhanced oil recovery using CO2 injection. The proposed project would be similar to existing waterflood activities; therefore, many of the existing facilities and infrastructure would be used as part of the Proposed Action.	Natrona County	10,917 acres	—	Table W-1 of BLM 2020a	EA published June 2012. FONSI and DR signed August 7, 2012.
Samson Scott Field Development Project	Up to 40 additional well pads on lands with primarily private surface and federal minerals, with 2 to 6 wells drilled from each pad, up to a maximum of 150 wells.	Converse County	44,619 acres	1,500 acres	Table W-1 of BLM 2020a	Approved. EA published June 2012. FONSI and DR signed August 7, 2012.
Combs Ranch Northwest Complex	Construct, drill, complete, produce, and reclaim 48 horizontal and/or vertical wells from eight well pads, two production pads, and an access road.	Converse County	3,724 acres	167 acres	Table W-1 of BLM 2020a	Approved. DR and FONSI signed September 13, 2016.
Devon Energy Production Company, L.P. Robbins Unit Area Oil and Gas Development Project	Construct, complete, produce, and reclaim up to 54 wells from 17 new well pads and two existing well pads including construction of access roads, pipelines, power lines, and well pad facilities.	Converse County	19,331 acres	254 acres	Table W-1 of BLM 2020a	Approved. DR and FONSI signed June 14, 2017.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
FDL Operating, LLC – Salt Creek FieldWide Expansion Environmental Assessment	Construct, drill, complete, produce, and reclaim 479 wells; includes 134 new wells, 68 reactivation wells, 177 recompletion wells, and 100 replacement wells, 128.8 miles of pipeline, and 9.5 miles of access roads.	Natrona County	21,952 acres	140 acres	Table W-1 of BLM 2020a	Approved. DR and FONSI signed July 18, 2017.
Highland Loop Road Project	Thirty-seven new well pads that would accommodate 40 wells using any and all known drilling techniques, including—but not limited to—vertical, directional, and horizontal. The project proposal would also include the installation of the necessary equipment to facilitate the production.	Converse County	385,900 acres	552 acres	Table W-1 of BLM 2020a	EA published November 2012. FONSI and DR signed November 20, 2012.
East Converse Project	Eighteen new well pads that would accommodate 21 wells using all known drilling techniques including—but not limited to—vertical, directional, and horizontal. The project proposal also includes installing equipment necessary to produce the resource if it proves to be commercially productive.	Converse and Niobrara Counties	125,520 acres	153 acres	Table W-1 of BLM 2020a	EA approved. EA published November 2012. FONSI and DR signed November 20, 2012.
Lost Springs Environmental Assessment	Balidor proposes to drill 96 horizontal oil and gas wells with nine drilling locations. Wells would be drilled from new and existing multi-well pads.	Converse and Niobrara Counties	Unknown	54 acres	Table W-1 of BLM 2020a	NEPA in process.
<b>Cody Field Office</b>						
Leavitt Reservoir Expansion Project	Expands the current reservoir from 45 to 203 surface acres with expanded capacity of 2.2 billion gallons of water to reduce late-season irrigation shortages.	Big Horn County	~150 acres	702	Table W-1 of BLM 2020a	Joint ROD issued October 2019.
Bighorn Basin Resource Management Plan Revision Proposed Resource Management Plan and Final EIS	Management actions as part of the RMP EIS for the Cody and Worland Field Office areas' total project surface disturbance from reasonably foreseeable actions in the planning area.	Big Horn, Hot Springs, Park, and Washakie Counties	Cody and Worland planning areas	140,175 total acres of short-term disturbance from BLM actions; 121,869 total acres reclaimed from BLM actions; 18,306 acres long-term disturbance from BLM actions; 357,048 total acres of long-term disturbance from non-BLM actions.	Table 4-1 of BLM 2015	Final EIS issued May 2015.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>Lander Field Office</b>						
Sheep Mountain Uranium Project	Mine will identify ore deposits and will extract approximately 1.0 to 2.0 million pounds of uranium per year during active operations. The anticipated project life is approximately 20 years from initial construction through final reclamation.	Fremont County	3,625 acres	357 acres	BLM 2018a; Table W-1 of BLM 2020a	Approved. ROD published January 6, 2017. No construction start date identified.
Gas Hills In Situ Recovery Uranium Project	Development of uranium deposits in the Gas Hills Project Area. Project involves recovery of uranium from the subsurface through chemical dissolution using wells constructed similarly to conventional water wells and requires installation of surface and subsurface infrastructure.	Freemont and Natrona counties	8,518 acres	1,300 acres	Table W-1 of BLM 2020a	Final EIS was released November 2013; ROD issued February 2014. No construction start date identified.
Grieve Unit CO2 Enhanced Oil Recovery Project	Ten crude oil and disposal wells and associated infrastructure on six new well pads in the existing Grieve Unit.	Natrona County	171 acres	171 acres		Under construction. DR and FONSI published July 2012.
West Bison Basin 8 Well Expansion	Richard Operation Co. submitted eight applications for permit to drill for the West Bison Basin Unit. The drilling locations would be constructed of approximately 0.75 acre each with additional 3 acres of disturbance for access roads, pipelines, and power lines that are co-located to reduce disturbance.	Fremont County	20 acres	32 acres	Table W-1 of BLM 2020a	Approved.
West Bison Basin Unit Secondary Oil Recovery	Implement a nine-well steam injection program in the West Bison Basin Unit for secondary oil recovery of an existing oil field.	Fremont County	20 acres	30 acres	Table W-1 of BLM 2020a	Approved.
Moneta Divide Natural Gas and Oil Development Project	Aethon Energy Operating LLC and Burlington Resources Oil and Gas Company LP propose to develop new and enhance existing facilities for the exploration and production of oil and gas resources.	Fremont, Natrona and Sweetwater Counties	265,758 acres	14,984 acres	4,250 pads in 265,758 acres = 1 pad per 62 acres 3.5 acres of disturbance per pad BLM 2018a; BLM 2020a	Final EIS issued February 2020; subsequent NEPA analysis, tiered to this EIS, will be required prior to construction.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>Pinedale Field Office</b>						
Jonah Infill Natural Gas Development Project	3,600 natural gas wells and associated facilities and infrastructure. The project would result in a maximum of 14,030 acres of surface disturbance at any given time, with an estimated new short-term disturbance of 16,125 acres and long-term disturbance of up to 6,020 acres.	Sublette County	30,500 acres	16,125 acres	450 wells in 30,550 acres = 1 well per 68 acres 5 acres of disturbance per well BLM 2018a; Table W-1 of BLM 2020a	Under construction from 2006 to 2019. ROD published March 14, 2006.
Pinedale Anticline Oil and Gas Exploration and Development Project	4,399 natural gas wells and associated facilities and infrastructure.	Sublette County	198,000 acres	12,886	600 pads in 197,949 acres = 1 pad per 330 acres 13.5 acres of disturbance per pad BLM 2018a; Table W-1 of BLM 2020a	Under construction from 2009 to 2025. ROD published September 2008.
Normally Pressured Lance Natural Gas Development Project	3,500 new oil and natural gas wells and associated facilities and infrastructure. Ten-year development period and 40-year project life.	Sublette County	140,940 acres	5,874 acres	1 pad per 160 acres 18 acres of disturbance per pad BLM 2018a	ROD published August 2018
LaBarge Platform Exploration and Development Project	838 oil and natural gas wells and associated facilities and infrastructure. The project would result in approximately 1,763 acres of short-term surface disturbance and 649 acres of long-term surface disturbance.	Lincoln and Sublette Counties	218,000 acres	1,763 acres	Table W-1 of BLM 2020a	Notice of intent (NOI) published August 3, 2009. Project on hold.
Black Swan Oil and Gas Project	Construct, drill, complete, produce, and reclaim 46 horizontal and/or vertical wells from 12 well pads and seven other production pads, including all attendant facilities.	Converse County	30,000 acres	93 acres	Table W-1 of BLM 2020a	Approved. DR and FONSI signed January 31, 2017.
<b>Rawlins Field Office</b>						
Rawlins RMP Amendment for Oil and Gas Leasing	The RFO has issued an NOI for an amendment to the Rawlins RMP. The EA amendment would remove an estimated 12,425 acres from future oil and gas leasing. These acres are located on federal mineral estate adjacent to the water sources for the municipalities of Rawlins, Saratoga, and Laramie, Wyoming.	Albany and Carbon Counties	12,425 acres		Table W-1 of BLM 2020a	In NEPA process. NOI issued July 21, 2014.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
Chokecherry and Sierra Madre Wind Farm	Two wind farm sites of mixed public and private land located about 10 miles south of Rawlins. It is estimated that each wind turbine would generate 1.5-3 megawatts of electricity, with a total capacity of 2,000 to 3,000 megawatts, which is enough energy to power nearly 1 million homes. Access roads, underground electric gathering lines, an overhead transmission line, and substations to interconnect the generated power to the electric grid are included in the proposal.	Carbon County	227,638 acres	1,545 acres	Table W-1 of BLM 2020a	EIS approved and site-specific NEPA completed, and construction has commenced. Construction is anticipated to take 4 to 5 years with an estimated project life of 30 years.
Continental Divide-Creston Natural Gas Project	8,950 additional natural gas wells drilled from 5,450 well pads, including 100 to 500 coal bed natural gas wells and associated facilities and infrastructure. The project would result in an approximate new disturbance of 43,808 acres.	Carbon and Sweetwater Counties	~1.1 million acres	43,808 acres	1 pad per 40 acres 3.9 acres of disturbance per pad	Approved. ROD published September 26, 2016. Construction to take place from 2017 through 2032.
Lost Creek Uranium In Situ Recovery Project Amendment	The proposed mine expansion consists of two submittals: 1) expansion of 5,750 acres to the existing Lost Creek Project area, and 2) expansion of in-situ mining operations deeper into the KM horizon, while increasing the extent of the mining in the existing HJ horizon, adding 78 acres of additional surface disturbance.	Sweetwater County	5,750 acres	1,415 acres	Disturbance boundaries received from BLM Rawlins Field Office BLM 2018a, Table W-1 of BLM 2020a	ROD issued March 2019.
Desolation Flats Natural Gas Development Project and Endurance/Barricade Gas Infrastructure Project	385 natural gas wells and associated facilities and infrastructure. The project would result in an estimated 4,900 acres of short-term surface disturbance.	Sweetwater and Carbon Counties	233,542 acres	4,900 acres	Table W-1 of BLM 2020a	Under construction from 2004 through 2024. EIS ROD published July 2004. Infrastructure EA DR and FONSI published November 2013.
Atlantic Rim Natural Gas Development Project	2,000 gas wells and associated facilities and infrastructure with a surface disturbance cap of 7,600 acres at any given time, with a total estimated disturbance of 13,600 acres.	Carbon County	270,080 acres	13,600 acres	Table W-1 of BLM 2020a	Under construction from 2007 through 2027. ROD published March 2007.



Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>Rock Springs Field Office</b>						
Luman Rim Natural Gas Project	58 natural gas wells and associated facilities and infrastructure. The project would result in an estimated 879 acres of new short-term surface disturbance and approximately 226 acres of long-term surface disturbance.	Sweetwater County	20,828 acres	879 acres	58 wells in 17.029 acres = 1 well per 294 acres 4.4 acres of disturbance per well BLM 2018a, Table W-1 of BLM 2020a	Under construction from 2011 through 2021. DR and FONSI published December 16, 2010.
Monelle Arch Oil and Gas Development Project	125 new wells (105 oil wells, 18 carbon-dioxide injector wells, and 2 water disposal wells) and associated facilities and infrastructure.	Sweetwater County	32,781 acres	238 acres	40 wells in 12,533 acres (Arch portion only) = 1 well per 313 acres 2 acres of disturbance per pad BLM 2018a, Table W-1 of BLM 2020a	Approved. DR and FONSI published December 19, 2013. Construction anticipated to take place from 2014 through 2023.
Bird Canyon Natural Gas Development Project	348 natural gas wells and associated infrastructure. Estimated surface disturbance would depend on the alternative selected in the ROD. NEPA analysis was initiated with an NOI in 2014, but the EIS is currently on hold by the proponent.	Sublette and Lincoln Counties	17,612 acres	714 acres	1 pad per 160 acres 3.8 acres of disturbance per pad BLM 2018a, BLM 2018b	As of August 2018, the EIS is on hold.
Bitter Creek Shallow Oil and Gas Project	61 oil and natural gas wells and associated facilities and infrastructure. The project resulted in an estimated 326 acres of surface disturbance.	Sweetwater County	17,961 acres	326 acres	61 wells in 18,628 acres = 1 well per 116 acres 60,000 square feet of disturbance per well BLM 2018a	DR and FONSI published June 2005.
Desolation Road Environmental Assessment	Drilling of up to 17 wells on up to five well pads located within 2 miles of the Adobe Town Wilderness Study Area.	Campbell and Converse Counties	117 acres	117 acres	BLM 2018b	As of August 2018, the EIS is on hold.
Horseshoe Basin Project	Proposed action proposes 20 new wells and associated infrastructure with approximately 40 acres of surface disturbance within the Horseshoe Basin Unit.	Sweetwater County	24,972 acres	40 acres	Table W-1 of BLM 2020a	In NEPA process.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
Table Rock Unit Oil and Gas Development Project	88 new wells, including 33 shallow oil wells, 20 deep gas wells, and up to 35 water disposal wells.	Sweetwater County	13,644 acres	880 acres	Table W-1 of BLM 2020a	Approved. Construction anticipated to take place from 2013 through 2027. DR and FONSI published January 24, 2012.
Black Butte Coal Lease Modification Environmental Assessment	Lease modification would add 448.6 acres of surface disturbance to the existing Black Butte coal lease.	Sweetwater County	448.6 acres	449 acres	Table W-1 of BLM 2020a, BLM 2017a	FONSI and DR issued June 2017.
Sweetwater Solar Energy Project	Sweetwater Solar, LLC, to construct, operate, maintain, and decommission the proposed Sweetwater Solar Energy Project. The 80-megawatt photovoltaic solar project would encompass approximately 703 acres, of which 638 acres are located on public land. The project would have an expected life of 30 years.	Sweetwater County	703 acres	–	Table W-1 of BLM 2020a	FONSI signed June 2018. Sweetwater Solar, LLC is set to start construction on the facility July 1, 2018, with an expected in-service date of February 2019.
<b>Worland Field Office</b>						
Alkali Creek Reservoir Project	Right-of-way (ROW) proposal for 294-acre reservoir on Alkali Creek and ancillary facilities across public and private land near Hyattville, Wyoming.	Big Horn County	603 acres	204 acres	BLM 2017b	ROD signed October 2019.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
<b>High Desert District</b>						
Riley Ridge to Natrona CO <sub>2</sub> Pipeline Project	Two ROW applications have been submitted to the BLM for this project to construct and operate a CO <sub>2</sub> pipeline system. One application for the Riley Ridge segment would include 31 miles of 16-inch pipeline from the existing Riley Ridge Treating Plant 18 miles southwest of Big Piney to a proposed sweetening plant 12 miles northeast of LaBarge. From the sweetening plant, a 24-inch pipeline would transport the remaining CO <sub>2</sub> 129 miles through Sublette and Sweetwater Counties to the Bairoil (Exxon) Interconnect 50 miles northwest of Rawlins. The Bairoil-to-Natrona segment would include 83 miles of 24-inch pipeline from the Bairoil Interconnect through Fremont and Natrona Counties to the existing Greencore Pipeline, where the project ends at the Natrona Hub 30 miles west of Casper.	Fremont, Sweetwater, Sublette, and Natrona Counties	243 miles	1,877 acres	Table W-1 of BLM 2020a, BLM 2019	ROD issued March 2019.
West Antelope 3 Coal Lease by Application Project	Application to lease a tract of federal coal for approximately 441 million tons of coal.	Campbell and Converse Counties	5,179,29 acres	3,508 acres	Table W-1 of BLM 2020a	NEPA in process. NOI published July 28, 2017.
<b>Statewide</b>						
Gateway West Transmission Line Project	Approximately 1,000 miles of new high-voltage transmission lines between the Windstar substation near Glenrock, Wyoming, and the Hemingway substation near Melba, Idaho. The project would include approximately 200 miles of 230-kilovolt lines in Wyoming and approximately 800 miles of 500-kilovolt lines in Wyoming and Idaho.	Project analysis area crosses Natrona, Carbon, Sweetwater, Lincoln, Albany, and Converse Counties	1,000 miles	2,441 acres	Table W-1 of BLM 2020a	Approved. ROD released November 14, 2013. Project scheduled for line segments to be completed in phases between 2019 and 2023.
Transwest Express Transmission Line Project	600-kilovolt, direct current transmission line designed to facilitate renewable energy delivery from Wyoming to the southwestern United States while providing an important regional upgrade to the western U.S. power grid. The project would interconnect with the existing transmission grid near Sinclair, Wyoming, and the Marketplace Hub in Boulder City, Nevada.	Carbon and Sweetwater Counties	725 miles	2,484 acres	Table W-1 of BLM 2020a	Approved. ROD released December 13, 2016. ROW grant released June 23, 2017.

Project Name	Project Description	Location	Project Area	Disturbance Acres	Development Assumptions for Analysis and Source	Status
Gateway South Transmission Line Project	500-kilovolt transmission line, approximately 400 miles in length (depending on the route that is selected), beginning at the planned Aeolus substation near Medicine Bow, Wyoming, and terminating at the Clover substation near Mona, Utah. The line would be constructed on a 250-foot-wide ROW to accommodate the construction and operation of the transmission line.	Sweetwater, Natrona, Converse, and Carbon Counties	400+ miles	1,500 acres	Table W-1 of BLM 2020a	Approved. ROD issued December 13, 2016.
Additional Lanes between Waltman and Shoshoni on U.S. Route 26 (Wyoming Department of Transportation Project No. N342047 and No. N341113)	Adding additional lanes between Waltman and Shoshoni on U.S. Route 26. Length of work: 25 miles.	Fremont County	25 miles	76 acres	25miles*5280*25 ft land width total (2 lanes)/43,560 = 76 acres Table W-1 of BLM 2020a, BLM 2018a	Construction proposed for fiscal years 2020 and 2022.
<b>U.S. Forest Service</b>						
Tie Flume Vegetation Management Project EA	Project to implement the 2005 Bighorn National Forest Land and Resource Management Plan by proposing vegetation treatments. Proposed action has five components: commercial harvesting, precommercial thinning, prescribed fire, wildlife habitat enhancement, and road and trail opportunities. These may include up to 4,700 acres of silvicultural harvesting treatments; up to 10 miles temporary logging roads; decommissioning up to 10.5 miles of system roads; converting 5.7 miles of roads to closed; converting 1 mile of roads to nonmotorized trails and construct 1 mile of motorized loop trail.	Big Horn National Forest	47,500 acres	—	Included based on location but no other disturbance info available. U.S. Department of Agriculture (USDA) 2020a	Draft EA released January 2020.
Research Natural Areas and Botanical Areas Mineral Withdrawal EA	Proposed withdrawal of research natural areas and botanical areas from mineral entry. Necessary part of RNA designation process. U.S. Forest Service recommendation to BLM, who makes the decision. Project not subject to the objection process.	Black Hills National Forest	4,828 acres in Wyoming	-	USDA 2019	NEPA in progress.

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## **APPENDIX I**

### **Reasonably Foreseeable Development Scenario and Projected Emissions**

#### **Oil And Gas Production and Carbon Dioxide Equivalent Calculations from Potential Increase in Carbon Dioxide Flooding**





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# REASONABLY FORESEEABLE DEVELOPMENT SCENARIO AND PROJECTED GREENHOUSE GAS EMISSIONS

## Reasonably Foreseeable Development Well Projections

To analyze impacts of various alternatives in the *Resource Management Plan Amendments/Environmental Impact Statement Wyoming Pipeline Corridor Initiative* (RMPs-EIS), the Bureau of Land Management (BLM) develops reasonably foreseeable development (RFD) well projections for lands in the RMP planning areas. The EISs for RMPs approved or amended in 2015 include updated RFDs. An RFD is the result of a technical analysis that projects the total number of wells that could be developed in a field office based upon known geologic and economic conditions, current development technology, and industry-provided data about future planned development. The RFDs may include oil wells, gas wells, and coalbed natural gas wells (CBNGs) and are projections over the life of the RMP, which is generally 20 years. This information indicates that on average, statewide, approximately 998 federal wells are predicted to be developed annually. RFDs for Wyoming RMP planning areas are shown in Table I-1.

**Table I-1. Reasonably Foreseeable Development for Wells for Wyoming**

Planning Area	RFD Federal Mineral Estate (number of wells)	RFD All Mineral Ownership Lands (number of wells)
Lander Field Office*	1,695	4,254
Buffalo Field Office†	4,767	11,018
Bighorn Basin District‡ (Cody and Worland Field Offices)	1,141	6,054
Greater Sage-Grouse Approved Resource Management Plan (RMP) Amendment§	12,355	14,818

\*2013 Lander RMP final EIS, Appendix T, pages 1649–1650

† 2015 Buffalo RMP final EIS, Appendix G

‡ 2015 Bighorn Basin final EIS at 4-107.

§ 2015 Greater Sage-Grouse Approved RMP Amendment final EIS at 4-8; includes Newcastle, Casper, Rock Springs, Rawlins, Pinedale, and Kemmerer Field Offices.

While the above estimates may include specific projections of CBNG development, CBNG plays in Wyoming are not currently active. Most CBNG wells are being plugged across the state; therefore, the RFD and any associated emission projections attributed to CBNG may be an overestimate.

Development of oil and gas in Wyoming is ongoing and continues to be a major source of emissions. Development density (wells per square mile) and the number of wells installed annually depend on a number of variables, including market trends, available technology (vertical, directional, or horizontal drilling), geology of the hydrocarbon-bearing zone, and the application of controlled surface use and no surface occupancy stipulations. As a result, the number of wells in the planning area that could potentially be put into production under a full-field development scenario is highly uncertain.

## Current Drilling Activity

From 2008 through 2018, an average of 745 wells were completed annually statewide (Table I-2). The total number of wells per year, per field office, can vary as economic conditions fluctuate and as new fields and drilling technologies are explored. From 2008 to 2018, the highest annual rate of well completions and total well completions has been in the Pinedale Field Office planning area. The second highest rate of well completions has occurred in the Buffalo Field Office planning area.

**Table I-2. Federal Well Activity in Wyoming**

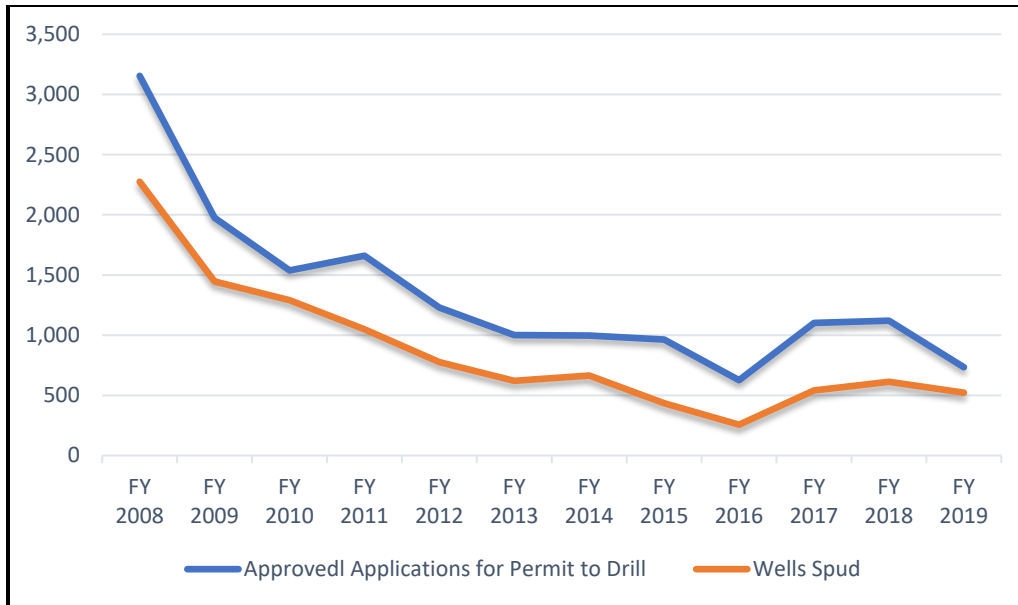
<b>Bureau of Land Management Federal Well Activity in Wyoming from October 1, 2008 to September 30, 2018</b>					
<b>Planning Document</b>	<b>Field Office</b>	<b>Approved Applications for Permit to Drill</b>	<b>Wells Started</b>	<b>Wells Completed for Production</b>	<b>Average Well Completions/Year</b>
Greater Sage-Grouse Approved Resource Management Plan (RMP) Amendment	Rock Springs Field Office	253	222	226	22.6
	Kemmerer Field Office	78	54	54	5.4
	Pinedale Field Office	3,372	3,230	3,128	312.8
	Rawlins Field Office	647	557	577	57.7
	Casper Field Office	1,956	871	554	55.4
	Newcastle Field Office	266	246	215	21.5
Buffalo RMP	Buffalo Field Office	2,168	2,208	2,450	245.0
Lander RMP	Lander Field Office	188	152	131	13.1
Bighorn Basin RMP	Cody Field Office	9	74	75	7.5
	Worland Field Office	5	55	36	3.6
<b>Statewide Annual Average</b>		<b>894.2</b>	<b>766.9</b>	<b>744.6</b>	<b>Average Number of Completions per Field Office/Year: 74.5</b>

Source: Automated Fluid Minerals Support System (as of September 30, 2019).

As shown in Table I-2, well completion rates (74.5 well completions at each of 10 field offices) are within current RFD projection (998 wells per year). A review of fiscal year 2019 data reveals that the annual statewide average for approved applications for permit to drill (APDs) has decreased to 877.9; wells started (spuds) has decreased to 740.6; wells completed for production has decreased to 719.2; and the annual average number of completions per field office has decreased to 71.9. Permitting levels across all field offices has decreased, with the exception of the Casper Field Office, where average annual well completions increased from 55.4 to 63.5.

The number of usable completions in the Buffalo Field Office has decreased over time as CBNG play has declined, but new horizontal drilling rates have increased in the Casper Field Office, in the southern portion of the Buffalo Field Office, and in discrete areas of the Rawlins Field Office and the Pinedale Field Office. The majority of new horizontal wells are produced from multiple mineral estates (private, state, and federal) due to the long reach of the wellbore and the large reservoir drainage area.

Similarly, as shown in Figure I-1, new wells spudded and the total number of APDs approved on federal lands in Wyoming has decreased over time and is approximately 27% of 2008 activity levels, although there was a slight increase between 2016 and 2017. The increase in permits likely corresponds to improved economic conditions during this time frame. Across the state, about 50% of federal APDs that are approved are actually spuds.



Source: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/oil-and-gas-statistics>

**Figure I-1. Wyoming federal applications for permit to drill approvals and federal wells started (spuds).**

## Projected Wyoming Greenhouse Gas Emissions

Using the RFDs, the BLM projected direct greenhouse gas (GHG) emissions typically associated with lease operations, including emissions from drilling, completion, operation, reclamation, and plugging. For more information on how emissions were calculated, refer to the Lander RMP final EIS, Air Quality Technical Support Document. Statewide direct carbon dioxide equivalent (CO<sub>2</sub>e) emissions from oil and gas operations for peak year 2020 are projected to be approximately 5.7 million metric tons (MMTs) (Greater Sage-Grouse Approved RMP Amendment 2015).

The BLM's Reservoir Management Group and field and district office staff provided information on production of oil and gas to support analysis in the RMP EISs. For each planning unit (or field office within a planning unit), the BLM developed total annual oil and gas production estimates for each RMP EIS alternative. The information used to develop these estimates included the number of wells drilled annually in each field office or planning unit by alternative (from the RFD), the percent of oil wells versus gas wells, the percent of wells completed, production decline curves for oil and gas wells, and estimates of cross-production from both oil and gas wells.

Appendix N, Social and Economic Impact Analysis Methodology of the 2015 Greater Sage-Grouse Approved RMP Amendment final EIS, describes the procedure to determine total federal production. For each year, the estimated number of wells completed was broken down into oil or gas wells based on the assumptions for the field office and planning unit provided by BLM staff. For each well type, the average first-year production rate (volume) from the annual decline curves for each field office and planning unit (as provided by RMG) was applied to determine the total production from first-year wells. For subsequent years, the appropriate average production rates from the decline curves were applied to the number of second-year wells, third-year wells, and so on. Total production was summed across all the well age cohorts for each year within the analysis period. Cross-production volume was calculated based on the numbers of wells of each type and the cross-production rates from the RMG and added to the total production volume.

Statewide projected indirect CO<sub>2</sub>e for the year 2020 was estimated at approximately 80.5 MMT.

## Existing Wyoming Greenhouse Gas Emissions

Outside of coal development, oil and gas development is the single largest contributor to total air pollutant emissions in Wyoming. The Center for Climate Strategies (CCS) prepared the *Wyoming Greenhouse Gas Inventory and Reference Case Projections 1990-2020* (2007) for the Wyoming Department of Environmental Quality (Center for Climate Strategies 2007). The CCS inventory report presents a draft GHG emission inventory and forecast from 1990 to 2020 for all federal and non-federal emission-generating activities in Wyoming. The inventory report provides an initial comprehensive understanding of Wyoming's current and possible future CO<sub>2</sub>e emissions. The information presented provides a starting point for estimating statewide emissions. Initial estimates may be revised with improvements to data sources and assumptions.

According to the CCS inventory report, activities in Wyoming accounted for approximately 56 MMT of gross CO<sub>2</sub>e emissions in 2005, an amount equal to 0.8% of total U.S. gross GHG emissions. These emission estimates focus on activities in Wyoming and are consumption based; they exclude emissions associated with electricity that are exported from the state. The inventory report concludes that Wyoming's gross GHG emissions increased 25% from 1990 to 2005, while national emissions rose by only 16% from 1990 to 2004; annual sequestration (removal) of GHG emissions due to forestry and other land uses in Wyoming were estimated at 36 MMT CO<sub>2</sub>e in 2005. The increase in per capita emissions in Wyoming from 1990 to 2005 is mostly due to increased activity in the fossil fuel industry, while national per capita emissions changed relatively little.

The analysis in the report indicates that Wyoming's per capita emission rate is more than four times greater than the national average of 25 MMT CO<sub>2</sub>e/year. This large difference between national and state per capita emissions occurs in most sectors, including electricity, industrial, fossil fuel production, transportation, industrial processes, and agriculture. The reasons for the higher per capita intensity in Wyoming are varied but include the state's strong fossil fuel production industry, other industries with high fossil fuel consumption intensity, large agricultural industries, large distances, and a low population base. No updates to the CCS inventory report have been completed, and it remains the best available synthesis of potential and future GHG emissions in Wyoming.

The CCS inventory report also indicates that emissions from the fossil fuel industry grew 101% from 1990 to 2005, largely attributable to the tight sand gas play in western Wyoming and the CBNG boom in the Powder River Basin. The report projected that these emissions would increase by an additional 10% between 2005 and 2020. The natural gas industry is the major contributor to both GHG emissions and emissions growth, with methane (CH<sub>4</sub>) emissions from coal mining second in terms of their overall contribution. A significant portion of the emissions attributed to the natural gas industry are due to vented gas from processing plants, many of which process gas used for injection in enhanced oil recovery (EOR) operations (CCS 2007).

The U.S. Energy Information Administration (EIA) is one of the primary agencies in charge of producing energy outlook forecasts for the United States. The EIA includes Wyoming as part of the Rocky Mountain Region in its forecasts, which also includes Colorado, Utah, Idaho, Nevada, Arizona, and portions of New Mexico. Wyoming borders Montana, which is part of the Northern Great Plains Region; the Northern Great Plains Region also includes North Dakota and South Dakota. Both the Rocky Mountain Region and Northern Great Plains Region should be used when discussing regional oil and gas trends, Wyoming's contribution to the oil and gas industry, and associated GHG emissions. As discussed in the EIA's *Assumptions to the Annual Energy Outlook: 2019: Oil and Gas Supply Module* (EIS 2019), total technically recoverable oil volumes in these two regions are 51.3 billion barrels (BBLs); the Rocky Mountain Region is expected to contribute 24.9 BBLs and the Northern Great Plains region is expected to contribute 26.4 BBLs. For dry natural gas, the two regions are thought to contain a total of

approximately 357.4 trillion cubic feet (TCF) of technically recoverable natural gas; of this total, the Rocky Mountain Region is estimated to contain 314.8 TCF and 42.6 TCF in the Northern Great Plains Region. The EIA estimates that current recoverable reserves in Wyoming, as of December 31, 2017, are 22,352 billion cubic feet of wet gas and 1,119 million barrels of crude oil plus lease condensate.

The Fourth National Climate Assessment (Chapter 22) projects that for the Northern Great Plains Region, which includes Wyoming, Montana, North Dakota, South Dakota, and Nebraska, conditions will become consistently warmer over the next 2 to 3 decades and coincide with less snowpack and high variability in annual water availability, with an overall small projected decrease in average streamflow (U.S. Global Change Research Program 2018). These climatic changes are projected to include an increase in the number of heavy precipitation events, excluding the mountain ranges located in southern Wyoming.

## Greenhouse Gas Emissions Statewide<sup>1</sup> and Nationwide on Federal Lands

The U.S. Geological Survey (USGS) has developed gross GHG emission estimates for all federal mineral estates in the United States and for each of the states that contain federal minerals, including those in the Rocky Mountain and Northern Great Plains Regions (Merrill et al. 2018). According to Merrill et al. (2018),

*The emissions estimates span a 10-year period (2005–14) and are reported for 28 States and two offshore areas. Nationwide emissions from all fossil fuels produced on Federal lands in 2014 were 1,279.0 million metric tons of carbon dioxide equivalent (MMT CO<sub>2</sub> Eq.) for carbon dioxide (CO<sub>2</sub>), 47.6 MMT CO<sub>2</sub> Eq. for methane (CH<sub>4</sub>), and 5.5 MMT CO<sub>2</sub> Eq. for nitrous oxide (N<sub>2</sub>O). Compared to 2005, the 2014 totals represent decreases in emissions for all three greenhouse gases (decreases of 6.1 percent for CO<sub>2</sub>, 10.5 percent for CH<sub>4</sub>, and 20.3 percent for N<sub>2</sub>O). Emissions from fossil fuels produced on Federal lands represent, on average, 23.7 percent of national emissions for CO<sub>2</sub>, 7.3 percent for CH<sub>4</sub>, and 1.5 percent for N<sub>2</sub>O over the 10 years included in this estimate.*

Merrill et. al (2018) also found that of the total nationwide emission estimates for federal minerals (1,279.53 MMT), federal lands in Wyoming contributed approximately 727,700,000 million tons (MT) (727.7 MMT) (57%) of CO<sub>2</sub>e in 2014. Compared to these nationwide federal totals, Wyoming's 2014 federal direct emissions from extractive activities in oil and natural gas systems were 9,089,000 MT (9.089 MMT) CO<sub>2</sub>e<sup>2</sup>, and indirect emissions from stationary combustion activities totaled 75,180,000 MT (75.18 MMT). In contrast, coal mining on federal lands in Wyoming in 2014 contributed approximately 3,800,000 MT (3.8 MMT) CO<sub>2</sub>e<sup>3</sup>, and combustion emissions from coal use and mobile combustion make up the remainder (Merrill et al. 2018).

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<sup>1</sup> As it relates to information presented in Merrill et al. and the Wyoming Oil and Gas Conservation Commission calculations, emissions are based on raw production information (rather than being produced from a well emission factor through an air quality analysis, which would have included specific BTU and therm information). They are generally presented in total CO<sub>2</sub>, even though the Environmental Protection Agency (EPA) Equivalencies Calculator reports them as CO<sub>2</sub>e. All calculated indirect emission estimates presented in this EIS were calculated using the EPA Equivalencies Calculator and are presented as CO<sub>2</sub>e. Regional emission comparisons are also presented in CO<sub>2</sub>e, even though they are reported as CO<sub>2</sub> in Merrill et al., for consistency purposes.

<sup>2</sup> Extractive emissions are defined as (at 22) “[e]missions of greenhouse gases from ongoing extraction activities and product transportation in the petroleum and natural gas industries,” and stationary combustion emissions are defined as “greenhouse gases produced during the combustion of fossil fuels in all nontransportation sectors, including electricity generation, industrial feedstocks, and residential and commercial heating.”

<sup>3</sup> The 2015 Buffalo RMP final EIS (at 694) estimates that in the year 2024 (year of peak emissions), direct GHGs from future coal mining in that planning area could be 10,157,051 MT of CO<sub>2</sub>e; the Buffalo Field Office has the largest share of coal production in the continental United States.

From 2005 through 2014, the highest CO<sub>2</sub>e emissions in Wyoming from federal fossil fuel development were in 2008 (the total was 889,500,000 MT or 889.5 MMT). Overall, nationwide emissions from federal lands decreased from 2005 levels in 2014: “The 2014 totals represent decreases in emissions for all three greenhouse gases compared to 2005 values, with reductions of 6.1 percent for CO<sub>2</sub>, 10.5 percent for CH<sub>4</sub>, and 20.3 percent for N<sub>2</sub>O [nitrous oxide].”

Merrill et al. (2018) also report the following:

*In general, as of 2014, Wyoming, offshore Gulf, New Mexico, Louisiana, and Colorado had the highest CO<sub>2</sub> emissions from fuels produced on Federal lands. . . . The CO<sub>2</sub> emissions attributed to Federal lands in Wyoming are 57 percent of the total from Federal lands in all States and offshore areas combined. Emissions estimates for the release of CH<sub>4</sub> are also highest for Federal lands in Wyoming (28 percent), followed by New Mexico, offshore Gulf, Colorado, and Utah. . . .*

*Unsurprisingly, the trends and relative magnitudes of the emissions estimated are roughly parallel to the Federal lands production volumes (U.S. Energy Information Administration, 2015a). States that produced the most fuel from Federal lands are associated with the highest emissions for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. These relationships vary slightly relative to absolute production because different fuels require different extraction methods and fuel uses emit varying amounts of greenhouse gases.*

While Merrill et al. (2018) report that emissions from all fossil fuel development on federal lands in Wyoming totaled approximately 727,700,000 MT/year, they also note that approximately 26,200,000 MT is sequestered by natural resources, such that the net total CO<sub>2</sub> emissions from fossil fuel production in Wyoming is 701,500,00 MT.

Using 2014 production information from the Wyoming Oil and Gas Conservation Commission (WOGCC), the BLM calculated that total estimated indirect CO<sub>2</sub>e emissions from all (federal, state, and private) oil and gas production in Wyoming was approximately 140,100,00 MT (140.1 MMT) CO<sub>2</sub>e, whereas total oil production was 75,706,328 BBLs and natural gas production was 1,966,535,934 million cubic feet (MCF<sup>4</sup>) (WOGCC 2014). Using the USGS 2014 federal indirect emissions estimate, federal emissions accounted for approximately 53.6% of all indirect oil and gas emissions in Wyoming. Further, total Wyoming indirect emissions are approximately 11% of the national total (1,279 MMT) described by Merrill et al. (2018). In 2018, also based on WOGCC production information for all lands, total indirect CO<sub>2</sub>e was 134,600,000 MT (total oil production was 83,538,577 BBLs and total natural gas production was 1,803,004,880 MCF) (EPA 2016).

## National Greenhouse Gas Emissions

The EPA’s *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017* discusses total U.S. CO<sub>2</sub> emissions (EPA 2019):

In 2017, total gross U.S. greenhouse gas emissions were 6,456.7 MMT, or million metric tons, of carbon dioxide (CO<sub>2</sub>) Eq. Total U.S. emissions have increased by 1.3 percent from 1990 to 2017, and emissions decreased from 2016 to 2017 by 0.5 percent (35.5 MMT CO<sub>2</sub> Eq.). The decrease in total greenhouse gas emissions between 2016 and 2017 was driven in part by a decrease in CO<sub>2</sub> emissions from fossil fuel combustion. The decrease in CO<sub>2</sub> emissions from fossil fuel combustion was a result of multiple factors, including a continued shift from coal to natural gas and increased use of renewable energy in the electric power sector, and milder weather that contributed to less overall electricity use.

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<sup>4</sup> Volumes converted to CO<sub>2</sub>e using the EPA Greenhouse Gas Equivalencies Calculator.



Relative to 1990, the baseline for this Inventory, gross emissions in 2017 are higher by 1.3 percent, down from a high of 15.7 percent above 1990 levels in 2007. Overall, net emissions in 2017 were 13.0 percent below 2005 levels as shown in Table ES-2.

Between 1990 and 2017, CO<sub>2</sub> emissions from fossil fuel combustion increased from 4,738.8 MMT CO<sub>2</sub> Eq. to 4,912.0 MMT CO<sub>2</sub> Eq., a 3.7 percent total increase over the twenty-eight-year period. Conversely, CO<sub>2</sub> emissions from fossil fuel combustion decreased by 832.8 MMT CO<sub>2</sub> Eq. from 2005 levels, a decrease of approximately 14.5 percent between 2005 and 2017. From 2016 to 2017, these emissions decreased by 49.9 MMT CO<sub>2</sub> Eq. (1.0 percent).

These data coincide with information from the EIA (Comstock 2019), which found the following:

[I]n 2015, natural gas emissions surpassed coal emissions, and the AEO [Annual Energy Outlook] 2019 Reference case projects that natural gas CO<sub>2</sub> emissions will continue increasing as natural gas use increases. The U.S. electric power sector—now the largest consuming sector for natural gas—has added generating capacity from natural gas in recent years and has used those power plants more often. Natural gas surpassed coal to become the most prevalent fuel used to generate electricity in the United States in 2016.

Other sectors have also increased their consumption of natural gas. By the mid-2020s, EIA projects that the industrial sector will again become the largest consumer of natural gas, using natural gas as a feedstock in chemical industries, as lease and plant fuel, for industrial heat and power applications, and for liquefied natural gas production. The residential and commercial sectors are also expected to continue using more natural gas. For instance, EIA projects that natural gas furnaces and boilers will be used in 55% of U.S. homes in 2050, an increase from their 49% share in 2018.

Coal CO<sub>2</sub> emissions in the United States are almost all from the electric power sector. Only about 10% of coal CO<sub>2</sub> emissions came from the industrial sector in 2018, and this percentage is expected to remain the same through 2050. Although the AEO2019 Reference case projects that nearly one-third of the existing coal-fired electricity generating capacity retires within the next decade, the surviving fleet is used more often, meaning coal's projected decline in electricity generation is less than the capacity retirements would suggest.

The EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sink, 1990-2017* (EPA 2019) and estimates of United States emissions from the Global Carbon Project show that on average, the United States accounts for 14.2% of the global fossil fuel CO<sub>2</sub> emissions on an annual basis (since 2015). According to the EIA, domestic energy production accounts for approximately 90% of all United States energy consumption. The three major fossil fuels—petroleum (28%), natural gas (31.8%), and coal (17.8%)—combined accounted for approximately 77.6% of this production, whereas renewable energy sources (12.7%) and nuclear electric power (9.6%) account for the remainder. The EIA's Annual Energy Outlook (AEO) report provides modeled projections of domestic energy markets through 2050, and includes cases with different assumptions regarding macroeconomic growth, world oil prices, technological progress, and energy policies (EIA 2020). In general, the last few years of baseline reference case data have shown strong domestic production coupled with relatively flat energy demand. The reference case estimates that natural gas consumption will grow the most on an absolute basis (0.8% annually), and nonhydroelectric renewables will grow the most on a percentage basis. Petroleum and coal annual growth is projected to be negative over the projection period, at -0.3% and -0.2% respectively. The outlook suggests that the United States could become a net energy exporter over the projection period in most cases.

In trying to model climate changes under varying scenarios, the Fourth National Climate Assessment concludes the following:

Ultimately, however, the magnitude of human-induced climate change depends less on the year-to-year emissions than it does on the net amount of carbon, or cumulative carbon, emitted into the atmosphere. The lower the atmospheric concentrations of CO<sub>2</sub>, the greater the chance that eventual global temperature change will not reach the high end temperature projections, or possibly remain below 3.6°F (2°C) relative to preindustrial levels.

The timing and magnitude of projected future climate change is uncertain due to the ambiguity introduced by human choices (as discussed in Section 4.2), natural variability, and scientific uncertainty, which includes uncertainty in both scientific modeling and climate sensitivity. (U.S. Global Change Research Program 2018)

Under various modelled scenarios where concentrations (of CO<sub>2</sub>) would exceed 400 parts per million sustained over long periods of time (tens of thousands of years), some of the projected changes could include increases in temperature in the range of 9 to 14 degree Fahrenheit (5 to 8 degrees Celsius) and conditions analogous to the Eocene, a time in which there were no permanent land-based ice sheets.

The assessment also found, however, that

Net cumulative CO<sub>2</sub> emissions in the industrial era will largely determine long-term, global mean temperature change. A robust feature of model climate change simulations is a nearly linear relationship between cumulative CO<sub>2</sub> emissions and global mean temperature increases, irrespective of the details and exact timing of the emissions pathway . . . Limiting and stabilizing warming to any level implies that there is a physical upper limit to the cumulative amount of CO<sub>2</sub> that can be added to the atmosphere. Eventually stabilizing the global temperature requires CO<sub>2</sub> emissions to approach zero. Thus, for a 3.6° F (2°C) or any desired global mean warming goal, an estimated range of cumulative CO<sub>2</sub> emissions from the current period onward can be calculated. The key sources of uncertainty for any compatible, forward looking CO<sub>2</sub> budget associated with a given future warming objective include the climate sensitivity, the response of the carbon cycle including feedbacks (for example, the release of GHGs from permafrost thaw), the amount of past CO<sub>2</sub> emissions, and the influence of past and future non-CO<sub>2</sub> species. (U.S. Global Change Research Program 2018)

# OIL AND GAS PRODUCTION AND CARBON DIOXIDE EQUIVALENT CALCULATIONS FROM POTENTIAL INCREASE IN CARBON DIOXIDE FLOODING

Table I-3. Total Carbon Dioxide Equivalent Calculations by Oil Field Based on 2019 Production Data

FLD_NAME	PROD 2019- Oil (barrels)	Additional EOR Oil recovery based on 17.26% (Using 2019 production)	Year 1 (barrels)	Year 2 (barrels)	Year 3 (barrels)	Year 4 (barrels)	Year 5 (barrels)	Year 6 (barrels)	Year 7 (barrels)	Year 8 (barrels)	Year 9 (barrels)	Year 10 (barrels)	Year 11 (barrels)	Year 12 (barrels)	Year 13 (barrels)	Year 14 (barrels)	Year 15 (barrels)	Year 16 (barrels)	Year 17 (barrels)	Year 18 (barrels)	Year 19 (barrels)	Year 20 (barrels)	Total by Field (barrels)	Million- barrels of Oil (MMBO)	Billion-cubic feet (BCF) of CO2 needed for EOR <sup>1</sup>	Million- metric tons (Mmt) of CO2 needed for EOR <sup>2</sup>		
ASH CREEK	3,147	543.2	3,690.2	4,233.3	4,776.5	5,319.7	5,862.9	6,406.0	6,949.2	7,492.4	8,035.5	8,578.7	8,423.7	8,268.7	8,113.8	7,958.8	7,803.8	7,648.8	7,493.8	7,338.8	7,183.8	7,028.8	138,762.4	0.13876238	0.009990891	0.000516529		
BONE PILE	52,058	8,985.2	61,043.2	70,028.4	79,013.6	87,998.8	96,984.1	105,969.3	114,954.5	123,939.7	132,924.9	141,910.1	139,346.3	136,782.5	134,218.7	131,654.8	129,091.0	126,527.2	123,963.4	121,399.6	118,835.8	116,272.0	2,295,421.7	2.295421672	0.16527036	0.008544478		
DEAD HORSE CREEK	8,617	1,487.3	10,104.3	11,591.6	13,078.9	14,566.2	16,053.5	17,540.8	19,028.1	20,515.4	22,002.6	23,489.9	23,065.6	22,641.2	22,216.8	21,792.4	21,368.0	20,943.7	20,519.3	20,094.9	19,670.5	19,246.1	379,954.1	0.379954062	0.027356692	0.001414341		
GAS DRAW	10,235	1,766.6	12,001.6	13,768.1	15,534.7	17,301.2	19,067.8	20,834.4	22,600.9	24,367.5	26,134.0	27,900.6	27,396.5	26,892.5	26,388.4	25,884.3	25,380.3	24,876.2	24,372.2	23,868.1	23,364.0	22,860.0	451,297.4	0.451297415	0.032493414	0.001679909		
HARTZOG DRAW	409,260	70,638.3	479,898.3	550,536.6	621,174.8	691,813.1	762,451.4	833,089.7	903,727.9	974,366.2	1,045,004.5	1,115,642.8	1,095,487.0	1,075,331.3	1,055,175.6	1,035,019.8	1,014,864.1	994,708.4	974,552.7	954,396.9	934,241.2	914,085.5	18,045,723.5	18.04572349	1.299292091	0.067173401		
HELDT DRAW	20,235	3,492.6	23,727.6	27,220.1	30,712.7	34,205.2	37,697.8	41,190.4	44,682.9	48,175.5	51,668.0	55,160.6	54,164.1	53,167.5	52,170.9	51,174.4	50,177.8	49,181.3	48,184.7	47,188.1	46,191.6	45,195.0	892,232.8	0.892232847	0.064240765	0.003321248		
HILIGHT	700,579	120,919.9	821,498.9	942,418.9	1,063,338.8	1,184,258.7	1,305,178.7	1,426,098.6	1,547,018.5	1,667,938.5	1,788,858.4	1,909,778.4	1,875,275.4	1,840,772.4	1,806,269.5	1,771,766.5	1,737,263.6	1,702,760.6	1,668,257.7	1,633,754.7	1,599,251.8	1,564,748.8	30,891,010.4	30.8910104	2.224152749	0.114988697		
HOUSE CREEK	2,511,690	433,517.7	2,945,207.7	3,378,725.4	3,812,243.1	4,245,760.8	4,679,278.5	5,112,796.2	5,546,313.9	5,979,831.6	6,413,349.2	6,846,866.9	6,723,168.2	6,599,469.5	6,475,770.8	6,352,072.0	6,228,373.3	6,104,674.6	5,980,975.9	5,857,277.2	5,733,578.4	5,609,879.7	110,749,311.5	110.7493115	7.973950429	0.412253237		
JEPSON DRAW	6,539	1,128.6	7,667.6	8,796.3	9,924.9	11,053.5	12,182.2	13,310.8	14,439.4	15,568.1	16,696.7	17,825.3	17,503.3	17,181.2	16,859.2	16,537.2	16,215.1	15,893.1	15,571.0	15,249.0	14,926.9	14,604.9	288,327.7	0.288327679	0.020759593	0.001073271		
KITTY	19,326	3,335.7	22,661.7	25,997.3	29,333.0	32,668.7	36,004.3	39,340.0	42,675.7	46,011.3	49,347.0	52,682.7	51,730.9	50,779.1	49,827.3	48,875.5	47,923.7	46,971.9	46,020.1	45,068.4	44,116.6	43,164.8	852,151.8	0.852151816	0.061354931	0.00317205		
LAZY B	8,818	1,522.0	10,340.0	11,862.0	13,384.0	14,905.9	16,427.9	17,949.9	19,471.9	20,993.9	22,515.9	24,037.9	23,603.6	23,169.3	22,735.0	22,300.8	21,866.5	21,432.2	20,997.9	20,563.6	20,129.4	19,695.1	388,816.9	0.388816864	0.027994814	0.001447332		
MEADOW CREEK	12,146	2,096.4	14,242.4	16,338.8	18,435.2	20,531.6	22,628.0	24,724.4	26,820.8	28,917.2	31,013.6	33,110.0	32,511.8	31,913.6	31,315.5	30,717.3	30,119.1	29,520.9	28,922.7	28,324.5	27,726.4	27,128.2	535,560.2	0.535560176	0.038560333	0.001993569		
MILL - GILLETTE	341	58.9	399.9	458.7	517.6	576.4	635.3	694.1	753.0	811.9	870.7	929.6	912.8	896.0	879.2	862.4	845.6	828.8	812.0	795.2	778.4	761.6	15,035.9	0.015035898	0.001082585	5.59696E-05		
PINE TREE	106,602	18,399.5	125,001.5	143,401.0	161,800.5	180,200.0	198,599.5	216,999.0	235,398.5	253,798.0	272,197.5	290,597.1	285,347.0	280,096.9	274,846.9	269,596.8	264,346.7	259,096.7	253,846.6	248,596.5	243,346.5	238,096.4	4,700,459.9	4.700459892	0.338433112	0.017496992		
PORCUPINE	11,859	2,046.9	13,905.9	15,952.7	17,999.6	20,046.5	22,093.3	24,140.2	26,187.0	28,233.9	30,280.8	32,327.6	31,743.6	31,159.5	30,575.5	29,991.4	29,407.4	28,823.4	28,239.3	27,655.3	27,071.2	26,487.2	522,905.3	0.522905329	0.037649184	0.001946463		
RECLUSE	4,012	692.5	4,704.5	5,396.9	6,089.4	6,781.9	7,474.4	8,166.8	8,859.3	9,551.8	10,244.2	10,936.7	10,739.1	10,541.5	10,343.9	10,146.4	9,948.8	9,751.2	9,553.6	9,356.0	9,158.4	8,960.8	176,903.3	0.176903295	0.012737037	0.000658505		
REEL	31,375	5,415.3	36,790.3	42,205.7	47,621.0	53,036.3	58,451.6	63,867.0	69,282.3	74,697.6	80,112.9	85,528.3	83,983.1	82,437.9	80,892.7	79,347.5	77,802.3	76,257.1	74,711.9	73,166.7	71,621.5	70,076.3	1,383,434.9	1.383434918	0.099607314	0.005149698		
RENO	68,885	11,889.6	80,774.6	92,664.1	104,553.7	116,443.2	128,332.8	140,222.3	152,111.9	164,001.4	175,891.0	187,780.5	184,388.0	180,995.4	177,602.9	174,210.4	170,817.9	167,425.3	164,032.8	160,640.3	157,247.7	153,855.2	3,037,383.7	3.037383723	0.218691628	0.011306357		
ROCK CREEK	14,148	2,441.9	16,589.9	19,031.9	21,473.8	23,915.8	26,357.7	28,799.7	31,241.6	33,683.6	36,125.5	38,567.4	37,870.7	37,173.9	36,477.1	35,780.3	35,083.6	34,386.8	33,690.0	32,993.2	32,296.4	31,599.7	623,835.4	0.623835449	0.044916152	0.002322165		
ROCKY POINT	66,624	11,499.3	78,123.3	89,622.6	101,121.9	112,621.2	124,120.5	135,619.8	147,119.1	158,618.4	170,117.7	181,617.0	178,335.8	175,054.7	171,773.5	168,492.3	165,211.1	161,930.0	158,648.8	155,367.6	152,086.4	148,805.2	2,937,688.2	2.937688222	0.211513552	0.010935251		
ROZET	77,127	13,312.1	90,439.1	103,751.2	117,063.4	130,375.5	143,687.6	156,999.7	170,311.8	183,624.0	196,936.1	210,248.2	206,449.8	202,651.3	198,852.9	195,054.4	191,256.0	187,457.5	183,659.1	179,860.7	176,062.2	172,263.8	3,400,802.7	3.400802706	0.244857795	0.012659148		
SANDBAR EAST	36,815	6,354.3	43,169.3	49,523.5	55,877.8	62,232.1	68,586.3	74,940.6	81,294.9	87,649.2	94,003.4	100,357.7	98,544.6	96,731.5	94,918.4	93,105.3	91,292.1	89,479.0	87,665.9	85,852.8	84,039.7	82,226.6	1,623,303.8	1.623303793	0.116877873	0.006042586		
SLATTERY	100,890	17,413.6	118,303.6	135,717.2	153,130.8	170,544.5	187,958.1	205,371.7	222,785.3	240,198.9	257,612.5	275,026.1	270,057.4	265,088.6	260,119.9	255,151.1	250,182.4	245,213.6	240,244.9	235,276.1	230,307.4	225,338.6	4,448,597.6	4.448597573	0.320299025	0.01655946		
SPRINGEN RANCH	11,545	1,992.7	13,537.7	15,530.3	17,523.0	19,515.7	21,508.3	23,501.0	25,493.7	27,486.3	29,479.0	31,471.7	30,903.1	30,334.5	29,765.9	29,197.3	28,628.8	28,060.2	27,491.6	26,923.0	26,354.4	25,785.8	509,060.0	0.509059956	0.036652317	0.001894925		
SUSSEX	13,745	2,372.4	16,117.4	18,489.8	20,862.2	23,234.5	25,606.9	27,979.3	30,351.7	32,724.1	35,096.5	37,468.9	36,791.9	36,115.0	35,438.1	34,761.1	34,084.2	33,407.3	32,730.4	32,053.4	31,376.5	30,699.6	606,065.8	0.606065751	0.043636734	0.002256019		
SUSSEX WEST	21,435	3,699.7	25,134.7	28,834.4	32,534.0	36,233.7	39,933.4	43,633.1	47,332.8	51,032.4	54,732.1	58,431.8	57,376.2	56,320.5	55,264.8	54,209.2	53,153.5	52,097.9	51,042.2	49,986.6	48,930.9	47,875.2	945,145.1	0.945145098	0.068050447	0.003518208		
TABLE MOUNTAIN	61,666	10,643.6	72,309.6	82,953.1	93,596.7	104,240.2	114,883.8	125,527.3	136,170.9	146,814.4	157,458.0	168,101.5	165,064.5	162,027.5	158,990.5	155,953.5	152,916.5	149,879.5	146,842.5	143,805.5	140,768.5	137,731.5	2,719,072.4	2.719072435	0.195773215	0.010121475		
TIMBER CREEK	152,446	26,312.2	178,758.2	205,070.4	231,382.5	257,694.7	284,006.9	310,319.1	336,631.3	362,943.4	389,255.6	415,567.8	408,060.0	400,552.1	393,044.3	385,536.4	378,028.6	370,520.7	363,012.9	355,505.0	347,997.2	340,489.4	6,721,884.3	6.721884287	0.483975669	0.025021542		
AUSTIN CREEK	4,529	781.7	5,310.7	6,092.4	6,874.1	7,655.8	8,437.5	9,219.2	10,000.9	10,782.6	11,564.3	12,346.1	12,123.0	11,900.0	11,676.9	11,453.9	11,230.8	11,007.8	10,784.7	10,561.7	10,338.6	10,115.6	199,699.7	0.199699657	0.014378375	0.000743362		
BIG MUDDY	14,413	2,487.7	16,900.7	19,388.4	21,876.1	24,363.7	26,851.4	29,339.1	31,826.8	34,314.5	36,802.2	39,289.8	38,580.0	37,870.2	37,160.4	36,450.5	35,740.7	35,030.9	34,321.0	33,611.2	32,901.4	32,191.6	635,520.2	0.635520238	0.045757457	0.002365661		
COLE CREEK	19,783	3,414.5	23,197.5	26,612.1	30,026.6	33,441.2	36,855.7	40,270.3	43,684.8	47,099.4	50,513.9	53,928.5	52,954.2	51,979.9	51,005.6	50,031.3	49,057.0	48,082.7	47,108.4	46,134.1	45,159.8	44,185.5	872,302.6	0.872302565	0.062805785	0.003247059		

FLD_NAME	PROD 2019- Oil (barrels)	Additional EOR Oil recovery based on 17.26% (Using 2019 production)	Year 1 (barrels)	Year 2 (barrels)	Year 3 (barrels)	Year 4 (barrels)	Year 5 (barrels)	Year 6 (barrels)	Year 7 (barrels)	Year 8 (barrels)	Year 9 (barrels)	Year 10 (barrels)	Year 11 (barrels)	Year 12 (barrels)	Year 13 (barrels)	Year 14 (barrels)	Year 15 (barrels)	Year 16 (barrels)	Year 17 (barrels)	Year 18 (barrels)	Year 19 (barrels)	Year 20 (barrels)	Total by Field (barrels)	Million- barrels of Oil (MMBO)	Billion-cubic feet (BCF) of CO2 needed for EOR <sup>1</sup>	Million- metric tons (Mmt) of CO2 needed for EOR <sup>2</sup>		
COLE CREEK SOUTH	13,274	2,291.1	15,565.1	17,856.2	20,147.3	22,438.4	24,729.5	27,020.6	29,311.6	31,602.7	33,893.8	36,184.9	35,531.2	34,877.5	34,223.7	33,570.0	32,916.3	32,262.5	31,608.8	30,955.1	30,301.3	29,647.6	585,297.7	0.585297692	0.042141434	0.002178712		
HORNBUCKLE	1,400,059	241,650.2	1,641,709.2	1,883,359.4	2,125,009.6	2,366,659.7	2,608,309.9	2,849,960.1	3,091,610.3	3,333,260.5	3,574,910.7	3,816,560.8	3,747,609.0	3,678,657.3	3,609,705.5	3,540,753.7	3,471,801.9	3,402,850.1	3,333,898.3	3,264,946.5	3,195,994.8	3,127,043.0	61,733,562.0	61.733562	4.444816464	0.229797011		
KAYE	50,359	8,692.0	59,051.0	67,742.9	76,434.9	85,126.9	93,818.8	102,510.8	111,202.7	119,894.7	128,586.7	137,278.6	134,798.5	132,318.4	129,838.2	127,358.1	124,877.9	122,397.8	119,917.7	117,437.5	114,957.4	112,477.2	2,220,506.7	2.220506742	0.159876485	0.008265614		
POISON SPIDER WEST	19,486	3,363.3	22,849.3	26,212.6	29,575.9	32,939.1	36,302.4	39,665.7	43,029.0	46,392.3	49,755.6	53,118.8	52,159.2	51,199.5	50,239.8	49,280.2	48,320.5	47,360.8	46,401.1	45,441.5	44,481.8	43,522.1	859,206.8	0.859206783	0.061862888	0.003198311		
POWELL	87,580	15,116.3	102,696.3	117,812.6	132,928.9	148,045.2	163,161.5	178,277.8	193,394.2	208,510.5	223,626.8	238,743.1	234,429.8	230,116.6	225,803.3	221,490.1	217,176.9	212,863.6	208,550.4	204,237.1	199,923.9	195,610.6	3,861,712.5	3.861712513	0.278043301	0.014374839		
SAGE SPRING CREEK	47,686	8,230.6	55,916.6	64,147.2	72,377.8	80,608.4	88,839.0	97,069.6	105,300.2	113,530.8	121,761.4	129,992.0	127,643.5	125,295.0	122,946.5	120,598.0	118,249.5	115,901.1	113,552.6	111,204.1	108,855.6	106,507.1	2,102,644.7	2.102644701	0.151390418	0.007826885		
SALT CREEK EAST	370	63.9	433.9	497.7	561.6	625.4	689.3	753.2	817.0	880.9	944.8	1,008.6	990.4	972.2	954.0	935.7	917.5	899.3	881.1	862.8	844.6	826.4	16,314.6	0.016314611	0.001174652	6.07295E-05		
SAND DUNES	38,442	6,635.1	45,077.1	51,712.2	58,347.3	64,982.4	71,617.4	78,252.5	84,887.6	91,522.7	98,157.8	104,792.9	102,899.7	101,006.4	99,113.2	97,219.9	95,326.7	93,433.5	91,540.2	89,647.0	87,753.8	85,860.5	1,695,044.0	1.695043988	0.122043167	0.006309632		
SCOTT	1,108,980	191,409.9	1,300,389.9	1,491,799.9	1,683,209.8	1,874,619.8	2,066,029.7	2,257,439.7	2,448,849.6	2,640,259.6	2,831,669.5	3,023,079.5	2,968,463.1	2,913,846.7	2,859,230.3	2,804,614.0	2,749,997.6	2,695,381.2	2,640,764.8	2,586,148.5	2,531,532.1	2,476,915.7	48,898,857.5	48.89885754	3.520717743	0.182021107		
SPEARHEAD RANCH	116,852	20,168.7	137,020.7	157,189.3	177,358.0	197,526.6	217,695.3	237,863.9	258,032.6	278,201.2	298,369.9	318,538.6	312,783.7	307,028.8	301,273.9	295,519.1	289,764.2	284,009.3	278,254.5	272,499.6	266,744.7	260,989.9	5,152,418.7	5.15241871	0.370974147	0.019179363		
STEINLE RANCH	3,014	520.2	3,534.2	4,054.4	4,574.6	5,094.9	5,615.1	6,135.3	6,655.5	7,175.7	7,695.9	8,216.2	8,067.7	7,919.3	7,770.9	7,622.4	7,474.0	7,325.5	7,177.1	7,028.7	6,880.2	6,731.8	132,897.9	0.132897939	0.009568652	0.000494699		
BYRON	349,511	60,325.6	409,836.6	470,162.2	530,487.8	590,813.4	651,139.0	711,464.6	771,790.2	832,115.8	892,441.4	952,767.0	935,553.8	918,340.7	901,127.6	883,914.4	866,701.3	849,488.2	832,275.0	815,061.9	797,848.8	780,635.6	15,411,178.4	15.41117838	1.109604843	0.05736657		
ELK BASIN	876,889	151,351.0	1,028,240.0	1,179,591.1	1,330,942.1	1,482,293.2	1,633,644.2	1,784,995.2	1,936,346.3	2,087,697.3	2,239,048.4	2,390,399.4	2,347,213.3	2,304,027.3	2,260,841.2	2,217,655.1	2,174,469.0	2,131,282.9	2,088,096.8	2,044,910.8	2,001,724.7	1,958,538.6	38,665,143.0	38.665143	2.783890296	0.143927128		
ELK BASIN SOUTH	24,493	4,227.5	28,720.5	32,948.0	37,175.5	41,403.0	45,630.5	49,858.0	54,085.4	58,312.9	62,540.4	66,767.9	65,561.7	64,355.4	63,149.1	61,942.9	60,736.6	59,530.4	58,324.1	57,117.8	55,911.6	54,705.3	1,079,983.2	1.079983154	0.077758787	0.004020129		
FRANNIE	141,982	24,506.1	166,488.1	190,994.2	215,500.3	240,006.4	264,512.5	289,018.6	313,524.7	338,030.7	362,536.8	387,042.9	380,050.4	373,057.9	366,065.4	359,072.9	352,080.4	345,087.9	338,095.4	331,102.9	324,110.4	317,117.9	6,260,489.5	6.260489451	0.45075524	0.023304046		
GARLAND	834,192	143,981.5	978,173.5	1,122,155.1	1,266,136.6	1,410,118.2	1,554,099.7	1,698,081.2	1,842,062.8	1,986,044.3	2,130,025.9	2,274,007.4	2,232,924.1	2,191,840.8	2,150,757.5	2,109,674.2	2,068,590.9	2,027,507.7	1,986,424.4	1,945,341.1	1,904,257.8	1,863,174.5	36,782,481.0	36.78248099	2.648338631	0.136919107		
SAGE CREEK	73,313	12,653.8	85,966.8	98,620.6	111,274.5	123,928.3	136,582.1	149,235.9	161,889.8	174,543.6	187,197.4	199,851.2	196,240.6	192,630.0	189,019.4	185,408.8	181,798.2	178,187.6	174,577.0	170,966.4	167,355.8	163,745.2	3,232,629.9	3.232629933	0.232749355	0.012033142		
Big Sand Draw	307,014	52,990.6	360,004.6	412,995.2	465,985.8	518,976.5	571,967.1	624,957.7	677,948.3	730,938.9	783,929.5	836,920.2	821,800.0	806,679.8	791,559.6	776,439.4	761,319.2	746,199.0	731,078.8	715,958.6	700,838.4	685,718.2	13,537,335.1	13.53733507	0.974688125	0.050391376		
Grieve	92,810	16,019.0	108,829.0	124,848.0	140,867.0	156,886.0	172,905.0	188,924.0	204,943.0	220,962.0	236,981.1	253,000.1	248,429.2	243,858.4	239,287.6	234,716.8	230,146.0	225,575.2	221,004.3	216,433.5	211,862.7	207,291.9	4,092,321.7	4.092321744	0.294647166	0.015233258		
CROOKS GAP	8,886	1,533.7	10,419.7	11,953.4	13,487.2	15,020.9	16,554.6	18,088.3	19,622.1	21,155.8	22,689.5	24,223.2	23,785.6	23,348.0	22,910.4	22,472.7	22,035.1	21,597.5	21,159.8	20,722.2	20,284.6	19,847.0	391,815.2	0.391815225	0.028210696	0.001458493		
FULLER RESERVOIR	2,833	489.0	3,322.0	3,811.0	4,299.9	4,788.9	5,277.9	5,766.9	6,255.8	6,744.8	7,233.8	7,722.8	7,583.2	7,443.7	7,304.2	7,164.7	7,025.1	6,885.6	6,746.1	6,606.6	6,467.1	6,327.5	124,917.0	0.124917008	0.008994025	0.000464991		
HAPPY SPRINGS	2,955	510.0	3,465.0	3,975.1	4,485.1	4,995.1	5,505.2	6,015.2	6,525.2	7,035.3	7,545.3	8,055.3	7,909.8	7,764.3	7,618.7	7,473.2	7,327.7	7,182.1	7,036.6	6,891.1	6,745.5	6,600.0	130,296.4	0.13029642	0.009381342	0.000485015		
PILOT BUTTE	20,895	3,606.5	24,501.5	28,108.0	31,714.4	35,320.9	38,927.4	42,533.9	46,140.3	49,746.8	53,353.3	56,959.8	55,930.7	54,901.6	53,872.6	52,843.5	51,814.5	50,785.4	49,756.3	48,727.3	47,698.2	46,669.1	921,334.6	0.921334585	0.06633609	0.003429576		
SAND DRAW NORTH	3,619	624.6	4,243.6	4,868.3	5,492.9	6,117.6	6,742.2	7,366.8	7,991.5	8,616.1	9,240.8	9,865.4	9,687.2	9,508.9	9,330.7	9,152.5	8,974.2	8,796.0	8,617.8	8,439.5	8,261.3	8,083.1	159,574.5	0.159574533	0.011489366	0.000594		
SHELDON	30,319	5,233.1	35,552.1	40,785.1	46,018.2	51,251.2	56,484.3	61,717.4	66,950.4	72,183.5	77,416.5	82,649.6	81,156.4	79,663.2	78,170.0	76,676.8	75,183.7	73,690.5	72,197.3	70,704.1	69,210.9	67,717.7	1,336,872.1	1.336872136	0.096254794	0.004976373		
STEAMBOAT BUTTE	330,135	56,981.3	387,116.3	444,097.6	501,078.9	558,060.2	615,041.5	672,022.8	729,004.1	785,985.4	842,966.7	899,948.0	883,689.1	867,430.2	851,171.4	834,912.5	818,653.6	802,394.7	786,135.8	769,876.9	753,618.0	737,359.2	14,556,821.9	14.55682188	1.048091176	0.054186314		
ANT HILLS NORTH	32,111	5,542.4	37,653.4	43,195.7	48,738.1	54,280.4	59,822.8	65,365.2	70,907.5	76,449.9	81,992.2	87,534.6	85,953.1	84,371.7	82,790.3	81,208.8	79,627.4	78,045.9	76,464.5	74,883.1	73,301.6	71,720.2	1,415,887.8	1.415887766	0.101943919	0.005270501		
BUCK CREEK	18,555	3,202.6	21,757.6	24,960.2	28,162.8	31,365.4	34,568.0	37,770.6	40,973.2	44,175.7	47,378.3	50,580.9	49,667.1	48,753.3	47,839.5	46,925.7	46,011.8	45,098.0	44,184.2	43,270.4	42,356.6	41,442.7	818,155.7	0.818155694	0.05890721	0.003045503		
CLARETON	53,939	9,309.9	63,248.9	72,558.7	81,868.6	91,178.5	100,488.4	109,798.2	119,108.1	128,418.0	137,727.8	147,037.7	144,381.3	141,724.8	139,068.4	136,411.9	133,755.5	131,099.0	128,442.5	125,786.1	123,129.6	120,473.2	2,378,361.6	2.378361627	0.171242037	0.008853213		
DONKEY CREEK	27,196	4,694.0	31,890.0	36,584.1	41,278.1	45,972.1	50,666.1	55,360.2	60,054.2	64,748.2	69,442.3	74,136.3	72,796.9	71,457.5	70,118.2	68,778.8	67,439.4	66,100.0	64,760.6	63,421.2	62,081.9	60,742.5	1,199,168.0	1.199168001	0.086340096	0.004463783		
KUMMERFIELD	8,497	1,466.6	9,963.6	11,430.2	12,896.7	14,363.3	15,829.9	17,296.5	18,763.1	20,229.7	21,696.2	23,162.8	22,744.4	22,325.9	21,907.4	21,488.9	21,070.5	20,652.0	20,233.5	19,815.1	19,396.6	18,978.1	374,662.8	0.374662837	0.026975724	0.001394645		
LANCE CREEK	41,379	7,142.0	48,521.0	55,663.0	62,805.0	69,947.1	77,089.1	84,231.1	91,373.1	98,515.1	105,657.1	112,799.2	110,761.3															

FLD_NAME	PROD 2019- Oil (barrels)	Additional EOR Oil recovery based on 17.26% (Using 2019 production)	Year 1 (barrels)	Year 2 (barrels)	Year 3 (barrels)	Year 4 (barrels)	Year 5 (barrels)	Year 6 (barrels)	Year 7 (barrels)	Year 8 (barrels)	Year 9 (barrels)	Year 10 (barrels)	Year 11 (barrels)	Year 12 (barrels)	Year 13 (barrels)	Year 14 (barrels)	Year 15 (barrels)	Year 16 (barrels)	Year 17 (barrels)	Year 18 (barrels)	Year 19 (barrels)	Year 20 (barrels)	Total by Field (barrels)	Million- barrels of Oil (MMBO)	Billion-cubic feet (BCF) of CO2 needed for EOR <sup>1</sup>	Million- metric tons (Mmt) of CO2 needed for EOR <sup>2</sup>		
SKULL CREEK	9,266	1,599.3	10,865.3	12,464.6	14,063.9	15,663.2	17,262.6	18,861.9	20,461.2	22,060.5	23,659.8	25,259.1	24,802.8	24,346.4	23,890.1	23,433.7	22,977.4	22,521.1	22,064.7	21,608.4	21,152.0	20,695.7	408,570.8	0.408570771	0.029417096	0.001520864		
Big Hand	15,475	2,671.0	18,146.0	20,817.0	23,488.0	26,158.9	28,829.9	31,500.9	34,171.9	36,842.9	39,513.9	42,184.9	41,422.7	40,660.6	39,898.5	39,136.3	38,374.2	37,612.1	36,849.9	36,087.8	35,325.7	34,563.5	682,347.6	0.682347581	0.049129026	0.002539971		
Dry Gulch	22,411	3,868.1	26,279.1	30,147.3	34,015.4	37,883.6	41,751.7	45,619.8	49,488.0	53,356.1	57,224.2	61,092.4	59,988.7	58,884.9	57,781.2	56,677.5	55,573.8	54,470.0	53,366.3	52,262.6	51,158.9	50,055.1	988,180.4	0.988180397	0.071148989	0.003678403		
Frisby South	27,425	4,733.6	32,158.6	36,892.1	41,625.7	46,359.2	51,092.8	55,826.3	60,559.9	65,293.4	70,027.0	74,760.6	73,409.9	72,059.2	70,708.6	69,357.9	68,007.3	66,656.6	65,305.9	63,955.3	62,604.6	61,254.0	1,209,265.4	1.209265422	0.08706711	0.00450137		
Glenrock South	25,405	4,384.9	29,789.9	34,174.8	38,559.7	42,944.6	47,329.5	51,714.4	56,099.3	60,484.2	64,869.1	69,254.0	68,002.9	66,751.7	65,500.5	64,249.3	62,998.2	61,747.0	60,495.8	59,244.6	57,993.4	56,742.3	1,120,196.5	1.120196465	0.080654145	0.004169819		
Halverson	40,305	6,956.6	47,261.6	54,218.3	61,174.9	68,131.6	75,088.2	82,044.9	89,001.5	95,958.1	102,914.8	109,871.4	107,886.4	105,901.5	103,916.5	101,931.5	99,946.5	97,961.5	95,976.5	93,991.5	92,006.5	90,021.5	1,777,190.3	1.777190259	0.127957699	0.006615413		
Lake Creek	16,495	2,847.0	19,342.0	22,189.1	25,036.1	27,883.1	30,730.2	33,577.2	36,424.3	39,271.3	42,118.3	44,965.4	44,153.0	43,340.6	42,528.3	41,715.9	40,903.5	40,091.2	39,278.8	38,466.4	37,654.1	36,841.7	727,323.0	0.727322995	0.052367256	0.002707387		
Luckey Ditch	82,800	14,291.3	97,091.3	111,382.6	125,673.8	139,965.1	154,256.4	168,547.7	182,839.0	197,130.2	211,421.5	225,712.8	221,635.0	217,557.1	213,479.3	209,401.5	205,323.6	201,245.8	197,168.0	193,090.1	189,012.3	184,934.5	3,650,945.4	3.650945377	0.262868067	0.013590279		
Moorcroft West	33,696	5,815.9	39,511.9	45,327.9	51,143.8	56,959.7	62,775.6	68,591.6	74,407.5	80,223.4	86,039.4	91,855.3	90,195.8	88,536.3	86,876.8	85,217.3	83,557.8	81,898.3	80,238.8	78,579.3	76,919.8	75,260.3	1,485,776.0	1.485776032	0.106975874	0.005530653		
Rattlesnake	19,171	3,308.9	22,479.9	25,788.8	29,097.7	32,406.7	35,715.6	39,024.5	42,333.4	45,642.3	48,951.2	52,260.1	51,316.0	50,371.8	49,427.7	48,483.5	47,539.4	46,595.2	45,651.1	44,706.9	43,762.7	42,818.6	845,317.3	0.845317317	0.060862847	0.003146609		
Raven Creek	37,627	6,494.4	44,121.4	50,615.8	57,110.3	63,604.7	70,099.1	76,593.5	83,087.9	89,582.4	96,076.8	102,571.2	100,718.1	98,865.0	97,011.9	95,158.8	93,305.7	91,452.6	89,599.5	87,746.4	85,893.3	84,040.2	1,659,107.7	1.65910775	0.119455758	0.006175863		
ESPY	23,973	4,137.7	28,110.7	32,248.5	36,386.2	40,524.0	44,661.7	48,799.4	52,937.2	57,074.9	61,212.7	65,350.4	64,169.7	62,989.1	61,808.4	60,627.8	59,447.1	58,266.5	57,085.8	55,905.2	54,724.5	53,543.9	1,057,054.5	1.057054511	0.076107925	0.00393478		
MAHONEY DOME	11,274	1,945.9	13,219.9	15,165.8	17,111.7	19,057.6	21,003.5	22,949.4	24,895.2	26,841.1	28,787.0	30,732.9	30,177.7	29,622.5	29,067.2	28,512.0	27,956.7	27,401.5	26,846.3	26,291.0	25,735.8	25,180.6	497,110.6	0.497110606	0.035791964	0.001850445		
QUEALY	21,649	3,736.6	25,385.6	29,122.2	32,858.9	36,595.5	40,332.1	44,068.7	47,805.3	51,541.9	55,278.6	59,015.2	57,949.0	56,882.8	55,816.6	54,750.4	53,684.2	52,618.0	51,551.8	50,485.6	49,419.4	48,353.2	954,581.1	0.954581117	0.06872984	0.003553333		
BRADY	13,508	2,331.5	15,839.5	18,171.0	20,502.4	22,833.9	25,165.4	27,496.9	29,828.4	32,159.8	34,491.3	36,822.8	36,157.5	35,492.3	34,827.0	34,161.8	33,496.5	32,831.3	32,166.0	31,500.7	30,835.5	30,170.2	595,615.6	0.595615582	0.042884322	0.002217119		
DESERT SPRINGS WEST	3,428	591.7	4,019.7	4,611.3	5,203.0	5,794.7	6,386.4	6,978.0	7,569.7	8,161.4	8,753.1	9,344.7	9,175.9	9,007.1	8,838.2	8,669.4	8,500.6	8,331.8	8,162.9	7,994.1	7,825.3	7,656.5	151,152.7	0.151152666	0.010882992	0.000562651		
BLACK MOUNTAIN	106,201	18,330.3	124,531.3	142,861.6	161,191.9	179,522.2	197,852.5	216,182.8	234,513.0	252,843.3	271,173.6	289,503.9	284,273.6	279,043.3	273,813.0	268,582.7	263,352.4	258,122.0	252,891.7	247,661.4	242,431.1	237,200.8	4,682,778.4	4.682778381	0.337160043	0.017431174		
COTTONWOOD CREEK	88,668	15,304.1	103,972.1	119,276.2	134,580.3	149,884.4	165,188.5	180,492.6	195,796.7	211,100.8	226,404.9	241,709.0	237,342.1	232,975.3	228,608.5	224,241.7	219,874.8	215,508.0	211,141.2	206,774.3	202,407.5	198,040.7	3,909,686.3	3.909686288	0.281497413	0.014553416		
GEBO	116,176	20,052.0	136,228.0	156,280.0	176,331.9	196,383.9	216,435.9	236,487.9	256,539.8	276,591.8	296,643.8	316,695.8	310,974.2	305,252.6	299,531.1	293,809.5	288,087.9	282,366.3	276,644.8	270,923.2	265,201.6	259,480.0	5,122,611.5	5.122611475	0.368828026	0.019068409		
GOLDEN EAGLE	28,685	4,951.0	33,636.0	38,587.1	43,538.1	48,489.1	53,440.2	58,391.2	63,342.2	68,293.2	73,244.3	78,195.3	76,782.6	75,369.9	73,957.2	72,544.5	71,131.7	69,719.0	68,306.3	66,893.6	65,480.9	64,068.2	1,264,823.3	1.264823287	0.091067277	0.004708178		
GRASS CREEK	786,897	135,818.4	922,715.4	1,058,533.8	1,194,352.3	1,330,170.7	1,465,989.1	1,601,807.5	1,737,626.0	1,873,444.4	2,009,262.8	2,145,081.2	2,106,327.2	2,067,573.1	2,028,819.1	1,990,065.0	1,951,311.0	1,912,556.9	1,873,802.9	1,835,048.8	1,796,294.8	1,757,540.7	34,697,076.9	34.69707686	2.498189534	0.129156399		
LITTLE SAND DRAW	21,282	3,673.3	24,955.3	28,628.5	32,301.8	35,975.1	39,648.4	43,321.6	46,994.9	50,668.2	54,341.5	58,014.7	56,966.6	55,918.5	54,870.4	53,822.2	52,774.1	51,726.0	50,677.9	49,629.8	48,581.6	47,533.5	938,398.8	0.938398786	0.067564713	0.003493096		
MURPHY DOME	86,275	14,891.1	101,166.1	116,057.1	130,948.2	145,839.3	160,730.3	175,621.4	190,512.5	205,403.5	220,294.6	235,185.7	230,936.7	226,687.7	222,438.7</													

1. 1 MMBO = 0.072 BCF of CO2 per Jones and Freye, in press.

2. 1 BCF of CO2 = 0.0517 Mmt of CO2, considering 1 cubic foot of CO2 (at 70° F and 1 atm) = 0.114 pounds (airproducts.com, 2020).

Table I-4. Total CO2e Calculations by Gas Field Based on 2019 Production Data

FLD_NAME	PROD 2019-Gas	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Annual Decline @6.2%	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
DESERT SPRINGS WEST	34960	6,034.1	2,541.6	40,994.1	47,028.2	53,062.3	59,096.4	65,130.5	71,164.6	77,198.7	83,232.8	89,266.9	95,301.0	92,759.3	90,217.7	87,676.1	85,134.4	82,592.8	80,051.2	77,509.5	74,967.9	72,426.3	69,884.6	
ASH CREEK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BYRON	12613	2,177.0	917.0	14,790.0	16,967.0	19,144.0	21,321.0	23,498.0	25,675.0	27,852.0	30,029.0	32,206.0	34,383.0	33,466.1	32,549.1	31,632.1	30,715.1	29,798.1	28,881.2	27,964.2	27,047.2	26,130.2	25,213.2	
POISON SPIDER WEST	71452	12,332.6	5,194.6	83,784.6	96,117.2	108,449.8	120,782.5	133,115.1	145,447.7	157,780.3	170,112.9	182,445.5	194,778.2	189,583.5	184,388.9	179,194.2	173,999.6	168,804.9	163,610.3	158,415.6	153,221.0	148,026.3	142,831.7	
Lucky Ditch	24186	4,174.5	1,758.4	28,360.5	32,535.0	36,709.5	40,884.0	45,058.5	49,233.0	53,407.5	57,582.0	61,756.5	65,931.0	64,172.7	62,414.3	60,656.0	58,897.6	57,139.3	55,380.9	53,622.6	51,864.2	50,105.9	48,347.5	
BUCK CREEK	44603	7,698.5	3,242.7	52,301.5	60,000.0	67,698.4	75,396.9	83,095.4	90,793.9	98,492.3	106,190.8	113,889.3	121,587.8	118,345.1	115,102.4	111,859.7	108,617.0	105,374.3	102,131.6	98,888.9	95,646.2	92,403.6	89,160.9	
MAHONEY DOME	2449	422.7	178.0	2,871.7	3,294.4	3,717.1	4,139.8	4,562.5	4,985.2	5,407.9	5,830.6	6,253.3	6,676.0	6,497.9	6,319.9	6,141.8	5,963.8	5,785.7	5,607.7	5,429.7	5,251.6	5,073.6	4,895.5	
QUEALY	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SPRINGEN RANCH	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
STEINLE RANCH	40571	7,002.6	2,949.6	47,573.6	54,576.1	61,578.7	68,581.2	75,583.8	82,586.3	89,588.9	96,591.4	103,594.0	110,596.5	107,647.0	104,697.4	101,747.9	98,798.3	95,848.7	92,899.2	89,949.6	87,000.1	84,050.5	81,100.9	
ELK BASIN SOUTH	111180	19,189.7	8,082.9	130,369.7	149,559.3	168,749.0	187,938.7	207,128.3	226,318.0	245,507.7	264,697.3	283,887.0	303,076.7	294,993.8	286,910.8	278,827.9	270,745.0	262,662.1	254,579.2	246,496.2	238,413.3	230,330.4	222,247.5	
HAPPY SPRINGS	1997	344.7	145.2	2,341.7	2,686.4	3,031.0	3,375.7	3,720.4	4,065.1	4,409.8	4,754.5	5,099.1	5,443.8	5,298.6	5,153.5	5,008.3	4,863.1	4,717.9	4,572.7	4,427.5	4,282.3	4,137.2	3,992.0	
SAND DRAW NORTH	20990	3,622.9	1,526.0	24,612.9	28,235.7	31,858.6	35,481.5	39,104.4	42,727.2	46,350.1	49,973.0	53,595.9	57,218.7	55,692.7	54,166.7	52,640.7	51,114.7	49,588.7	48,062.8	46,536.8	45,010.8	43,484.8	41,958.8	
KUMMERFIELD	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
GRASS CREEK	227134	39,203.3	16,512.9	266,337.3	305,540.7	344,744.0	383,947.3	423,150.6	462,354.0	501,557.3	540,760.6	579,964.0	619,167.3	602,654.4	586,141.5	569,628.5	553,115.6	536,602.7	520,089.8	503,576.9	487,064.0	470,551.1	454,038.1	
Halverson	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BONE PILE	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
DEAD HORSE CREEK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LAZY B	953	164.5	69.3	1,117.5	1,282.0	1,446.5	1,611.0	1,775.4	1,939.9	2,104.4	2,268.9	2,433.4	2,597.9	2,528.6	2,459.3	2,390.0	2,320.7	2,251.5	2,182.2	2,112.9	2,043.6	1,974.3	1,905.0	
RENO	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AUSTIN CREEK	3213	554.6	233.6	3,767.6	4,322.1	4,876.7	5,431.3	5,985.8	6,540.4	7,094.9	7,649.5	8,204.1	8,758.6	8,525.0	8,291.5	8,057.9	7,824.3	7,590.7	7,357.1	7,123.5	6,889.9	6,656.3	6,422.7	
SALT CREEK EAST	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ESPY	28274	4,880.1	2,055.6	33,154.1	38,034.2	42,914.3	47,794.4	52,674.5	57,554.6	62,434.6	67,314.7	72,194.8	77,074.9	75,019.4	72,963.8	70,908.3	68,852.7	66,797.2	64,741.6	62,686.0	60,630.5	58,574.9	56,519.4	
JEPSON DRAW	7697	1,328.5	559.6	9,025.5	10,354.0	11,682.5	13,011.0	14,339.5	15,668.0	16,996.5	18,325.0	19,653.5	20,982.0	20,422.4	19,862.9	19,303.3	18,743.7	18,184.1	17,624.5	17,065.0	16,505.4	15,945.8	15,386.2	
MILL - GILLETTE	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TABLE MOUNTAIN	9343	1,612.6	679.2	10,955.6	12,568.2	14,180.8	15,793.4	17,406.0	19,018.6	20,631.2	22,243.8	23,856.4	25,469.0	24,789.8	24,110.5	23,431.3	22,752.0	22,072.8	21,393.5	20,714.3	20,035.0	19,355.8	18,676.5	
CROOKS GAP	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Big Hand	10318	1,780.9	750.1	12,098.9	13,879.8	15,660.7	17,441.5	19,222.4	21,003.3	22,784.2	24,565.1	26,346.0	28,126.9	27,376.7	26,626.6	25,876.5	25,126.3	24,376.2	23,626.1	22,876.0	22,125.8	21,375.7	20,625.6	
Moorcroft West	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
HELDT DRAW	722	124.6	52.5	846.6	971.2	1,095.9	1,220.5	1,345.1	1,469.7	1,594.3	1,718.9	1,843.6	1,968.2	1,915.7	1,863.2	1,810.7	1,758.2	1,705.7	1,653.2	1,600.7	1,548.2	1,495.8	1,443.3	
FRANNIE	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
DONKEY CREEK	529	91.3	38.5	620.3	711.6	802.9	894.2	985.5	1,076.8	1,168.1	1,259.4	1,350.7	1,442.1	1,403.6	1,365.1	1,326.7	1,288.2	1,249.8	1,211.3	1,172.8	1,134.4	1,095.9	1,057.5	
GOLDEN EAGLE	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Dry Gulch	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

FLD_NAME	PROD 2019-Gas	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Annual Decline @6.2%	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Raven Creek	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SANDBAR EAST	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SLATTERY	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLE CREEK SOUTH	91	15.7	6.6	106.7	122.4	138.1	153.8	169.5	185.2	200.9	216.7	232.4	248.1	241.5	234.8	228.2	221.6	215.0	208.4	201.8	195.1	188.5	181.9	
SAGE CREEK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
GAS DRAW	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ROZET	4958	855.8	360.5	5,813.8	6,669.5	7,525.3	8,381.0	9,236.8	10,092.5	10,948.3	11,804.0	12,659.8	13,515.5	13,155.1	12,794.6	12,434.2	12,073.7	11,713.2	11,352.8	10,992.3	10,631.9	10,271.4	9,911.0	
TIMBER CREEK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Glenrock South	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SAGE SPRING CREEK	22434	3,872.1	1,631.0	26,306.1	30,178.2	34,050.3	37,922.4	41,794.5	45,666.7	49,538.8	53,410.9	57,283.0	61,155.1	59,524.1	57,893.1	56,262.1	54,631.2	53,000.2	51,369.2	49,738.2	48,107.3	46,476.3	44,845.3	
GARLAND	336615	58,099.7	24,472.3	394,714.7	452,814.5	510,914.2	569,014.0	627,113.7	685,213.5	743,313.2	801,413.0	859,512.7	917,612.5	893,140.2	868,667.9	844,195.5	819,723.2	795,250.9	770,778.6	746,306.3	721,834.0	697,361.7	672,889.3	
LITTLE SAND DRAW	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Rattlesnake	24297	4,193.7	1,766.4	28,490.7	32,684.3	36,878.0	41,071.6	45,265.3	49,459.0	53,652.6	57,846.3	62,040.0	66,233.6	64,467.2	62,700.8	60,934.4	59,167.9	57,401.5	55,635.1	53,868.7	52,102.3	50,335.8	48,569.4	
SHELDON	22910	3,954.3	1,665.6	26,864.3	30,818.5	34,772.8	38,727.1	42,681.3	46,635.6	50,589.9	54,544.1	58,498.4	62,452.7	60,787.1	59,121.5	57,455.9	55,790.3	54,124.7	52,459.2	50,793.6	49,128.0	47,462.4	45,796.8	
MURPHY DOME	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SLICK CREEK	28001	4,833.0	2,035.7	32,834.0	37,666.9	42,499.9	47,332.9	52,165.9	56,998.8	61,831.8	66,664.8	71,497.8	76,330.7	74,295.0	72,259.3	70,223.6	68,187.9	66,152.2	64,116.5	62,080.8	60,045.1	58,009.4	55,973.7	
MEADOW CREEK	181897	31,395.4	13,224.1	213,292.4	244,687.8	276,083.3	307,478.7	338,874.1	370,269.5	401,665.0	433,060.4	464,455.8	495,851.2	482,627.1	469,403.0	456,178.8	442,954.7	429,730.6	416,506.4	403,282.3	390,058.2	376,834.1	363,609.9	
BIG MUDDY	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COLE CREEK	9936	1,715.0	722.4	11,651.0	13,365.9	15,080.9	16,795.8	18,510.8	20,225.7	21,940.7	23,655.6	25,370.6	27,085.5	26,363.2	25,640.8	24,918.5	24,196.1	23,473.7	22,751.4	22,029.0	21,306.7	20,584.3	19,861.9	
SAND DUNES	164744	28,434.8	11,977.1	193,178.8	221,613.6	250,048.4	278,483.3	306,918.1	335,352.9	363,787.7	392,222.5	420,657.3	449,092.1	437,115.1	425,138.0	413,160.9	401,183.8	389,206.7	377,229.6	365,252.5	353,275.5	341,298.4	329,321.3	
TORCHLIGHT	11926	2,058.4	867.0	13,984.4	16,042.9	18,101.3	20,159.7	22,218.1	24,276.6	26,335.0	28,393.4	30,451.8	32,510.3	31,643.2	30,776.2	29,909.2	29,042.1	28,175.1	27,308.1	26,441.0	25,574.0	24,707.0	23,839.9	
Frisby South	13582	2,344.3	987.4	15,926.3	18,270.5	20,614.8	22,959.0	25,303.3	27,647.5	29,991.8	32,336.0	34,680.3	37,024.5	36,037.1	35,049.7	34,062.2	33,074.8	32,087.4	31,100.0	30,112.5	29,125.1	28,137.7	27,150.3	
Lake Creek	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
STEAMBOAT BUTTE	48241	8,326.4	3,507.2	56,567.4	64,893.8	73,220.2	81,546.6	89,873.0	98,199.4	106,525.8	114,852.2	123,178.6	131,505.0	127,997.8	124,490.6	120,983.4	117,476.3	113,969.1	110,461.9	106,954.7	103,447.5	99,940.4	96,433.2	
MUSH CREEK	6947	1,199.1	505.1	8,146.1	9,345.1	10,544.2	11,743.2	12,942.3	14,141.3	15,340.4	16,539.4	17,738.5	18,937.5	18,432.5	17,927.4	17,422.4	16,917.3	16,412.2	15,907.2	15,402.1	14,897.1	14,392.0	13,887.0	
BLACK MOUNTAIN	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ROCKY POINT	17576	3,033.6	1,277.8	20,609.6	23,643.2	26,676.9	29,710.5	32,744.1	35,777.7	38,811.3	41,844.9	44,878.6	47,912.2	46,634.4	45,356.6	44,078.8	42,801.0	41,523.2	40,245.4	38,967.6	37,689.8	36,412.0	35,134.2	
SUSSEX WEST	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
FULLER RESERVOIR	90803	15,672.6	6,601.5	106,475.6	122,148.2	137,820.8	153,493.4	169,166.0	184,838.6	200,511.2	216,183.8	231,856.4	247,529.0	240,927.5	234,326.0	227,724.5	221,123.0	214,521.5	207,920.1	201,318.6	194,717.1	188,115.6	181,514.1	
GEBO	3636	627.6	264.3	4,263.6	4,891.1	5,518.7	6,146.3	6,773.9	7,401.4	8,029.0	8,656.6	9,284.2	9,911.7	9,647.4	9,383.1	9,118.7	8,854.4	8,590.0	8,325.7	8,061.3	7,797.0	7,532.7	7,268.3	
POWELL	1025352	176,975.8	74,544.3	1,202,327.8	1,379,303.5	1,556,279.3	1,733,255.0	1,910,230.8	2,087,206.5	2,264,182.3	2,441,158.0	2,618,133.8	2,795,109.6	2,720,565.2	2,646,020.9	2,571,476.6	2,496,932.3	2,422,387.9	2,347,843.6	2,273,299.3	2,198,755.0	2,124,210.7	2,049,666.3	
PILOT BUTTE	12035	2,077.2	875.0	14,112.2	16,189.5	18,266.7	20,344.0	22,421.2	24,498.4	26,575.7	28,652.9	30,730.2	32,807.4	31,932.5	31,057.5	30,182.5	29,307.6	28,432.6	27,557.7	26,682.7	25,807.7	24,932.8	24,057.8	
LANCE CREEK	36294	6,264.3	2,638.6	42,558.3	48,822.7	55,087.0	61,351.4	67,615.7	73,880.1	80,144.4	86,408.8	92,673.1	98,937.4	96,298.8	93,660.2	91,021.6	88,383.0	85,744.4	83,105.7	80,467.1	77,828.5	75,189.9	72,551.3	
BRADY	341327	58,913.0	24,814.9	400,240.0	459,153.1	518,066.1	576,979.2	635,892.2	694,805.2	753,718.3	812,631.3	871,544.4	930,457.4	905,642.5	880,827.6	856,012.8	831,197.9	806,383.0	781,568.1	756,753.2	731,938.3	707,123.5	682,308.6	
RECLUSE	9645	1,664.7	701.2	11,309.7	12,974.5	14,639.2	16,303.9	17,968.6	19,633.4	21,298.1	22,962.8	24,627.5	26,292.3	25,591.1	24,889.9	24,188.7	23,487.5	22,786.3	22,085.1	21,383.8	20,682.6	19,981.4	19,280.2	
SKULL CREEK	241	41.6	17.5	282.6	324.2	365.8	407.4	449.0	490.6	532.2	573.8	615.4	657.0	639.4	621.9	604.4	586.9	569.4	551.8	534.3	516.8	499.3	481.8	

FLD_NAME	PROD 2019-Gas	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Annual Decline @6.2%	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
KAYE	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SUSSEX	42123	7,270.4	3,062.4	49,393.4	56,663.9	63,934.3	71,204.7	78,475.1	85,745.6	93,016.0	100,286.4	107,556.9	114,827.3	111,764.9	108,702.5	105,640.1	102,577.7	99,515.3	96,452.9	93,390.5	90,328.2	87,265.8	84,203.4	
ELK BASIN	3204628	553,118.8	232,980.3	3,757,746.8	4,310,865.6	4,863,984.4	5,417,103.2	5,970,222.0	6,523,340.8	7,076,459.5	7,629,578.3	8,182,697.1	8,735,815.9	8,502,835.6	8,269,855.3	8,036,875.0	7,803,894.7	7,570,914.4	7,337,934.1	7,104,953.8	6,871,973.5	6,638,993.2	6,406,012.9	
CLARETON	112908	19,487.9	8,208.5	132,395.9	151,883.8	171,371.8	190,859.7	210,347.6	229,835.5	249,323.4	268,811.4	288,299.3	307,787.2	299,578.7	291,370.1	283,161.6	274,953.0	266,744.5	258,535.9	250,327.4	242,118.8	233,910.3	225,701.7	
PORCUPINE	207067	35,739.8	15,054.0	242,806.8	278,546.5	314,286.3	350,026.1	385,765.8	421,505.6	457,245.3	492,985.1	528,724.9	564,464.6	549,410.6	534,356.6	519,302.6	504,248.6	489,194.5	474,140.5	459,086.5	444,032.5	428,978.5	413,924.4	
HARTZOG DRAW	100968	17,427.1	7,340.5	118,395.1	135,822.2	153,249.2	170,676.3	188,103.4	205,530.5	222,957.5	240,384.6	257,811.7	275,238.8	267,898.3	260,557.8	253,217.3	245,876.8	238,536.3	231,195.8	223,855.3	216,514.8	209,174.3	201,833.8	
KITTY	2287	394.7	166.3	2,681.7	3,076.5	3,471.2	3,865.9	4,260.7	4,655.4	5,050.2	5,444.9	5,839.6	6,234.4	6,068.1	5,901.8	5,735.6	5,569.3	5,403.0	5,236.8	5,070.5	4,904.2	4,738.0	4,571.7	
COTTONWOOD CREEK	207828	35,871.1	15,109.3	243,699.1	279,570.2	315,441.3	351,312.5	387,183.6	423,054.7	458,925.8	494,796.9	530,668.0	566,539.1	551,429.8	536,320.4	521,211.1	506,101.7	490,992.4	475,883.1	460,773.7	445,664.4	430,555.0	415,445.7	
HILIGHT	3596116	620,689.6	261,441.9	4,216,805.6	4,837,495.2	5,458,184.9	6,078,874.5	6,699,564.1	7,320,253.7	7,940,943.4	8,561,633.0	9,182,322.6	9,803,012.2	9,541,570.3	9,280,128.3	9,018,686.4	8,757,244.4	8,495,802.5	8,234,360.5	7,972,918.6	7,711,476.6	7,450,034.7	7,188,592.7	
HOUSE CREEK	2691904	464,622.6	195,704.7	3,156,526.6	3,621,149.3	4,085,771.9	4,550,394.5	5,015,017.2	5,479,639.8	5,944,262.4	6,408,885.0	6,873,507.7	7,338,130.3	7,142,425.7	6,946,721.0	6,751,016.4	6,555,311.7	6,359,607.0	6,163,902.4	5,968,197.7	5,772,493.1	5,576,788.4	5,381,083.8	
PINE TREE	220834	38,115.9	16,054.9	258,949.9	297,065.9	335,181.8	373,297.8	411,413.7	449,529.7	487,645.6	525,761.6	563,877.5	601,993.5	585,938.6	569,883.7	553,828.8	537,773.9	521,719.0	505,664.1	489,609.2	473,554.3	457,499.4	441,444.5	
REEL	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ROCK CREEK	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
HORNBUCKLE	3434807	592,847.7	249,714.6	4,027,654.7	4,620,502.4	5,213,350.1	5,806,197.8	6,399,045.4	6,991,893.1	7,584,740.8	8,177,588.5	8,770,436.2	9,363,283.9	9,113,569.3	8,863,854.7	8,614,140.1	8,364,425.5	8,114,710.9	7,864,996.3	7,615,281.7	7,365,567.2	7,115,852.6	6,866,138.0	
SCOTT	1865588	322,000.5	135,630.5	2,187,588.5	2,509,589.0	2,831,589.5	3,153,590.0	3,475,590.4	3,797,590.9	4,119,591.4	4,441,591.9	4,763,592.4	5,085,592.9	4,949,962.4	4,814,331.9	4,678,701.4	4,543,070.9	4,407,440.5	4,271,810.0	4,136,179.5	4,000,549.0	3,864,918.5	3,729,288.0	
SPEARHEAD RANCH	620337	107,070.2	45,099.2	727,407.2	834,477.3	941,547.5	1,048,617.7	1,155,687.8	1,262,758.0	1,369,828.2	1,476,898.3	1,583,968.5	1,691,038.7	1,645,939.4	1,600,840.2	1,555,740.9	1,510,641.7	1,465,542.4	1,420,443.2	1,375,344.0	1,330,244.7	1,285,145.5	1,240,046.2	
ANT HILLS NORTH	64400	11,115.4	4,682.0	75,515.4	86,630.9	97,746.3	108,861.8	119,977.2	131,092.6	142,208.1	153,323.5	164,439.0	175,554.4	170,872.4	166,190.5	161,508.5	156,826.6	152,144.6	147,462.7	142,780.7	138,098.7	133,416.8	128,734.8	
Big Sand Draw	0	15,829.4	981.4	15,829.4	31,658.8	47,488.2	63,317.5	79,146.9	94,976.3	110,805.7	126,635.1	142,464.5	158,293.9	157,312.4	156,331.0	155,349.6	154,368.2	153,386.8	152,405.3	151,423.9	150,442.5	149,461.1	148,479.6	
Grieve	11321640	1,954,115.1	823,096.8	13,275,755.1	15,229,870.1	17,183,985.2	19,138,100.3	21,092,215.3	23,046,330.4	25,000,445.4	26,954,560.5	28,908,675.6	30,862,790.6	30,039,693.8	29,216,597.0	28,393,500.2	27,570,403.4	26,747,306.6	25,924,209.8	25,101,112.9	24,278,016.1	23,454,919.3	22,631,822.5	
			Sum	36,085,130.9	41,410,154.7	46,735,178.6	52,060,202.4	57,385,226.3	62,710,250.1	68,035,274.0	73,360,297.8	78,685,321.7	84,010,345.5	81,773,067.4	79,535,789.3	77,298,511.2	75,061,233.1	72,823,955.0	70,586,676.9	68,349,398.8	66,112,120.6	63,874,842.5	61,637,564.4	1,317,530,541.3
			CO2e	1,988,290.7	2,281,699.5	2,575,108.3	2,868,517.2	3,161,926.0	3,455,334.8	3,748,743.6	4,042,152.4	4,335,561.2	4,628,970.0	4,505,696.0	4,382,422.0	4,259,148.0	4,135,873.9	4,012,599.9	3,889,325.9	3,766,051.9	3,642,777.8	3,519,503.8	3,396,229.8	72,595,932.8

Table I-5. Wells and Production by Gas Field

FLD_NAME	ADMU_NAME	Discovery Year	2019 Total Wells	2019 Producing Wells	2010 Producing Wells	Change in wells 2010-2019	Prod 2010-Oil	Prod 2010-Gas	PROD 2019-Oil	PROD 2019-Gas	Annual Decline in Oil Production 2010-2019 (bbls)	Total percent decline over 10 years	Annual-Percent change in Production 2010-2019	Projected next year production oil	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Projected next year production gas	Total Cumulative Oil	Total Cumulative Gas	Cumulative G:O
DESERT SPRINGS WEST	Rock Springs Field Office	1958	39	32	21	-11	7962	106957	3,428	34,960	0.569454911	56.94549108	5.694549108	4,019.67	6,034.10	40,994.10	1,567,834	367,151,753	234.18
ASH CREEK	Buffalo Field Office	1952	7	6	1	-5	20	0	3,147	0	-156.35			3,690.17	0.00	0.00	1,459,000	15,376	0.01
BYRON	Cody Field Office	1918	80	55	50	-5	426227	13358	349,511	12,613	0.179988598	17.99885976	1.799885976	409,836.60	2,177.00	14,790.00	137,173,764	13,981,822	0.10
POISON SPIDER WEST	Casper Field Office	1948	34	28	26	-2	24847	135718	19,486	71,452	0.215760454	21.5760454	2.15760454	22,849.28	12,332.62	83,784.62	12,508,243	57,732,040	4.62
Luckey Ditch	Not in shapefile	1985	8	8	6	-2	105953	110020	82,800	24,186	0.21852142	21.85214199	2.185214199	97,091.28	4,174.50	28,360.50	11,099,290	74,505,421	6.71
BUCK CREEK	Newcastle Field Office	1952	12	7	6	-1	33522	0	18,555	44,603	0.446482907	44.64829067	4.464829067	21,757.59	7,698.48	52,301.48	7,366,374	7,094,244	0.96
MAHONEY DOME	Rawlins Field Office	1919	14	14	13	-1	27057	11515	11,274	2,449	0.583324094	58.33240936	5.833240936	13,219.89	422.70	2,871.70	7,104,820	230,046	0.03



FLD_NAME	ADMU_NAME	Discovery Year	2019 Total Wells	2019 Producing Wells	2010 Producing Wells	Change in wells 2010-2019	Prod 2010-Oil	Prod 2010-Gas	PROD 2019-Oil	PROD 2019-Gas	Annual Decline in Oil Production 2010-2019 (bbls)	Total percent decline over 10 years	Annual-Percent change in Production 2010-2019	Projected next year production oil	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Projected next year production gas	Total Cumulative Oil	Total Cumulative Gas	Cumulative G:O
QUEALY	Rawlins Field Office	1934	15	13	12	-1	36929	0	21,649	0	0.413766958	41.37669582	4.137669582	25,385.62	0.00	0.00	13,864,834	0	0.00
HAWK POINT	Buffalo Field Office	1986	5	0		0	0	0	0	0		0	0	0.00	0.00	0.00	4,739,680	1,226,378	0.26
MEADOW CREEK NORTH*	Buffalo Field Office	1949	0	0	0	0	0	0	-	-		0	0	74,747.23	24,230.84	74,747.23	9,546,332	29,448,504	3.08
SPRINGEN RANCH	Buffalo Field Office	1968	2	2	2	0	14489	0	11,545	0	0.203188626	20.31886259	2.031886259	13,537.67	0.00	0.00	10,793,228	14,015,488	1.30
STEINLE RANCH	Casper Field Office	1973	10	10	10	0	4381	147565	3,014	40,571	0.312029217	31.20292171	3.120292171	3,534.22	7,002.55	47,573.55	4,339,291	18,164,668	4.19
ELK BASIN SOUTH	Cody Field Office	1945	28	23	23	0	44583	229941	24,493	111,180	0.450620192	45.06201916	4.506201916	28,720.49	19,189.67	130,369.67	19,497,676	43,808,004	2.25
HAPPY SPRINGS	Lander Field Office	1950	17	9	9	0	11339	34152	2,955	1,997	0.739395008	73.93950084	7.393950084	3,465.03	344.68	2,341.68	9,216,984	11,150,319	1.21
SAND DRAW NORTH	Lander Field Office	1953	4	3	3	0	63346	5278	3,619	20,990	0.942869321	94.28693209	9.428693209	4,243.64	3,622.87	24,612.87	1,075,914	489,888	0.46
KUMMERFIELD	Newcastle Field Office	1960	9	6	6	0	20397	1089	8,497	0	0.58341913	58.34191303	5.834191303	9,963.58	0.00	0.00	13,042,828	874,404	0.07
GRASS CREEK	Worland Field Office	1914	255	222	222	0	815590	220545	786,897	227,134	0.035180667	3.518066676	0.351806668	922,715.42	39,203.33	266,337.33	221,272,410	134,950,087	0.61
Halverson	Not in shapefile	1961	20	13	13	0	67810	0	40,305	0	0.40561864	40.56186403	4.056186403	47,261.64	0.00	0.00	17,522,799	374,295	0.02
BONE PILE	Buffalo Field Office	1972	10	8	9	1	73526	0	52,058	0	0.291978348	29.19783478	2.919783478	61,043.21	0.00	0.00	9,498,347	813,768	0.09
DEAD HORSE CREEK	Buffalo Field Office	1957	15	12	13	1	11258	402	8,617	0	0.234588737	23.45887369	2.345887369	10,104.29	0.00	0.00	11,904,492	3,148,433	0.26
LAZY B	Buffalo Field Office	1969	11	5	6	1	15128	25334	8,818	953	0.417107351	41.71073506	4.171073506	10,339.99	164.49	1,117.49	3,043,558	6,171,511	2.03
RENO	Buffalo Field Office	1965	6	5	6	1	75680	0	68,885	0	0.089785941	8.97859408	0.897859408	80,774.55	0.00	0.00	13,615,700	272,838	0.02
AUSTIN CREEK	Casper Field Office	1988	3	3	4	1	32977	877877	4,529	3,213	0.862661855	86.26618552	8.626618552	5,310.71	554.56	3,767.56	1,762,218	18,363,525	10.42
SALT CREEK EAST	Casper Field Office	1951	16	13	14	1	39368	0	370	0	0.990601504	99.06015038	9.906015038	433.86	0.00	0.00	13,642,253	1,062,737	0.08
ESPY	Rawlins Field Office	1964	9	7	8	1	68869	0	23,973	28,274	0.65190434	65.19043401	6.519043401	28,110.74	4,880.09	33,154.09	1,279,809	349,771	0.27
JEPSON DRAW	Buffalo Field Office	1974	10	5	7	2	18124	3852	6,539	7,697	0.63920768	63.92076804	6.392076804	7,667.63	1,328.50	9,025.50	1,930,307	524,216	0.27
MILL - GILLETTE	Buffalo Field Office	1969	5	2	4	2	4634	2581	341	0	0.926413466	92.64134657	9.264134657	399.86	0.00	0.00	4,271,921	10,567,114	2.47
TABLE MOUNTAIN	Buffalo Field Office	1977	21	14	16	2	85754	3571	61,666	9,343	0.280896518	28.08965179	2.808965179	72,309.55	1,612.60	10,955.60	6,408,755	3,554,430	0.55
CROOKS GAP	Lander Field Office	1944	16	5	7	2	10499	0	8,886	0	0.153633679	15.36336794	1.536336794	10,419.72	0.00	0.00	13,562,997	1,362,402	0.10
Big Hand	Not in shapefile	1969	9	5	7	2	52238	4163	15,475	10,318	0.703759715	70.37597151	7.037597151	18,145.99	1,780.89	12,098.89	8,101,046	2,997,771	0.37
Moorcroft West	Not in shapefile	1956	15	10	12	2	73125	0	33,696	0	0.5392	53.92	5.392	39,511.93	0.00	0.00	8,269,386	6,419,057	0.78
HELDT DRAW	Buffalo Field Office	1973	17	13	16	3	51,736	6052	20,235	722	0.608879697	60.88796969	6.088796969	23,727.56	124.62	846.62	7,924,135	4,335,874	0.55
FRANNIE	Cody Field Office	1928	46	39	42	3	172067	185	141,982	0	0.174844683	17.48446826	1.748446826	166,488.09	0.00	0.00	120,669,929	1,225,646	0.01
DONKEY CREEK	Newcastle Field Office	1953	18	9	12	3	43952	2255	27,196	529	0.381234074	38.12340735	3.812340735	31,890.03	91.31	620.31	17,265,424	3,810,275	0.22
GOLDEN EAGLE	Worland Field Office	1921	9	4	7	3	41597	55106	28,685	0	0.310407001	31.04070005	3.104070005	33,636.03	0.00	0.00	14,656,385	3,824,106	0.26
Dry Gulch	Not in shapefile	1983	7	5	8	3	44166	4184	22,411	0	0.492573473	49.25734728	4.925734728	26,279.14	0.00	0.00	5,508,686	165,324	0.03
Raven Creek	Not in shapefile	1956	20	12	15	3	85612	0	37,627	0	0.560493856	56.0493856	5.60493856	44,121.42	0.00	0.00	47,804,344	14,095	0.00
SANDBAR EAST	Buffalo Field Office	1968	11	6	10	4	62820	0	36,815	0	0.413960522	41.39605221	4.139605221	43,169.27	0.00	0.00	13,777,631	7,250,660	0.53
SLATTERY	Buffalo Field Office	1957	19	14	18	4	160570	10501	100,890	0	0.371675905	37.16759046	3.716759046	118,303.61	0.00	0.00	14,923,446	728,308	0.05
COLE CREEK SOUTH	Casper Field Office	1948	16	16	20	4	26473	0	13,274	91	0.498583462	49.85834624	4.985834624	15,565.09	15.71	106.71	17,330,462	149,222	0.01

FLD_NAME	ADMU_NAME	Discovery Year	2019 Total Wells	2019 Producing Wells	2010 Producing Wells	Change in wells 2010-2019	Prod 2010-Oil	Prod 2010-Gas	PROD 2019-Oil	PROD 2019-Gas	Annual Decline in Oil Production 2010-2019 (bbls)	Total percent decline over 10 years	Annual-Percent change in Production 2010-2019	Projected next year production oil	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Projected next year production gas	Total Cumulative Oil	Total Cumulative Gas	Cumulative G:O
SAGE CREEK	Cody Field Office	1948	24	20	24	4	91879	0	73,313	0	0.202070114	20.2070114	2.02070114	85,966.82	0.00	0.00	14,620,979	450	0.00
GAS DRAW	Buffalo Field Office	1968	35	6	11	5	28019	0	10,235	0	0.63471216	63.47121596	6.347121596	12,001.56	0.00	0.00	27,402,497	2,854,303	0.10
ROZET	Buffalo Field Office	1959	34	24	29	5	98185	2749	77,127	4,958	0.214472679	21.44726791	2.144726791	90,439.12	855.75	5,813.75	28,851,557	9,297,849	0.32
TIMBER CREEK	Buffalo Field Office	1958	12	7	12	5	267097	400	152,446	0	0.42924855	42.92485502	4.292485502	178,758.18	0.00	0.00	23,108,797	1,374,252	0.06
Glenrock South	Not in shapefile	1950	29	18	23	5	48819	0	25,405	0	0.479608349	47.96083492	4.796083492	29,789.90	0.00	0.00	75,985,032	30,393,859	0.40
SAGE SPRING CREEK	Casper Field Office	1949	34	26	32	6	69875	23360	47,686	22,434	0.317552773	31.75527728	3.175527728	55,916.60	3,872.11	26,306.11	17,269,438	7,995,827	0.46
GARLAND	Cody Field Office	1906	288	204	210	6	1089311	556341	834,192	336,615	0.23420217	23.420217	2.3420217	978,173.54	58,099.75	394,714.75	208,578,305	164,457,999	0.79
LITTLE SAND DRAW	Worland Field Office	1949	17	5	11	6	49328	6228	21,282	0	0.568561466	56.85614661	5.685614661	24,955.27	0.00	0.00	13,192,939	460,389	0.03
Rattlesnake	Not in shapefile	1968	21	16	22	6	47212	59109	19,171	24,297	0.593937982	59.39379819	5.939379819	22,479.91	4,193.66	28,490.66	7,424,626	6,943,506	0.94
SHELDON	Lander Field Office	1925	20	11	19	8	43093	104860	30,319	22,910	0.296428654	29.64286543	2.964286543	35,552.06	3,954.27	26,864.27	7,885,434	10,751,907	1.36
MURPHY DOME	Worland Field Office	1949	35	27	35	8	160434	0	86,275	0	0.462239924	46.22399242	4.622399242	101,166.07	0.00	0.00	42,277,627	3,135	0.00
SLICK CREEK	Worland Field Office	1950	22	10	18	8	28751	42327	6,360	28,001	0.778790303	77.87903029	7.787903029	7,457.74	4,832.97	32,833.97	7,110,867	10,853,885	1.53
MEADOW CREEK	Buffalo Field Office	1950	31	4	13	9	31367	172	12,146	181,897	0.61277776	61.27777601	6.127777601	14,242.40	31,395.42	213,292.42	35,688,610	80,514,364	2.26
BIG MUDDY	Casper Field Office	1916	5	3	13	10	15479	0	14,413	0	0.068867498	6.88674979	0.688674979	16,900.68	0.00	0.00	3,038,921	0	0.00
COLE CREEK	Casper Field Office	1938	21	11	21	10	32640	9741	19,783	9,936	0.393903186	39.39031863	3.939031863	23,197.55	1,714.95	11,650.95	18,648,763	658,048	0.04
SAND DUNES	Casper Field Office	1982	26	16	26	10	55183	1083179	38,442	164,744	0.303372415	30.33724154	3.033724154	45,077.09	28,434.81	193,178.81	27,046,220	130,127,972	4.81
TORCHLIGHT	Worland Field Office	1935	34	18	28	10	98378	16425	61,214	11,926	0.377767387	37.7767387	3.77767387	71,779.54	2,058.43	13,984.43	19,055,529	4,487,342	0.24
Frisby South	Not in shapefile	1972	27	14	24	10	55964	21433	27,425	13,582	0.509952827	50.99528268	5.099528268	32,158.56	2,344.25	15,926.25	7,754,499	6,067,433	0.78
Lake Creek	Not in shapefile	1925	28	12	22	10	44683	1867	16,495	0	0.630843945	63.08439451	6.308439451	19,342.04	0.00	0.00	10,902,898	381,658	0.04
STEAMBOAT BUTTE	Lander Field Office	1943	54	31	44	13	565322	107284	330,135	48,241	0.416023081	41.60230807	4.160230807	387,116.30	8,326.40	56,567.40	103,149,309	14,264,044	0.14
MUSH CREEK	Newcastle Field Office	1943	59	25	38	13	31158	9525	13,952	6,947	0.552217729	55.2217729	5.52217729	16,360.12	1,199.05	8,146.05	14,879,046	2,614,696	0.18
BLACK MOUNTAIN	Worland Field Office	1924	46	34	48	14	180284	0	106,201	0	0.410923876	41.09238757	4.109238757	124,531.29	0.00	0.00	22,433,283	113,915	0.01
ROCKY POINT	Buffalo Field Office	1961	30	17	32	15	159418	23703	66,624	17,576	0.582079815	58.20798153	5.820798153	78,123.30	3,033.62	20,609.62	14,979,439	17,031,993	1.14
SUSSEX WEST	Buffalo Field Office	1951	55	23	38	15	54422	0	21,435	0	0.606133549	60.61335489	6.061335489	25,134.68	0.00	0.00	73,247,350	15,077,205	0.21
FULLER RESERVOIR	Lander Field Office	1977	69	13	28	15	13303	346596	2,833	90,803	0.787040517	78.70405172	7.870405172	3,321.98	15,672.60	106,475.60	2,434,591	28,621,484	11.76
GEBO	Worland Field Office	1943	45	31	46	15	263719	3376	116,176	3,636	0.559470497	55.9470497	5.59470497	136,227.98	627.57	4,263.57	36,638,697	1,205,341	0.03
POWELL	Casper Field Office	1954	58	45	62	17	128235	1893791	87,580	1,025,352	0.317035131	31.70351308	3.170351308	102,696.31	176,975.76	1,202,327.76	29,437,490	326,590,455	11.09
PILOT BUTTE	Lander Field Office	1916	6	4	21	17	32373	13661	20,895	12,035	0.354554722	35.45547215	3.545547215	24,501.48	2,077.24	14,112.24	15,663,501	10,119,586	0.65
LANCE CREEK	Newcastle Field Office	1918	80	21	38	17	64667	118495	41,379	36,294	0.360121855	36.0121855	3.60121855	48,521.02	6,264.34	42,558.34	121,216,936	148,940,276	1.23
BRADY	Rock Springs Field Office	1973	48	17	35	18	143700	2736386	13,508	341,327	0.905998608	90.59986082	9.059986082	15,839.48	58,913.04	400,240.04	71,074,268	638,094,003	8.98
RECLUSE	Buffalo Field Office	1967	30	9	28	19	41789	262081	4,012	9,645	0.903993874	90.3993874	9.03993874	4,704.47	1,664.73	11,309.73	23,671,172	102,973,195	4.35
SKULL CREEK	Newcastle Field Office	1946	97	43	62	19	24452	8622	9,266	241	0.621053493	62.10534926	6.210534926	10,865.31	41.60	282.60	13,750,015	1,651,912	0.12

FLD_NAME	ADMU_NAME	Discovery Year	2019 Total Wells	2019 Producing Wells	2010 Producing Wells	Change in wells 2010-2019	Prod 2010-Oil	Prod 2010-Gas	PROD 2019-Oil	PROD 2019-Gas	Annual Decline in Oil Production 2010-2019 (bbls)	Total percent decline over 10 years	Annual-Percent change in Production 2010-2019	Projected next year production oil	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Projected next year production gas	Total Cumulative Oil	Total Cumulative Gas	Cumulative G:O
KAYE	Casper Field Office	1969	55	23	45	22	95576	3877	50,359	0	0.473099941	47.30999414	4.730999414	59,050.96	0.00	0.00	10,159,126	8,375,957	0.82
SUSSEX	Buffalo Field Office	1948	37	4	28	24	116984	10256	13,745	42,123	0.8825053	88.25052999	8.825052999	16,117.39	7,270.43	49,393.43	73,247,350	15,077,205	0.21
ELK BASIN	Cody Field Office	1915	249	184	208	24	1170370	4371271	876,889	3,204,628	0.250759162	25.07591616	2.507591616	1,028,240.04	553,118.79	3,757,746.79	480,124,604	415,357,576	0.87
CLARETON	Newcastle Field Office	1950	127	90	115	25	113643	262317	53,939	112,908	0.525364519	52.53645187	5.253645187	63,248.87	19,487.92	132,395.92	7,484,647	9,253,072	1.24
PORCUPINE	Buffalo Field Office	1969	70	38	70	32	35329	670816	11,859	207,067	0.664326757	66.43267571	6.643267571	13,905.86	35,739.76	242,806.76	4,979,970	88,859,286	17.84
HARTZOG DRAW	Buffalo Field Office	1976	211	122	172	50	805,590	203,757	409,260	100,968	0.491974826	49.19748259	4.919748259	479,898.28	17,427.08	118,395.08	120,640,602	42,144,650	0.35
KITTY	Buffalo Field Office	1965	158	86	147	61	69492	803785	19,326	2,287	0.721896046	72.18960456	7.218960456	22,661.67	394.74	2,681.74	22,975,499	130,964,948	5.70
COTTONWOOD CREEK	Worland Field Office	1953	231	117	208	91	238714	451248	88,668	207,828	0.628559699	62.85596991	6.285596991	103,972.10	35,871.11	243,699.11	68,094,309	69,052,719	1.01
HILIGHT	Buffalo Field Office	1969	225	146	169	23	101,910	3892082	700,579	3,596,116	-5.874487293	-587.4487293	-58.74487293	821,498.94	620,689.62	4,216,805.62	82,470,823	344,810,040	4.18
HOUSE CREEK	Buffalo Field Office	1968	334	259	207	-52	1124786	116622	2,511,690	2,691,904	-1.233038107	-123.3038107	-12.33038107	2,945,207.69	464,622.63	3,156,526.63	68,216,150	38,454,636	0.56
PINE TREE	Buffalo Field Office	1976	68	37	46	9	79043	309682	106,602	220,834	-0.348658325	-34.86583252	-3.486583252	125,001.51	38,115.95	258,949.95	11,527,264	20,063,682	1.74
REEL	Buffalo Field Office	1962	8	3	4	1	24346	0	31,375	0	-0.288712725	-28.87127249	-2.887127249	36,790.33	0.00	0.00	10,643,409	30,342	0.00
ROCK CREEK	Buffalo Field Office	1988	1	1		-1	10878	0	14,148	0	-0.300606729	-30.06067292	-3.006067292	16,589.94	0.00	0.00	972,742	54,844	0.06
GRIEVE NORTH	Casper Field Office	1974	2	2	3		4030	0	0	463	1	100	10	0.00	79.91	542.91	4,133,417	23,917,436	5.79
HORNBUCKLE	Casper Field Office	1984	115	92	53		697791	184410	1,400,059	3,434,807	-1.006415961	-100.6415961	-10.06415961	1,641,709.18	592,847.69	4,027,654.69	15,448,008	15,849,888	1.03
SCOTT	Casper Field Office	1979	186	123			233396	445262	1,108,980	1,865,588	-3.751495313	-375.1495313	-37.51495313	1,300,389.95	322,000.49	2,187,588.49	23,806,491	36,066,212	1.51
SPEARHEAD RANCH	Casper Field Office	1973	41	24			85284	536663	116,852	620,337	-0.370151494	-37.01514938	-3.701514938	137,020.66	107,070.17	727,407.17	9,532,151	59,674,366	6.26
ANT HILLS NORTH	Newcastle Field Office	1947	9	6			30726	0	32,111	64,400	-0.045075832	-4.507583154	-0.450758315	37,653.36	11,115.44	75,515.44	4,101,113	565,126	0.14
NEIBER DOME*	Worland Field Office	1947	4	3			2436	0	0	0	1	100	10	9,297.48	15,829.39	15,829.39	3,824,573	6,511,509	1.70
Big Sand Draw	Existing Flood	1918	44	29			110190	302406	307,014	11,321,640	-1.786223795	-178.6223795	-17.86223795	360,004.62	1,954,115.06	13,275,755.06	61,412,892	234,647,897	3.82
Grieve	Existing Flood-Lander FO	1954	16	11			4030	0	92,810	0	-22.02977667	-2202.977667	-220.2977667	108,829.01	0.00	0.00	30,277,796	109,130,844	3.60
Beaver Creek	Existing Flood	1938	139	77	113	36	1182812	12811892	733,476	12,898,600	0.379887928	37.98879281	3.798879281	860,073.96	2,226,298.36	15,124,898.36	72,369,356	918,295,692	12.69
Lost Soldier	Existing Flood	1916	111	69	94	25	1594513	35121102	730,654	35,373,636	0.541769807	54.17698068	5.417698068	856,764.88	6,105,489.57	41,479,125.57	277,851,458	1,082,496,399	3.90
Patrick Draw (Monell)	Existing Flood	1959	163	146			1867667	842863	2,083,606	130,865	-0.115619647	-11.56196474	-1.156196474	2,443,236.40	22,587.30	153,452.30	31,847,707	39,966,158	1.25
Salt Creek	Existing Flood	1889	1047	584	735	151	4348635	0	4,010,235	0	0.077817522	7.781752205	0.778175221	4,702,401.56	0.00	0.00	726,923,094	726,375,228	1.00
Wertz	Existing Flood	1921	61	49			472968	18783595	644,119	27,885,367	-0.361865919	-36.1865919	-3.61865919	755,293.94	4,813,014.34	32,698,381.34	126,355,708	582,810,219	4.61

If the percentage is negative, it means there was an increase in production.

\*Based on average annual production since 2019 production was zero (68 and 71 yrs respectively)

Cumulative production, Discovery Year, Cumulative Production and 2019 Production taken from <http://pipeline.wyo.gov/FieldReport.cfm> (access 3/10/2020)

Table I-6. Average Decline by Gas Field

FLD_NAME	ADMU_NAME	2019 Total Wells	2019 Producing Wells	2010 Producing Wells	Change in wells 2010-2019	Prod 2010-Oil	Prod 2010-Gas	PROD 2019-Oil	PROD 2019-Gas	Annual Decline in Oil Production 2010-2019 (bbis)		Annual-Percent change in Production 2010-2019				Additional EOR Oil recovery based on 17.26% (Using 2019 production)	Projected next year production oil	Additional EOR Gas recovery based on 17.26% (Using 2019 production)	Projected next year production gas	Total Cumulative Oil	Total Cumulative Gas	Cumulative G:O
DESERT SPRINGS WEST	Rock Springs Field Office	39	32	21	-11	7962	106957	3,428	34,960	0.569454911	56.94549	5.694549	0.67314	67.31397	6.731397	591.67	4,019.67	6,034.10	40,994.10	1,567,834	367,151,753	234.18
BYRON	Cody Field Office	80	55	50	-5	426227	13358	349,511	12,613	0.179988598	17.99886	1.799886	0.055772	5.577182	0.557718	60,325.60	409,836.60	2,177.00	14,790.00	137,173,764	13,981,822	0.10
POISON SPIDER WEST	Casper Field Office	34	28	26	-2	24847	135718	19,486	71,452	0.215760454	21.57605	2.157605	0.473526	47.3526	4.73526	3,363.28	22,849.28	12,332.62	83,784.62	12,508,243	57,732,040	4.62
Luckey Ditch	Not in shapefile	8	8	6	-2	105953	110020	82,800	24,186	0.21852142	21.85214	2.185214	0.780167	78.01672	7.801672	14,291.28	97,091.28	4,174.50	28,360.50	11,099,290	74,505,421	6.71
BUCK CREEK	Newcastle Field Office	12	7	6	-1	33522	0	18,555	44,603	0.446482907	44.64829	4.464829				3,202.59	21,757.59	7,698.48	52,301.48	7,366,374	7,094,244	0.96
MAHONEY DOME	Rawlins Field Office	14	14	13	-1	27057	11515	11,274	2,449	0.583324094	58.33241	5.833241	0.787321	78.73209	7.873209	1,945.89	13,219.89	422.70	2,871.70	7,104,820	230,046	0.03
QUEALY	Rawlins Field Office	15	13	12	-1	36929	0	21,649	0	0.413766958	41.3767	4.13767				3,736.62	25,385.62	0.00	0.00	13,864,834	0	0.00
SPRINGEN RANCH	Buffalo Field Office	2	2	2	0	14489	0	11,545	0	0.203188626	20.31886	2.031886				1,992.67	13,537.67	0.00	0.00	10,793,228	14,015,488	1.30
STEINLE RANCH	Casper Field Office	10	10	10	0	4381	147565	3,014	40,571	0.312029217	31.20292	3.120292	0.725064	72.50635	7.250635	520.22	3,534.22	7,002.55	47,573.55	4,339,291	18,164,668	4.19
ELK BASIN SOUTH	Cody Field Office	28	23	23	0	44583	229941	24,493	111,180	0.450620192	45.06202	4.506202	0.516485	51.64847	5.164847	4,227.49	28,720.49	19,189.67	130,369.67	19,497,676	43,808,004	2.25
HAPPY SPRINGS	Lander Field Office	17	9	9	0	11339	34152	2,955	1,997	0.739395008	73.9395	7.39395	0.941526	94.15261	9.415261	510.03	3,465.03	344.68	2,341.68	9,216,984	11,150,319	1.21
SAND DRAW NORTH	Lander Field Office	4	3	3	0	63346	5278	3,619	20,990	0.942869321	94.28693	9.428693	-2.97689	-297.689	-29.7689	624.64	4,243.64	3,622.87	24,612.87	1,075,914	489,888	0.46
KUMMERFIELD	Newcastle Field Office	9	6	6	0	20397	1089	8,497	0	0.58341913	58.34191	5.834191	1	100	10	1,466.58	9,963.58	0.00	0.00	13,042,828	874,404	0.07
GRASS CREEK	Worland Field Office	255	222	222	0	815590	220545	786,897	227,134	0.035180667	3.518067	0.351807	-0.02988	-2.9876	-0.29876	135,818.42	922,715.42	39,203.33	266,337.33	221,272,410	134,950,087	0.61
Halverson	Not in shapefile	20	13	13	0	67810	0	40,305	0	0.40561864	40.56186	4.056186				6,956.64	47,261.64	0.00	0.00	17,522,799	374,295	0.02
												4.199747			6.19125							

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## **APPENDIX J**

### **Grazing Allotment Supporting Data**





# LIVESTOCK GRAZING ALLOTMENTS IMPACTED

The following tables list the grazing allotments crossed by each of the three action alternatives. This information supports the Livestock Grazing analysis, found in Section 3.8 of the *Resource Management Plan Amendments/Environmental Impact Statement Wyoming Pipeline Corridor Initiative*. Information to support this analysis was acquired from the Bureau of Land Management (BLM) Rangeland Administration System<sup>1</sup>.

**Table 1. Alternative B: Grazing Allotments Impacted**

Allotment Name	Allotment Number
NORTH BASIN GROUP	578
TORCHLIGHT	181
SOUTH BASIN	577
EAST BASIN DRAW	201
MANDERSON	36
SCHOOLHOUSE GULCH	99
SOUTH SLEEPER	683
BADGER GULCH	652
SAND CREEK	91
WEST FIVE MILE	651
ALAMO CREEK	664
RIMROCK BASIN	526
COW PASTURE	663
LAWLER SEC 15	2,555
LOWER SAND CREEK	73
10 MILE	671
NO. GOOSEBERRY	508
ENRIGHT	662
RATTLESNAKE RIDGE	34
GRASS POINT	545
SLICK WATER	162
SO. GOOSEBERRY GROUP	507
HOME	616
WORLAND CATTLE GROUP	7
NORTH GRASS CREEK	621
DENVER JAKE DRAW	153
GRASS CREEK	522
LOWER COTTONWOOD	521
D & LM IND	548

<sup>1</sup> Bureau of Land Management (BLM). 2020. Rangeland Administration System. Allotment Information Report. Available at: <https://reports.blm.gov/report/RAS/1/Allotment-Information>. Accessed February 25, 2020.

Allotment Name	Allotment Number
NELSON	665
NOWATER	105
LITTLE SAND DRAW	590
LOWER NOWATER	15
FREEMAN DRAW	625
SOUTH LUCERNE GROUP	502
EAST TANNER	511
GARDNER BADLANDS	562
KIRBY CREEK	589
RED SPRINGS DRAW	570
BLUE SPRINGS	501
ROCK SPRINGS DRAW	602
V PASTURE	2,547
SWALLOW	2,543
V-H DRAW	2,514
BLUE HILL	2,536
STUMP	2,542
COPPER MTN	655
REED CREEK	2,554
GRANGER LEASE	11,302
SEEDSKADEE	11,112
Cantril Jack Allot.	1,301
NORTH OF CB&Q R.R.	1,302
South of CB&Q RR	1,303
NORTH OF TRACKS	1,312
Moneta Hills Pasture	1,314
DITCH PASTURE	1,315
MADDEN RANCH PASTURE	1,316
BRANDAU RANCH ALLOT	1,317
ST.CLAIR SOUTH PAST.	1,322
HOODOO CREEK ALLOT	1,324
EAST OF RANCH	1,325
BOW & ARROW	1,332
DE PASS RANCH	1,337
PICARD PRIVATE ALLOT	1,339
SCOTT DRAW	1,351
CAMPBELL	1,353
LOOKOUT HILL	1,355
RAMAGE RANCH	1,359

Allotment Name	Allotment Number
CABIN PASTURE	1,366
RIM PASTURE	1,401
DELFELDER ALLOTMENT	1,402
CONANT CREEK COMMON	1,403
WM HERBST WINTER	1,404
POISON CREEK	1,406
MUSKRAT AMP	1,407
MUSKRAT OPEN	1,409
SHOSHONI ROAD	1,411
PIPELINE PASTURE	1,413
ANDERSON WINTER	1,414
HAYBARN HILL	1,417
LITTLE BUG PASTURE	1,518
Circle Bar Allotment	1,614
NORTH OF DRIFT FENCE	1,615
KEESTER	1,616
CABIN CREEK PASTURE	1,620
JJ WINTER PASTURES	1,629
TRAM ROAD PASTURE	1,630
GRANITE MOUNTAIN OPEN	1,636
GARSON RANCH	1,640
BIG PASTURE	1,703
BREEDING PASTURE	1,704
ICE SLOUGH	1,707
HAY MEADOW PASTURE	1,711
WHITLOCK FENCED	1,713
FENCED INDIVIDUAL	1,717
EAST BEAVER COMMON	1,801
SAND DRAW AMP	1,802
CROOKS GAP	2,023
MITCHELL PASTURE	2,028
MUSKRAT-LINN	11,501
FRASER DRAW	11,502
DIAMOND SPRINGS	11,509
NORTH DOBIE FLAT	11,511
BLACKJACK RANCH	11,513
BASIN PASTURE	11,516
BUG MEADOWS PASTURES	11,517
GREEN MT.FENCED	12,004

<b>Allotment Name</b>	<b>Allotment Number</b>
EAST ALLOTMENT	12,012
FENCED ALLOTMENT	12,013
ARAPAHOE CREEK	17,056
ANTELOPE HILLS	17,055
ALKALI CREEK SHEEP	17,057
SCHNOOR	140
SOUTH FORK CASPER CREEK	241
WYATT DRAW	244
WHEATFIELD	289
ROBINETT	455
POWDER RIVER DRAW	10,007
WALTMAN	10,008
HILAND	10,012
RAILROAD	10,013
CAMEL'S HUMP	10,014
CANTRIL-TODD	10,019
SUMMER BREWER	10,022
BECK PLACE	10,027
SOUTH HILAND	10,030
ERVAY BASIN	10,044
POISON SPIDER	10,045
POTTER	10,053
LITTLE RED CREEK	10,054
SHAMROCK	10,056
SULLIVAN	10,066
TEAPOT	10,068
PAUL PLACE	10,094
FENTON	10,095
FORGEY	10,096
HAUGHTON	10,107
SMOKEY GAP II	10,115
SMOKY GAP-H.JARRARD	10,118
MANNING	10,124
FORGEY PLACE	10,129
MILLER	10,130
PINE MOUNTAIN	10,134
BARKER	10,135
DEADHORSE II	10,137
TTT-SCOTTS PLACE	10,139

Allotment Name	Allotment Number
OKIE TRAIL	10,148
WEIDT	10,159
ELLIS DRAW	12,991
ECCLES	20,523
WYATT PLACE	20,530
TWENTYMILE HILL	31,004
G.L.	706
DALEY RANCH	605
NORTH TIPTON	715
NORTH WAMSUTTER	716
HAYSTACK RIVER PAST	708
MONUMENT LAKE	711
HAYSTACK	707
BROWNS CANYON	741
SLATE CREEK	11,113
Smith Cut	2,383
FLYNN DRAW	12,148
4Mile Creek/RC	12,182
Crazy Woman Creek	12,094
Montgomery	12,140
South Fork Powder R	2,389
Julio Draw	32,019
Michelena	12,227
Kingsbury/Wild Horse	22,202
Schiermiester	12,185
Clear Creek	2,093
Gosney, Elmer	2,395
Fourmile Ranch	2,379
Crooked Creek	2,426
NURSE DRAW	12,190
BEKEBREDE DRAW	22,127
West Timber Draw	2,170
Sussex Cutoff	12,167
Schoonover Ranch	22,214
South Fork	2,451
Hoe Ranch	12,169
Hepp Charles	12,153
Mitchell Draw	2,429
Rattlesnake Springs	12,098

Allotment Name	Allotment Number
Wall (East)	12,146
Grub Draw	2,469
Maycock Draw	22,221
T.W.	2,438
Flats	32,006
Powder River Ranch	2,260
Timber Draw	12,199
Salt Creek	2,411
Crenshaw Hill	12,218
Mark Gordon	2,368
Reno	2,385
Billy Creek	2,262
Dugout Creek	2,453
Gammon Draw	12,079
V Bar F	2,284
Lawrence Land Co. Inc.	12,188
Cat Creek	2,376
S. Fork Otter Creek	2,386
Vanderhoff	2,345
South Sussex StkRst	2,467
Sussex Stockrest	2,420
Falxa	12,139
Pumpkin Creek	12,138
Little Poison Creek	32,007
KURTLEY DRAW	12,056
CASTLE CREEK	10,144
Daley Reservoir	15,990
MATADOR	10,020
NORTH DAVIS	17,677
M & D	10,123
GAS HILLS	11,508
SMOKY GAP-SHEPPERSON	254
UPPER POISON SPIDER CREEK	14,289
ORMSBY	10,082
HIGHWAY JUNCTION	523
SUMMER ALLOTMENT	1,357
MARTON	40
33 MILE SDW	1,000
BLACK CANYON	323

Allotment Name	Allotment Number
DRY CREEK	321
LEO	320
INDIAN SPRINGS	315
ANDA	338
CANYON CREEK	303
LU	604
HILLBERRY RIM	579
FERRIS MOUNTAIN	10,207
PINE GROVE/BOLTEN	10,623
TIPTON	10,621
SOUTH RED DESERT	10,619
LAZY Y S RANCH	10,626
STEWART CREEK	10,102
ECHO SPRINGS	10,607
SIXTEEN MILE	10,616
Beaver Cr. Meadow Ind	2,142
SEMINOE	10,218
South Desert Allot.	2,040
SOUTH WAMSUTTER	10,620
CYCLONE RIM	10,103
S Piney Ranch Ind	2,074
Sand Draw Allotment	2,156
RINER	10,615
Beaver Cr. Ind	2,141
Labarge Unit Ind	2,194
STONE	10,221
N. Labarge Com	2,077
Horse Center	3,114
Polecat Bench	1,071
HOGG (GCRA)	3,033
Greenwald	3,045
East/West	1,060
GOULD NORTH IND	2,511
Holding Pasture	3,117
Lovell Group 5	1,050
Foster Gulch	1,039
Turnell	3,107
Oilwell	3,113
Big Horn River Riparian Tracts	1,081

Allotment Name	Allotment Number
Sand Hills 1043	1,043
Dump (WRA)	1,515
Badlands	1,087
Pitchfork	2,532
Cedar Mountain	2,528
Greybull Group	1,051
Meeteetse Rim	3,096
Homestead/Avent	2,564
Tonopah Ridge	2,544
Eagle Pass	3,035
Little Sheep Mountain	1,053
Kukla Section 15	2,523
Heart Mountain South 3099	3,099
Dry Creek Wildlife	14,243
Lovell Group 1	1,032
Red Cabin	3,079
South Lovell Group	1,052
Rush Creek	3,119
Heart Mountain South 3116	3,116
Meeteetse Creek 2561	2,561
Coal Creek	3,006
Stone Barn 15	3,112
Thumper	1,059
Little Dry Creek	3,061
Sand Hills 1054	1,054
Osborn	3,010
Cottonwood Creek	3,051
Meeteetse Creek 3031	3,031
Rawhide	3,098
91 Ranch	2,545
Trailing Pasture	3,065
Winniger	2,553
Chapman Bench 3086	3,086
Himes Group	1,031
Red Point	3,067
Big Trap	1,070
Oregon Basin	3,029
Individual 1061	1,061
SOUTH PHINNEY DRAW	16,896



Allotment Name	Allotment Number
NORTH PHINNEY DRAW	12,159
EMIGRANT GAP	10,050
BURKE	10,009
GOWIN	10,097
BATES HOLE SDW	1,500
GARRETT	10,032
SOUTH CAVE GULCH	10,006
F.L. RANCH	10,031
SOUTH DAVIS	10,039
NORTH WALCOTT	819
Hoodoo Base	3,048
Heart Mountain North	3,011
Himes-Spence	1,037
BYRON OIL FIELD	1,016
TWO BAR	10,002
EAGLE RIDGE	10,142
Red Desert	13,012
Little Sandy	13,003
Reservoir	13,006
Sublette	13,027
Sands	13,015
Rock Springs	13,018
Lombard	13,022
Bush Rim	13,013
Fourth of July	3,016
Eighteen Mile	13,017
Pacific Creek	13,007
Figure 4	13,023

**Table 2. Alternative C: Grazing Allotments Impacted**

Allotment Name	Allotment Number
SCHOOLHOUSE GULCH	99
SAND CREEK	91
WEST FIVE MILE	651
ALAMO CREEK	664
LOWER SAND CREEK	73
RATTLESNAKE RIDGE	34
SLICK WATER	162

Allotment Name	Allotment Number
GRASS CREEK	522
NELSON	665
LITTLE SAND DRAW	590
SWING INDIVIDUAL	641
FREEMAN DRAW	625
SOUTH LUCERNE GROUP	502
EAST TANNER	511
KIRBY CREEK	589
RED SPRINGS DRAW	570
BLUE SPRINGS	501
ROCK SPRINGS DRAW	602
Cantril Jack Allot.	1,301
BRANDAU RANCH ALLOT	1,317
MUSKRAT-LINN	11,501
MCKENZIE DRAW	379
CANTRIL-TODD	10,019
ERVAY BASIN	10,044
COLE CREEK	10,087
SEVEN L	10,161
GEARY DOME	14,056
STRAND 2	14,057
NORTH WAMSUTTER	716
MATADOR	10,020
GAS HILLS	11,508
ORMSBY	10,082
LU	604
PINE GROVE/BOLTEN	10,623
STEWART CREEK	10,102
Beaver Cr. Meadow Ind	2,142
South Desert Allot.	2,040
SOUTH WAMSUTTER	10,620
S Piney Ranch Ind	2,074
Sand Draw Allotment	2,156
Beaver Cr. Ind	2,141
Labarge Unit Ind	2,194
STONE	10,221
N. Labarge Com	2,077
Polecat Bench	1,071
Lovell Group 5	1,050

Allotment Name	Allotment Number
Foster Gulch	1,039
Sand Hills 1043	1,043
Badlands	1,087
Little Sheep Mountain	1,053
Heart Mountain South 3099	3,099
South Lovell Group	1,052
Thumper	1,059
Sand Hills 1054	1,054
Big Trap	1,070
Individual 1061	1,061
Heart Mountain North	3,011
Himes-Spence	1,037
BYRON OIL FIELD	1,016
Sublette	13,027
Figure 4	13,023

**Table 3. Alternative D: Grazing Allotments Impacted**

Allotment Name	Allotment Number
NORTH BASIN GROUP	578
TORCHLIGHT	181
SOUTH BASIN	577
EAST BASIN DRAW	201
MANDERSON	36
SCHOOLHOUSE GULCH	99
SOUTH SLEEPER	683
BADGER GULCH	652
SAND CREEK	91
WEST FIVE MILE	651
ALAMO CREEK	664
RIMROCK BASIN	526
COW PASTURE	663
LAWLER SEC 15	2,555
LOWER SAND CREEK	73
10 MILE	671
NO. GOOSEBERRY	508
ENRIGHT	662
RATTLESNAKE RIDGE	34
GRASS POINT	545

Allotment Name	Allotment Number
SLICK WATER	162
SO. GOOSEBERRY GROUP	507
HOME	616
WORLAND CATTLE GROUP	7
NORTH GRASS CREEK	621
DENVER JAKE DRAW	153
GRASS CREEK	522
D & LM IND	548
NELSON	665
NOWATER	105
LITTLE SAND DRAW	590
SWING INDIVIDUAL	641
LOWER NOWATER	15
FREEMAN DRAW	625
SOUTH LUCERNE GROUP	502
EAST TANNER	511
GARDNER BADLANDS	562
KIRBY CREEK	589
RED SPRINGS DRAW	570
BLUE SPRINGS	501
ROCK SPRINGS DRAW	602
V PASTURE	2,547
SWALLOW	2,543
V-H DRAW	2,514
BLUE HILL	2,536
STUMP	2,542
COPPER MTN	655
REED CREEK	2,554
GRAHAM	11,111
Canril Jack Allot.	1,301
NORTH OF CB&Q R.R.	1,302
South of CB&Q RR	1,303
NORTH OF TRACKS	1,312
Moneta Hills Pasture	1,314
DITCH PASTURE	1,315
MADDEN RANCH PASTURE	1,316
BRANDAU RANCH ALLOT	1,317
ST.CLAIR SOUTH PAST.	1,322
HOODOO CREEK ALLOT	1,324

<b>Allotment Name</b>	<b>Allotment Number</b>
EAST OF RANCH	1,325
BOW & ARROW	1,332
DE PASS RANCH	1,337
PICARD PRIVATE ALLOT	1,339
SCOTT DRAW	1,351
CAMPBELL	1,353
LOOKOUT HILL	1,355
CABIN PASTURE	1,366
RIM PASTURE	1,401
DELFELDER ALLOTMENT	1,402
CONANT CREEK COMMON	1,403
WM HERBST WINTER	1,404
POISON CREEK	1,406
MUSKRAT AMP	1,407
MUSKRAT OPEN	1,409
SHOSHONI ROAD	1,411
PIPELINE PASTURE	1,413
ANDERSON WINTER	1,414
HAYBARN HILL	1,417
JJ WINTER PASTURES	1,629
TRAM ROAD PASTURE	1,630
GRANITE MOUNTAIN OPEN	1,636
BIG PASTURE	1,703
BREEDING PASTURE	1,704
ICE SLOUGH	1,707
HAY MEADOW PASTURE	1,711
WHITLOCK FENCED	1,713
FENCED INDIVIDUAL	1,717
EAST BEAVER COMMON	1,801
SAND DRAW AMP	1,802
CROOKS GAP	2,023
MITCHELL PASTURE	2,028
MUSKRAT-LINN	11,501
FRASER DRAW	11,502
GREEN MT.FENCED	12,004
EAST ALLOTMENT	12,012
FENCED ALLOTMENT	12,013
ARAPAHOE CREEK	17,056
ANTELOPE HILLS	17,055

Allotment Name	Allotment Number
ALKALI CREEK SHEEP	17,057
SOUTH FORK CASPER CREEK	241
WYATT DRAW	244
CASPER CANAL	373
MCKENZIE DRAW	379
ROBINETT	455
POWDER RIVER DRAW	10,007
WALTMAN	10,008
HILAND	10,012
RAILROAD	10,013
CANTRIL-TODD	10,019
SUMMER BREWER	10,022
SOUTH HILAND	10,030
ERVAY BASIN	10,044
POISON SPIDER	10,045
STONE RANCH	10,052
SULLIVAN	10,066
TEAPOT	10,068
STONE CABIN	10,070
COLE CREEK	10,087
DODDS	10,089
FENTON	10,095
FORGEY	10,096
SMOKEY GAP II	10,115
MANNING	10,124
FORGEY PLACE	10,129
MILLER	10,130
PINE MOUNTAIN	10,134
BARKER	10,135
OKIE TRAIL	10,148
SEVEN L	10,161
V R	10,164
OIL MOUNTAIN	10,453
GEARY DOME	14,056
STRAND 2	14,057
ECCLES	20,523
TWENTYMILE HILL	31,004
G.L.	706
DALEY RANCH	605

Allotment Name	Allotment Number
NORTH TIPTON	715
NORTH WAMSUTTER	716
HAYSTACK RIVER PAST	708
MONUMENT LAKE	711
HAYSTACK	707
BROWNS CANYON	741
SLATE CREEK	11,113
Smith Cut	2,383
FLYNN DRAW	12,148
Crazy Woman Creek	12,094
Montgomery	12,140
Ninemile	2,425
South Fork Powder R	2,389
Julio Draw	32,019
Michelena	12,227
Kingsbury/Wild Horse	22,202
Schiermiester	12,185
Clear Creek	2,093
Little Willow	2,310
Gosney, Elmer	2,395
Fourmile Ranch	2,379
Farm	17,300
Crooked Creek	2,426
NURSE DRAW	12,190
BEKEBREDE DRAW	22,127
West Timber Draw	2,170
Sussex Cutoff	12,167
Dry Fork P.R.	2,341
Schoonover Ranch	22,214
South Fork	2,451
Hoe Ranch	12,169
Hepp Charles	12,153
Mitchell Draw	2,429
Rattlesnake Springs	12,098
Wall (East)	12,146
Grub Draw	2,469
Maycock Draw	22,221
T.W.	2,438
Flats	32,006

Allotment Name	Allotment Number
Powder River Ranch	2,260
Timber Draw	12,199
Salt Creek	2,411
Crenshaw Hill	12,218
Mark Gordon	2,368
Reno Draw	2,268
Billy Creek	2,262
Dugout Creek	2,453
Gammon Draw	12,079
V Bar F	2,284
Lawrence Land Co. Inc.	12,188
Cat Creek	2,376
Vanderhoff	2,345
South Sussex StkRst	2,467
Sussex Stockrest	2,420
Falxa	12,139
Pumpkin Creek	12,138
Little Poison Creek	32,007
Soldier Creek Ranch	2,294
KURTLEY DRAW	12,056
BUCKNUM	10,081
ICE CAVE MOUNTAIN	10,042
Daley Reservoir	15,990
MATADOR	10,020
NORTH DAVIS	17,677
M & D	10,123
GAS HILLS	11,508
SMOKY GAP-SHEPPERSON	254
UPPER POISON SPIDER CREEK	14,289
ORMSBY	10,082
HIGHWAY JUNCTION	523
SUMMER ALLOTMENT	1,357
BATES CREEK	10,003
DIFFICULTY	800
MINE	314
MOSS AGATE	309
ANTELOPE SPRINGS	310
BATES BENCHMARK	311
LU	604



Allotment Name	Allotment Number
HILLBERRY RIM	579
SULLIVAN	328
PINE GROVE/BOLTEN	10,623
Eubank S Labarge Ind	2,061
Ellis Block/Petes Gap	811
Fontenelle MDW Ind	22,010
DANA MEADOWS SOUTH	829
TIPTON	10,621
SOUTH RED DESERT	10,619
LAZY Y S RANCH	10,626
STEWART CREEK	10,102
Bonduraunt Individual	12,125
CHACE BLOCK	830
ECHO SPRINGS	10,607
SIXTEEN MILE	10,616
PASS CREEK RIDGE	827
Beaver Cr. Meadow Ind	2,142
DANA BLOCK NORTH	822
South Labarge Common	22,005
South Desert Allot.	2,040
FT STEELE BREAKS	816
SOUTH WAMSUTTER	10,620
CYCLONE RIM	10,103
S Piney Ranch Ind	2,074
Sand Draw Allotment	2,156
RINER	10,615
Beaver Cr. Ind	2,141
Labarge Unit Ind	2,194
STONE	10,221
N. Labarge Com	2,077
Horse Center	3,114
Polecat Bench	1,071
HOGG (GCRA)	3,033
Greenwald	3,045
East/West	1,060
GOULD NORTH IND	2,511
Cottonwood	2,551
Lovell Group 5	1,050
Foster Gulch	1,039

Allotment Name	Allotment Number
Turnell	3,107
Oilwell	3,113
Big Horn River Riparian Tracts	1,081
Sand Hills 1043	1,043
Dump (WRA)	1,515
Badlands	1,087
Pitchfork	2,532
Cedar Mountain	2,528
Greybull Group	1,051
Meeteetse Rim	3,096
Homestead/Avent	2,564
Tonopah Ridge	2,544
Eagle Pass	3,035
Little Sheep Mountain	1,053
Kukla Section 15	2,523
Heart Mountain South 3099	3,099
Dry Creek Wildlife	14,243
Lovell Group 1	1,032
Red Cabin	3,079
South Lovell Group	1,052
Rush Creek	3,119
Meeteetse Creek 2561	2,561
Coal Creek	3,006
Stone Barn 15	3,112
Thumper	1,059
Little Dry Creek	3,061
Sand Hills 1054	1,054
Osborn	3,010
Meeteetse Creek 3031	3,031
Rawhide	3,098
91 Ranch	2,545
Trailing Pasture	3,065
Winniger	2,553
Himes Group	1,031
Red Point	3,067
Big Trap	1,070
Oregon Basin	3,029
Individual 1061	1,061
EMIGRANT GAP	10,050

Allotment Name	Allotment Number
BATES HOLE SDW	1,500
SOUTH CAVE GULCH	10,006
F.L. RANCH	10,031
SOUTH DAVIS	10,039
BIG MUDDY	10,152
Hoodoo Base	3,048
Heart Mountain North	3,011
Himes-Spence	1,037
BYRON OIL FIELD	1,016
Red Desert	13,012
Sublette	13,027
Sands	13,015
Rock Springs	13,018
Fourth of July	3,016
Figure 4	13,023
SMITH CREEK	10,083

**Table 4. Alternative E: Grazing Allotments Impacted**

Allotment Name	Allotment Number
WORLAND CATTLE GROUP	7
LOWER NOWATER	15
RATTLESNAKE RIDGE	34
MANDERSON	36
LOWER SAND CREEK	73
SAND CREEK	91
SCHOOLHOUSE GULCH	99
NOWATER	105
DENVER JAKE DRAW	153
SLICK WATER	162
TORCHLIGHT	181
EAST BASIN DRAW	201
SOUTH FORK CASPER CREEK	241
WYATT DRAW	244
SMOKY GAP-SHEPPERSON	254
WHEATFIELD	289
MOSS AGATE	309
ANTELOPE SPRINGS	310
BATES BENCHMARK	311

Allotment Name	Allotment Number
MINE	314
SULLIVAN	328
ROBINETT	455
BLUE SPRINGS	501
SOUTH LUCERNE GROUP	502
SO. GOOSEBERRY GROUP	507
NO. GOOSEBERRY	508
EAST TANNER	511
GRASS CREEK	522
HIGHWAY JUNCTION	523
RIMROCK BASIN	526
GRASS POINT	545
D & LM IND	548
GARDNER BADLANDS	562
RED SPRINGS DRAW	570
SOUTH BASIN	577
NORTH BASIN GROUP	578
HILLBERRY RIM	579
KIRBY CREEK	589
LITTLE SAND DRAW	590
ROCK SPRINGS DRAW	602
LU	604
DALEY RANCH	605
HOME	616
NORTH GRASS CREEK	621
FREEMAN DRAW	625
SWING INDIVIDUAL	641
WEST FIVE MILE	651
BADGER GULCH	652
COPPER MTN	655
ENRIGHT	662
COW PASTURE	663
ALAMO CREEK	664
NELSON	665
10 MILE	671
SOUTH SLEEPER	683
G.L.	706
HAYSTACK	707
HAYSTACK RIVER PAST	708

Allotment Name	Allotment Number
MONUMENT LAKE	711
NORTH TIPTON	715
NORTH WAMSUTTER	716
BROWNS CANYON	741
DIFFICULTY	800
Ellis Block/Pete's Gap	811
FT STEELE BREAKS	816
DANA BLOCK NORTH	822
PASS CREEK RIDGE	827
DANA MEADOWS SOUTH	829
CHACE BLOCK	830
33 MILE SDW	1000
BYRON OIL FIELD	1016
Himes Group	1031
Lovell Group 1	1032
Himes-Spence	1037
Foster Gulch	1039
Sand Hills 1043	1043
Lovell Group 5	1050
Greybull Group	1051
South Lovell Group	1052
Little Sheep Mountain	1053
Sand Hills 1054	1054
Thumper	1059
East/West	1060
Individual 1061	1061
Big Trap	1070
Polecat Bench	1071
Big Horn River Riparian Tracts	1081
Badlands	1087
Cantril Jack Allot.	1301
NORTH OF CB&Q R.R.	1302
South of CB&Q RR	1303
NORTH OF TRACKS	1312
Moneta Hills Pasture	1314
DITCH PASTURE	1315
MADDEN RANCH PASTURE	1316
BRANDAU RANCH ALLOT	1317
ST.CLAIR SOUTH PAST.	1322

Allotment Name	Allotment Number
HOODOO CREEK ALLOT	1324
EAST OF RANCH	1325
BOW & ARROW	1332
DE PASS RANCH	1337
PICARD PRIVATE ALLOT	1339
SCOTT DRAW	1351
CAMPBELL	1353
LOOKOUT HILL	1355
SUMMER ALLOTMENT	1357
CABIN PASTURE	1366
RIM PASTURE	1401
DELFELDER ALLOTMENT	1402
CONANT CREEK COMMON	1403
WM HERBST WINTER	1404
POISON CREEK	1406
MUSKRAT AMP	1407
MUSKRAT OPEN	1409
SHOSHONI ROAD	1411
PIPELINE PASTURE	1413
ANDERSON WINTER	1414
HAYBARN HILL	1417
BATES HOLE SDW	1500
Dump (WRA)	1515
LITTLE BUG PASTURE	1518
Circle Bar Allotment	1614
NORTH OF DRIFT FENCE	1615
KEESTER	1616
CABIN CREEK PASTURE	1620
JJ WINTER PASTURES	1629
TRAM ROAD PASTURE	1630
GRANITE MOUNTAIN OPEN	1636
GARSON RANCH	1640
BIG PASTURE	1703
BREEDING PASTURE	1704
ICE SLOUGH	1707
HAY MEADOW PASTURE	1711
WHITLOCK FENCED	1713
FENCED INDIVIDUAL	1717
EAST BEAVER COMMON	1801

Allotment Name	Allotment Number
SAND DRAW AMP	1802
CROOKS GAP	2023
MITCHELL PASTURE	2028
South Desert Allot.	2040
Eubank S Labarge Ind	2061
S Piney Ranch Ind	2074
N. Labarge Com	2077
Clear Creek	2093
Beaver Cr. Ind	2141
Beaver Cr. Meadow Ind	2142
Sand Draw Allotment	2156
West Timber Draw	2170
Labarge Unit Ind	2194
Powder River Ranch	2260
Billy Creek	2262
V Bar F	2284
Vanderhoff	2345
Mark Gordon	2368
Cat Creek	2376
Fourmile Ranch	2379
Smith Cut	2383
Reno	2385
S. Fork Otter Creek	2386
South Fork Powder R	2389
Gosney, Elmer	2395
Salt Creek	2411
Sussex Stockrest	2420
Crooked Creek	2426
Mitchell Draw	2429
T.W.	2438
South Fork	2451
Dugout Creek	2453
South Sussex StkRst	2467
Grub Draw	2469
GOULD NORTH IND	2511
V-H DRAW	2514
Kukla Section 15	2523
Cedar Mountain	2528
Pitchfork	2532

Allotment Name	Allotment Number
BLUE HILL	2536
STUMP	2542
SWALLOW	2543
Tonopah Ridge	2544
91 Ranch	2545
V PASTURE	2547
Cottonwood	2551
Winniger	2553
REED CREEK	2554
LAWLER SEC 15	2555
Meeteetse Creek 2561	2561
Homestead/Avent	2564
Coal Creek	3006
Osborn	3010
Heart Mountain North	3011
Fourth of July	3016
Oregon Basin	3029
Meeteetse Creek 3031	3031
HOGG (GCRA)	3033
Eagle Pass	3035
Greenwald	3045
Hoodoo Base	3048
Cottonwood Creek	3051
Little Dry Creek	3061
Trailing Pasture	3065
Red Point	3067
Red Cabin	3079
Chapman Bench 3086	3086
Meeteetse Rim	3096
Rawhide	3098
Heart Mountain South 3099	3099
Turnell	3107
Stone Barn 15	3112
Oilwell	3113
Horse Center	3114
Heart Mountain South 3116	3116
Holding Pasture	3117
Rush Creek	3119
BATES CREEK	10003



Allotment Name	Allotment Number
SOUTH CAVE GULCH	10006
POWDER RIVER DRAW	10007
WALTMAN	10008
BURKE	10009
HILAND	10012
RAILROAD	10013
CAMEL'S HUMP	10014
CANTRIL-TODD	10019
MATADOR	10020
SUMMER BREWER	10022
BECK PLACE	10027
SOUTH HILAND	10030
F.L. RANCH	10031
SOUTH DAVIS	10039
ICE CAVE MOUNTAIN	10042
ERVAY BASIN	10044
POISON SPIDER	10045
EMIGRANT GAP	10050
POTTER	10053
SHAMROCK	10056
SULLIVAN	10066
TEAPOT	10068
ORMSBY	10082
SMITH CREEK	10083
PAUL PLACE	10094
FENTON	10095
FORGEY	10096
GOWIN	10097
STEWART CREEK	10102
CYCLONE RIM	10103
HAUGHTON	10107
SMOKEY GAP II	10115
SMOKY GAP-H.JARRARD	10118
M & D	10123
MANNING	10124
FORGEY PLACE	10129
MILLER	10130
PINE MOUNTAIN	10134
BARKER	10135

Allotment Name	Allotment Number
DEADHORSE II	10137
TTT-SCOTTS PLACE	10139
CASTLE CREEK	10144
OKIE TRAIL	10148
WEIDT	10159
STONE	10221
ECHO SPRINGS	10607
RINER	10615
SIXTEEN MILE	10616
SOUTH RED DESERT	10619
SOUTH WAMSUTTER	10620
TIPTON	10621
PINE GROVE/BOLTEN	10623
LAZY Y S RANCH	10626
GRAHAM	11111
SLATE CREEK	11113
MUSKRAT-LINN	11501
FRASER DRAW	11502
GAS HILLS	11508
DIAMOND SPRINGS	11509
NORTH DOBIE FLAT	11511
BLACKJACK RANCH	11513
BASIN PASTURE	11516
BUG MEADOWS PASTURES	11517
GREEN MT.FENCED	12004
EAST ALLOTMENT	12012
FENCED ALLOTMENT	12013
KURTLEY DRAW	12056
Gammon Draw	12079
Crazy Woman Creek	12094
Rattlesnake Springs	12098
Bonduraunt Individual	12125
Pumpkin Creek	12138
Falxa	12139
Montgomery	12140
Wall (East)	12146
FLYNN DRAW	12148
Hepp Charles	12153
NORTH PHINNEY DRAW	12159

Allotment Name	Allotment Number
Sussex Cutoff	12167
Hoe Ranch	12169
4Mile Creek/RC	12182
Schiermiester	12185
Lawrence Land Co. Inc.	12188
NURSE DRAW	12190
Timber Draw	12199
Crenshaw Hill	12218
Michelena	12227
ELLIS DRAW	12991
Little Sandy	13003
Reservoir	13006
Pacific Creek	13007
Red Desert	13012
Bush Rim	13013
Sands	13015
Rock Springs	13018
Figure 4	13023
Sublette	13027
Dry Creek Wildlife	14243
UPPER POISON SPIDER CREEK	14289
Daley Reservoir	15990
SOUTH PHINNEY DRAW	16896
ANTELOPE HILLS	17055
ARAPAHOE CREEK	17056
ALKALI CREEK SHEEP	17057
NORTH DAVIS	17677
ECCLES	20523
WYATT PLACE	20530
South Labarge Common	22005
Fontenelle MDW Ind	22010
BEKEBREDE DRAW	22127
Kingsbury/Wild Horse	22202
Schoonover Ranch	22214
Maycock Draw	22221
TWENTYMILE HILL	31004
Flats	32006
Little Poison Creek	32007
Julio Draw	32019

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## **APPENDIX K**

### **Public Comment Summary Report**





U.S. Department of the Interior  
Bureau of Land Management

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# Public Comment Summary Report

Wyoming Pipeline Corridor Initiative Project  
Draft Environmental Impact Statement

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August 2020

## **PREPARING OFFICE**

U.S. Department of the Interior  
Bureau of Land Management  
Wyoming State Office





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# 1 INTRODUCTION

This report describes the public review and comment process implemented for the Wyoming Pipeline Corridor Initiative (WPCI) draft environmental impact statement (draft EIS) between April 17, 2020, and July 16, 2020. The Bureau of Land Management (BLM) prepared the draft EIS to disclose the potential environmental impacts associated with the proposed WPCI and to comply with the National Environmental Policy Act (NEPA) of 1969. The purposes of the public review and comment process are to 1) ensure that all interested and affected parties are aware of the WPCI and 2) provide the public with an opportunity to review and provide comments on the draft EIS. Agency and public comments received during the public comment period are summarized and will be used to help inform revisions to the final environmental impact statement (final EIS) for the WPCI. Supplementary information related to the public review and comment process is included in the following appendices:

- Appendix A. Notice of Availability Published in the *Federal Register*
- Appendix B. Virtual Public Meeting Materials
- Appendix C. Question and Answer Report
- Appendix D. Notification Letters and Contacts List

To review public comment letters received during the draft EIS public comment period, visit the E-Planning website, as follows: <https://eplanning.blm.gov/eplanning-ui/project/1502028/570>.

## 2 DRAFT ENVIRONMENTAL IMPACT STATEMENT PUBLIC COMMENT PERIOD

The BLM developed a public involvement strategy to educate the public and interested parties about the WPCI Project, receive their input on the draft EIS, and identify resource concerns. Information provided by the public during the draft EIS public comment period for the WPCI Project helps the BLM revise the content and analysis in the final EIS. Mechanisms used to assist the BLM in providing opportunities for public education and involvement during the public comment period are listed below in Sections 2.1 through 2.4.

### 2.1 Publication of the Notice of Availability

The Notice of Availability (NOA) for the WPCI Project was published in the *Federal Register* on April 17, 2020. The NOA serves as the official public announcement of the release of the draft EIS and initiated the 90-day public comment period, scheduled to conclude on July 16, 2020. The NOA includes a brief overview about the Proposed Action and alternatives, potential resource concerns, opportunities to provide comments, and BLM project contacts (see Appendix A). The NOA stated that the BLM would announce 15 days in advance, future public involvement opportunities, such as meetings or hearings, through public notices, media releases, and/or mailings.

### 2.2 Public Notifications

#### 2.2.1 Press Release and Email

The BLM issued a press release on May 13, 2020, to notify the public of the virtual public meetings, and a dedicated website was created to allow participants to register for the virtual meetings (<https://www.swcavirtualpublicinvolvement.com/wyoming-pipeline-corridor-initiative-rmp/eis>). The

press release also included information about the WPCI Project and provided guidance on how to comment on the draft EIS. Appendix D contains a copy of the press release and a list of federal and state agencies, counties, conservation districts, and tribes that the BLM conducted public outreach to.

On May 18, 2020, the BLM sent an email to federal and state agencies, tribes, interested parties, those who requested to be placed on the WPCI mailing list, those who submitted scoping comments, and cooperating agencies. The email provided notification of virtual public meetings, a registration link to sign up for the virtual public meeting, and dates of the public comment period for the proposed Project.

### **2.2.2 Information Available Online**

The E-Planning website for the WPCI includes WPCI information in an easily accessible format (i.e., Section 508-compliant portable document format file). It also includes an email address for submitting electronic comments. Documents available on the website include the following:

- Project proposal
- *Federal Register* notices
- Scoping meeting materials and scoping summary report
- Draft EIS
- Draft EIS virtual meeting PowerPoint
- Wildlife, vegetation and special status species reports
- Maps and GIS for the WPCI and alternatives
- Other appropriate information

The BLM also developed a website to provide information of the WPCI to the public. The website included information about the virtual public meetings and links for members of the public to register for the virtual public meetings. The website included attendee resources for the virtual public meetings to inform the public of the format of the meeting and familiarize them with how to participate and use the Zoom webinar platform utilized for the virtual public meeting. The website also included contact information for the BLM Project Manager, links to the Draft Resource Management Plan Amendment/EIS, data and maps, E-Planning website and a link to leave public comments.

## **2.3 Opportunities for Public Comment**

Members of the public, tribes, cooperators, and federal, state, and local agencies had several methods for providing comments during the public comment period from April 17 through July 16, 2020. Comments could be submitted electronically to the BLM through E-Planning (<https://eplanning.blm.gov/eplanning-ui/project/1502028/510>) or emailed to BLM Project Manager Heather Schultz (HSchultz@blm.gov).

## **2.4 Virtual Public Meetings**

The BLM held two virtual public meetings on May 28, 2020 from 11:00 a.m. to 1:00 p.m. mountain standard time and from 5:00 p.m. to 7:00 p.m. mountain standard time. To participate in the virtual public meetings, interested parties were required to pre-register for the meeting using the registration link provided by the BLM. Attendees could join the virtual public meeting online or by phone. The format of the virtual public meetings included a short presentation followed by a question and answer (Q&A) session. The presentation by the BLM covered the following topics:

- Introduction and welcoming message by Mike Valle of the BLM
- An overview of the Zoom Webinar format and how to participate

- Formal BLM slide presentation by Mike Valle of the BLM (posted to the E-Planning site on May 29, 2020)
- How to provide comments on the draft EIS, including the closing date of the comment period
- The NEPA process
- WPCI proposal overview
- Alternatives analyzed in the Draft EIS
- Q&A session led by Heather Schultz of the BLM

Questions submitted as part of the virtual meeting registration process were answered first; followed by questions asked during the meeting. All general questions and detailed questions requiring specialist input were answered in the Q&A report, which was posted to E-Planning a week after the virtual public meetings.

### **2.4.1 Virtual Public Meeting Attendance**

Attendance for the virtual public meetings is summarized in Table 1. The morning meeting had 33 attendees, and the evening meeting had 24 attendees. Attendees included the BLM, third-party contractors, cooperators, and members of the public.

**Table 1. May 28, 2020, Virtual Public Meetings Attendance**

Meeting Time	Number Registered	Number Attended
Meeting 1: 11:00 a.m. to 1:00 p.m.	52	33
Meeting 2: 5:00 p.m. to 7:00 p.m.	33	24
<b>Total</b>	<b>85</b>	<b>57</b>

### **2.4.2 Virtual Public Meeting Materials**

Materials provided during the two virtual public meetings on May 28, 2020 included a Draft EIS Virtual Meeting PowerPoint and Attendee Interaction Guidance. These materials can be found on the E-Planning and the WPCI websites and are also located in Appendix B.

### **2.4.3 Question and Answer Session**

The Q&A portions of the virtual public meetings allowed participants to ask questions about the NEPA process or the WPCI to compose formal comments. Any questions asked as part of the virtual public meeting registration process or during the virtual public meetings were not entered in the WPCI record as a formal comment. Public comments submitted through the WPCI E-Planning portal during the public comment period were recorded as formal comments used to help inform revisions to the WPCI final EIS and are included in Section 4 of this report.

Members of the public could submit questions in the following ways:

- During registration, members of the public could include a question to be answered during the public meeting.
- During the public meeting, members of the public could use the Q&A feature in the webinar to submit a question to be answered during the meeting.

The BLM received a total of 38 questions from the public during the morning meeting and 12 questions from the public during the afternoon meeting. Several other questions and answers were provided by the BLM during the meetings, and those are also captured in the Q&A report.

The Q&A report was posted to the BLM E-Planning website on June 5, 2020, and is included in this report as Appendix C.

### 3 METHODS FOR COMMENT COLLECTION AND ANALYSIS

This section summarizes the methods for comment collection and analysis for the individual comments received during the public comment period

In compliance with the requirements of Council on Environmental Quality regulations for implementing NEPA, all substantive comments received were assessed and a response provided. According to BLM guidelines (BLM's NEPA Handbook, H-1790-1, January 2008), substantive comments are defined as doing one or more of the following:

- Question, with reasonable basis, the accuracy of information in the EIS
- Question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis
- Present new information relevant to the analysis
- Present reasonable alternatives other than those analyzed in the EIS
- Cause changes or revisions in one or more of the alternatives

Comments not considered substantive include those

- in favor of or against the Proposed Action or alternatives without reasoning that meets the BLM's definition of substantive comments;
- only agreeing or disagreeing with BLM policy or resource decisions without justification or supporting data that meet the BLM's definition of substantive,
- pertaining to the Project area or Project, and
- taking the form of vague, open-ended questions.

BLM received 544 comment submittals that were identified as unique. Most individual comment submittals had multiple comments. Table 2 includes a summary of the total number of public comments received and associated concern, issue, or resource topic, which are presented in alphabetical order of coding category. It is possible that comments addressed multiple topics; therefore, comments may be included in multiple categories listed in Table 2.

**Table 2. Public Comment Coding Categories**

Initial Coding Category	Coding Counts	Percentage of Total
Add to mailing list	6	1%
Air quality	48	9%
Alternatives	76	14%
Cultural resources	2	0%

Initial Coding Category	Coding Counts	Percentage of Total
Cumulative effects	18	3%
Environmental justice	13	2%
Fire and fuel loads	1	0%
General ecological resources	4	1%
Geology and minerals	3	1%
Groundwater	14	3%
Hazardous and solid waste management	0	0%
Land use and access	22	4%
Mitigation	10	2%
Native American concerns	20	4%
Negative comment (non-substantive)	6	1%
Noise	0	0%
Out of scope	3	1%
Paleontological resources	3	1%
Positive comment (non-substantive)	22	4%
Process – NEPA	66	12%
Proposed action	39	7%
Public health and safety	4	1%
Purpose and need	13	2%
Range/grazing	12	2%
Reclamation	8	1%
Recreation	1	0%
Request for additional information	7	1%
Socioeconomics	11	2%
Soils	7	1%
Special designations	7	1%
Special status species	26	5%
Surface water	15	3%
Transportation	6	1%
Vegetation	22	4%
Visual resources	0	0%
Wild horses	1	0%
Wildlife – general	28	5%
<b>Total</b>	<b>544</b>	<b>100%</b>

## 4 COMMENTS RECEIVED

### 4.1 Summary of Submissions

The BLM Wyoming State Office received 29 public comment submissions from members of the public, federal state, and local agencies, organizations, businesses, and cooperating agencies during the public comment period (Table 3). Comments were emailed directly to BLM Project Manager Heather Schwartz and/or submitted electronically via the BLM's E-Planning website. No form letters were received. All comments were given equal consideration, regardless of method of submittal.

**Table 3. Comment Submissions**

Submission Number	Date Received	Submission Type	Name
001	5/11/2020	Individual	Amanda Moore
002	4/17/2020	Individual	Jean Public
003	5/18/2020	Individual	James Sherrard
004	5/28/2020	Individual	James Sherrard
005	4/25/2020	Individual	Laurence Kirby
006	6/10/2020	Cooperating agency	Rio Blanco County Board of County Commissioners
007	6/11/2020	Cooperating agency	Sweetwater County Board of County Commissioners
008	6/15/2020	Federal agency	U.S. Environmental Protection Agency
009	7/1/2020	Organization	Western Watersheds Project
010	4/18/2020	Individual	Croitiene ganMoryn
011	5/10/2020	Individual	Christopher Stroz
012	6/16/2020	Cooperating agency	Hot Springs County Natural Resources Planning Committee
013	7/10/2020	Business	Genesis Alkali
014	7/10/2020	Business	Occidental Petroleum Corporation
015	7/13/2020	State agency	Wyoming Department of Agriculture
016	7/15/2020	Cooperating agency	Campbell County Board of County Commissioners
017	7/16/2020	Organization	Wyoming Farm Bureau
018	7/16/2020	State agency	Wyoming Game and Fish Department
019	7/16/2020	State Agency	Wyoming Department of Environmental Quality
020	7/16/2020	State agency	State of Wyoming
021	7/16/2020	Organization	Wyoming Outdoor Council
022	7/16/2020	Cooperating agency	Washakie County Conservation District
023	7/16/2020	Organization	Western Watersheds Project et. al.
024	7/16/2020	Organization	Powder River Basin Resource Council
025	7/16/2020	Cooperating agency	Wyoming County Commissioners Association
026	7/16/2020	Organization	Petroleum Association of Wyoming



<b>Submission Number</b>	<b>Date Received</b>	<b>Submission Type</b>	<b>Name</b>
027	7/16/2020	Business	Power Company of Wyoming LLC/ TransWest Express LLC
028	7/16/2020	Cooperating agency	Saratoga-Encampment-Rawlins Conservation District
029	7/16/2020	Cooperating agency	Converse County Board of Commissioners

## **4.2 Public Comments Received**

Table 4 provides the public comments received organized by comment code(s) and includes a response from BLM for each comment.

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Table 4. Public Comments with BLM Responses

Comment Letter Number	Comment Number	Comment	Response
001	001	Authorities responsible for potable water should be given more than 1 week to prepare for potential issues arising from construction as safe drinking water is vital to the well being of citizens.	Impacts to water resources are presented in Section 3.19 and further site-specific analysis will be conducted in the event that construction activities are proposed.
002	001	blm is mismanaging our national lands owned by 330,000,000 americans. they have been convicged at this agency in the past of bribery and taking bribe money from oil profiteers. they are probably still doing it and i ask for an investigation to see if it has stopped	Comment noted. This comment is beyond the scope of analysis for WPCI.
002	002	i am against this pipeline. gas is very low right now. russia and saudis are crazed to sell us as much oil as we want. there is no reason to drill our nation to bits. we need to save oil for our children and grandchildren. no need to let rich white men keep making themselves into billionaires and we have no clean water left anywhwer that we can drink. and we kill off all n agture to let these rich white men make themselves richand ourselves die from teh pollution. this is a bad plan, we dont need this pipeline at all, we dont need it. there is no reason to allow this drilling or this pipeline. blm is working as if this is the gas shortage of many eons ago and seems nable to adjust to the present situation. this needs shut down. protect our national lands. this pipeline sucks. this commetrn is fopr the public record. and i particularly find it disgusting when an average american who tries to protect some of this land buys it for \$1.50 an acre and then has to go through hell to keep the land she is trying to protect	Thank you for your comment.
002	003	this commen is for the public rcord. please receipt.	Thank you for your comment.
003	001	In the Comprehensive RMP/EIA excellent job on quantifying the impacts but I do not see a section on impact mitigation. Will this mitigative practices come later when specific corridors are approved or dung the BLM ROW easements approvals and assessments. Through the years many excellent mitigative measures have been developed for pipeline impacts such as double ditching to save the integrity of top soil, following existing areas of roads that are already impacted, or boring the lines beneath archaeological assets or trails.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
003	002	A comment on the life cycle of CO2 used in EOR, and realizing many of the areas in Wyoming aren't currently under CO2. As so stated the CO2 is flooded into the formation by injection wells and travels with the miscible oil to 4-5 recovery oil producing wells. Once entering the wellbore: it is oil, natural gas, produced water, and CO2 either dissolved in the liquid or in the vapor state. When produced to the surface and with pressure reductions you have venting of the oil, natural gas, and CO2 into the atmosphere. The reason most oilfield production tanks (100, 210 and field fabricated BBL sized) are atmospheric which means they burp to the atmosphere, almost all oilfield pneumatic and level controllers use natural gas containing dissolved CO2 and they vent to the atmosphere. Meaning the industry is unable to recycle 100% of the CO2 for reuse, they are constantly adding CO2 for makeup of loses. EOR is not a geologic sink for storage for CO2 GHG, you have losses to the atmosphere	Thank you for your comment. We refer the commenter to Section 3.2.5.1 where the potential for leakage from the reservoir or production facilities is addressed: "Although there could be some future leakage from the reservoir or during production operations, it cannot be reasonably estimated at this time."
003	003	Section 1.5.3 It is unclear in the RMP/EIS if this will include on oil lease flow lines that connect remote production tank batteries to transportation pipelines? Also does project include lines associated with the distribution of the EOR CO2 to the numerous injection wells?	WPCI does not include any infrastructure (e.g., pipelines or tank batteries) outside of these corridors. These types of site-specific projects are outside the scope of this analysis.
003	004	Section 1.5.3 States: "And any future ROW projects within the designated Corridor would be required to conduct a specific NEPA analysis." I don't see the benefit of doing this corridor approval if any lines within still have to undergo a NEPA review and Approval. They should be given a FONSI or issued a general permit (GP) under the RMP/ EIS if certain general practices are followed. This does not make sense to me.	Section 1.3.1 of the final EIS states that the purpose for the BLM action is to designate corridors for the preferred location of future pipelines associated with the transport of CO2, EOR products, and other compatible uses and to amend the various BLM RMPs within the State of Wyoming to incorporate the proposed corridors. The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could reference analyses already conducted. The analyses in the EIS evaluate the environmental impacts of the designation of the proposed corridors and subsequent land use amendments. Future NEPA analysis would be required to analyze additional specific environmental impacts, associated with specific projects.
003	006	Oil is at an historical 30-40 year low around \$20 BBL for WTI, EOR produced oil has even a higher breakeven point before in is even feasible. Has the project considered EOR may never be a financial possibility in Wyoming.	This proposal fits well into the BLM's land use planning efforts. Land use planning is a forward-thinking process, and the BLM must objectively evaluate an application on its environmental conformance and not necessarily on its current economic viability.
004	001	This is more directed to the Department of the Interior and BLM and implementation of FLMPA, but very progressive in doing an EIS on potential pipeline corridors. It would have great utility in other BLM states. But, in time I would like to see the BLM move toward issuing Permits By Rule (PBRs) under FLMPA as you gain experience with the corridor concepts. If this EIS cannot be used as a functional planning tool with an end product I just don't see the time savings.	The BLM does not have the authority under Federal Land Policy and Management Act or our regulations to issue a permit by rule. A proponent would need to submit an SF-299 application for a ROW. Additional site-specific NEPA would be required to evaluate the plan of development.
004	002	I would like to see more of a discussion on mitigation practices that are common in the pipeline industry, where a certain construction practice may allow you to be closer to a LEK, or bore under a historic trail. These would be just like River Crossings where you bore under to avoid impacts. It may allow you to refine the corridor while in the planning stages	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
004	003	Once this EIS is final I would like to see the specific RMP updated as to the corridors so there would be a degree of NEPA fast tracking.	Comment noted. The Record of Decision for the EIS would include the amendments to the RMPs.
004	004	Can you send me the link where all the planning docs are located	The planning documents can be found on the WPCI E-Planning website at <a href="https://eplanning.blm.gov/eplanning-ui/project/1502028/570">https://eplanning.blm.gov/eplanning-ui/project/1502028/570</a> .

Comment Letter Number	Comment Number	Comment	Response
005	001	The WPCI is a huge piece of infrastructure -- 2000 miles of pipeline with associated engineering projects -- that will exacerbate the climate crisis, harm the fragile local environment and cultural sites, and benefit nobody other than the bottom lines of fossil fuel corporations.	Comment noted.
005	002	The urgency of the climate crisis is well known. This is precisely the wrong time to invest in outdated, polluting fossil fuel infrastructure which will only make the climate crisis worse. In addition, in a long pipeline like this, accidental methane emissions and oil spills are inevitable, irreparably harming our public lands.	Comment noted. Impacts to air quality and climate are discussed in Section 3.2 of the EIS.
005	003	Protecting the viability of fossil fuel companies, at the expense of the local and global environment, should not be on the BLM's agenda. Instead the BLM should live up to its mission to protect our public lands, and not open them up to be torn apart and polluted for private profit. The WPCI should not be allowed to go ahead. The DEIS's Alternative A (no action) is the only sane and rational way to proceed. Alternatives C and D merely mitigate slightly the bad effects of Alternative B and these should be rejected	Comment noted.
006	001	The Board of County Commissioners of Rio Blanco County, Colorado, herein "RBC" support the designation of the BLM land within the state of Wyoming as suitable for the construction of a CO2-Enhanced Oil Recovery (EOR) pipeline.	Comment noted.
006	002	Rio Blanco County supports the designation of 2,000 miles and 25 segments of pipeline corridor within the Green River, Kemmerer, Rawlins, Casper, Pinedale, Worland, and Buffalo Resource Management Plan (RMP) areas.	Comment noted.
006	003	The proposed corridor would run through the Shute Creek area, which is also the northern terminus of the Raven Ridge CO2EOR pipeline that runs southward to Rangely. This would allow for additional transportation of marketable oil and natural gas resources from Rio Blanco to other areas. The designation complies with the provisions of the 2016 Rio Blanco County Land and Natural Resources Plan and Policies (Plan) for oil and gas development in Rio Blanco County.	Thank you for your comment; however, the WPCI is to designate corridors within the State of Wyoming and RMPA/EIS is only analyzing the impact of the proposed corridors within the State of Wyoming.
006	004	Please see the full section (Section 4.7) on Oil, Gas, Coal and Minerals on pages 34- 47. Below are specific statements and evidence supporting the use of federal lands for oil and gas development. Page 34 Paragraph 2: "The development and production of extractable resources are vital to the custom, culture, social and economic stability of Rio Blanco County. Mineral resources support multitude of local jobs, industries, and activities." Page 37 Paragraph 1: "The Uinta Piceance Basin contains eight to six percent (86 percent) of the BLM Planning Area and a majority of the oil and gas development potential...The Basin is one of six priority provinces for the National Oil and Gas Assessment because of its potential for significant natural gas resources."Page 37 Paragraph 2: "The Southwestern Wyoming Province (SWWP) is a structural basin that formed during the Laramide orogeny...In Rio Blanco County the basin occupies about 7% of the very northeastern part of the county under the Routt National Forest." Page 37 Paragraph 3: "The Rangely Oil Field in Western Rio Blanco County is one of the largest and oldest oil fields in the Rocky Mountain West with cumulative production of about 900 million barrels of oil and 700 billion cubic feet of natural gas." 4.7.2 Policy Statements: #11. Open all federal lands shown to have reasonable mineral potential leasing with stipulations and conditions that will protect resource values.	Thank you for your comment; however, the WPCI is to designate corridors within the State of Wyoming and RMPA/EIS is only analyzing the impact of the proposed corridors within the State of Wyoming.
006	005	Thank you for this opportunity to provide comments on this very important issue. We encourage you to read in its entirety, the 2016 Rio Blanco County Land and Natural Resources Plan and Policies which encapsulates Rio Blanco County's right to participate in this process. As previously stated, Rio Blanco County, the White River Conservation District and the Douglas Creek Conservation District are obligated to protect the customs and culture of the local citizens, to provide protect the natural environment and resources."	Comment noted.
007	001	The county supports the WPCI project and the BLM Preferred Alternative D which minimizes impacts to sage grouse habitat, historic trails and other important resources. While supporting the preferred Alternative D, Sweetwater County would like to encourage the BLM to consider including the following additional county comments and concerns in its Final Resource Plan Amendment, FEIS and Record of Decision.	Comment noted. The BLM is considering all comments and concerns submitted through the public comment process for the WPCI RMPA/EIS.
007	002	All proposed pipeline corridors and related pipeline construction should be sited: <ul style="list-style-type: none"><li>o Within existing pipeline corridors or within or adjacent to existing pipeline or similarly compatible rights of way.</li><li>o To minimize impact to visual, wildlife, recreation, and water resources</li><li>o In consideration of the West-wide Energy Corridors Programmatic EIS and Review</li><li>o Outside of Sweetwater County road rights of way and in compliance with all Sweetwater County transportation and development guidelines and regulations.</li><li>o With full final reclamation bonding paid to the governing jurisdiction prior to any pipeline construction</li><li>o In compliance with federal and state guidelines and regulations regarding historic trails and landscapes</li></ul>	The proposed corridors were routed to minimize impacts to sensitive resources. Chapter 2 of the EIS discusses the alternatives and alternative development process. Alternative C was developed to avoid resource conflicts and maximize the use of existing corridors while Alternative D was designed to minimize resource conflicts. The siting of future pipeline and associated construction would be assessed in future site-specific NEPA. Section 1.5.2 discusses conformance with land use plans and plan amendments, including county plans.
007	003	WPCI Lateral Corridor #1: The Green River is the source of drinking water for the cities of Rock Springs, Green River and Granger and for several unincorporated communities. It provides high quality process water for several mines and major industries. In addition, the Green River provides water for the Seedskadee National Wildlife Refuge and the Fontenelle and Flaming Gorge Reservoirs which support sport fishing, boating and other recreational opportunities.  To protect Green River water for these important uses, Sweetwater County recommends that the final plan amendments and EIS stipulate that all pipeline crossings of the Green River and its perennial tributaries be installed by boring under these water features and provided with up and down stream automatic shut off valves for the purposes of limiting the size of product spills if a potential pipeline break occurs.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
007	004	In the vicinity of T17N R106W Section 10 and T17N R107W Section 12, WPCI Lateral Corridor #1 crosses the Flaming Gorge National Recreation Area (FGNRA). The FGNRA is a national recreation resource whose wildlife, fisheries and scenic resources support a multi-million dollar and multi-state recreation industry. With this in mind, Sweetwater County encourages the state, BLM and USFS to ensure that any proposed crossing of the FGNRA be completed in a manner that utilizes existing pipeline corridors and rights of way and preserves water quality, wildlife habitat and visual resources.	The proposed corridors would be designated only on BLM-administered lands. However, to use those corridors, future site-specific development projects would need to cross state, private, and non-BLM federal land. Accordingly, any subsequent proposed construction projects within the corridors would be subject not only to BLM permitting requirements but also to other federal, state, and local permit requirements. A WPCI proponent would be required to obtain all of these federal, state, and local permits and approvals prior to construction within the corridors.
007	005	WPCI Lateral Corridor #2: In previous BLM NEPA comments, Sweetwater County has consistently supported the preservation of the West-wide Energy Corridors 121-220 and 220-221 as Electrical Only corridors. These corridors provide an important right of way for the Jim Bridger, Gateway West, and other future above ground electrical transmission lines (see attached West-wide Corridor summary sheets	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
007	006	In addition, the county believes that mixing electrical and pipelines utilities within rights of way within a single corridor creates potential safety hazards. By placing these utilities into separate designated corridors, safety concerns can be minimized. For this reason, Sweetwater County recommends that the West-wide Energy Corridors 121-220 and 220-221 remain as electrical only corridors and that the WPCI Lateral Corridors be placed in corridors designated only for underground pipelines.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.

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007	007	WPCI Trunk Corridor #4 Approximately one third of the WPCI Trunk Corridor #4 is located adjacent to and parallel to the Tri-territory Scenic Loop Tour route. In this corridor, proposed pipelines would be buried and surface disturbance reclaimed thus resulting in minimal view shed impacts to the Tri-territory Loop Tour. Because of this, Sweetwater County supports the establishment of WPCI Trunk Pipeline Corridor #4 in this location. It should be emphasized that Sweetwater County opposes the West-wide Energy designation of the Tri-territory Loop Tour portion of this corridor as a multi-modal corridor which would allow both underground and above ground energy transmission lines. Sweetwater County believes that construction of above ground transmission facilities within this corridor could cause safety concerns and would be a detriment to the Tri-territory Scenic Loop Tour. For these reasons, Sweetwater County supports the designation of this corridor as an underground pipeline right of way corridor only which would be compatible with the WPCI project	Comment noted.
007	008	WPCI Lateral Corridor #5: Sweetwater County supports this corridor and its designation as an underground pipeline corridor only. During construction, special attention should be given to historical trails, crossings of Sweetwater County roads, and protection of wildlife habitat especially the aspen groves and isolated springs along Bush Rim. Sweetwater County supported locating the Denbury Pipeline within this corridor.	Comment noted.
007	009	West-wide Energy Corridor Programmatic EIS and Review: Sweetwater County and other cooperators have spent significant time in coordinating with the Bureau of Land Management and in the creation of the West-wide Energy Corridor Programmatic EIS and Review and have relied on these documents to help define their positions regarding pipeline corridors. With this mind, Sweetwater County believes that the BLM, within Chapter 1 - Section 1.5.2 Conformance with other Land Use Plans and Plan Amendments, should include a paragraph describing the importance and function of the West-wide Energy Corridor program and how the findings of that program are integrated into WPCI Draft EIS.  To ensure proper coordination with West-wide Energy above ground only corridors, Sweetwater County encourages the BLM to compare the proposed WPCI corridors with the locations and designations provide within the West-wide Energy Corridor Programmatic EIS and Review.	The No Action alternative includes the West-wide energy corridors, as well as other existing designated corridors and these areas were used in the developing of the WPCI alternatives.
008	001	The EPA appreciates the opportunity to support the BLM during the scoping process and the inclusion of changes in the Draft EIS which incorporate adjustments to corridors to reduce impacts to wildlife.	Thank you for your comment.
008	002	We understand that this EIS will not authorize pipeline construction and therefore we support the inclusion under Alternative D to require initiation of a new EIS process for future and new corridors.	Comment noted.
008	003	Additionally, our enclosed comments recommend that the Final EIS include an evaluation of potential adverse impacts from pipeline leaks or spills as they are unique to this technology.	Impacts from pipeline leaks or spills are presented in multiple sections in the EIS including Sections 3.5 Geology and Soils, 3.6 Hazardous Materials and Wastes, 3.12 Public Health and Safety, 3.17 Vegetation, and 3.19 Water.
008	004	We also support expanding the documentation of your consultation process to ensure the public is adequately informed of future changes which may occur within these corridors	A summary of the coordination and consultation process is presented in the Executive Summary and Chapter 1. A more detailed description of the coordination and consultation process is presented in Appendix A.
008	005	We are committed to working with you as you prepare the Final EIS and appreciate the opportunity to participate in the review of the Draft EIS.	Comment noted
008	006	We recommend the Final EIS include an evaluation of potential adverse impacts from pipeline leaks or spills. This should include potential adverse impacts to; surface waters, public or private water supplies, human health, vegetation, or wildlife. In this part of the analysis, it would be useful to discuss the probabilities and/or likely frequencies of different types of spill or leak events over the life of this type of pipeline. We expect this information would be useful in determining appropriate, safe corridor locations for future projects covered under these RMP changes	Impacts from pipeline leaks or spills are presented in multiple sections in the EIS including Sections 3.5 Geology and Soils, 3.6 Hazardous Materials and Wastes, 3.12 Public Health and Safety, 3.17 Vegetation, and 3.19 Water.
008	007	For existing ROW corridors where a future EIS is not anticipated, we recommend that the Final EIS include detailed maps where construction may occur so the public may have access to information which may be referenced in an EA in the future and where consultation may not be required	Detailed maps are provided in Appendix G and shapefiles of the alternatives are posted on the BLM's E-Planning website.
008	008	As stated in the Draft EIS, the BLM noted that consultation under the National Historic Preservation Act (NHPA) was provided to various Tribes, as well as the State Historical Preservation Office. It has been our experience that these contacts change frequently and must be verified with each action. To ensure that consultation requirements are met, provided below are two resources which are updated and maintained online: The National Association of Tribal Historic preservation Officers – Find a THPO <a href="https://www.nathpo.org/thpos/find-a-thpo/">https://www.nathpo.org/thpos/find-a-thpo/</a> ; and, The National Conference of State Historic Preservation Offices – Directory <a href="https://ncshpo.org/directory/">https://ncshpo.org/directory/</a> We recommend that an updated contact list for THPOs and SHPOs be cited in the Final EIS to provide the public with full disclosure on the consultation requirements under the NHPA.	Thank you for the recommendation. This list has been added to the final EIS Appendix A.  Information on tribal consultation has been updated in the final EIS.
009	001	How many entities were asked to be cooperating agencies? (The DEIS is contradictory and says in one place that 48 entities were asked to be cooperators and in another that 44 were asked. In one place it says the 44 entities listed in Appendix A are the ones that were asked to be cooperating agencies, and in another that they were the ones that accepted.)	This has been revised and clarified in the Executive Summary, Chapter 1, Appendix A, and Appendix C of the final EIS.
009	002	Were any tribes asked to be cooperating agencies?	Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to reflect the updated list of cooperating agencies.
009	003	The BLM answered questions during the WPCI DEIS public meetings. It is not unreasonable for the public to expect that the BLM would answer clarifying questions throughout the public comment period, instead of requiring all questions to be thought of and asked during the public meetings, which were more than a month ago. I am asking these questions in the spirit of NEPA, which states, "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 CFR § 1500.1(b).	The BLM was available to answer questions during the public comment period. The BLM Project Manager Heather Schultz's email and phone number were made available to the public. During the virtual public meetings, Heather also offered to answer questions via email or phone, should members of the public have follow-up questions, and this was also stated in the Q&A report in Section 3.1 Question 8. Information was also available on the WPCI E-Planning site.
009	004	Which tribes (if any) were asked to be cooperating agencies for the WPCI DEIS? Did any tribes accept that invitation?	Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to reflect the updated list of cooperating agencies.
010	001	I oppose this pipeline! The DEIS doesn't take into account ALL environmental impacts. If it did, this pipeline would be shut down under the law	Comment noted.

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011	001	The draft EIS notes the importance of groundwater in this area for supporting streams, springs, and seeps along with providing a source of drinking, industrial, and agricultural water (BLM 2020, 3-92), however the draft EIS is silent on the potential impact of a leak from a CO2 pipeline that could eventually be installed in a corridor designated under the WPCI on Wyoming's primary source of drinking water. Given that an estimated three-quarters of Wyoming residents rely on groundwater as the sole or a contributory source of their drinking water (Wyoming Department of Environmental Quality n.d.), BLM needs to assess the impact of a release on the groundwater resource users.	Pipelines are typically installed just below the frost line, which, in Wyoming, is approximately 4 feet, so the potential to encounter groundwater would be limited; where necessary crossing of perennial waters would be done, using directional boring techniques and the pipeline would be encased in a larger diameter pipe to contain fluids in the case of a leak or break. Loss of pressure would be remotely monitored. construction on public lands in saturated soils is typically not allowed. If at the site-specific level, a pipeline is proposed in areas where shallow ground water is suspected, BLM would require additional mitigation, including but not limited to, strategically placing shut off valves, additional pipeline casing, or re-routing that segment where feasible.
011	002	As noted in the DEIS (BLM 2020, 1-2), the actual installation of a pipeline would require additional NEPA analysis, allowing the potential impacts of specific pipeline line segments on specific aquifers to be analyzed in more detail, however a high level assessment is appropriate at this time to determine whether any significant impacts could be expected from a CO2 leak.	Impacts from pipeline leaks or spills to groundwater resources are presented in Section 3.19; and it is stated that "The proposed corridors cross no sole source aquifers".
011	003	The results of CO2 interaction with groundwater have been extensively researched and can lead to acidification (Little and Jackson 2010, 9228); mobilization of inorganic contaminants and metals (Birkholzer, et.al. 2008, 327; Little and Jackson 2010, 9228); and quality degradation from carbonate minerals common to aquifer rocks (Lu, Horvorka, and Wong 2020, 346). Much of the existing research on CO2 impacts to groundwater and aquifers is related to leaks from carbon sequestration activities and assumes a long-term release and resulting interaction with the water source. Most CO2 pipeline leaks will likely be of a shorter duration than considered in these studies, and the lack of relevant literature on the impact of short duration CO2/groundwater interaction further supports the need for assessment at this point of the WPCI. If this initial assessment finds that impact to groundwater is limited for short-duration leaks, this information will likely be reassuring to the public and responsive to several of the comments received during public scoping (BLM 2020, Appendix C-23).	This concern has been addressed in Section 3.19 of the EIS, though as appropriately mentioned, analysis is limited due to the current state of research surrounding short-term interactions of CO2 and groundwater resources. Analysis of potential leaks from CO2 to groundwater resources will mirror that of accidental release of hazardous materials and will thus utilize number of stream crossings within the proposed corridor per alternative.
011	004	While this appears to be a beneficial action in consolidating environmental impacts from pipeline corridors, the opportunity to sequester CO2 through EOR (Gozalpour, Ren, and Tohidi 2005; Ferguson, et. al. 2005), and the potential to prevent or delay the development of new oil production areas through extending the life of existing infrastructure, the impact of an underground CO2 release needs to be assessed to understand the risk to and mitigations necessary to protect the aquifers in this area.	Impacts from pipeline leaks or spills to groundwater resources are presented in Section 3.19; and it is stated that "The proposed corridors cross no sole source aquifers".
012	001	This is a BLM document, addressing BLM lands only. However, the several Wyoming counties impacted by this initiative could benefit from some direction in how to address the same issues addressed by this document	Thank you for your comment.
012	002	To the maximum extent possible, to minimize impacts to private lands the proposed CO2 pipeline corridors should utilize existing pipeline corridors, easements, and rights-of-way for the placement of pipelines and infrastructure	The proposed corridors would only be designated on BLM lands. Direct impacts to private lands would not occur from the proposed designation of corridors; however, indirect impacts to private lands are disclosed in Section 3.7 Land Use and Realty. Additionally, the proposal utilizing existing corridors and ROWs to the extent possible and the BLM considered existing corridors and ROWs in developing the alternatives for the EIS.
012	003	In split-estate lands, cultural and paleontological resources are the property of the surface owner. Consequently, it has been determined that NEPA review of mineral activity (including pipelines) on split estate lands does not require cultural/paleontological investigations. It would be helpful to note this in the text, even though BLM lands affected by this proposal may not contain any split estates.	The BLM did include this information in the analysis, and impacts are disclosed in Sections 3.3 and 3.11.
013	001	Genesis Alkali supports the Wyoming Pipeline Corridor Initiative (WPCI). It is an innovative approach to facilitating land use in the State of Wyoming and enhancing carbon capture, utilization and storage, and enhanced oil recovery; however, we want to help ensure the initiative will be successful	Thank you for your comment.
013	002	Alternative D is identified as the BLM's preferred alternative. Genesis Alkali also supports Alternative D, specifically the Alternative D modifications to Lateral Corridor 1 segment from Shute Creek to Rock Springs, as it appears to be the best balance of facilitating development of CO2 and Enhanced Oil Recovery resources in Wyoming while avoiding resource conflicts, minimizing impact on the KSLA and protecting Sage Grouse habitat.	Thank you for your comment.
013	003	Nonetheless to the extent that the Alternative D routing does cross the KSLA, the RMPs must include a requirement that, for those portions of the pipeline within the KSLA, no pipeline or pipeline activities may inhibit or preclude access to the trona resource (such as, without limitation, access to mining as well as trona mining support features like powerlines, roads, pipelines that may have to run in or cross the corridor). This is a critical element in ensuring the long-term viability of the unique Wyoming trona economy, and as such, that the lands within the WPCI cannot be solely "dedicated" to pipeline use within the KSLA.	As stated in Section 3.9.5 of the EIS, the designation of corridors would not impact valid existing rights within existing leases and permit areas.
014	001	Oxy generally supports the State of Wyoming's proposal to increase transportation corridors for EOR activities, but wants to ensure its interests are fully and adequate protected. For that reason, the BLM must consider and expressly protect all valid and existing rights	As stated in Section 3.9.5 of the EIS, the designation of corridors would not impact valid existing rights within existing leases and permit areas.
014	002	Please place David Applegate and Jennifer Leinonen, 900 Werner Court, Suite 100, Casper, WY 82601, on your mailing list for this project and specifically provide complete paper copies of the draft EIS, final EIS, and Record of Decision for this project at the address provided above	Individuals have been added to the mailing list and will receive paper copies of the final EIS and ROD.
015	001	As the proposed Project affects our agriculture industry, our natural resources, and the welfare of our citizens, it's important you continue to inform us of proposed actions and decisions and continue to provide us the opportunity to express pertinent issues and concerns. WDA supports the plan to amend the RMP's in all nine BLM Field Offices. The development of defined pipeline corridors across BLM and private lands will help utilize the valuable natural resources in our state while still helping to protect the natural, agricultural and social uniqueness of our great state.	Comment noted.
015	002	WDA encourages the BLM Field Offices to work closely with pipeline development companies, and through the site specific NEPA process, to ensure that private landowners' concerns and the interests of the various publics are met. This includes any road construction, reclamation and pipeline placement during the life of the project.	The BLM will continue to coordinate and consult the public and other interested parties as required by NEPA during any site-specific project.

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015	003	WDA appreciates the BLM recognizing the potential impact to livestock grazing and agriculture producers in the over 1,900 mile proposed corridor area. There are a number of specific impacts to agriculture the BLM must analyze in the EIS, or ensure they are included in the site-specific NEPA process: increased off- and on-road traffic, increased number of speeding vehicles in the area causing death or impairments of livestock, cut fences, opened gates, damaged range improvements, decreased Animal Unit Months (AUM's), decreased palatability of vegetation and forage from road dust and development activities, unsuccessful reclamation of disturbed areas, introduction and spread of noxious weeds and other detrimental social and economic impacts on livestock management operations. Many of these issues are broadly covered in the DEIS document, however, because of the broad scale and complexity of this project BLM must ensure that they are more thoroughly documented in each specific area when projects are authorized.	This EIS analyzes a planning decision to designate proposed corridors on BLM lands. Future site-specific NEPA would be conducted for future projects and developments within the proposed corridors and would evaluate specific impacts to livestock grazing and agriculture.
015	004	We strongly encourage BLM staff and pipeline development companies to work closely and consistently with all affected grazing permittees and agriculture producers to learn of their concerns and recommendations regarding these proposed corridors. Agriculture producers are intimately familiar with areas affected by this proposal and they possess irreplaceable long-term, on-the-ground knowledge. We highly recommend that during the site-specific NEPA process developers and BLM officials seek and address the concerns and recommendations of these stewards of habitat, forage and rangeland health.	The BLM has conducted stakeholder and public outreach for this EIS through scoping and the draft EIS public comment period. The BLM will continue to seek input through the final EIS, Governor's consistency review and protest period from stakeholders and the public including pipeline development companies, grazing permittees, and agriculture producers. Additionally, the BLM would continue to seek public input for future site-specific NEPA for any future development in the proposed corridors as required under NEPA.
015	005	Livestock grazing represents a vital economic value to agriculture producers and to local communities. Additionally, livestock grazing contributes irreplaceable environmental and social values, preservation of open space, scenic vistas and visual beauty of the area, and the traditional image of the historic rural landscapes of Wyoming and the West. This corridor project will have a direct impact on livestock grazing as pipelines are built and maintained. The BLM should analyze any loss or impact to these important environmental, historical and social values of livestock grazing.	Impacts to agricultural and livestock grazing have been disclosed in Sections 3.7 Land Use and Realty and 3.8 Livestock Grazing. Future site-specific NEPA would be conducted for future projects and developments within the proposed corridors and would evaluate specific impacts to livestock grazing and agriculture, as the commenter noted.
015	006	The WDA insists the BLM plan for, oversee, and ensure successful reclamation and mitigation occurs in all new/temporary disturbances in the project corridor. This also includes monitoring and eradicating invasive and noxious weeds until desired vegetation is established.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures included as part of the state's proposal and compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
015	007	The BLM must analyze and mitigate increased costs and reduced revenues on disturbed land for private landowners and grazing permittees in the final EIS and Record of Decision along with the specific impacts during the site specific NEPA process.	When the BLM receives a project proposal, site-specific NEPA will more thoroughly analyze these issues.
016	001	Thank you for allowing us the opportunity to submit comments regarding the above referenced document. Providing incentives for the expansion of pipeline infrastructure for carbon capture, utilization and storage (CCUS) and enhanced oil recovery is a critical component of Campbell County's overall development and marketing strategy and is vital to the long-term economic health of our county and the State of Wyoming. Our county is unique as it is comprised of roughly 12% federal surface and an estimated 83% federal minerals. We are an energy rich area with approximately forty percent (40%) of the nation's BTU's being produced from the surface coalmines, oil and natural gas located in the area. While we recognize that Campbell County has a significant portion of private surface, there could be some tangible benefits of getting CO2 to the County through this infrastructure proposal by promoting opportunities to develop additional lateral pipelines for enhanced oil recovery to multiple existing oil field complexes. Therefore, Campbell County provides the following detailed comments for BLM's consideration	Thank you for your comment.
016	002	Wyoming County Commissioner Association (WCCA) -- We generally endorse comments submitted by the WCCA unless inconsistent with the specific issues outlined below. State of Wyoming -- We generally endorse comments submitted by the State of Wyoming unless inconsistent with the specific issues outlined below.	Comment noted.
016	003	Wyoming County Commissioner Association (WCCA) -- We generally endorse comments submitted by the WCCA unless inconsistent with the specific issues outlined below.	Comment noted.
016	004	Wyoming Pipeline Corridor Initiative (WPCI) -We fully support the State of Wyoming for bringing the proposed action forward for consideration. The WPCI will be instrumental in promoting and facilitating the development of much needed CO2 to existing fields for enhanced oil recovery (EOR). Not only would carbon be stored through EOR, the corridors would assist in transporting CO2 for secure geologic storage.	Comment noted.
016	005	Generally, we support minimization of surface disturbance to protect impacts to resources where it is economically and practicably feasible. The level of detail provided in the DEIS maps between Alternative B and D are so minute that in some cases it is difficult to ascertain the difference. While Alternative D does slightly deviate certain route segments from those that are proposed in Alternative B to avoid or minimize impacts to resources, a significant amount of time was expended by the State ground truthing the proposed action and it was determined that the corridors were placed in the best locations. In fact, the DEIS inaccurately states that large acreages were added to the Resource Management Plans (RMPs) thru the Proposed Action, which was simply not accurate as 65% of the State's proposal is located within proposed corridors already designated in the RMPs. As the preferred alternative is finalized, we would encourage BLM to accept the State's input to the maximum extent possible within its regulatory.	The analysis includes changing the management of the corridors in Alternative B and Alternative D. To quantify this change, the amount of acres that would be managed differently from what is currently in the various RMPs was used.
016	006	Page ix. Special Designations Alternative B and D - "Under Alternative B, up to 15,269.3 acres across five wilderness study areas (WSAs) could be impacted by the proposed corridors." "Under Alternative D, up to 8,366.4 acres within four WSAs could be impacted by the proposed corridors."  This paragraph seems confusing as it could read that BLM may authorize pipeline corridors to be constructed within WSA boundaries and therefore the area within the WSA itself. Please clarify if it is the intent of BLM to identify the impacts from corridor construction as affecting the viewshed from WSA boundaries and therefore visual resources versus surfacing disturbing activity within the WSA boundary.	No proposed corridor alternative crosses a Wilderness Study Area; however, the impacts quantified are those areas within the WSAs that could be impacted by visual or auditory disturbances. Section 3.15 of the final EIS has been revised to ensure this is clear.
016	007	Page 1-3. 1.5.2.2. County Land Use Plans - "County land use plans were reviewed to ensure that the proposed corridors would not conflict with existing land use plans and policies for energy development. Upon review, the proposed corridors would be consistent with the goals and objectives of county land use plans and would not result in conflicts with existing land use plans."  While we appreciate that BLM acknowledges the requirement to conduct consistency reviews with local plans during the NEPA process, this analysis is insufficient and does not provide any detailed information that NEPA documents are consistent with local plans or more importantly where they are inconsistent with federal laws, rules and regulations and why.  NEPA's implementing regulations require that a federal agency "cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements." 40 C.F.R. §1506.2. Federal agencies must also discuss any inconsistencies between a proposed action and State and local plans and include in an EIS a description of the extent to which the agency would harmonize its proposed action with the local law or plan. The BLM must demonstrate, in a more meaningful way, that they considered local county natural resource plans and are consistent with local plans to the greatest extent allowed by law. An example of a more sufficient analysis conducted by a federal agency can be found under in the Forest Service Thunder Basin National Grassland 2020 Plan Amendment Final Environmental Impact Statement, Appendix F (Review for Consistency with State and Local Plans) dated May of 2020 and this more thorough template should be incorporated into the FEIS.	The analysis in the WPCI EIS is sufficient in that the land use plans were reviewed, and no inconsistencies were noted. This EIS will also go through Governor's consistency review, and the BLM will continue to coordinate with counties.

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016	008	<p>Page 3-1, Introduction, Paragraph 2 - "Under Alternative B and D, all proposed corridors, both outside and within existing designated corridors, would be designated exclusively for the transport of CO2 and EOR products, and other compatible uses."</p> <p>While we agree that CO2 is a critical component of the State's future promoting EOR, this project also advances a network that facilitates pipelines and carbon capture, utilization, and storage (CCUS) opportunities. Additionally, there are significant CO2 sources such as the Dry Fork Station and the Wyodak Campus, which could be analyzed as the origin of supply source points in the pipeline network recognizing that private surface easements would need to be obtained by a third party before construction of pipelines could occur. The Dave Johnson and Laramie River power plants should also be considered as a major CO2 supply source in this study.</p>	<p>This analysis does not preclude location of pipelines in another location. If there was a proposed project in these locations, the BLM would review that proposal at that time. The sources of CO2 would also be analyzed at the project specific level.</p>
016	009	<p>Finally, all opportunities for exporting products out of the state (natural gas, oil, CO2, etc.) should be considered to the maximum extent possible in this analysis and allowed as a compatible use within the corridor.</p>	<p>The WPCI is to designate corridors within the State of Wyoming and RMPA/EIS is only analyzing the construction of proposed corridors within the State of Wyoming as proposed.</p>
016	010	<p>Page 3-35, Agriculture Land Use Section The BLM does not accurately reflect the impact to agricultural lands under Alternative B and D. Alternative B would impact 62% less privately owned agricultural lands than Alternative D thereby avoiding impacts to private property. This should be more accurately described in the FEIS.</p>	<p>Section 3.7.9.2 of the final EIS has been revised.</p>
016	011	<p>Page 3-60, Socioeconomics The "point of delivery" for the purpose of sales tax is critical to participating counties and therefore, the sales tax for the company laying pipe in the ground should be paid to the county in which the line is being buried. Every county should receive sales tax in proportion to the percentage of pipe buried in their respective county. BLM should include language in the analysis that companies should consider distributing the "point of delivery" sales tax in the jurisdiction in which the pipe is buried versus paying all "point of delivery" tax in one jurisdiction.</p>	<p>This is outside the scope of this analysis.</p>
016	012	<p>Page 3-73. Transportation We request that BLM include language that project proponents notify affected counties of the transportation routes they will use for mobilizing equipment and accessing pipeline routes and Rights-of-Way in order to understand impacts to area roadways, traffic flow etc.</p>	<p>Applicants would be required to analyze these impacts during site-specific analysis.</p>
016	013	<p>Campbell County is committed to being a cooperating agency throughout this Environmental Impact Statement process and we look forward to exploring all options that will benefit the capture of CO2, promote the development of our energy resources through enhanced oil recovery opportunities and advance options to export our product to be competitive in the marketplace.</p>	<p>Comment noted.</p>
017	001	<p>WyFB supports the plan to amend the RMP's in all nine BLM Field Offices. Developing a defined pipeline corridors across BLM and private lands will help reduce the scope of damages to affected natural resources in our state while still helping to protect the agricultural uses in the area.</p>	<p>Comment noted.</p>
017	002	<p>WyFB supports the BLM examining the potential impact to livestock grazing and agriculture producers in the proposed corridor area. These impacts include more than just disturbance of the soil and vegetation. Other impacts could include, for example, increased roads, and associated traffic. Water sources and drainage could also be impacted. Weed control will be paramount on reclaimed areas.</p>	<p>General impacts to livestock grazing such as those listed in the comment are disclosed in Section 3.8. Additionally, project specific impacts would be analyzed under subsequent NEPA analysis once a project has been proposed.</p>
017	003	<p>Working with grazing permittees will be extremely important, not only for the BLM but also the companies doing the work. Coordinating time of construction to as minimally as possible affect grazing must be on a case by case basis. Reaching out to permittees, who often have outstanding knowledge of the specific area to be affected. Livestock grazing provides a vital economic asset to local areas, and the seasonal use of the land is vital to the permittees. A close working relationship is extremely important.</p>	<p>Impacts to livestock grazing are disclosed in Section 3.8 and the BLM would continue to seek public input for future site-specific NEPA for any future development in the proposed corridors as required under NEPA.</p>
017	004	<p>As with any resource disturbance, reclamation is of the utmost importance. This includes monitoring the disturbed sites for noxious and other weeds. Early monitoring and control are key to keeping the resource in the best shape possible.</p>	<p>Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures included as part of the state's proposal and compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.</p>
017	005	<p>Broadband infrastructure is an important topic in Wyoming and WyFB support that broadband infrastructure as a use that could be located in the corridor. WyFB supports siting telecommunication infrastructure placement in the proposed corridor. As technology advances, reliable broadband will become more and more critical to WyFB members</p>	<p>Broadband would be considered a compatible use within the proposed corridors and could be permitted in these areas in the future.</p>
018	001	<p>The agency preferred alternative (Alternative D) is very similar to the WPCI project proposal (Alternative B), with only minor route deviations except for all or portions of four segments. Alternative C designates very few corridors, but does not appear to meet the purpose and need of designating corridors specifically for those uses. Since this is not a programmatic document, any proposed development within these corridors will require full environmental analysis. We offer the following comments for your consideration.</p>	<p>Thank you for your comment.</p>
018	002	<p>General Comments The maps in the DEIS make it very difficult to determine where these segments differ, since there is not a map showing all of the alternative routes together. We recommend including maps that show the alternatives together in the Final Environmental Impact Statement (FEIS). Ideally, planning documents could include an interactive, geospatial map so it is clearer where the alternative routes differ, and how each route or segment might affect different resources.</p>	<p>Larger scale maps were provided as part of the scoping materials and the alternative shapefiles are publicly available on the E-Planning site.</p>
018	003	<p>Additionally, where portions of the proposed routes were changed in Alternative D, the FEIS should provide details explaining the rationale, rather than using generalities such as "to avoid resource concerns".</p>	<p>Details of what specific resource concerns were avoided in Alternative D are provided in Section 2.4.</p>
018	004	<p>Many of the routes cross areas with multiple important wildlife habitats. We recommend including an appendix in the FEIS which quantifies the miles of specific important wildlife habitats such as sage-grouse core areas and crucial winter ranges by species that are crossed by each segment and sub-segment. Likewise, this appendix should similarly quantify the number of stream crossings and miles of areas with steep terrain, difficult to reclaim soils, etc.</p>	<p>Acres of wildlife habitat are provided in the various tables in Section 3.21 by alternative. The analysis was not done at the level of corridor segments; therefore, the further level of detail was not warranted for this level of analysis.</p>
018	005	<p>In many cases, minor site specific route deviations from the corridors during development planning would reduce resource conflicts. The FEIS and Record of Decision (ROD) should include and explain a process to be followed to allow minor site specific route deviations from the corridors during project development to minimize resource conflicts. If projects are proposed in these corridors, the Department would like to work closely with the Bureau of Land Management (BLM) and project proponents on site-specific design and practices to minimize impacts to terrestrial wildlife and fisheries resources.</p>	<p>Micrositing would occur at the site-specific level for a project and the BLM would coordinate with necessary parties to ensure impacts are avoided, minimized, or mitigated.</p>
018	006	<p>As mentioned above, except for all or portions of four segments, the Alternative D routes are nearly identical to the WPCI project proposed routes. The Department recognizes that corridors across the State cannot avoid important wildlife habitats. The WPCI proposal generally avoids important habitats as much as possible, while not increasing habitat fragmentation. Except as described below, Alternative D appears to have similar potential for impacts to wildlife and habitat, and we do not have any alternative route suggestions.</p>	<p>Comment noted.</p>



Comment Letter Number	Comment Number	Comment	Response
018	007	Corridor Segment 1B runs on the east side of Fontenelle Reservoir along an existing utility corridor, which avoids sage-grouse core areas and has relatively fewer wildlife concerns. However, Segment 1D (Preferred Alternative) runs west of Fontenelle Reservoir, partially though areas without existing or designated utility corridors, and completely though areas of overlapping valuable wildlife habitat, including mule deer, elk, moose and pronghorn crucial range, and the Fontenelle sage-grouse core area. Additionally, this route is in much rougher terrain with more stream crossings and potential for increased erosion. Building one or more pipelines though this area may be detrimental to both terrestrial wildlife and fisheries. Therefore, we support the proposed route east of Fontenelle Reservoir (Segment 1B) for the preferred alternative.	Segment 1D was rerouted to the west to align it with and existing BLM corridor. There is no existing designated BLM corridor to the east of Fontenelle Reservoir and alternative B is inconsistent with the visual resources' objectives.
018	008	South of Fontenelle Reservoir, Segment 1D roughly parallels Highway 372 and lies to the east of Segment 1B, avoiding the Seedskaadee sage-grouse core area and apparently areas where subsidence from mining is more probable. Although this puts more of the route within pronghorn crucial winter range, we understand this route deviation.	Comment noted.
018	009	Our understanding is Segment 6B has a bottleneck due to terrain in the Seminoe Mountains, and segment 6D was developed to avoid this bottleneck. However, it is unclear why this specific route was chosen. Because of the existing and proposed transmission lines in the designated transmission line corridor through the Hanna sage-grouse core area, pipeline disturbances through this corridor might be considered "disturbance on disturbance" and thus have fewer wildlife conflicts. We recommend analyzing and disclosing whether a route in the designated transmission line corridor through the Hanna sage-grouse core area may have fewer impacts to wildlife and other resources.	Segment 6B had multiple resource issues as detailed in the alternative selection process in the administrative record, and Segment 6D was relocated to the east to collocate the proposed segment within an existing designated corridor. The original Segment 6B crossed the Hanna and Natrona greater sage-grouse core areas and, per one of the stipulations of developing alternatives the BLM, would not designate new corridors in greater sage-grouse core areas.
018	010	The other two major differences between Alternatives B and D are segments 11 and 12. It appears these alternative routes will have similar impacts to wildlife. The FEIS should explain why these routes were chosen and detail whether they would have fewer impacts if developed.	The development of alternatives C and D are described in Section 2.4. Segments 11 and 12 were revised to collocate them in existing designated BLM corridors to avoid greater sage-grouse core areas. Also see updated information on the preferred alternative in Section 2.5.
018	011	Minimum Requirements for DevelopmentThe key to minimizing impacts to wildlife and habitat from development within these corridors will be site-specific design features and requirements and stipulations on construction, weed management and reclamation. Development in these corridors will likely cross BLM Field Office boundaries. However, there are often differences in requirements between different Resource Management Plans (RMPs). Additionally, the WPCI Plan of Development has different requirements than many RMPs. The DEIS is generally vague regarding the minimum requirements for development in these corridors, and it is unclear what stipulations would apply. The FEIS and ROD should clearly stipulate that any project that utilizes a portion of these corridors for these purposes follows the most stringent and protective requirements and stipulations for development, reclamation and weed management for the entire development, including development on BLM lands outside these corridors.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures included as part of the state's proposal and compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
018	012	The need for consistent, protective requirements for an entire project is especially important for weed and invasive species management. Because vehicles and equipment are used in a large geographic area, linear developments have increased potential to spread weeds or cause new infestations of weeds and invasive species. Additionally, requirements to address cheatgrass and other annual invasive grasses vary across RMPs and counties. Any project that utilizes a portion of these corridors should follow the most appropriate weed management and eradication protocols to prevent the spread of existing weeds and introduction of new weeds.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
018	013	Stream crossing requirements also vary between RMPs. Since the technology to bore under perennial rivers and streams has developed to where it is the standard industry practice for crossing waterbodies and other features, trenching should only be considered as a last resort to cross waterbodies.	At the site-specific level, the BLM field office would determine what would be the best option for this issue. There are stipulations in all RMPs to protect perennial rivers and stream resources.
019	001	DEIS pg. iv: "Of this total, 1,105 miles Please include similar mileage would cross BLM lands, estimates for Alternatives C and D 690 miles would cross in this section. private surface, 118 miles would cross state lands, and 1 mile would cross U.S. Forest Service surface. The 1, 105 miles on BLM land would cross lands managed by the Buffalo, Casper, Cody, Kemmerer, Lander, Pinedale, Rawlins, Rock Springs, and Worland WQD BLM Field Offices. Of the 1,105 miles on BLM lands, approximately 745 miles would be located in current BLM designated utility corridors and approximately 291 miles would be within 0.5 mile of an existing pipeline ROW on BLM lands. The remaining 69 miles would not be located in or near an existing designated corridor." Please include similar mileage estimates for Alternatives C and D in this section.	Section 2.4 and the Executive Summary of the final EIS have been revised to include this information.
019	002	DEIS page 3-92 surface water. Recommend adding the following clarifying language: "In accordance with Title 35, Section 11 of the Wyoming Statutes, WDEQ is responsible for the protection and restoration of the quality of waters of the state in Wyoming.  WDEQ/WQD also implements portions of the Federal Clean Water Act, including development and adoption of surface water quality standards, identification of impaired waters, and development of total maximum daily loads for impaired waters under Section 303; inventorying water quality under Section 305; discharge permitting under Section 402; water quality certifications under Section 401; and addressing nonpoint sources of pollution under Section 319."	Section 3.19.2.1 has been revised to include clarifying information.
019	003	DEIS page 3-92 Groundwater  Recommend adding the following clarifying language: "In accordance with Title 35, Section 11 of the Wyoming Statutes, WDEQ is responsible for the protection and restoration of the quality of waters of the state in Wyoming."	Section 3.19.2.2 has been revised to include clarifying information.
019	004	DEIS page 3-92 "Section 401 of the CWA establishes water quality criteria and is administered by the WDEQ."  Recommend revising this sentence to "WDEQ is responsible for issuing Clean Water Act Section 401 Water Quality Certifications for dredge and fill permits issued by the Army Corps of Engineers to ensure that the permit complies with Wyoming's Surface Water Quality Standards. Conditions of the 401 Certification are included as conditions of the federal permit."	Section 3.19.2.1 has been revised to include this information.
019	005	DEIS page 3-92 "Under the jurisdiction of the CW A, wetlands with surface connectivity to navigable water are under the administration of the USACE, similar to other surface water features discussed above."  Recommend revising this sentence to: "Pursuant to the CWA, the Army Corps of Engineers regulates the discharge of dredge and fill materials into wetlands that are considered Waters of the United States." Pursuant to Title 3 5, Section 11 of the Wyoming Statutes and Wyoming's Water Quality Rules and Regulations, WDEQ is responsible for the protection and restoration of the quality of waters of the state, including isolated wetlands, ephemeral drainages, and other surface waters not considered Waters of the United States and not regulated under the federal Clean Water Act."	Section 3.19.2.3 has been revised to include this information.

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019	006	<p>DEIS page 3-93 "Erosion potential from Recommend clarifying how "highly potential projects' erodible soils" were identified and surface-disturbing how the use of "highly erodible activities and the soils within 500 feet" is consistent resultant effects to water with RMPs that reference avoiding quality were only surface-disturbing activities within considered an impact to 500 feet of surface waters and/or water resources when a riparian areas, regardless of soil type classified as highly erodible by water was adjacent to ( e.g., within 500 feet) an NHD-defined waterway or NWI waterbody and within the proposed corridors. Adjacency to water features were defined per the consensus in affiliated RMPs that surface-disturbing activities should be avoided within 500 feet of surface water and/ or riparian areas."</p> <p>Recommend clarifying how "highly erodible soils" were identified and how the use of "highly erodible soils within 500 feet" is consistent with RMPs that reference avoiding surface-disturbing activities within 500 feet of surface waters and/or riparian areas, regardless of soil type.</p>	Clarifying language has been added to Section 3.19 of the EIS on why the BLM focused on highly erodible soils. Data source for highly erodible soils has been added to Table 3.19-1.
019	007	<p>DEIS page 3-90 to 3-98 Water Section</p> <p>Recommend adding surface water classifications and designated uses from Wyoming's Water Quality Rules and Regulations, Chapter 1, Wyoming Surface Water Quality Standards, for the streams that are within or crossing proposed corridors, with particular emphasis on Class 1 and Class 2 waters. Class 1 waters are outstanding surface waters designated by the Environmental Quality Council where water quality is to be maintained and protected. Class 2 waters are designated for fisheries or drinking water uses.</p>	The BLM would require any specific project to follow all state requirements and policies.
019	008	<p>DEIS page 3-94 "Additionally, surface disturbance would be limited to project-specific would be limited to project-specific approved areas, and would adhere to project-specific WDEQ's stormwater pollution requirements."</p> <p>Recommend revising text to "Additionally, surface disturbance would be limited to project-specific approved areas and would adhere to WDEQ's stormwater permitting requirements." Also recommend WDEQ's stormwater discharge permitting and turbidity waiver requirements that may be applicable are incorporated throughout the document.</p>	Section 3.19.5.1 revised to include this information.
019	009	<p>DEIS page 3-96 "Any disturbance within wetlands would require compliance with FERC's wetland and waterbody construction and mitigation plan (see Appendix D), which includes compliance with CWA Section 404 permitting requirements via a permit with the USACE."</p> <p>Recommend revising text to "Any disturbance within wetlands would require compliance with FERC's wetland and waterbody construction and mitigation plan (see Appendix D), which includes compliance with CW A Section 404 permitting requirements via a permit with the USACE, along with any conditions of a DEQ issued CW A Section 401 Certification. Cumulative disturbances of greater than one acre of isolated wetlands require compliance with DEQ's Isolated Wetlands Mitigation General Permit."</p>	Section 3.19.5.2 revised to include this information.
019	010	<p>DEIS page 3-97 "Table 3.19-1. Surface and Groundwater Impact Indicators by Alternative Acres of highly erodible soils adjacent to water resources" "Number of perennial streams crossed by proposed corridors..."</p> <p>Recommend adding the data source for each of the indicators. For example, add the data source for highly erodible soils. Recommend defining adjacent ( e.g., 500 feet). Recommend adding the data source for perennial streams, intermittent streams, and seeps/springs ( e.g., 24k National Hydrography Dataset). Recommend adding the data source for impaired streams. Note: WDEQ recently released an updated 2020 Integrated Water Quality Report, available here: <a href="http://deg.filoming.gov/wgd/water-quality-assessment/">http://deg.filoming.gov/wgd/water-quality-assessment/</a> Recommend adding the data source for initial depth to groundwater of less than 20 feet.</p>	At the site-specific level, the BLM field office would determine what would be the best option for this issue. There are stipulations in all RMPs to protect perennial rivers and stream resources.
019	011	<p>DEIS page 3-97 Table 3.9-2. Wetland Impacts Indicators by Alternative</p> <p>Recommend adding source of wetlands data and source of water bodies data.</p>	Section 3.19 of the final EIS has been revised to include data sources for NWI to Table 3.19-1.
019	012	<p>General.</p> <p>A quantitative analysis of potential projected air emissions was not provided in the draft EIS document. Emissions for pipeline construction projects are often based on activity factors which can be scaled, to represent the amount of construction-related emissions generated per mile of pipeline constructed (i.e., tons/mile). This approach would allow for RMP-specific quantification of potential emissions based on the number of miles to calculate the total potential tons emitted for a given RMP. Please include an emissions quantification table of potential emissions for criteria air pollutants based on the tons/mile factor approach.</p>	To provide insight on the potential air pollutant emissions that could be associated with the construction of future development in the designated corridors, construction combustion emissions have been estimated using data from another pipeline project (see Section 3.2.5). Individual potential projects in the designated corridors would require an analysis of impacts to air quality, including the quantification of criteria pollutant and GHG emissions and determination of the need for a conformity analysis.
019	013	<p>General.</p> <p>Pursuant to Wyoming Statute 35- 12-119 ( c )(iii) all pipelines, except coal slurry pipelines, are exempt from the Industrial Siting Act. That said, Wyoming Statute 35-12-119( d) states that Applicants of exempt activities must furnish the information required by W.S 35-12-109 (a)(iii), (iv), (v), and (viii). A brief summary of the statute information below:</p> <p>-A description of the nature and location of the facility/project;</p> <p>-Estimated time of construction and construction time;</p> <p>-Estimated number and job classifications, by calendar quarter, of employees ... during construction ... ; and</p> <p>-A copy of any studies which may have been made of the environmental impact facility</p> <p>Should a corridor be approved, any projects proponents - including exempt activities - that take place within the corridor would need to meet with Industrial Siting for a case-by-case determination of jurisdiction and for the transmittal of the required information detailed above.</p>	Site-specific NEPA analysis would occur at the time a project is proposed, and these details would be provided and included in any necessary analysis at that time.
020	001	<p>As you know, the State has invested approximately ten years and over \$2 million on the development and authorization of the WPCI. This project stands to substantially benefit the State's economy by investing in our ability to tap into a wider suite of energy products as well as improve other infrastructure such as broadband connectivity. The WPCI, as proposed, will incentivize development of pipeline infrastructure in a manner that consolidates construction in Wyoming while minimizing impacts to existing infrastructure and other valuable resources. Adequately authorized corridors are crucial to our economy and this project, as proposed by the State of Wyoming, exemplifies responsible development of pipeline infrastructure across the state.</p>	Comment noted.
020	002	<p>In general, the State of Wyoming supports the proposed action outlined under Alternative B with few exceptions. I am confident that the State's level of analysis and design criteria as reflected in the proposed action will allow proponents the opportunity to develop infrastructure in a manner that reduces both potential impacts and conflicts with other resources.</p>	Comment noted.
020	003	<p>I do not support Alternative A nor Alternative C, as they are inconsistent with the State's proposed action and the fundamental vision of the WPCI. I am confident that selection of Alternative A or C will result in added impacts to Wyoming, as they will maintain the current development scenario that allows pipeline infrastructure to be built in an unconsolidated manner across our landscape.</p>	As described in Section 2.4, Alternative C is the designation of new corridors only and are the connector segments between existing designated BLM corridors present in Alternative B and Alternative D.

Comment Letter Number	Comment Number	Comment	Response
020	004	I am concerned with the adjustments made to Alternatives C and D regarding how the proposed routes and Greater sage-grouse habitat interact. In short, I question the BLM's rationale for removing or re-locating proposed segments when located within or crossing priority habitat management areas (PHMA). Measures have already been undertaken and incorporated into the proposed action to follow the underlying principles of avoidance and minimization of development activities -- not complete preclusion thereof -- under the State of Wyoming's Greater sage-grouse Core Area Protection Strategy pursuant to Executive Order 2019-3. The Executive Order describes opportunities for nuanced activities to occur within Core Areas/PHMA. Completely removing segments under Alternatives C and D is not consistent with EO 2019-3.	Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. A spectrum of alternatives was analyzed in the draft EIS alternatives that traverse through PHMAs, as well as alternatives that avoid PHMAs. This constitutes a reasonable range of alternatives. The final decision will consider all alternatives. The BLM has a legal obligation to be consistent with our own planning documents, not just the Wyoming EOs.
020	005	Segment 1: The State supports the Proposed Action, with several minor exceptions. The northern reach of Segment I, as Proposed, follows an existing RMP designated corridor. Conversely the northern portion of Alternative D is outside of an existing corridor that intersects a Greater sage-grouse core area, which is converse to the rationale that has been presented for the adjustments made under this alternative. The State supports circumstances where Alternative D re-routes the corridor outside of the existing RMP designated corridor to reduce potential impacts to trona mining operations south of Seedskaadee National Wildlife Refuge. The State is also comfortable with minor mapping variations as proposed in Alternative D in T17N R102W, T18N R99W, T19N R98W and T19N R97W.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	006	Segment 2: The State supports the Proposed Action. However, the few minor Alternative D mapping variations in this Segment are acceptable.	Comment noted.
020	007	Segment 3: The State supports the Proposed Action. The mapping variations proposed in Alternative D throughout this segment are currently filled with existing roads and other infrastructure. The Proposed Action better accounts for this existing infrastructure and avoids it.	Comment noted.
020	008	Segment 4: The State supports the Proposed Action. However, the few minor Alternative D mapping variations are acceptable.	Comment noted.
020	009	Segment 5: The State supports the Proposed Action. This segment provides connectivity to one of Wyoming's largest sources of CO2. The Proposed Action directly parallels the Denbury Pipeline, which has already been analyzed and approved by an EIS. Accordingly, any new pipelines that originate in the LaBarge area should seek to parallel this existing project. Alternative D is illogical as it terminates in a non-functional, arbitrary location, in Sublette Co. While the motivation for this termination is clearly avoidance of sage-grouse Core Area, it is unrealistic to assume that linear infrastructure can avoid Core Areas. It makes much more sense to incentivize development in a confined corridor through Core Area by authorizing Segment 5, as proposed.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	010	Segment 6: While the Proposed Action is an important route that follows existing pipeline infrastructure, the State understands the myriad resource conflicts associated with this segment. Accordingly, the State is comfortable with removing the Segment 6 Proposed Action from further consideration. Understanding that Segment 6 requires modification, the State is supportive of Alternative D with a few exceptions. In T30N R78W and T30N R77W, Alternative D intersects lands administered by the U.S. Forest Service (USFS). The State requests that Alternative D be realigned in these locations to avoid an additional federal nexus. This minor modification is consistent with the State's proposal to reduce challenges to future pipeline project proponents while minimizing impacts to other resources. Additionally, as proposed, Alternative D is divided into multiple Segments (Segment 6 and Segment 10), prior to intersecting with Segment 17. This is unnecessary and creates confusion. If this Alternative is selected, Segment 6 should continue undivided and intersect with Segment 17.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	011	Segment 7: The State supports the Proposed Action; however, we are comfortable with the Alternative D minor mapping variations.	Comment noted.
020	012	Segment 8: The State supports the Proposed Action; however, we are comfortable with the Alternative D minor mapping variations.	Comment noted.
020	013	Segment 9: The State supports the Proposed Action. While many of the Alternative D mapping variations are minor, they shift the corridor into locations that already contain multiple pipelines. The Proposed Action better accounts for this existing infrastructure and parallels it.	Comment noted.
020	014	Segment 10: The State supports the Proposed Action. Segment 10, as proposed, follows an existing RMP designated corridor (Cabin Creek Corridor - Casper RMP) (shapefile attached). The proposed action also parallels existing infrastructure.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	015	Segment 11: The State supports the Proposed Action. The mapping variations in Alternative D will result in unnecessary impacts to privately owned irrigated farm lands, in addition to heavily populated residential and industrial areas around Casper, WY.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	016	Segment 12: The State supports the Proposed Action. The mapping variations in Alternative D will result in unnecessary impacts to privately owned irrigated farm lands, in addition to heavily populated residential and industrial areas around Casper, WY.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	017	Segment 13: The State supports the Proposed Action.	Comment noted.
020	018	Segment 14: The State supports the Proposed Action.	Comment noted.
020	019	Segment 15: The State supports the Proposed Action, however, we are comfortable with the minor mapping variations in Alternative D.	Comment noted.
020	020	Segment 16: The State supports the Proposed Action.	Comment noted.
020	021	Segment 17: The State supports the Proposed Action. While a portion of the Proposed Action does deviate from the RMP designated corridor, that deviation reduces impacts that are not accounted for in Alternative D. Where the Proposed Action is outside of the RMP designated corridor, it parallels existing pipeline infrastructure. Conversely, where Alternative D remains within the existing RMP designated corridor, there is no existing infrastructure. Additionally, Alternative D would result in unnecessary impacts to privately owned irrigated farm lands, as well as to riparian habitats along the Powder River.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.

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020	022	Segment 18: The State supports the Proposed Action.	Comment noted.
020	023	Segment 19: The State supports the Proposed Action, however, we are comfortable with the minor mapping variations in Alternative D.	Comment noted.
020	024	Segment 20: The State supports the Proposed Action. The mapping variation in Alternative D, T46N R94W, unnecessarily intersects a developed area on private lands. The mapping variation in Alternative D, T47N R94W, unnecessarily intersects a topographic feature that would make construction less feasible.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	025	Segment 21: The State supports the Proposed Action. The mapping variations in Alternative D will cause unnecessary impact to privately owned, irrigated farmlands. If a realignment is deemed necessary, consider paralleling the existing pipeline infrastructure in T54N R1O1W and T55N R1O1W until it intersects the Proposed Action.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	026	Segment 22: The State supports the Proposed Action, however, we can support some of the Alternative D mapping variations. The exceptions are where Alternative D realigns in T52N R93 W and T52N R94 W it unnecessarily intersects privately owned, irrigated farmland. The Proposed Action better accounts for and avoids this conflict.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	027	Segment 23: The State supports the Proposed Action. The Alternative D mapping variation in T50N R102W is unnecessary and moves the Segment into riparian habitats that the Proposed Action avoids.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	028	Segment 24: The State supports the Proposed Action, however, we are comfortable with the minor mapping variations in Alternative D.	Comment noted.
020	029	Segment 25: The State supports the Proposed Action, however, we are comfortable with some of the Alternative D mapping variations. The Alternative D mapping variation in T56N R93W is routed on top of HWY 14. The Proposed Action avoids this conflict.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the final routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
020	030	Section 3.2.6, Page 3-9: The DEIS inadequately describes the benefits of capturing and pemmnently storing carbon, which will be facilitated by authorizing WPCI. Not only would carbon be stored through EOR, the corridors will also facilitate transporting CO2 for other forms of secure geologic storage.	Benefits of EOR added to Section 3.2 of the final EIS.
020	031	Section 3.3.9, Page 3-20: The DEIS inadequately articulates the fact that most of the Cultural Resources have been identified because of the need to conduct surveys prior to developing infrastructure. It is accurate that by following existing infrastructure, projects will likely encounter more "known sites". However, if projects are not consolidated into corridors and continue to proliferate across the landscape, there is potential for greater impacts to not yet known Cultural Resources.	Section 3.3.9 of the final EIS has been revised to add a statement regarding known resources in existing ROWs vs undeveloped areas.
020	032	Section 3.4.6, Page 3-22: In this section and throughout the document, the authors inappropriately describe large acreages of pipeline corridors that will be "added." This is inaccurate and misleading to readers. The reality is that the Proposed Action is 65% within already designated RMP corridors and the proposal is to reserve a portion of that corridor for CO2, etc. Here, and throughout the DEIS, this data and the acreages portrayed should accurately reflect that very large corridor acreages will not be "added."	Section 3.4.6 of the final EIS has been revised to change "add" to "designate"; however, the analysis includes changing the management of the corridors in Alternative B and Alternative D. To quantify this change, the amount of acres that would be managed differently from what is currently in the various RMPs was used.
020	033	Section 3.7.9.2, Page 3-35: This section does not effectively articulate the level of impact to agricultural lands between Alternatives B and D. Alternative B would impact 62% less privately owned agricultural lands than Alternative D.	Section 3.7.9.2 of the final EIS has been revised.
020	034	Section 3.7.10, Page 3-36: Paragraph 2, Sentence 1 should be re-written for clarity. Paragraph 2, Sentence 4 also makes no sense and should either have additional context or be removed. Paragraph 3, Sentence 2 is not accurate. Subsurface energy production is still viable below a right-of-way (ROW).	In Section 3.7.10 of the final EIS paragraph 2, sentence 1, has been revised for accuracy and Paragraph 3, sentence 2, refers to reclamation activities and therefore no change was made.
020	035	Section 3.8.3, Page 3-38: Sentence 2 is misleading. It leads readers to believe the entire corridor would be disturbed and developed at once, which is not a possibility. The range of impacts would be based on a project specific ROW.	The indirect impact analysis assumed full disturbance of the corridors based on that is the highest level of impact that could be possible. Site-specific analysis would analyze project specific disturbance once proposed.
020	036	Section 3.8.4, Page 3-40: The Proposed Action is to "authorize" corridors. The State does not intend to develop any of the corridors. Please be sure this is accurately reflected throughout the document.	Section 3.8.4 of the final EIS has been revised.
020	037	Section 3.8.10, Page 3-41: Sentence 3 says that loss of acreage for grazing across the corridor will be permanent for the life of the project. This is inaccurate. Loss of grazing will be only for the project specific portion and will be temporary, as grazing opportunity will resume once vegetation is reestablished.	Section 3.8.10 of the final EIS has been revised.
020	038	Section 3.9.5, Page 3-45: The first paragraph and the first sentence tries to describe the corridors will be inaccessible to mineral development and goes on to try to tie in capital investment. This sentence really makes no sense and is contradictory to the rationale for the proposed action. Minerals can still be developed below ROWs and we proposed the WPCI in an effort to potentially reduce the amount of capital required to develop projects. This sentence should be removed, or written in a manner that accurately depicts WPCI.	Section 3.9.5 of the final EIS has been revised.
020	039	Section 3.9.9, Page 3-46: Paragraph 3 says there will be no potential for impacts under Alternative A. This is inaccurate since there is always a potential for impacts. It should say that Alternative A will not change the potential for impacts.	Section 3.9.9 of the final EIS has been revised.

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020	040	Section 3.11.3, Page 3-51: Paragraph 3 says that Alternative B would increase the potential for indirect impacts through collection or destruction. This should be common to All Action Alternatives.	The Alternative B impact statement has been removed from Section 3.11.3. This impact producing factor is already discussed under Impacts Common to all Alternatives, so the sentence has therefore been placed in Summary of Effects.
020	041	Section 3.11.6, Page 3-54: The final sentence in this paragraph is inaccurate. Alternative B does have slightly less mileage within existing corridors; however, Alternative B would parallel more existing pipelines/disturbance than Alternative D and therefore would require fewer new or improved roads.	Section 3.11.6 has been revised to clarify the difference in ground disturbance between Alternatives B and D due to Alternative B utilizing more existing pipeline routes and disturbed areas.
020	042	Section 3. 13.6, Page 3-59: In sentence 3, for consistency and transparency, include the acreage and percentage of Alternative D, just like the other two Alternatives.	Section 3.13.6 of the final EIS has been revised.
020	043	Section 3.14.6.2, Page 3-66: The first sentence of this section needs a citation or some other context to justify this statement.	Section 3.14.6.2 revised to add context.
020	044	Section 3.14.8.2, Page 3-67: The final sentence of the first paragraph should state that Alternative D will have "greater" impacts on agriculture than Alternative B.	Based on Section 3.8 of the final EIS Alternative B affects 6,539 AUMs, while Alternative D affects 6,447 AUMs and, therefore, this section describes how those impacts are economically similar.
020	045	Section 3.15.9: The second paragraph is misleading to readers. No pipeline corridors would intersect a WSA so the narrative should describe the potential impacts being changing the view, if it is actually capable of being seen within a WSA.	Section 3.15.9 of the final EIS has been revised for clarity.
020	046	Section 3.18.4, Page 3-88: The author of this section seems to have the best grasp of the WPCI concept and in paragraph I articulates it more accurately than in any other segment. It can be demonstrated that throughout time scattered development patterns are how pipeline infrastructure has been developed. Without a concerted effort, such as WPCI, we should expect no change to the proliferation of infrastructure across the landscape. This rationale that the WPCI reduces impacts if authorized should be considered and articulated throughout the DEIS.	Comment noted.
020	047	Section 3.20.4, Page 3-99: The second paragraph is redundant and should be removed.	Section 3.20.4 of the final EIS has been revised.
020	048	Section 3 .21.2, Page 3-104: The State's Greater sage-grouse Core Area Protection Strategy embodied by Executive Order 2019-3 describes opportunities for nuanced activities to occur within Core Areas, as they are deemed to be minimally impactful to sage-grouse.	Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. A spectrum of alternatives was analyzed in the DEIS-alternatives that traverse through PHMAs, as well as alternatives that avoid PHMAs. This constitutes a reasonable range of alternatives. The final decision will consider all alternatives. BLM has a legal obligation to be consistent with our own planning documents and policies, in addition to considering Wyoming EOs.
020	049	Section 3.21.5.1, Page 3-105: The first sentence refers to movement corridors. This should be removed, as they have no actionable management prescriptions.	Section 3.21.5.1 revised for clarification
020	050	Section 3.21.5.1, Page 3-105: The paragraph should reference design features and seasonal stipulations in Appendix E, just as is done in the following sections.	Section 3.21.5.1 of the final EIS has been revised to include references to Appendix D and E.
020	051	Section 3.21.5.4, Page 3-106: In sentence 3 of the first paragraph, it should read that corridors may fragment habitat. In most instances if projects are built, they will parallel existing disturbance under Alternative B, thus reducing this potential impact.	Section 3.21.5.4 of the final EIS has been revised to state that corridors within or adjacent to existing ROWs would have less effect on fragmentation
020	052	Section 3.21.5.4, Page 3-109: In the second paragraph, sentence 3, replace "critical" habitat with "crucial" habitat.	This section is discussing special status wildlife rather than big game. The former uses critical habitat, and the latter uses crucial habitat.
020	053	Section 3.21.6.1, Page 3-110: Do not inconsistently choose which sections the document discloses that design features and seasonal stipulations will be applied for applicable species, as described in Appendix E. The document should consistently reference Appendix E in every applicable section.	Appendix E is referenced consistently in Section 3.21.5 as it applies to big game, migratory birds, fish habitat, special status species and greater sage-grouse. Appendix E contains specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures included as part of the state's proposal and compiled from all nine RMPs that would be applied to minimize impacts.
021	001	First, the BLM has not sufficiently established the purpose and need for this project as required by National Environmental Policy Act (NEPA) and Council for Environmental Quality (CEQ) implementing regulations.	Comment noted.
021	002	Second, the proposed project does not prioritize development outside of Priority Habitat Management Areas (PHMA), also known as core Greater sage-grouse habitat, in violation of the Federal Land Policy and Management Act (FLPMA) and the 2015 sage-grouse RMP amendments. <sup>1</sup> These amendments are currently in effect and must be adhered to as the 2019 revisions have been enjoined by litigation. See Mem. Order and Decision, Western Watersheds Project v. Schneider, 2019 U.S. Dist. LEXIS 181043 (D. Idaho Oct. 16, 2019) (attached as Appendix 1 and incorporated fully by reference herein). A federal court in Idaho recently affirmed the BLM's duty to prioritize leasing outside of PHMA on FLPMA grounds, vacating three BLM lease sales including a sale in Wyoming. See Mem. Order and Decision, Montana Wildlife Federation et.al. v. Bernhardt et.al. CV-18-69-GF-BMM (D. Montana May 22, 2020) (attached as Appendix 2 and incorporated by reference). The BLM must apply the Montana Wildlife court's interpretation of the 2015 grouse plan's "priority requirement" in its review of the WPCI.	Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. A spectrum of alternatives was analyzed in the draft EIS alternatives that traverse through PHMAs, as well as alternatives that avoid PHMAs. This constitutes a reasonable range of alternatives. The final decision will consider all alternatives. The BLM has a legal obligation to be consistent with our own planning documents, not Wyoming EOs.

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021	003	Third, the BLM's review of potential adverse impacts to wildlife habitat and water resources does not take a hard look at the full range of direct, indirect and cumulative environmental impacts that will result from reasonably foreseeable development within the corridor, as NEPA requires. Particularly, the BLM must conduct further review of potential impacts to Greater sage-grouse and to mule deer migration corridors and crucial winter range.	The EIS analyzes potential direct, indirect, and cumulative impacts from future pipeline development within corridors. These impacts to greater sage-grouse, mule deer migration corridors and crucial winter range are presented in Section 3.21. All site-specific information will be analyzed in future NEPA analysis.
021	004	Additionally, the BLM has not sufficiently consulted and engaged with Tribes in Wyoming, although they have a significant stake in the project.	Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded.
021	005	And finally, the BLM should not proceed with the project because meaningful public participation is not possible at this time.	The BLM held four in-person scoping meetings across the State of Wyoming in December 2019, and two virtual public meetings during the public comment period in May 2020. In this unprecedented time, the BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities. Attendance and participation in both types of meetings were comparable.
021	006	<p>The BLM has not sufficiently established the purpose and need for this project in violation of NEPA.</p> <p>The BLM has not sufficiently established the purpose, or the need, for this project. NEPA and CEQ regulations require a description of a proposed project's purpose and need. 40 CFR 1502.13. In this DEIS, the BLM's purpose for the WPCI is defined so broadly that it calls the environmental analysis into question, and the need for the project is uncertain given the lack of project proponents. The DEIS states that The WPCI would result in a system of corridors that is integrated with the BLM's existing corridor network for the construction of pipelines for the transport of CO2, EOR products, and other compatible uses on federal lands throughout the state of Wyoming."</p> <p>DEIS at Page i. (emphasis added).</p> <p>The purpose for the BLM action is to designate corridors for the preferred location of future pipelines associated with the transport of CO2, EOR products, and other compatible uses and to amend the various BLM RMPs within the State of Wyoming to incorporate the proposed corridors."</p> <p>DEIS at i.</p> <p>Here, and throughout the DEIS, the purpose of the corridor designation is vague. It is not clear what "other compatible uses" the corridor may be used for. A brief elaboration in Appendix D lists broadband infrastructure as an example and states "corridors are constrained to only transport CCUS and EOR products; however, other compatible uses may be considered that would not limit future use of the corridors for CCUS and EOR pipelines and facilities." DEIS, Appendix D at 6. Without knowing the scope of the corridor's purpose, it is impossible for the BLM or the public to take a "hard look" at the WPCI's potential impacts. This catchall clause renders the WPCI's purpose impermissibly vague.</p>	The BLM has established the purpose and need for the WPCI and presents this information in Section 1.3. Additionally, corridors will also be reserved for compatible uses with CO2 transport and EOR products to allow the decision maker the most flexibility at the WPCI specific level. Language has been added to Section 2 to clarify the use of this terminology.
021	007	<p>The BLM NEPA handbook states that "We recommend that the purpose and need statement be brief, unambiguous, and as specific as possible... The broader the purpose and need statement, the broader the range of alternatives that must be analyzed." BLM, National Environmental Policy Act Handbook H-1790-1 (2008) at 35. The purpose described in the DEIS is both ambiguous and unspecific, and the catchall clause "other compatible uses" is so broad that the scope of necessary analysis is unclear. The DEIS observes Besides oil and gas resources, the planning area also produces mineral products such as coal and coalbed CH4; trona; locatable minerals such as uranium, limestone, gypsum, bentonite, and precious metals; and mineral materials such as building stone, sand and gravel, and clay. And notes that Wyoming has been the top coal- producing state in the United States since 1986, accounting for more than 40% of the annual U.S. coal supply (WSGS 2020c). The proposed corridors overlap the Bighorn Coal Field, the Wind River Coal Field, the Powder River Coal Field, the Hanna Coal Field, and the Green River Coal Field. There are approximately 416,322 acres of active coal permits (Wyoming Department of Environmental Quality [WDEQ] permits) in the planning area. There is also approximately 1,004,640 acres of trona areas in the planning area.</p> <p>DEIS at 3-42.</p> <p>Later, the DEIS explains The BLM could still consider any proposal for mineral development within the proposed corridors, and any facilities proposed would have to be re-routed around those first in time approvals.</p> <p>DEIS at 3-47</p> <p>The BLM does not specify whether development of these other resources constitutes "compatible uses" and their potential impacts are not analyzed in the DEIS. With such a broadly defined purpose and need, it is also unclear what criteria will be used to determine whether the BLM's alternatives will meet the WPCI's purpose, and whether any future projects would meet that purpose. This problem will be amplified as projects inevitably tier to the WPCI. As the BLM handbook states "The 'purpose' can be described as a goal or objective that we are trying to reach." NEPA Handbook at 35. Here, the BLM has not established what goals or objectives would be reached by "other compatible uses." The vagueness of the stated purpose undermines the legitimacy of the BLM's environmental analysis.</p> <p>Regarding the need for the project, the BLM's NEPA handbook states, For many types of actions, the "need" for the action can be described as the underlying problem or opportunity to which the BLM is responding with the action. Often, the "purpose" can be presented as the solution to the problem described in the "need" for the action."</p>	EIS Chapter 2 has been revised to provide clarification about compatible uses that may be considered within the designated corridors. EIS Section 3.9 addresses potential impacts to mineral resources, including fluid, geothermal, locatable, and salable mineral resources. As explain in EIS Section 3.9, the proposed corridors would not be allowed to make any existing authorized fluid, geothermal, locatable, or salable mineral development operations inaccessible. Any potential impacts to existing authorized fluid, geothermal, locatable, or salable mineral development operations would have to be addressed during site-specific authorization through rerouting or other means.
021	008	<p>But the problem to which BLM's broad purpose responds is not well established. The DEIS states that the WPCI is needed in order to respond to an almost eight-year effort to support future development. The DEIS reads The need for the BLM action is to respond to the State of Wyoming Governor's Office project proposal and to support future development of CCUS and EOR through the development of infrastructure to existing oil fields within the state of Wyoming.</p> <p>DEIS at i.</p> <p>And further The BLM action responds to the need to reverse the downward trend of declining oil production by stimulating economic development through EOR.</p> <p>DEIS at 1-1.</p> <p>Governor Gordon's proposal, available online at <a href="https://www.wyopipeline.com/projects/wpci/">https://www.wyopipeline.com/projects/wpci/</a>, states that The scoping period is the result of a nearly 8-year effort that began under the administration of Governor Matt Mead with funding support from the Wyoming Legislature. Pipelines are critical to transporting CO2 from sources to locations where it can be used or stored. The initiative supports Governor Mark Gordon's goals of supporting carbon capture projects and extending the life of coal fired power plants in Wyoming.</p>	Comment noted.

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021	009	<p>The BLM explains that “This need is based on the BLM’s responsibility under Section 503 of the Federal Land Policy and Management Act of 1976 (FLPMA) to consider and designate ROW corridors.” The following section, FLPMA section 504, elaborates on the federal government’s responsibilities in specifying the boundaries of rights-of-ways designated pursuant to section 503. It reads</p> <p>Boundary specifications; criteria; temporary use of additional lands The Secretary concerned shall specify the boundaries of each right-of-way as precisely as is practical. Each right-ofway shall be limited to the ground which the Secretary concerned determines</p> <p>(1) will be occupied by facilities which constitute the project for which the right-of-way is granted, issued, or renewed,</p> <p>(2) to be necessary for the operation or maintenance of the project,</p> <p>(3) to be necessary to protect the public safety, and</p> <p>(4) will do no unnecessary damage to the environment. The Secretary concerned may authorize the temporary use of such additional lands as [he or she] determines to be reasonably necessary for the construction, operation, maintenance, or termination of the project or a portion thereof, or for access thereto. FLPMA Sec. 504 [43 U.S.C. 1764] (a). (emphasis added). FLPMA establishes a high bar for the designation of rights-of-way. The boundaries shall be limited to areas that the government has determined will be occupied by a project’s facilities, are necessary to conduct that project, are necessary for public safety, and will not unduly damage the environment.</p> <p>With the WPCI, there are no proposed facilities, operations, or maintenance to evaluate as necessary or otherwise, and thus the DEIS does not conduct the analysis that section 504 of FLPMA requires. There is no apparent public safety need. And because we do not know what projects will be tiered to the WPCI because none have been proposed, neither the public nor the BLM can reasonably consider whether there might be unnecessary damage to the environment. Given the vague purpose addressed above, we also can’t evaluate what facilities might occupy the corridor and what kind of operation and maintenance might occur beyond the enumerated purposes of CCS and EOR.</p>	<p>The commenter refers to Section 504 of FLPMA; however, Section 504 does not refer to right-of-way corridors (as Section 503 does). The requirements of FLPMA Section 504 would apply as specific right-of-way applications located within the designated corridor(s) are received by the BLM.</p>
021	010	<p>The proposed project does not prioritize development outside of core Greater sagegrouse habitat in violation of FLPMA. The WPCI proposal violates FLPMA because it relies on the faulty logic inherent in the recently vacated instruction memorandum (IM) 2018-026 and fails to apply a procedure sufficient to meet the 2015 sage grouse plan amendments' priority requirement, such as the procedure detailed in IM 2016-143. Per FLPMA, BLM cannot take actions that are inconsistent with the governing land use plans – in this case the 2015 grouse plan amendments, which the Fish &amp; Wildlife Service noted as having “mandatory requirements” to protect habitat. Norton v. S. Utah Wilderness All., 542 U.S. 55, 69 (2004). The BLM’s duty to apply the 2015 plan’s priority requirement was recently at issue in federal court and is applicable to the WPCI proposal, as the requirement pertains to oil and gas development broadly, including EOR and CCS.</p>	<p>Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. A spectrum of alternatives was analyzed in the draft EIS alternatives that traverse through PHMAs, as well as alternatives that avoid PHMAs. This constitutes a reasonable range of alternatives. The final decision will consider all alternatives. The BLM has a legal obligation to be consistent with our own planning documents, not Wyoming EOs.</p>
021	011	<p>On May 22, 2020 a federal district court in Montana ruled in favor of sage-grouse protection in a case brought by Montana Wildlife Federation, Montana Audubon, National Audubon Society, National Wildlife Federation and The Wilderness Society. In a victory for the plaintiffs, the court vacated BLM’s Instruction Memorandum 2018-026, which states that “[i]n effect, the BLM does not need to lease and develop outside of [sage-grouse] habitat management areas before considering any leasing and development within [sage-grouse] habitat.” The court vacated IM 2018-026, and vacated and remanded three contested lease sales in Montana and Wyoming, on the grounds that both the IM and the lease sales themselves violate FLPMA because they are inconsistent with the 2015 plans. See Montana Wildlife Federation v. Bernhardt, supra.</p> <p>The court stated it “sees no reason to leave the 2018 IM in place. BLM’s errors undercut the very reason that the 2015 Plans created a priority requirement in the first place and prevent BLM from fulfilling that requirement’s goals.” Id. At 30. The court found that “BLM’s reinterpretation of the prioritization requirement in the 2018 IM conflicts with both its own application of the prioritization requirement before issuance of the National Directives and FWS’s understanding of the requirement in rejecting the request to list the sage-grouse under the ESA.” Id. At 23. In addition, the court found the new guidance violated FLPMA “because it misconstrues the 2015 Plans and renders the prioritization requirement into a mere procedural hurdle” instead of the meaningful provision that was clearly intended to accomplish 2 goals: limiting surface disturbance and encouraging development outside grouse habitat.</p> <p>In particular, The 2018 IM interpreted prioritization to only apply in instances of an backlog in expressions of interest (EOI), in which case the BLM would prioritize processing leases outside habitat, but did not require consideration of the many factors set out in the 2016 IM, which directed actual prioritization of leasing outside habitat and consideration of development potential regardless of EOIs. Further, BLM’s new guidance did not include any reference to encouraging development outside grouse habitat – an explicit goal of the 2015 plans. The court also held that the contested lease sales themselves violated FLMPA because they applied the faulty logic inherent in the 2018 IM. Montana Wildlife Federation at 26</p> <p>Here, the WPCI violates FLPMA because, as in the above cited case, it “either explicitly, or in effect, follow[s] the same rationale as the 2018 IM.” Id. All four alternatives overlap both PHMA and General Habitat Management Areas (GHMA) for Greater sage-grouse. The agency preferred alternative, Alternative D, would affect 17,405.9 acres within PHMA, and 2,940,330.2 acres within a 4-mile buffer of PHMA; 37,837.3 acres of GHMA, and 3,065,454.5 acres within a 2-mile buffer of GHMA. DEIS at 3-123.</p>	<p>BLM Instruction Memorandum 2018-026 applies to oil and gas leasing and development within greater sage-grouse habitat, not the establishment of designated corridors. New pipelines through PHMAs are allowed if 1) they occur within a corridor designated in an existing RMP or if they are designated through future RMP amendments or 2) if they are constructed in or adjacent to existing utilities or roads. Pipelines constructed in corridors designated in RMPs or adjacent to existing utilities will require completion of a Density and Disturbance Calculation Tool (DDCT) analysis for baseline data collection, but WPCI is not required to meet the threshold of 5 percent. Further, Alternatives C and D were developed to avoid designating new corridors within greater sage grouse PHMAs.</p>

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021	012	<p>Despite the potential for significant surface disturbance in core habitat under all alternatives including the preferred alternative, the BLM did not apply the priority requirement from the 2015 plans and has not conducted the kind of thorough review envisioned in the 2016 IM, which would have fulfilled the BLM's prioritization obligation. Rather, the DEIS for the WPCI project ignores the 2015 plans' priority requirement, citing neither the 2015 rules, the 2016 IM, nor the vacated 2018 IM, and offering no discussion of prioritization nor any articulated standards with which to evaluate the project's success at prioritizing development outside of core. Thus, the BLM and the public have no means to assess whether the proposal fulfills the priority requirement. We only know that all alternatives would impact many thousands of acres of core habitat.</p> <p>As the original 2016 IM explains This IM does not prohibit leasing or development in GHMA or PHMA as the GRSG Plans will allow for leasing and development by applying prioritizing sequencing, stipulations, required design features, and other management measures to achieve the conservation objectives and provisions in the GRSG Plans.</p> <p>Instruction Memorandum No. 2016-143 A thorough review such as that required under the 2016 IM is essential to meet the conservation objectives of the 2015 plans and prevent an Endangered Species Act (ESA) listing of the bird. The court in Montana Wildlife stressed the importance of adequate regulatory mechanisms, including the prioritization requirement, in preventing a listing: FWS relied on this understanding of the 2015 Plans when it declined to list the sagegrouse as an endangered species. The ESA recognizes that "the inadequacy of existing regulatory mechanisms" to protect a species represents an important factor to consider in deciding whether a species must be listed. 16 U.S.C. § 1533(a)(1)(D). FWS expressly relied on the prioritization requirement and other protections in BLM's 2015 Plans in deciding in 2015 not list to sage-grouse as endangered. FWS instead noted that the important "regulatory mechanisms" contained in the 2015 Plans adequately would protect the sage-grouse. 80 Fed. Reg. 59,874-875, 59,891. FWS viewed the prioritization requirements as establishing "mandatory" protections. Id. at 59,875. FWS specifically noted that the 2015 Plans "prioritize the future leasing and development of nonrenewable-energy resources outside of sage-grouse habitats." Id. at 59891. The 2015 Plans instead require BLM to "follow an avoidance, minimization, and mitigation approach." Id.</p> <p>Montana Wildlife, supra at 22. The appended Special Status Species Report for the WPCI lists acreage of Greater sage-grouse core habitat affected by the proposal and assures that a density/disturbance calculation tool (DDCT) would be applied to surface disturbance per state policy.<sup>2</sup> This is an important first step, but falls far short of the sequencing, stipulations, required design features, and other management measures that were established in IM 2016-143 in order to implement the 2015 plans. Though the 2016 IM has now expired, the underlying priority requirement in the 2015 plans remains. Now that BLM's reinterpretation of that requirement in IM 2018-026 has been vacated for its failure to adhere to the 2015 plans, the BLM must establish a standard for prioritization consistent with the requirements and objectives of the 2015 plans and review the WPCI accordingly.</p>	<p>Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. A spectrum of alternatives was analyzed in the draft EIS alternatives that traverse through PHMAs, as well as alternatives that avoid PHMAs. This constitutes a reasonable range of alternatives. The final decision will consider all alternatives. The BLM has a legal obligation to be consistent with our own planning documents, including the Wyoming EOs.</p>
021	013	<p>Instead, as in the challenged lease sales in Montana Wildlife, "the errors here occurred at the beginning of the... process, infecting everything that followed." Montana Wildlife, supra at 31. The BLM does not consider and apply the priority requirement. The DEIS merely lists the impacted PHMA, GHMA, and leks for each alternative and explains that subsequent development could lead to long-term reduction in habitat. DEIS at 3-123. This cursory review cannot fulfill the BLM's duty to prioritize development outside of core. Thus, this proposal violates FLPMA's requirement to apply the prioritization requirement in a manner consistent with the 2015 plans.</p>	<p>Per BLM ROW management, new pipelines are allowed to cross PHMAs if they are within designated RMP corridors or if they in/adjacent to existing utilities or road and have completed a DDCT analysis to meet the 5% threshold. Completely removing segments from and /or realigning segments to existing corridors within PHMA is consistent with this management action. Further NEPA analysis would occur at the site-specific level to further ensure impacts to greater sage-grouse are disclosed.</p>
021	014	<p>The BLM's analysis of potential adverse impacts to wildlife habitat and water resources are not sufficient to meet NEPA's "hard look" mandate The BLM has not taken a hard look at impacts to wildlife habitat and water resources in violation of NEPA. NEPA is our "basic national charter for the protection of the environment." 40 C.F.R. § 1500.1(a). It achieves its purpose through "action forcing" procedures. Id. §§1500.1(a), 1502.1. The courts have termed this crucial evaluation as a "hard look." Ocean Advocates v. U.S. Army Corps of Engineers, 402 F.3d 846, 864 (9th Cir. 2005). NEPA's fundamental purpose is to ensure "important effects will not be overlooked or underestimated." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989). NEPA requires BLM to consider national policy in its decision-making process. 40 C.F.R. §§ 1500.6, 1502.16(c), 1506.2(d).<sup>3</sup> This includes the consideration of best available information and data, as well as disclosure of any inconsistencies with federal policies and plans. Id. §§ 1502.22, 1502.24.</p> <p>Recognizing that "each person should enjoy a healthful environment," NEPA ensures that the federal government uses all practicable means to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings," seeking to "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences." 42 U.S.C. §§ 4331(b)–(c). To that end, NEPA requires the lead agency to take a "hard look" at potential direct, indirect, and cumulative impacts of a proposed project. Greater Boston Television Corp. v. F.C.C., 444 F.2d 841, 851 (D.C. Cir. 1970). Despite this mandate, the BLM has not taken a hard look at impacts to Greater sage-grouse, mule deer, and water resources in this DEIS. Notably, the Wyoming Game and Fish Department (WGFD) was not invited to be a cooperator on this project – DEIS at A-1. Closer coordination with WGFD in future proposals would help the BLM fulfill NEPA's hard look requirements regarding impacts to wildlife.</p>	<p>Impacts to greater sage-grouse and mule deer are disclosed in EIS Section 3.21. Impacts to water resources are disclosed in EIS Section 3.19. Data from the Wyoming Game and Fish Department (WYGFD) was used to inform the analysis of impacts to big game, trout streams, greater sage-grouse, and vegetation. EIS Appendix A has been updated to reflect that WYGFD is a cooperating agency.</p>



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	015	<p>1. Impacts to Greater sage-grouse habitat have not been adequately evaluated and disclosed. In addition to the FLPMA concerns regarding sage-grouse addressed above, we are concerned that the BLM has not taken a hard look at impacts to Greater sage-grouse in violation of NEPA. The DEIS acknowledges that Direct impacts to greater sage-grouse include surface disturbance to important habitats, mortality resulting from collisions, and destruction of nests and nest abandonment. Indirect impacts to greater sage- grouse include habitat fragmentation, increased noise levels and human activity, dispersal of noxious weeds and invasive plant species, increased risk of wildfire, dust effects, potential for increased presence of West Nile virus, and increase in predation.</p> <p>DEIS at 3-109.</p> <p>However, the DEIS does not disclose and evaluate the extent of potential impacts, because it does not incorporate the best available science on sage-grouse. Significant new science indicates that Greater sage-grouse population declines between 2015 and 2019 cannot be explained by population cycles and weather, contrary to the assertions of agency biologists.4 (attached as Appendix 3). These findings are directly relevant to BLM's proposal to develop oil and gas resources in sage-grouse habitat and the reasonably foreseeable impacts thereof. For instance:</p> <p>Numerous studies (Naugle et al. 2011) have shown greater sage-grouse avoid habitat within approximately 4.8 km of industrial activity and scientists have documented industrial impacts extending approximately 19 km. Nevertheless, within about the last four years the Bureau of Land Management offered energy leases on nearly 2.5 million hectares of sage-grouse habitat; leases from these offerings have been sold on over one million hectares of habitat. Range-wide, nearly three million hectares of currently occupied sage-grouse habitat, including almost 1.6 million hectares of priority habitat, have had a change of management status with respect to energy development since 2015 (Gardner et al. 2019, Thuemer 2019a). Energy companies have obtained drilling approvals under present administration rules at a rate that is more than six times higher than under previous policies according to a recent report (Gardner et al. 2019).</p> <p>The authors conclude that</p> <p>Given the continued loss and degradation of sage-grouse habitat, cycles do not appear to be a sufficient or compelling explanation for recent declines and blaming cycles or weather seems to be an abdication of responsibility.</p> <p>Id. At 9.</p> <p>The impact of these findings cannot be ignored and must be considered in an evaluation of the reasonably foreseeable impacts of the WPCI. The BLM is approving development in PHMA at accelerating rates, amid sustained population declines, operating under a demonstrably false assumption that those declines are attributable to cyclic population declines and weather, and refusing to consider data that suggests otherwise. Clearly, this cannot satisfy NEPA's hard look requirement.</p>	<p>The BLM has met the hard look doctrine and has disclosed the direct, indirect, and cumulative impacts to greater sage-grouse from the proposed corridor designations in Section 3.21 and Section 4.22 respectively. The analysis focuses on reasonably foreseeable impacts as has included a discussion of impacts that could occur if the corridors were developed. The BLM is not approving any development at this time and if an application is submitted to the BLM site-specific NEPA analysis would occur at that time.</p>
021	016	<p>Additionally, the BLM has not adequately considered cumulative impacts to grouse. The DEIS, which devotes a single paragraph to cumulative impacts to wildlife and fisheries, explains that Greater sage-grouse are among the wildlife species that would be cumulatively impacted but falls short of NEPA's requirement to analyze cumulative impacts in sufficient detail. DEIS at 4-7. The appended Special Status Species Report does not elaborate on cumulative impacts to sage grouse at all.</p> <p>BLM's responsibility to fully evaluate cumulative impacts was recently clarified in <i>WildEarth Guardians v. Zinke</i>. 368 F. Supp. 3d 41 (D.D.C. 2019) [hereinafter <i>WildEarth Guardians</i>] (attached as Appendix 4 and incorporated by reference).</p> <p>NEPA requires that the environmental consequences should be considered together when several projects that may have cumulative environmental impacts are pending concurrently. <i>Kleppe</i>, 427 U.S. at 410. NEPA also requires that agencies do more than merely catalogue relevant projects in the area. <i>Great Basin Mine Watch v. Hankins</i>, 456 F.3d 955, 971 (9th Cir. 2006). An agency instead must give sufficiently detailed analysis about these projects and the differences between them. Id. The agency must provide sufficient detail in its analysis such that the analysis will assist the “decisionmaker in deciding whether, or how, to alter the program to lessen cumulative environmental impacts.” <i>Churchill Cty. v. Norton</i>, 276 F.3d 1060, 1080 (9th Cir. 2001) (quoting <i>City of Carmel-by-the-Sea v. U.S. Dept' of Transp.</i>, 123 F.3d 1142, 1160 (9th Cir. 1997)).</p> <p><i>WildEarth Guardians</i> at 23.</p> <p>In that case, an environmental organization challenged the BLM's failure to evaluate the impacts of greenhouse-gas emissions that would result from nine oil-and-gas lease sales in Wyoming. The court held that the BLM's findings of no significant impact for the sales were inadequate because the agency had failed to consider the lease sales' reasonably foreseeable climate impacts. The BLM has previously argued the agency could not reasonably foresee the impacts of oil-and-gas development without “a discrete proposal for surface occupancy.” See e.g. BLMWyoming Response to Public Comment No. 51 for the 2nd Quarter, June 2019 Lease Sale. Under the court's opinion in <i>WildEarth Guardians</i>, however, the BLM could provide a range of potential climate impacts based on the wealth of available data. Here, as in that case, the BLM has ample data to forecast a range of reasonably foreseeable impacts to sage grouse from the WPCI and must explain where there is uncertainty.</p> <p>The impacts of the WPCI on sage-grouse must be analyzed in the context of other local and regional development. The BLM must sufficiently analyze projects in Wyoming and neighboring states and “set forth in sufficient detail” a description of past lease sales and projects and the previous impacts to sage grouse resulting from them. See e.g. <i>Lands Council v. Powell</i>, 395 F.3d 1019, 1028 (9th Cir. 2005), (faulting an agency for failing to catalogue other agency projects in its environmental assessments). Similarly, the Ninth Circuit in <i>Klamath-Siskiyou</i> held that BLM failed to comply with NEPA where it discussed other projects but offered “no quantified assessment of their combined environmental impacts.” 387 F.3d at 994.</p> <p>Tiering to the 2015 plans alone cannot satisfy the requirement to review cumulative impacts. The recent order in <i>Western Watersheds Project</i> enjoining the 2019 plans highlights a significant issue with BLM's cumulative impacts analysis - the 2019 plans tier to six separate EISs for individual states, splitting up the sage-grouse range and not considering the cumulative impacts of the BLM actions across states. <i>Mem. Order and Decision, Western Watersheds Project v. Schneider</i>, Case No. 16-CV-83-BLW (D. Idaho Oct. 16, 2019). The court noted that “sage grouse range covers multiple states and that a key factor—connectivity of habitat—requires a large-scale analysis that transcends any single state.” Id. at 23.</p> <p>In assessing the impacts of this lease sale on the sage-grouse, the BLM must consider the broader context of impacts from past, present, and reasonably foreseeable federal actions. Otherwise, members of the public and decision-makers have no context for the BLM's conclusion that impacts beyond those analyzed in RMPs are not expected. Here, the BLM has merely listed the acreage of impacted PHMA and GHMA and the number of leks for each alternative, without reviewing the broader context or forecasting a reasonable range of impacts to the population.</p>	<p>The BLM does disclose the cumulative impacts from the designation of corridors and the future potential development of those corridors in Section 4.22. Project level impacts would be disclosed through site-specific NEPA analysis, if a project is proposed within the corridors.</p>
021	017	<p>Additionally, the BLM's cumulative impacts analysis must consider development that has occurred since the relevant RMP amendments went into effect, as the <i>WildEarth Guardians</i> made clear. <i>WildEarth Guardians</i>, supra at 26. The 2015 amendments predate the WPCI by five years. The cumulative impact regulations require a catalogue of past, present, and reasonably foreseeable projects at the time of the project proposal. BLM has the benefit of five years' worth of information that it did not have at the RMP amendment stage about what constitutes past, present, and reasonably foreseeable projects. Tiering to the relevant RMPs is insufficient because the BLM has not catalogued nor evaluated the past, present, and reasonably foreseeable projects at the time of the proposal, nor has the agency accounted for actions outside the planning area. Tiering to the 2015 Plans without conducting further cumulative impacts analysis cannot satisfy NEPA's mandate. Instead, before moving forward with the WPCI, the BLM must set forth with reasonable specificity the cumulative effect of the leasing, improve the analysis in its EIS, and make decisions accordingly.</p>	<p>The cumulative analysis for wildlife does not tier to existing RMPs and analysis identifies other projects that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these projects.</p>

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021	018	Impacts to big game migration corridors and crucial winter range have not been adequately evaluated and disclosed. The BLM must also conduct further review of potential impacts to big game migration corridors and crucial winter range (CWR) in order to comply with NEPA's hard look and cumulative impacts requirements. The DEIS for the WPCI explains that All three action alternatives cross numerous movement corridors, migration routes, and crucial or year- long seasonal habitats for big game. Construction and operations for all the action alternatives would have the potential to cause stress or displace big game, or both from parts of their crucial winter range, parturition areas, and migration corridors for the duration of the activity. Areas of human activity within big game migration corridors or parturition areas would be temporarily unavailable for big game feeding, resting, migration, or parturition. Noise, dust, equipment and vehicle traffic, and general human activity would cause big game to avoid construction areas and potentially restrict big game movement if the activity area is large enough. The intensity of big game avoidance would depend on the scale of the human activity and the ability to address crucial seasonal use through avoidance measures and timing limitations. Here again, because the WPCI's purpose is vague, the BLM does not review a reasonable range of potential impacts. Instead, the BLM asserts that big game avoidance behavior, which can range from a detour or accelerated pace through vital habitat to the complete and permanent loss of a migration corridor, will depend on the scale of the undefined "human activity." This cannot meet NEPA's mandate to take a "hard look" at environmental impacts. The BLM merely lists the acreage of impacts to migration corridors and crucial winter range. See DEIS at 3-110, Table 3.21-3. Acreages and Linear Miles of Alternative B Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis. Essentially, the DEIS lists the amount of impacted acreage for each vital habitat under each alternative, stating that they either would or would not be impacted, without discussing the consequences for big game in detail. The BLM has not taken hard look at the extent of those potential impacts, nor has the agency considered them in the context of cumulative impacts.	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are discussed. Because specifics of potential infrastructure projects are unknown, the analysis is unable to analyze specific projects, or specific levels of human disturbance, because construction size and methods are unknow, but the impacts that are known or typically associated with the types of projects that could be built are included in the analysis. All site-specific information will be analyzed in future NEPA analysis.
021	019	Here again, because the WPCI's purpose is vague, the BLM does not review a reasonable range of potential impacts. Instead, the BLM asserts that big game avoidance behavior, which can range from a detour or accelerated pace through vital habitat to the complete and permanent loss of a migration corridor, will depend on the scale of the undefined "human activity." This cannot meet NEPA's mandate to take a "hard look" at environmental impacts. The BLM merely lists the acreage of impacts to migration corridors and crucial winter range. See DEIS at 3-110, Table 3.21-3. Acreages and Linear Miles of Alternative B Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis.	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are discussed.
021	020	Essentially, the DEIS lists the amount of impacted acreage for each vital habitat under each alternative, stating that they either would or would not be impacted, without discussing the consequences for big game in detail. The BLM has not taken hard look at the extent of those potential impacts, nor has the agency considered them in the context of cumulative impacts.	The EIS addressed potential impacts to big game species in Section 3.21 and cumulative impacts in Section 4.22 if designated corridors are developed. Since specific development design and methods are not known at this time, the analysis is focuses on potential surface disturbance impacts. All site-specific information will be analyzed in future NEPA analysis.
021	021	The BLM must fully consider impacts to migration corridors The BLM must fully consider potential impacts to mule deer migration corridors in order to comply with NEPA's hard look requirement. All of the alternatives analyzed in the DEIS would route corridors within State of Wyoming-designated mule deer migration corridors, mule deer crucial winter range, and/or parturition areas — habitats that the WGFD considers "vital" pursuant to the 2019 Wyoming Action Plan for the Implementation of Department of the Interior Secretarial Order 3362. See DEIS at 3-110, Table 3.21-3.	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are adequately discussed.
021	022	The DEIS, however, does not disclose or analyze potential impacts to mule deer from development within migration corridors and other vital habitats. Instead, the BLM suggests that "[i]mpacts to big game species migration routes and crucial habitat would need to be addressed by individual pipeline project proponents." Wildlife Resources Technical Report at 18 (available online at <a href="https://eplanning.blm.gov/public_projects/1502028/200341243/20019820/250026024/WPCI_Wildlife-03-2016-final.pdf">https://eplanning.blm.gov/public_projects/1502028/200341243/20019820/250026024/WPCI_Wildlife-03-2016-final.pdf</a> ).	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are adequately discussed.
021	023	Particularly, the DEIS conducts no analysis whatsoever of the potential impacts from development within vitally important high use areas and stopovers. The DEIS and appendices do not even disclose whether the alternatives intersect stopovers, high use areas, or bottlenecks. Incredibly, the BLM neglects this analysis even within herd units that have already faced dramatic population declines due to human disturbance.	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are adequately discussed.
021	024	<p>matic population declines due to human disturbance. The public cannot evaluate the risks from development in these vital habitats because the DEIS does not discuss the statewide decline in our mule deer populations nor does it discuss the affected environment in terms of herd units. The DEIS does not even disclose that the majority of mule deer herd units in Wyoming are significantly below WGFD population objectives.</p> <p>Instead, the DEIS pays lip service to Wyoming's migration executive order without reviewing the science that made the order necessary. Not only is this a violation of NEPA, it also violates FLPMA. In violating the letter and the spirit of the Wyoming Mule Deer and Antelope Migration 14 Corridor Protection Executive Order (Order 2020-1) (attached as Appendix 5), this project also violates FLPMA's requirement to adhere to state law to the extent possible.</p> <p>As the EO states, "migration corridors are essential to the maintenance of viable mule deer and antelope populations." Id. at 1. The order defines High Use Areas as the "segment or portion of a mule deer and antelope migration corridor used by 20% or greater of the [GPS] collared animals," and defines Stopover Areas as "the area used the majority of time by GPScollared animals to forage and rest during spring and fall migration." Id. at 5. High use areas and stopovers are the most important portions of "vital" habitat and are integral to corridor functionality. Wyoming's migration EO makes clear that "whenever possible, development, infrastructure, and use should occur outside of designated corridors" and outlines management considerations for specific areas within corridors. For high use areas "surface disturbance and human presence shall be limited to levels that maintain the corridor functionality and do not cause migrating mule deer or antelope to avoid or leave the high-use portion of the designated corridor during migration periods" and for stopovers within high use areas "surface disturbance should be avoided" and "permitted human activities during migration periods should be limited or avoided." Id. Yet despite this strong state policy directive to maintain corridor functionality and protect the most important and vulnerable habitat within migration corridors, the WPCI proposes to develop within vital habitat without even a cursory review of the risks to our herds. For example, overlaying the BLM's provided GIS layer for the agency preferred Alternative D with WGFD layers for stopovers and high use areas reveals that the preferred alternative routes the corridor through both stopovers and high use areas of the Red Desert to Hoback mule deer migration corridor. See Appendix 6 – Map of Alt. D intersecting in RD2H MDC high use areas and stopovers.</p>	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are adequately discussed.

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021	025	However, the DEIS excludes significant information including the fact that the Red Desert to Hoback is the longest mule deer migration corridor ever recorded, that the Sublette herd unit which relies upon the corridor is about 38 percent below WGFD objectives, and that the WPCI proposes development in the most vital habitats within that corridor. This data is readily available to the BLM as evidenced by environmental assessments for BLM's own oil and gas lease sales. See e.g. EA for the September 2020 sale, available online at <a href="https://eplanning.blm.gov/public_projects/nepa/1505373/20017843/250023832/2020Q3_DOIBLM-WY-0000-2020-0009-EA.pdf">https://eplanning.blm.gov/public_projects/nepa/1505373/20017843/250023832/2020Q3_DOIBLM-WY-0000-2020-0009-EA.pdf</a> .	The EIS has been revised for clarification.
021	026	The BLM must at a minimum review the available data on WGFD population objectives for the impacted herd units and the actual populations of those herds, incorporate the best available science regarding development in stopovers and high use areas, and disclose the potential impacts from each of the proposed alternatives to Wyoming's mule deer herds in order to meet NEPA's hard look requirement. It has not done so in this DEIS.	The big-game herd objectives were not developed based of habitat carrying capacity. Mitigation measure and reclamation would be developed at the project level to minimize impacts to big game critical habitats.
021	027	The BLM must fully consider impacts to crucial winter range Similarly, the BLM must fully consider impacts to mule deer crucial winter in its DEIS and has not done so here. As with migration corridors, the BLM merely lists the affected acreage of CWR under each alternative, without reviewing the environmental impacts of developing in that habitat. There is no substantive discussion of those impacts in the attached Wildlife Resources Technical Report. See Report at page 16 (devoting a single paragraph to quoting a 2004 WGFD definition for winter range, without further review of potential impacts). This approach is not adequate.	The EIS does address potential impacts to big game species and their habitats in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game or their habitats, but the potential indirect impacts of that management decision could impact big game species and their habitats and those potential impacts are adequately discussed.
021	028	The DEIS includes a brief discussion of crossing features to reduce impacts to big game in the Technical Report at page 18, but this is not availing. Mitigation measures must be developed to a reasonable degree and supported by evidence. Here, BLM has merely listed a potential measure with no analysis and no supporting evidence. Courts have held that mere listing of mitigation measures is inadequate. See, e.g. HCPC I, Case No. 3:11-cv-00023-PK, slip copy at 26-27 (USFS's wetland/springs mitigation was insufficiently developed to justify a CE, to support a FONSI "proposed mitigation measures must be 'developed to a reasonable degree' and supported by analytical data."), citing Bosworth, 510 F.3d at 1029 (citing Nat'l Parks&Conservation Ass'n, 241 F.3d 722, 734 (9th Cir. 2001); Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 473-75 (9th Cir. 2000). While "a mitigation plan need not be legally enforceable, funded or even in final form to comply with NEPA's procedural requirements"[.] a 'perfunctory description' or 'mere listing' of mitigating measures is inadequate to satisfy NEPA's requirements.'" Id. (citing Neighbors of Cuddy Mtn. v. USFS, 137 F.3d 1372, 1380 (9th Cir. 1998); Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1151 (9th Cir. 1998).	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
021	029	Additionally, BLM's approach to development in crucial winter range is outdated. The timing limitation stipulations attached to mule deer crucial winter range are based on WGFD's admittedly inadequate and out of date Recommendations for Development of Oil and Gas Resources within Crucial and Important Habitat" (2010). Responding to a decade of new science, WGFD now recognizes that the TLS recommended in 2010 to protect crucial winter range are not effective to protect that vital designated habitat and is in the process of revising its recommendations. Yet, because BLM has not analyzed their own proposed mitigation measures and considered their ability to maintain corridor functionality based on the available evidence.	At this time, BLM will need to default to the most recent (2010) WGFD recommendations. Once the final revised WGFD recommendations are available, BLM can consider an updated approach.
021	030	BLM must take a hard look at potential impacts to CWR. This includes evaluating potential impacts using the best available science which indicates, for instance, that ungulate avoidance of anthropogenic disturbance increases over time, a relevant scientific finding that indicates impacts will be greater than those expected in the underlying RMPs. See Samantha Dwinnell et. al "Where to forage when afraid: Does perceived risk impair use of the foodscape?" Ecological Applications 29(7), June 2019 ("Disturbance from energy development causes not only direct habitat loss but has a multiplicative effect through avoidance behavior resulting in indirect habitat loss 4.6-times greater than direct habitat loss from roads, well pads, and other infrastructure."). See also Sawyer H, Beckmann JP, Seidler RG, Berger J. Long-term effects of energy development on winter distribution and residency of pronghorn in the Greater Yellowstone Ecosystem. Conservation Science and Practice (2019) (Our 15-year study showed that pronghorn avoidance and displacement from well pads increased through time and revealed a significant decline in winter residency rates concurrent with large-scale natural gas 16 development in the GYE... The predicted distance from nearest well pad in our dis-placement analysis increased from 908 m in 2005 to1,708 m in 2017 and presumably led to indirect habitat losses much larger than habitat lost directly to infrastructure.) The BLM must consider significant new information including these studies in its analysis, rigorously evaluate potential impacts from leasing in crucial winter range, propose mitigation accordingly, and if those impacts are beyond those anticipated in the underlying RMPs, conduct an EIS.	The EIS does address potential impacts to big game species in Section 3.21. The proposed action is the designation of corridors, which have no direct impacts to big game, but the potential indirect impacts of that management decision could impact big game species, including avoidance behavior and those potential impacts are adequately discussed.
021	031	The tiering and cumulative impacts concerns raised in our sage grouse comments apply to the BLM's review of impacts to corridors and winter range as well. The underlying RMPs predate the WPCI proposal significantly. The cumulative impacts analysis required by NEPA must catalogue past, present, and reasonably foreseeable projects at the time of the proposal. This requires a deeper analysis of potential impacts to big game than merely tiering to the underlying RMPs. As in the Montana Wildlife Federation case cited above, the BLM has the benefit of years of information since the relevant RMPs were published and must account for that information here. Otherwise the public has no way to understand the extent of development in these vital habitats and the potential impacts resulting from it.	The cumulative analysis for wildlife does not tier to existing RMPs and analysis identifies other projects that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these projects.

Comment Letter Number	Comment Number	Comment	Response
021	032	<p>Impacts to groundwater resources have not been adequately evaluated and disclosed The BLM has not taken a hard look at potential impacts to groundwater resources, because the DEIS does not review the range of reasonably foreseeable direct, indirect, and cumulative impacts to groundwater stemming from the WPCI proposal. The WPCI's stated purpose is to "to designate corridors for the preferred location of future pipelines associated with the transport of CO2, EOR products, and other compatible uses and to amend the various BLM RMPs within the State of Wyoming to incorporate the proposed corridors." DEIS at i. In the Project Overview discussion from Appendix D, the DIES states The WPCI corridors were established based on reasonably foreseeable development of resources that will require pipeline construction for development. EOR was the principal development activity used to select the WPCI corridors.</p> <p>Id. at Appendix D, 11.</p> <p>In reviewing climate impacts, the DEIS explains that "[i]ndirect effects would include the use of EOR in technically and economically feasible oil fields." The BLM describes the process of enhanced oil recovery with carbon dioxide in the climate impacts section of the DEIS:</p> <p>The CO2 is directed to injection wells strategically to optimize the areal sweep of the reservoir. The injected CO2 enters the reservoir and moves through the pore spaces of the rock, encountering residual droplets of crude oil, becoming miscible with the oil, and forming a concentrated oil bank that is swept toward producing wells. At the producing wells—there may be three, four, or more producers per injection well—oil and water are pumped to the surface, where they typically flow to a centralized collection facility. The pattern of injection wells and producers, which can change over time, will typically be determined based on computer simulations that model the reservoir's behavior based on 17 different design scenarios... The produced fluids are separated and the produced gas stream, which may include CO2 as the injected gas begins to break through at producing well locations, must be further processed. Produced CO2 is separated from the produced gas and recompressed for reinjection along with additional volumes of newly-purchased CO2. In some situations, separated produced water is treated and re-injected, often alternating with CO2 injection, to improve recovery efficiency.</p> <p>Id. at 3-8.</p> <p>The DEIS then considers a range of foreseeable emissions based on based on the anticipated additional production from EOR in fields identified as technically feasible. Yet the DEIS conducts no review of the potential impacts to groundwater resources from the injection of CO2 into reservoirs, or from the disposal, through either reinjection or surface disposal, of oil and gas produced water. Nor does the DEIS disclose the range of reasonably foreseeable impacts from this development as NEPA requires. The BLM's review only considers the direct impacts of surface disturbance within the corridor. While sedimentation, turbidity, and salinity are important considerations, NEPA instructs the BLM to consider the entire range of reasonably foreseeable direct, indirect, and cumulative impacts of a proposed project. Greater Boston Television Corp. v. F.C.C., 444 F.2d 841, 851 (D.C. Cir. 1970). Here, the BLM has identified the use of EOR in technically and economically feasible oil fields as an indirect impact but does not review the risks it presents to groundwater.</p> <p>The recent WildEarth Guardians case discussed above is instructive here. In that case, the court held that BLM's "analysis" of potential groundwater impacts "fail[ed] to satisfy NEPA's hard look requirement because, at best, they prove to be "general statements about 'possible' effects and 'some risk.'" WildEarth Guardians at 10. Here, as in the WildEarth Guardians case "the EA fail[s] to tell 'the reader . . . what data the conclusion was based on, or why objective data cannot be provided."</p> <p>The BLM has sufficient data to analyze impacts at this stage based on its identification of oil plays where EOR is technically and economically feasible. The court in WildEarth Guardians held that BLM's "inability to fully ascertain the precise extent of the effects of mineral leasing" at the leasing stage cannot justify a failure to consider those effects at this stage." Id. at 13. The same rationale applies here. While the BLM may be unable to fully ascertain the precise extent of the effects of the WPCI, the BLM has ample evidence to forecast a reasonably foreseeable range of effects from the EOR and CCS projects the WPCI anticipates and will facilitate.</p> <p>The BLM must undertake a sufficiently specific analysis for the WPCI. In WildEarth Guardians A comparison of BLM's analysis of groundwater impacts from shallow fracturing and surface casing depths and the factual record show[ed] that BLM improperly deferred its analysis to the APD stage. BLM provide[d] almost no analysis related to shallow fracturing and surface casing depth. The factual record, on the other hand, shows that BLM possessed the information necessary to 18 undertake a more specific analysis at the leasing stage than it did. WildEarth correctly argue[d] that BLM had access to records showing "aquifer depth and quality in the areas where the leases are located" and "records of existing wells drilled in the area." (Doc. 30 at 13.) Here, the DEIS improperly defers analysis to the project stage. The BLM must fully consider the range of reasonably foreseeable direct, indirect, and cumulative impacts to groundwater resulting from EOR, CCS, and any other compatible projects in the DEIS for this project. DEIS at 3-97.</p>	<p>BLM's RFD scenarios have been analyzed in previous NEPA processes related to individual resource management plans. The proposed action or alternatives considered during the WPCI NEPA process do not alter the RFDs or the impacts from them as disclosed in past documents. Since there are no changes to the existing RMPs, no analysis of new impact is required.</p>
021	033	<p>The BLM has not sufficiently consulted and engaged with Tribes in Wyoming, although they have a significant stake in the project The NEPA process requires that BLM consult with American Indian Tribes in two ways. The first is through Section 106 of the National Historic Preservation Act. The second, are requirements set forth in NEPA itself. Further, BLM agency manuals and executive orders direct the BLM to consult with Tribes in a prescribed manner. The DEIS fails to meet the requirements of these provisions in the following ways.</p>	<p>Appendix A Consultation and Coordination includes the list of tribes that the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded.</p>
021	034	<p>The BLM must adhere to Section 106 of the NHPA</p> <p>One of the broad policy goals of the NHPA is to "foster conditions under which our modern society and our historic property can exist in productive harmony." 54 U.S.C. § 300101(1). Tribal consultation under Section 106 of the NHPA requires that The agency official shall ensure that consultation in the section 106 process provides the Indian Tribe or Native Hawaiian organization a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effect... Consultation should commence early in the planning process, in order to identify and discuss relevant preservation issues and resolve concerns about the confidentiality of information on historic properties. 36 C.F.R. 800.2(A) § 800.2(B) goes on to say that "The Federal Government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes, and court decisions. Consultation with Indian tribes should be conducted in a sensitive manner respectful of tribal sovereignty." § 800.2(C) says that Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government or the governing body of a Native Hawaiian organization. Consultation with Indian tribes and Native Hawaiian organizations should be conducted in a manner sensitive to the concerns and needs of the Indian tribe or Native Hawaiian organization. 800.2(D)</p> <p>When Indian tribes and Native Hawaiian organizations attach religious and cultural significance to historic properties off tribal lands, section101(d)(6)(B) of the act requires Federal agencies to consult with such Indian tribes and Native Hawaiian organizations in the section 106 process. Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes and Native Hawaiian organizations and should consider that when complying with the procedures in this part.</p> <p>Finally, § 800.16(f) provides a definition for consultation in context of the NHPA. It defines Consultation as "the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process.</p> <p>Taken together the requirements under § 106 of the NHPA show that consultation is supposed to more than a simple opportunity for a tribe(s) to comment or a box to check in the NEPA process. It is meant to be a more robust process that is sensitive to the importance of effects of management decisions as well as the historic and ongoing relationship between tribes and agencies. First, in order for the process to be robust, consultation needs to happen early on in the process and the consultation needs to ongoing with multiple attempts made by an agency to engage in consulting. San Juan Citizens Alliance v. Norton 586 F. Supp 2d 1270 (2008). Here, the entire section on consultation feels cursory and rushed, as though it is simply a procedural box to check. Second, the tribes were not consulted early in the process. According to the DEIS, tribes with potential interest in this project appear to have only been contacted once by letter after the project proposal had been formed and submitted to the BLM.</p>	<p>Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.</p>
021	035	<p>While not required by the NHPA, it should be noted that the absence of an alternative that does not impact cultural sites is apparent. Because of this lack of options, the BLM is in a position where it must make a choice between alternatives that harm cultural sites or choose the no action alternative stalling the project completely. This binary choice between harm or no action creates a situation that offers a false choice and invites conflict. This is exactly what early consultation seeks to remedy. Early and ongoing consultation is meant to help avoid conflict and discovering problems before it is too late. Failing to consult is not only legally problematic but it is disrespectful, sending a message of contempt and disregard to Indian Tribes who are owed the respectful and dignified treatment of sovereigns.</p>	<p>Appendix A Consultation and Coordination provides an overview of consultation the BLM conducted for this EIS process. Appendix A includes the list of tribes that the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded.</p>

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021	036	<p>Consultation is inadequate under NEPA, Executive Order 13175, and Presidential Memorandum for the Heads of Executive Departments and Agencies April 29, 1994</p> <p>NEPA has its own consultation requirements via Executive Order 13175 and Presidential Memorandum for the Heads of Executive Departments and Agencies April 29, 1994. NEPA in 42 U.S.C. § 4331 (a) states that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony” and that further it is the policy of the Federal Government to “preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice.” § 4331 (b)(4). Along with these broad policy statements in NEPA, Executive Order 13175 sets out further requirements for agency consultation with tribes and Presidential Memorandum for the Heads of Executive Departments and Agencies April 29, 1994, Government-to-Government Relations with Native American Tribal Governments, directs agencies to In order to ensure that the rights of sovereign tribal governments are fully respected, executive branch activities shall be guided by the following: (a) The head of each executive department and agency shall be responsible for ensuring that the department or agency operates within a government-togovernment relationship with federally recognized tribal governments. (b) Each executive department and agency shall consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments. All such consultations are to be open and candid so that all interested parties may evaluate for themselves the potential impact of relevant proposals. (c) Each executive department and agency shall assess the impact of Federal Government plans, projects, programs, and activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities. The BLM must recognize and honor the government to government relationship between them and any Tribe. Which here they have not done with the single letter sent to the tribes to invite them to participate. All of the sources provided above point to engagement that is respectful and more involved on the part of the BLM. The BLM is required to honor any treaty or trust obligations that the federal government is obligated to. The Federal Government is in a unique role in regard to relationships with American Indian Tribes. They are both an independent sovereign and the Trustee. The BLM needs to consider their actions from both of these 21 perspectives. Finally, the consultation should be meaningful in order to generate suitable alternatives.</p>	<p>Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.</p>
021	037	<p>The BLM has shown here that they have not meaningfully engaged with the tribes. They rely on one letter soliciting consultation to satisfy their requirements. One letter is not enough to satisfy the meaningful requirement of consultation. Further, the letter attempts to engage in consultation during the NEPA process which here, in a way, comes too late, as the project was conceived and developed by the project sponsors, and for whatever reason, did not consult with tribes. Had the project sponsors done this, tribes would have been able to give input early in the project planning process, potentially developing pipeline routes that would not be harmful or conflict with cultural sites that are highly valued and sacred to tribes. Because tribes were not consulted by the project sponsors early in developing the proposed project, the BLM will now find it hard to meaningfully consult with tribes as the alternatives proposed offer only two real choices, harm sacred cultural sites or deny the project. Again, early consultation is meant to avoid this exact kind of catch 22 problem.</p>	<p>Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.</p>
021	038	<p>The proposed tiering precludes adequate tribal consultation</p> <p>The BLM is proposing to engage in tiering of EIS’s and then engage in more meaningful consultation efforts once specific pipeline segments are proposed to be built. This kind of tiering is inappropriate however because there is no guarantee that full EIS’s will be carried out for each proposed section of pipeline. If BLM chooses to conduct Environmental Assessments rather than the EIS’s, than there is no requirement for the BLM to pursue further consultation effectively freezing out any tribal involvement outside specific requirements of other laws upon discovery of cultural, sacred, or historical sites. Tiering is meant to be used for broad programs, plans, or policies. Here a specific project is being evaluated which will create a corridor for pipelines to be built. If BLM designates a corridor for this project, it creates a situation where tribes will not have any meaningful way to be consulted even though the BLM alludes to doing that in the future. What is true for tribal consultation would also be true for the public more generally who will want to comment on any proposed specific sections of pipeline being constructed.</p>	<p>Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.</p>
021	039	<p>The tribal consultation here also fails to meet the guidelines set forth in its own agency manuals, primarily Manual 1780 Tribal Relations. Section 1.1(E) recognizes that consultation is a government to government relationship, and that within that framework consultation should “ensure that it”:</p> <ol style="list-style-type: none"><li>1. Begins early in the life cycle of a proposed action;</li><li>2. Directly involves the agency official who has delegated authority for disposition of the proposed action;</li><li>3. Recognizes the transparent and deliberative nature of consultation;</li><li>4. Includes a reasonable and sustained effort to invite tribes to consult, which may include several invitations and/or other methods of offering engagement;</li><li>5. Is carried out in the context of an ongoing relationship involving regularly scheduled meetings and other forms of communications;</li><li>6. Communicates final decisions with a summary explanation of how tribal concerns were taken into account; and</li><li>22</li><li>7. Does not terminate with the decision or authorization itself, but rather continues to engage tribes regarding land and mineral resources, land uses, treatments, all forms of mitigation (including data recovery, interpretation, funding for tribal social/cultural programs, lease stipulations, operating plan conditions-of-approval, etc.), inspections and monitoring, reclamation requirements, and dissemination of reports and information for the lands and resources affected.</li></ol> <p>The first five bullet points are directly at issue here. (1) as discussed previously, consultation was clearly not started early in the life cycle of the proposed WPCI project. (2) It is unknown whether the agency official with delegated authority for disposition was involved in the consultation process. (3) Consultation is generally non-existent and late in the process. This leaves doubt about whether or not the BLM is being transparent in its efforts to consult and there can be no deliberation if there has been not been any consultation. (4) The BLM has only made one attempt to consult with tribes via letter. This is neither a reasonable or sustained effort. (5) The minimal effort put into consulting for this DEIS does not indicate that it is part of an ongoing relationship with regularly scheduled meetings and alternative forms of communication. BLM needs to explain how this is being accomplished. The final two bullet points from the manual need to be considered and commented on when entering a final decision. The BLM needs to comply with AHPA, NEPA, and BLM Manual 1780 in order to properly carry out tribal consultation. Early meaningful consultation is required.</p>	<p>Appendix A Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.</p>

Comment Letter Number	Comment Number	Comment	Response
021	040	<p>The BLM must consider off-reservation treaty rights in its analysis</p> <p>Various parts of Wyoming are subject to or potentially subject to off-reservation treaty rights held by various American Indian tribes. These rights to hunt, fish, and gather would be harmed if the proposed pipeline has effects on wildlife travel patterns and numbers, ecosystem quality, or water quality. Further, a pipeline may cause a reduction in the area where their rights extend to. The BLM needs to consider the impacts on these off-reservation rights held by tribes. Treaties that Guarantee tribes rights to use unoccupied lands of the United States can be found in at least two treaties relevant to the WPCI, these are the Fort Bridger Treaty Council of 1868, and the 1868 Treaty of Fort Laramie. Article IV of the Fort Bridger Treaty Council of 1868 states that the tribes “shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts.” Article XI of the 2nd Treaty of Fort Laramie 1868 states that the Sioux Nation “reserve[s] the right to hunt on any lands north of North Platte, and on the Republican Fork of the Smoky Hill river, so long as the buffalo may range thereon in such numbers as to justify the chase.” The United States Supreme Court has recently shown a willingness to uphold and enforce treaties made with American Indian Tribes. see <i>Herrera v. Wyoming</i>, 136 S. Ct. 1686 (2019) and <i>McGirt v. Oklahoma</i>, 140 S. Ct. 659 (2020). The case of <i>Herrera v. Wyoming</i> is particularly relevant. In that case the Court found that the off-reservation treaty rights to hunt on unoccupied lands of the United States have not been extinguished for the Crow Tribe. While there is still a question for the lower courts as to what lands are considered unoccupied for the purposes of the 23 treaty, case law from other U.S. Districts strongly indicates that the lands in question in <i>Herrera</i> would be considered unoccupied. see <i>State v. Tinno</i>, 94 Idaho 759 (1972) and <i>State v. Arthur</i>, 74 Idaho 251 (1953). While BLM lands have not yet been evaluated by the courts as to whether they would be considered “unoccupied lands,” the aforementioned case law dealing with U.S. Forest Service lands address criteria that, as applied to BLM lands, indicate that BLM lands would be considered “unoccupied.” The criteria applied to determine whether the lands were unoccupied were presented in <i>Herrera</i> as: whether the lands were reserved from disposal and settlement by the federal government, whether the lands had no settlements (some intensive uses meet this criteria), and that wildlife continued to exist on those lands for hunting (a treaty stipulation). <i>Herrera</i>, 136 S. Ct. at 1698-1703. The BLM lands in question as part of the WPCI would meet these criteria and therefore the courts would likely deem these lands unoccupied federal lands subject to offreservation treaty rights. In the case of the 1868 Treaty of Fort Laramie (15 stat. 635) , the off-reservation treaty rights to hunt were later abrogated by Congress when it enacted a subsequent 1876 agreement with the Sioux that removed the Black Hills from the Sioux Nations reservation and removed the Sioux Nation’s rights to hunt in lands West of the reservation. <i>U.S. v. Sioux Nation of Indians</i>, 488 U.S. 382-83 (1980). This later agreement was found to be coercive and in bad faith leading that same court to find that the U.S. Government had effected a taking and owed the Sioux interest on the amount of money that was due to the tribes. <i>Id.</i> Payment for this taking has not been accepted, and the Sioux Nation continues to demand a return of their lands and for the U.S. Government to uphold all treaty rights. The BLM then as a matter of policy and respect for the sovereignty of the Sioux Nation should consider and address any treaty rights that the Sioux Tribes have within the project area.</p> <p>In order to fully comply with NEPA, the BLM needs to consider the effects that the corridor for the WPCI project would have on these off-reservation hunting rights held (or claimed to be held) by American Indian Tribes.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
021	041	<p>The BLM Should Not Proceed Because Meaningful Public Participation is Not Possible at this time We are in the midst of a national emergency around COVID-19 which makes it exceptionally difficult for people to participate in comment processes. Proceeding with the WPCI at this time would violate the public participation requirements of the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA). As BLM has recently been reminded, “[p]ublic involvement in oil and gas leasing is required under FLPMA and NEPA” and “the public involvement requirements of FLPMA and NEPA cannot be set aside in the name of expediting oil and gas lease sales.” <i>Western Watersheds Project v. Zinke</i> Case No. 1:18-cv-00187-REB (D. Idaho, Sept. 21, 2018). This holding is relevant to the WPCI as well. In particular, FLPMA requires that BLM give “the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and 24 programs for, and the management of, the public lands.” 43 U.S.C. § 1739(e). NEPA requires that “environmental information is available to public officials and citizens before decisions are made and before actions are taken” and reiterates that “public scrutiny is essential to implementing NEPA.” 40 C.F.R. § 1500.1(b). Further, NEPA obligates the BLM to “[m]ake diligent efforts to involve the public in preparing and implementing the NEPA procedures.” <i>Id.</i> § 1506.6(a). Moving forward with the WPCI comment period and approval, a decision that sets the stage for many potential future projects, when the public is unable to properly participate violates the requirements of NEPA and FLPMA. BLM’s public rooms are closed (making it difficult to conduct research or deliver comments), and state and local orders are encouraging or requiring people to stay at home and limiting travel. Notably, Wyoming’s connectivity rating ranks 46th in the nation for broadband internet access, compounding the challenges with participating in the comment process. Broadband internet is particularly problematic in rural areas of the state, exacerbating the challenges of participation in areas likely to be affected by the WPCI. Further, the WPCI alternatives cross significant segments of private lands, so there are owners and residents of these lands who will be particularly interested in and affected by the proposal. Moving forward with a project proposal that will require companies to enter on to private land for development activities is especially irresponsible at this time. Members of Congress, attorneys general, and state and local governments have submitted requests that the Federal government pause or extend public comment periods for rulemaking efforts and other processes during the novel coronavirus pandemic.<sup>5</sup> Administrative actions and public comment periods for other Federal agency actions are being suspended or extended for “to be determined” amounts of time due to the national emergency.<sup>6</sup> BLM should heed these many indications that it is not responsible to move forward with the WPCI at this time. Five conservation organizations in Wyoming requested an extension of the public comment periods for the foregoing reasons (attached as Appendix 7 and incorporated by reference) but did not receive a response from the BLM State Office.</p>	<p>The BLM held nine scoping meeting across the State of Wyoming and two virtual public meetings during the public comment period. In this unprecedented time, the BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities. Members of the public who had internet connectivity issues had the option of joining the virtual public meeting by phone. Contact information for the BLM and contractor staff were made available for members of the public to reach out to in the event of any questions or technical difficulties with the virtual public meetings. Members of the public also had the ability to pre-submit questions for the meeting upon registration and email or call the BLM with questions throughout the public comment period. Attendance and participation in both types of meetings were comparable.</p>
21	42	<p>For the aforementioned reasons, we the undersigned ask that the BLM conduct further analysis of this project proposal to ensure that the WPCI complies with NEPA, FLPMA, and the relevant implementing regulations. Particularly, we ask that the BLM establish the purpose and need for this project; disclose and analyze the project’s potential impacts to wildlife and water resources as NEPA requires; adhere to the 2015 grouse plans, and Wyoming’s sage grouse and ungulate migration corridor executive orders as FLPMA requires, conduct robust engagement with Tribes in Wyoming that have a significant stake in this project, and postpone the project in its entirety until the public can meaningfully engage in its review. Thank you for the opportunity to comment on this proposal.</p>	<p>The purpose and need for the proposed WPCI is presented in EIS Section 1.3, and EIS Section 1.4 summarizes the decision to be made by the BLM. Impacts to wildlife are disclosed in EIS Section 3.21 and impacts to water resources are disclosed in EIS Section 3.19. EIS Appendix A describes the tribal consultation process for the WPCI EIS.</p>
022	001	<p>WCCD supports the historic uses of federal lands and the multiple use mandate under which BLM lands are directed to be managed as per the Federal Land Policy Management Act of 1976. Our comments are derived from our mission and are directed by our Long Range Natural Resource Land Use Plan policies which can be found at <a href="https://www.washakiedc.com/publications.html">https://www.washakiedc.com/publications.html</a>.</p>	<p>Comment noted.</p>
022	002	<p>WCCD supports the plan to amend the RMP’s in the Worland BLM Field Office. The development of defined pipeline corridors across BLM and private lands will help utilize the valuable natural resources in our state while still helping to protect the natural, agricultural and social uniqueness of our great state.</p>	<p>Comment noted.</p>
022	003	<p>WCCD expects the BLM to continue to very ,carefully, and thoroughly analyze any potential impacts that the WPCI could cause, which includes, but not limited to, new/temporary roads and other disturbed areas, invasive and noxious weeds, and costs and loss of revenues to private landowners and grazing permittees.</p>	<p>Impacts to these resources have been analyzed in Section 3.8 Grazing, Section 3.14 Socioeconomics, Section 3.16 Transportation, and Section 3.17 Vegetation of the final EIS.</p>
022	004	<p>WCCD strongly encourages the BLM to continue to have strong communication with permittees and landowners to ensure the landowners best interests and concerns are met. Agriculture producers are intimately familiar with areas affected by this proposal and they possess irreplaceable long-term, on-the-ground knowledge.</p>	<p>The BLM will continue to coordinate and consult the public and other interested parties, as required by NEPA during any site-specific project.</p>
022	005	<p>WCCD highly recommends that during the site-specific NEPA process, developers and BLM officials seek and address the concerns and recommendations of these stewards of habitat and rangeland health.</p>	<p>The BLM will continue to coordinate and consult the public and other interested parties, as required by NEPA during any site-specific project.</p>
022	006	<p>WCCD encourages the BLM to address our concern of a lengthy duration of potential AUM loss. It is critical that there be a timeframe estimate for loss of AUM’s/potential use that the BLM, permittees/landowners, and pipeline development companies address in each site specific NEPA analysis. It is crucial that the impacts remain short term rather than long term.</p>	<p>The EIS assumes that reclamation would return forage productivity and available AUMs and long-term productivity would be minimal. Site-specific reclamation to address grazing impacts will be analyzed in site-specific NEPA analysis.</p>

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022	007	WCCD insists that the BLM plan for, oversee, and ensure that successful reclamation and mitigation occur in all disturbances in the project corridor. It will be important to monitor the eradication of invasive and noxious weeds to ensure that desired vegetation is established.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
022	008	WCCD strongly insists that in any instance of disturbance, the BLM considers erosion control and soil conservation as a priority. It is crucial that all affected grazing permittees, private landowners, and pipeline companies are in communication and any concerns are addressed and/or resolved.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
022	009	WCCD expects the BLM to analyze and mitigate increased costs and reduced revenues on disturbed land for private landowners and grazing permittees in the final EIS and Record of Decision, along with the specific impacts during site specific NEPA process.	This is outside the scope of analysis, and the current proposal does not include the creation of any corridors on private lands.
022	010	WCCD expects that the BLM will continue to very carefully and thoroughly analyze any potential impacts that the WPCI could cause, which includes, but not limited to, new/temporary roads and other disturbed areas, invasive and noxious weeds, and costs and loss of revenues to private landowners and grazing permittees	Site-specific impacts to these resources would be further analyzed during future subsequent site-specific NEPA for development within the proposed corridors.
022	011	WCCD appreciates the opportunity to comment on the Draft Resource Management Plan Amendments/Environmental Impact Statement for the Wyoming Pipeline Corridor Initiative. We encourage continued attention to our concerns and look forward to serving as a cooperating agency on the proposed project and being involved in future proposed actions and decisions. We also ask to be notified of any future site-specific NEPA documents developed for this project.	Thank you for your comment.
023	001	The BLM should halt the WPCI effort. After reviewing the DEIS and appendices, we strongly recommend that the BLM halt this effort to designate a statewide system of corridors to support enhanced oil recovery (EOR). As described throughout our comments below, too much of the impact of development in the proposed pipeline corridor network is unknowable without specific project proposals (which do not exist) and climate change impacts are too speculative to allow informed decision-making. High uncertainty around fossil fuel economic and market conditions coupled with the speculative and unproven technology of carbon capture from coal power plants, the lack of actual identified current projects to facilitate construction of such pipelines, and the significant environmental impacts that would accompany pipeline development supports our conclusion that this statewide corridor designation project is overambitious and premature at best. Furthermore, we are concerned that if a system of pipeline corridors is designated, it will be extremely difficult if not impossible for the agency to decline a proposed project even if environmental impacts were discovered to be unacceptably high. A wiser and more defensible approach to well-informed decisions grounded in best available current science is to evaluate specific projects as they are proposed.	The decision before the BLM is whether or not to amend nine RMPs to include corridor designations. Potential indirect impacts of the possible development of those corridors are disclosed in this EIS. As stated in Chapter 1, any proposed infrastructure project would be subject to subsequent NEPA review.
023	002	As described below, although Alternative C is far better than Alternative D with respect to pipeline corridor placement and minimizing impacts of potential future development to many other resource values, we remain concerned that even under Alternative C the BLM is considering allowing the permanent designation of exclusive-use pipeline corridors that, if developed, would lead to unacceptable impacts without any knowledge now of the specifics	The decision before the BLM is whether or not to amend nine RMPs to include corridor designations. Potential indirect impacts of the possible development of those corridors are disclosed in this EIS. As stated in Chapter 1, any proposed infrastructure project would be subject to subsequent NEPA review.
023	003	<p>National Environmental Policy Act (NEPA) regulations require federal agencies to encourage and facilitate public involvement “to the fullest extent possible,” 40 C.F.R. § 1500.2, and identify public scrutiny as an “essential” part of the NEPA process, id. § 1500.1(b). See also id. § 1501.4(b) (Agencies must “involve . . . the public, to the extent practicable”); id. § 1506.6 (“Agencies shall: . . . (a) Make diligent efforts to involve the public in preparing and implementing their NEPA procedures”). They also provide that “NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.” 40 C.F.R. § 1500.1(b). FLPMA section 309(e) similarly requires BLM to “give . . . the public adequate notice and an opportunity to comment upon . . . and to participate in . . . the management of[] the public lands.” 43 U.S.C. § 1739(e) (emphasis added).</p> <p>In light of BLM’s public participation obligations under NEPA and its implementing regulations, on June 11, 2020, five conservation groups asked BLM to extend the public comment period for the WPCI proposal by 120-days.1 As of July 15, 2020 BLM has not responded to this request and has not extended the public comment period.</p> <p>The groups asked that the public comment period be extended due to extraordinary circumstances that limited the public’s ability to respond. These include two nationwide emergencies that have taken place during the public comment period. First, the COVID-19 pandemic has decreased the public’s ability to participate, due to additional demands on the public’s time and the lack of in-person comment opportunities for those who do not have access to broadband internet. Native American tribes have also been operating under many pandemic restrictions that have reduced their ability to comment or participate in government-to-government consultation. Second, the current national unrest resulting from the killing of George Floyd by Minneapolis police has resulted in protests and vigils in many Wyoming cities and towns, including Casper, Cheyenne, Cody, Dubois, Jackson, Riverton, Lander, Laramie, Pinedale, Rock Springs, and Sheridan. Hundreds of protests have occurred across the United States, requiring the public’s time and attention.</p>	The BLM held four in-person scoping meetings across the State of Wyoming in December 2019, and two virtual public meetings during the public comment period in May 2020. In this unprecedented time, the BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities. Attendance and participation in both types of meetings were comparable.
023	004	In light of the two ongoing national emergencies, Wyoming’s rural communities and tribes face significant difficulties in participating in the WPCI NEPA process, which at the DEIS stage was carried out online due to the COVID-19 pandemic and the resulting closure of BLM offices in Wyoming. Many residents of rural Wyoming have little access to adequate broadband internet, with average download speed of only 17 mpbs.2 According to a 2019 Federal Communications Commission Study, fewer than half of the housing units on U.S. tribal lands have access to 25/3 Mbps broadband internet service.	Call in information was also made available for the virtual public meetings and an internet connection was not required or necessary to participate in the public meetings. Attendance and participation in both types of meetings were comparable.
023	005	Furthermore, BLM has not conducted and does not plan to conduct outreach to private landowners whose properties are adjacent to the proposed corridors.4 Given the checkerboard nature of BLM and private lands in some areas of the proposed corridors, this means that private landowners who could be affected by these designations had no idea that this NEPA process was occurring. Although BLM does not have the authority to designate pipeline corridors on private property, pipeline corridors that are designated adjacent to or near private lands increase the likelihood that pipelines would be proposed on those lands in the future. BLM’s lack of outreach to those potentially affected landowners does not fulfill the agency’s obligations to encourage and facilitate public involvement.	The BLM published notices for public scoping and public comment periods in the <i>Federal Register</i> and issued media releases and emails that announced the scoping and public comment periods to the mailing list. The mailing list was developed from BLM’s mailing list, tribal contacts, and other cooperating agencies.
023	006	In contrast to BLM’s decision not to extend public comment for the WPCI proposal and its nine RMP amendments, BLM recently extended a public comment period for the Farmington-Mancos Resource Management Plan (RMPA) by 120 days due to concerns expressed by Native Americans in the Greater Chaco region.5 In that case, the current global pandemic and related public health crisis prevented BLM from conducting additional face-to-face public meetings to solicit feedback on the Farmington RMPA. Instead, the agency conducted virtual meetings that were largely inaccessible to the communities most impacted. Following strong demands from the New Mexico Delegation, the Greater Chaco Coalition, the Navajo Nation, the All Pueblo Council of Governors, and the Governor of New Mexico, BLM finally agreed to extend the public comment period until September 2020.6 By not extending the public comment for the WPCI DEIS and nine RMP amendments, BLM arbitrarily decided not to allow the affected tribes and communities in Wyoming to fully and meaningfully participate as it did in New Mexico.	The BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities.



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023	007	In addition, BLM did not make documents referred to in the EIS available until the last month of the comment period and only after we requested that they do so. The BLM posted the vegetation and wildlife technical reports on June 18, 2020 and the special status species report on July 1, 2020, the latter only 15 days before the comment deadline. This does not facilitate meaningful public comment and is unacceptable. As a matter of course, the BLM should make all documents that are directly referred to – and presumably relied on – in the DEIS available at the beginning of the comment period. We have not had adequate time to review and react to these documents, especially the special status species report. For this reason alone, the BLM should re-open this comment period for at least a month.	Comment noted.
023	008	The DEIS states that the BLM's proposed action is needed to respond to the State of Wyoming's project proposal and to support future development of carbon capture and utilization systems (CCUS) and enhanced oil recovery (EOR) through the development of infrastructure to transport CO2 from anthropogenic (i.e., existing coal power plants) and natural (i.e., natural gas fields) sources to existing oil fields suitable for EOR within the state. The planning documents refer to anthropogenic sources of CO2 repeatedly throughout, without any analysis or even acknowledgement of the fact that the technology to install carbon capture systems on coal power plants is highly speculative, commercially unproven, would be prohibitively expensive, and is unlikely ever to come to fruition on a coal power plant in Wyoming. For example, in its 2019 Integrated Resource Plan, PacifiCorp evaluated the possibility of retrofitting some of the units at its Wyoming coal plants for carbon capture, and decided that: Given the high capital cost of implementing CCS [Carbon Capture and Storage] on coal fired generation (either on a retrofit basis or for new resources) CCS is not considered a viable option before 2025. Factors contributing to this position include capital cost risk uncertainty, the availability of commercial sequestration (non-EOR) sites, uncertainty regarding long-term liabilities for underground sequestration, and the availability of federal funding to support such projects.	This is a planning-level document; the BLM cannot predict the future economic viability or technology.
023	009	According to recent comments submitted by the Institute for Energy Economics and Financial Analysts (IEEFA) in April 2020, if the utility did install CCS equipment on one of its Wyoming coal plants, Wyoming ratepayers would bear all of the risks and pay all of the costs (direct and indirect) for such a system, leading to dramatic increases in electricity rates throughout the utility's service territory in Wyoming. The IEEFA report identified numerous flawed assumptions underlying proposals for carbon capture retrofits on coal plants in Wyoming, including the advanced age of the most likely coal plants, expiring federal tax credits, wildly inflated operating life estimates for CCS retrofits, and completely unrealistic cost estimates for installation (based on known costs to build to the one and only existing CCS project in the United States, and inflated estimates of how much CO2 such a retrofit could capture. To support its statement that anthropogenic sources of CO2 from power plants are part of the purpose and need for this project and help justify it, the BLM must provide a robust analysis of the feasibility of CCS retrofits on Wyoming power plants and the likelihood that they will ever be built. If anthropogenic sources of CO2 are unrealistic or unlikely to be built, then corridors associated with those sources should not be delineated now. If such a CCS ever was built on a Wyoming plant, transportation needs for the CO2 it captured should be evaluated as part of that project planning.	The decision before the BLM is whether or not to respond to the State of Wyoming Governor's office application to designate pipeline corridor(s) for oil and gas products and other compatible uses. The WPCI would not authorize any new infrastructure projects or rights-of-way but would amend several BLM resource management plans across the state. The feasibility of developing carbon capture and storage on coal-fired power plants is outside the scope of this EIS. The purpose and need statement in EIS Chapter 1 does not refer to anthropogenic sources of CO2 from power plants. However, human-made sources of CO2 could use the pipeline corridors, as technology develops.
023	010	Reliability of estimates for demand for EOR at existing Wyoming oil fields is also questionable, and should be analyzed more rigorously using current data. All EOR demand estimates in the DEIS are based on one reported research paper, Wo et al. 2009,9 based on data that is now 12 years out of date. Demand for EOR should be reevaluated taking into account oil market trends: The Wyoming Consensus Revenue Estimating Group estimated in its May 2020 forecast that oil production has dropped by 45% in 202010, a number of wells have been shut in, and Wyoming's active drilling rig count has ranged from zero to one since January 1, 2020.	The Enhanced Oil Recovery Institute (EORI) has developed a list of 100 oil fields in Wyoming that, because of reservoir properties, are technically capable of supporting the use miscible (mixable) CO <sub>2</sub> floods for successful tertiary recovery efforts (see Appendix G). EORI reports "[T]he estimated recoverable reserves for the candidate fields using CO <sub>2</sub> -EOR are approximately 1.5 billion barrels of oil" (Jones and Freye 2019). Of these fields, 28 are near existing CO <sub>2</sub> delivery infrastructure and 26, according to the same report, are economically and technically viable. Seven of the fields are undergoing existing CO <sub>2</sub> -EOR production. Section 3.9.3.1 also states: "Going forward, total supply, cost of CO <sub>2</sub> , and pipeline capacity would likely determine where additional production can be realized using CO <sub>2</sub> -EOR."
023	011	Finally, we question the wisdom of constraining future potential uses of lands designated as pipeline corridors to only transport CCUS and EOR products, even those that are co-located within existing designated corridors, as specified in the BLM's identified preferred Alternative D. Under Alternative C, less area would be reserved for CCUS and EOR products through application of such reservation only to new corridors, although as described in the following section, Alternative C actually appears to be completely impractical. We remain deeply concerned about reducing the potential for Wyoming to respond to unknown future opportunities for other types of economic activity and diversification.	The decision before the BLM is whether or not to respond to the State of Wyoming Governor's office application to designate pipeline corridor(s) for oil and gas products and other compatible uses. As required by NEPA, the BLM developed a reasonable range of alternatives to respond to the application.
023	012	Alternative C appears nonsensical and impractical. In describing Alternative C, the BLM states that "Any of the proposed corridor segments from Alternative B occurring within existing designated corridors would be managed per existing corridor requirements and would not be dedicated to CO2, EOR products, or other compatible uses. The net result would be the same as eliminating that proposed corridor segment because other utilities could continue to use the full extent of the existing corridors. Therefore, only the new proposed corridors under Alternative C would be those segments located outside of existing designated corridors, and these corridors would be dedicated for transportation of CO2, EOR products, or other compatible uses." DEIS at 2-3. In other words, it seems as if Alternative C adds 239 miles of disconnected segments of CO2 pipeline corridors that connect to existing segments of other types of pipelines that are already dedicated to other uses. If this is actually the case, it would seem that Alternative C is not viable in meeting the purpose and need of this BLM action.	Alternative C is the connecting segments to complete a connected corridor network throughout the State of Wyoming. Therefore, it is a viable alternative to meet the purpose and need of the proposed WPCI.
023	013	<p>The purpose of the BLM action is "to designate corridors for the preferred location of future pipelines associated with the transport of CO2, EOR products, and other compatible uses, and to incorporate the designated corridors into the various BLM RMPs within the state of Wyoming." DEIS at 1-2. Pursuant to NEPA, the BLM in the DEIS must identify and analyze a range of reasonable alternatives for pipeline network configurations and take a hard look at the impacts resulting from the various configurations. 42 U.S.C. § 4332(2)(E). This information is necessary for the public to adequately understand and comment on the proposed action. "Without substantive, comparative environmental impact information regarding other possible courses of action, the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded." N.M. ex rel. Richardson v. BLM, 565 F.3d 683, 708 (10th Cir. 2009).</p> <p>The DEIS includes three action alternatives. Alternative B is the proposal put forth by the state of Wyoming and would allocate 1,914 miles of pipeline corridors, 1,105 of which would traverse BLM administered land. Alternatives C and D appear to have identical physical configurations and are designed to not traverse sage grouse Priority Habitat Management Areas (PHMA) acres with other valid existing rights, and acres with certain special designations. The difference between the two is that Alternative C would not provide for exclusive use of corridors for EOR while Alternative D would do so. They would both designate the same 1,868 miles of corridor ROWs.</p> <p>Regardless, the DEIS does not provide a range of reasonable alternatives contrary to CEQ direction. 40. C.F.R. § 1502.14. Instead, it only provides two physical configurations for comparison (i.e., Alt. B and Alt. C/D) and the two are relatively similar (differing by 46 miles). Instead, per CEQ direction, the BLM should have provided (and rigorously explored) a range of alternatives that reflect different configurations and network sizes. In doing so, the BLM would illuminate the environmental consequences of each and the trade-offs that need to be considered and enable informed decision-making. Adequately resolving this deficiency in the EIS may require issuance of a supplemental EIS rather than just revising the DEIS.</p>	The alternatives analyzed in this EIS include routes of corridors to facilitate a connected network between existing oil and gas fields and potential CO2 sources and the alternatives also include the differing management directives of how these corridors would be managed in the various BLM field offices throughout Wyoming.



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023	014	<p>The BLM in this DEIS continuously defers analysis to subsequent project-level proposals and environmental analyses. See, e.g., DEIS at 41, 43, 111, 116, 138, 140, 141, 146, 151. The BLM also makes it clear that it intends to tier future analyses to this environmental impact statement in order to streamline them and gain efficiencies. DEIS at 1-2 (“The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis.”)</p> <p>There are two glaring problems with the BLM’s approach. The first problem is that the BLM is playing a shell game. It is not undertaking a rigorous analysis in this DEIS and instead claiming it will do so in subsequent project level analyses and at the same time it is saying that subsequent project level analyses will rely on the analyses within this DEIS. This is both inappropriate and unlawful. “Though “tiering” to a previous EIS is sometimes permissible, the previous document must actually discuss the impacts of the Project at issue.” South Fork Band Council of Western Shoshone of NV. v. United States Dept. of Interior, 588 F.3d 718, 726 (9th Cir. 2009) (citing Muckleshoot Indian Tribe v. United States Forest Serv., 177 F.3d 800, 810 (9th Cir. 1999) (holding that reliance on the EIS accompanying an earlier planning document was improper because it did not discuss the subsequent specific Project in detail). The fact that BLM envisions undertaking site-specific environmental analyses for pipeline segments in the future does not abdicate the BLM from its legal mandate under NEPA to conduct rigorous analysis of the alternatives in this DEIS.</p>	<p>The final EIS has been revised. Subsequent NEPA analysis would not tier to this document. Subsequent project proposals would undergo site-specific NEPA and could reference this document. The NEPA analysis for WPCI analyzes the designation of corridors; therefore, the alternatives analyzed in this document were different corridors. WPCI has conducted a rigorous analysis of the corridor alternatives.</p>
023	015	<p>The second problem is that by deferring impact analyses to subsequent pipeline projects the BLM is foregoing illuminating and evaluating broad-scale impacts. This is especially true in the context of imperiled species, and big game species, and their habitats. A broad-scale analysis may in fact reveal the loss of significant functional habitat across the ecosystem with implications to species’ viability while a site-level analysis may not.</p>	<p>This NEPA analysis for WPCI is to examine the designation of a statewide network of corridors. This EIS examines the impact of the designation of corridors on imperiled species, big game species and their habitats. Subsequent project proposals would undergo site-specific NEPA and could reference this analysis. Once a project is proposed within the corridors, subsequent site-specific NEPA analysis would be conducted and would include more detailed analysis of impacts imperiled species, big game, and habitat at that time.</p>
023	016	<p>The BLM has a duty under NEPA to rigorously evaluate and disclose to the public the environmental impacts resulting from each of the alternatives. In multiple places in this DEIS the BLM has failed to meet this burden. The BLM must remedy this deficiency. We reiterate that BLM should halt the WPCI process until it has additional information necessary to undertake an informed environmental analysis. As discussed throughout this letter, future pipelines in the corridors will have significant impacts far beyond what is analyzed in this DEIS. Environmental assessments, determinations of NEPA adequacy (which are not NEPA documents and do not provide any analysis), or categorical exclusions tiered to or incorporating by reference the WPCI EIS will not satisfy NEPA.</p>	<p>The NEPA analysis for WPCI is to examine the designation of corridors. The analysis in this EIS examines the environmental impacts of the proposed corridor designations associated with each alternative. Analysis is looking at designation of corridors. This EIS does meet the burden of rigorously evaluating and disclosing impacts associated with the proposed corridor designations. Future projects within the corridors would be examined and analyzed under future site-specific NEPA. WPCI specific impacts that are associated with the building of infrastructure and those impacts would be disclosed during subsequent NEPA. There would be no tiering of future site-specific NEPA to this NEPA document.</p>
023	017	<p>NEPA requires agencies to maintain a national “look before you leap” policy in regard to all major federal actions. Congress’ intent in establishing this objective was to avoid uninformedagency decisions that could have serious environmental consequences. Thus, NEPA’s mandate is that all federal agencies analyze the likely effects of their actions, as well as address the potential alternatives. “Agencies are to perform this hard look before committing themselves irretrievably to a given course of action so that the action can be shaped to account for environmental values. NEPA § 102(2)(c) requires the agency to consider numerous factors [including] irreversible commitments of resources called for by the proposal.” Sierra Club v. Hodel, 848 F.2d 1068 (10th Cir. 1988) (rev’d on other grounds). NEPA provides procedural protections for resources at risk by requiring analysis of impacts before substantial decisions are made that set development in motion. See Conservation Law Foundation v. Watt, 560 F. Supp. 561, 581 (D. Mass. 1983), aff’d by Massachusetts v. Watt, 716 F. 2d 946 (1st Cir. 1983).</p> <p>NEPA and its implementing regulations are our “basic national charter for the protection of the environment.” 40 C.F.R. § 1500.1. The primary purpose of NEPA is two-fold: (1) “[i]t ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts,” and (2) “it . . . guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.” Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989). Thus, while “NEPA itself does not mandate particular results, but simply prescribes the necessary process,” id. at 350, agency compliance with NEPA’s action-forcing statutory and regulatory mandates helps federal agencies ensure that they are adhering to NEPA’s noble purpose and policies. See 42 U.S.C. §§ 4321, 4331.</p> <p>NEPA imposes “action-forcing procedures . . . requir[ing] that agencies take a ‘hard look’ at environmental consequences.” Methow Valley Citizens Council, 490 U.S. at 350 (citations omitted). These “environmental consequences” may be direct, indirect, or cumulative. 40 C.F.R. §§ 1502.16, 1508.7, 1508.8</p>	<p>This EIS examines the potential impacts associated with the designation a statewide corridor network. This EIS has examined the effects of the corridor designation and addressed potential alternatives to meet the hard look doctrine.</p>
023	018	<p>From the information provided in the DEIS, it was difficult to determine the significance of the impacts to vegetation and the habitat that it provides for various wildlife species. Below we identify where the information or analysis was incomplete and needs to be enhanced in order for BLM to meet its duty to take a hard look at the effects that are likely to result under each alternative and to inform decision-making.</p>	<p>Comment noted.</p>
023	019	<p>The method that the BLM used to evaluate the impacts to vegetation was to calculate the acres of each ecosystem type within a one mile buffer of the proposed corridors (analysis area) that would be disturbed, and identify whether special status plant species are known to occur or have the potential to occur within the analysis area. DEIS at 3-77. Applying this approach, the BLM in the DEIS concludes for Alternatives B and D that the disturbance within the corridor would amount to 2% of the analysis area, presumably by dividing the average width of a pipeline by the width of the buffer (2 miles). This number, unfortunately, is meaningless because the analysis area (1 mile buffer on either side of the pipeline) is an arbitrary area without any ecological grounding or support. While not sufficient, at a minimum, the BLM should have calculated the fraction of each vegetative community that would be disturbed instead of the total acreage that is disturbed.</p>	<p>Vegetation analysis has been revised to evaluate direct effects (acres removed within corridors) and indirect effects within the proposed designated corridors plus a 1-mile buffer. The 2% calculation has been removed.</p>
023	020	<p>Further, while it is helpful to know the ecosystem types (Table 3.17-1) and the acres of ecosystem groups (e.g., shrubland/desert scrub/grassland) (Table 3.17-3) that will be disturbed by the pipeline construction, we cannot discern the magnitude of the proposed disturbances without contextual information. For example, the DEIS says that the project will bulldoze about 3,000 acres of wetlands. But we don’t know the type or location of these wetlands, their relative value to wildlife and plant species, the total number of wetlands and types of wetlands in Wyoming, and current trends related to wetland health in the state. According to Copeland et al. (2010), Wyoming has 222 wetland complexes and about 280,000 wetland of which 2/3rds are temporary. Low elevation wetland complexes, such as the ones most likely disturbed by this proposal, are the last protected, in the poorest condition, and the most vulnerable to land use changes and climate change (Copeland et al. 2010; Pocewicz et al. 2014)13. BLM must analyze and disclose these impacts to the public, including their significance. See 40 C.F.R. §§ 1508.8(b); 1502.16(a)-(b).</p>	<p>Note that riparian-wetland in Table 3.17-3 is a general GAP category. See Section 3.19, Water, for the wetland and waterbody discussion based on NWI data. A comparison of acres of wetland that would fall within designated corridors by alternative is provided in Section 3.19; however, because the Action alternatives do not authorize specific projects that would disturb wetlands, an estimate of disturbance to wetlands (nor the context of that disturbance) from any specific future projects within the corridors would be speculative at this time.</p>

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023	021	Similarly, the DEIS states that the pipelines will destroy 50,000+ acres of shrubland/desert scrub/grassland ecosystem types, but does not put this number into context by disclosing the fraction of each ecosystem type within the 50,000+ acres that is currently disturbed or intact, the fraction of ecosystem types in Wyoming that is disturbed or intact, and the relative importance of some parts of the analysis area for wildlife than other parts, the trends and stresses that this ecosystem group is experiencing and related implications. Dobkin and Sauder (2004) warned against presuming that sagebrush ecosystem dependent species are or could reside in potentially suitable habitat: Range maps created by connecting the dots among sites where a species has been captured do not paint a realistic picture, especially in the highly altered and fragmented shrub-steppe landscapes of today. For small terrestrial mammals in particular, our results support the view that many of these species now exist only as small, disconnected populations isolated from each other by unsuitable habitats across which they cannot disperse. Many of the bird and mammal species we examined have broad geographic ranges, but our spatially explicit analyses of actual trapping and BBS data, along with previous work on shrub-steppe bird population dynamics emphatically demonstrate this point: It is completely untenable to assume species' presence based simply on presence of appropriate habitat in shrub-steppe landscapes of the Intermountain West. Dobkin and Sauder (2004) at Executive Summary-3. Their field observations led them to believe that small mammals and other species less able to travel longer distances and/or affected by fragmentation exist in small and disconnected populations. This means that certain habitat patches (and possible connecting zones) are clearly more important than other habitat patches within larger zones deemed as potentially suitable habitat. The BLM erred in not making an effort to model or otherwise identify which habitat patches might be more important than others. For example, the pygmy rabbit requires patches with contiguous sagebrush for cover; potential corridor patches with contiguous cover therefore might be higher value to the pygmy rabbit than corridor patches carved up by dirt tracks or other bare ground.	We recognize that some species are currently affected and will be increasingly affected by fragmentation. The EIS has been revised to add the percent of the proposed corridors that are within existing corridors, and a general estimate of existing disturbance within the 1-mile analysis area. Corridors have been sited along existing ROWs and other disturbances to minimize impacts. The project level NEPA analysis will be able to better quantify existing disturbance within these corridors. Existing WYND D species models were used for this programmatic level analysis and project level analysis of habitat patches will be done at that time.
023	022	<p>The situation is similar for the analysis of impacts to rare or imperiled plants. BLM states which special status plants have suitable habitat in the proposed pipeline corridors and the analysis area and quantifies the affected acres under each alternative (Tables 3.17-5 and 6). Again, while this is useful information it is not enough information to discern the significance of the effects of the proposed pipelines. BLM must also analyze and disclose to the public fraction of suitable the habitat for each plant that will be disturbed and whether and where (generally) occurrences have been documented within the pipeline corridor or analysis area.</p> <p>The BLM has not taken a hard look at the impacts of the proposed pipelines under the alternatives to vegetation, especially impacts to rare and imperiled plant species. The BLM must analyze and disclose the specific ecosystem types and their relative value and condition of the lands (with buffer) slated for disturbance and clearing. The BLM must also provide relevant context so that both BLM decision makers and the public can discern the significance of the proposed destruction of ~55,000 acres. The BLM must rectify these deficiencies in the final EIS.</p>	The EIS has been revised to add the percent of the proposed corridors that are within existing corridors, and a general estimate of existing disturbance within the 1-mile analysis area. Corridors have been sited along existing ROWs and other disturbances to minimize impacts. The project level NEPA analysis will be able to better quantify existing disturbance within these corridors. Existing WYND D species models were used for this programmatic level analysis and project level analysis of habitat patches will be done at that time.
023	023	The DEIS' section on vegetation briefly discusses the threat of invasive species stating that ground disturbance could lead to spread of invasive and weedy species in disturbed areas. DEIS at 3-81, 3-82 and 3-79. While this is true, the indirect effects of disturbing vegetation and soils are considerably yet undisclosed and unexplored in the DEIS. These include, but are not limited to: 1) diminished forage for wildlife, 2) increased likelihood of wildfire which in turn can lead to more acres invaded by invasive species, 3) degraded wildlife habitat and lower biodiversity, 5) increased dust production and associated impacts, and 6) diminished pollinator health.	We agree that these ecosystems can be directly and indirectly impacted by invasive plants and noxious weeds. This is discussed in Section 3.17.5.2. A weed control plan has been prepared for the WPCI. Impacts to other resources from invasive species are discussed in those sections (e.g., wildlife)
023	024	One of the biggest threats to the shrub-steppe ecosystems and riparian ecosystems of Wyoming is invasive species including annual exotic grasses such as cheatgrass and noxious weeds. For certain invasive species, once they get established, it is very difficult to eradicate them from an area or control their spread. Because the ecology and behavior of these species is different from native species, they alter how ecosystems respond to and resist perturbation. They often can outcompete native species, especially in hotter and drier areas, and thus reduce the complexity and biodiversity of the ecosystems.	We agree that these ecosystems can be directly and indirectly impacted by invasive plants and noxious weeds. This discussed in Section 3.17.5.2. A weed control plan has been prepared for the WPCI.
023	025	<p>Cheatgrass and other exotic annual grasses expand across the shrub-steppe by invading the interspaces between existing shrubs and bunchgrasses, essentially filling in areas that are more bare. These exotic annuals green up and dry out before native perennial grasses and thus provide the fine flammable fuel and enhanced ignitions that facilitate fire spread (Shinneman et al. 2018). Further, cheatgrass can often outcompete native species in re-establishing after a fire or other type of disturbance and appear to have a competitive advantage in warmer climates (Blumenthal et al. 2016; Shinneman et al. 2018). This positive feedback loop is often referred to as the grass/fire cycle characterized by greatly reduced fire-free intervals that promote further dominance and spread of exotic grasses and prevent re-establishment of the native shrub-steppe community (Shinneman et al. 2018). Cheatgrass can also lead to secondary invasion by other invasive species such as Medusahead or ventenata (Smith and Enloe 2006).</p> <p>Systems invaded with cheatgrass and other exotic plants are less biodiverse (Zouhar 2003). Their functionality as wildlife habitat is reduced, in part because the period when the grass is green is smaller than that for native perennials, there is less cover and vegetative structure (Zouhar 2003; Ceradini &amp; Chalfoun 2017), and they alter the natural fire regime with a cascade of effects (Manier 2013). Special status species, including the greater sage grouse and the pygmy rabbit, are less successful in systems invaded by exotic grasses (Larrucea and Broussard 2008; Manier 2013; Dumroese et al. 2015).</p>	We agree that these ecosystems can be impacted by invasive plants and noxious weeds. This discussed in Section 3.17.5.2. A weed control plan has been prepared for the WPCI. Reduction in quality of habitat due to habitat removal and invasive plant establishment is stated in Section 3.21.5.4.
023	026	Systems invaded with exotic annual grasses are more prone to emit dust into the atmosphere. See the discussion of dust impacts in the next subsection. Also, systems invaded with exotic and weedy species that are less biodiverse adversely impact pollinators. See the discussion below on pollinator impacts.	Section 3.17.5.2 of the final EIS has been revised to include impacts to Invasive Plant Species and Noxious Weeds.
023	027	In the case of the ground disturbing projects like this pipeline proposal, invasive species can spread in multiple ways. First, if invasive species are present on the site, disturbing the soil and the plants will spread seeds within and adjacent to the disturbed area. Further, seeds will spread to and away from the site through vectors including construction machinery, motor vehicles, people, and animals (wild and livestock). Even if invasive species are not present pre-construction, they are likely to invade and spread given the available vectors.	Section 3.17.5.2 of the final EIS has been revised to include impacts to Invasive Plant Species and Noxious Weeds.
023	028	The biggest threat to the shrub-steppe of Wyoming is habitat loss which results from direct disturbance and, among other things, through the spread of invasive species into adjacent habitats. The BLM has failed to take a hard look at the impacts of invasive species on the disturbance sites, in adjacent areas, and generally within the region. In doing so, the BLM must attempt to quantify the acres that could be affected directly and indirectly by the spread of invasive and noxious species and the triggering of the annual exotic grass/fire cycle. This is crucial information for decision-makers as they weigh the costs and benefits of the pipeline proposal.	Section 3.17.5.2 of the final EIS has been revised to include impacts to Invasive Plant Species and Noxious Weeds.
023	029	<p>The BLM in the DEIS does not discuss the fact that the pipeline proposal will lead to higher levels of atmospheric dust. Places where vegetation is removed leaving exposed soils such as pipeline corridors are more prone to emit dust into the atmosphere; the disturbed soils are vulnerable to high winds that can carry dust into the atmosphere and great distances. Systems invaded with exotic species are also more prone to emit dust into the atmosphere because they are more likely to burn more often; burned ground is vulnerable to wind erosion that can result in the movement of dust significant distances.</p> <p>Duniway, et al (2019) note the transport of dust "hundreds of meters to thousands of kilometers": Wind erosion and consequent dust emissions carry considerable risk for ecosystems and people at multiple scales (Fig. 2). Worldwide, billions of tons of desert dust are transported annually over distances ranging from hundreds of meters to thousands of kilometers (Ginoux et al. 2012, Pointing and Belnap 2014, UNEP, WMO, and UNCCD 2016).</p> <p>Pointing and Belnap (2014) and Miller (2011) point out that dust can have far-reaching and profound negative impacts. It lands on mountain snowpacks causing them to heat up and melt faster in the spring leading to shifted hydrographs and biogeochemistry for affected watersheds (Meyer 2011; Steltzer et al 2009; Painter et al. 2010). Dust can also impact marine environments leading to, among other things, coral reef senescence (Pointing and Belnap 2014). Finally, as is well known, dust is recognized as a threat to human health (Aleadelat and Ksaibati 2017; Pointing and Belnap 2014; De Longueville et al. 2012).</p> <p>The BLM erred in not analyzing the impacts of dust resulting from this project alone and in aggregate with the array of other ground disturbing projects and activities (including dirt roads and OHV activity, oil and gas development, grazing, and agriculture) in the region. The BLM must rectify this deficiency in the final EIS.</p>	Dust emissions are discussed in the Section 3.2 Air Quality, Section 3.8 Livestock Grazing, Section 3.17 Vegetation, and Section 3.21 Wildlife of the final EIS.

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023	030	The DEIS does not discuss the impact of the proposal on pollinators. Places with higher concentrations of invasive species and less plant biodiversity adversely affect pollinators. The importance of pollinators in maintaining native vegetation communities and the ecosystems on which they depend is increasingly being recognized by federal agencies. Direction for management of this critical component of functioning ecosystems has been developed by the Pollinator Health Task Force, which produced the National Strategy to Promote the Health of Honey Bees and Other Pollinators (2015) and the Pollinator Research Action Plan (2015). Many rare plant species require specific pollinators, the loss of which will lead to their extinction. According to the National Research Council (2007), “the effects of pollinator decline on rare plant species or on those with small populations also should be given special attention.” Given that one of the main reasons for pollinator decline is habitat fragmentation, the DEIS’ clearly erred in not mentioning, discussing, or analyzing the impact of the proposal on pollinators.	Information has been added to the analysis to demonstrate the connection between vegetation and pollinators. As described in the analysis, measures would be implemented as part of the proposed WPCI to remove or treat invasive plants and noxious weeds and reclamation would help reestablish native habitats that would in turn support pollinators.
023	031	As the BLM rectifies this omission in the final EIS, the agency must keep in mind that restoration of native shrub-steppe systems is difficult and far from assured, so that even if restoration occurs on disturbed sites, there will still be an impact to pollinators. In addition, the agency must adopt mitigation measures that assure adequate protection for pollinators of rare plants as well as more generalist pollinators. Native bees, butterflies, bats, and hummingbirds have all undergone severe declines (Xerces Society 2018 at 13).	The challenges associated with reclamation or restoration of vegetation communities has been identified and considered in the analysis. Information has been added to the analysis to demonstrate the connection between vegetation and pollinators. As described in the analysis, measures would be implemented as part of the proposed WPCI to remove or treat invasive plants and noxious weeds and reclamation would help reestablish native habitats that would in turn support pollinators.
023	032	The DEIS’ discussion on soil disturbance and the adverse effect it has on recovery rates and success is inadequate. First, the DEIS devotes just one paragraph to the very important topic of biological soil crusts (BSCs) which are widely recognized as a vital part of arid ecosystems (Condon and Pyke 2018). A complex arrangement of fungi, lichens, cyanobacteria, bryophytes, algae, and soil particles, BSCs perform important ecological roles including carbon fixation, nitrogen fixation and soil stabilization; they alter soil albedo and water relations and affect germination and nutrient levels in vascular plants. Areas without intact BSCs are more prone to invasion by exotic annual grasses (Condon and Pyke 2018). The BLM in the DEIS admits that it does not know where BSCs are located or their condition. DEIS at 3-26. It also does not discuss the fact that the loss of BSCs will exacerbate the problem of invasive species.	Discussion of Condon and Pyke’s conclusions regarding the effect disturbance to biological soil crusts can have on invasive species was added to Section 3.5.5.2 of the final EIS.
023	033	Second, the DEIS reveals that under Alternative D that much of the soil in the proposed pipeline corridors are erodible, shallow, and droughty... In other words, the fragile and erodible nature of the soil increases the difficulty of stabilizing them after construction and revegetating successfully. While the BLM readily acknowledges that soil recovery is limited, it also claims that grasses and herbaceous plant communities will readily recover. DEIS at 3-78. This conclusion is not warranted given the fragile and erodible nature of the affected soils.	The final EIS (Section 3.5.10) states that required design features would help avoid or reduce compaction, erosion, and long-term loss of soil productivity in soils with limited reclamation potential under all Action alternatives at the project-specific implementation level. The final EIS (Section 3.5.10) also acknowledges that depending on the soil that would be impacted, there is some potential for long-term impacts to soil productivity in disturbed areas.
023	034	The BLM should provide a map showing soil types and relative erodibility and recovery potential. This would help decision-makers and the public weigh the tradeoffs among alternatives as well as possibly craft additional alternatives that impact soils less.	Corridor routes analyzed in the final EIS were sited to avoid sensitive resources whenever possible. Required design features, stipulations, and BMPs would help avoid or reduce impacts to sensitive soils under all action alternatives at the project-specific implementation level.
023	035	The DEIS at 3-27 states that soil disturbance on slopes > 25% is disallowed but BLM can issue an exception, waiver or modification. In addition, the DEIS at E-2 provides a design feature for the Buffalo Field Office (but no other) that says no disturbance to BSCs but also allows for an exception, waiver, or modification. We question the purpose of providing these safeguards if the BLM can easily dismiss them. Further, it’s hard to imagine the BLM would not dismiss them if a pipeline needs to cross areas with BSCs are steep slopes, given the difficulty of rerouting a segment of pipeline once the corridor network is established. This highlights the importance of mapping the soils and giving thoughtful and adequate consideration to the pipeline corridor network location based on this information.	Corridor routes analyzed in the final EIS were sited to avoid sensitive resources whenever possible. Required design features, stipulations, and BMPs would help avoid or reduce impacts to sensitive soils under all action alternatives at the project-specific implementation level.
023	036	<p>The DEIS offers one paragraph related to vegetation and climate change. DEIS at 3-78. It does not offer any information on the relative vulnerability of affected ecosystems (just offers some are highly vulnerable) nor relative threats to those ecosystems.</p> <p>See the discussion on climate change in the section of this letter on threatened, endangered, and special status species. The BLM must utilize the information presented in Pocewicz et al. (2014) to evaluate the potential impacts of the pipeline on affected ecosystems’ ability to adapt to a changing climate and the vulnerability of ecosystems across Wyoming to climate change effects. In evaluating climate change impacts, the BLM must consider that annual exotic grasses have the competitive advantage over native perennials in warmer climates, and the combination of increased invasive species and warmer, drier climate will lead to higher chance of wildfires (Shinneman et al. 2018). Warmer and drier climate will also heighten the amount of dust that is released into the atmosphere during and after construction. Further, wetlands and riparian areas are considered particularly vulnerable to the effects of climate change and are some of most fragmented systems in the state (SWAP 2017). Given all this, the BLM in the DEIS must disclose the impact of climate change on the potential for recovery in pipeline-disturbed locations and ecosystems.</p>	Section 3.2 of the final EIS provides additional details on climate change and states, "Climate is both a driving force and limiting factor for ecological, biological, and hydrological processes, and influences resource management." The vegetation analysis acknowledges vegetation communities most vulnerable to climate change and analyzes the direct effects from the proposed WPCI on those vegetation communities.
023	037	Finally, the BLM must discuss the impact of the pipeline proposal on carbon sequestration. Recent research has shown that intact sagebrush steppe systems have tremendously more capacity to sequester carbon than annual grasses (Meyer 2010; Austreng et al. 2010). Bulldozing vegetation on about 55,000 acres to install pipelines with significantly reduce the lands’ ability to sequester carbon. Austreng et al. (2010) calculated that sagebrush systems have over 30 tons more soil carbon than cheatgrass systems and about 17 tons more soil carbon over bunchgrass systems.	As described in the analysis, measures would be implemented as part of the proposed WPCI and other potential projects within the proposed corridors to reestablish native habitats in accordance with Wyoming BLM reclamation policy. As part of the reclamation plan for the proposed WPCI, disturbed areas would be reclaimed to pre-disturbed landforms with desired plant communities. Analyzing impacts on vegetation carbon sequestration is therefore outside of the scope of this analysis.
023	038	<p>We are glad to see that the DEIS calls generally for the use of native seed. DEIS at 3-78. In addition, we are glad to see that the DEIS calls for using locally adapted seed that comes from the same seed zone and elevation range as the disturbed areas in forested areas. DEIS at 3-79. Using genetically appropriate native seed is key to recovery (Plant Conservation Alliance 2015).</p> <p>We are concerned, however, that the DEIS is not applying this same restriction to non-forested areas, and, in fact, is allowing field offices to use non-native seed. See DEIS at E-52 and IM WY 2012-032, WY Reclamation Policy Page 4 that allows for the use of non-native seed. While we understand that the objective is to re-establish native plant communities, in our experience the BLM often uses non-native seed claiming that they cannot acquire adequate amounts of native seed among other reasons.</p> <p>The DEIS should be explicit that genetically appropriate local native seed must be used and that non-natives are not allowed. If there is not enough native seed in supply, construction must wait until enough seed and seedlings are available. The BLM should warn applicants of this requirement so that the BLM/applicants can work with native seed suppliers in advance to develop adequate supplies of genetically appropriate plant material for the restoration work.</p>	WO IM 2006-073 is the national BLM standard and is the minimum restriction that must be applied to the project. More restrictive weed control measures may be applied as stipulations during the decision-making process. Also, each future project will have a reclamation plan with weed control measures.

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023	039	The BLM should require without exception that occurrences of rare or imperiled plants within a reasonable buffer (at least .5 mile) of the construction zone be erected and maintained.	Each RMP has protective buffers for rare and imperiled plants. See Appendix E.
023	040	<p>The scientific literature is clear that roads can cause an array of ecological harms (Gucinski et al. 2000; Trombulak and Frissell 2000; Coffin 2007; Robinson et al. 2010; Fahrig and Rytwinski 2009; Benítez-López et al. 2010). Roads fragment ecosystems thereby diminishing habitat quality and function (e.g. (Gucinski et al. 2000; Trombulak and Frissell 2000; Coffin 2007; Robinson et al. 2010; Fahrig and Rytwinski 2009; Benítez-López et al. 2010). Roads also serve as vectors for invasive species (e.g., Meunier and Lavoie 2012; Joly et al. 2011) and for people. According to BLM's own NEPA analysis, "[r]oads and trails are one of the main vectors of invasive weed spread, which leads to increase [in fire danger] and ecosystems moving away from natural fire regimes." Nevada – Northeastern California Greater Sage-grouse RMP Amendment DEIS at 701.</p> <p>Roads and motorized activity on those roads diminish habitat functionality for wildlife (e.g., Wisdom et al. 2004). For example, roads have multiple impacts on sage grouse, including noise and movement from vehicle traffic, habitat fragmentation, and dust pollution that can depress productivity of sagebrush and other plants important to sage-grouse diets (e.g., Ouren et al. 2007). Holloran (2005) found that road densities greater than 0.7 linear miles per square mile within two miles of leks resulted in significant negative impacts to sage grouse populations. BLM has also acknowledged that noise from off-road vehicles typically exceeds background noise levels by more than 10 dBA, a level that can have significant negative consequences for sage-grouse. Northwest Colorado Greater Sage-grouse RMP Amendment DEIS at 399.</p>	Impacts of roads are discussed in the invasive plant and wildlife sections.
023	041	Roads also alter the hydrology of an area and thereby diminish the habitat functionality of streams and watersheds. The erosion of road- and trail-related sediment and its subsequent movement into stream systems affects the geomorphology of the drainage system in a number of ways. It directly alters channel morphology by embedding larger gravels as well as filling pools. It can also have the opposite effect of increasing peak discharges and scouring channels, which can lead to disconnection of the channel and floodplain, and lowered base flows (Gucinski et al. 2000). The width/depth ratio of the stream changes can trigger changes in water temperature, sinuosity and other geomorphic factors important for aquatic species survival (Trombulak and Frissell 2000).	Impacts from erosion and resultant sedimentation, turbidity, and salinity as well as impacts associated with potential channel alterations due to stream crossings or water withdrawals are addressed in Section 3.19.5.1 of the EIS. See clarified language around how impacts from erosion can also potentially change stream morphology.
023	042	Roads can have dramatic and lasting impacts on fish and aquatic habitat. Increased sedimentation in stream beds has been linked to decreased fry emergence, decreased juvenile densities, loss of winter carrying capacity, increased predation of fish, and reductions in macro-invertebrate populations that are a food source to many fish species (Gucinski et al. 2000, Endicott 2008). Roads close to streams reduce the number of trees available for large wood recruitment, and reduce stream-side shade (Meredith et al. 2014.) On a landscape scale, these effects add up to changes in the frequency, timing and magnitude of disturbance to aquatic habitat and changes to aquatic habitat structures (e.g., pools, riffles, spawning gravels and in-channel debris), and conditions (food sources, refugia, and water temperature (Gucinski et al. 2000). Roads also act as barriers to migration and fragment habitat of aquatic species (Gucinski et al. 2000). Where roads cross streams, road engineers usually place culverts or bridges. Undersized culverts interfere with sediment transport and channel processes such that the road/stream crossing becomes a barrier for fish and aquatic species movement up and down stream (Erikinaro et al. 2017).	The fisheries section addresses road crossings; however, the crossing methods are unknown at this time. Therefore, we cannot speculate the degree of impacts from potential road and pipeline crossings. These will be addressed at the project level once design of crossings and culverts are proposed.
023	043	The BLM does not provide adequate information about the road building that will be necessary to construct the pipeline network. The only information that BLM provides is a statement that project proponents will use existing roads as much as possible, and when that is not possible, roads will be built to minimum allowable federal standards prioritizing existing disturbed road traces over dozing intact habitat. After construction, roads on public lands will be left in place or completely reclaimed, at the direction of the BLM field office. WY proposal. DEIS at 14.	Project specific impacts, including temporary and permanent road building, would be analyzed under subsequent site-specific NEPA analysis once a project has been proposed. Road construction, use, and reclamation would be managed under existing RMPs. Any additional roads would be analyzed as a part of a projects site-specific NEPA analysis.
023	044	The BLM does not show us the extent of the existing road network and where additional roads may be needed and the fragmentation that this will cause. This is especially important information to understand in relationship to special status species' habitats and important resource areas such as wetlands and fish-bearing streams. Further, the BLM leaves the final disposition of the roads used in ROW construction to the BLM field offices. If BLM field offices choose to not fully reclaim roads, the impacts of the roads will be long-term and will not only involve the physical presence of the road but public use on and around those roads. The BLM does not analyze the direct, indirect, or cumulative impacts related to temporary and permanent road building in the DEIS in violation of NEPA. The BLM must rectify this omission in the final EIS.	Project specific impacts, including temporary and permanent road building, would be analyzed under subsequent site-specific NEPA analysis once a project has been proposed. Roads would be managed under existing RMPs. Any additional roads would be analyzed as a part of a projects site-specific NEPA analysis. The Wildlife section addresses habitat fragmentation and road crossings; however the locations of any proposed roads are unknown at this time. Therefore, we cannot speculate the degree of impacts from potential road and pipeline crossings.
023	045	The WPCI proposal seeks to increase oil production in Wyoming. However, greater sage-grouse respond negatively to oil and gas development, and oil and gas development in Wyoming has led to sage-grouse population declines. The Sage-grouse National Technical Team's Conservation Report states: There is strong evidence from the literature to support that surface-disturbing energy or mineral development within priority sage-grouse habitats is not consistent with a goal to maintain or increase populations or distribution. None of the published science reports a positive influence of development on sage-grouse populations or habitats. Breeding populations are severely reduced at well pad densities commonly permitted (Holloran 2005, Walker et al. 2007a). Magnitude of losses varies from one field to another, but findings suggest that impacts are universally negative and typically severe. Sage-grouse National Technical Team Conservation Report at 19 (Attachment 14).14 Other negative impacts of oil and gas develop on sage-grouse are described in the report, which we incorporate by reference. See especially 18-24.	Impacts to greater sage-grouse from the potential development of the corridors are disclosed in Section 3.21.
023	046	The WPCI DEIS includes laundry lists of potential negative impacts to greater sage-grouse as a result of developing pipelines in the WPCI corridors (e.g., vegetation disturbance, habitat fragmentation, increased noise, lek abandonment, increased predation, etc.) but does not discuss the extent to which those negative impacts could harm statewide and local sage-grouse populations; sage-grouse genetic connectivity; sage-grouse migration; and sage-grouse redundancy, representation, and resilience. Nor does the DEIS or the Special Status Species Report prepared for the WPCI project identify which grouse populations are present in each corridor segment and analyze how grouse populations are doing in each corridor segment. The DEIS's analysis of greater sage-grouse lek data is also insufficient for BLM to make an informed decision about the proposed WPCI corridors. The DEIS presents lek counts as 20-year averages of peak male counts by WPCI alternative, rather than showing the actual lek counts over those 20 years. DEIS at 3-112, 3-115 and 3-117. This does not give BLM enough information to know whether 6-10 year lek count cycles are increasing, decreasing, or remaining stable over time, nor does it give BLM enough information to know whether grouse populations are healthy across all segments. The chart of lek counts by segment in the WPCI Special Status Species Report is also inadequate. It lists a single lek count number for each segment, with no information about when that count was taken and no information showing those lek counts over time, which is necessary to understand grouse population cycles. Special Status Species Report at 28. Instead, lek counts should be presented by pipeline segment, over the last 30 years, so that BLM and the public can understand how grouse populations are faring by pipeline segment over time. BLM cannot determine which pipeline segments are better or worse than others for sage-grouse without segment-by segment lek count data that shows grouse population cycles.	The BLM has disclosed those impacts to greater sage-grouse that are reasonably foreseeable from the designation of corridors and the potential development of those corridors from pipelines for CO2 and EOR products and other compatible uses. Additional impacts to populations, seasonal habitats, or movement of greater sage-grouse within these areas would be analyzed at the site-specific level as these impacts would be more specific to the type of proposed project. Peak counts are reported as a 20-year average, as that accounts for at least two cycles of population fluctuations and provides the necessary information to be able to compare the greater sage-grouse populations for each alternative.
023	047	Also missing from the DEIS is analysis of impacts to greater sage-grouse seasonal habitat (e.g., breeding, early brood-rearing, late brook-rearing, winter) and how that will in turn affect greater sage-grouse populations and sage-grouse redundancy, representation, and resilience. For example, seasonal grouse habitat is not mapped in the DEIS or Special Status Species Report, nor are seasonal habitat acreages provided and discussed by segment or alternative in either the DEIS or Special Status Species Report. All of the above information is necessary for BLM to make informed decisions regarding pipeline locations and whether to allow reduced NEPA analysis with abbreviated or even no public comment periods for future pipelines in those corridors via tiering to the WPCI EIS.	The BLM has disclosed those impacts to greater sage-grouse that are reasonably foreseeable from the designation of corridors and the potential development of those corridors from pipelines for CO2 and EOR products and other compatible uses. Additional impacts to greater sage-grouse seasonal habitats would be analyzed at the site-specific level as these impacts would be more specific to the type of proposed project.

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023	048	<p>In addition, impacts to greater sage-grouse stemming from future pipelines built in the WPCI corridors are not limited to the construction, operation and maintenance of those pipelines. Potential impacts to greater sage-grouse include those related to the production or mining of carbon dioxide for the pipelines, carbon dioxide flooding of existing oil fields and increased oil production in those existing oil fields. These additional impacts to greater sage-grouse are not disclosed or analyzed in the DEIS. In regard to the carbon dioxide production and future oil production locations linked by the pipelines, the FEIS must discuss which greater sage-grouse populations will be affected and how they will be affect, which leks will be affected and population trends at those leks over the last 30 years, how much PHMA and GHMA will be affected and how much grouse seasonal habitat will be affected. BLM cannot make informed decisions about the WPCI proposal without this information.</p>	<p>The BLM has disclosed those impacts to greater sage-grouse that are reasonably foreseeable from the designation of corridors and the potential development of those corridors from pipelines for CO2 and EOR products and other compatible uses. Additional impacts to greater sage-grouse would be analyzed at the site-specific level, as these impacts would be more specific to the type of proposed project.</p>
023	049	<p>While the BLM does discuss Wyoming’s strategy for conserving the greater sage grouse, it does not take a hard look at the impact of this BLM action in the context of other actions in the sage grouse’s range. For instance, in the context of the larger range, how much habitat is being lost or disturbed? How many leks (and 4 mile buffers around leks) are being disturbed? We conducted a basic analysis to try to illuminate the situation for the first question. See Appendix 1. We looked only at very large scale projects and activities including oil and gas leases (sold between 4th Q 2015 and 1st Q 2020), proposed fuel break networks in the Great Basin, wildfires since 2010, existing rights of ways, and grazing allotments not meeting rangeland health standards. Notably, we have not included the projects reasonably foreseeable pursuant to the Great Basin Fuels Reduction and Range Restoration PEIS (DOI-BLM-ID-0000-2017-0003-EIS) which are anticipated to impact 38 million acres of sage brush/pinyon juniper habitat.</p> <p>We found that cumulatively oil and gas leasing (sold between 4th Quarter 2015 and 1st Quarter 2020), rights of ways, wildfires (since Jan. 1, 2010), and fuel breaks (as specified in the Great Basin Fuel Breaks PEIS and the Tri-State PEIS) impacted 22,447,935 acres. This is approximately 14% of the sagebrush biome. See Appendix 1, Map 1.</p> <p>When we added grazed lands not meeting land health standards, cumulative disturbed acres amounted to 48,092,234 acres. This is approximately 30% of sagebrush biome. See Appendix 1, Map 2.</p> <p>The BLM must disclose the fact that this project is one more insult to the sagebrush biome critical to the greater sage grouse and 350 other sagebrush dependent species. BLM must resist the urge to dismiss this project as having an impact on the larger sagebrush biome by claiming that the ~55,000 acres that it proposed to disturb is a small fraction of the larger biome. That line of thinking is exactly why NEPA requires a hard look at the cumulative impacts of projects.</p>	<p>The BLM has disclosed those impacts to greater sage-grouse that are reasonably foreseeable from the designation of corridors and the potential development of those corridors from pipelines for CO2 and EOR products and other compatible uses. Section 3.21 does disclose impacts to habitats and leks within 2 and 4 miles of the corridors that could be potentially impacted. Additional impacts to greater sage-grouse would be analyzed at the site-specific level, as these impacts would be more specific to the type of proposed project.</p>
023	050	<p>Table in comment.</p> <p>All three alternatives within the DEIS would impact big game seasonal habitats to varying degrees, including crucial winter range for elk, mule deer, pronghorn, moose, bighorn sheep, and white-tailed deer; parturition areas for elk, mule deer, pronghorn, moose, and bighorn sheep; and migration corridors for mule deer, pronghorn, moose, and bighorn sheep.</p> <p>For comparative purposes, the number of acres within big game seasonal habitats for all project alternatives are shown in the table below: (table in comment).</p> <p>According to the Wyoming Game and Fish Department, mule deer numbers statewide have declined by more than 30% since their peak in 1991, with even steeper declines in southwestern Wyoming. Over roughly the same time period, since the mid 1990s, moose numbers have dropped a staggering 65%, with much of the blame laid at the feet of habitat alteration or loss. The BLM should acknowledge these current declining population trends and include a robust analysis of any further loss of habitat from pipeline corridor development to population stability.</p>	<p>Revised to state: Surface-disturbing and disruptive activities are prohibited or seasonally restricted in crucial ranges. Big game exhibit some population fluctuation depending on severity of winter and summer drought. In Wyoming, mule deer and moose populations are generally below WGFD’s population objectives while pronghorn and elk populations are generally increasing or stable. The BLM manages habitat to support wildlife population objectives defined by WGFD.</p>
023	051	<p>As of February 2020, Wyoming has designated three migration corridors for mule deer, continues to actively gather and analyze research data to identify and designate additional migration corridors for mule deer and pronghorn, several of which are already well documented and are up for designation in the near future.</p> <p>The Wildlife Resources Technical Report (West 216b)15 prepared for the BLM states that: The WPCI proposed corridors...cross several important migration corridors. The corridor crosses 6 moose migrations routes, 41 mule deer migration routes, 3 bighorn sheep migration routes, and 103 pronghorn migration routes.</p> <p>Of particular importance, the BLM’s preferred Alternative D proposes two corridor segments that would transect important “stop-over” areas in the Sublette Mule Deer Migration Corridor, which was identified by the Wyoming Game and Fish Department and officially designated under Governor Mark Gordon’s Executive Order 2020-1. Any future development in these areas would be required to adhere to the development standards within the Governor’s Executive Order, which states that “whenever possible, development, infrastructure, and use should occur outside of designated corridors.” The Wildlife Resource Technical Report points out that energy and mineral development can cause ungulates to speed up through areas of disturbance and result in decreased use of stopovers. Stopover areas are vitally important for the long-term health of mule deer populations using the Sublette corridor and are where animals spend 95% of their time during migration.16</p>	<p>We recognize the technical report is out of date in terms of designated migration corridors. Executive Order 2020-1 was published during preparation of the DEIS and is addressed in Section 3.21.2. Proposed corridor segments that cross mule deer migration corridors are primarily in existing designated corridors and existing disturbed ROWs.</p>
023	052	<p>In addition, the DEIS contains an error that should be corrected: Within mule deer migration corridors, 6,897 acres of high use, 3,541 acres of medium use, and 287 acres of low use are within the Alternative B area of analysis. DEIS at 3-110.</p> <p>Table 3.21-3, p. 3-110 identifies 26,312 acres of migration corridor impacted by Alternative B, which is presumed to be the correct figure, but which does not even remotely approximate the 10,725 stated in the quoted text.</p> <p>Appendix B, Table 3 (p. 41) shows proposed construction timing restrictions for crucial winter range for elk, mule deer, and pronghorn. There is no mention of any restrictions in parturition areas or migration corridors, which must be identified for timing restrictions. Appendix B (p. 118) also notes that the BLM may grant exceptions to seasonal stipulations. This exception provision should be stricken, as it essentially makes seasonal stipulations meaningless. Migration corridors are not even mentioned in the section of Appendix B on wildlife resources (pp. 117-119). This information must be added.</p>	<p>Error has been corrected, thank you. Appendix E contains the timing restrictions enforced by each BLM FO. These are from the existing RMPs and no amendment to RMP big game stipulations are proposed.</p>
023	053	<p>The DEIS contains no maps identifying designated wildlife corridors, documented wildlife corridors that are proposed for designation, or crucial winter range for any big game species. This information must be provided so decisionmakers and the public can understand where and how this project would impact these seasonal wildlife habitats.</p>	<p>The EIS contains those map figures that depict sensitive resources that were important in developing the alternatives. Other map figures and shapefiles of the alternatives are available for review on E-Planning.</p>
023	054	<p>The DEIS identifies two types of special designations for impact consideration: Areas of Critical Environmental Concern (ACECs) and Wilderness Study Areas (WSAs). ACECs are managed to protect the relevant and important values associated with each individual unit. WSAs are managed to protect their wilderness characteristics and values as long as they are designated as WSAs.</p> <p>Alternative C would not impact any ACECs, while Alternative B would impact two ACECs and Alternative D would impact one. Given the unique purposes served by ACECs and their relatively small size, we urge the BLM not to designate any corridors that would impact any ACEC.</p>	<p>Comment noted.</p>
023	055	<p>Looking at WSAs, Alternative C would impact 2,591 acres in one WSA (Cedar Mountain), Alternative D would impact 8, 364 acres in four WSAs (Alkali Basin/East Sand Dunes, Alkali Draw, South Pinnacles, and Cedar Mountain), and Alternative B would impact 15,270 acres in five WSAs (the same four as Alternative D plus Bennet Mountains). Any impact to these designated WSAs would diminish their wilderness values and affect the likelihood of their future consideration as designated wilderness, and we strongly urge the BLM to not allow any corridors to impact any WSA. These relatively small pockets (the largest one is just over 20,000 acres) of undeveloped, wilderness quality landscapes are important to residents of Wyoming as places of natural refuge in the high desert, and some serve as important wildlife security areas without motorized access.</p>	<p>Comment noted.</p>

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023	056	Finally, we request that the BLM also include an evaluation of Landscapes with Wilderness Characteristics (LWCs) that would be affected by pipeline corridor designation and subsequent development. LWCs are undeveloped areas that could qualify for wilderness designation. While they are not required to be managed to protect their wilderness characteristics, the BLM still has an obligation under NEPA to disclose how many LWC acres will be affected by the proposal and where those acres are located. We urge the BLM to reroute pipelines around LWCs to ensure that these special undeveloped landscapes are not degraded by development so they no longer qualify as potential wilderness. There are numerous LWCs throughout the planning region, particularly in the southwestern part of the state, for which impact analyses should be conducted.	None of the proposed alternatives cross lands managed for wilderness characteristics; as such, this resource was not carried forward for a detailed effects analysis.
023	057	The BLM's discussion of special status wildlife species is inadequate and does not meet its duty to take a hard look at the impacts that may result under the alternatives. First, the BLM fails to provide baseline information on the condition and location of affected habitat, the condition and location of special status species and their habitat, and the ecological conditions necessary for each species (or group of species) to assure continued viability. If BLM does not disclose the degree to which a species is imperiled, the causes of the imperilment, and the places on the landscape that provide the ecological conditions necessary for its continued viability, neither decisionmakers nor the public can meaningfully evaluate the degree of harm that the proposal will impose.	BLM is currently preparing a Biological Assessment in coordination with the USFWS. The resulting determinations will be incorporated by reference.
023	058	The BLM relies on the number of acres in each ecosystem group as an indicator of relative impacts to special status species reliant on those ecosystem groups yet fails to describe the overall condition of the ecosystem groups and the trends affecting them. For instance, the BLM does not disclose how fragmented the landscape is within each ecosystem group. Similarly, the BLM does disclose how degraded the ecosystems are overall and the relative importance of the lands that will be traversed by the proposed pipeline corridor. (We know, for instance, that less than 10% of the sagebrush steppe remains intact (Wisdom et al. 2005).) Wyoming Game and Fish published an intactness analysis as part of the 2017 State Wildlife Action Plan (SWAP 2017, Figure 10 at pdf page 152) that shows the level of fragmentation across the state.	We recognize that some species are currently affected and will be increasingly affected by fragmentation. The EIS has been revised to add the percent of the proposed corridors that are within existing corridors, and a general estimate of existing disturbance within the 1-mile analysis area. Corridors have been sited along existing ROWs and other disturbances to minimize impacts. The project level NEPA analysis will be able to better quantify existing disturbance within these corridors. Existing WYNDD species models were used for this programmatic level analysis and project level analysis of habitat patches will be done at that time.
023	059	Second, the BLM fails to take the requisite hard look at the impacts to special status species that would result from the proposed pipeline corridor. Within the DEIS itself, the only analysis the BLM does is to compare the acreage in ecosystem types in which special status species reside and that will be disturbed under each alternative. As we discuss earlier in this letter, potential habitat is not a surrogate for actual habitat (Dobkin and Sauder 2004). "It is completely untenable to assume species' presence based simply on presence of appropriate habitat in shrub-steppe landscapes of the Intermountain West." Dobkin and Sauder (2004) at Executive Summary-3. Their field observations led them to believe that small mammals and other species less able to travel longer distances and/or affected by fragmentation exist in small and disconnected populations. This means that certain habitat patches (and possible connecting zones) are clearly more important than other habitat patches within larger zones deemed as potentially suitable habitat. The DEIS makes no effort to differentiate higher value habitat patches from less valuable per species (or groups of species). For instance, more fragmented habitat patches may in fact be less valuable for certain species than less fragmented habitat.	Presence/absence of species within potential habitats and quality of those habitats will be determined after field surveys are conducted at the project level. For this programmatic analysis, existing WYNDD models and GAP data are used to predict the location and quantity of potential habitats.
023	060	The DEIS lacks basic spatial information necessary for decision-making. For instance, the DEIS does not analyze the pipeline corridors in relationship to 1) range maps and occurrence maps for special status species, 2) crucial priority areas and enhancement priority areas which are mapped by Wyoming Game and Fish, 3) species richness maps which are published as part of the SWAP (see Figure 9 at pdf page 151); 4) state intactness map (SWAP 2017, see Figure 10 at pdf page 152), 5) ecosystem types, and 6) riparian, aquatic, wet meadow, and wetlands resources. Without these maps we cannot answer the question of how much of the pipeline corridor network overlaps with special species habitats, crucial priority area and enhancement area habitats, zones with high species richness, and zones with important lotic resources.	Spatial data was used to quantify impacts to resources analyzed in this EIS. For example, the SSS impact calculations in Table 3.21-17 and 3.21-18 are based on WYNDD range maps for each species and overlapping GAP habitat types. Several resources that were analyzed within proposed corridors are not visible or meaningfully presented in the form of report sized maps. Due to the size of the WPCI, we do not think maps would help show how these resources are overlapped by the corridors, therefore tables are used for quantification.
023	061	The DEIS does not discuss the effect of fragmentation from the pipeline corridors on special status wildlife species. We know that habitat loss, degradation and fragmentation is the leading cause of species imperilment in Wyoming. As part of this discussion and analysis, the DEIS must reveal the current level of fragmentation which is necessary as a baseline from which to gauge the magnitude and intensity of the impacts resulting from the proposed pipeline. Wyoming Game and Fish in the SWAP (2017) quantified the relative intactness of habitats. The following figure is excerpted from the document (pdf page 149): (figure in comment).	We recognize that some species are currently affected and will be increasingly affected by fragmentation. The EIS has been revised to add the percent of the proposed corridors that are within existing corridors, and a general estimate of existing disturbance within the 1-mile analysis area. Corridors have been sited along existing ROWs and other disturbances to minimize impacts. The project level NEPA analysis will be able to better quantify existing disturbance within these corridors. Existing WYNDD species models were used for this programmatic level analysis and project level analysis of habitat patches will be done at that time.
023	062	Figure in comment. We note that the ecosystems affected by this proposal are the least intact in the state. The DEIS offers no meaningful discussion of the effect of climate change on the species' outlook and condition, and how this proposal might exacerbate or mitigate those trends, especially when viewed in the context of other projects, activities, and disturbances. The purpose of this proposal is to enhance overall recovery (and downstream combustion) of fossil fuels in the larger region. The project, if implemented, will contribute to greenhouse gas emissions, which in turn will contribute to changing the climate – and relatedly the ecological condition – of special status species. The DEIS should discuss which species are most vulnerable to current and predicted climate changes and how this project, in aggregate with other ongoing contributions to climate change, will affect the outlook for those species. Relevant to that inquiry is Pocewicz et al. (2014) in which the authors calculated the relative vulnerability of 51 species of concern from climate change, disease, and development. Findings from this analysis were published as part of the SWAP (2017) from which the figure below was excerpted (pdf page 107). Pocewicz et al. (2014) and the SWAP (2017) also provide a discussion on species and habitat vulnerability along with climate vulnerability and exposure maps that if overlain with the pipeline corridor proposal would provide insight into the effects of climate change on habitats affected by this pipeline proposal.	Please see analysis in 3.2 Air Quality. CCUS and EOR projects can store large quantities of CO2, and CO2 used during EOR is recycled continuously in the reservoir rather than vented to the atmosphere. EOR projects maximize oil recovery from existing, previously disturbed fields, while also reducing carbon emissions. Emissions from pipeline construction are discussed in the Air Quality section.
023	063	Finally, we notice that a pipeline is proposed through the Seedskadee National Wildlife Refuge, a true treasure of this nation and home to imperiled wildlife and migratory birds. The BLM in the DEIS does not discuss the potential impacts to this nationally recognized wildlife area and must rectify this omission in the Final EIS.	Currently there is no specific pipeline project proposed to cross the Seedskadee National Wildlife Refuge and, therefore, there are no impacts to disclose for this area. The decision currently before the BLM is to designate corridors and BLM only has jurisdiction and will only designate corridors on BLM-administered lands.

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023	064	<p>The cumulative impact analysis is arguably one of the most important components of an environmental impact statement. Its purpose is to disclose and evaluate the cumulative impacts to specific resources from the proposed project and other projects and activities. Projects viewed individually may not appear to be overwhelmingly harmful, but viewed aggregately with lots of other projects may in fact be devastating. This is particularly true for at risk species that are subject to “death by 1000 cuts” with each one not seeming so devastating but together can be its undoing.</p> <p>This pipeline corridor proposal impacts at least seventeen species listed under the Endangered Species Act and many more that are at risk. While the BLM readily acknowledges that this proposal will disturb close to 60,000 acres, it dismisses the environmental impact of this level of disturbance by saying that future analysis will avoid sensitive places (e.g., Vegetation Technical Report at 40), the disturbed acreage is minimal compared to the acreage the agency manages statewide (e.g., DEIS at 3-80), and that wildlife can easily avoid the areas (e.g., DEIS at 3-105). But, coupled with the millions of acres that are undergoing disturbance – including those listed in Appendix H and those linked to projects omitted from Appendix H as discussed below- the continued loss of habitat, some of which is highly functional and important, must be evaluated and disclosed. As we discuss below, the cumulative impacts analysis is highly deficient and fails to achieve its vital function of illuminating the larger effects to wildlife, plants, ecosystems, water, and people.</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3.</p>
023	065	<p>BLM must also include a robust discussion of cumulative impacts. The CEQ regulations define "cumulative impacts" as those which, "when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same [EIS]." 40 C.F.R. § 1508.25(a)(2). The regulations add that a cumulative impact: is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.</p> <p>40 C.F.R. § 1508.7. As noted, an adequate cumulative effects analysis requires some "quantified or detailed" information. Klamath-Siskiyou Wildlands Ctr. v. U.S. Bureau of Land Mgmt, 387 F.3d at 993 (9th Cir. 2004). Cf. Sierra Club v. Bosworth, 510 F.3d 1016, 1028-30 (9th Cir. 2007) (requiring consideration of cumulative impacts for activities covered by categorical exclusion for fuel reduction activities); Soda Mountain Wilderness Council v. Norton, 424 F. Supp. 2d 1241, 1266-67 (E.D. Cal. 2006) (finding one-page cumulative impact analysis inadequate).</p> <p>Generalized, conclusory statements about the insignificance of cumulative effects or how they will be effectively mitigated will not suffice. Te-Moak Tribe of Western Shoshone of Nevada v. U.S. Dept. of Interior, 608 F.3d 592, 606 (9th Cir. 2010) (failure to include quantified or detailed information on cumulative effects of past, present, and reasonably foreseeable mining activities); see also Great Basin Mine Watch v. Hankins, 456 F.3d 955, 971-74 (9th Cir. 2006) (holding cumulative impact analysis for gold mining operations inadequate because it consisted of "vague and conclusory statements, without any supporting data" and lacked any explanation for why other mining projects were not explicitly discussed).</p> <p>Agencies not only have an obligation to discuss the cumulative impacts of related projects; they also have an "affirmative duty to locate, describe, and consider other projects that could have cumulative impacts when combined with the project under consideration." <i>Edwardsen v. United States Dep't of the Interior</i>, 268 F.3d 781, 786 (9th Cir. 2001), citing 40 C.F.R. § 1508.25(c)(3); <i>Kettle Range Conservation Group v. United States Forest Serv.</i>, 148 F. Supp. 2d 1107, 1129 (E.D. Wash. 2001). In assessing cumulative impacts, "the [EIS] must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment." <i>Lands Council v. Powell</i>, 395 F.3d 1019, 1028 (9th Cir. 2005). See also <i>Western Watersheds Project v. Kraayenbrink</i>, 620 F.3d 1187, 1207 (9th Cir. 2010) (failure to address combined effects of various reductions in opportunities for public participation in process of issuing grazing allotments); <i>League of Wilderness Defenders-Blue Mountains Biodiversity Project v. United States Forest Serv.</i>, 549 F.3d 1211, 1218–19 (9th Cir. 2008) (identification of one past timber sale and general statement that other timber sale had occurred insufficient); <i>Oregon Natural Res. Council Fund v. Goodman</i>, 505 F.3d 884, 892-93 (9th Cir. 2007); <i>Oregon Natural Res. Council Fund v. Brong</i>, 492 F.3d 1120, 1133 (9th Cir. 2007).</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3.</p>
023	066	<p>B. Deficiencies in the BLM cumulative impact analysis</p> <p>The BLM in this DEIS has not yet met its burden regarding cumulative effects analysis. The BLM in Appendix H listed reasonably foreseeable projects (mainly energy related) and added up the acreages that are anticipated to be disturbed by these projects. Through this exercise, the BLM concluded that 386,198 acres – or about 1.3% of the federally managed vegetation and habitat resources in the state will be disturbed. DEIS at 4-6. As we describe below, this cursory look is insufficient to meet the agency's burden.</p> <p>First, the BLM failed to consider multiple types of projects in the cumulative impact analysis. The BLM omitted relevant projects and activities from its list of past, present, and reasonably foreseeable activities that lead to disturbance in Appendix H. For instance, the BLM did not include grazing permits or leases. Grazing can lead to significant disturbance to vegetative systems, soils, water resources, and wildlife (Fleischner 2010). The spread of exotic vegetation is directly linked to grazing (e.g, Williamson et al. 2019; Reisner et al. 2013). The BLM manages grazing pursuant to 43 CFR 4100 and is required to regularly evaluate the health of rangelands pursuant to 43 CFR 4180. While the BLM does not make rangeland health evaluation reports public, in 2014 the Public Employees for Environmental Responsibility (PEER) collated nationally rangeland health data to show that as of 2012 16% of allotments (29% of total allotment area), have failed to meet standards due to livestock grazing. See <a href="https://www.peer.org/blm-grazing-data/">https://www.peer.org/blm-grazing-data/</a> for the methodology utilized by PEER and the resultant interactive map. See Figure 1. The BLM erred in not analyzing the cumulative impacts of the proposed pipeline network and grazing impacts as reflected by rangeland evaluation reports and other data sources.</p> <p>Figure 1. Map of Wyoming showing as of 2012 the BLM grazing allotments that were meeting or not meeting rangeland health standards. Source: PEER. (figure in comment).</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3. Analysis revised to discuss grazing, which occurs throughout BLM offices across the state.</p>
023	067	<p>The BLM did not include in its cumulative impact analysis travel management decisions that allow off-road vehicle travel and other recreational uses that disturb soils, vegetation, and wildlife. Off-road vehicle use causes direct mortality of wildlife, damages habitat and vegetation, causes noise, introduces exotic species, disturbs soils, and increases atmospheric dust (Ouren et al. 2007). The BLM allows cross-country travel on a fraction of the lands it administers and designates trails, roads, and areas for off-highway vehicle use in other lands through a travel management planning process. It also permits off-highway vehicle events such as hill climbs and races. All of these projects and activities cause damage. While Wyoming BLM does not make OHV designation data available to the public and thus we cannot tell the fraction of BLM acres where driving is allowed cross-country, we do know that WY BLM in the recent past or currently is working on travel management plans or permits for off-highway vehicle events – see, e.g., DOI-BLM-WY-P070-2018-0027-EA, DOI-BLM-WY-D010-2016-0101-EA, DOI-BLM-WY-D090-2016-0001-CX, DOI-BLM-WY-R020-2019-0085-CX, DOI-BLM-WY-R020-2019-0073-DNA, DOI-BLM-WY-P060-2020-0087-CX. The BLM erred in not analyzing the cumulative impacts of the proposed pipeline network and off-highway vehicle and travel management impacts resulting from past, ongoing, and reasonably foreseeable projects.</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3. Analysis revised to discuss OHV use. Note that RMPs provide information on OHV designations.</p>
023	068	<p>Further, the BLM made no mention of wildfires in its cumulative effects analysis. While a natural process, wildfire does shift vegetation and habitat function and must be accounted for when contemplating cumulative impacts to biotic resources. In particular, the spread of exotic vegetation is directly linked to wildfire (e.g., Shinneman et al. 2018) The BLM erred in not analyzing the cumulative impacts of the proposed pipeline network and wildfires.</p>	<p>Appendix H and the cumulative impact analysis has been updated to present information on historical vegetation coverage across the state to put cumulative surface disturbance over the last 10 years into context. Disturbance includes wildfire as well as wildland fire use.</p>



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023	069	Similarly, the BLM erred in not analyzing the cumulative impacts of the proposed pipeline network and solar or wind development or recent oil and gas lease sales and development. While oil and gas lease sales do not directly result in land disturbance, they commit the leased lands to future oil and gas development.	The cumulative impacts analysis considers RFDs across the state (see Appendix H). Development resulting from future sales are assumed to be included in each RFDs. Appendix H also includes reasonably foreseeable wind and solar projects.
023	070	<p>Second, the BLM's analysis is not adequately detailed or quantitative, and the BLM is relying on generalized, conclusory statements. The BLM in this DEIS does not actually undertake a meaningful cumulative impacts analysis in which it analyzes the cumulative impacts of the proposed pipeline networks (under each alternative) and other projects and activities on specific resources. Instead, in its Cumulative Impact Section (DEIS chapter 4) the BLM refers the reader to the Affected Environment section of the DEIS and relies on a simple analysis of the number of acres potentially affected by the pipeline project and other reasonably foreseeable projects listed in Appendix H. DEIS at 4-1 to 4-7. For example, the Cumulative Impacts analysis for vegetation in its entirety states:</p> <p>The cumulative impacts of past and present actions on vegetation in the planning area are represented by the description of the existing affected environment. Reasonably foreseeable future actions with potential to impact vegetation include all reasonably foreseeable future actions that would remove vegetation through surface-disturbing activities (see Appendix H). The total amount of disturbance associated with these developments is approximately 386,198 acres, which represent approximately 1.3% of the total federally managed vegetation and habitat resources statewide. This disturbance would largely be in shrubland/desert scrub, grassland, or previously disturbed areas.</p> <p>DEIS at 4-6. The Affected Environment section for vegetation is one page in length and simply lists the vegetation types that will be affected by the proposed pipelines, mentions that invasive plant species are a major disruption to natural systems, and that special status plants which do occur in the pipeline corridor network are suffering in the face of habitat loss. This pattern is repeated with most categories of resources, including Geology and Soils (DEIS at 4-3), noise (DEIS at 4-4), Paleontological Resources (DEIS at 4-4), Recreation (DEIS at 4-5), Vegetation (DEIS at 4-6), Visual Resources (DEIS at 4-6), and Water (DEIS at 4-7), Wildlife and Fisheries (DEIS at 4-7).</p>	The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3.
023	071	The BLM makes no effort to actually analyze the cumulative effects to specific resources beyond general conclusory statements. For instance, the BLM does not make any effort to analyze and disclose to the public how the cumulative projects will impact specific species and the habitat that is most important for their survival. Along that same vein, the BLM does not take a hard look at cumulative impacts to resources of high conservation value such as riparian areas and wetlands. For example, while BLM discloses that this project will disturb about 3,000 acres of wetlands, it fails to disclose the cumulative number of acres of wetlands that would be disrupted and the relative value of those wetlands to water supplies, wildlife, and plants. Similarly, we know that certain at-risk plant species will be affected by this pipeline, but BLM fails to disclose whether other reasonably foreseeable projects will affect these same plant species.	The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3. Analysis augmented to disclose potential impacts to riparian vegetation in Section 4.18.
023	072	Finally, the BLM does not actually compare the cumulative impacts under each alternative precluding informed decision-making and a complete understanding of the trade-offs. The BLM simply discusses cumulative impacts generally.	The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3.
023	073	To sum, the BLM has erred in not conducting a meaningful cumulative impacts analysis. Specifically, the BLM has relied on general and unsupported conclusory statements, has failed to take a hard look by providing sufficient detail and quantification, failed to differentiate impacts by alternative, and failed to include a comprehensive list of reasonably foreseeable projects. As we stated in the introduction, the cumulative impacts analysis is crucial to ensure we are not inadvertently significantly impacting resources including biotic resources that over time can be extirpated from large areas as a result of aggregate habitat loss. The BLM must correct these deficiencies in the final EIS.	The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3.
023	074	<p>BLM's WPCI efforts appear to violate the Federal Land Management Policy Act and NEPA and its implementing regulations.</p> <p>The WPCI review process excluded tribes from the early stages of the process, denying sovereign nations the opportunity to have the same level of involvement that the State of Wyoming, state and federal offices and agencies, county commissions, conservation districts, and private landowners enjoyed.</p> <p>The State of Wyoming began working on the Wyoming Pipeline Corridor Initiative proposal about 11-12 years ago.<sup>17</sup> It met with various stakeholders to site the 25 pipeline corridor segments, including federal, state, county, and private landowners.</p> <p>DEIS at iv.</p> <p>Tribes were not included in these meetings, nor did the state consider tribal treaty rights on off-reservation lands.</p> <p>According to the DEIS, BLM invited either 48 or 44 state and federal agencies, county commissions, and conservation districts to be cooperating agencies. See DEIS at 1-1 and A-1. No tribes are listed in the DEIS as having been invited to be cooperating agencies, even though at least three proposed WPCI segments have been routed right up to the boundaries of the Wind River Indian Reservation, which is shared by the Eastern Shoshone and Northern Arapaho Tribes. See list of groups asked to be cooperating agencies (DEIS at A-1) and DEIS at Figure G-10j. BLM Wyoming field offices have invited tribes as cooperating agencies on NEPA for off-reservation projects in the recent past, for example, on the Moneta Divide Oil and Gas Project. See Moneta Divide Natural Gas and Oil Development Project Final EIS at ES-2.</p>	Appendix A Consultation and Coordination includes the list that the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to reflect the updated list of cooperating agencies.



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023	075	In addition to apparently failing to ask tribes to be cooperating agencies, BLM did not send government-to-government consultation invitations to tribes until after DEIS scoping was well under way. WPCI’s scoping comment period began on November 15, 2019, with the publication of the Notice of Intent in the Federal Register.20 Three and a half weeks later, BLM sent letters dated December 10, 2019 to 25 tribes inviting them to government-to-government consultation. Four in-person public scoping meetings were held December 9-12, 2019.	Appendix A Consultation and Coordination includes the list that the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to include all correspondence between the BLM and tribes, including invitations to be cooperating agencies and initiative government-to-government consultation.
023	076	<p>On February 25, 2020, the Director of the National Center for Immunization and Respiratory Diseases at the U.S. Centers for Disease Control warned the American public that COVID-19 was expected to begin spreading within U.S. communities and that the public should be prepared for “severe” disruptions of daily life.21 These disruptions did indeed occur, and have spread across the United States in the form of various state and local government protective measures, such as stay-at-home orders and mandatory business closures. Similarly, many of the 25 tribes to whom BLM sent WPCI consultation letters implemented their own protective measures to safeguard their people from COVID-19.</p> <p>On April 17, 2020, BLM published the DEIS and began its public comment period. Two virtual (online) public comment meetings were held on May 28, 2020. On June 11, 2020, five conservation groups asked BLM to extend the DEIS’s public comment period. See Attachment 1. The letter requested that public comment be extended by a minimum at least 20 days due to two ongoing national emergencies (the COVID-19 pandemic and civil unrest following the police shooting of George Floyd on May 28, 2020). It noted that many tribes were operating under pandemic restrictions that limited their ability to fully participate in the WPCI NEPA process. It also questioned whether BLM’s use of online tribal consultation during the pandemic would be sufficient to meet BLM’s consultation obligations. As of July 15, 2020, BLM has not responded to the extension request and the comment period has not been extended.</p>	The BLM held four scoping meeting across the State of Wyoming and two virtual public meetings during the public comment period. In this unprecedented time, the BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities. Members of the public who had internet connectivity issues had the option of joining the virtual public meeting by phone. Contact information for the BLM and contractor staff were made available for members of the public to reach out to in the event of any questions or technical difficulties with the virtual public meetings. Members of the public also had the ability to pre-submit questions for the meeting upon registration and email or call the BLM with questions throughout the public comment period. Attendance and participation in both types of meetings were comparable.
023	077	<p>BLM planning regulations direct BLM state directors or field managers, when amending resource management plans with a DEIS, to invite recognized Tribes to participate as cooperating agencies. 43 C.F.R. §1610.3-1(b). Tribes are eligible cooperators even if the project does not cross tribal land so long as they have special expertise relevant to the environmental analysis. 43 C.F.R. §1601.0-5(d)(2). Tribes may have historical ties to lands that are a considerable distance from their modern headquarters or place of residence.</p> <p>The Northern Arapaho Tribe of the Wind River Indian Reservation and the Eastern Shoshone Tribe of the Indian Wind River Reservation are currently two federally recognized Tribes in Wyoming. 84 Fed. Reg. 1200 (February 1, 2019). At least three pipeline corridor segments have been proposed running up to the boundary of the Wind River Reservation, where there is existing oil and gas production. In addition, other Tribes have interests in lands in Wyoming including those listed in the Wyoming portion of the Forest Service Tribal Connection Interactive Map Viewer.</p> <p>The DEIS states that while either 48 or 44 federal and state agencies as well as county commissions and conservation districts were invited to be cooperators, no Tribes were invited to be cooperators. DEIS at 1-1 and A-1. The failure to invite Tribes to be cooperators violates BLM regulations.</p> <p>BLM’s illegal failure to invite tribes to be cooperators is further significant because cooperating agencies have early input into the DEIS before it goes to the general public. This early involvement is particularly important in the case of Resource Management Plan (RMP) amendments because cooperating agencies may suggest to BLM that additional alternatives be evaluated or that protective stipulations be added in order to RMPs to mitigate the effects of future actions, such as the construction and operation of CO2 and oil pipelines.</p>	Consultation and Coordination includes the list the BLM reached out to for consultation. Of the tribes notified, only the Northern Cheyenne Tribe has responded. The Executive Summary, Chapter 1, Appendix A and Appendix C of the final EIS have been revised to reflect the updated list of cooperating agencies.
023	078	<p>C. The DEIS Fails to Take a “Hard Look” at Impacts to Environmental Justice Populations</p> <p>1. The DEIS’s methodology for identifying “environmental justice populations” is too narrow and does not conform to CEQ Environmental Justice Guidance.</p> <p>The Council on Environmental Quality’s Environmental Justice Guidance (CEQ EJ Guidance)24 advises agencies to “consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes.” CEQ EJ Guidance at 9. However, the WPCI DEIS does not follow this CEQ directive and instead relies on an overly narrow definition of environmental justice based solely on the percentage of minority or low-income populations. The DEIS states:</p> <p>Evaluation of environmental justice effects involves assessment of the potential for disproportionately high adverse effects on minority or low-income populations. The CEQ defines a community with potential environmental justice populations as one that has a greater percentage of minority or low-income populations than does an identified reference community. Minority populations are those populations having 1) 50% minority population in the affected area or 2) a meaningfully greater minority population than the reference area (CEQ 1997).</p> <p>DEIS at 3-63. Native Americans are included in CEQ’s definition of the phrase “minority” (“Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic”), 25 but CEQ’s EJ guidance does not state that native communities are to be considered as environmental justice populations only if they contain a certain percentage of indigenous people.</p>	Census tracts in Wyoming tend to be quite large. The tracts identified in the Environmental Justice section of the DEIS range in size from 34 square miles to more than 3,300 square miles. Additionally, tract 9402.02 is located within the Wind River Reservation. This is now noted in Section 3.14.6.3. As a result of the large size of Census tracts, we do not believe the methodology produces environmental justice populations that are too narrow, since the tracts extend for dozens of miles from the path of the proposed corridor.
023	079	Furthermore, the DEIS’s methodology for identifying environmental justice populations is too narrow because it is limited to only the census tracts containing, traversed by or bordering the pipeline corridors. See DEIS 3-66 to 3-68. This ignores the WPCI’s impacts to tribal communities inside the Wind River Indian Reservation, including but not limited to impacts triggered by effects to water and air quality. At least three pipeline corridor segments run up to the boundaries of the Wind River Indian Reservation (DEIS at Figure G-10j), and there is no logical reason to construct and operate those segments except to increase oil production on existing oil fields within the boundaries of the reservation. Increasing that oil production will affect water and air quality for the Eastern Shoshone and Northern Arapaho tribes, both of whom are environmental justice communities per CEQ EJ Guidance. Past oil and gas production on the Wind River Reservation has led to water contamination and subsequent federal prosecution of oil companies.	Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.
023	080	In response to all of the above factors, BLM should revise the EIS’s definition of environmental justice communities to explicitly include tribes as environmental justice communities and subsequently revise its environmental justice impacts analysis to reflect this.	Tract 9402.02 is located within the Wind River Reservation. This was noted in Section 3.14.6.3

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023	081	<p>2. The DEIS fails to analyze the direct effects of designating WPCI corridors and amending the nine RMPs on environmental justice populations.</p> <p>The DEIS defines direct impacts as follows: Effects that are caused by the action and occur at the same time and in the same general location as the action. For the purpose of this analysis, direct effects are those effects that would occur as a result of the designation of new corridors outside existing designated corridors or the change in management within existing designated corridors.</p> <p>DEIS at 3-1. However, the DEIS fails to identify and analyze the direct impacts of designating WPCI corridors and amending the nine RMPs on environmental justice populations. Part of BLM's stated Purpose and Need for this EIS and RMP amendment NEPA process is to facilitate reduced, sped up NEPA processes later on: "The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis." DEIS at 1-2. A reasonably foreseeable outcome of NEPA tiering for future pipeline approvals on the WPCI corridors would be BLM preparing EAs or other non-NEPA documents, such as determinations of NEPA adequacy, instead of EISs. The reduced analysis in an EA compared to an EIS is accompanied by reduced opportunities for public comment. In regard to oil and gas infrastructure, it is common BLM practice to hold public scoping periods before an EA is issued, but not allow public comment on the EA itself, or to hold only a 14- or 30-day public comment period for an EA. This would reduce the opportunity for environmental justice populations to comment, which increases the likelihood that issues important to them will not be addressed and resolved in future NEPA processes for the pipelines proposed in these corridors. Also, future reduced and sped up pipeline public comment periods would have a disproportionate impact on tribes, whom CEQ EJ Guidance identifies as being inherently environmental justice populations. See CEQ EJ Guidance at 9. As BLM states in its Handbook (H) 1780-1, Improving and Sustaining BLM-Tribal Relations: It is important to know the schedules for tribal council meetings for the tribes with which BLM offices consult. Some councils meet every month. Others only convene every few months. The BLM's comment periods may not coincide with tribal council meetings where responses are often determined by consensus.</p> <p>(H) 1780-1 at III-14 to III-15 (emphasis added).27 But the WPCI FEIS does not analyze this disproportionate impact of reduced or accelerated future NEPA analysis on tribal participation. To avoid this disproportionate impact to tribal communities and other environmental justice populations, BLM should commit in the WPCI ROD to preparing EISs with minimum -90-day public comment periods for any future pipelines in the WPCI corridors.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	082	<p>3. The DEIS fails to analyze the indirect effects of the proposed WPCI corridors on environmental justice populations.</p> <p>The DEIS defines indirect effects as follows: Effects that occur at a different time or in a different location than the action to which the effects are related. For the purpose of this analysis, indirect effects are those effects that would occur from the potential development of the corridors. Further, it is assumed that CO2-EOR would occur to the reasonably foreseeable extent.</p> <p>DEIS at 3-1. However, the DEIS fails to identify and analyze the actual impacts of pipelines in the WPCI corridors on those populations. Rather than name and discuss these impacts, the DEIS states, "The potential for disproportionate adverse effects on low income and minority communities was identified based on the demographic characteristics of census tracts traversed by or bordering the proposed corridors and the environmental effects evaluation provided in this EIS." DEIS at 3-61.</p> <p>The DEIS further states: Although corridor designation alone would not create any high and adverse effects, these [environmental justice] populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors under Alternative B. Future development within the designated corridor would be subject to subsequent NEPA reviews where environmental justice populations would have additional opportunities to participate in the planning of projects that may affect their community.</p> <p>DEIS at 3-66. For Alternatives C and D, the DEIS states that there are fewer census tracts with potential environmental justice populations in Alternative C than in Alternative B, and that Alternative D would be the same as Alternative B in regard to environmental justice. DEIS at 3-67 and 3-68.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	083	<p>Despite having identified the potential for environmental justice populations to be disproportionately affected by future pipeline construction (i.e., indirect effects of the WPCI proposal), the DEIS does not disclose or analyze those potential adverse effects. Instead, the DEIS defers that environmental justice analysis to "subsequent NEPA reviews." DEIS at 3-66. The DEIS attempts to justify that deferred analysis by asserting that environmental justice populations could participate in planning at a future date. DEIS at 3-66. However, the preferred locations for these pipeline corridors are being set now, in this EIS and accompanying RMP amendments, not in a future NEPA process. DEIS at i. These preferred locations have potential to disproportionately impact tribes because tribes were not invited to participate in the State of Wyoming's pipeline siting meetings while county commissions and private landowners were.28 Furthermore, the DEIS states that tribes were not invited to be cooperating agencies but county commissions and conservation districts were. DEIS at 1-1 and A-1. This violates BLM's planning regulations (43 C.F.R. §1610.3-1(b)) and does not conform to CEQ's EJ guidance. Instead, BLM waited to invite tribes to participate in the review of the WPCI proposal until after public scoping had begun, where there was already a proposed map of the corridors that tribes had not been invited to site. The 25 tribes that the DEIS identifies as having ties to the project area were not invited to participate at the same time that county commissions and conservation districts were, which does not conform to the CEQ EJ Guidance.29 The State of Wyoming's and BLM's decisions to invite state and local government entities and private landowners to the earliest portions of the review process while excluding tribes has disproportionately disadvantaged environmental justice populations. Deferring full analysis of the impacts of designating pipeline corridors on environmental justice communities until after those corridors have been approved by BLM and the nine RMPs have been amended, rather than fully analyzing those impacts in the WPCI DEIS now, will compound that disadvantage.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	084	<p>Furthermore, deferring environmental justice analysis until a future NEPA process disproportionately disadvantages tribes a second way. Part of BLM's stated Purpose and Need for this WPCI NEPA process is to facilitate reduced, speeded up NEPA processes later on: "The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis." DEIS at 1-2. Based on the current practices of BLM Wyoming field offices, NEPA analysis tiered to this EIS would most likely take the form of a lesser, shorter NEPA review, such as an Environmental Assessment (EA), wholesale Categorical Exclusions (CXs) to NEPA, or non-NEPA documents known as Determinations of NEPA Adequacy (DNAs). Of those three, only an EA might provide a public comment period, but that is uncertain because current NEPA regulations make public comment periods for EAs discretionary. In our experience, BLM's current practice for oil and gas related EAs is to either hold a 14- to 30-day scoping comment period prior to issuance of an EA with no public comment allowed on the EA itself. or to hold a 14- to 30-day public comment period for a draft EA. None of BLM's real-world NEPA tiering practices will give environmental justice communities adequate time to review and comment. As a result, BLM must analyze impacts to environmental justice communities fully in the WPCI EIS rather than to defer analysis to some unknown time after BLM approves the WPCI corridors and amends the nine RMPs.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>

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023	085	<p>These concerns are significant because the DEIS ignores the documented impacts to North American indigenous communities that have resulted when large-scale resource extraction projects are built and operated, bringing in large numbers of outside workers. Two recent studies have documented impacts to North American indigenous communities resulting from large resource extraction projects that brought in many temporary workers from outside the local area. A study of the Mount Milligan Mine's impacts to local First Nations communities found: The influx of workers resulted in strains on existing health services, impacts to health services in relation to an increase in industrial accidents and illness, increased vulnerability for women and youth in the area, increased pressure on a pre-existing housing crisis, and increased traffic.</p> <p>Community Health and Safety in the Nak'al Bun/Stuart Lake Region During the Construction Phase of the Mount Milligan Mine (Shandro et al.) at 5.30 Crime (including sexual assaults) and prostitution also increased. Id. at 30 and 29.</p> <p>Similarly, a 2017 study of the impacts of resource-extraction worker camps on the First Nations of western Canada<sup>31</sup> found increased vulnerability for women and youth,<sup>32</sup> increased road safety problems,<sup>33</sup> increased sex trade and sex trafficking, increased amounts of drugs and alcohol being brought into indigenous communities, and increased strain on health services. In northern British Columbia, increases in rates of sexually transmitted diseases have been linked to influxes of oil and gas workers.</p> <p>Likewise, reservations in the United States have experienced serious health and safety impacts during the Bakken oil boom. On the Fort Berthold Indian Reservation in North Dakota, the Bakken oil boom has coincided with large increases in sex trafficking, sexual assault, and domestic violence. Finn et al. at 2-3 and NIWRC at 13-17. The Fort Peck Assiniboine Sioux Tribe has also experienced increases in crime and violence during the Bakken oil boom. NIWRC at 18-19. In addition, according to the Montana Board of Crime Control, the four Montana counties nearest the Bakken oil patch reported higher crime increases than their surrounding counties.</p> <p>Wyoming already has a serious existing problem of missing and murdered indigenous women, as has been recognized formally by the state. In April 2019, Wyoming Governor Mark Gordon announced that he would convene a task force "to address ways to combat the high rates of murdered and missing American Indian women in Wyoming." As shown above, resource extraction, including oil and gas development, has been accompanied by increased sex trafficking and violent crime against indigenous women. Constructing and operating pipelines in WPCI corridors and increasing oil production in existing oil fields potentially exacerbate this problem, resulting in disproportionately high adverse effects to an environmental justice population.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	086	<p>Despite the close proximity of the Wind River Indian Reservation to the pipeline segments and the siting of at least three of the segments to end at the borders of the reservation, which makes no sense unless their ultimate destinations are existing oil fields on the reservation, the WPCI DEIS does not consider the proposals potential impacts to indigenous communities related to a wide range of issues identified by the sources cited in this section. Nor does the DEIS consider whether and to what degree the construction and operation of future pipelines in these segment and related increase of oil production on existing oil fields inside the reservation could exacerbate Wyoming's existing crisis of missing and murdered indigenous women. To meet its NEPA obligations related to environmental justice, BLM should analyze these impacts in the WPCI FEIS.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p> <p>EIS analysis revised to discuss cumulative impacts to environmental justice populations.</p>
023	087	<p>There may also be disproportionate impacts to environmental justice populations outside of tribal communities. However, conservation groups have been unable to evaluate this due to the opacity of census tract information in the DEIS and online. The WPCI DEIS identifies five census tracts along or adjacent to the corridors with potential environmental justice populations, but the DEIS does not identify them by community name. DEIS at 3-66. Internet searches for these census tracts did not turn up clear records of their associated communities. Please name these communities in the Final EIS.</p>	<p>More descriptive information for the Census tracts was provided in the DEIS. Additionally, Census tracts can be mapped here: <a href="https://censusreporter.org/">https://censusreporter.org/</a></p>
023	088	<p>The DEIS's failure to adequately analyze impacts to environmental justice populations is particularly baffling given that the U.S. Environmental Protection Agency (EPA) and other commenters specifically asked BLM during the scoping process to analyze those impacts. The WPCI Scoping Report states: Commenters recommended analysis of impacts to minority, low-income, and tribal communities, specifically impacts to the health and welfare of these communities. One commenter recommended involving any affected communities in developing mitigation measures or alternate corridor routes to avoid or reduce any disproportionate adverse impacts to the communities. A representative comment follows:</p> <p>"In addition, the EIS must analyze the impacts to indigenous communities that would result from the construction and operation of the pipelines and oil and gas development associated with them, including the impacts of worker man camps."</p> <p>WPCI Scoping Report at 20 (DEIS Appendix C).</p> <p>The Scoping Report further states that the U.S. Environmental Protection Agency (EPA) requested that the DEIS: "...Assess EJ and other socioeconomic concerns for any EJ [environmental justice] communities, to the extent information is available, including: A discussion of the 37 potential direct, indirect and cumulative environmental impacts of the proposed project on the health or welfare of these communities, including air quality and water quality and impacts. Health risks to EJ communities from the proposed pipeline may include construction and operation impacts as well as potential leak risks. An evaluation of the socio-economic impacts and benefits to the local communities, including the potential for any additional loading placed on local communities' abilities to provide necessary public services and amenities..." WPCI Scoping Report at 37 (DEIS Appendix C). Although the DEIS estimates potential economic benefits of future pipelines (jobs and money), it does not include analysis related to the EPAs request regarding impacts to environmental justice communities' health or welfare -- including impacts caused by air and water quality impacts, health risks from pipeline construction and operation impacts and leaks, and additional loading placed on public services and amenities. This omission may have stemmed from the EPA's request being quoted in the economics section of the Scoping Report but not also in the environmental justice section. Regardless of the source of the error, it needs to be remedied in the final EIS with full analysis of impacts to environmental justice communities' health and welfare, including all of the potential environmental justice impacts that EPA and other commenters identified in their scoping comments.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	089	<p>The DEIS fails to analyze the cumulative impacts of the proposed WPCI corridors on environmental justice populations.</p> <p>The DEIS defines cumulative impacts as follows: As defined in 40 CFR 1508.7 (CEQ regulations for implementing NEPA), a cumulative impact is an effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions. Cumulative effects may result from individually minor but collectively significant actions occurring over a period of time.</p> <p>DEIS at 4-1. The DEIS's cumulative effects chapter fails to discuss and analyze any cumulative impacts to environmental justice communities other than those to cultural resources. See DEIS at 4-2 and 4-5 to 4-7 (Cultural Resources, Public Health and Safety, Socioeconomics, Visual Resources, Water, Wildlife and Fisheries). BLM must remedy this in the FEIS. Other potential cumulative impacts include impacts to public health and well-being, public safety, air quality, water quality, and game and fish in locations where tribes hold off-reservation treaty hunting rights. We recommend that BLM and the DEIS contractors write the revised EIS text after reviewing CEQ's EJ Guidance and chapters three and four of BLM's recent Moneta Divide FEIS.</p>	<p>EIS analysis revised to discuss cumulative impacts to environmental justice populations.</p>

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023	090	<p>The DEIS does not identify unavoidable, adverse impacts to environmental justice populations or include mitigation measures to reduce or avoid them.</p> <p>The DEIS asserts, “For each resource issue, the analysis describes the following types of effects:” and includes unavoidable, adverse effects as a described effect. DEIS at 3-1 to 3-2. It defines unavoidable, adverse effects as “residual effects that would remain after implementation of mitigation measures” and cites 40 CFR 1508.20 for its definition of mitigation measures: “measures that could reduce or avoid adverse effects.” DEIS at 3-2. However, the DEIS does not identify unavoidable, adverse effects to environmental justice populations or identify mitigation measures to avoid or reduce them. To remedy this, BLM needs to revise the EIS to fully analyze impacts to environmental justice populations and then identify unavoidable adverse effects, as well as mitigation to avoid and reduce them. We recommend that BLM and its DEIS contractors write the revised EIS text after reviewing CEQ’s EJ Guidance and chapters three and four of BLM’s recent Moneta Divide FEIS.<sup>38</sup> In addition, BLM should ask tribes and all of the potential environmental justice populations identified in the WPCI DEIS for mitigation suggestions, as is consistent with CEQ EJ Guidance.<sup>39</sup> Identifying unavoidable, adverse effects to environmental justice populations and mitigation measures to avoid and reduce them is especially critical at this stage because mitigation measures need to be included in the amended RMPs to ensure that they are part of mandatory Conditions of Approval (COAs) for any future pipelines built in the proposed corridors. Otherwise, if mandatory mitigation measures are not included in the revised RMPs, it is unlikely that they will be implemented as mandatory in future pipeline COAs.</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p>
023	091	<p>D. The DEIS does not consider potential impacts on tribes’ ability to exercise their off-reservation treaty rights.</p> <p>As acknowledged by the DEIS’s section on tribal consultation (DEIS at A-1 to A-2), at least 25 tribes have ties to the lands crossed by the WPCI pipeline corridors, as well as lands containing the potential sources of CO2 and existing oil fields that the WPCI corridors seek to tie together. Some of these tribes have off-reservation treaty rights involving these lands, which BLM as part of the U.S. federal government has an obligation to honor. However, the DEIS does not discuss how future development tiered to the WPCI EIS could affect the ability of tribes to exercise their treaty rights. This should be remedied in the FEIS. BLM should identify which segments of the proposed corridors cross lands for which tribes hold treaty rights (e.g., access; religious; hunting, fishing, and gathering rights), and identify what those rights are, so that BLM can analyze and disclose the WPCI proposal’s direct, indirect, and cumulative impacts to the resources associated with the tribes’ ability to exercise their treaty rights. Depending on the type of rights involved, portions of that analysis might be too sensitive to include in the FEIS, but that analysis still needs to take place. Off-reservation treaty rights within the State of Wyoming were upheld in 2019 by the U.S. Supreme Court. <i>Herrera v. Wyoming</i>. 139 S.Ct. 1686 (2019). 38 <i>Ibid</i>. 39 “Throughout the process of public participation, agencies should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe and should carefully consider community views in developing and implementing mitigation strategies. Mitigation measures identified in an EIS or developed as part of a FONSI should reflect the needs and preferences of affected low-income populations, minority populations, or Indian tribes to the extent practicable.” CEQ EJ Guidance at 16 (emphasis added).</p>	<p>Under the proposed action and action alternatives, the corridor designation alone would not create any high and adverse effects on Environmental Justice communities because the corridor designations are not authorization for any ground-disturbing activities. Still, these populations could be disproportionately affected by any adverse effects from future pipeline construction and operations within the designated corridors and these potential impacts were discussed in more detail. The list of environmental justice communities was also expanded to include the Eastern Shoshone and North Arapahoe Tribes by explicit reference.</p> <p>EIS analysis revised to discuss cumulative impacts to Environmental Justice populations.</p>

Comment Letter Number	Comment Number	Comment	Response
023	092	<p>The DEIS’s Greenhouse Gas and Climate Change Analysis is Deficient and Must Be Revised</p> <p>A. Climate Change Impacts are Already Occurring and Must Be Analyzed and Disclosed with Greenhouse Gas Emissions</p> <p>A large and growing body of scientific research demonstrates, with ever increasing confidence, that climate change is occurring and is caused by emissions of greenhouse gases (GHGs) from human activities, primarily the use of fossil fuels. The 2018 Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C found that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, and that warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.<sup>40</sup> The IPCC also found that “[i]mpacts on natural and human systems from global warming have already been observed.”<sup>41</sup> Additional warming will likely lead to further impacts according to the IPCC, including:</p> <ul style="list-style-type: none"><li>• Warming of extreme temperatures in many regions. The number of hot days is projected to increase in most land regions;<sup>42</sup></li><li>• Increases in frequency, intensity, and/or amount of heavy precipitation in several regions;<sup>43</sup></li><li>• Increase in intensity or frequency of droughts in some regions;<sup>44</sup></li><li>• Rise in global mean sea level, which could potentially expose millions of people to related risks including increased saltwater intrusion, flooding and damage to infrastructure;<sup>45</sup></li><li>• Impacts on biodiversity and ecosystems, including species loss and extinction associated with forest fires, the spread of invasive species, transformation of ecosystems from one type to another, loss of geographic range, and other climate related changes;<sup>46</sup></li><li>• Increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels, and resultant risks to marine biodiversity, fisheries, and ecosystems, and their functions and services to humans:</li><li>• Shifting the ranges of many marine species to higher latitudes, increasing the amount of damage to many ecosystems; loss of coastal resources and reduced productivity of fisheries and aquaculture; irreversible loss of many marine and coastal ecosystems;<sup>48</sup></li><li>• Ocean acidification-driven impacts to the growth, development, calcification, survival, and thus abundance of a broad range of species;<sup>49</sup></li><li>• Risks to fisheries and aquaculture via impacts on the physiology, survivorship, habitat, reproduction, disease incidence, and risk of invasive species;<sup>50</sup></li><li>• Disproportionately higher risk of adverse consequences to certain populations, including disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods. Poverty and disadvantage are expected to increase in some populations as global warming increases;<sup>51</sup></li><li>• Negative consequences for human health including heat-related morbidity and mortality, ozone-related mortality, amplified impacts of heatwaves in cities resulting from urban heat islands, and increased risks from some vector-borne diseases, such as malaria and dengue fever, including potential shifts in their geographic range;<sup>52</sup></li><li>• Net reductions in yields of maize, rice, wheat, and potentially other cereal crops, particularly in sub-Saharan Africa, Southeast Asia, and Central and South America, and in the CO2-dependent nutritional quality of rice and wheat;<sup>53</sup> and</li><li>• Potential adverse impacts to livestock, depending on the extent of changes in feed quality, spread of diseases, and water resource availability.<sup>54</sup> The 2018 United States Fourth National Climate Assessment (hereinafter, “NCA4”) found, “that the evidence of human-caused climate change is overwhelming and continues to strengthen, that the impacts of climate change are intensifying across the country, and that climate-related threats to Americans’ physical, social, and economic well-being are rising.”<sup>55</sup> Like the IPCC, the authors of NCA4 found that impacts are already occurring, concluding that “[t]he impacts of global climate change are already being felt in the United States and are projected to intensify in the future—but the severity of future impacts will depend largely on actions taken to reduce greenhouse gas emissions and to adapt to the changes that will occur.”<sup>56</sup></li></ul> <p>NCA4 found that:</p> <p>More frequent and intense extreme weather and climate-related events, as well as changes in average climate conditions, are expected to continue to damage infrastructure, ecosystems, and social systems that provide essential benefits to communities.<sup>57</sup></p> <ul style="list-style-type: none"><li>• People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts.<sup>58</sup></li><li>• Regional economies and industries that depend on natural resources and favorable climate conditions, such as agriculture, tourism, and fisheries, are vulnerable to the growing impacts of climate change.<sup>59</sup></li><li>• Rising temperatures are projected to reduce the efficiency of power generation while increasing energy demands, resulting in higher electricity costs.<sup>60</sup></li><li>• With continued growth in emissions at historic rates, annual losses in some economic sectors are projected to reach hundreds of billions of dollars by the end of the century—more than the current gross domestic product (GDP) of many U.S. states.<sup>61</sup></li><li>• Rising air and water temperatures and changes in precipitation are intensifying droughts, increasing heavy downpours, reducing snowpack, and causing declines in surface water quality, with varying impacts across regions. Future warming will add to the stress on water supplies and adversely impact the availability of water in parts of the United States.<sup>62</sup></li><li>• Groundwater depletion is exacerbating drought risk in many parts of the United States, particularly in the Southwest and Southern Great Plains.<sup>63</sup></li><li>• Rising air and water temperatures and more intense extreme events are expected to increase exposure to waterborne and foodborne diseases, affecting food and water safety.<sup>64</sup></li><li>• With continued warming, cold-related deaths are projected to decrease and heat-related deaths are projected to increase; in most regions, increases in heat-related deaths are expected to outpace reductions in cold-related deaths.<sup>65</sup></li><li>• Climate change is also projected to alter the geographic range and distribution of disease-carrying insects and pests, exposing more people to ticks that carry Lyme disease and mosquitoes that transmit viruses such as Zika, West Nile, and dengue, with varying impacts across regions.</li></ul> <p>Many Indigenous peoples are reliant on natural resources for their economic, cultural, and physical well-being and are often uniquely affected by climate change. The impacts of climate change on water, land, coastal areas, and other natural resources, as well as infrastructure and related services, are expected to increasingly disrupt Indigenous peoples’ livelihoods and economies, including agriculture and agroforestry, fishing, recreation, and tourism.<sup>67</sup></p> <ul style="list-style-type: none"><li>• Increasing wildfire frequency, changes in insect and disease outbreaks, and other stressors are expected to decrease the ability of U.S. forests to support economic activity, recreation, and subsistence activities.<sup>68</sup></li><li>• Climate change has already had observable impacts on biodiversity, ecosystems, and the benefits they provide to society, including the migration of native species to new areas and the spread of invasive species. Such changes are projected to continue, and without substantial and sustained reductions in global greenhouse gas emissions, extinctions and transformative impacts on some ecosystems cannot be avoided in the long term.<sup>69</sup></li><li>• While some regions (such as the Northern Great Plains) may see conditions conducive to expanded or alternative crop productivity over the next few decades, overall, yields from major U.S. crops are expected to decline as a consequence of increases in temperatures and possibly changes in water availability, soil erosion, and disease and pest outbreaks.<sup>70</sup></li><li>• Climate change and extreme weather events are expected to increasingly disrupt our Nation’s energy and transportation systems, threatening more frequent and longer-lasting power outages, fuel shortages, and service disruptions, with cascading impacts on other critical sectors.<sup>71</sup></li><li>• The continued increase in the frequency and extent of high-tide flooding due to sea level rise threatens America’s trillion-dollar coastal property market and public infrastructure, with cascading impacts to the larger economy. Expected increases in the severity and frequency of heavy precipitation events will affect inland infrastructure in every region, including access to roads, the viability of bridges, and the safety of pipelines.<sup>72</sup></li><li>• Rising water temperatures, ocean acidification, retreating arctic sea ice, sea level rise, high-tide flooding, coastal erosion, higher storm surge, and heavier precipitation events threaten our oceans and coasts. These effects are projected to continue, putting ocean and marine species at risk, decreasing the productivity of certain fisheries, and threatening communities that rely on marine ecosystems for livelihoods and recreation.</li></ul>	<p>Climate change impacts that are already occurring are discussed in Section 3.2.2.3, including information from the U.S. Global Change Research Program, American Meteorological Society, and Fourth National Climate Assessment.</p>

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023	093	<p>When federal agencies consider the impacts of projects or regulations on GHG emissions and climate change, they must acknowledge the role of fossil fuels and other sources in driving climate changes, as recognized by both the IPCC and National Climate Assessment, respectively: CO2 emissions from fossil fuel combustion and industrial processes contributed about 78% to the total GHG emission increase between 1970 and 2010, with a contribution of similar percentage over the 2000–2010 period (high confidence).<sup>74</sup></p> <p>Many lines of evidence demonstrate that human activities, especially emissions of greenhouse gases from fossil fuel combustion, deforestation, and land-use change, are primarily responsible for the climate changes observed in the industrial era, especially over the last six decades.<sup>75</sup></p> <p>Research shows that fossil fuels produced from U.S. federal lands are already a significant source of GHG emissions: “[t]ogether, coal, oil, and natural gas produced on federal lands account for approximately 25 percent of the total fossil fuels produced annually in the United States.”<sup>76</sup> Coal produced on federal lands accounted for about 40 percent of U.S. total coal production; crude oil and natural gas produced from federal lands account for about 25 percent of U.S. production.<sup>77</sup></p> <p>A 2018 analysis from the U.S. Geological Survey (USGS) found that, “[n]ationwide emissions from [fossil] fuels extracted from Federal lands in 2014 were 1,279.0 MMT CO2 Eq. [million metric tons of carbon dioxide equivalent] for CO2 [carbon dioxide], 47.6 MMT CO2 Eq. for CH4 [methane], and 5.5 MMT CO2 Eq. for N2O [nitrous oxide] . . . . On average, Federal lands fuels emissions . . . accounted for 23.7 percent of national CO2 emissions, 7.3 percent for CH4, and 1.5 percent for N2O” over the ten years included in this estimate.<sup>78</sup></p> <p>The Department of the Interior’s Bureau of Land Management (BLM) acknowledges that the energy sector accounts for 84 percent (5,424.8 CO2e) of GHG emissions in the United States<sup>79</sup> and fossil fuel combustion is the largest source of energy-related GHG emissions.<sup>80</sup> BLM states that U.S. energy related emissions increased 1.5 percent from 1990 to 2017, which were largely from fossil fuel combustion, non-energy use of fuels, and petroleum systems.<sup>81</sup></p>	<p>Section 3.2.2.3 states that most of the observed global warming is very likely due to an increase in anthropogenic GHG concentrations. It also states that GHGs are emitted through human activities. Text has been added to list the sectors that generate the largest share of GHG emissions in the United States and specify that fossil fuel use is part of these sectors.</p> <p>In addition, Appendix I provides information on projected Wyoming greenhouse gas emissions, including a statement that “outside of coal development, oil and gas development is the single largest contributor to total air pollutant emissions in Wyoming.” It also states that “Wyoming’s per capita emission rate is more than four times greater than the national average of 25 MMT CO2e/year. This large difference between national and state per capita emissions occurs in most sectors, including electricity, industrial, fossil fuel production, transportation, industrial processes, and agriculture. The reasons for the higher per capita intensity in Wyoming are varied but include the state’s strong fossil fuel production industry, other industries with high fossil fuel consumption intensity, large agricultural industries, large distances, and a low population base.” Appendix I also discusses GHG emissions statewide and nationwide on federal lands.</p>
023	094	<p>Federal lands are also a critical carbon sink. The USGS found that in 2014, federal lands of the conterminous United States stored an estimated 83,600 MMT CO2 Eq., in soils (63 percent), live vegetation (26 percent), and dead organic matter (10 percent).<sup>82</sup> In addition, the USGS estimated that Federal lands “sequestered an average of 195 MMT CO2 Eq./yr between 2005 and 2014, offsetting approximately 15 percent of the CO2 emissions resulting from the extraction of fossil fuels on Federal lands and their end-use combustion.”<sup>83</sup></p>	<p>Comment noted.</p>
023	095	<p>BLM Fails to Analyze and Disclose the Impacts Associated with Enhanced Oil Recovery</p> <p>BLM states that “[t]he initiative’s objective is to stimulate economic development by connecting oil fields that are good candidates for enhanced oil recovery (EOR) with sources of carbon dioxide (CO2) that could be used for EOR. Current data and literature suggest that there are more than 90 potential fields suitable for CO2 flooding with recoverable reserves in excess of 1.5 billion barrels.”<sup>84</sup> BLM also states: “[b]y their very nature, EOR projects can store large quantities of CO2, and because CO2 used during EOR is a purchased commodity, it is recycled continuously in the reservoir rather than vented to the atmosphere. EOR projects can add value by maximizing oil recovery from existing, previously disturbed fields, while at the same time offering a bridge to a reduced carbon emissions future.”<sup>85</sup> However, BLM offers no scientific or technical support for its assertion that the proposed EOR project would offer a bridge to a reduced carbon emissions future. There is a lot of uncertainty on this point that must be disclosed.</p>	<p>Text and sources have been added for clarification.</p>
023	096	<p>Current scientific literature assessing the GHG impacts of EOR finds mixed results, not the purely positive impact asserted in the DEIS. It is currently unclear whether EOR is a net CO2 contributor or whether it is net carbon negative, and the available research studies are difficult to compare because the GHG emission scenarios are set up differently within them. While there are arguments for EOR as a way to reduce the carbon intensity of oil and sequester substantial amounts of carbon, there is also a compelling case against it, namely that there should be less oil and gas production, not more.<sup>87</sup> The carbon intensity of oil is only reduced if the carbon dioxide used is from anthropogenic sources or captured from the atmosphere.</p>	<p>Comment noted. Reducing oil and gas production on federal lands is outside the scope of this decision. This EIS analyzes a planning decision to designate proposed corridors on BLM-administered lands. Site-specific NEPA would be conducted for future EOR projects within the proposed corridors. This site-specific NEPA would evaluate the air quality impacts and benefits of EOR for the particular project.</p>
023	097	<p>First, less than 15 percent of the CO2 used in today’s U.S. EOR operations (as of 2010) is pulled from “anthropogenic” sources like gas processing and hydrocarbon conversions. Over 85 percent comes from “terrestrial” sources, a few big natural CO2 reservoirs under the Earth’s surface.<sup>88</sup> The majority of EOR projects have used naturally occurring CO2, and absent a large increase in oil prices or some other kind of strong, reliable financial incentive, this seems likely to continue.<sup>89</sup> Ideally, all EOR operations would draw exclusively on anthropogenic CO2, and they would all sequester the maximum amount possible. That might make them carbon negative on a lifecycle basis. Even short of that, they could lower the lifecycle emissions of the oil and gas produced.<sup>90</sup> However, here, it is unclear whether the CO2 used in the proposed EOR operations would be derived from anthropogenic or terrestrial sources. BLM merely states that both types area available: “Naturally occurring sources of CO2 are found in the western portion of the state in numerous hydrocarbon reservoirs and can be produced in quantities sufficient to support EOR. Two of these reservoirs currently serve as the source CO2 for ongoing EOR projects.”<sup>91</sup> “Additionally, human-made sources of CO2, mainly power plants, can be used for EOR projects.”<sup>92</sup> It is important for BLM to disclose the climate benefits, if any, of both sources since the lifecycle emissions of oil and gas produced would likely be higher if they were derived from terrestrial sources.</p>	<p>This EIS analyzes a planning decision to designate proposed corridors on BLM lands. BLM is unable to disclose whether the CO2 in future potential EOR projects would be derived from anthropogenic or terrestrial sources because no specific projects have been proposed at this time. Site-specific NEPA would be conducted for future EOR projects within the proposed corridors. This site-specific NEPA would disclose where the CO2 in the EOR project would come from.</p> <p>The following text has been added to Section 2.4.2: “The use of naturally-occurring sources of CO2 versus human-made sources of CO2 for EOR can result in different lifecycle carbon emissions.”</p>
023	098	<p>Second, while some projects use CO2 captured from anthropogenic sources for EOR – it is important to track who claims credit for the avoided CO2 emissions. A credit associated with storing CO2 underground can only be counted once – either it can reduce the emissions from the original source when it was captured, or it can reduce the emissions from oil production. It cannot do both. Therefore to produce “carbon-negative oil” – that is for CO2-EOR actually to reduce the stock of CO2 in the atmosphere – EOR projects would need to inject CO2 that has either come from the combustion or conversion of biomass or has been captured directly from the air.</p>	<p>Comment noted. This EIS analyzes a planning decision to designate proposed corridors on BLM lands. Site-specific NEPA would be conducted for future EOR projects within the proposed corridors. Whether the EOR project would be net carbon negative or a CO2 contributor would be discussed at this project-specific level because project details would be available to analyze emissions.</p>
023	099	<p>Third, ensuring the integrity of CO2 storage is also important for validating the emissions reductions. There are steps operators must take to ensure and demonstrate the permanency of CO2 storage, including: identifying sites with suitable geology that traps CO2; avoiding abandoned wells that could create a conduit for CO2 to reach the surface (or ensuring that these are plugged); and introducing monitoring and field surveillance to detect potential leakage. These measures reduce the risk of the injected CO2 migrating back to the surface and adding to the atmospheric concentration of CO2. It is unclear from a reading of the DEIS whether BLM plans to require any of these measures. While BLM acknowledges that there could be some future leakage from the reservoir or during production operations, it asserts that “it cannot be reasonably estimated at this time.”</p>	<p>These types of measures would be implemented at the project specific level, through project-specific NEPA analysis.</p>

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023	100	Another factor to consider in determining whether a proposed EOR is net carbon negative or a net CO2 contributor is the age of the project. Research suggests that EOR projects are initially net carbon negative for their first few years but then become net CO2 contributors if they continue. <sup>97</sup> The commercial time horizon for a CO2-EOR flood (a few years to decades) is shorter than the time horizon of interest for achieving effective sequestration of CO2 from the atmosphere (centuries, or longer). CO2-EOR thus lacks the long-term outlook of a sequestration operation specifically designed for the purpose. The focus of CO2-EOR is the operational phase and not the post-closure phase. Migration of CO2 out of pattern, out of authorized zones, or to the atmosphere is possible after injection and production cease. Standard cement plugs that are used in the field to decommission wells have not been designed to withstand the presence of CO2 in the long term and could prove to be leakage pathways long after the operator has walked away from a field.	This EIS analyzes a planning decision to designate proposed corridors on BLM lands. Site-specific NEPA would be conducted for future EOR projects within the proposed corridors. Whether the EOR project would be net carbon negative or a CO2 contributor would be discussed at this project-specific level because project details would be available to analyze emissions.
023	101	Further, even after tertiary recovery, conventional oil fields are expected to still contain an average of 35 to 50 percent of the original oil in place. <sup>99</sup> If oil companies develop advanced EOR techniques, operators may choose to reenter CO2-EOR fields at a future date to recover these reserves. It is possible that such operations could necessitate removing CO2 from the field (“blowing down” the field), in which case the operator would need to ensure that the CO2 is not released to the atmosphere if it has already received credit for being sequestered.	This would be evaluated at the project specific level.
023	102	In the DEIS, BLM provides more questions than answers and provides no support for its claims that the proposed EOR projects would offer a bridge to a reduced carbon emissions future. While heavily relying on unsupported claims regarding climate benefits, it simultaneously fails to provide any supporting analysis. Instead, BLM summarily concludes without support that “emissions of GHGs and production from EOR under the alternatives are not expected to differ significantly.”	<p>The text in Section 1.2 has been clarified: "EOR projects help reduce carbon emissions by capturing CO2 emitted from anthropogenic sources and permanently sequestering the CO2 underground. Geologic sequestration of CO2 emissions by EOR projects accounts for approximately 9 million metric tons of carbon, or approximately 80 percent of the industrial use of CO2, every year. Although approximately 20% of CO2 in EOR currently comes from natural gas processing plants, the majority comes from natural underground sources and does not represent a net reduction in CO2 emissions. However, carbon capture and storage offer the potential to alter this situation (DOE 2010)."</p> <p>Emissions of GHGs and production from EOR under the alternatives are not expected to differ significantly because the types of potential EOR projects proposed in the corridors would likely be similar for each alternative. These emissions would be analyzed at the project level with site-specific NEPA.</p>
023	103	Because so much uncertainty exists as to whether the CO2 pipelines proposed would be net CO2 contributors or net CO2 negative, BLM must fully analyze and disclose to the public the impacts of the possible net CO2 outcomes for each alternative and specifically describe how the impacts of a net CO2 contributor outcome would be minimized, avoided, and mitigated. For example, one mitigation possibility that could be explored is habitat restoration of damaged public lands and management restrictions on the restoration lands, so that carbon can be sequestered in the long term.	A full analysis and disclosure of the impacts of the possible net CO2 outcomes would be included in the NEPA for individual projects.
023	104	<p>BLM Must Analyze and Disclose the True Magnitude of GHG Pollution Using the Best Available Science</p> <p>When preparing NEPA documents, federal agencies are required to use high-quality information and accurate scientific analysis, and to ensure the professional and scientific integrity of the discussions and analyses therein.<sup>102</sup> Therefore, BLM must not understate the climate impact of GHG emissions by using outdated or inaccurate estimates of global warming potential (GWP), which is a measure of the amount of warming caused over a designated period by the emission of one ton of a particular greenhouse gas relative to one ton of carbon dioxide.<sup>103</sup> GWPs are calculated for multiple time frames, commonly 20 years, 100 years, and 500 years, because the amount of warming a particular GHG causes differs when calculated for different time periods. For example, the GWPs for methane estimate how many tons of carbon dioxide emissions produce the same amount of global warming as a single ton of methane (36 tons over a 100-year period, 87 tons over a 20-year period).<sup>104</sup> Using GWPs to calculate equivalent emissions is important because some GHGs, such as methane, are much more potent than carbon dioxide, and/or have much greater climate impacts in the near-term than the long-term.<sup>105</sup> Under NEPA, “both short- and long-term effects” are relevant. 40 C.F.R. § 1508.27(a). Thus, BLM must analyze and disclose the global warming potential of GHG emissions of the WPCI project over both the short-term (20-year GWP) and long-term (100-year GWP).</p> <p>BLM, however, often fails to discuss the 20-year GWP for shorter-lived GHGs, such as methane, that has a disproportionately large climate-changing impact in the near term. For such a pollutant, it is arbitrary and capricious to consider only the 100-year GWP.<sup>106</sup> NEPA requires a “full and fair discussion of significant environmental impacts.” 40 C.F.R. § 1502.1. The environmental information made available to the public “must be of high quality.” 40 C.F.R. § 1500.1(b). “Accurate scientific analysis” proves “essential to implementing NEPA.” Id. NEPA requires an agency to ensure “scientific integrity” in its analyses. 40 C.F.R. § 1502.24. Thus, BLM must provide a “full and fair discussion” of the methane pollution resulting from its actions, as required by NEPA. See id. § 1502.1.</p> <p>Here, BLM mentions the 100-year GWP, but not the 20-year GWP.<sup>107</sup> In order to disclose and assess both the long- and short-term impacts of its decisions as required by NEPA, BLM must analyze and disclose the warming potential of GHG emissions using both the IPCC’s current 20-year and 100-year GWPs for fossil methane.<sup>108</sup> Applying the current GWPs for GHGs for both the 20- and 100- year periods could substantially change agencies’ assumptions regarding the GHG pollution’s impacts of a project or a regulatory change. A district court recently agreed with commenters on this point, finding that BLM violated NEPA where it failed to justify its use of global warming potentials GWPs based on a 100-year time horizon rather than the 20-year time horizon of the resource management plans (RMPs). <i>W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.</i>, CV16-21-GF-BMM, 2018 WL 1475470, at *18 (D. Mont. Mar. 26, 2018).</p>	This EIS analyzes a planning decision to designate proposed corridors on BLM lands. Without specific project information available (because no projects have been proposed yet), the BLM has provided its best estimate of GHG emissions in Section 3.2.5.1 (with backup in Appendix I). Site-specific NEPA would be conducted for future EOR projects within the proposed corridors and would analyze GHGs in greater detail and would include both the 20-year and 100-year GWP.
023	105	<p>BLM Must Fully Analyze and Disclose the Direct and Indirect Emissions Resulting from their Actions</p> <p>BLM must utilize recent climate science to analyze and disclose to the public the GHG emissions and climate impacts that would result from the construction and operation of the proposed CO2, oil, and gas pipeline network. BLM acknowledges that while pipeline infrastructure exists in these areas; the proposed action alternative would facilitate additional routes into new areas and that under all action alternatives, pipeline construction, operation, and maintenance activities, along with future potential EOR production, would affect air quality, including GHG emissions. Yet in the DEIS, BLM fails to quantify all of the emissions from construction and operation, instead arguing that “because no specific potential projects are proposed at this time, the exact types and numbers of equipment and vehicles that would be used are unknown.”</p>	To provide insight on the potential air pollutant emissions that could be associated with the construction of future development in the designated corridors, construction combustion emissions have been estimated using data from another pipeline project (see Section 3.2.5). Individual potential projects in the designated corridors would require an analysis of impacts to air quality, including the quantification of criteria pollutant and GHG emissions and determination of the need for a conformity analysis.
023	106	BLM must analyze and disclose the direct and indirect GHG emissions and climate change impacts from the construction and operation of the WPCI project, including increased oil and gas production facilitated by the project due to the increased access to markets resulting from the project’s pipelines. While BLM assumes that CO2-EOR would occur to the reasonably foreseeable extent and that new injection wells and that new production wells, or conversion of wells to injection could occur, BLM asserts that “data available do not allow the BLM to predict how many total wells may be necessary to support future CO2-EOR operations” and “because it is currently not possible to predict whether new production wells may be necessary to further develop an oil field, direct emissions from the drilling, completion, and operation of these wells cannot be reasonably predicted.”	This EIS analyzes a planning decision to designate proposed corridors on BLM lands. Without specific project information available (because no projects have been proposed yet), the BLM has provided its best estimate of GHG emissions in Section 3.2.5.1 (with backup in Appendix I). Site-specific NEPA would be conducted for future potential EOR projects within the proposed corridors and would analyze GHGs in greater detail.



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023	107	<p>NEPA requires that [federal agencies] engage in reasonable forecasting” and thus, courts “must reject any attempt by agencies to shirk their responsibility under NEPA by labeling any and all discussions of future environmental effects as crystal ball inquiry.” N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted). “The BLM can certainly explain specific projections with reference to uncertainty; however, it may not rely on a statement of uncertainty to avoid even attempting the requisite analysis.” Or. Natural Res. Council Fund v. Brong, 492 F.3d 1120, 1134 (9th Cir. 2007).</p> <p>Notably, courts have repeatedly held that agencies must analyze and disclose to the public the GHG emissions resulting from the production, transportation, processing, and end-use of fossil fuels that will be produced or transported as a result of agency approvals.<sup>113</sup> See, e.g., Sierra Club v. FERC, 867 F.3d 1357,1374 (D.C. Cir. 2017) (GHG emissions from the combustion of gas “are an indirect effect of authorizing this [pipeline] project, which [the agency] could reasonably foresee”); Citizens for a Healthy Cmty. v. U.S. Bureau of Land Mgmt., No. 1:17-cv-02519-LTB-GPG, 2019 WL 1382785, at *8 (D. Colo. Mar. 27, 2019) (“Defendants acted in an arbitrary and capricious manner and violated NEPA by not taking a hard look at the foreseeable indirect effects resulting from the combustion of oil and gas.”); WildEarth Guardians v. Zinke, 368 F. Supp. 3d 41, 71 (D.D.C. 2019) (“BLM failed to take a hard look at the environmental impacts of leasing because it failed to quantify and forecast aggregate GHG emissions from oil and gas development.”); Mid States Coal. for Progress v. Surface Transp. Bd., 345 F.3d 520, 549-50 (8th Cir. 2003); San Juan Citizens All. v. U.S. Bureau of Land Mgmt., 326 F. Supp. 3d 1227, 1242-43 (D.N.M. 2018) (BLM’s reasoning for not analyzing indirect GHG emissions was “contrary to the reasoning in several persuasive cases that have determined that combustion emissions are an indirect effect”); W. Org. of Res. Councils, 2018 WL 1475470, at *13 (D. Mont. Mar. 26, 2018) (“In light of the degree of foreseeability and specificity of information available to the agency while completing the EIS, NEPA requires BLM to consider in the EIS the environmental consequences of the downstream combustion of the coal, oil and gas resources potentially open to development under these RMPs.”); Mont. Envtl. Info. Ctr. v. U.S. Office of Surface Mining Reclamation and Enft, 274 F. Supp. 3d 1074, 1098-99 (D. Mont. 2017) (holding indirect effects from coal trains includes the 23.16 million metric tons of GHG emissions from the combustion of coal extracted from the mine); Wilderness Workshop v. U.S. Bureau of Land Mgmt., 342 F. Supp. 3d 1145, 1156 (D. Colo. 2018) (“BLM acted in an arbitrary and capricious manner and violated NEPA by not taking a hard look at the indirect effects resulting from the combustion of oil and gas in the planning area under the RMP [Resource Management Plan].”); Diné Citizens Against Ruining Our Env’t v. U.S. Office of Surface Mining Reclamation and Enft, 82 F. Supp. 3d 1201, 1213 (D. Colo. 2015) (“[T]he coal combustion-related impacts of [the mine’s] proposed expansion are an ‘indirect effect’ requiring NEPA analysis”), vacated as moot, 643 Fed. App’x 799 (2016); High Country Conservation Advocates v. U.S. Forest Serv., 52 F. Supp. 3d. 1174, 1198 (D. Colo. 2014) (“[R]easonably foreseeable effect [of downstream combustion] must be analyzed, even if the precise extent of the effect is less certain.”).</p> <p>Yet BLM refuses to fully analyze and disclose to the public the GHG emissions and climate change impacts resulting from this project, asserting that “new utility corridor designation in existing utility corridors would not result in any irretrievable or irreversible impacts to air quality or climate change. Unavoidable adverse effects to air quality would occur indirectly after designation of the corridors when specific projects are implemented. These impacts would consist of increases in criteria pollutants, hazardous air pollutants, and GHGs from the construction, operation, and maintenance of the potential projects.”<sup>114</sup> Agencies “need not foresee the unforeseeable, but . . . reasonable forecasting and speculation . . . is implicit in NEPA.”<sup>115</sup> BLM cannot shirk its responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry. Contrary to BLM’s implication, emissions quantification over the lifetime of projects or programs is not too complex or too speculative to undertake.</p> <p>As BLM acknowledges, most of the information needed is indeed readily available.<sup>116</sup> For example, the emissions associated with the production of fossil fuels from federal lands can be divided into two categories: (1) direct emissions associated with activities such as construction, drilling, completion, and well operation; and (2) indirect or “downstream” emissions associated with activities such as transportation, processing and end use of those fuels. Since direct emissions from production represent only a small proportion of the life cycle emissions from the fossil fuels, agencies must analyze and disclose to the public both the direct and indirect effects for the entire supply chain. This includes emissions from exploration, development, drilling, completion (including hydraulic fracturing), production, gathering, boosting, processing, transportation, transmission, storage, distribution, refining, and end use. Agencies must disclose their estimates of emissions from these sources and describe the methodologies used to make their estimates. The production of oil and gas is a predicate for the transportation of these fossil fuels through this pipeline corridor and therefore must be accounted for in BLM’s NEPA analysis.</p>	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	108	<p>The Council on Environmental Quantity’s (CEQ) 2016 final guidance on the consideration of GHG emissions and the effects of climate change provided examples of the types of impacts that should be considered specifically for resource extraction projects.<sup>117</sup> Similarly, the U.S. Environmental Protection Agency (EPA) concluded that the Federal Energy Regulatory Commission (FERC) should estimate the GHG emissions from the development and production of gas being transported through proposed pipelines, as well as from product end use, due to the reasonably close causal relationship of this activity to the project.</p>	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	109	<p>Further, it is not necessary to know the exact locations of all of the wells that will supply oil and gas to the pipelines, or the methods used to obtain that oil and gas, in order to analyze the potential impacts. Average production rates and production methods from wells in the supply region could be used to estimate the number of wells and the types of equipment and production methods necessary to supply pipeline capacity. See Birkhead v. FERC, 925 F.3d. 510, 520 (D.C. Cir. 2019). (“It should go without saying that NEPA also requires the Commission to at least attempt to obtain the information necessary to fulfill its statutory responsibilities.”). This information could then be used to analyze the potential GHG emissions and to develop a reasonable range of alternatives and mitigation measures to offset such emissions.</p>	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	110	<p>The emissions calculations that BLM did provide are confusing and difficult for the public to follow, thereby lacking transparency. The information necessary to make sense of their approach is spread across three sections of the draft EIS: Chapter 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS, Subsection 3.2.5.1 Enhanced Oil Recovery with Carbon Dioxide in 3.2 AIR QUALITY, where, the results of GHG emissions from additional EOR production product combustion are presented along with a single sentence noting the use and value of EPA GHG equivalency calculator emissions factors; Chapter 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS, Subsection 3.9.3 Methods of Analysis in 3.9 MINERAL RESOURCES, where the method is described in more detail, specifically noting unsupported choices of extended production lifetime and production regime over that extended lifetime, as well as an unsupported method of estimating additional recovery; and APPENDIX I. Reasonably Foreseeable Development Scenario and Projected Emissions, Oil and Gas Production and Carbon Dioxide Equivalent Calculations from Potential Increase in Carbon Dioxide Flooding, where the data resulting from the calculations used to reach the result are presented in tabular form with limited context and poor labeling (Table I-3. Total Carbon Dioxide Equivalent Calculations by Oil Field Based on 2019 Production Data and Table I-4 Total CO2e Calculations by Gas Field Based on 2019 Production Data).</p> <p>Additionally, the information is presented in a confusing, illogical order, which could lead to misinterpretation. This was the case in subsection 3.9.3 Methods of Analysis. BLM’s description began with a focus on information about the approach by which it estimated rate of production decline before introducing its assumption about the if, and when, this period of decline would occur within the known 20-year extended production life. It is stated later in this same section that the BLM assumed 10 years of production growth and 10 years of decline, DEIS at 3-44, however, this backward ordering of key facts leads to greater confusion for public audiences looking to follow BLM’s analysis to verify whether it was done correctly.</p>	<p>The BLM has adequately explained its methodology for predicting future production decline and future incremental production in those fields considered to be capable of utilizing EOR to enhance future production. The BLM has further added the tables showing which fields were evaluated for this analysis in Appendix I. Although the commenter desire it to be portrayed in a different manner, this would not detract or add-to the analysis provided. The BLM has utilized the information from Section 3.9 to prepare the information regarding future GHG analysis. This approach provides for consistency in analysis and is reasonable.</p>



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023	111	When explaining its approach to determining decline ratio, some of the crucial data were not transparent. BLM explained that data from only 15 fields were used to estimate an average annual oil production decline rate, which would be applied to every field as if it were a good representation. While it may be reasonable for ruling out certain fields based on evidence of declining production, BLM failed to disclose the final list of fields used, which makes it impossible for the public to review the list to ensure transparency and provide public comment regarding the accuracy of this analysis. Further, there appears to be a mathematical error in the determination of the average decline rate. BLM used two, individual year data points – production in year 2010 and production in year 2019 – as representative of decline over a 10-year period. BLM used the percent difference between 2010 production and 2019 production to infer annual average production, and did so by dividing by 10; however, the period is only nine years long. This error results in an artificially low decline rate of 4.2% being reported for oil and 6.19% production for gas. Additionally, it is unclear from the written description alone exactly how this decline rate was functionally applied in BLM’s analysis. Typically, in decline curve analysis, production decline is modeled using a non-linear form, such as exponential, hyperbolic, or harmonic. <sup>119</sup> The U.S. Energy Information Administration (EIA), for example, uses hyperbolic decline in its Annual Energy Outlook 2020. However, it is not clear until inspecting the data tables provided in Index I (Tables I-3 and I-4) that the decline rate is applied linearly – that is, using it as a fixed percentage of the predicted 2020 production value to be lost from year to year (after year 10). Although this linear approach was also used for estimating production increases during the first 10 years, it is not clearly stated to be the case in the decline regime as it was there (“The BLM applied this recovery rate to each 2019 field-level production amount.”). DEIS at 3-44. Therefore, BLM should explain why they used production levels in a projected year (2020) as a basis for estimating the decline rate rather than for the known year of 2019.	Additional data added to Appendix I and see Section 3.9.3 that states: For estimates of future production: the BLM used operator-supplied incremental recovery percentages for the five fields currently using CO <sub>2</sub> -EOR (Grieve and Big Sand Draw were not used due to relative shortness of the record) as the common denominator (approximately 17.26%) (see Table 3.9-1). The BLM applied this recovery rate to each 2019 field-level production amount. The BLM used this average annual production increase to produce future year production amounts on a field basis."This was applied to years 1-10 as shown in Table 3.9.1 and in the text. Similarly, BLM calculated average annual decline using production data starting with year 2010 (year one) through year 2019 (year ten) and then applied this value to years 11-20. The BLM has clarified the text in Section 3.9.3 to make this more explicit. BLM explained in the text that the production curve BLM created has created a perfect bell curve and that production may peak earlier and at a higher rate than what BLM’s analysis has projected. BLM also explained that it cannot predict how many new wells may be necessary to develop the fields and as such, it has assumed for analysis purposes that the existing well network is sufficient. Because of the multiples of assumptions that BLM would have to make, a perfect bell curve is a reasonable method for predicting potential incremental production over the next 20 years, which is the expected life of a RMP.
023	112	The data BLM reported in Tables I-3 and I-4 are lacking many labels essential to their interpretation; principally, lack of consistent unit labelling of data being displayed. For Table I-3, DEIS at I-9 – I-11, which focuses on oil fields, no data are labelled with units except in the final columns titled “MMBO,” “BCF per MMBO,”– and “MCF of CO <sub>2</sub> .” Even in these exceptions, while MMBO can be reasonably deduced to mean million barrels of oil, BCF per MMBO to mean billion cubic feet per million barrels of oil, and MCF of CO <sub>2</sub> to mean thousand cubic feet of CO <sub>2</sub> input, the public is left to make inferences about their significance and relationships to the rest of the tabulated data. Specifically, for columns like “BCF per MMBO,” without further context, it is not clear what gas the billion cubic feet refers to: gas produced jointly during EOR or CO <sub>2</sub> input needed for EOR, information crucial to verifying these calculations. The public should not have to make guesses to follow the process BLM used to analyze indirect emissions. BLM must provide transparent labelling of all data in Tables I-3 and I-4, either in the tables themselves or in additional descriptive text in the corresponding Appendix, where BLM represents that all calculations are shown. Finally, while it can be deduced from the table and sections referenced that the first row labelled “CO <sub>2</sub> e” is the indirect emissions from the additional production calculated in Table I-3, it is not clear what the second row labelled CO <sub>2</sub> e references or how it was estimated. The “Total CO <sub>2</sub> e” row can be determined as the sum of those two CO <sub>2</sub> e rows, but without knowing the purpose of the second CO <sub>2</sub> e row, its meaning or relevance is also unclear. The values in these rows do not appear to be referenced at all in the DEIS, which makes it unclear why these values are mentioned here.	Labels and edits have been added to Table I-3, as requested, and Appendix I has been updated.
023	113	More critically, the calculation used to arrive at this total of 7,619.7 Mmt CO <sub>2</sub> (million metric tons) input is unclear and BLM must disclose the underlying assumptions used. From an investigation of the data, it would seem to derive from the total volume (BCF) of CO <sub>2</sub> estimated to be necessary, which is reported in Table I-3 as 395.830196 BCF CO <sub>2</sub> . This total BCF does match up with the total of all individual fields’ BCF estimates, suggesting it is correct. However, getting from one to the other is not disclosed, preventing verification. The logical calculation for converting from a volumetric measure of CO <sub>2</sub> needed (billion cubic feet) to a mass of CO <sub>2</sub> input needed (metric tons) requires utilization of density of CO <sub>2</sub> . That calculation to determine mass of CO <sub>2</sub> in metric tons of input gas needed would be as follows: Mass CO <sub>2</sub> [metric tons] = Volume CO <sub>2</sub> [billion cubic feet] x Density CO <sub>2</sub> [metric tons/billion cubic feet]. However, what density to use for CO <sub>2</sub> is unknown. In order to end up with a result of 7,619 million metric tons CO <sub>2</sub> , the density of CO <sub>2</sub> used would need to have been 19.25 million metric tons per billion cubic feet. This does not correspond to the densities of CO <sub>2</sub> at standard temperature and pressure (51.4 million metric tons per billion cubic feet) or at miscible supercritical phase referenced in EOR papers <sup>120,121</sup> (0.6-0.8 g/cm <sup>3</sup> <sup>122</sup> = 17,027 - 22,700 million metric tons per billion cubic feet <sup>123</sup> ). The assumptions underlying this conversion calculation are essential because the total CO <sub>2</sub> input in terms of mass is used in the DEIS to suggest CO <sub>2</sub> sequestration. This potential sequestration of 381 million metric tons CO <sub>2</sub> is compared to the incremental GHG emissions from additional EOR production and the balance of these two will suggest the net positive or net negative emissions impact of the project. The net effect of this factor will depend in large part on some of the considerations raised regarding CCS-EOR described infra Section VI.B.: for example, where will the CO <sub>2</sub> come from? If the CO <sub>2</sub> is derived from natural sources, as most are, then more CO <sub>2</sub> input here would mean the possibility of more corresponding indirect emission activity (e.g. more injection wells needed or more CO <sub>2</sub> reprocessing), which must be disclosed.	Commenter noted an error in the conversion of CO <sub>2</sub> from volume to weight, which has been corrected. Information on the assumption for conversion of BCF CO <sub>2</sub> to Mmt CO <sub>2</sub> and the source of the conversion factor has been added to Table I-3, as requested.
023	114	Additionally, there are several missing sources of additional indirect emissions. First, BLM claims “it is currently not possible to predict whether new production wells may be necessary to further develop an oil field, direct emissions from the drilling, completion, and operation of these wells cannot be reasonably predicted.” DEIS at 3-8. However, it is plausible that new wells will need to be built to accommodate the added production, so BLM should provide at least an estimate of potential impact, even if not precise. This should include a reasonable estimate of both (1) the maximum number of wells that could be needed to produce the reported levels of potential future additional oil and gas from EOR, from each field and total; and (2) the GHG emissions expected from drilling, completion, and operation of an average additional well. If the impact will be a function of the volume of expected production, GHG emissions from wells for different volume categories should be provided. This information, when applied to the reported additional production volume expected per field, would enable an estimate of range for total indirect emissions from this missing source. BLM has a responsibility to provide the information needed so decisionmakers and the public can understand the reasonably foreseeable impacts of BLM’s actions.	This EIS analyzes a planning decision to designate proposed corridors on BLM lands. The BLM has no WPCI specific information at this time but has provided its best estimate of emissions in Section 3.2. Site-specific NEPA would be conducted for future potential projects within the proposed corridors and would analyze emissions in greater detail.
023	115	BLM also failed to quantify or disclose emissions from foreseeable CO <sub>2</sub> reprocessing and reinjection of CO <sub>2</sub> used in EOR. The agency noted that “the produced gas stream [from EOR]... may include CO <sub>2</sub> as the injected gas begins to break through at producing well locations [and] must be further processed,” DEIS at 3-8 and that “[b]ecause CO <sub>2</sub> is purchased for use, operators would recapture CO <sub>2</sub> from the production stream and reinject it into the field to support ongoing EOR.” DEIS at 3-9. Research on EOR identifies gas processing and CO <sub>2</sub> compression as energy intensive components and they contribute between 9-54% and 32-46% of operating emissions, respectively. <sup>124</sup> However, no emissions associated with this process were disclosed. BLM should analyze and disclose the emissions associated with the process whereby “[p]roduced CO <sub>2</sub> is separated from the produced gas and recompressed for reinjection along with additional volumes of newly-purchased CO <sub>2</sub> .” DEIS at 3-8. BLM could disclose any uncertainty regarding how much reprocessing could occur by normalizing to total CO <sub>2</sub> input (i.e. percent of CO <sub>2</sub> input reprocessed) and making transparent disclosures on a reasonable range of values.	These emissions would be analyzed at the project level with site-specific NEPA.

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023	116	<p>Finally, BLM asserts “[a]lthough there could be some future leakage from the reservoir or during production operations, it cannot be reasonably estimated at this time.” BLM failed to provide any support for this assertion. NETL recently published a review of research on CO2 leakage from EOR operations, including leakage rates from select case studies where leakage occurred. In at least one example, the Rangely Oil Field in Western Colorado, leakage was reported in the context of its total volume of CO2 injected per year, creating a generalizable percentage rate factor that can be adopted or at least considered and rejected for transparent cause.125 BLM claims that “[w]hen a site-specific application for permit to drill or other project proposal is submitted for approval, the BLM would further refine its GHG emission estimates.” DEIS at 3-9. However, if it is possible to do this later, BLM should at least qualitatively explain what this type of analysis would entail, particularly since BLM acknowledges that it intends to tier to this DEIS for site-specific approvals in the future. Thus, BLM must remedy the above-described discrepancies in its final EIS.</p>	<p>BLM may supplement existing analysis at the site-specific project stage, if there is additional information that would inform the decision-making process. However, BLM agrees that the provided information does provide good context and BLM has added information to this section to provide a range of potential leakage while acknowledging that the geology of the reservoir and BACT controls on production facilities will ultimately control these future potential rates.</p>
023	117	<p>BLM Must Fully Analyze and Disclose the Cumulative Emissions of its Actions and the Resulting Impacts on the Climate</p> <p>Agencies must analyze and disclose the cumulative impacts of the GHG emissions resulting from their actions. “Cumulative” effects are “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions,” 40 C.F.R. §§ 1508.7, 1508.25(c), and “can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7.</p> <p>Analysis of cumulative impacts protects against “the tyranny of small decisions,” Kern v. U.S. Bureau of Land Mgmt., 284 F.3d 1062, 1078 (9th Cir. 2002), by confronting the possibility that agency action may contribute to cumulatively significant effects even where impacts appear insignificant in isolation, 40 C.F.R. §§ 1508.7, 1508.27(b)(2).126 This is particularly important in the climate change context where, given the national and global magnitude of the problem, agencies, including BLM, have attempted to portray the GHG emissions associated with a single project as relatively insignificant. Courts have not viewed this practice favorably.</p> <p>For example, the Ninth Circuit held that the impact of “greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.” Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008). In WildEarth Guardians v. Zinke, the court held that “[g]iven the national, cumulative nature of climate change, considering each individual drilling project in a vacuum deprives the agency and the public of the context necessary to evaluate oil and gas drilling on federal land before irretrievably committing to that drilling.” 368 F. Supp. 3d 41, 83 (D.D.C. 2019). Thus, an agency’s failure to quantify GHG emissions renders its cumulative impact analyses inadequate. Id. at 76. More recently in Wildearth Guardians v. BLM, ---F. Supp. 3d-2020 WL 2104760, *9-10 (D. Mont. May 1, 2020), the court found that BLM’s failure to analyze the cumulative impacts of its oil and gas leasing decisions violates NEPA. Thus, BLM must analyze and disclose the impacts of its actions and the cumulative climate impacts analysis should include the incremental GHG emissions increases, added to other past, present, and reasonably foreseeable emissions on a regional and national scale. See 40 C.F.R. §§ 1508.7, 1508.27(a); see also WildEarth Guardians, 368 F. Supp. 3d at 76-77. Given the national, cumulative nature of climate change, considering each individual project in a vacuum deprives the agency and the public of the context necessary to evaluate an agency action before irretrievably committing to that action. Id. at 83. In addition to looking at direct impacts in the immediate vicinity of the proposed pipeline project, BLM must consider other effects that are reasonably foreseeable, including whether this project would facilitate increased oil and gas production or exploration and any associated GHG and climate impacts.</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3. The projects considered in the cumulative analysis include the RFDs.</p>
023	118	<p>Courts have determined that agencies are not free to ignore the cumulative impacts, particularly GHG emissions resulting from fossil fuel leasing and development approvals. In WildEarth Guardians v. Zinke, the court held that BLM cannot ignore the impacts from similar, cumulative federal lease sales. 368 F. Supp. 3d 41, 56 (D.D.C. 2019). Further, The Tenth Circuit Court of Appeals held that if BLM has prepared a reasonably foreseeable development scenario (RFDS) for a particular area then the agency must fully analyze the impacts of developing the full number of wells identified in that RFDS in its site-specific NEPA analysis, if that analysis has not previously been conducted. Diné Citizens Against Ruining Our Env’t v. Bernhardt, 923 F.3d 831, 854 (10th Cir. 2019). Thus, for purposes of NEPA analysis, those reasonably foreseeable wells must be considered in the agency’s cumulative impacts analysis. See id. at 853. (“We conclude that the [RFD] made it reasonably foreseeable that 3,960 horizontal Mancos Shale wells would be drilled, and NEPA therefore required the BLM to consider the cumulative impacts of those wells in the EAs.”). There, BLM was “foreclose[d]” from authorizing a proposed activity when the agency had failed to fully analyze all reasonably foreseeable cumulative impacts. Id. at 854. As the Tenth Circuit explained, once an RFDS has been issued, the wells predicted in that document were “reasonably foreseeable future actions.” Id. at 853. (citing 40 C.F.R. § 1508.7). Thus, for purposes of NEPA, those reasonably foreseeable wells must be considered in the agency’s cumulative impact analysis. See id.</p> <p>Relevant here, BLM has prepared at least one RFDS for each RMP at issue. In each RFDS, BLM anticipated the drilling of a certain number of oil and gas wells over a certain period of time (e.g., fifteen years). Yet none of the aforementioned RFDSs included analyses of the site-specific environmental impacts of these anticipated reasonably foreseeable oil and gas wells, as required by NEPA. Diné CARE, 923 F.3d at 854. Based on the foregoing, BLM must remedy its cumulative impacts analysis in the FEIS.</p>	<p>The cumulative effects analysis detailed reasonably foreseeable future actions that could have cumulative impacts when combined with the project under consideration. See Appendix H for a list of these reasonably foreseeable projects. Appendix H and the analysis has been updated to present information on historical vegetation coverage across the state to put this cumulative surface disturbance into context or other disturbances that have already occurred. Cumulative surface disturbance acreages and well counts have also been updated, and the analysis has been augmented to present the contribution of the proposed pipeline network to cumulative impacts, rather than referring the reader to Chapter 3. The projects considered in the cumulative analysis include the RFDs.</p>
023	119	<p>Agencies Must Analyze and Disclose the Significance of their Actions’ Greenhouse Gas Emissions and Implications for Climate Change</p> <p>In the DEIS, BLM failed to analyze the environmental effects of the anticipated GHG emissions (i.e., direct, indirect, and cumulative). Instead, BLM merely quantified the total emissions and used that number as a proxy for environmental effects. But BLM “must do more than quantify pollution” rather the agency “must also ‘discuss the actual environmental effects resulting from those emissions.’” WildEarth Guardians v. Zinke, 2019 WL 2404860, *8 (D. Mont. Feb. 11, 2019) (quoting Ctr. for Biological Diversity v. Nat. Highway Traffic Safety Admin., 538 F.3d 1172, 1216 (9th Cir. 2008)). BLM must analyze the effects of GHG emissions in the same manner as it must for any other resource. See Ctr. for Biological Diversity, 538 F.3d at 1216-17.</p> <p>BLM projected average annual GHG emissions resulting from the additional production: approximately 0.31% of the 4,912 Mmt reported by EPA for total U.S. combustion emissions in 2017, approximately 20.5% of the USGS 2014 combustion emissions for federal lands in Wyoming, and approximately 11.4% of the statewide 2018 production estimate of 134.6 Mmt (see Appendix I).127 An agency’s comparison of an action’s annual emissions to state, national, or global emissions misleadingly suggests that an action’s contribution to climate change is static and small, while in fact a continuing stream of emissions will add to the already too-high level of GHGs in the atmosphere and exacerbate the already excessive damage occurring each year. Comparing an agency action’s emissions to a state, national, or global inventory reveals nothing about the significance of the action’s contributions to actual environmental impacts. Merely quantifying GHG emissions and calculating what percentage they represent of U.S. GHG emissions is inadequate. Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin., 538 F.3d 1172, 1216-17 (9th Cir. 2008).</p>	<p>Text has been added that states "These emissions would contribute to and exacerbate the climate change impacts described in Section 3.2.2.3. Collectively, the incremental addition of GHG emissions from numerous currently proposed and future projects have a large impact on a global scale. "</p>

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023	120	<p>Further, in <i>Wildearth Guardians v. BLM</i>, the court noted that “if BLM ever hopes to determine the true impact of its projects on climate change, it can do so only by looking at projects in combination with each other, not simply in the context of state and nation-wide emissions.” 2020 WL 2104760, at *11. “Without doing so, the relevant ‘decisionmaker’ cannot determine ‘whether, or how, to alter the program to lessen cumulative impacts’ on climate change.” <i>Id.</i> (internal citations omitted).</p> <p>Additionally, in its 2016 Final Guidance on the consideration of GHG emissions and the effects of climate change, CEQ explicitly addressed the inappropriateness of an agency’s assertion that the emissions resulting from its actions represent only a small fraction of global emissions in order to avoid analysis and disclosure of climate impacts, as follows:</p> <p>Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government.</p> <p>Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact.<sup>128</sup></p> <p>In addition to including quantitative estimates of the total GHG emissions resulting from its approvals, BLM must also assess the ecological, economic, and social impacts of those emissions, including assessing their significance. See 40 C.F.R. §§ 1508.8(b); 1502.16(a)-(b). The inclusion of this information in an agency’s NEPA analysis allows members of the public and interested parties to evaluate this information, submit written comments where appropriate, and spur further analysis as needed. <i>W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.</i>, CV16-21-GF-BMM, 2018 WL 1475470, at *16 (D. Mont. Mar. 26, 2018). Without all the relevant information, a NEPA analysis cannot “foster informed decision-making” and is unlikely to survive judicial scrutiny. <i>Id.</i> (citing <i>California v. Block</i>, 690 F.2d 753, 761 (9th Cir. 1982)). Agencies must analyze the significance and severity of emissions, so that decisionmakers and the public can determine whether and how those emissions should influence the choice among alternatives. See <i>Robertson v. Methow Valley Citizens Council</i>, 490 U.S. at 351-52 (recognizing that EIS must discuss “adverse environmental effects which cannot be avoided[,]” which is necessary to “properly evaluate the severity of the adverse effects”).</p> <p>BLM should not place the burden of analyzing data and drawing conclusions from it on the public. <i>WildEarth Guardians v. Zinke</i>, 368 F. Supp. 3d at 83. Even if it were possible for the public to analyze GHG emissions of agency decisions based on the data made available, it does not relieve agencies from their burden to consolidate the available data as part of its “informed decisionmaking,” before taking action. <i>Id.</i> (citing <i>WildEarth Guardians v. Jewell</i>, 738 F.3d 298, 303 (D.C. Cir. 2013) (quoting <i>New York v. Nuclear Regulatory Comm’n</i>, 681 F.3d 471, 476 (D.C. Cir. 2012)).</p>	<p>The EIS does not state that emissions from the proposed action represent only a small fraction of global emissions.</p> <p>Text has been added that states "These emissions would contribute to and exacerbate the climate change impacts described in Section 3.2.2.3. Collectively, the incremental addition of GHG emissions from numerous currently proposed and future projects have a large impact on a global scale. "</p>
023	121	<p>To take the required “hard look,” agencies must tell the public what quantitative estimates mean in terms of “actual environmental effects.” <i>Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.</i>, 538 F.3d 1172, 1216 (9th Cir. 2008) (“While the EA quantifies the expected amount of CO2 emitted from light trucks MYs 2005-2011, it does not evaluate the ‘incremental impact’ that these emissions will have on climate change or on the environment more generally. . . . The EA does not discuss the actual environmental effects resulting from those emissions.”); <i>Or. Nat. Res. Council v. U.S. Bureau of Land Mgmt.</i>, 470 F.3d 818, 822-23 (9th Cir. 2006) (rejecting assessment of logging project’s impacts by looking exclusively at the number of acres to be harvested); <i>Klamath-Siskiyou Wildlands Ctr. v. U.S. Bureau of Land Mgmt.</i>, 387 F.3d 989, 995 (9th Cir. 2004) (While tallies of “the number of acres to be harvested” and “the total road construction anticipated” were “a necessary component” and “a good start” to the analysis, respectively, they do not amount to the required “description of actual environmental effects”); 40 C.F.R. § 1508.25(c).</p> <p>While agencies are not required to use any specific protocols to determine the significance of emissions under NEPA, BLM must undertake a more robust discussion of GHG emissions. <i>WildEarth Guardians v. Zinke</i>, 368 F. Supp. 3d 41, 78 (D.D.C. 2019). This is because an agency’s failure to provide a discussion of the significance of impacts resulting from its decisions and associated climate implications deprives the public of important information on the cumulative GHG emissions and true climate implications of agency actions. See <i>Or. Nat. Desert Ass’n v. U.S. Bureau of Land Mgmt.</i>, 625 F.3d 1092, 1099-1100 (9th Cir. 2010) (“[NEPA] require[es] agencies to take a ‘hard look’ at how the choices before them affect the environment, and then to place their data and conclusions before the public.”). Accepted methods exist to quantify and analyze the significance of GHG emissions (through monetization), which BLM could use to evaluate the significance of those emissions and to balance consequences of emissions against benefits of a specific approval.<sup>129</sup></p>	<p>Text has been added that states, "These emissions would contribute to and exacerbate the climate change impacts described in Section 3.2.2.3. Collectively, the incremental addition of GHG emissions from numerous currently proposed and future projects have a large impact on a global scale. "</p>
023	122	<p>Here, BLM’s only attempt to assess the significance of emissions is to use EPA’s Greenhouse Gas Equivalencies calculator to convert its estimate of emissions to the equivalent emissions from passenger vehicles and home energy use.<sup>130</sup> While this may be helpful for trying to contextualize emissions, it is insufficient to meet BLM’s obligations under NEPA to analyze and disclose significance, as it misleadingly trivializes the project’s contributions. The public does not necessarily have any frame of reference to assess whether the energy used by a certain number of homes in a year or by a certain number of cars driven for a year is significant or not. Such figures are still abstract, lack context, and on their own are misleading. Monetization is a much more relatable scale for the public to understand and it assesses the significance of a project’s contributions.</p>	<p>The commenter has overlooked the fact that BLM has placed the emission estimates in context with other regional and national estimates (see Section 3.2.5.1 "On an annual basis, the projected average annual GHG emissions resulting from the additional production would be approximately 0.31% of the 4,912 Mmt reported by EPA for total U.S. combustion emissions in 2017, approximately 20.5% of the USGS 2014 combustion emissions for federal lands in Wyoming, and approximately 11.4% of the statewide 2018 production estimate of 134.6 Mmt (see Appendix I)". Additional information on existing emission levels at the state, regional and national levels is provided in Appendix I. BLM has utilized the EPA equivalency calculator to further place in context the expected emission levels is readily comprehensible numbers for the general public. This is a reasonable approach. Further, BLM maintains that without any other monetized benefits or costs reported, monetized estimates of the social cost of carbon emissions would be presented in isolation, without any context for comparison. Quantifying only the economic costs of oil and gas development by using the social cost of carbon metrics, but not the economic benefits (as measured by, for example, the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals, or the costs to society measured by the impacts to standards of living) would yield information that is both inaccurate and not useful for the decision maker.</p>

Comment Letter Number	Comment Number	Comment	Response
023	123	<p>To this end, one tool available to analyze and disclose the significance of emissions and related climate change impacts is the Interagency Working Group’s Social Costs of Carbon,<sup>131</sup> which – even though purportedly withdrawn by Executive Order 13783<sup>132</sup> – remains the best available scientific and economic basis for determining the value of avoiding each ton of GHG emissions. Even Executive Order 13783 requires agencies to monetiz[e] the value of changes in greenhouse gas emissions resulting from regulations, including with respect to the consideration of domestic versus international impacts and the consideration of appropriate discount rates, agencies shall ensure, to the extent permitted by law, that any such estimates are consistent with the guidance contained in OMB Circular A–4 of September 17, 2003 (Regulatory Analysis), which was issued after peer review and public comment and has been widely accepted for more than a decade as embodying the best practices for conducting regulatory cost-benefit analysis.<sup>133</sup></p> <p>An agency’s failure to disclose the costs of its actions while simultaneously touting the economic benefits violates NEPA. High Country Conservation Advocates v. U.S. Forest Serv., 52 F. Supp. 3d 1174, 1190-91 (D. Colo. 2014) (The SCC was an available tool to quantify the significance of GHG impacts, and it was “arbitrary and capricious to quantify the benefits of the lease modifications and then explain that a similar analysis of the costs was impossible”). Here, BLM touts the economic benefits of the WPCI project, such as an estimated total payroll for the reasonably foreseeable development of an additional approximately \$668 million per year at full development and an estimated \$900 million per year of cumulative tax, royalties, and lease revenues from that reasonably foreseeable development.<sup>134</sup> However, BLM failed to also disclose the associated costs of its action, in violation of NEPA, and should have used the social costs of carbon and methane to do so.</p>	<p>The analysis in the underlying EISs prepared for the RMPs, and in this amendment, were prepared in accordance with policy [see Washington Office Instruction Memorandum (IM) 2013-131] and were not based on economic theory and modelling under a cost-benefit umbrella, as suggested by the commenter. Economic “impact” is not the same as economic “benefit.” The analysis in this EIS has not provided a quantitative monetary estimate of any benefits or costs. As defined by IM 2013-131, “Impact analysis provides estimates of the direct, indirect, and cumulative economic activity that a given management decision is expected to create within a specified geographic area. This activity is typically expressed as projected changes in employment, personal income, or economic output. For example, developing a large oil and gas field might employ 9,000 workers and provide \$500 million in wages per year, with a certain proportion of that economic impact remaining in the county or other local area. This type of analysis calculates the changes in activity for various economic sectors, typically measured as a difference from the “no-action alternative.” Impact analysis is what was prepared for the underlying RMPs versus a cost-benefit analysis which is defined in IM 2013-131 as: “Benefit-cost analysis in principle estimates the full range of economic benefits and costs to society of a proposed activity, both market and nonmarket, providing another picture of the proposed action. The spatial scale of benefit-cost analysis is usually large, for it attempts to capture benefits and costs to individuals regardless of where they reside. Such an analysis can provide a more holistic picture of each management scenario.” As it relates to assessments of oil and gas development, the definitions in IM 2013-131 are more refined as: “To assess the impacts of a proposed oil and gas field, for example, the BLM routinely performs an impact analysis that estimates the jobs, income, and economic output that will occur over the life of the development. A benefit-cost analysis would estimate the overall economic value of the proposed field. From a market perspective, the economic value of the proposed oil and gas development and production would generally equal the price of oil and gas minus the cost of producing, processing, and transporting the minerals” In the EA, BLM explained the difference between the impact analysis that had been completed and how that would differ from a cost-benefit analysis. BLM did not prepare a cost-benefit analysis as defined by IM 2013-131 in this EIS, or in the underlying RMP EISs. The commenter has not provided any new information not previously considered. BLM maintains that without any other monetized benefits or costs reported, monetized estimates of the social cost of carbon emissions would be presented in isolation, without any context for comparison. Quantifying only the economic costs of oil and gas development by using the social cost of carbon metrics, but not the economic benefits (as measured by, for example, the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals, or the costs to society measured by the impacts to standards of living) would yield information that is both inaccurate and not useful for the decision maker. BLM explained the difference between the impact analysis that had been completed and how that would differ from a cost-benefit analysis. BLM did not prepare a cost-benefit analysis as defined by IM 2013-131 in the underlying RMP EISs. The commenter has not provided any new information not previously considered. BLM maintains that without any other monetized benefits or costs reported, monetized estimates of the social cost of carbon emissions would be presented in isolation, without any context for comparison. Quantifying only the economic costs of oil and gas development by using the social cost of carbon metrics, but not the economic benefits (as measured by, for example, the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals, or the costs to society measured by the impacts to standards of living) would yield information that is both inaccurate and not useful for the decision maker.</p>

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023	124	<p>The social cost of carbon protocol (hereinafter, “SCC”) is a metric that is used to reflect the damages associated with an increase in carbon emissions.<sup>135</sup> The SCC analysis is an important tool to effectuate the purposes of NEPA. The SCC can be used by agencies to put the significance of the emissions in a context that decisionmakers and members of the public could understand because it was “designed to quantify a project’s contribution to costs associated with global climate change.” High Country Conservation Advocates, 52 F. Supp. At 1190-91. The SCC allows agencies to “present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options.” 40 C.F.R. § 1502.14.</p> <p>The SCC was developed by the Interagency Working Group (IWG) on Social Cost of Greenhouse Gases.<sup>136</sup> The IWG was comprised of multiple federal agencies and White House economic and scientific experts, and the SCC was developed using up-to-date peer-reviewed models.<sup>137</sup> According to one analysis, “[t]he SCC estimates the benefit to be achieved, expressed in monetary value, by avoiding the damage caused by each additional metric ton (tonne) of carbon dioxide (CO2) [released] into the atmosphere.”<sup>138</sup> These costs are created when GHG emissions force climate change, increasing global temperatures. This leads to sea level rise, increased intensity of storms, drought, and other changes, which have negative economic impacts including property damage from storms and floods, reduced agricultural productivity, impacts on human health, and reduced ecosystem services. The SCC estimates the dollar value of these negative economic impacts and recognizes that every marginal ton of CO2 carries with it a social cost of carbon.<sup>139</sup></p> <p>While the SCC may underestimate climate costs because it does not include all important damages, the IWG’s social cost metrics remain the best estimates yet produced by the federal government for monetizing the impacts of GHG emissions and are “generally accepted in the scientific community.” 40 C.F.R. § 1502.22(b)(4). Several courts have rejected agency refusals to use the SCC as a means of evaluating the impact of GHG emissions that result from agency action. See, e.g., <i>Sierra Club v. FERC</i>, 867 F.3d 1357, 1375 (D.C. Cir. 2017); <i>Montana Env’tl. Info. Ctr. v. U.S. Office of Surface Mining Reclamation and Enft</i>, 274 F. Supp. 3d 1074, 1094-99 (D. Mont. 2017) (rejecting agency’s failure to incorporate the federal SCC estimates into its cost-benefit analysis of a proposed mine expansion); <i>Zero Zone, Inc. v. U.S. Dep’t of Energy</i>, 832 F.3d 654, 679 (7th Cir. 2016) (holding estimates of the SCC used to date by agencies were reasonable); <i>High Country Conservation Advocates v. U.S. Forest Serv.</i>, 52 F. Supp. 3d 1174, 1190-93 (D. Colo. 2014) (holding the SCC was an available tool to quantify the significance of GHG impacts, and it was “arbitrary and capricious to quantify the benefits of the lease modifications and then explain that a similar analysis of the costs was impossible”) (emphasis in original). If an agency monetizes the economic benefits of fossil fuel extraction, it must then also monetize the costs of carbon pollution. See <i>Montana Env’tl. Info. Ctr.</i>, 274 F. Supp. 3d at 1094-99. An agency may not assert that the social cost of fossil fuel development is \$0: “by deciding not to quantify the costs at all, the agencies effectively zeroed out the costs in its quantitative analysis.” <i>High Country Conservation Advocates</i>, 52 F. Supp. 3d at 1192; see also <i>Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.</i>, 538 F.3d 1172, 1200 (9th Cir. 2008) (finding that while there is a range potential social cost figures, “the value of carbon emissions reduction is certainly not zero”).</p> <p>As noted, while Executive Order 13783 purports to have revoked the Interagency Working Group’s work product, it instructs agencies to rely on OMB Circular A-4. That document instructs that: Special ethical considerations arise when comparing benefits and costs across generations. Although most people demonstrate time preference in their own consumption behavior, it may not be appropriate for society to demonstrate a similar preference when deciding between the well-being of current and future generations. Future citizens who are affected by such choices cannot take part in making them, and today’s society must act with some consideration of their interest.<sup>140</sup></p> <p>For this reason, OMB cautioned against using high discount rates for decisions with intergenerational consequences.<sup>141</sup></p> <p>Even if NEPA does not require a cost benefit analysis in every case, NEPA does require agencies to assess the significance of their actions, and the SCC remains one of the best tools available to analyze and disclose to the public the significance of GHG emissions and should not be arbitrarily taken off the table as a tool for analysis. For example, disclosing that a lease sale will have \$100 million in climate impacts presents an easily digestible figure for the public, as opposed to trying to minimize the impacts as a percentage of total emissions, for example, 0.05 percent.</p>	<p>The analysis in the underlying EISs prepared for the RMPs, and in this amendment, were prepared in accordance with policy [see Washington Office Instruction Memorandum (IM) 2013-131] and were not based on economic theory and modelling under a cost-benefit umbrella, as suggested by the commenter. Economic “impact” is not the same as economic “benefit.” The analysis in this EIS has not provided a quantitative monetary estimate of any benefits or costs. As defined by IM 2013-131, “Impact analysis provides estimates of the direct, indirect, and cumulative economic activity that a given management decision is expected to create within a specified geographic area. This activity is typically expressed as projected changes in employment, personal income, or economic output. For example, developing a large oil and gas field might employ 9,000 workers and provide \$500 million in wages per year, with a certain proportion of that economic impact remaining in the county or other local area. This type of analysis calculates the changes in activity for various economic sectors, typically measured as a difference from the “no-action alternative.” Impact analysis is what was prepared for the underlying RMPs versus a cost-benefit analysis which is defined in IM 2013-131 as: “Benefit-cost analysis in principle estimates the full range of economic benefits and costs to society of a proposed activity, both market and nonmarket, providing another picture of the proposed action. The spatial scale of benefit-cost analysis is usually large, for it attempts to capture benefits and costs to individuals regardless of where they reside. Such an analysis can provide a more holistic picture of each management scenario.” As it relates to assessments of oil and gas development, the definitions in IM 2013-131 are more refined as: “To assess the impacts of a proposed oil and gas field, for example, the BLM routinely performs an impact analysis that estimates the jobs, income, and economic output that will occur over the life of the development. A benefit-cost analysis would estimate the overall economic value of the proposed field. From a market perspective, the economic value of the proposed oil and gas development and production would generally equal the price of oil and gas minus the cost of producing, processing, and transporting the minerals” In the EA, BLM explained the difference between the impact analysis that had been completed and how that would differ from a cost-benefit analysis. BLM did not prepare a cost-benefit analysis as defined by IM 2013-131 in this EIS, or in the underlying RMP EISs. The commenter has not provided any new information not previously considered. BLM maintains that without any other monetized benefits or costs reported, monetized estimates of the social cost of carbon emissions would be presented in isolation, without any context for comparison. Quantifying only the economic costs of oil and gas development by using the social cost of carbon metrics, but not the economic benefits (as measured by, for example, the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals, or the costs to society measured by the impacts to standards of living) would yield information that is both inaccurate and not useful for the decision maker. BLM explained the difference between the impact analysis that had been completed and how that would differ from a cost-benefit analysis. BLM did not prepare a cost-benefit analysis as defined by IM 2013-131 in the underlying RMP EISs. The commenter has not provided any new information not previously considered. BLM maintains that without any other monetized benefits or costs reported, monetized estimates of the social cost of carbon emissions would be presented in isolation, without any context for comparison. Quantifying only the economic costs of oil and gas development by using the social cost of carbon metrics, but not the economic benefits (as measured by, for example, the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals, or the costs to society measured by the impacts to standards of living) would yield information that is both inaccurate and not useful for the decision maker.</p>

Comment Letter Number	Comment Number	Comment	Response
023	125	<p>Similarly, the Social Cost of Methane is another available tool that BLM could use in its NEPA analysis to analyze and disclose the significance of impacts of its decisions as required by 40 C.F.R. §§ 1508.8(b),1502.16(a)-(b). In August 2016, the IWG provided an update to the SCC technical support document,<sup>142</sup> adopting a similar methodology for evaluating the climate impact of each additional ton of methane and nitrous oxide emissions.<sup>143</sup> Similar to the SCC, the Social Cost of Methane provides a standard methodology that allows state and federal agencies to quantify the social benefits of reducing methane emissions.</p> <p>The Social Cost of Methane is intended to “offer a method for improving the analyses of regulatory actions that are projected to influence [methane or nitrogen oxide] emissions in a manner consistent with how [carbon dioxide] emission changes are valued.”<sup>144</sup> Like the SCC, the Social Cost of Methane is presented as a range of figures across four discount rates; it is based on results from three integrated assessment models; displayed in dollars per metric ton of emissions; and increases over time because emissions become more damaging as their atmospheric concentrations increase.<sup>145</sup> The IWG estimated that each additional ton of methane emitted in 2020 will cost between \$540 and \$3,200 dollars (measured in 2007 dollars).</p>	<p>To the extent possible, BLM has provided context to the numbers it has presented in relative percentages, for comparison; it further provided context for the indirect emissions from the proposed action in terms that the general public can understand (e.g. number of homes annual energy use, number of smartphone charges, etc.). Percentages are readily understandable by the public. The BLM respectfully disagrees that SCC provides more understandable information, since this methodology cannot discern if, where, when and how the dollar-represented changes may actually manifest. And, like emissions levels that differ by orders of magnitude, comparisons of dollar figures that differ by orders of magnitude (e.g., \$325 million and \$3.3 billion) may be difficult to comprehend. Similarly, economic models themselves are abstractions of reality (Randall, 1984); for this reason, BLM has provided a qualitative discussion of climate change, and the projected impacts that could occur at the statewide, regional and national level (see Appendix I). This complies with NEPA; where there are important qualitative considerations, monetization is not necessary and should not be used. Moreover, in responding to an argument that by not utilizing the “social cost of carbon” and the “global carbon budget,” BLM “arbitrarily dismissed the need to analyze cumulative GHG impacts,” the court specifically found that in the case of the Wyoming leasing analyses, “BLM’s decision to forgo the protocols’ use does not rise to the level of a NEPA violation.” <i>WildEarth Guardians v. Zinke</i>, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)</p>
023	126	<p>The IWG’s social cost metrics remain the best estimates produced by the federal government for monetizing the impacts of GHG emissions and are “generally accepted in the scientific community,” as required by 40 C.F.R. § 1502.22(b)(4). This is true despite the issuance of Executive Order 13,783, which disbanded the IWG and formally withdrew its technical support documents “as no longer representative of governmental policy.”<sup>147</sup> However, this Executive Order did not find fault with any component of the IWG’s analyses. To the contrary, it encourages agencies to “monetiz[e] the value of changes in greenhouse gas emissions” and instructs agencies to ensure such estimates are “consistent with the guidance contained in OMB Circular A-4.”<sup>148</sup> The IWG tools, however, illustrate how agencies can appropriately comply with the guidance provided in Circular A-4, as OMB participated in the IWG and did not object to the group’s conclusions. As agencies follow the Circular’s standards for using the best available data and methodologies, they will necessarily choose similar data, methodologies, and estimates as the IWG, since the IWG’s work continues to represent the best estimates presently available.<sup>149</sup> Thus, the IWG’s 2016 update to the estimates of the Social Costs of Greenhouse Gases remains the best available and generally accepted tool for assessing the significance of GHG emissions, notwithstanding the fact that this document has since been withdrawn.</p> <p>“‘Accurate scientific analysis’ is ‘essential to implementing NEPA.’” <i>WildEarth Guardians v. Zinke</i>, 369 F. Supp. 3d 41, n.31 (D.D.C. 2019) (quoting 40 C.F.R. § 1500.1(b)). “And NEPA requires an agency to ensure ‘scientific integrity’ in its environmental assessments.” <i>Id.</i> (quoting 40 C.F.R. § 1502.24). For example, agencies “may not forgo using the social cost of carbon simply because courts have thus far been reluctant to mandate it.” <i>Id.</i> “Given that the Department of Energy and other agencies consider the social cost of carbon reliable enough to support rulemakings . . . the protocol may one day soon be a necessary component of NEPA analyses.” <i>Id.</i> (citing <i>Zero Zone, Inc. v. U.S. Dep’t of Energy</i>, 832 F.3d 654, 677 (7th Cir. 2016)); see <i>High Country Conservation Advocates v. U.S. Forest Serv.</i>, 52 F. Supp. 3d 1174, 1193 (D. Colo. 2014) (“I am not persuaded by the[] cases [the Government cites], or by anything in the record, that it is reasonable completely to ignore a tool in which an interagency group of experts invested time and expertise.”).</p> <p>In the absence of other tools, BLM should use the social costs of carbon and methane to assist in analyzing and disclosing to the public the significance of the GHG emissions resulting from its decision under NEPA. Even if NEPA does not require a cost benefit analysis in all cases, it does require agencies to assess the significance of their actions, and the Social Costs of Greenhouse Gases remain as some of the best tools available to analyze and disclose to the public the significance of GHG emissions. Critically, these protocols not only contextualize costs associated with climate change but can also be used as a proxy for understanding climate impacts and comparing alternatives. See 40 C.F.R. § 1502.22(a) (stating agency “shall” include all “information relevant to reasonably foreseeable significant adverse impacts [that] is essential to a reasoned choice among alternatives).</p>	<p>To the extent possible, BLM has provided context to the numbers it has presented in relative percentages, for comparison; it further provided context for the indirect emissions from the proposed action in terms that the general public can understand (e.g. number of homes annual energy use, number of smartphone charges, etc.). Percentages are readily understandable by the public. The BLM respectfully disagrees that SCC provides more understandable information, since this methodology cannot discern if, where, when and how the dollar-represented changes may actually manifest. And, like emissions levels that differ by orders of magnitude, comparisons of dollar figures that differ by orders of magnitude (e.g., \$325 million and \$3.3 billion) may be difficult to comprehend. Similarly, economic models themselves are abstractions of reality (Randall, 1984); for this reason, BLM has provided a qualitative discussion of climate change, and the projected impacts that could occur at the statewide, regional and national level (see Appendix I). This complies with NEPA; where there are important qualitative considerations, monetization is not necessary and should not be used. Moreover, in responding to an argument that by not utilizing the “social cost of carbon” and the “global carbon budget,” BLM “arbitrarily dismissed the need to analyze cumulative GHG impacts,” the court specifically found that in the case of the Wyoming leasing analyses, “BLM’s decision to forgo the protocols’ use does not rise to the level of a NEPA violation.” <i>WildEarth Guardians v. Zinke</i>, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)</p>

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023	127	<p>Another measuring standard available to agencies for analyzing the significance of GHG emissions is to apply those emissions to the remaining global carbon budget through carbon budgeting—which offers a cap on the remaining stock of greenhouse gases that can be emitted while keeping global average temperature rise below scientifically researched warming thresholds, beyond which climate change impacts may result in severe and irreparable harm.150 Research shows that enormous and rapid cuts in GHG emissions are needed to meet climate goals. The IPCC’s Special Report on 1.5°C estimated a remaining budget from the start of 2018 of approximately:</p> <ul style="list-style-type: none"><li>• 420 Gigatonnes of CO2 (GtCO2) for a two-thirds chance of limiting warming to 1.5°C;</li><li>• 580 GtCO2 for a 50 percent chance of limiting warming to 1.5°C;</li><li>1170 GtCO2 for a two-thirds chance of limiting warming to 2°C;153 and</li><li>• 1500 GtCO2 for a 50 percent chance of limiting warming to 2°C.154</li></ul> <p>In order to meet these targets, global CO2 emissions would need to reach net zero in about 30 years to stay within a 580 GtCO2 budget, reduced to 20 years for a 420 GtCO2 budget.155</p> <p>However, there are also significant uncertainties in these carbon budgets—uncertainties that in some cases are nearly as large as the entire budgets themselves. While the multiple sources of uncertainties cannot be formally combined, the IPCC concluded that, overall, “current understanding of the assessed geophysical uncertainties suggests at least a ±50% possible variation for remaining carbon budgets for 1.5°C-consistent pathways.”156 In other words, the remaining global carbon budget may be significantly smaller than these estimated budgets. The potential carbon emissions from existing fossil fuel reserves—the known belowground stock of extractable fossil fuels—considerably exceed both 2°C and 1.5°C of warming. Globally, the IPCC found in AR5 that, “[e]stimated total fossil carbon reserves exceed [the 2°C budget] by a factor of 4 to 7.”157 Another study found that, to meet the target of 2°C, “a third of oil reserves, half of gas reserves and over 80 percent of current coal reserves should remain unused from 2010 to 2050.”</p> <p>Research shows that potential emissions from just U.S. federal fossil fuels could take up all or a significant portion of the remaining global carbon budget. A 2015 analysis prepared by EcoShift Consulting estimated that the potential emissions from all U.S. fossil fuels is 697-1,070 GtCO2eq.159 Federal fossil fuels—including crude oil, gas, coal, oil shale, and tar sands—account for as much as 492 GtCO2eq, or approximately 46 to 50 percent of total potential emissions.160 Unleased federal fossil fuels comprise 91 percent of these potential emissions, with already leased federal fossil fuels accounting for as much as 43 GtCO2eq.161 Unleased federal gas has potential GHG emissions ranging from 37.86 to 47.26 GtCO2eq, while leased federal gas represents 10.39 to 12.88 GtCO2eq.162 Unleased federal crude oil has potential GHG emissions ranging from 37.03 to 42.19 GtCO2e, while potential emissions from leased federal crude oil represents from 6.95 to 7.92 GtCO2e.</p> <p>While global carbon budgets are imperfect, they represent tools presently available to agencies to use in analyzing and disclosing to the public the significance of their decisions on GHG emissions and their implications for climate change. The global carbon budget is rapidly being spent, and every additional ton of emissions is a debit against the climate. Thus, BLM should analyze and disclose the cumulative emissions resulting from its actions against the remaining carbon budget, thereby providing decisionmakers and the public the necessary context for understanding the significance of their decisions. See 40 C.F.R.§ 1508.27(a).</p>	<p>NEPA does not require that BLM use a particular tool, so long as its methods of analysis are reasonable. The Supplemental EA describes potential GHG emissions at various scales (including for the subject lease parcels and Colorado-wide) and compares them to larger-scale projected emissions estimates to provide context for their potential contribution to climate change. Please see Appendix I for additional information regarding the state of existing GHG emissions and we refer the reader to page 3-9 of the EA for discussion of existing national emissions levels and projected emissions from the project. Moreover, in responding to an argument that by not utilizing the “social cost of carbon” and the “global carbon budget,” BLM “arbitrarily dismissed the need to analyze cumulative GHG impacts,” the court specifically found that in the case of the Wyoming leasing analyses, “BLM’s decision to forgo the protocols’ use does not rise to the level of a NEPA violation.” <i>WildEarth Guardians v. Zinke</i>, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)</p>
023	128	<p>Agencies Must Consider A Range of Reasonable Alternatives, including those that Reduce GHG emissions</p> <p>Congress, through the NEPA process, requires agencies to “study, develop, and describe” reasonable alternatives to the agency’s proposed action. 42 U.S.C. § 4332(2)(C)(iii), (2)(E). This alternative analysis forms the “heart” of the NEPA process. 40 C.F.R. § 1502.14. To fulfill this mandate, federal agencies must “[r]igorously explore and objectively evaluate all reasonable alternatives.” 40 C.F.R. § 1502.14(a) (emphasis added). As the Ninth Circuit has explained, “[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” <i>Westlands Water Dist. v. U.S. Dep’t of Interior</i>, 376 F.3d 853, 868 (9th Cir. 2004).</p> <p>Agencies must analyze and disclose the GHG emissions associated with each alternative, so they can meaningfully consider a reasonable range of alternatives that would decrease the emissions resulting from their actions. For example, the Ninth Circuit Court of Appeals found that the National Highway Traffic Safety Administration failed to analyze an alternative raised by an outside commentator in its environmental analysis that would have decreased emissions. <i>Center for Biological Diversity v. NHTSA</i>, 538 F.3d. at 1217- 1219; see also <i>WildEarth Guardians v. U.S. Bureau of Land Management</i>, 870 F.3d 1222, 1236 (10th Cir. 2017); <i>Montana Environmental Information Center v. OSMRE</i>, 274 F.Supp.3d 1074, 1098 (D. Mont. 2017); <i>Sierra Club v. FERC</i>, 867 F.3d at 1375.</p> <p>Further, in <i>Western Organization of Resource Councils (WORC) v. BLM</i>, the court invalidated EISs for the Buffalo and Miles City resource management plans (RMPs) because BLM failed to consider a reasonable alternative that reduced the amount of coal made available under the plans. 2018 WL 1475470 at *9 (D. Mont. March 26, 2018). The court found that “BLM’s failure to consider any alternative that would decrease the amount of extractable coal available for leasing rendered inadequate the Buffalo EIS and Miles City EIS in violation of NEPA.” <i>Id.</i> at *9. The court explained, “BLM cannot acknowledge that climate change concerns defined, in part, the scope of the RMP revision while simultaneously foreclosing consideration of alternatives that would reduce the amount of available coal based upon deference to an earlier coal screening that failed to consider climate change.” <i>Id.</i> at *17. Similarly, in <i>Wilderness Workshop v. U.S. Bureau of Land Mgmt.</i>, the court found that BLM failed to consider reasonable alternatives by omitting any option that would meaningfully limit leasing and development within the planning area. 342 F. Supp. 3d 1145, 1167 (D. Colo. 2018).</p> <p>In its 2016 Final Guidance, CEQ instructed: “[w]hen conducting the analysis, an agency should compare the anticipated levels of GHG emissions from each alternative – including the no-action alternative – and mitigation actions to provide information to the public and enable the decision maker to make an informed choice.” It also instructed agencies to “consider reasonable alternatives and mitigation measures to reduce action-related GHG emissions or increase carbon sequestration in the same fashion as they consider alternatives and mitigation measures for any other environmental effects.”</p> <p>Conversely, BLM provides no analysis of the GHG emissions associated with each alternative. Instead BLM defers this analysis to an unknown later time:</p> <p>Because no specific potential pipeline projects are proposed, emissions by alternative cannot be quantified at this time; however, using surface disturbance as a proxy for fugitive dust and combustion emissions and GHGs, Alternative B would have the potential to generate the greatest amount of fugitive dust, combustion emissions, and GHGs, and Alternative C would have the potential to generate the least amount of fugitive dust, combustion emissions, and GHGs. Individual projects would require an analysis of impacts to air quality, including the quantification of emissions and determination of the need for a conformity analysis. Emissions of GHGs and production from EOR under the alternatives are not expected to differ significantly.166</p> <p>BLM’s failure to disclose the GHG emissions associated with each alternative makes it impossible for decisionmakers and the public to meaningfully analyze and differentiate among alternatives, including mitigation alternatives, to reduce GHG emissions and their implications for climate change, in violation of NEPA. And as previously discussed above, because so much uncertainty exists as to whether the CO2 pipelines would be net CO2 contributors or net CO2 negative, BLM must fully analyze an alternative that analyzes the impacts of the possible net CO2 outcomes and discuss how the impacts of a net CO2 contributor outcome would be avoided, minimized, and mitigated.</p>	<p>This EIS analyzes a planning decision to designate proposed corridors on BLM lands. The BLM has no WPCI specific information at this time but has provided its best estimate of emissions in Section 3.2. Site-specific NEPA would be conducted for future potential projects within the proposed corridors and would analyze GHG emissions in greater detail.</p>



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023	129	<p>VII. BLM Must Comply with The Endangered Species Act (ESA)</p> <p>A. Statutory requirements under the ESA</p> <p>The BLM has clear responsibilities under section 7(a)(1) and 7(a)(2) of the ESA. The BLM must consult with the USFWS to assure compliance with section 7 of the ESA. According to the DEIS, there are at least seventeen threatened, endangered candidate or proposed species within the project area. DEIS at 3-107 and 3-79. To ensure compliance with these Section 7(a)(2) prohibitions, the “action agency”—in this case BLM—must undergo a consultation process with USFWS upon proposing to authorize, fund, or carry out an action that “may affect” a species or its critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.02. A “may affect” determination is required when any “possible effect, whether beneficial, benign, adverse, or of an undetermined character” occurs. Center for Biological Diversity v. BLM, 698 F.3d 1101 (9th Cir. 2012). The consultation process ensures a rigorous review of the actions’ impacts on threatened and endangered species and serves as an independent check on the tendency of federal agencies to pursue their other goals and mandates at the expense of imperiled species. “Formal” consultation is required when the agency’s action is likely to “adversely affect” listed species or critical habitat. 50 C.F.R. §§ 402.13, 402.14(a). Formal consultation concludes with an USFWS biological opinion. In a biological opinion, FWS determines whether “jeopardy” or “adverse modification” is likely to occur due to the action and, if so, sets forth the reasonable and prudent alternatives that could avoid such ESA violations. 16 U.S.C. § 1536(b)(3)(A).</p> <p>In considering an agency’s proposed action, USFWS must identify the action area, the environmental baseline, and the effects of the action. The action area includes “all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action.” 50 C.F.R. § 402.02. The environmental baseline “includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area.” Id. The effects of the action include the direct, indirect, and cumulative effects to a species from the proposed agency action, as well as “interrelated and interdependent actions.” Id. (defining “effects of action”), Id. § 402.14(c)(4) &amp; (8). Direct impacts are caused by the action and occur at the same time and place. Id. § 402.02. Indirect impacts are those that are caused by the proposed action but are later in time and reasonably certain to occur. Id. Cumulative effects include “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” Id. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Id. Interdependent actions are those that have no independent utility apart from the action under consideration. Id. During the ESA consultation process and in developing a biological opinion, both USFWS and the BLM must use the best scientific and commercial data available. Id. § 1536(a)(2).</p> <p>Further, it is inappropriate for a programmatic biological opinion or concurrence to completely defer analysis of particular types of impacts to future site-specific consultations. Natural Resources Defense Council v. Kempthorne, 69 Env’t. Rep. Cas. (BNA) 1095, 2008 WL 5054115, *33 (E.D. Cal. 2008), superseded in part, 621 F. Supp. 2d 954 (E.D. Cal. 2009), decision clarified, 627 F. Supp. 2d 1212 (E.D. Cal. 2009), on reconsideration, 2009 WL 2424569 (E.D. Cal. 2009), aff’d on other grounds, 686 F.3d 1092 (9th Cir. 2012). Even in the limited circumstances where such “tiering” is appropriate under the ESA, site-specific actions must strictly conform to the programmatic documents to which they are tied. See, e.g., Center for Sierra Nevada Conservation v. U.S. Forest Service, 832 F. Supp. 2d 1138 (E.D. Cal. 2011) (invalidating tiered site-specific consultation because FS did not conduct analysis required by programmatic BiOp).</p>	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	130	<p>In addition to the Section 7(a)(2) prohibitions on agency actions, the ESA also prohibits agency actions that “take” threatened and endangered species. 16 U.S.C. § 1538(a)(2); 50 C.F.R. § 17.31(a). “Take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” 16 U.S.C. § 1532(19). ESA regulations further define “harm” as “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” 50 C.F.R. § 17.3.</p> <p>Congress created two “incidental take” exceptions to the take prohibition, including “incidental take statements” that are issued to federal agencies. 16 U.S.C. §§ 1536(b)(4)(A), 1536(o)(2). Like biological opinions, USFWS issues incidental take statements at the conclusion of the ESA section 7(a)(2) consultation process. Id. § 1536(b)(4)(A). FWS must issue incidental take statements if it (1) concludes in a biological opinion that the agency’s action will neither jeopardize the species nor destroy or adversely modify critical habitat, and (2) the agency action “may” take a listed species. 50 C.F.R. §§ 402.14(g)(7); 402.14(i)(1). An incidental take statement must (1) limit and quantify the amount of take, (2) specify the reasonable and prudent measures that USFWS considers necessary to minimize such impact, (3) set forth terms and conditions that must be complied with by the federal agency to implement these reasonable and prudent measures, and (4) establish monitoring and reporting requirements. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i). Any taking that exceeds the limits set forth in an incidental take statement triggers the need to immediately reinstitute consultation. See 50 C.F.R. § 402.16.</p> <p>In addition to the substantive and procedural requirements outlined above, BLM has affirmative responsibilities to develop species recovery programs under section 7(a)(1). Specifically, section 7(a)(1) requires all federal agencies, including BLM, to “conserve” listed species. 16 U.S.C.A. § 1536(a)(1). This means taking actions that will tend to increase endangered and threatened species’ populations. 16 U.S.C.A. § 1532(3). Section 7(a)(1) imposes more than just a generalized duty; it requires agencies to consult, develop programs, and “take whatever actions are required to ensure the survival of each [listed] species.” See, e.g., Sierra Club v. Glickman, 156 F.3d 606, 616 (5th Cir. 1998); see also Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257 (9th Cir. 1984), cert. denied, 470 U.S. 1083 (1985). BLM should meet these obligations by establishing enforceable and appropriate constraints in the DEIS and prescribing specific actions necessary or important to advancing conservation and recovery.</p>	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	131	<p>B. The BLM Fails to Comply with the ESA</p> <p>The DEIS makes little mention of a biological assessment or potential biological opinion for this proposal. In two places in the document, the BLM acknowledges that it has a duty under the ESA to consult with the U.S. Fish and Wildlife Service (USFWS) and that if the BLM determines that the proposal will affect federally listed or proposed endangered or threatened species or their designated critical habitat, the BLM will prepare a biological assessment “to identify the nature and extent of adverse impacts, and to recommend mitigation measures that would avoid the habitat and/or species or that would reduce the potential impact to acceptable levels. DEIS at A-4 and pdf 24-25. The BLM in the DEIS does not provide any further information about USFWS consultation including whether the BLM is preparing a biological assessment (BA), or if the BLM has initiated formal consultation, even though the DEIS clearly expresses that federally listed or proposed species will be affected. DEIS at 3-107.</p>	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	132	<p>Further, in a few places, the DEIS appears to inappropriately defer USFWS consultation to subsequent NEPA processes for specific pipeline projects. See, e.g., DEIS at 3-79 (“Individual projects proposed within any future corridor established under this initiative would first evaluate the suitability of habitats to support listed species. Where the BLM determines the proposed project and prospective pipeline may affect a listed or proposed species or its designated or proposed critical habitat, the BLM must initiate Section 7 consultation with the USFWS.”)</p> <p>The BLM fails to meet its responsibilities under Section 7(a)(2) of the ESA. It appears that the BLM has not initiated formal consultation despite the fact that listed species will be adversely affected by the proposed ROW authorizations, and it appears that the BLM is unlawfully deferring USFWS consultation to subsequent pipeline projects. The BLM must conduct the necessary analysis and share any consultation documentation with the public as early as possible, but no later than the release of the FEIS. BLM must also engage in project-specific consultation.</p>	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	133	<p>Further, we do not see evidence in the DEIS that BLM is meeting its to develop species recovery programs under section 7(a)(1). Given the amount of habitat destruction and fragmentation that will result from authorizing a state-wide network of pipeline corridors, the BLM must take affirmative steps to advance the conservation and recovery of affected listed species.</p>	BLM is currently preparing a Biological Assessment in coordination with the USFWS. The resulting determinations will be incorporated by reference.
023	134	<p>As we described at the outset of this letter, BLM should halt the WPCI effort. Furthermore, the WPCI DEIS fails to meet BLM’s legal obligations under NEPA and its implementing regulations, FLPMA, the APA, the Endangered Species Act, and other laws and must be remedied prior to issuance of a FEIS.</p>	Comment noted.
023	135	<p>Thank you again for this opportunity to assist BLM during the NEPA process. The groups below respectfully request to be notified of all future public comment opportunities related to the WPCI Project, the availability of any NEPA analysis BLM undertakes in relationship to it, and BLM’s decisions related to it, pursuant to 40 C.F.R. § 1506.6.</p>	Comment noted.
024	001	<p>We have reviewed the Wyoming Pipeline Corridor Initiative Project Draft Environmental Impact Statement (DEIS). By any measure, the proposal is significant, both environmentally and economically. 2,000 miles of new pipelines, about a half of which are on private surface lands, will impact any number of land, air, and water resources in the state</p>	Comment noted.



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024	002	This is the first project of its kind that we have seen where the BLM has reviewed a proposal from the State of Wyoming. Q&A at the virtual public meeting confirmed that no pipeline proponent has applied to build a pipeline in any of the proposed designated corridors so at this time Wyoming's pipeline map is theoretical in nature. Purpose & Need: BLM states it purpose and need as follows: "The need for the BLM action is to respond to the State of Wyoming Governor's Office project proposal and to support future development of CCUS and EOR through the development of infrastructure to existing oil fields within the state of Wyoming." However, the Governor's Office is not actually proposing a project and therefore there is not anything before the BLM to review or act upon in terms of an actual project necessitating NEPA analysis.	As stated in Section 1.3, "The purpose for the BLM action is to designate corridors for the preferred location of future pipelines associated with the transport of CO2, EOR products, and other compatible uses, and to incorporate the designated corridors into the various BLM RMPs within the state of Wyoming. The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis. The BLM action responds to the need to reverse the downward trend of declining oil production by stimulating economic development through EOR. Within the state, CO2 sources are abundant, but current constraints impacting increased CO2 flooding center around a limited network and capacity of CO2 pipelines."
024	003	Additionally, many of the sources of CO2 identified in the proposal are not actually sources of CO2. For instance, the coal-fired power plants identified as sources of CO2 do not have carbon capture currently in place, nor are there ready for construction and operation carbon capture projects in permitting or development at those coal-fired power plants. Carbon capture at Wyoming's older power plants, such as the Dave Johnston and Jim Bridger power plants, face any number of economic, engineering, and environmental obstacles. We refer BLM to a recent report prepared by the Institute for Energy Economics and Financial Analysis that explains the challenges for carbon capture at these coal-fired power plants. Please see the report available at: 2 <a href="https://ieefa.org/wp-content/uploads/2020/06/IEEFA-Public-Comments-on-Rocky-Mountain-Power-2019-Integrated-Resource-Plan_April-2020.pdf">https://ieefa.org/wp-content/uploads/2020/06/IEEFA-Public-Comments-on-Rocky-Mountain-Power-2019-Integrated-Resource-Plan_April-2020.pdf</a> and please consider it incorporated by reference into these comments. Therefore, we question the purpose and need for the project and ask BLM to withdraw this programmatic document and instead to consider site-specific pipeline projects when they come forward from project developers.	BLM has acknowledged that the total supply, cost of CO <sub>2</sub> (which could include retrofitting existing plants) and pipeline capacity would likely determine where additional production can be realized using CO <sub>2</sub> -EOR. We refer the reader to Section 3.9.3 for a discussion of existing and potential future sources of CO <sub>2</sub> .
024	004	Eminent Domain & Private Land Use Impacts: BLM's DEIS is deficient because it provides only a passing, and inaccurate, description of eminent domain, which is a significant impact for private landowners. On page 3-34 of the DEIS, "Invocation of eminent domain for future potential development on private lands is not expected but could occur if the U.S. government, states, municipalities, or assignors thereof (such as utility companies) were involved in a proposed project and if the project was determined to be for the greater good of the public." This is an inaccurate statement because in Wyoming, private companies can exercise eminent domain powers to build pipelines. Additionally, there is no discussion about eminent domain impacts or possibilities in Chapter 4 of the DEIS.	The possible use of eminent domain is impermissibly speculative and outside the decision authority of the BLM. There are no projects or activities to analyze or decisions by Field Managers to determine if future activities are in the interests of the public (and, therefore, no way to determine if eminent domain is applicable).
024	005	Tiering & Future NEPA Analysis: The DEIS states "The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis." However, it does not explain what future NEPA documents will be required. Given the myriad of environmental impacts associated with building large and long pipelines, and because of the uncertainty contained within this broad-scope programmatic proposal, we believe BLM must commit to the very least providing a public comment period of no less than forty-five days for any future NEPA document (whether that be an EIS or EA).	The BLM has conducted stakeholder and public outreach for this EIS through scoping and the draft EIS public comment period. The BLM will continue to seek input through the final EIS, Governor's consistency review and protest period from stakeholders and the public including pipeline development companies, grazing permittees, and agriculture producers. Additionally, the BLM would continue to seek public input for future site-specific NEPA for any future development in the proposed corridors as required under NEPA.
024	006	Water & Erosion Concerns: Our landowner members have experienced pipelines becoming exposed because of erosion. We ask that BLM prohibit pipelines under or through streams and rivers and prohibit pipelines in areas with sensitive soils prone to erosion. These areas are already mapped in agency RMPs.	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
025	001	The WCCA applauds the State of Wyoming for bringing this proposal and the BLM for analyzing and considering it. The WCCA strongly supports the WPCI. In Wyoming, there are both providers of carbon dioxide and ready customers. Connecting CO2 sources in the state with oil and gas reserves in need of enhanced recovery will benefit Wyoming counties and their economies. Because it best meets the counties' needs and objectives, the WCCA supports Alternative B (Proposed Action) with some exceptions, described below.	Comment noted.
025	002	WCCA does not support Alternatives A or C.	Comment noted.
025	003	In addition to the comments below, please consider any comments submitted by Wyoming counties, which are incorporated by reference here and control if inconsistent with the following. I. Generally, the WCCA supports the Proposed Action but agrees with several of Alternative D's adjustments. The WCCA generally supports the Proposed Action. While the WCCA recognizes the need to avoid resource impacts, especially impacts to Greater sage-grouse habitat, the Proposed Action provides a more appropriate route in certain segments, reducing overall surface impacts and the cost of installing pipeline infrastructure. The following is a list of specific corridor segments and route recommendations. If a segment is not addressed below, the WCCA supports the segment as presented in Alternative B or D	Comment noted.
025	004	Segment 1 The northern reach of Segment 1, as the State proposed, follows an existing RMP designated corridor and should remain along the route in the Proposed Action.	Segment 1D was rerouted to the west to align it with and existing BLM corridor. There is no existing designated BLM corridor to the east of Fontenelle Reservoir, this area is managed for visual resources, and a new corridor in this area would be incompatible with management objectives.
025	005	Segment 3 The WCCA supports the route as identified in the Proposed Action. The mapping variations proposed in Alternative D throughout this segment contain existing roads and other infrastructure. The Proposed Action better accounts for and avoids this infrastructure.	Comment noted.
025	006	Segment 5 The WCCA asks the BLM to retain this route as presented in the Proposed Action. This segment provides connectivity to one of Wyoming's larges sources of CO2. The Proposed Action directly parallels the Denbury Pipeline, which has already been analyzed and approved by an EIS. Accordingly, any new pipelines that originate in the LaBarge area should seek to parallel this existing project. Moreover, the WCCA disagrees with the BLM's proposal to terminate this segment in Sublette County. While the WCCA understands that the BLM proposed to terminate this segment to avoid Greater sage-grouse core area, it is unrealistic to assume that linear infrastructure can fully avoid core areas in all instances. Instead, the BLM should incentivize development in a confined corridor through core area by authorizing Segment 5, as proposed. Any future project proponent will weigh potential resource impacts and associated mitigation costs that may accompany development in core area.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.

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025	007	Segment 6 The WCCA agrees that, because of potential resource conflicts, modification of Segment 6 is appropriate. WCCA supports Alternative D with the following exception. WCCA asks that Alternative D be realigned in T30N R78W and T30N R77W to avoid U.S. Forest Service lands and additional associated permitting and analysis requirements for future developers.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	008	Segment 9 The WCCA asks the BLM to retain Segment 9 as presented in the Proposed Action. While many of the Alternative D mapping variations are minor, they shift the corridor into locations that already contain multiple pipelines. The Proposed Action better accounts for this existing infrastructure and parallels it.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	009	Segment 10 The WCCA asks the BLM to retain Segment 10 as presented in the Proposed Action. Segment 10, as the State proposed, follows an existing RMP designated corridor (Cabin Creek Corridor – Casper RMP). The Proposed Action also parallels existing infrastructure.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	010	Segments 11 and 12 The WCCA asks the BLM to retain Segments 11 and 12 as presented in the Proposed Action. The mapping variations in Alternative D will result in unnecessary impacts to privately owned irrigated farmlands and heavily populated residential and industrial areas around Casper.	The development of alternatives C and D are described in Section 2.4. Segments 11 and 12 were revised to collocate them in existing designated BLM corridors to avoid greater sage-grouse core areas.
025	011	Segment 13 WCCA asks the BLM to retain the route presented in the Proposed Action.	Comment noted.
025	012	Segment 14 WCCA asks the BLM to retain the route presented in the Proposed Action.	Comment noted.
025	013	Segment 16 WCCA asks the BLM to retain the route presented in the Proposed Action.	Comment noted.
025	014	Segment 17 The WCCA asks the BLM to retain Segment 17 as presented in the Proposed Action. While a portion of the Proposed Action does deviate from RMP designated corridor, that deviation reduces impacts that are not accounted for in Alternative D. Where the Proposed Action is outside of RMP designated corridor, it parallels existing pipeline infrastructure. Conversely, where Alternative D remains within the existing RMP designated corridor, there is no existing infrastructure. Additionally, Alternative D would result in unnecessary impacts to privately owned irrigated farmlands, as well as to riparian habitats along the Powder River.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	015	Segment 18 WCCA asks the BLM to retain the route presented in the Proposed Action.	Comment noted.
025	016	Segment 20 The WCCA asks the BLM to retain Segment 20 as presented in the Proposed Action. The mapping variations in Alternative D in T46N R94W unnecessarily intersect a developed area on private lands. The mapping variation in Alternative D, T47N R94W unnecessarily intersects a topographic feature that would make construction unfeasible.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	017	Segment 21 The WCCA asks the BLM to retain Segment 21 as presented in the Proposed Action. The mapping variations in Alternative D will cause unnecessary impacts to privately owned irrigated farmlands. If realignment is necessary, BLM should consider paralleling the existing pipeline infrastructure in T54N R101W and T55N R101W until it intersects the Proposed Action.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	018	Segment 22 The WCCA supports Alternative D with one exception—where Alternative D realigns in T52N R93W and T52N R94W it unnecessarily intersects privately owned irrigated farmland. The Proposed Action better accounts for and avoids this conflict.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	019	Segment 23 The WCCA asks the BLM to retain Segment 23 as presented in the Proposed Action. The Alternative D mapping variation in T50N R102W is unnecessary and moves Segment 23 into riparian habitats that the Proposed Action avoids.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	020	Segment 25 The WCCA asks the BLM to retain Segment 25 as presented in the Proposed Action with one exception—the Alternative D mapping variation in T56N R93W is routed on top of HWY 14. The Proposed Action avoids this conflict.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
025	021	II. The DEIS incorrectly characterizes the Proposed Action and alternatives as “adding” corridors instead of simply reserving and redesignating a portion of existing corridors Throughout the DEIS, the BLM states that, under the Proposed Action, large acreages of pipeline corridors will be “added” to RMPs. This is not true. Under the Proposed Action, 65% of the proposed corridors are located within already-designated RMP corridors. The State simply asks that this portion of existing corridors be reserved for CO2 and compatible uses. These pipelines corridors are not in addition to corridors already identified in the RMPs. The DEIS should be revised to accurately describe the Proposed Action. The WCCA asks that the Final EIS reflect this distinction.	Changed 'add' to 'designate'; however, the analysis includes changing the management of the corridors in Alternative B and Alternative D. To quantify this change, the amount of acres that would be managed differently from what is currently in the various RMPs.
025	022	III. The DEIS incorrectly states impacts to agricultural lands under Alternative B and D The BLM should revise the DEIS to accurately reflect the impact Alternatives B and D would have on agricultural lands. Alternative B would impact 62% less privately owned agricultural lands than Alternative D thereby avoiding impacts to private property.	Section 3.7.9.2 of the final EIS has been revised.

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025	023	IV. Include a more detailed review of relevant county land use and natural resource plans in the Final EIS Pursuant to provisions in the National Environmental Policy Act (NEPA) and its implementing regulations, the WCCA asks that the BLM expand its review of county natural resource plans.1 The NEPA requires that a federal agency “cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements.”2 Federal agencies must discuss any inconsistencies between a proposed action and state and local plans and include in an EIS a description of the extent to which the agency would harmonize its proposed action with the local law or plan3. The summary provided in the DEIS does not sufficiently review or consider inconsistencies between the alternatives presented and county land use and natural resource plans. WCCA asks that the BLM provide a list of county land use and natural resource plans reviewed, a summary of relevant provisions of those plans and whether those provisions are consistent with each alternative. NEPA’s consistency reviews must be more than a single, simple paragraph. If the BLM needs any assistance identifying pertinent plans or reviewing them for consistency, please do not hesitate to reach out to WCCA or individual counties	The analysis in the WPCI EIS is sufficient in that the land use plans were reviewed, and no inconsistencies were noted. This EIS will also go through Governor’s consistency review, and the BLM will continue to coordinate with counties as needed.
026	001	PAW supports the goal of the WPCI to facilitate the development of corridors that can be utilized for carbon transportation. Continued development of Wyoming’s legacy oil fields and even prospective projects within the Powder River Basin are dependent, in part, on the ability to move carbon from the source to the field for enhanced oil recovery uses.	Comment noted.
026	002	With respect to the specific routing and on-the-ground analysis of each individual segment, PAW agrees with and supports the State of Wyoming’s proposal (Alternative B). The state’s proposal was years in the making and is the most accurate with respect to appropriate routes that meet the needs of projects, wildlife protections, valid existing rights, and other resource conflicts. The Bureau of Land Management should defer to the state’s knowledge and analysis when it comes to on-the-ground decisions of routing.	Comment noted.
026	003	While PAW applauds the goal of the WPCI and supports the State of Wyoming’s proposed action with regard to route analysis, we are disappointed that only the most restrictive alternative measured by segment removals and reroutes (Alternative C) includes the least restrictive requirements measured by access to corridors for uses beyond CO2. However, even Alternative C only allows for existing corridors to remain available for multiple use. As mentioned in our comments of December 20, 2019, we remain concerned that designating portions, or the entirety, of a corridor for one exclusive use is not compatible with the Federal Land Management and Policy Act. Further, as technological advances continue and market demands shift, an exclusive use corridor does not provide the flexibility that may become necessary and apparent for future project proponents or state-led policy goals. Both Alternative B and D include the phrase “other compatible” uses when discussing the restrictions to corridor access, but nowhere is that phrase defined.	EIS Chapter 2 has been revised to provide clarification about compatible uses that may be considered within the designated corridors. Compatible uses would be allowed under Alternatives B, C, and D.
026	004	The exclusivity of corridors could also result in the unintended consequence of increasing the costs on project proponents on the roughly 36% of corridors in Alternatives B and D that are privately owned. PAW agrees with and understands Wyoming’s desire to minimize land use impacts and reduce scattered approach to pipeline developments. Offering incentives and a streamlined approval process for using pre-existing or pre-designated corridors could have benefits in reducing costs.	Comment noted.
026	005	However, introducing exclusive corridors and exclusive segments of corridors adds another potential layer of inflexibility on project proponents if doing so limits proponents from seeking other routes in the future. If a proponent’s only option is to cross through a privately owned section such that either end connects to a pre-determined 300-foot wide approved and exclusive corridor, very little leeway remains to negotiate acceptable agreements on land use with private owners. Absent sufficient eminent domain authority, advancement of the state goal of carbon capture, utilization, and storage could be inadvertently stymied.	Comment noted.
027	001	In their December 20, 2019 public scoping comment letter to BLM, PCW and TransWest identified conflicts between the proposed WPCI pipeline corridors and the existing BLM right-of-way authorizations and private land easements held by PCW and TransWest for the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project) and the TransWest Express Transmission Project (TWE Project), respectively. These conflicts primarily occur south of the City of Rawlins and Town of Sinclair, in Carbon County, Wyoming. These conflicts are not resolved in any of the action alternatives presented in the Draft EIS and must be adequately addressed by BLM prior to the designation of the WPCI pipeline corridors.	To the extent possible, the BLM did adjust the alignments of Alternative D to occur outside these existing rights.
027	002	The Preferred Alternative still conflicts with valid, existing rights PCW and TransWest have reviewed BLM’s Agency Preferred Alternative, Alternative D, in the Draft EIS. Conflicts with PCW and TransWest’s valid, existing rights have not been resolved under Alternative D. Therefore, we do not support Alternative D as it relates to the Segment 2 lateral line in the vicinity of Rawlins/Sinclair and we request that this corridor be reevaluated in the Final EIS to determine its feasibility.	To the extent possible, the BLM did adjust the alignments of Alternative D to occur outside these existing rights.
027	003	We appreciate that the Alternative D corridor for Segment 2 appears to potentially reduce the conflicts with valid, existing rights as compared to the Proposed Action, Alternative B. However, as shown on the attached map, Alternative D still cuts through portions of the CCSM Project’s West Sinclair Rail Facility and requires multiple crossings of other pipelines, communication lines and electric transmission lines in the area, including the TWE Project. This is concerning for many reasons, especially since the Draft EIS acknowledges that, compared to the proposed action, Alternative D only has “slightly less potential to affect development of other linear infrastructure, such as transmission lines, and the exercise of valid, existing rights” (Draft EIS, p. 3-68). Based on this statement, it appears that BLM is considering authorizing WPCI pipeline corridors that are in conflict with or that interfere with the exercise of valid, existing rights for numerous other large, critical infrastructure projects. Interfering with valid, existing rights for previously authorized projects is certainly not in the public interest and is at odds with current policies to support and stimulate infrastructure investments.	The BLM reviewed the GIS shapefiles available for the CCSM Project when identifying corridor alternatives presented in the DEIS. The corridors would not remove valid existing rights or previous authorizations granted by the BLM. Any future proposed pipeline to use the designated corridors would have to accommodate existing infrastructure and operations during site-specific authorization through pipeline rerouting or other means.
027	004	As stated in our public scoping letter, PCW and TransWest have invested hundreds of millions of dollars in the development and construction of their respective energy infrastructure projects. In the Draft EIS, the BLM stated that only “activities like grazing, recreation and other uses can occur on top of a pipeline corridor. Other things, such as transmission lines that could cause a physical impediment to constructing a future pipeline would not likely be authorized in the corridor” (Public Meetings Question and Answer Report, p. 3-6). It does not make sense – neither for the BLM nor for future project-specific right-of-way applicants – to create a new pipeline corridor that runs under already-approved infrastructure that the BLM has determined is incompatible with the CO2 and Enhanced Oilfield Recovery (EOR) pipelines that may be located in that corridor.	The corridors would not remove valid existing rights or previous authorizations granted by the BLM. Any future proposed pipeline to use the designated corridors would have to accommodate existing infrastructure and operations during site-specific authorization through pipeline rerouting or other means.
027	005	At a minimum, the Segment 2 corridor currently south of Rawlins/Sinclair should be realigned to avoid all conflicts with the CCSM Project and be realigned to cross the existing and planned linear infrastructure, including the TWE Project, in just one location, instead of crossing in three locations within two miles as is currently contemplated (see attached map). Early avoidance of conflicts between the WPCI corridors and current and authorized infrastructure within this well-established corridor will help better achieve the goal of feasible, functional pipeline corridors that can realistically be used by future project-specific proposals. Multiple crossings of multiple existing linear facilities would either be technically infeasible or would add significant, potentially prohibitive cost to future WPCI project developers.	The BLM reviewed the GIS shapefiles available for the CCSM Project when identifying corridor alternatives presented in the DEIS. The corridors would not remove valid existing rights or previous authorizations granted by the BLM. Any future proposed pipeline to use the designated corridors would have to accommodate existing infrastructure and operations during site-specific authorization through pipeline rerouting or other means.
027	006	Need to analyze a greater range of reasonable alternatives All action alternatives proposed by BLM for the Segment 2 lateral line continue to conflict with valid, existing rights; additional alternatives should be developed and analyzed to provide a reasonable range of alternatives for this segment.	Thank you for your comment. As described in Chapter 2, the BLM considered a range of alternatives. Alternatives C and D were both developed with an aim of addressing conflicts with valid existing rights.
027	007	Given the extensive conflicts with existing, authorized and planned infrastructure and current right-of-way grants, PCW and TransWest reiterate their public scoping comment that BLM consider alternative routes for the WPCI corridors currently proposed south of Rawlins.	Thank you for your comment. The BLM has considered all scoping comments received in developing the alternatives and the draft EIS. The final scoping report is included as Appendix C of the EIS.

Comment Letter Number	Comment Number	Comment	Response
027	008	Due to the congestion on the south side of the I-80 utility corridor, which PCW and TransWest believe is at or near capacity between Sinclair and Rawlins, we again encourage BLM to develop alternative WPCI corridors, as well as any new Resource Management Plan (RMP) utility corridors, north of Sinclair and/or Rawlins. This is a very relevant issue that was not addressed in the scope of the environmental analysis. We did not see any explanation for why creating a new corridor on the north side of Interstate 80 was not explored or analyzed, nor was the concept addressed in Section 2.3, "Alternatives considered but eliminated from detailed analysis."	The BLM reviewed potential alternatives north of Interstate 80, but those options were considered infeasible due to the lack of existing pipeline corridors and the presence of other resource conflicts, such as greater sage-grouse PHMA.
027	009	The Draft EIS does not include or analyze a reasonable or adequate range of alternatives in the vicinity of Sinclair and Rawlins, especially when all of the corresponding and connecting WPCI corridors lie north of Interstate 80, nor does it explain in detail which alternatives may have been considered and why they were not carried forward. The BLM offers no explanation of why an alternative north of Sinclair and Rawlins, as suggested by PCW and TransWest during scoping, is not practical or feasible from a technical or economic standpoint and using common sense. (See "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act"). These items should be addressed in the Final EIS as this is a potentially fatal flaw in BLM's National Environmental Policy Act (NEPA) analysis.	The BLM reviewed potential alternatives north of Interstate 80, but those options were considered infeasible due to the lack of existing pipeline corridors and the presence of other resource conflicts, such as greater sage-grouse PHMA.
027	010	Need to evaluate if the corridors are in the public interest There is a conflict with BLM's multiple-use mandate under the Federal Land Policy and Management Act (FLPMA) if BLM intends to "reserve" lands only for use by a certain set of project types, and for projects that are speculative in nature. The BLM says it has not "received any applications or interest in relation to the Proposed Action" (Public Meetings Question and Answer Report, p. 3-9) and it may be that the BLM never receives any applications for the transport of CO2, EOR products, and other compatible uses. Reserving corridors for the exclusive use of pipelines that have not been proposed and may never be built at the expense of exercising valid, existing rights is questionable policy and is certainly not in the public interest.	The BLM is charged with managing public lands under a multiple-use mandate, but recognized in Section 103(c) of FLPMA, multiple uses may not always occur on the same piece of land and uses may shift over time. The BLM balances various uses and land classifications through its land use planning process to ensure an appropriate mix of uses is provided. The need to accommodate pipeline corridors on the public lands in Wyoming have necessitated examination and rebalancing of competing uses. The designation of corridors would be managed to address conflicts with valid existing rights.
027	011	If the BLM does move forward with reserving land that can only be used by a certain set of project types and other uses that the BLM deems as "compatible," then it makes sense to consider and evaluate placing this incompatible infrastructure into a new corridor, especially in the vicinity of the already congested I-80 corridor, so as not to preclude other project proponents from applying for rights-of-way or exercising their rights in the currently designated utility corridors.	Comment noted.
027	012	The BLM should provide equivalent estimates of the revenue that could be lost to Wyoming, should other types of linear projects or other projects be blocked from using portions of the now-"reserved" utility corridor. Socioeconomic benefits and estimates for authorized projects could be obtained from the Gateway South Transmission Project EIS or the TWE Project EIS, for example.	The analysis of potential opportunity costs is outside the scope of the analysis. Direct economic impacts from future pipeline construction and operations are unknown because specifics of future projects are unknown. It would be similarly speculative to provide estimates of potential opportunity costs. However, we did note that potential future conflicts could result in lost jobs and revenue from the construction and operation of other linear infrastructure, should they occur. Additionally, we noted that private property owners could be impacted by having fewer negotiating opportunities in Section 3.14.6.1
027	013	Need to strengthen socioeconomic analysis If the BLM does move forward with reserving land for speculative projects in the currently designated utility corridors, the socioeconomics section of the Draft EIS says this may reduce the ability of other types of projects to provide economic benefits to Wyoming. For example, Section 3.14.9 says: Designation of the proposed corridors for the transport of CO2, EOR products, and other compatible uses could directly affect other economic activities in Wyoming due to potential conflicts with the development of other linear infrastructure and valid existing rights. (p. 3-68, emphasis added) The Draft EIS provides an estimate of potential indirect economic effects from pipeline construction: In the Riley Ridge example, each mile of pipeline constructed was estimated to also provide an estimated \$782,000 in regional economic output and \$277,000 in labor earnings, including direct, indirect, and induced economic activity. Construction activity was also estimated to produce an estimated \$6,000 in annual state and local tax revenues from sales taxes and lodging taxes per mile of pipeline construction. (p. 3-64 The socioeconomic analysis should also be expanded to estimate the revenues potentially lost to private landowners, who may not be able to benefit from the highest and best use of their private lands by selling easements to developers of other types of energy or infrastructure projects, because they will in effect only be allowed to sell easements to any future CO2 or EOR pipeline proponents in that location. Knowing that the private land use will be restricted in a "reserved" corridor is likely to lead to less negotiating ability for the private landowner and potentially less easement income for the private landowner – a private lands impact that should be considered in the Final EIS.	The analysis of potential opportunity costs is outside the scope of the analysis. Direct economic impacts from future pipeline construction and operations are unknown because specifics of future projects are unknown. It would be similarly speculative to provide estimates of potential opportunity costs. However, we did note that potential future conflicts could result in lost jobs and revenue from the construction and operation of other linear infrastructure, should they occur. Additionally, we noted that private property owners could be impacted by having fewer negotiating opportunities.
027	014	Technical updates In Appendix H, Reasonably Foreseeable Future Actions, Table H-1, page H-7, the CCSM Project is listed among the projects in the Rawlins Field Office. However, the information under "project description" and under "status" are outdated and should be updated to reflect current information. For example, "status" should be updated to say that the site-specific analysis is in fact complete, not "undergoing the NEPA process," and that project construction commenced in 2016. A more current, updated description of the CCSM Project can also be found in the site-specific NEPA analysis documents recently completed for the project.	CCSM project status has been updated in the EIS.
028	001	Project). The general comments pertain to the Proposed Project concept and scope, document comments to the "Wyoming Pipeline Corridor Initiative State of Wyoming Proposal" and site-specific comments pertain to the three segments within the SER CD, segments 2, 6, and 7.  Our comments are specific to our mission as a local government entity within the project area: "develop and direct programs to promote long-term conservation and enhancement of our natural resources while contributing to the economic stability of the district and its residents." As this project impacts the conservation of our natural resources and the stability of the district and residents, we believe it is important you continue to inform us of proposed actions and decisions for the Proposed Project. Conservation districts are the only local government charged, specifically by state statute, with natural resource management. District supervisors serve as the grass roots representatives of private landowners and the general public, providing leadership and direction in natural resource conservation programs. We appreciate the continued opportunity to express the importance of pertinent issues and concerns on the Proposed Project.	The BLM has conducted stakeholder and public outreach for this EIS through scoping and the draft EIS public comment period. The BLM will continue to seek input through the final EIS, Governor's consistency review and protest period from stakeholders and the public including pipeline development companies, grazing permittees, and agriculture producers. Additionally, the BLM would continue to seek public input for future site-specific NEPA for any future development in the proposed corridors, as required under NEPA.

Comment Letter Number	Comment Number	Comment	Response
028	002	<p>SER CD’s comments are based upon the Long Range Land Use and Natural Resource Management Plan for SER CD 2017-2021 (SER CD Long Range Plan) that includes policy statements developed, open for public comment, adopted by the SER CD Board of Supervisors, and filed with the Carbon County Clerk. SER CD Long Range Plan policy statements related to the Proposed Project include the following list of generally applicable policies:</p> <p>Policy Agriculture #1: The District recognizes that agricultural land and subsequent operations are primarily responsible for the economic stability of the District and its residents both as an economic driver and as a conservation strategy. Therefore, the District, in agreement with Carbon County, works to retain ranching and agriculture as the preferred land uses in rural areas (Carbon County 2012).</p> <p>Policy District Operations/Education #2: The District requests that all federal actions occurring within the District requiring NEPA documentation and processes include and invite the District to be a part of that process as a Cooperating Agency. The District at its discretion, within its authority and resources available will consider the federal invitation and respond in writing to those projects which we feel we can be a productive team member.</p> <p>Policy District Operations/Education #3: The District will cooperate and consult with Cooperators and residents of the District, and the several public institutions/government agencies in the conservation of the water, soil, plants and wildlife resources in the District, within budgetary constraints.</p> <p>Policy District Operations/Education #4: The District will provide technical and material assistance in an equitable fashion to the Cooperators of the District, within budgetary constraints.</p> <p>Policy District Operations/Education #5: The District will review, analyze and comment, when possible, on all local, state and federal legislation, rules and regulations promulgated or revised that may have an effect on the District Long Range Land Use and Natural Resource Management Plan and our Cooperators.</p> <p>Policy Ecosystem Services #3: The District, in agreement with Carbon County, wants to sustain scenic areas, wildlife habitat, and other important open spaces (Carbon County 2012).</p> <p>Policy Energy #4: The District supports local, state, and federal agencies in requiring proper construction, maintenance, and reclamation of transportation corridors such as access roads, pipelines, transmission lines, etc. to prevent resource deterioration.</p> <p>Policy Private Property Rights #1: The District will defend all Constitutional private property rights in local, state, and federal agency policies, regulations, rules, and actions.</p> <p>Policy Socio-economics #1: Achieve an economic balance between all the drivers of the local economy for all land uses in the District directly or indirectly pertaining to economic growth and quality of life.</p> <p>Policy Socio-economics #2: Protect the custom and culture of the citizens of the District and to provide for community stability. The District promotes wildlife conservation, sustainability of healthy wildlife habitat and populations, and their contributions to the local economy.</p> <p>Policy Range #6: The District supports and strongly encourages the control of noxious weeds and pests by owners, managers, and users of all lands.</p>	Comment noted.
028	003	The SER CD supports collocating any newly designated corridors from the Proposed Project with existing statewide utility corridors or with Region 4 Section 368 Energy Corridors. Collocating will not only minimize the aggregate impact of future projects on federal lands, but on private and state lands too. These exiting corridors have roads that could be used for more purposes and reduce the need for additional habitat fragmentation, expanded reclamation challenges, and reduce additional noxious weed infestation opportunities.	Comment noted.
028	004	“Other compatible uses” needs to be defined. This term is very vague, and we believe it is used as a “feel good” statement to provide the Proposed Project to appear as not being as restrictive in nature. Who gets to decide compatibility? What are the limitations for saying a project is compatible? Leaving the term as it is will allow for decision makers throughout the field offices to make different decisions as to what is compatible or not. The SER CD believes using this term without it being defined could provide an opportunity for a legal challenge.	EIS Chapter 2 has been revised to provide clarification about compatible uses that may be considered within the designated corridors.
028	005	The SER CD supports the idea of transporting Carbon Dioxide (CO2) and Enhanced Oil Recovery (EOR) products using exiting corridors. We do not support reserving a portion of existing corridors for the sole purpose of transportation of CO2, EOR products, or other “compatible uses”. These products can already be transported in existing corridors after the appropriate project-specific National Environmental Policy Act (NEPA) is completed. Specific project proponents would have the best knowledge of where pipelines for CO2 and EOR products should occur.	Comment noted.
028	006	The SER CD is concerned with continued habitat fragmentation within the district including developing new installation roads, operation and maintenance roads, increasing native range disturbance, and expanding the spread of noxious/invasive plants as supported by SER CD Long Range Plan, Policy Wildlife #1: “The District promotes wildlife conservation, sustainability of healthy wildlife habitat and populations, and their contributions to the local economy.” and Policy Range #6: “The District supports and strongly encourages the control of noxious weeds and pests by owners, managers, and users of all lands.”	Impacts to habitat including fragmentation and wildlife disturbance are disclosed in Sections 3.17 and 3.21.
028	007	The SER CD supports the approach of using the existing Rights of Way stipulations from the applicable field office Resource Management Plan for any corridor designated through this Proposed Project.	Comment noted.
028	008	The SER CD supports Alternative A: No Action. Carbon Dioxide (CO2) and Enhanced Oil Recovery (EOR) products can already be transported in existing corridors after the appropriate National Environmental Policy Act (NEPA) is completed. Specific project proponents would have the best knowledge of where pipelines for CO2 and EOR products should occur and future projects may or may not propose using the corridors proposed in Alternatives B, C, or D.	Comment noted.
028	009	The SER CD does not support the Agency Preferred Alternative as it is currently written. We support the segment adjustments in Alternative D, but we do not support reserving a portion of existing corridors for the sole purpose of transportation of CO2, EOR products, or other “compatible uses”.	Comment noted.
028	010	We support segment 6 location in alternative D with the exception that it be realigned in T30N R78W and T30N R77W to avoid U.S. Forest Service lands that would lead to additional associated permitting and analysis requirements for future developers.	The BLM has analyzed several alternatives and, based on this analysis, a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
028	011	<p>Of the 3 Action Alternatives, the SER CD prefers Alternative C because it does not reserve a portion of existing corridors for the sole purpose of transportation of CO2, EOR products, or other “compatible uses”.</p> <p>a. We support maximizing the use of existing corridors and NOT reserve a portion of those corridors exclusively for CO2 and EOR products.</p> <p>b. We also prefer alternative C because compared to alternatives B and D, alternative C has the least new disturbance and potential for additional habitat fragmentation with: the fewest acres of soils with high wind and water erodibility potential; the smallest direct impact acquisition of agricultural lands; the least acreage-wise impacts of temporary loss of forage (AUMs); the least disturbance to shrublands and grasslands; less potential for weed spread, the least impacts to VRM Class I lands; less potential for negative water quality impacts from sedimentation, turbidity and salinity; and the potential to generate the least amount of fugitive dust, combustion emissions, and green-house gases.</p> <p>c. Concerns of invasive plant and noxious weed infestations are of paramount concern. SER CD Range Policy #6 and the associated objective to “reduce the distribution of noxious weeds and aggressively treat new invaders” becomes a larger task with more disturbance.</p> <p>d. An increase in disturbance also directly correlates with an increase in erosion – wind and water. Water erosion can then lead to water quality problems.</p>	Appendix E of the EIS includes resource specific stipulations, WPCI design features, best management practices (BMPs), and mitigation measures compiled from all nine RMPs that would be applied to minimize impacts. Site-specific mitigation would be developed if required as a part of subsequent NEPA analysis for development of the corridors.
028	012	The Special-Status Plant Species narratives for alternatives B and D are confusing and need clarification. As an example, section 3.17.6.3 states “...There is no designated critical habitat in the proposed corridors; however, there is critical habitat for desert yellow head within 1 mile of Alternative B.”	The EIS has been revised for clarification.

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028	013	For each alternative, the “General Vegetation” narrative lists the number of acres of vegetation that could be removed within proposed corridors and associated areas. The “Invasive Species” narrative lists the number of acres of land that could be disturbed. These acreages are not the same – why? Please clarify the difference between “potential acres of vegetation removed” and “acres of land that could be disturbed.”	The EIS has been revised for clarification.
028	014	A narrative of “Indicators of impacts to vegetation resources” is lacking. Please include what indicators will be used for evaluation.	Section 3.17.1 has been revised to include this information.
028	015	Table ES-2 Summary and Comparison of Environmental Impacts. The SER CD requests all narratives be reviewed and edited to insure a clear understanding of impacts to each specific alternative. For example, narratives for Alternative B (proposed alternative) should have the qualitative and quantitative information for the proposed alternative. Alternatives C & D narratives should include narratives with clear comparisons to the proposed alternative – again these should be qualitative and quantitative. The same information should be presented in all 3 alternatives.	Qualitative and quantitative analyses are summarized throughout Chapter 3 of the EIS as appropriate.
028	016	Table ES-2 Summary and Comparison of Environmental Impacts. Public health and safety. The SER CD would argue that impacts would not be the same across all alternatives as stated. We contend that impacts would be directly proportional to the number of miles of corridor.	The impacts as disclosed in the EIS would be the same across all alternatives, the intensity of those impacts could be different and would be analyzed at a site-specific level if necessary.
028	017	Table ES-2 Summary and Comparison of Environmental Impacts. Livestock Grazing. The narratives for alternatives B & D are confusing. Alternative B states 6,539 AUMs, 0.42% and alternative D says 6,447 AUMs, 0.44%. From a comparison standpoint, this does not make sense. Please review and edit the narratives so impacts can be compared.	The allotment federal acres within the proposed corridor varies by alternative. As such, the total federal AUMs within allotments varies by alternative. The percentage represents the number of calculated AUMs in the corridor (considered to be temporarily lost) divided by the total federal AUMs within allotments across all field offices.
028	018	Table ES-2 Summary and Comparison of Environmental Impacts. Public health and safety. The SER CD would argue that impacts would not be the same across all alternatives as stated. We contend that impacts would be directly proportional to the number of miles of corridor.	The types impacts disclosed in the EIS would be the same across all alternatives, the intensity of those impacts could be different and would be analyzed at a site-specific level if necessary.
028	019	Table ES-2 Summary and Comparison of Environmental Impacts. Socioeconomics. The SER CD would ask that the Alternative B narrative include the actual impacts and not just the general statements “Alternative B and Alternative D would generally have similar socioeconomic effects. Alternative B and D would have similar impacts to environmental justice populations.”	Expanded description in Table ES-2.
028	020	Table ES-2 Summary and Comparison of Environmental Impacts. Transportation. The Alternatives B and D narratives do not provide sufficient information for comparison. Number of miles should be included in all 3 alternative impacts. Alternative C simply states “fewer miles” but no adequate quantitative basis for comparison.	Section 3.16.6 of the final EIS provides this information in table format.
028	021	Table ES-2 Summary and Comparison of Environmental Impacts. Water. The SER CD requests the HUC description listed in Alternative C be included in the narratives for Alternatives B and D. Alternative C is the only one that includes information about water quality which is vital impact information. Narratives do not provide sufficient information for comparison. Number of miles should be included in all 3 alternative impacts. Alternative C simply states “fewer miles” but no adequate quantitative basis for comparison.	Section 3.19.6.1 describes the differences in surface disturbance within HUC watersheds between alternatives B-D. Impacts to water quality common to all action alternatives are discussed in Section 3.19.5.1.
028	022	Table ES-2 Summary and Comparison of Environmental Impacts. Wildlife and fisheries. The SER CD requests the acreage and kind of big game seasonal habitat be listed in the narratives. Stating “Alternatives B and D would affect the same amount of big game seasonal habitat” does not allow for an adequate comparison of alternative impacts.	Section 3.21.9 of the final EIS provides this information in table format.
028	023	Section 1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION. The SER CD does not agree with the statement in paragraph one of this section “The designation of corridors would streamline environmental reviews of potential projects proposed within the corridors because NEPA documents could tier to this analysis.” Site-specific NEPA analysis will be necessary for each proposed project in the future. Although the final Environmental Impact Statement (FEIS) can provide as a starting point reference, we do not think future projects will “tier” to this analysis and the analysis will not be “streamlined”.	Comment noted.
028	024	Table 2.5-1 page 2-5, Segment 2 Alternative C. It appears that approximately 1.5 miles or more of this segment are on private/state lands. One or two miles does not serve a purpose as a corridor and lacks effectiveness, so it makes no sense to maintain 1 or 2 miles as a “corridor”. It can more efficiently and effectively be analyzed during a site-specific proposal if necessary, in a future proposal. The SER CD supports dropping this segment from Alternative C.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
028	025	Table 2.5-1 page 2-5, Segment 6 Alternative C. The 1 mile included may be on private lands. Regardless, a one-mile segment does not serve a purpose as a corridor and lacks effectiveness, so it makes no sense to maintain it as a “corridor”. It can more efficiently and effectively be analyzed during a site-specific proposal if necessary, in a future proposal. The SER CD supports dropping this segment from Alternative C.	The BLM has analyzed several alternatives and based on this analysis a determination of the alternative routes will be determined by the Wyoming State Director or designated authorizing authority. See updated information in the final EIS Section 2.5.
028	026	Section 3.7.5.2 Agricultural Land Uses. The SER CD has several concerns regarding the statement “Land required for development within the proposed corridors would be removed from production for the lifetime of the project.” We request clarification as to what is meant by “lifetime of the project.” Is the intent to remove from production during the construction of the project or to remove from production for the life expectancy of a future proposed pipeline which could be 50 years or more? This is vital information when conducting an analysis on a site-specific project proposal.	Section 3.7.5.2 of the final EIS has been revised to clarify statement to pertain to construction and reclamation activities only.
028	027	Section 3.7.5.2 Agricultural Land Uses. The extent of crop damage would depend on the crop being produced at the time of a future site-specific proposal. While the direct number of acres taken out of agriculture production may seem small and insignificant, until the specific site is identified and project- specific impacts analyzed, it is inappropriate to assume “... loss of productive cropland would be minor.” Indirect impacts may be far greater, and a situation could exist where a pipeline transected a crop field – irrigation circle for example. Not only would the very few acres be impacted, but it could ultimately make the entire field unusable with severe or even detrimental impacts to an individual agriculture producer. The SER CD requests the narrative be changed to reflect that indirect impacts may be much greater than the direct impacts.	Section 3.7.5.2 has been revised and this statement has been removed for clarity and consistency.
028	028	Section 3.7.10 Irretrievable and Irreversible Impacts and Short-Term Uses versus Long-Term Productivity. The first paragraph states “...until the designations or use reservations are changed.” The SER CD recommends that a sentence be added to state how this change would/could occur.	Designations can only be changed through an RMP amendment and associated NEPA analysis. This statement has been revised in Section 3.7.10.
028	029	Section 3.7.10 Irretrievable and Irreversible Impacts and Short-Term Uses versus Long-Term Productivity. The SER CD is concerned with the potential irretrievable and irreversible impacts that may occur in the future as a result of this Proposed Project. We understand it is difficult to anticipate future proposals that occur and reference this DEIS. We believe the potential direct and indirect impacts to agricultural land uses is understated. We also believe that the challenges and history of limited success of reclamation on lands in Carbon County should constitute Irretrievable and irreversible impacts.	Section 3.7.10 of the final EIS has been revised to clarify impacts associated with irretrievable and irreversible impacts. Site-specific impacts to reclamation of the agricultural lands in Carbon County as the commenter noted would be analyzed in future site-specific NEPA.

Comment Letter Number	Comment Number	Comment	Response
028	030	Section 3.8 Livestock Grazing. The SER CD is concerned with the potential for direct and indirect impacts as a result of surface disturbance activities associated with construction activities. The loss of forage, fragmentation of grazing allotments, potential disruptions to calving areas and periods, and increased mortality and injuries to livestock resulting from increased vehicle traffic are of significant concern. Range improvements, which include fences, gates, cattle guards, and stock tanks, could be directly removed or disturbed. These direct and indirect impacts to livestock grazing from future projects constructed in corridors designated by this DEIS can be irretrievable and irreversible.	Section 3.8.10 has been revised to clarify the return of resource conditions following reclamation.
028	031	Section 3.15 Special Designations. The SER CD recommends direct and indirect impacts to Wilderness Study Areas be included in the narratives of sections 3.15.5, 3.15.6, 3.15.7, and 3.15.8. As written, only the Areas of Critical Concern are addressed in the identified narratives.	Impacts to WSAs are disclosed throughout the analysis sections of 3.15 of the final EIS.
028	032	Section 3.17 Vegetation. The SER CD has concerns related to Vegetation Resources. recommends direct and indirect impacts to Wilderness Study Areas be included in the narratives of sections 3.15.5, 3.15.6, 3.15.7, and 3.15.8. As written, only the Areas of Critical Concern are addressed in the identified narratives.	Impacts to WSAs are disclosed throughout the analysis sections of 3.15 of the final EIS.
028	033	Section 3.19 Water. The SER CD has concerns related to the Water section as it relates to segment 6B. Segment 6 in Alternative B goes across a blue ribbon stream segment on the North Platte River; crosses the North Platte River in the miracle mile area, an area with very high economic value for tourism and recreation; and it crosses the North Platte River 3 times and appears to be in the river bed for nearly a mile. The potential direct and indirect impacts as described in Section 3.19.5.1 Surface and Groundwater is of great concern to us. We strongly recommend this segment not be considered for approval in the Record of Decision.	Segment 6 was rerouted during the alternative development process to avoid this resource concern. Alternatives C and D include this rerouted alignment.
028	034	Chapter 2. Description of Alternatives. Section 2.4.2.2 and 2.4.3 makes reference to "...see Table 2.4-1...". The Table being referenced is titled as 2.5-1 on pages 2-5 thru 2-8 and there is not a Table 2.4-1. Please correct the table title.	The call-outs to Table 2.5-1 in Chapter 2 have been revised.
029	001	Wyoming County Commissioner Association (WCCA) -- Converse County generally endorses comments submitted by the WCCA unless inconsistent with the specific issues outlined below. State of Wyoming - Converse County generally endorses comments submitted by the State of Wyoming unless inconsistent with the specific issues outlined below.	Comment noted.
029	002	Wyoming Pipeline Corridor Initiative (WPCI) - Converse County fully supports the State of Wyoming for bringing the proposed action forward for consideration. The WPCI will be instrumental in promoting and facilitating the development of much needed CO2 to existing fields for enhanced oil recovery (EOR). Not only would carbon be stored through EOR, the corridors would assist in transporting CO2 for secure geologic storage. The Board supports Alternative B with certain exceptions explained below.	Comment noted.
029	003	Generally Converse County supports minimization of surface disturbance to protect impacts to resources where it is economically and practicably feasible. The level of detail provided in the DEIS maps between Alternative B and D are so minute that in some cases it is difficult to ascertain the difference, While Alternative D does slightly deviate certain route segments from those that are proposed in Alternative B to avoid or minimize impacts to resources, a significant amount of time was expended by the State ground truthing the proposed action and it was determined that the corridors were placed in the best locations. In fact, the DEIS inaccurately states that large acreages were added to the Resource Management Plans (RMPs) thru the Proposed Action, which was simply not accurate as 65% of the State's proposal is located within proposed corridors already designated in the RMPs. As the preferred alternative is finalized, we would encourage BLM to accept the State's input to the extent it can within its regulatory framework.	The analysis includes changing the management of the corridors in Alternative B and Alternative D. To quantify this change, the amount of acres that would be managed differently from what is currently in the various RMPs was used.
029	004	Converse County does, however, have one exception to supporting Alternative B as it does not consider any lands for pipeline segments within the county. Alternative D does include a short segment (Segment 10D) that comes into Converse County and then cuts back to Natrona County and is directed to the southwest. It is our understanding that Segment 10D was included to minimize impacts to Sage-grouse Priority Habitat Management Area (PHMA). It appears to be inevitable that the pipeline corridor south of Casper must cross Sage-grouse PHMA regardless of where it is placed. While Converse County supports the reduction of impacts to resources where appropriate, we do promote any opportunities for pipeline segments bringing much needed CO2 to existing fields. Therefore, the Board supports pipeline corridor Segment 10D as identified in Alternative D and would encourage its inclusion in the Final EIS Preferred Alternative.	The analysis includes changing the management of the corridors in Alternative B and Alternative D. To quantify this change, the amount of acres that would be managed differently from what is currently in the various RMPs was used.
029	005	Page ix, Special Designations Alternative B and D - "Under Alternative B, up to 15,269.3 acres across five wilderness study areas (WSAs) could be impacted by the proposed corridors." "Under Alternative D, up to 8,366.4 acres within four WSAs could be impacted by the proposed corridors." This paragraph seems confusing as it could read that BLM may authorize pipeline corridors to be constructed within WSA boundaries and therefore the area within the WSA itself. Please clarify if it is the intent of BLM to identify the impacts from corridor construction as affecting the viewshed from WSA boundaries and therefore visual resources versus surfacing disturbing activity within the WSA boundary.	No proposed corridor alternative crosses a Wilderness Study Area; however, the impacts quantified are those areas within the WSAs that could be impacted by visual or auditory disturbances. Section 3.15 of the final EIS has been revised to ensure this is clear.
029	006	Page 1-3. 1.5.2.2. County Land Use Plans - "County land use plans were reviewed to ensure that the proposed corridors would not conflict with existing land use plans and policies for energy development. Upon review, the proposed corridors would be consistent with the goals and objectives of county land use plans and would not result in conflicts with existing land use plans."  While we appreciate that BLM acknowledges the requirement to conduct consistency reviews with local plans during the NEPA process, this analysis is insufficient and does not provide any detailed information that NEPA documents are consistent with local plans or more importantly where they are inconsistent with federal laws, rules and regulations and why.  NEPA's implementing regulations require that a federal agency "cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements." 40 C.F.R. § 1506.2. Federal agencies must also discuss any inconsistencies between a proposed action and State and local plans and include in an EIS a description of the extent to which the agency would harmonize its proposed action with the local law or plan.  The BLM must demonstrate, in a more meaningful way, that they considered local county natural resource plans and are consistent with local plans to the greatest extent allowed by law. An example of a more sufficient analysis conducted by a federal agency can be found under in the Forest Service Thunder Basin National Grassland 2020 Plan Amendment Final Environmental Impact Statement, Appendix F (Review for Consistency with State and Local Plans) dated May of 2020 and this more thorough template should be incorporated into the FEIS.	The analysis in the WPCI EIS is sufficient in that the land use plans were reviewed, and no inconsistencies were noted. This EIS will also go through Governor's consistency review, and the BLM will continue to coordinate with counties as needed.
029	007	Page 3-1. Introduction. Paragraph 2 - "Under Alternative B and D, all proposed corridors, both outside and within existing designated corridors, would be designated exclusively for the transport of CO2 and EOR products, and other compatible uses."  While Converse County agrees that CO2 is a critical component of the State's future promoting EOR, this project also advances a network that facilitates pipelines and carbon capture, utilization, and storage (CCUS) opportunities. The Dave Johnson Power Plant and northern Converse County should be considered and analyzed as the origin of a major CO2 supply source points in the pipeline network recognizing that private surface easements would need to be obtained by a third party before construction of pipelines could occur.	This analysis does not preclude location of pipelines in another location. If there was a proposed project in these locations, the BLM would review that proposal at that time. The sources of CO2 would also be analyzed at the project specific level.
029	008	Finally, all opportunities for exporting products out of the state (natural gas, oil, CO2, etc.) should be considered to the maximum extent possible in this analysis and allowed as a compatible use within the corridor. Converse County is looking toward the consideration of other products such as Liquified Natural Gas (LNG) and this project could assist in facilitating those opportunities.	The WPCI is to designate corridors within the State of Wyoming and RMPA/EIS is only analyzing the impact of the proposed corridors within the State of Wyoming.
029	009	Page 3-35. Agriculture Land Use Section. The BLM does not accurately reflect the impact to agricultural lands under Alternative B and D. Alternative B would impact 62% less privately-owned agricultural lands than Alternative D thereby avoiding impacts to private property. This should be more accurately described in the FEIS.	Section 3.7.9.2 of the final EIS has been revised.

Comment Letter Number	Comment Number	Comment	Response
029	010	Page 3-60, Socioeconomics. The "point of delivery" for the purpose of sales tax is critical to participating counties and therefore, the sales tax for the company laying pipe in the ground should be paid to the county in which the line is being buried. Every county should receive sales tax in proportion to the percentage of pipe buried in their respective county. BLM should include language in the analysis that companies should consider distributing the "point of delivery" sales tax in the jurisdiction in which the pipe is buried versus paying all "point of delivery" tax in one jurisdiction.	This is outside the scope of this analysis.
029	011	Page 3-73, Transportation Prior to pipeline or facility construction, Converse County requests that BLM include language that project proponents must coordinate with affected counties to discuss the most appropriate transportation routes for mobilizing equipment and accessing areas to minimize impacts to the surrounding communities (i.e. roads, flow of traffic, etc.). The Board also strongly supports an aggressive dust control plan.	Project specific impacts would be analyzed under subsequent site-specific NEPA analysis once a project has been proposed.
029	012	Converse County is committed to being a cooperating agency throughout this Environmental Impact Statement process and we look forward to exploring all options that will benefit the capture of CO2, promote the development of our energy resources through enhanced oil recovery opportunities an advance options to export our product to be competitive in the marketplace.	Thank you for your comment.



## **Appendix A**

***Federal Register* Notice of Availability**



thence South 87°56'03" East, 98.68 feet;  
 thence Southeasterly, 656.97 feet, along the  
 arc of a 57170.78 foot radius curve to the  
 right, the central angle of which is  
 00°39'30" and the long chord of which  
 bears South 87°35'43" East, 656.97 feet;  
 thence North 02°43'59" East, 50.00 feet;  
 thence Southeasterly, 381.31 feet, along the  
 arc of a 57175.09 foot radius curve to the  
 right, the central angle of which is  
 00°22'56" and the long chord of which  
 bears South 87°04'30" East, 381.31 feet;  
 thence South 41°44'32" East, 197.74 feet;  
 thence Southeasterly, 166.38 feet, along the  
 arc of a 57080.78 foot radius curve to the  
 right, the central angle of which is  
 00°10'01" and the long chord of which  
 bears South 86°39'39" East, 166.38 feet;  
 thence North 47°24'34" East, 125.00 feet;  
 thence Southeasterly, 303.34 feet, along the  
 arc of a 57170.78 foot radius curve to the  
 right, the central angle of which is  
 00°18'14" and the long chord of which  
 bears South 86°20'18" East, 303.34 feet;  
 thence North 03°48'47" East, 25.00 feet;  
 thence Southeasterly, 252.15 feet, along the  
 arc of a 57195.78 foot radius curve to the  
 right, the central angle of which is  
 00°15'09" and the long chord of which  
 bears South 86°03'36" East, 252.15 feet;  
 thence South 85°56'01" East, 247.54 feet;  
 thence South 04°03'59" West, 5.00 feet;  
 thence South 85°56'01" East, 40.00 feet;  
 thence North 04°03'59" East, 5.08 feet;  
 thence South 85°56'01" East, 273.58 feet;  
 thence Southeasterly, 743.68 feet, along the  
 arc of a 34477.47 foot radius curve to the  
 left, the central angle of which is 01°14'09"  
 and the long chord of which bears South  
 86°33'04" East, 743.67 feet;  
 thence South 00°19'33" East, 127.79 feet;  
 thence South 85°56'06" East, 25.00 feet;  
 thence South 00°19'33" East, 105.00 feet;  
 thence North 87°43'34" West, 728.33 feet;  
 thence South 02°25'27" West, 768.43 feet;  
 thence South 87°34'33" East, 171.00 feet;  
 thence Southeasterly, 23.56 feet, along the  
 arc of a 15.00 foot radius curve to the right,  
 the central angle of which is 90°00'00", and  
 the long chord of which bears South  
 42°34'33" East, 21.21 feet;  
 thence South 02°25'27" West, 71.32 feet;  
 thence South 87°34'33" East, 66.49 feet;  
 thence Southeasterly, 106.26 feet, along the  
 arc of a 200.00 foot radius curve to the  
 right, the central angle of which is  
 30°26'33", and the long chord of which  
 bears South 72°21'17" East, 105.02 feet;  
 thence South 57°08'00" East, 46.71 feet;  
 thence Southeasterly, 53.13 feet, along the  
 arc of a 100.00 foot radius curve to the left,  
 the central angle of which is 30°26'33", and  
 the long chord of which bears South  
 72°21'17" East, 52.51 feet;  
 thence South 87°34'33" East, 641.17 feet, to  
 a point on the East Line of said Section 2  
 and the POINT OF BEGINNING  
 Subject to the Right-of-Way of Lautner Road  
 over the Easterly 33 feet thereof.

**Tara Sweeney,**

*Assistant Secretary—Indian Affairs.*

[FR Doc. 2020-08180 Filed 4-16-20; 8:45 am]

**BILLING CODE 4337-15-P**

## DEPARTMENT OF THE INTERIOR

### Bureau of Land Management

[LLWY925000.L13400000.PQ0000 20X]

### Notice of Availability of the Wyoming Pipeline Corridor Initiative Draft Environmental Impact Statement and Resource Management Plan Amendments for 9 BLM-Wyoming Resource Management Plans

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Notice of availability.

**SUMMARY:** In accordance with the National Environmental Policy Act of 1969, as amended, and the Federal Land Policy and Management Act of 1976, as amended, the Bureau of Land Management (BLM) has prepared a Draft Environmental Impact Statement (EIS) and Draft Resource Management Plan (RMP) Amendment for the proposed Wyoming Pipeline Corridor Initiative (WPCI) within the BLM Cody, Worland, Buffalo, Casper, Lander, Pinedale, Kemmerer, Rawlins and Rock Springs field offices.

**DATES:** To ensure that comments will be considered, the BLM must receive written comments on the Draft RMP Amendment and Draft EIS within 90 days following the date the Environmental Protection Agency publishes its Notice of Availability in the **Federal Register**. The BLM will announce future meetings or hearings and any other public involvement activities at least 15 days in advance through public notices, media releases, and/or mailings.

**ADDRESSES:** You may submit comments on the DEIS during comment period on the WPCI ePlanning website at <https://go.usa.gov/xpCM>. Requests for information regarding the Draft EIS may be emailed to:

- **Mail:** Heather Schultz, WPCI EIS Project Manager, [hschultz@blm.gov](mailto:hschultz@blm.gov).

Copies of the Draft EIS are available on the project website at: <https://go.usa.gov/xpCMr>.

#### FOR FURTHER INFORMATION CONTACT:

Heather Schultz, Project Manager, telephone 307-775-6084; address 5353 Yellowstone Road, Cheyenne Wyoming; email [hschultz@blm.gov](mailto:hschultz@blm.gov). Contact Ms. Schultz to add your name to our mailing list. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question with the

above individual. You will receive a reply during normal business hours.

**SUPPLEMENTARY INFORMATION:** The State of Wyoming is proposing a pipeline corridor network reserved for the use and the transport of carbon dioxide (CO<sub>2</sub>), enhanced oil recovery (EOR) products and other compatible uses to be designated on BLM-managed lands in Wyoming through the land use planning process. The amendments would designate new corridors reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses, that may support future Carbon Capture Storage and Utilization (CCUS) projects in the State of Wyoming. The State of Wyoming proposes that approximately 2,000 miles and 25 segments of pipeline corridors be designated on BLM-managed lands and in those associated RMPs. The proposed WPCI corridors are divided into segments based on proposed width and the regions they will service. The BLM plans to analyze the State's proposal by preparing an EIS. Based on the findings of the EIS process, the BLM may amend the nine RMPs containing lands proposed for pipeline corridors to designate those corridors. If the BLM were to receive a right-of-way application for CO<sub>2</sub> or EOR product pipelines or related facilities in the future, project specific NEPA would be completed separately at that time. The purpose of this public comment process is to determine if relevant issues are addressed in the scope of the environmental analysis, including alternatives, and guide the planning process.

The BLM is analyzing four alternatives:

**Alternative A: No Action Alternative:** Under the no action alternative no new corridors would be designated, no Resource Management Plans would be amended, and management of existing corridors would remain the same.

**Alternative B: Proposed Action:** Designates new corridors reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses. Portions (200 ft or 300 ft wide) of existing corridors would be reserved for pipelines and facilities associated with CO<sub>2</sub>, EOR products and other uses as outlined in the State of Wyoming Proposal. Additional corridors would be designated both in Sage Grouse Priority Habitat Management Areas (PHMA) and outside of PHMA as proposed by the state of Wyoming.

**Alternative C: Maintain Existing Management in Existing Corridors and creates new corridors reserved for CO<sub>2</sub>, EOR products and other compatible uses.** Routes would be modified or

eliminated from the Proposal to avoid resource conflicts, Sage Grouse PHMA, pre-existing rights, existing uses and infrastructure. Use of existing corridors would be maximized. Management of existing corridors would remain the same and would not be reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses. Additional new corridors (200 ft or 300 ft wide) would be created for the transport of CO<sub>2</sub>, EOR products, and other compatible uses. Additional Corridors would be not be created in Sage Grouse PHMA.

**Alternative D:** Alternative D is the agency preferred alternative and dedicates portions of existing corridors and creates new corridors reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses. Routes would be modified or eliminated from the Proposal to avoid resource conflicts, Sage Grouse PHMA, pre-existing rights, existing uses and infrastructure. Portions (200 ft or 300 ft wide) of existing corridors would be reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses. Additional Corridors would be not be created in Sage Grouse PHMA.

Please note that public comments and information submitted including names, street addresses, and email addresses of persons who submit comments will be available for public review and disclosure at the above address during regular business hours (8 a.m. to 4 p.m.), Monday through Friday, except holidays.

Before including your address, phone number, email address or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

**Authority:** 40 CFR 1506.6, 40 CFR 1506.10, 43 CFR 1610.2

**Duane Spencer,**

*BLM Wyoming State Director.*

[FR Doc. 2020-08117 Filed 4-16-20; 8:45 am]

**BILLING CODE 4310-22-P**

## DEPARTMENT OF THE INTERIOR

### Bureau of Land Management

[LLCOF02400.L16100000.DQ0000.  
LXSSC0100000.20X]

### Notice of Availability of the Proposed Resource Management Plan and Associated Environmental Impact Statement for the Browns Canyon National Monument, Colorado

**AGENCY:** Bureau of Land Management.

**ACTION:** Notice of availability.

**SUMMARY:** In accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, and the National Forest Management Act of 1976, as amended, the Bureau of Land Management (BLM) Royal Gorge Field Office (RGFO), Cañon City, Colorado, and U.S. Forest Service (USFS), Pike-San Isabel National Forests and Comanche-Cimarron National Grasslands (PSICC), Pueblo, Colorado, have prepared a Proposed Resource Management Plan (RMP) and Forest Plan (FP) amendment, supported by an Environmental Impact Statement (EIS), for the Browns Canyon National Monument, and by this notice are announcing its availability.

**DATES:** BLM planning regulations state that any person who meets the conditions as described in the regulations may protest the BLM's Proposed RMP. The USFS has waived its objection procedures and instead adopted the BLM's administrative review process (36 CFR 219.59). A person who meets the conditions and files a protest must file the protest within 30 days of the date that the Environmental Protection Agency (EPA) publishes its Notice of Availability (NOA) in the **Federal Register**. The EPA publishes its NOAs in the **Federal Register** weekly, usually on Fridays.

**ADDRESSES:** The Proposed RMP-FP amendment and Final EIS is available on the BLM ePlanning project website at <https://go.usa.gov/xn2eC>. Click the Documents and Reports link on the left side of the screen to find the electronic versions of these materials. Hard copies of the Proposed RMP-FP amendment and Final EIS are also available for public inspection by appointment at the BLM RGFO, 3028 E. Main St., Cañon City, CO 81212, and at the PSICC Salida Ranger District, 5575 Cleora Road, Salida, CO 81201.

All protests must be in writing and filed with the BLM Director, either as a hard copy or electronically via the BLM's ePlanning project website listed previously. To submit a protest

electronically, go to the BLM ePlanning project website and follow the protest instructions highlighted at the top of the home page. If submitting a protest in hard copy, it must be mailed to one of the following addresses:

**Regular Mail:** Director (210), Attn: Protest Coordinator, P.O. Box 261117, Lakewood, CO 80226.

**Overnight Delivery:** Director (210), Attn: Protest Coordinator, 2850 Youngfield Street, Lakewood, CO 80215.

### FOR FURTHER INFORMATION CONTACT:

Joseph Vieira, Project Manager, telephone 719-246-9966; address 5575 Cleora Road, Salida, CO 81201; email [blm\\_co\\_browns canyon@blm.gov](mailto:blm_co_browns canyon@blm.gov).

Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1-800-877-8339 to contact Mr. Vieira during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question. You will receive a reply during normal business hours.

**SUPPLEMENTARY INFORMATION:** The BCNM was established by Presidential Proclamation 9232. The BLM and USFS have prepared the Proposed RMP-FP amendment and Final EIS for BCNM to evaluate the management strategy for monument resources, objects, and values, including resource uses and special designations within the BCNM. The planning area is located in Chaffee County, Colorado, and encompasses approximately 21,600 acres. The BCNM RMP-FP amendment will determine management for approximately 9,790 acres of BLM-administered surface land and approximately 11,810 acres of USFS-administered national forest. The monument also includes a portion of the Arkansas Headwaters Recreation Area, a cooperatively managed area along the Arkansas River administered by the BLM, the USFS, and Colorado Parks and Wildlife (CPW).

Major planning issues considered in the Proposed RMP-FP amendment and Final EIS are conserving and protecting monument resources, objects or values including bighorn sheep, peregrine falcon, terrestrial and avian wildlife habitat, cultural and historical resources, geological features and riparian values; maintaining monument values and settings; understanding and addressing tribal values including religious and other significant sites; addressing existing uses such as livestock grazing; and managing for sustainable outdoor recreation, visitor growth and visitor enjoyment. The Proposed RMP-FP amendment and Final EIS also considers BLM decisions regarding wild and scenic rivers, areas

## **Appendix B**

### **Virtual Public Meeting Materials**







U.S. Department of the Interior  
Bureau of Land Management

# Wyoming Pipeline Corridor Initiative (WPCI)

Virtual Public Meeting; May 28, 2020





# Introductions and Welcoming to Meeting: Mike Valle

- Good morning/evening – My name is Mike Valle from the BLM. I am your mid-level management host/presenter for today's Public Meeting on the Wyoming Pipeline Corridor Initiative. I have been associated with this assignment for the past two years.
- We want to welcome those of you that have joined the Zoom meeting as well as those that are listening on their phones. We all know the challenges we are facing with COVID in our personal lives as well as professionally, this is one of the first projects BLM Wyoming has determined will utilize a Virtual Meeting platform.
- We have assembled a team today that will consist of the BLM's third party NEPA contractor, SWCA, Heather Schultz, the day to day WPCI project manager, and me. I will provide welcome remarks and a short presentation. Heather will review most of the questions we receive today and answer as many as we can in the time allotted. SWCA will post all questions submitted and their responses by June 5, 2020 which you can access directly from the ePlanning site.





# Welcome Information

- All Questions and answers asked during the Public Meetings website will be posted on the BLM ePlanning site (see below) by June 5, 2020
- We hope to answer many of the questions you ask today during the Q & A portion of this meeting.
- Some questions that require specific or complex responses maybe deferred until after the public meeting so the subject matter specialists can draft informed responses which will be posted on ePlanning

For additional information on the proposal:

Heather Schultz  
Project Manager  
hschultz@blm.gov  
307-775-6084

ePlanning Page: <https://go.usa.gov/xpCMr>



# Welcome to the WPCI Draft EIS Public Meeting

- You have joined this webinar as an attendee in listen-only mode
- The webinar will consist of a presentation and an opportunity to ask questions in writing
- During the presentation:
  - Please give us your undivided attention
- To ask questions after the presentation:
  - Use the **Q&A** feature to type your question



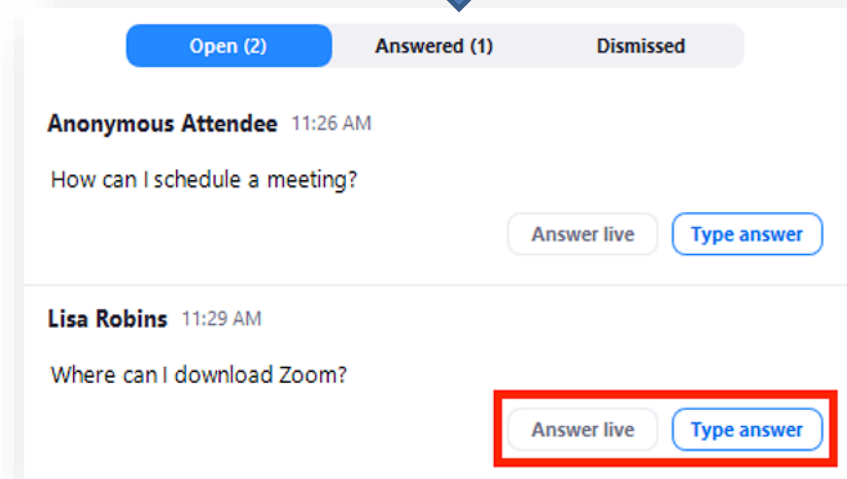
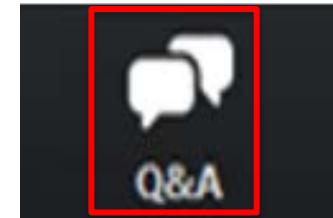
Audio, chat, and raise hand are disabled.

\*\*\*To get this to show on your screen you may have to move your cursor towards the bottom



# To Ask Question in Writing use “Q&A”

Attendees can use the on-screen “Q&A” button to type a question



Mobile Button Q&A



**Any question on using zoom or technical questions?**

**Please contact Jennifer Wynn**

**[Jennifer.Wynn@swca.com](mailto:Jennifer.Wynn@swca.com)**

**917-410-7450**



# Covered in this Presentation

- How to provide comments on the Draft EIS
- The NEPA Process
- WPCI proposal overview
- Alternatives analyzed in the Draft EIS
- Questions submitted during registration
- Questions asked in the presentation





# Keys to Making Effective Comments on the Draft EIS

- The BLM encourages the public to make comments
- Share specific information, data, or knowledge on environmental and community factors
- Be timely: Comments must be received by the due date to be considered (July 16, 2020)
- If you have questions or would like assistance, please call or email the WPCI project manager

**Submit comments in ePlanning: <https://go.usa.gov/xpCMr>**



# WPCI Timeline

November 15,  
2019

➤ Notice of Intent  
(NOI)

April 17 – July 16, 2020

➤ Publish Draft EIS  
➤ 90-day comment period

September 11,  
2020

➤ Publish Final EIS

November 13,  
2020

➤ Publish  
Record of  
Decision







# Questions on the NEPA process?

Please use the Q&A button at the  
bottom of your screen





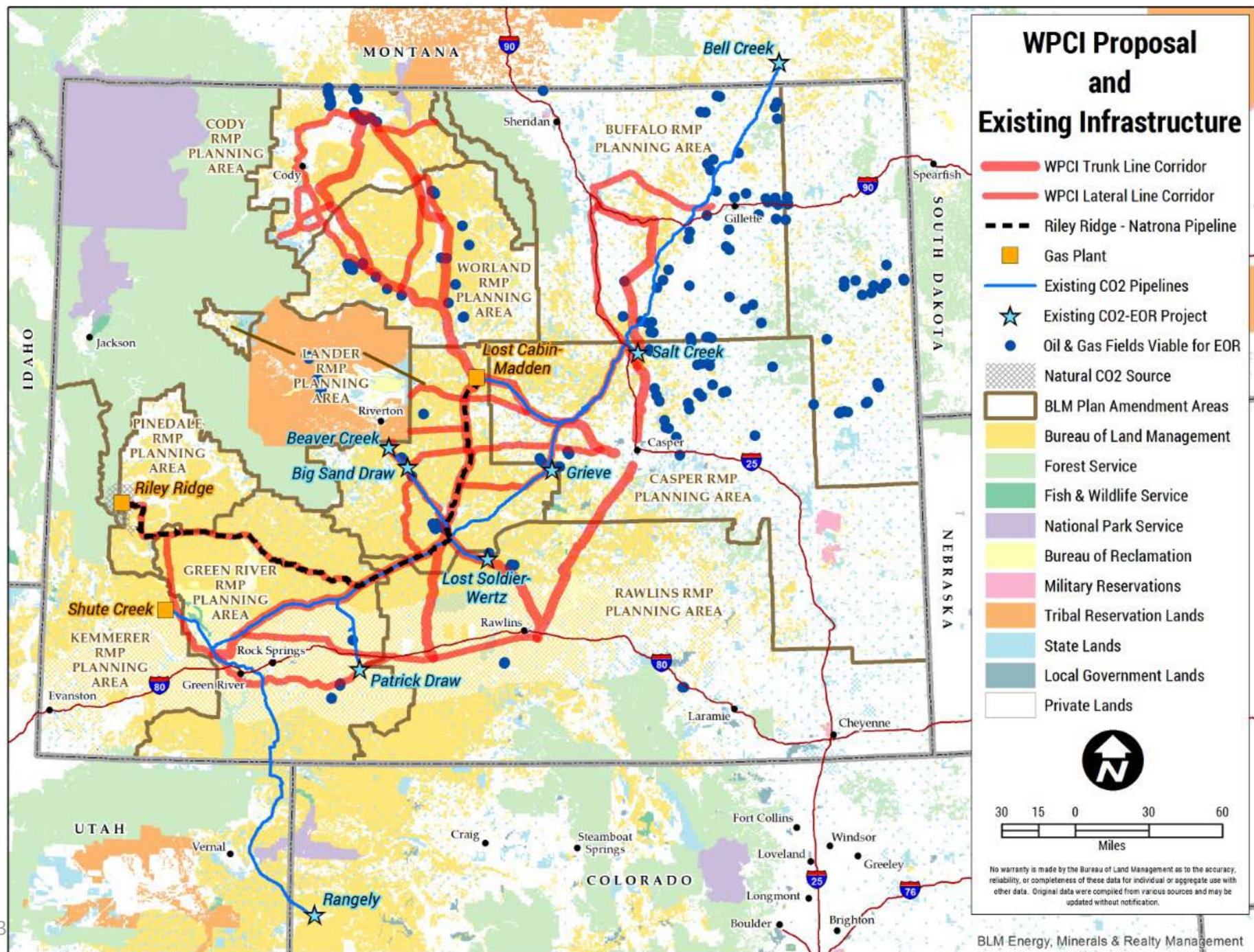
# Summary of WPCI Proposal

- The State of Wyoming submitted a proposal to the BLM Wyoming State Office that requests designation of pipeline corridors throughout the state.
- The WPCI proposal would amend 9 Resource Management Plans in Wyoming in order to create the statewide corridor network.
- As proposed, corridors would be reserved for the transport of CO<sub>2</sub>, Enhanced Oil Recovery (EOR) products, and other compatible uses.
- The proposal identifies approximately 2,000 miles of pipeline corridor in Wyoming, of which 1,105 miles are on BLM-managed lands.



# Proposal Fundamentals

- The purpose for the BLM action is to designate corridors for the preferred location of future pipelines associated with the transport of CO<sub>2</sub>, EOR products, and other compatible uses, and to incorporate the designated corridors into the various BLM RMPs within the State of Wyoming.
- The BLM will continue to manage other resources in the affected field office planning areas under the pre-existing terms, conditions, and decisions in the applicable RMPs for those other resources;
- The approved RMP amendments will not include planning and management decisions for lands administered by other federal agencies, private or state lands.
- This Project will not authorize any on the ground projects or grant any Right-of-Ways. If the BLM were to receive a Right-of-Way application for CO<sub>2</sub> or EOR pipelines, site-specific NEPA would be completed for those projects.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.





# Alternatives Summary

- Alternative A: No Action Alternative
- Alternative B: State of Wyoming Proposal, corridors would be reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses as proposed by the State without avoiding resource conflicts or existing uses.
- Alternative C: Maintains existing management in current RMP corridors and creates new corridors for the transport of CO<sub>2</sub>, EOR products, and other compatible uses.
- Alternative D – Preferred Alternative: Reserves portions of existing corridors and creates new corridors that would be reserved for the transport of CO<sub>2</sub>, EOR products, and other compatible uses.

**(Chapter 2. Description of Alternatives in the Draft EIS)**



# Alternative B- Proposed Action

- Reserves portions of existing corridors and creates new corridors designated exclusively for the transport of CO<sub>2</sub>, EOR products, and other compatible uses.
- Portions of existing corridors (200 ft or 300 ft wide) would be reserved for transportation of CO<sub>2</sub>, EOR products, or other compatible uses.
- Designates new corridors in Sage Grouse Priority Habitat Management Areas (PHMA), historic trails, valid existing rights, and existing infrastructure.
- Changes the management on approximately 33,000 acres of BLM - managed surface estate





# Alternative C

- Management of existing corridors would remain the same and **would not be reserved** exclusively for the transport of CO<sub>2</sub>, EOR products, and other compatible uses.
- In addition, new corridors would be created and **reserved** for transportation of CO<sub>2</sub>, EOR products, or other compatible uses.
- New corridors **would not** be designated in Sage Grouse PHMA; proposed routes would be modified or eliminated to avoid other resource conflicts including wildlife habitat, historic trails, valid existing rights, and existing infrastructure.
- RMP amendments would change the management on approximately 5,000 acres of BLM-administered lands for pipeline corridors.







# Alternative D – Preferred Alternative

- Alternative D is the same as alternative C except the following:
- **Reserves portions of existing corridors and creates new corridors** designated exclusively for the transport of CO<sub>2</sub>, EOR products, and other compatible uses.
- RMP amendments would change the management on approximately 30,000 acres of BLM-administered lands for pipeline corridors.





# Questions on any of the Alternatives?

Please use the Q & A at the  
bottom of your Screen





# Any Other Questions?

For additional information on the Proposal:

Heather Schultz  
Project Manager  
hschultz@blm.gov  
307-775-6084

ePlanning WPCI Website:  
<https://go.usa.gov/xpCMr>



## Options for Joining Zoom Webinar



Open Zoom Application  
(Computer Audio and Video)



Join from web browser (Computer Audio and Video)



Browser or Application with Telephone Audio



Zoom Cloud Meetings App (on Smart Phone)



Dial in without video on Phone  
(Audio only)

# Joining Zoom Webinar

- After registering for the Public Meeting, you will receive an email with the following ways to join the Zoom Webinar.
- If you are joining online, you can use a web browser or download the Zoom application.

Hi Eren Yaeger,

Thank you for registering for "My Webinar".

Please submit any questions to: [kevin.hoang@zoom.us](mailto:kevin.hoang@zoom.us)

Date Time: Sep 11, 2018 10:00 AM Pacific Time (US and Canada)

Join from a PC, Mac, iPad, iPhone or Android device:

Please click this URL to join: [https://success.zoom.us](https://success.zoom.us/j/319833382?tk=QvnVju44sn4BvDesYH_a1KqAOLurYUwnlYSss8gtpOk.DQEAAAAAExBFJhZyTk0ZUxYcFRfS2Q3UVIMZ1VOMEdnAA)

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Note: This link should not be shared with others; it is unique to you.

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Or iPhone one-tap :

US: +16468769923,,319833382# or +16699006833,,319833382#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 646 876 9923 or +1 669 900 6833 or +1 877 369 0926 (Toll Free) or +1 877 853 5247 (Toll Free)

Webinar ID: 319 833 382


International numbers available: <https://zoom.us/j/319833382>

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- To join the webinar, click the link that the host provided you or that you received in the confirmation page after you registered. If the host sent a registration confirmation email, the link can also be found there.

### Webinar Registration Approved

Topic	My Webinar
Time	Sep 11, 2018 10:00 AM in Pacific Time (US and Canada) <a href="#">Add to calendar</a>
Webinar ID	319-833-382



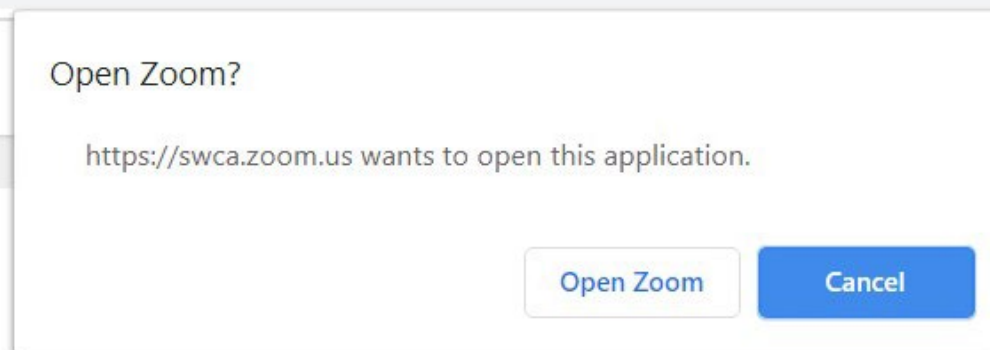
#### To Join the Webinar

Join from a PC, Mac, iPad, iPhone or Android device:

Please click this URL to join. [https://success.zoom.us/j/319833382?tk=QvniVju44sn4BvDesYH\\_a1KqAOLurYUwniYSSs8gtpOk.DQEAAAAExBfjhzYtkd0ZUxycFRfS2Q3UvIMZ1VOMEdnAA](https://success.zoom.us/j/319833382?tk=QvniVju44sn4BvDesYH_a1KqAOLurYUwniYSSs8gtpOk.DQEAAAAExBfjhzYtkd0ZUxycFRfS2Q3UvIMZ1VOMEdnAA)

# Using the Zoom Application

- Before joining a Zoom Webinar on a computer or mobile device, you can download the Zoom application from [Zoom's Download Center](#). Otherwise, you will be prompted to download and install Zoom when you click a join link.
- Upon clicking the Zoom Webinar URL, the Join Meeting Launcher prompt (located to the right) will appear.
- You can also join from your web browser, instead of downloading the Zoom Application.



Launching...

Please click Open Zoom Meetings if you see the system dialog.

If nothing prompts from browser, [click here](#) to launch the meeting, or [download & run Zoom](#).

If you cannot download or run the application, [join from your browser](#).



# Join Zoom Webinar by Phone only

- You can join a Zoom Webinar via teleconferencing/audio conferencing (using a touch-tone phone).
- You can join the Zoom Webinar by dialing the call-in number.
- All attendees will be muted for the duration of the Webinar.



## Ways to Participate During Zoom Webinar



Written questions may be submitted during meeting registration.



The Q&A feature is only accessible through the online version of the Zoom Webinar.



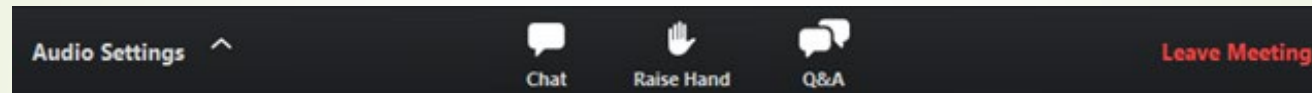
Throughout the Zoom Webinar, participants can type out questions they wish to ask.



The Panel will answer questions submitted during meeting registration and the Q&A.

# Participating in Zoom Webinar

## Audio

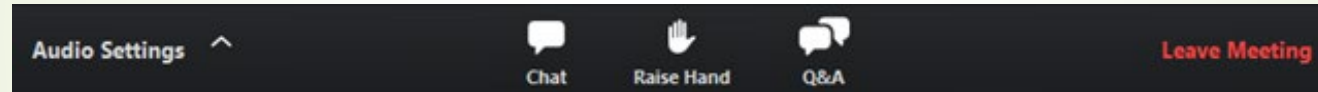


**Audio will be disabled during the Zoom Webinar.**

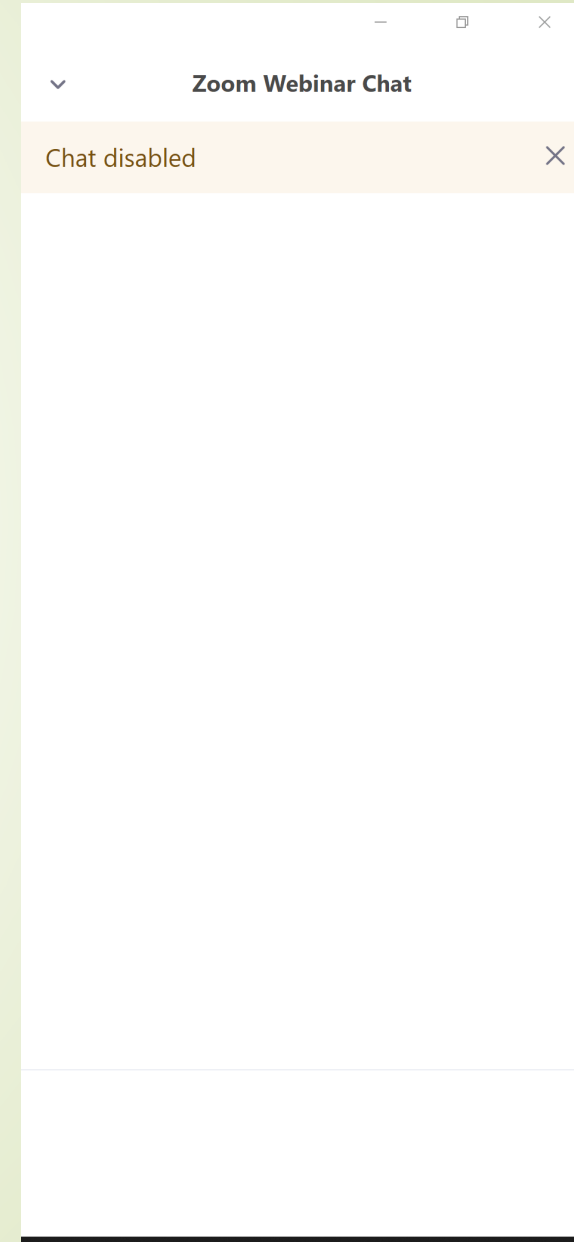


# Participating in Zoom Webinar

## Chat

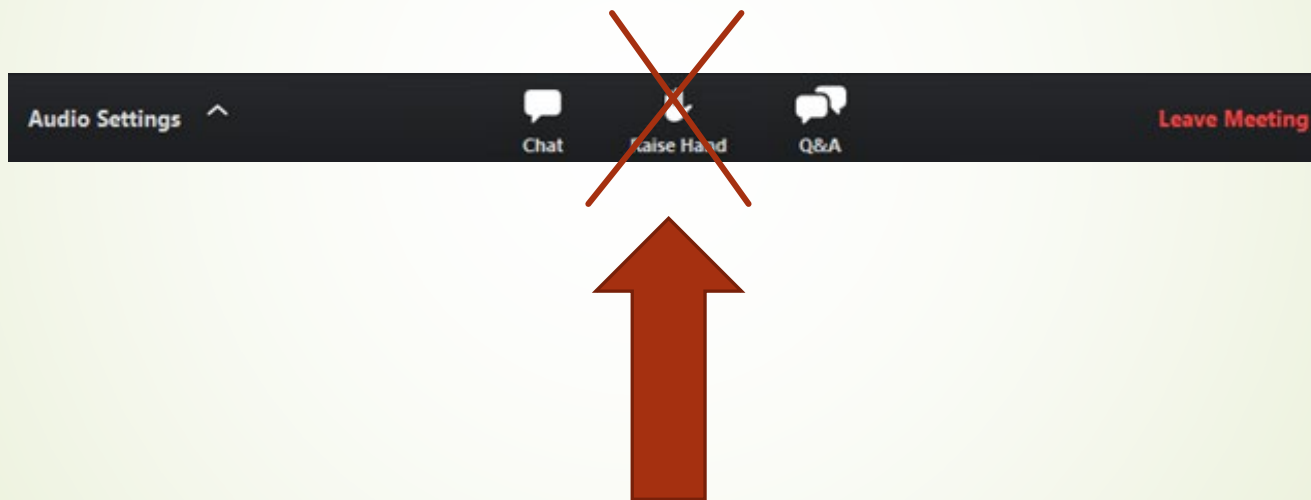


**Chat will be disabled during the Zoom Webinar.**



# Participating in Zoom Webinar

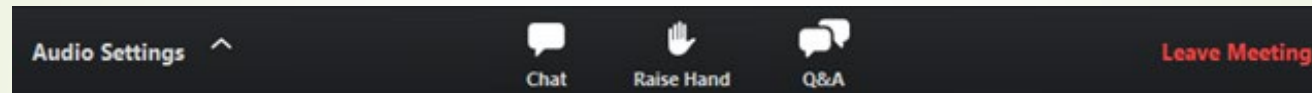
## Raise Hand



**Raising Hand will also be disabled during the Zoom Webinar.**

# Participating in Zoom Meeting

## Q&A



**Attendees can use the on-screen button to type a question.**

**Note that the Q&A function is not available to phone-only users.**



## Q&A

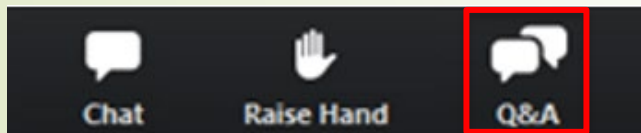
Attendees can submit questions via the Q&A function throughout the entire meeting by typing in their question for the Host/Moderator.

The Host/Moderator can respond to the Attendee individually or answer live.

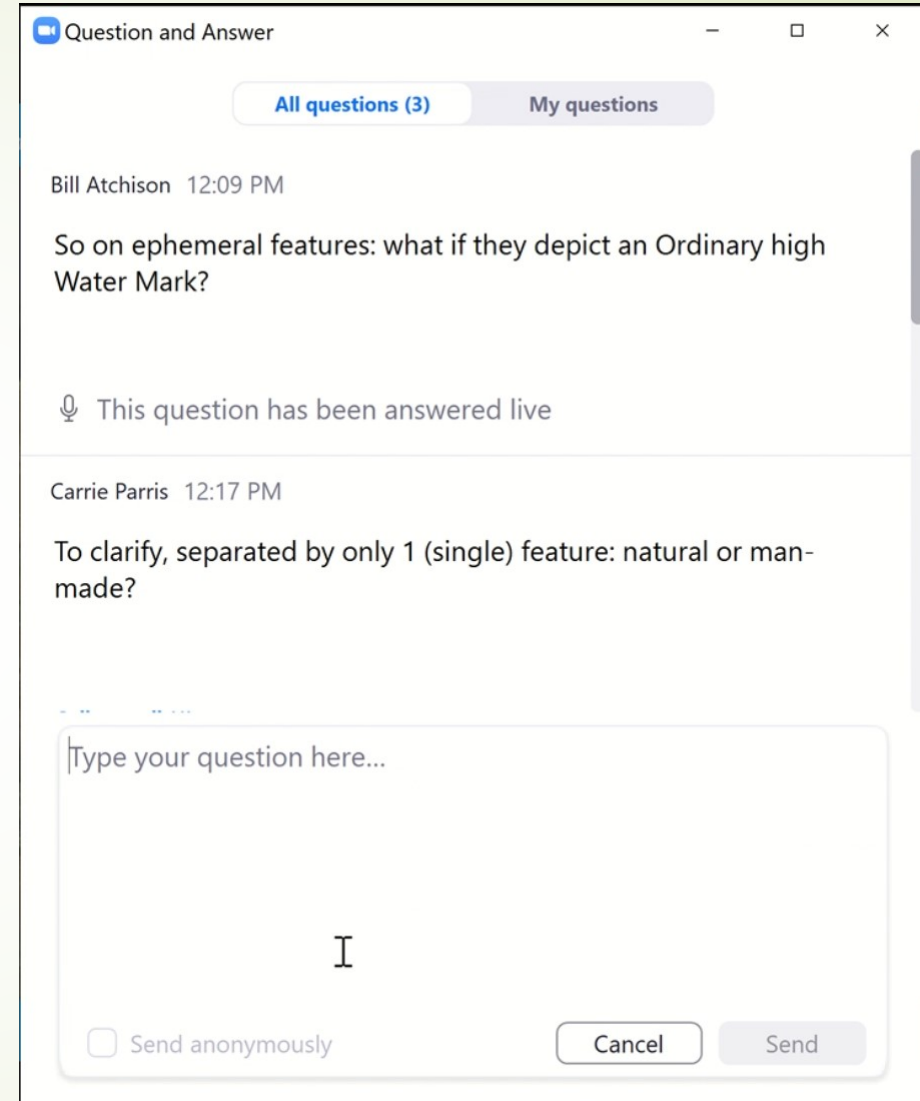
*This is only available for the online webinar component of the Zoom Webinar.*

# How to Q&A

- Upon clicking the Q&A button, the box on the right will pop up where attendees can type out their questions.
- Attendees can also choose to submit questions anonymously by checking the 'send anonymously' box in the Q&A.



On-Screen Button

A screenshot of a 'Question and Answer' window. At the top, there are two tabs: 'All questions (3)' and 'My questions'. Below the tabs, there are two questions listed. The first question is by 'Bill Atchison' at '12:09 PM' and asks 'So on ephemeral features: what if they depict an Ordinary high Water Mark?'. Below it, a status message says 'This question has been answered live'. The second question is by 'Carrie Parris' at '12:17 PM' and asks 'To clarify, separated by only 1 (single) feature: natural or man-made?'. At the bottom, there is a text input field with the placeholder 'Type your question here...'. Below the input field is a checkbox labeled 'Send anonymously'. To the right of the checkbox are two buttons: 'Cancel' and 'Send'.



## **Appendix C**

### **Question and Answer Report**







U.S. Department of the Interior  
Bureau of Land Management

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**Public Meetings Questions and Answers Report  
Draft Resource Management Plan Amendments/Environmental Impact Statement  
Wyoming Pipeline Corridor Initiative  
June 2020**

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U.S. Department of the Interior

Bureau of Land Management  
Wyoming State Office  
5353 Yellowstone Road  
Cheyenne, Wyoming 82009  
Telephone: (307) 775-6256

June 2020



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## **CHAPTER 1. INTRODUCTION**

This report provides a summary of the question and answer (Q&A) portions of the virtual public meetings for the Wyoming Pipeline Corridor Initiative (WPCI) draft environmental impact statement (EIS). As part of the public review and comment period for the WPCI draft EIS and in compliance with the National Environmental Policy Act (NEPA), on May 28, 2020, the Bureau of Land Management (BLM) held two virtual public meetings for the WPCI draft EIS. The purposes of the public review and comment period are to 1) ensure that all interested and affected parties are aware of the WPCI and 2) provide the public with an opportunity to review and provide comments for the draft EIS.

The Q&A portions of the virtual public meetings allowed participants to ask questions about the NEPA process or the WPCI to compose formal comments. Any questions asked as part of the virtual public meeting registration process or during the virtual public meetings will not be entered in the project record as a formal comment. Public comments submitted through the WPCI ePlanning portal during the public comment period will be recorded as formal comments and used to help inform revisions to the WPCI final EIS.

## CHAPTER 2. VIRTUAL PUBLIC MEETINGS

The BLM held two virtual public meetings on May 28, 2020 from 11:00 a.m. to 1:00 p.m. mountain time and from 5:00 p.m. to 7:00 p.m. mountain time. The BLM issued a press release on May 13, 2020, to notify the public of the virtual public meetings, and a dedicated website was created to allow participants to register for the virtual meetings. The format of the virtual public meetings was identical and included a short presentation followed by a Q&A session. The presentation by the BLM covered the following topics:

- Introduction and welcoming message by Mike Valle of the BLM
- An overview of the Zoom Webinar format and how to participate
- Formal BLM slide presentation by Mike Valle of the BLM (posted to ePlanning site on May 29, 2020)
- How to provide comments on the draft EIS, including the closing date of the comment period
- The NEPA process
- WPCI proposal overview
- Alternatives analyzed in the draft EIS
- Q&A session led by Heather Schultz of the BLM

Questions submitted as part of the virtual meeting registration process were answered first; then, questions asked during the meeting were acknowledged and answered. General questions were answered during the meeting. All general questions and detailed questions requiring specialist input are answered fully in this report.

### 2.1 MEETING ATTENDANCE

Attendance for the virtual public meetings is summarized in Table 1. The morning meeting had 33 attendees, and the evening meeting had 24 attendees. Attendees included the BLM, third-party contractor, cooperators, and members of the public.

**Table 1. May 28, 2020, Virtual Public Meetings Attendance**

Meeting Time	Number Registered	Number Attended
Meeting 1: 11:00 a.m. to 1:00 p.m.	52	33
Meeting 2: 5:00 p.m. to 7:00 p.m.	33	24
<b>Total</b>	<b>85</b>	<b>57</b>

## CHAPTER 3. QUESTIONS AND ANSWERS

This section summarizes the Q&As received during the public meetings. Members of the public could submit questions in the following ways:

- During registration, members of the public could include a question to be answered during the public meeting.
- During the public meeting, members of the public could use the Q&A feature in the webinar to submit a question to be answered during the meeting.

The BLM received a total of 38 questions from the public during the morning meeting and 12 questions from the public during the afternoon meeting. Several other questions and answers were provided by the BLM during the meetings, and those are also capture here. All Q&As are included in the sections below, organized by topic. Questions that were received multiple times were answered once.

### 3.1 MEETING FORMAT

Q-1: Is this presentation pre-recorded or happening in real time? Will the BLM answer questions during this recording?

A-1: There will be opportunities for a Q&A during the presentation. It is live.

C-1: Thank you.

Q-2: How many attendees are there at this morning's meeting/webinar?

A-2: Thirty-three people attended the morning webinar, which includes the 13 members of the contractor and BLM teams.

Q-3: Why aren't viewers allowed to ask voice questions?

A-3: BLM Wyoming wanted to ensure that questions were responded to as accurately and quickly as possible while creating an accurate record of the Q&As. The BLM thought the best platform to accomplish these goals was through the written Q&A function provided in the webinar.

Q-4: Is there or will there be a link to this presentation/slides, maybe on ePlanning?

A-4: The presentation will be posted on the ePlanning website at <https://go.usa.gov/xpCMr>

Q-5: Where on the ePlanning website will the Q&A be posted? Documents and reports, meetings, issues?

A-5: The Q&As will be posted in the Documents & Reports section:  
<https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=200006422>

Q-6: How many participants are on the call this evening; how many members of the contractor and BLM teams are included this time?

A-6: There are 24 attendees, which include 13 BLM and SWCA (contractor) employees.

Q-7: I am not seeing the questions you are reading in the Q&A box; there is apparently a delay with this function.

A-7: The BLM received several questions before the webinar meeting started and will be responding to those questions as well.

Q-8: If there is a specific answer to your question by an individual there is no “reply” feature for further questions. Will email addresses be provided to continue discussion as we would in an “in person” meeting?

A-8: Heather Schultz can be contacted at [hschultz@blm.gov](mailto:hschultz@blm.gov).

Q-9: Why are you ONLY accepting comments through the ePlanning website? Will comments emailed or mailed to the Project Manager, Heather Schultz be accepted?

A-9: Accepting comments via ePlanning allows the BLM to ensure that your comment is properly recorded and catalogued. This also ensures that the BLM is able to respond to your comment properly. If you do email comments to Heather directly, they will get incorporated in the record and addressed. However, submitting comments through ePlanning is the preferred method for comment submittal.

## **3.2 NATIONAL ENVIRONMENTAL POLICY ACT PROCESS**

Q-1: How many scoping comments did the BLM receive?

A-1: The BLM received 33 total submissions during scoping. The entire breath of scoping comments is detailed in the Appendix C of the draft EIS. The scoping report can also be found on the ePlanning website at <https://go.usa.gov/xpCMr>.

C-1: Thank you.

Q-2: What were the most frequent and most significant scoping comments the BLM received?

A-2: Most of the scoping comments the BLM received had to do with conflicts about resource values such as wildlife, greater sage-grouse, and wetlands. There were also comments about climate change and air quality, and the flexible use of the corridors. The scoping report is Appendix C of the draft EIS and can also be found on the ePlanning website at <https://go.usa.gov/xpCMr>.

Q-3: If a future carbon dioxide (CO<sub>2</sub>) enhanced oil recovery (EOR) project is proposed and additional resource values are discovered, can the proposal be moved out of the corridor?

A-3: Yes, at the site-specific level, the best pipeline placement will be determined through the NEPA process for any future construction. When a future RMP revision is proposed, the analysis that would result in an EIS would re-evaluate existing corridors. That RMP may maintain these WPCI corridors, may modify them, or could eliminate them in a future RMP decision.



Q-4: Will the BLM send notice of these meetings to all groups/individuals that submitted scoping comments, as required by 40 Code of Federal Regulations 1506.6?

A-4: Yes. The BLM sent out an email notice to everyone who requested to be on the mailing list, to everyone who submitted scoping comments, and to cooperating agencies. In addition, the BLM issued a press release on May 13 and posted information regarding these meetings on the ePlanning website.

Q-5: Did the EIS indicate that the NEPA process would be streamlined for future pipeline applications? How does that work?

A-5: In a general sense, the analysis in this document could be cited in future decisions as it relates to the WPCI corridors. By no means does the BLM imply that there is a future pipeline application. NEPA documents may reference this document. This analysis could be used to cite future NEPA decisions as they relate to these corridors. If the BLM receives an application for a ROW for either a CO<sub>2</sub> line or EOR pipeline type project, there would still be a site-specific analysis developed for any project and stipulations applied as appropriate.

Q-6: Why is the BLM moving forward with this effort during the COVID pandemic?

A-6: The BLM, to the greatest extent possible, is working on maintaining service to the American people and our stakeholders that is consistent with evolving guidance from the Center for Disease Control (CDC) and local health authorities.

Q-7: What is the difference between direct and indirect impacts for the purposes of this project?

A-7: A direct impact is defined as effects that are caused by the action and occur at the same time and in the same general location as this action for the WPCI. Direct effects would occur because of the new designation of corridors, outside of the existing designated corridors, or the change in management within those designated corridors. The indirect impacts are those associated at a different time or different location than the actions that this designation applies. Therefore, for the WPCI, indirect effects would be those from potential development of the corridors, and it assumes that the WPCI would be developed. This is discussed in greater detail Section 3.1 of the draft EIS on page 3-1.

Q-8: Who is paying for the project?

A-8: The WPCI is funded both by the BLM and the State of Wyoming.

Q-9: Would future RMP revisions maintain these corridors?

A-9: When an RMP is revised based on the analysis, the associated EIS and the revised RMPs may maintain, modify, or eliminate these WPCI corridors. Therefore, these could change with future RMP revisions.

Q-10: Will there be any in-person meetings after this?

A-10: No. The BLM wants to ensure that the safety of the public and communities we serve will remain constant. There will be no future follow-up in-person meetings.

Q-11: Could you please explain a bit more about how this EIS will amend any RMPs and how subsequent permitting decisions will be made?

A-11: This EIS could reserve portions of the planning areas in the nine land use plans in Wyoming for CO<sub>2</sub> or EOR. If the decision is to select one of the action alternatives, this decision could be amended by future RMP decisions. In addition, when and if the BLM gets a new application for a CO<sub>2</sub> or EOR type project, it would go through the full NEPA process. The information in this EIS would be used to reference and provide a more robust and more streamlined future analysis, but BLM would still do the full NEPA analysis for any new application. The appropriate stipulations as determined through that future NEPA analysis, and as already determined in the current RMPs would be applied as appropriate.

### **3.3 ALTERNATIVES**

Q-1: At some point in the presentation, can you show a map comparing Alternatives B and D, and discuss where they vary from each other?

A-1: This is not part of the presentation, but this is all catalogued in the Appendix G, Maps, in the draft EIS, which can be found on ePlanning at <https://go.usa.gov/xpCMr>.

Q-2: Please explain where Alternatives B and D differ from each other. There is not a map in the DEIS showing where they differ from each other.

A-2: Alternative B is the state's Proposed Action. In Alternative D, the BLM modified Alternative B in response to resource concerns, particularly to avoid greater sage-grouse habitat, historic trails, and other resource values. The biggest difference for these two alternatives is whether or not new corridors would be created in Priority Habitat Management Areas (PHMA). In Alternative D, no new corridors would be created in PHMA for CO<sub>2</sub> or EOR projects and facilities. Those new corridors proposed in Alternative B that are proposed in PHMA have been moved outside of PHMA, have been moved into existing corridors, or have been eliminated.

Q-3: Is there a table somewhere that more easily compares the alternatives side by side?

A-3: Table 2.5-1. Alternatives Comparison Matrix of the Draft EIS starts on page 2-5. This table shows the route numbers under each alternative. In addition, you can go to the maps in Appendix G to see the maps that show each of the routes. Each alternative is represented by four maps. The maps are fairly large scale. If you need a more detailed map or information about a specific area please reach out to Heather Schultz ([hschultz@blm.gov](mailto:hschultz@blm.gov)) to provide a map of the specific area you are interested in. The biggest difference between the alternatives is that Alternatives C and D would not create new corridors in PHMA; the corridor was either moved to an existing corridor or it was eliminated to avoid PHMA. In Alternative B, the new corridors would cross PHMA. The stipulations for construction would be applied as any project for greater sage-grouse.

Q-4: Were there other alternatives BLM considered, or just these four?

A-4: The BLM discussed different aspects of what was considered in the alternatives. The BLM looked at having various mitigations, either by alternative or throughout all the corridors. The BLM discussed and worked with our cooperators and the public through scoping to narrow down what needed to be analyzed in detail. The BLM determined that these four alternatives, the no action

and the three action alternatives, needed detailed analysis in the EIS. This is discussed in Section 2.2 of page 2-1 of the draft EIS.

Q-5: Which alternative is currently the agency preferred alternative and what does that mean?

A-5: Alternative D is currently the agency preferred alternative. This alternative was determined to be the preferred alternative by the Acting Wyoming State Director, who is the authorized officer on the WPCI, and will be the primary decision maker. The preferred alternative is the alternative that BLM believes would reasonably accomplish the purpose and need of the Proposed Action while fulfilling the agency's statutory mission and responsibilities while considering environmental impacts.

Part of the NEPA process is having public meetings and soliciting public comments to improve the analysis in the EIS. The public is encouraged to provide specific information about the routes and the preferred routes based on specific information and their knowledge to help the BLM make a more informed decision. So, as you are reviewing the draft EIS, if you think that issues were missed, or a resource needs to be addressed more, please provide those comments so the BLM can develop the best solution for routes at the end of this process. This draft EIS preferred alternative was believed to be a reasonable alternative to accomplish both the purpose and need and fulfill the agency's requirements.

Q-6: Why are there no pipelines on the eastern part of the state, as Mike showed on the map earlier in the presentation?

A-6: The main reason there are no corridors proposed in the eastern part of the state is because this area is dominated by private land. The BLM only has authority to make a decision on BLM-managed surface, so it did not seem appropriate, and the state did not include it in their proposal, to have corridors on the far eastern part of the state because of the land ownership pattern.

Q-7: In regard to the map shown in this presentation, since the blue dots are in northeast Wyoming are not connected to any corridors, how do those private surface fields interact with this project?

A-7: The BLM has the authority to make decisions on BLM surface. The BLM does not have any authority to make decisions on lands that are private, state, or under other federal jurisdictions. If a proponent wanted to come in and construct a pipeline to go into those fields, they would have to work with the private landowners, the state, or whoever is the landowner through which their project would cross. Then they could tie into lateral or trunk lines once they get near the WPCI corridor.

Q-8: Looking at the maps in Appendix G, am I seeing correctly that there is not a corridor segment from the Casper area coming south into Carbon County - Sinclair area?

A-8: That depends on the alternative. In Alternative C, that corridor had a lot of resource issues and so that area for the most part was eliminated from Alternative C. Alternative B still maintains that corridor through Carbon County. Alternative D has portions of the corridor. You can also

look at Segment 6 in Table 2.5-1, Alternatives Comparison Table, and cross reference the maps in Appendix G.

Q-9: What are the corridor widths currently being considered by the BLM under the different alternatives?

A-9: There are two corridors widths analyzed in the EIS. 1) The trunk corridors are 300 feet wide, as proposed by the state, that could accommodate up to five 24-inch pipelines. 2) The lateral corridors are slightly smaller at 200 feet wide, which could fit up to three 24-inch pipelines assuming full build out in the future.

Q-10: Please provide a detailed narrative of how designating corridors through the WPCI process impacts other potential uses of existing corridors in the future?

A-10: The way this has been envisioned is those 200-foot or 300-foot corridors would be reserved for either CO<sub>2</sub>, EOR products and other compatible uses. Those compatible uses are those uses that can occur in the same space as pipeline or pipeline corridors. Activities like grazing, recreation, and other uses can occur on the top of a pipeline corridor. Other things, such as transmission lines that could cause a physical impediment to constructing a future pipeline, would not likely be authorized in the corridor. The BLM would go through the NEPA process if an application was received to build something in the corridor, whether that be a CO<sub>2</sub> line, an EOR line, or some other project. Then the BLM would determine if the future proposed project is compatible with whatever the final decision is made from the WPCI NEPA process.

Q-11: Is the BLM authorizing any pipelines are approving any rights-of-way (ROWs) as part of the WPCI project?

A-11: No. The WPCI is only looking at corridor designation. The state's proposal does not authorize or analyze any specific components, the indirect impacts of what a future project (a general project) would do on the landscape are described in this EIS, but they are not project specific and that would be done in future NEPA documents.

Q-12: So we have a question about the designation, as reserved for CO<sub>2</sub> and EOR products. Would these inhibit future pipeline constructions or would they be denied?

A-12: When the BLM gets a site-specific application for any type of project then the BLM looks at whether that activity is in compliance with our land use plans. This would depend on the specifics of the project and on how much of the project intersects the corridor. For example, if the proposal transverses or cuts straight across at a 90-degree angle, the site-specific NEPA would analyze if the project is in compliance with this proposal and it would assess if the future pipeline would not take up too much room in the corridor. If, for example, it follows the corridor, the site-specific NEPA would analyze whether the project would make it hard for future CO<sub>2</sub> or EOR development.

Q-13: Is broadband considered a compatible use within the WPCI proposed designated corridors through that goes throughout Wyoming?

A-13: Yes. Broadband would be compatible with potential use of the corridors in the future. Broadband lines do not take up a whole lot of space and can be moved around within the corridors to avoid issues.

Q-14: Why are there no mitigation measures or stipulations in the WPCI proposal?

A-14: The BLM evaluated implementing different mitigation measures through the scoping process. Because the RMPs are regionally specific in their mitigation and the RMPs consider each field office's specific resource values and conditions, stipulations would be maintained that are already described in the RMPs. If a site-specific application was received, the existing stipulations listed in the land use plans would apply. Additional specific resource issues would be evaluated in future site-specific NEPA processes

Q-15: Is the State designating similar corridors across state lands?

A-15: No, the State of Wyoming's proposal did not address creating corridors on state lands or designating corridors on state lands. The State of Wyoming does not have to go through the NEPA process; they have their own process. If a pipeline was proposed that crosses state lands, they would work through their process with the state's requirements.

Q-16: Have you given thought on the buildout within the corridor, would it be from the middle to the outside, or start on one side and add lines to the other line? Most large diameter pipelines take a 100-foot-wide construction corridor.

A-16: To minimize disturbance, the BLM encourages proponents to build near the edges first and to work next to any existing structures that are present. If a project is proposed in the corridor, the BLM would do additional resource surveys to look for any additional information that was collected between when this decision was made and when the new proposal came into the BLM. It is possible that a project proposed in this corridor could cross back and forth within the corridor; or if needed, it could extend outside the corridor. The site-specific NEPA would determine where the proposed project is the most feasible and avoids the most resource conflicts. ROW applications would be managed by the field office in which the proposal is located.

Q-17: How is the BLM going to manage routes that intersect with valid existing rights, special designations, trails, and other resources?

A-17: For Alternatives C and D, the BLM made some modifications to the state's proposal to avoid known conflicts with existing rights, designations, and trails. The types of projects that the BLM has tried to avoid include open pit mines, existing large-scale transmission lines, and other existing ROWs. Those type of uses are not typically compatible with a corridor. Please provide a comment if you see an issue with one of the routes. That would be a great thing for the BLM to receive comments on. In areas where the BLM could not find a route around the conflict, the WPCI corridor was either moved into an existing corridor, or in some cases, either entire segments or part of segments were eliminated. This process was done in Alternatives C and D. One of the biggest changes between alternatives are the routes in Alternative C and Alternative D did not create any new corridors in greater sage-grouse PHMA.

Q-18: Oil is at historic lows, 30 to 40 years low; has the project considered that this may not be financially feasible or possible in Wyoming, with the recent economic chaos, being caused by part of the pandemic? What is the viability for this project, when the fact that oil and gas prices have tanked, and the cost of pipeline construction will deter operators/companies in the near term?

A-18: This is a valid question considering the current economic climate. We have seen low oil and gas prices before; however, this proposal, even before the pandemic hit, fits well into the

BLM's land use planning efforts. Planning with a forward-thinking perspective is easier to embrace when time is on your side. Land use planning is a forward-thinking process and the BLM must objectively value an application on its environmental sustainability and not necessarily on its viability.

Q-19: How will pipeline construction plans be required to address disturbances to wildlife migration corridors?

A-19: All the alternatives intersect, to some degree, migration corridors. Alternative C has the least amount of impact to the migration corridors. However, all current stipulations for migration corridors would be applied at the site-specific project level. For example, timing of construction and surface occupancy would all be applied at the project level. In addition, there would be stipulations to make sure that there are areas where wildlife could cross over trenches, and trenches would not have continuous, open-trench areas during critical times for migration.

Q-20: As this is implemented and skills are developed, do you see the ability to issue ROW with a Permit By Rule (PBR) if in a corridor and will have set conditions, will streamline the permitting procedures?

A-20: The BLM does not have the authority under Federal Land Policy and Management Act or our regulations to issue a permit by rule. A proponent would need to submit an SF-299 application for a ROW. Additional site-specific NEPA would be required to evaluate the plan of development.

Q-21: Would future drilling for oil or gas in a designated corridor be a compatible use?

A-21: Compatible use under the state proposal is focused on broadband. If a corridor is designated for CO<sub>2</sub> and EOR products, the state's intent is to only have pipelines for CO<sub>2</sub> and related products from source to sink. It is unlikely the BLM would authorize a well pad on top of the corridor, but that decision is reserved to be made at the site-specific level. Because of safety concerns, drilling within a corridor would not likely be considered a compatible use.

Q-22: How does this effort coordinate with the BLM Section 368 Westwide Energy Programmatic EIS and Revision Process? Counties and others have spent significant time participating the Section 368 processes. It seems the EIS should contain a section [that] addresses this important BLM effort.

A-22: The former State Director determined that the BLM would move forward with the WPCI. BLM Wyoming considered consolidating efforts with the Washington Office to look at the Section 368 energy corridor study, but the delays were unacceptable for both the proponent and BLM. The BLM has nonetheless coordinated with the Section 368 energy corridor project manager.

Q-23: If a corridor is designated and classified as reserved for CO<sub>2</sub> or EOR products, then other activities that might inhibit future pipeline construction could or would be denied? Is this correct?

A-23: Reserving the corridors for CO<sub>2</sub> for 200 to 300 feet under the WPCI would preclude other non-compatible uses at the site-specific level.

Q-24: Looking at your map, it appears you coordinated with the Enhanced Oil Recovery Institute (EORI) to target the best oil fields amenable to CO<sub>2</sub> projects, they have done comprehensive analysis.

A-24: The EORI was consulted in developing the analysis in the draft EIS as part of the reasonably foreseeable development (RFD). The BLM is not aware if the proponent also consulted with the EORI prior to submitting their proposal. There is some original BLM narrative in the draft EIS that addresses the potential source/sink relationship as some credible research corroborates. EORI has published data that helped BLM to predict greenhouse gas emissions data and mineral potential.

C-3: yes.

Q-25: Has the BLM already received any site-specific pipeline proposals or any early stage discussions of possible site-specific pipeline interest for any of these potential WPCI corridors?

A-25: The BLM has not, at this time, received any applications or interest in relation to the Proposed Action.

Q-26: Does this proposal eliminate the existing Section 368 Programmatic EIS (121-220; 220 and 221 Electrical Only Corridor) running west from approximately from the Jim Bridger Power Plant?

A-26: The proposed corridors do not eliminate any existing corridors. However, they could change the types of projects that could be authorized in portions of existing corridors.

Q-27: Will a company have a distinct ROW legal description within the corridor, or will it be a common ROW?

A-27: A distinct legal description would be part of any future potential ROW grant. However, the BLM's regulations require that ROWs are not exclusive to any one proponent and compatible uses within that ROW grant can be approved.

Q-28: Will ROW grants in the corridors be first come first serve, and what happens when the corridor is full; will you build lateral in the corridor and expand it?

A-28: Yes, ROWs would be on a first come, first serve basis. Once the designated corridors are full, the BLM would need to undertake a new land use planning analysis or evaluate new applications on a case-by-case basis.

Q-29: Have all landowners whose properties would be intersected by pipelines laid in the corridors due to checkerboard property ownership been notified of this proposal and invited to comment?

A-29: Some private landowners attended the Thermopolis public scoping meetings and met with the WPCI state lead for this initiative. This proposal applies to BLM managed lands only but if a specific project is proposed that crosses private land the pipeline company or project proponent would have to deal with obtaining access on private lands.

Q-30: How does Wyoming's efforts to potentially acquire checkerboard lands in southern Wyoming play into this?

A-30: At this point, that is a state action that they are doing independent of the WPCI process. It is a separate process that the BLM is not involved in and does not impact this EIS. If the state

were to gain ownership of the surface land in southern Wyoming and a proponent wanted to cross those lands, they would have to go through the state's process to get authorization to cross those lands.

## **3.4 RESOURCE-SPECIFIC QUESTIONS**

### **3.4.1 Greater Sage-Grouse**

Q-1: Under Alternative C, how much distance would the corridors maintain from greater sage-grouse leks?

A-1: The different alternatives will have a different number of greater sage-grouse leks impacted. Alternative C has the fewest leks impacted. None of the alternatives maintain a specific distance from greater sage-grouse leks. The BLM tried to avoid leks to the extent possible. The state also tried to avoid leks in their original proposal. The reality is that to make corridors cross the state of Wyoming, greater sage-grouse leks cannot be completely avoided. Under any alternative, the action would be in conformance with the applicable BLM RMPs, as amended, as well as the State of Wyoming's greater sage-grouse Executive Order. See the greater sage-grouse section, 3.21.9.5, in the draft EIS starting on page 3-123.

Q-2: Under Alternative D, how many acres of GHMA and PHMA would be included in the corridors?

A-2: Please see Table 3.21-19, Acreage of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas, on page 3-123.

Q-3: Under Alternative D, how many greater sage-grouse leks would be in the corridors?

A-3: The draft EIS in Table 3.21-9 and 3.21-20 page 3-123 indicates 54 leks within 2 miles and 211 leks within 4 miles.

Q-4: The draft EIS lists averages of male counts at leks by alternative. Can the BLM provide male counts by lek not as averages? It is important for comparing different segments of the alternatives for their impacts to grouse.

A-4: The BLM used the average number of male counts at leks as the approach to determine the potential impacts to greater sage-grouse due to the cyclical nature of greater sage-grouse populations. The BLM will review this approach and determine if using actual counts of males at leks would provide a more accurate depiction of potential impacts. Please submit this comment into ePlanning to ensure this is received as a comment and responded to appropriately.

Q-5: How are the wild horse and burro populations in these designated pipeline areas and corridors being protected? I am aware that Wyoming BLM has proposed a zero population of wild horses and burros and did this pipeline proposal have anything to do with that decision?

A-5: The answer to the first question is that standard stipulations from the appropriate RMP would be applied to any new project. Depending on which RMP the project is located in, this could include maintaining fences or making sure that wild horses, wildlife, or livestock would not fall in open trenches. Other stipulations would ensure that reclamation standards would be applied



and met on the site-specific level. As a part of the WPCI, the BLM considered whether or not to create a different set of management stipulations. During the scoping process, the BLM determined that it would be better to maintain the existing RMPs stipulations, because those have been developed for that resource area for very specific reasons and the BLM would like to maintain those. The answer to the second part of the question is no. The part of the question related to “Wyoming BLM has proposed zero populations wild horses and burros and did this pipeline proposal have anything to do with that decision?” I’m not going to speak to the actual wild horse decision because the current Rock Springs Wild Horse and Burro RMPA/EIS does not have any influence on the WPCI.

Q-6: You have omitted sensitive wild horse habitat or discussed it. RMP revisions are already underway to “zero out” and change stocking levels of herds in zones in conflict with this EIS. When you discuss the project in terms of “minimizing conflict,” will you amend the EIS to discuss herd management areas (HMAs) and add them to the mapping? This EIS will serve as a baseline for site-specific NEPA. If the potential conflict is omitted in designation of corridors it will increase conflict, not decrease conflict. This EIS, and the lack of addressing HMAs, is adding conflict already in the RMP revision process. Will you amend this EIS to rectify the error and to address this conflict?

A-6: The WPCI draft EIS addresses wild horses in Chapter 3 pg. 98-100. This first part of the question is out of scope to the WPCI because it refers to the Rock Springs Wild Horse and Burro RMPA/EIS. The WPCI does not analyze actual on-the-ground detailed information. The WPCI analyzes corridor additions to RMPs, therefore there are no impacts to the HMA or wild horses. All site-specific information will be analyzed in future NEPA analysis.

C-1: I’ll email. The question I asked before was labelled “complex.” My other questions fall into that same category. Thank you.

## **3.5 OTHER**

Q-1: Heather, is the picture you are in front of the Sweetwater river near Devils Gate?

A-1: No, this is actually South of Saratoga; the Bagget Rocks Country is what they call this.

C-1: No response needed great job BLM had a great team to do a virtual meeting. You have already mitigated your footprint on this project.

C-2: Tim I drafted an email and included you, hope I got your email right with the BLM. I really like this idea, in my career in the Patch it is 30-40 years late, spent a lifetime in Rocksprings and Rawlings on route and ROW with BLM. Its time has arrived.

C-3: thank you.

## **CHAPTER 4. ADDITIONAL INFORMATION**

**Email:** [hschultz@blm.gov](mailto:hschultz@blm.gov)

**Telephone:** (307) 775-6084

## **Appendix D**

### **Notification letters and Contacts List**



# MAILING LIST

**Table D-1. Federal Agencies**

Agency	Office/Department
Bureau of Indian Affairs, Rocky Mouna	Rocky Mountain Regional Office
Bureau of Reclamation	Wyoming Area Office
National Park Service	National Trains Intermountain Region
Office of Surface Mining Reclamation and Enforcement	OSMRE Western Regional Office
U.S. Department of Agriculture	Animal and Plant Health Inspection Service
U.S. Environmental Protection Agency	Region 8
U.S. Environmental Protection Agency	Region 8
U.S. Fish and Wildlife Service	Wyoming Ecological Services Field Office
U.S. Forest Service	F5 Rocky Mountain Regional Office (Region 2)
U.S. Forest Service	Intermountain Region
U.S. Geological Survey	Fort Collins Science Center

**Table D-2. State Agencies**

Agency
Department of Revenue
Office of the Governor
State Historic Preservation Office
Wyoming Water Development Office
Wyoming Department of Agriculture
Wyoming Department of Agriculture
Wyoming Department of Environmental Quality
Wyoming Department of Transportation
Wyoming Department of Environmental Quality
Wyoming Department of Environmental Quality
Wyoming Department of Environmental Quality
Wyoming Department of Environmental Quality
Wyoming Department of Environmental Quality
Wyoming State Engineers Office
National Association of State Foresters
Wyoming State Geological Survey

**Table D-3. Counties**

<b>County</b>
Albany County Commissioners
Campbell County Commissioners
Carbon County Commissioners
Laramie County Commissioners
Natrona County Commissioners
Uinta County Commissioners
Uinta County Commissioners
Coalition of Governments

**Table D-4. Conservation Districts**

<b>Conservation District</b>
Hot Springs Conservation District
Lincoln Conservation District
Little Snake River Conservation District
Medicine Bow Conservation District
Natrona County Conservation District
Popo Agie Conservation District
Powell-Clarks Fork Conservation District
Shoshone Conservation District
South Big Horn Conservation District
Sweetwater County Conservation District
Washakie County Conservation District

**Table D-5. Tribal Outreach**

<b>Tribes</b>
Blackfeet Nation
Cheyenne and Arapaho
Cheyenne River Sioux Tribe
Chippewa Cree Tribe of the Rocky Boy's Reservation
Comanche Nation
Crow Creek Sioux Tribe of the Crow Creek Reservation
Crow Tribe of Indians
Eastern Shoshone Tribe of the Wind River Reservation
Fort Peck Assiniboine and Sioux Tribes
Lower Brule Sioux Tribe
Nez Perce Tribe
North Arapaho Tribe

<b>Tribes</b>
Northern Cheyenne
Oglala Sioux Tribe
Omaha Tribe of Nebraska
Ponca Tribe of Nebraska
Rosebud Sioux Tribe
Shoshone-Bannock Tribes of Fort Hall Reservation
Sisseton Wahpeton Oyate of the Lake Traverse Reservation
Spirit Lake Tribe
Standing Rock Sioux Tribe
Three Affiliated Tribes
The Ute Tribe of the Uintah and Ouray Reservation
Winnebago Tribe of Nebraska
Yankton Sioux Tribe



# News Release

BLM Wyoming State Office

FOR IMMEDIATE RELEASE

May 13, 2020

Contact: Brad Purdy, [bpurdy@blm.gov](mailto:bpurdy@blm.gov), 307-775-6328

## **BLM announces virtual public meetings for the Wyoming Pipeline Corridor Initiative Draft EIS**

CHEYENNE, Wyo. – The Bureau of Land Management is hosting two virtual public meetings on its draft environmental analysis of the Wyoming Pipeline Corridor Initiative on May 28 at 11 a.m. and 5 p.m. Registration is required to attend the virtual public meetings. To register please visit <https://www.swcavirtualpublicinvolvement.com/wyoming-pipeline-corridor-initiative-rmp/eis>.

The virtual public meetings are designed to be informative only. Comments on the Draft EIS must be submitted by July 16, 2020, through the WPCI project's ePlanning webpage at <https://go.usa.gov/xpCMr>.

The WPCI is a proposal from the State of Wyoming to designate almost 2,000 miles of pipeline corridors across private, state and BLM-managed lands in Wyoming. Approximately 1,150 miles of the proposed corridors are located on BLM managed lands. The Draft Environmental Impact Statement analyzes the State of Wyoming's proposed alternative, two agency action alternatives, and the no action alternative.

"These virtual meetings are designed to provide an overview of the project and our draft alternatives, which will hopefully be valuable for the public in submitting comments to the BLM," said Duane Spencer, BLM Wyoming Acting State Director. "We encourage all interested in the project to attend."

If approved, the WPCI project could establish a statewide pipeline corridor network for companies to submit future proposals to the BLM to build pipelines associated with carbon capture, utilization and storage, as well as pipelines and facilities associated with enhanced oil recovery. The WPCI project does not authorize any new pipelines or construction but could amend nine BLM Resource Management Plans across the state to make future analysis of project specific proposals more efficient.



The BLM manages more than 245 million acres of public land located primarily in 12 Western states, including Alaska. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation. In fiscal year 2018, the diverse activities authorized on BLM-managed lands generated \$105 billion in economic output across the country. This economic activity supported 471,000 jobs and contributed substantial revenue to the U.S. Treasury and state governments, mostly through royalties on minerals.

**From:** [Schultz, Heather M](#)  
**To:** [Schultz, Heather M](#)  
**Bcc:** [melissa.passas@bia.gov](mailto:melissa.passas@bia.gov); [Ronca, Carlie A](#); [Mahr, Aaron P](#); [Calle, Marcelo](#); [Bruce.A.Shambaugh@aphis.usda.gov](mailto:Bruce.A.Shambaugh@aphis.usda.gov); [strobelsphilip\\_contact](#); [Lozano.VelRey@epa.gov](mailto:Lozano.VelRey@epa.gov); [Abbott, Tyler](#); [byankoviak@fs.fed.us](mailto:byankoviak@fs.fed.us); [sandraunderhill@fs.fed.us](mailto:sandraunderhill@fs.fed.us); [Anderson, Patrick J](#); [beth.callaway@wyo.gov](mailto:beth.callaway@wyo.gov); [Barry.Lawrence@wyo.gov](mailto:Barry.Lawrence@wyo.gov); [chris.wichmann@wyo.gov](mailto:chris.wichmann@wyo.gov); [Wyodeq@wyo.gov](mailto:Wyodeq@wyo.gov); [adam.deppe@wyo.gov](mailto:adam.deppe@wyo.gov); [kimber.wichman@wyo.gov](mailto:kimber.wichman@wyo.gov); [kyle.wendtland@wyo.gov](mailto:kyle.wendtland@wyo.gov); [luke.esch1@wyo.gov](mailto:luke.esch1@wyo.gov); [kevin.frederick@wyo.gov](mailto:kevin.frederick@wyo.gov); [beth.callaway@wyo.gov](mailto:beth.callaway@wyo.gov); [erin.campbell@wyo.gov](mailto:erin.campbell@wyo.gov); [RPP01@ccgov.net](mailto:RPP01@ccgov.net); [gwynnbartlett@carbonwy.com](mailto:gwynnbartlett@carbonwy.com); [commissioners@carbonwy.com](mailto:commissioners@carbonwy.com); [commissioners@laramiecounty.com](mailto:commissioners@laramiecounty.com); [rhendry@natronacounty-wy.gov](mailto:rhendry@natronacounty-wy.gov); [mmaines@natronacounty-wy.gov](mailto:mmaines@natronacounty-wy.gov); [ersouth@unitacounty.com](mailto:ersouth@unitacounty.com); [mark.anderson@uintacounty.com](mailto:mark.anderson@uintacounty.com); [kconnelly@lwy.org](mailto:kconnelly@lwy.org); [hotspringscd@gmail.com](mailto:hotspringscd@gmail.com); [lsrcd@dteworld.com](mailto:lsrcd@dteworld.com); [joan@medbowcd.org](mailto:joan@medbowcd.org); [Lisa.Ogden@wy.nacdnet.net](mailto:Lisa.Ogden@wy.nacdnet.net); [bkhamilton@wyoming.com](mailto:bkhamilton@wyoming.com); [ann.trospen@wy.nacdnet.net](mailto:ann.trospen@wy.nacdnet.net); [shoshonecd@tctwest.net](mailto:shoshonecd@tctwest.net); [sbhcd1@gmail.com](mailto:sbhcd1@gmail.com); [admin@swccd.us](mailto:admin@swccd.us); [wccd@rtconnect.net](mailto:wccd@rtconnect.net); [Floyd Azure](#); [chairmanfox@mnanation.com](mailto:chairmanfox@mnanation.com); [NPTEC@nezperce.org](mailto:NPTEC@nezperce.org); [voaxaa@gmail.com](mailto:voaxaa@gmail.com); [ldwrightjr@gmail.com](mailto:ldwrightjr@gmail.com); [rstchairman@gwtc.net](mailto:rstchairman@gwtc.net); [Chairman@swo-nsn.gov](mailto:Chairman@swo-nsn.gov); [robertflyinghawk@gmail.com](mailto:robertflyinghawk@gmail.com); [Julia\\_Stuble@tws.org](mailto:Julia_Stuble@tws.org); [tetonpeak@gmail.com](mailto:tetonpeak@gmail.com); [kellie@wyopipeline.com](mailto:kellie@wyopipeline.com); [esther@pawyo.org](mailto:esther@pawyo.org); [mayfield@rtconnect.net](mailto:mayfield@rtconnect.net); [jennifer\\_fernandez@enzi.senate.gov](mailto:jennifer_fernandez@enzi.senate.gov); [hscplanner@hscounty.com](mailto:hscplanner@hscounty.com); [mccumberwell@tctwest.net](mailto:mccumberwell@tctwest.net); [dru@wyoming.com](mailto:dru@wyoming.com); [dlallison@ubtanet.com](mailto:dlallison@ubtanet.com); [john.lucas@genlp.com](mailto:john.lucas@genlp.com); [efagley@tatachemicals.com](mailto:efagley@tatachemicals.com); [connor.brady@exxonmobil.com](mailto:connor.brady@exxonmobil.com); [ryan.pauley@genlp.com](mailto:ryan.pauley@genlp.com); [joshua.skorc@genlp.com](mailto:joshua.skorc@genlp.com); [kelly.cummins@tac-denver.com](mailto:kelly.cummins@tac-denver.com); [tmartinez@continentaldividetrail.org](mailto:tmartinez@continentaldividetrail.org); [kfuller@westernwatersheds.org](mailto:kfuller@westernwatersheds.org); [vsmith@defenders.org](mailto:vsmith@defenders.org); [msaul@biologicaldiversity.org](mailto:msaul@biologicaldiversity.org); [connie.wilbert@sierraclub.org](mailto:connie.wilbert@sierraclub.org); [rfischer@wildearthguardians.org](mailto:rfischer@wildearthguardians.org)  
**Subject:** Virtual Public Meetings Wyoming Pipeline Corridor Initiative (WPCI) Draft EIS May 28 at 11 a.m. and 5 p.m.  
**Date:** Monday, May 18, 2020 1:51:00 PM

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Registration is required to attend the virtual public meetings. To register please visit <https://www.swcavirtualpublicinvolvement.com/wyoming-pipeline-corridor-initiative-rmp/eis>.

The virtual public meetings are designed to be informative only. Comments on the Draft EIS must be submitted by July 16, 2020, through the WPCI project's ePlanning webpage at <https://go.usa.gov/xpCMr>.

The WPCI is a proposal from the State of Wyoming to designate almost 2,000 miles of pipeline corridors across lands in Wyoming. Approximately 1,105 miles of the proposed corridors are located on BLM managed lands. The Draft Environmental Impact Statement analyzes the State of Wyoming's proposed alternative, two agency action alternatives, and the no action alternative.

"These virtual meetings are designed to provide an overview of the project and our draft alternatives, which will hopefully be valuable for the public in submitting comments to the BLM," said Duane Spencer, BLM Wyoming Acting State Director. "We encourage all interested in the project to attend."

If approved, the WPCI project could establish a statewide pipeline corridor network for companies to submit future proposals to the BLM to build pipelines associated with carbon capture, utilization and storage, as well as pipelines and facilities associated with enhanced oil recovery or other compatible uses. The WPCI project does not authorize any new pipelines or construction but could amend nine BLM Resource Management Plans across the state to make future analysis of project specific proposals more efficient.

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## **APPENDIX L**

### **Biological Assessment**

**Wyoming Pipeline Corridor Initiative, September 2020**





U.S. Department of the Interior  
Bureau of Land Management

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**Biological Assessment  
Wyoming Pipeline Corridor Initiative  
September 2020  
DOI-BLM-WY-0000-2020-0001-RMP-EIS**

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U.S. Department of the Interior

Bureau of Land Management  
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September 2020





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# 1 INTRODUCTION

The Wyoming Pipeline Corridor Initiative (WPCI) would designate approximately 1,970 miles of corridors throughout the central and western portions of the State of Wyoming for the transport of carbon dioxide (CO<sub>2</sub>) and enhanced oil recovery (EOR) products and for other compatible uses. Approximately 1,111 miles of the proposed corridors are located on Bureau of Land Management (BLM)-administered lands in nine field offices: Buffalo, Casper, Cody, Kemmerer, Lander, Pinedale, Rawlins, Rock Springs, and Worland (Figure 1).

The WPCI would not authorize any new infrastructure projects or rights-of-way (ROWs) but would amend the following eight BLM resource management plans (RMPs) (a biological assessment [BA] and biological opinion were prepared for each RMP; this BA addresses this proposed amendment for the following RMPs only):

- Buffalo Field Office approved RMP (as amended) (BLM 2015a, 2019)
- ROD and approved Casper RMP (as amended) (BLM 2007a)
- Bighorn Basin Resource Management Plan Revision Project (as amended), which covers the Cody and Worland Field Offices (BLM 2015b)
- ROD and approved Kemmerer RMP (as amended) (BLM 2010)
- ROD and approved RMP for the Lander Field Office (as amended) (BLM 2014)
- ROD and approved Pinedale RMP (as amended) (BLM 2008a)
- ROD and approved Rawlins RMP (as amended) (BLM 2008b)
- ROD and Green River RMP (as amended) (BLM 1997)

The amendments would designate new corridors reserved for the transport of CO<sub>2</sub> and EOR products and for other compatible uses (i.e., those that avoid conflicts with pipelines and have similar effects, as determined on a case-by-case basis). RMP amendments would also be required for those proposed corridors that are within existing designated corridors and that would reserve a portion of the designated corridor exclusively for CO<sub>2</sub> and EOR product pipelines or other compatible uses. The corridors would be in BLM areas that are presently open to ROWs. Although the designations would occur only on BLM-administered lands, the BLM takes into account potential environmental impacts that may occur on other lands as a result of those designations.

The preferred alternative (Alternative E in the final environmental impact statement [EIS] for the WPCI [BLM 2020]) would maximize the use of existing designated corridors and adjust corridor routes as needed to reduce resource impacts, address conflicts with valid existing rights, and collocate infrastructure to minimize impacts across the landscape. Existing stipulations for each respective RMP would apply to any new corridors within each BLM field office. The BAs listed above were prepared at the time each RMP was prepared to analyze how management actions would impact species listed under the Endangered Species Act (ESA). This BA analyzes the RMP amendments specific to WPCI corridor designation. BLM corridor designation is a planning exercise to ensure efficient and effective transport of CO<sub>2</sub>, EOR products, and compatible uses but does not constitute a change in of management of the area. These areas were already open to ROWs in the existing RMPs.

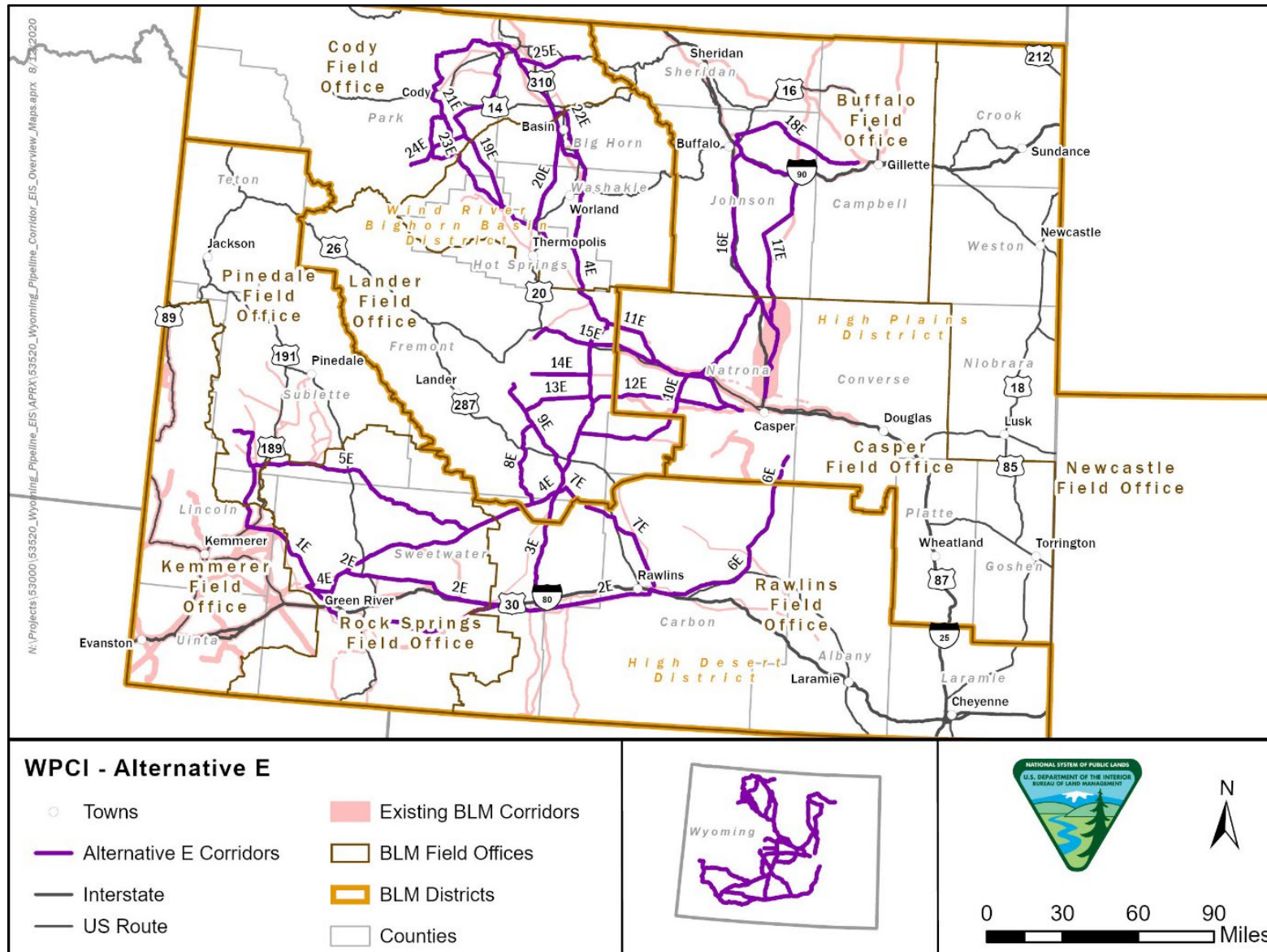


Figure 1. Wyoming Pipeline Corridor Initiative overview.

## 1.1 Coordination/Consultation

The corridors would be designated within potentially suitable habitats for threatened and endangered plants and wildlife or project actions may affect listed species and designated critical habitats, or both. This BA assesses the potential for effects of the proposed designation on threatened, endangered, proposed species, and critical habitats pursuant to the ESA. Federal agencies are required to utilize their existing programs in furtherance of the purposes of the ESA and to ensure the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of endangered and threatened species or their critical habitats. To accomplish these goals, the ESA requires action agencies, such as the BLM, to consult or confer with the U.S. Fish and Wildlife Service (USFWS) when there is discretionary federal involvement or control over the action (18 Code of Federal Regulations [CFR] 380.13).

This programmatic BA provides documentation for the BLM to meet ESA Section 7 obligations concerning the proposed corridor designations. The BLM met with the USFWS on June 18, 2020, to initiate early coordination and discuss the consultation process, including schedules for preparation and review of this BA.

It is assumed that future development will occur as a result of the designation of the corridors. As new applications to construct within the corridors are received, the BLM will conduct site-specific evaluations for those implementation-level projects in the designated corridors. Wherever necessary, the BLM will further consult with the USFWS at the site-specific level for activities authorized within the corridors where those activities may affect any threatened, endangered, candidate, or proposed species or their designated or proposed critical habitats.

## 2 WPCI DESCRIPTION

### 2.1 Background

The WPCI would designate new corridors reserved for the transport of CO<sub>2</sub> and EOR products and for other compatible uses and would reserve portions of existing designated corridors for the same purpose. Designating corridors on public lands provides for more efficient siting and permitting of projects and minimizes impacts across the greater landscape by providing for the collocation of projects.

Through the National Environmental Policy Act (NEPA) process, the BLM identified a preferred alternative that would maximize the use of existing corridors and adjust proposed corridor routes as needed to reduce resource impacts, address conflicts with valid existing rights (e.g., transmission substations, active mines), and collocate infrastructure to minimize impacts across the landscape (Alternative E) (Table 1). The BLM would require site-specific NEPA and other compliance, such as ESA compliance coordination, for any potential new project proposed within the designated corridors.

The corridors cover 57,776 acres, with 32,725 acres on BLM land. The remaining acreage consists primarily of private and state lands. Approximately 74% of the proposed corridor areas

overlap existing designated utility corridors and/or are within 0.5 mile of existing pipeline ROWs.

**Table 1. Summary of Wyoming Pipeline Corridor Initiative Preferred Alternative**

Description	Area
Total miles	1,970 miles
BLM miles	1,111 miles
Total acres	57,776 acres
BLM acres	32,725 acres
Acres overlapping existing designated utilities corridors	42,600 acres (74%)
Miles within 0.5 mile of existing pipeline ROWs	595 miles (30%)

All WPCI corridors, either new or those within existing ROWs on BLM lands, consist of trunk lines and lateral lines. Corridors for trunk lines would be 300 feet wide, and corridors for lateral lines would be 200 feet wide. Existing stipulations for each RMP apply to any proposed corridor segment within the lands under the jurisdiction of the respective BLM field office. The corridors are divided into 25 segments based on their type and the regions they would service within the state (Table 2).

**Table 2. Description of Wyoming Pipeline Corridor Initiative Segments**

Segment	Type	BLM Field Offices
1	Lateral	Kemmerer, Rawlins, Rock Springs
2	Lateral	Rawlins, Rock Springs
3	Trunk	Lander, Rawlins
4	Trunk	Cody, Lander, Rawlins, Rock Springs, Worland
5	Lateral	Pinedale, Rock Springs
6	Trunk	Casper, Rawlins
7	Trunk	Lander, Rawlins
8	Lateral	Lander
9	Lateral	Lander
10	Lateral	Casper, Lander
11	Trunk	Casper, Lander
12	Lateral	Lander, Casper
13	Lateral	Lander
14	Lateral	Lander
15	Lateral	Casper, Lander
16	Lateral	Buffalo, Casper
17	Trunk	Buffalo, Casper
18	Lateral	Buffalo
19	Trunk	Cody, Worland

Segment	Type	BLM Field Offices
20	Lateral	Worland
21	Lateral	Cody, Worland
22	Lateral	Cody, Worland
23	Lateral	Cody
24	Lateral	Cody
25	Lateral	Cody

## 2.2 General Setting

The corridors would be designated on BLM lands primarily characterized by low precipitation, high summer evapotranspiration rates, open grasslands, shrublands, forests, intermittent streams, ephemeral streams, and a few perennial rivers and wetlands (Wiken et al. 2011), where a mosaic of dryland farming, livestock grazing, residential development, and energy development (coal and oil and gas) has impacted some areas of the native mixed grass-shortgrass prairies and shrublands (Jin et al. 2013). U.S. Geological Survey (USGS) Gap Analysis Program (GAP) vegetation classification indicates the habitats present within the corridors and surrounding areas (USGS 2011). The GAP vegetation classifications are listed and grouped into general vegetation categories as described in Table 3.

**Table 3. Vegetation Types Associated the Wyoming Pipeline Corridor Initiative**

GAP Vegetation Class	General Vegetation Category
Central Rocky Mountain Montane-Foothill Grassland & Shrubland	Shrubland, desert scrub
Great Basin Saltbush Scrub	Shrubland, desert scrub
Great Basin-Intermountain Dry Shrubland & Grassland	Shrubland, desert scrub
Great Basin-Intermountain Dwarf Sagebrush Steppe & Shrubland	Shrubland, desert scrub
Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland	Shrubland, desert scrub
Southern Rocky Mountain Montane Shrubland	Shrubland, desert scrub
Great Plains Mixed-grass & Fescue Prairie	Grassland
Great Plains Sand Grassland & Shrubland	Grassland
Great Plains Shortgrass Prairie	Grassland
Rocky Mountain-Vancouverian Subalpine-High Montane Mesic Meadow	Grassland
Great Plains Floodplain Forest	Riparian
Rocky Mountain-Great Basin Montane Riparian Forest	Riparian
Arid West Interior Freshwater Marsh	Marsh, meadow
Great Plains Marsh, Wet Meadow, Shrubland & Playa	Marsh, meadow
Great Plains Saline Wet Meadow & Marsh	Marsh, meadow
North American Boreal & Sub-Boreal Acidic Bog & Fen	Marsh, meadow
Open Water	Marsh, meadow
Warm & Cool Desert Alkali-Saline marsh, Playa & Shrubland	Marsh, meadow
Western North American Montane-Subalpine Marsh, Wet Meadow & Shrubland	Marsh, meadow

GAP Vegetation Class	General Vegetation Category
Central Rocky Mountain Dry Lower Montane-Foothill Forest	Forest, woodland
Great Plains Forest & Woodland	Forest, woodland
Intermountain Single leaf Pinyon - Utah Juniper - Western Juniper Woodland	Forest, woodland
Rocky Mountain Subalpine-High Montane Conifer Forest	Forest, woodland
Southern Rocky Mountain Lower Montane Forest	Forest, woodland
Herbaceous Agricultural Vegetation	Agricultural
Introduced & Semi Natural Vegetation	Agricultural
Pasture & Hay Field Crop	Agricultural
Barren	Barren, badland
Great Plains Badlands Vegetation	Barren, badland
Great Plains Cliff, Scree & Rock Vegetation	Cliff, rock, scree
Intermountain Basins Cliff, Scree & Badlands Sparse Vegetation	Cliff, rock, scree
Western North American Temperate Cliff, Scree & Rock Vegetation	Cliff, rock, scree
Developed & Urban	Developed
Quarries, Mines, Gravel Pits and Oil Wells	Developed
Recently Disturbed or Modified	Developed

Source: USGS (2011).

## 2.3 Conservation Measures

The objectives of the BLM special status species policy are to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for those species and to initiate proactive conservation measures that reduce or eliminate threats to sensitive species to minimize the likelihood of and need for listing of these species under the ESA (BLM 2008c). All potential projects within the proposed corridors must follow applicable RMP decisions mandated for corridors in the RMP for the respective BLM field office where the proposed corridors are located. See Section 3.1, Species Descriptions, for those measures that pertain to each listed species and Attachment A for a full list of conservation measures and best management practices (BMPs) that would apply to the corridors.

## 3 SPECIES CONSIDERED

The official species list was obtained from Information for Planning and Consultation (IPaC) (USFWS 2020a) in June 2020 (Table 4). No designated critical habitat is present within the proposed corridor boundaries; however, desert yellowhead (*Yermo xanthocephalus*) and Canada lynx (*Lynx canadensis*) designated critical habitat are within 1 mile of the proposed corridors. In addition, designated critical habitat for Colorado River species and Platte River species is downstream. As a result, these habitats are also considered in this BA.

Section 7 consultation is not required under the ESA for the nonessential experimental black-footed ferret. However, BLM policy requires that all nonessential experimental populations (NEPs) (e.g., the ferret) be treated as “proposed species” for the purposes of Section 7 Interagency Cooperation. Therefore, the BLM will request the opportunity to conduct an



informal “conference” over the black-footed ferret in an effort to ensure USFWS concurrence with BLM determinations of potential effect.

Candidate species are afforded no legal status under the ESA and therefore do not require Section 7 consultation. For these reasons, white-bark pine is not carried forward for analysis at this time. The corridors cross the Area of Influence (AOI) for all the species in Table 4; therefore, the analysis includes those species and suitable habitats. The AOI ranges do not necessarily identify where the species are present but rather identify the area within which any proposed action should include consideration of potential effects to the listed species.

**Table 4. Threatened and Endangered Species Considered**

Common Name	Scientific Name	Status	Habitat
Black-footed ferret	<i>Mustela nigripes</i>	Nonessential experimental	Prairie dog complexes
Blowout penstemon	<i>Penstemon haydenii</i>	Endangered	Sand dunes
Bonytail and its critical habitat	<i>Gila elegans</i>	Endangered	Colorado River
Canada lynx and its critical habitat	<i>Lynx canadensis</i>	Threatened	Forest
Colorado pikeminnow and its critical habitat	<i>Ptychocheilus lucius</i>	Endangered	Colorado River
Desert yellowhead and its critical habitat	<i>Yermo xanthocephalus</i>	Threatened	Sandstone outcrops
Grizzly bear	<i>Ursus arctos horribilis</i>	Threatened	Forest
Humpback chub and its critical habitat	<i>Gila cypha</i>	Endangered	Colorado River
Least tern	<i>Sterna antillarum</i>	Endangered	Platte River drainage
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Forest
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Platte River drainage
Piping plover	<i>Charadrius melodus</i>	Threatened	Platte River drainage
Razorback sucker and its critical habitat	<i>Xyrauchen texanus</i>	Endangered	Colorado River
Ute ladies-tresses	<i>Spiranthes diluvialis</i>	Threatened	Riparian, wetland
Western prairie fringed orchid	<i>Platanthera praeclara</i>	Threatened	Platte River drainage
Whitebark pine	<i>Pinus albicaulis</i>	Candidate	Forest
Whooping crane and its critical habitat	<i>Grus americana</i>	Endangered	Platte River drainage
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened	Riparian

Source: USFWS 2020a.

## 3.1 Species Descriptions

### 3.1.1 Canada Lynx (*Lynx canadensis*)

This species is addressed in the following RMPs: Cody/Worland, Kemmerer, Lander, Rawlins, Rock Springs, and Pinedale.

### **3.1.1.1      *Status***

The Canada lynx was proposed for listing as threatened under the ESA in 1998 (*Federal Register* [FR] 63[130]). On March 24, 2000, the final rule listing the lynx as threatened within the contiguous U.S. Distinct Population Segment (DPS) was issued (FR 65[58]).

In 2014, critical habitat for the Canada lynx was designated for portions of Fremont, Lincoln, Park, Sublette, and Teton Counties, including some BLM land and parts of Yellowstone National Park and the Bridger-Teton and Shoshone National Forests in Wyoming (50 CFR 17.95(a); USFWS 2019a).

### **3.1.1.2      *Habitat Requirements and Distribution***

The lynx is a habitat and prey specialist that requires dense boreal and subalpine forests that support abundant snowshoe hares, which typically constitute greater than 90 percent of the lynx's year-round diet. Lynx and hares are most abundant in areas with long winters and persistent deep, powdery snow. Lynx and snowshoe hares are strongly associated with moist boreal forests, where winters are long, cold, and snowy. The boreal forest landscapes lynx and hares occupy are naturally dynamic. Forest stands within the landscape may experience abrupt changes after natural or human-caused disturbances such as fire, insect outbreaks, wind, ice, disease, and forest management and more gradual changes as the stands undergo succession and regenerate after such events. As a result, lynx habitat is a shifting mosaic of forest patches of variable ages and changing quality. These stands of differing ages and conditions provide lynx foraging and denning habitat, and some serve as routes for lynx moving between foraging and denning habitats (USFWS 2017).

The DPS occurs at the southern margin of the species' range, where boreal forest habitats and thus lynx are, in most places, naturally less abundant and generally more patchily distributed than in the core of the species' range in Canada and Alaska. Maintaining connectivity between the DPS and lynx populations in Canada is thought to be important. However, the extent to which DPS populations may depend on immigration of lynx from Canada remains uncertain (USFWS 2017).

In Wyoming, Canada lynx live in subalpine/coniferous forests of mixed age and structural classes. Mature forests with downed logs and windfalls provide cover for denning sites, escape, and protection from severe weather. Early to mid-successional forests with high stem densities of conifer saplings provide optimal habitat for the snowshoe hare. Most of Wyoming's lynx observations occur in the western part of the state in the Wyoming and Salt River Ranges and in the northern part of the state through the Tetons and Absaroka Range in and around Yellowstone National Park (USFWS 2019a).

Lynx in southern Rockies boreal forests live in isolated island habitats of mountainous areas surrounded by less suitable lower-elevation habitats, often shrub steppe in Wyoming. Movement between suitable habitats is essential, but poorly understood. Subadults move between habitat in response to low hare abundance. Functioning metapopulations require such occasional movements of individuals among subpopulations for species persistence. Smaller-scale movements occur as animals travel between hunting grounds within a home range. Because of

the patchiness of lynx habitats in the southern portion of the distributional range, lynx may include travel corridors within their home ranges (BLM 2005a).

Canada lynx inhabit the coniferous or mixed forests of the northern latitudes and high mountains. Cool, moist forests with cold, snowy winters and abundant snowshoe hares characterize the required habitat of lynx. Primary vegetation in lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce (BLM 2005a). Secondary vegetation includes cool, moist Douglas-fir, grand fir, western larch, and aspen forests. Dry forests, such as ponderosa pine and climax lodgepole pine, do not provide habitat for lynx (Ruediger et al. 2000). In Wyoming, the elevational range for lynx occurrences is 4,920 to 11,480 feet (BLM 2005a). Lynx observed in shrub steppe habitat are thought to be taking advantage of jackrabbit population spikes as alternate prey and (or) traveling between suitable habitat patches, especially within riparian vegetation corridors. Lynx require a complex mosaic of vegetation within their home range to meet the different habitat needs. Snowshoe hares are the primary prey of Canada lynx, and snowshoe hare abundance is a limiting factor for Canada lynx.

The Wyoming Natural Diversity Database (WYNDD 2020) indicates that lynx are present in Fremont, Lincoln, Park, Sublette, Teton, Uinta, and possibly Big Horn Counties. Lynx have been found in Medicine Bow, Bridger-Teton, Caribou-Targhee, and Shoshone National Forests and Grand Teton and Yellowstone National Parks. Lynx Analysis Units (LAUs) are U.S. Forest Service (USFS) management areas that contain suitable lynx habitat and key linkage areas and approximate the size of a female home range. Wyoming contains approximately 555,604 acres of LAUs, including small parcels of BLM-administered lands along national forest boundaries that are cooperatively managed to support USFS LAUs. The BLM also coordinates with the USFWS on programmatic planning process approaches to lynx management. Below is the known distribution of the species by BLM field office.

Cody/Worland: Canada lynx have not been documented on BLM-administered land in the planning area; however, the planning area contains four LAUs that include 24,507 acres of BLM-administered lands that the agency cooperatively manages with the USFS.

Kemmerer: The planning area contains portions of eight LAUs on BLM-administered land that the agency cooperatively manages with the USFS. Unlike other planning areas, the Kemmerer planning area contains two LAUs that do not involve USFS management. The Dempsey Ridge and Commissary Ridge LAUs are managed as “stand-alone” units. In addition to the 50,930 acres of LAUs in the planning area, 900 acres have been designated as lynx travel corridor and support habitat. Several occurrences of Canada lynx as recently as 2005 were documented within the northern edge of the planning area. There have been sporadic reports of tracks and other sign since the documented mortality of those lynx. No known or suspected lynx reside within these LAUs currently.

Rawlins: No LAUs are designated on BLM lands within the planning area, but there is potential for lynx to travel through portions of the planning area when moving over the landscape.

Rock Springs: Portions of three LAUs on the northern edge of the planning area extend from the Wind River Mountains into the foothills, including 24,492 acres of BLM-administered land the agency cooperatively manages with the USFS.

Lander: The LAUs in this planning area cover 115,611 acres, including 27,022 acres of BLM-administered surface that the agency cooperatively manages with the USFS.

Pinedale: Portions of 10 LAUs are within the planning area and include 77,699 acres on BLM-administered land that the agency cooperatively manages with the USFS.

Critical habitat for the Canada lynx is designated for portions of Fremont, Lincoln, Park, Sublette, and Teton Counties, including parts of Yellowstone National Park and the Bridger-Teton and Shoshone National Forests. This critical habitat includes lands under the management of the BLM Pinedale and Cody Field Offices. The USFWS has identified the primary constituent elements specific to lynx in the contiguous United States as boreal forest landscapes supporting a mosaic of differing successional forest stages and featuring:

- snowshoe hares and their preferred habitat conditions, which include dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multistoried stands with conifer boughs touching the snow surface;
- winter conditions that provide and maintain deep, fluffy snow for extended periods;
- sites for denning that have abundant coarse woody debris, such as downed trees and root wads; and
- matrix habitat between patches of boreal forest in close proximity such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range (USFS 2017).

### **3.1.1.3      *Threats***

There appear to be some notable differences between Canada lynx ecology in southern and northern boreal forests. In the south, snowshoe hare densities are lower and Canada lynx populations appear less stable and at higher risk. The ecological differences between latitudes are the result of the use of alternative prey species; the effect of habitat patchiness on movements, reproduction, and survival; and the potential effects of different communities of predators and competitors (Ruediger et al. 2000). Persistence of Canada lynx in the contiguous United States appears to rely on dispersal from larger populations and maintenance of connectivity between northern and southern populations (BLM 2005a; USFWS 2017). For Canada lynx in Wyoming and Colorado, this translates to maintaining connectivity between populations in those two states, connectivity between populations in Canada and Montana, and connectivity between populations in Montana and Wyoming.

Additional threats to Canada lynx include fragmentation resulting from forestry, agriculture, and roads and the subsequent isolation of suitable habitat. Wildfire management in the West has resulted in forests that are more homogeneous and consist of shade-tolerant species with more canopy layers. Habitat has been lost because of suppression of forest fires and ecological succession to habitats that do not support snowshoe hare and Canada lynx. Recreational trails created by snowmobiles and even cross-country skiers create packed snow conditions that allow other predators and competitors into what would otherwise be more exclusive Canada lynx habitat.

#### **3.1.1.4 Conservation Measures**

The BLM Wyoming State Office's *Final Statewide Programmatic Canada Lynx* (*Lynx canadensis*) *Biological Assessment* (BLM 2005a) was completed in July 2005. The USFWS biological opinion is included in *Consultation for the Impacts from the Wyoming Bureau of Land Management's Resource Management Plans to the Canada Lynx* (*Lynx canadensis*) (USFWS 2005). Conservation measures in place include the assessment of habitat in suitable and unsuitable condition and the ensuing limitations on percentage of disturbance allowable to habitat as specified in *Canada Lynx Conservation Assessment and Strategy* (Interagency Lynx Biology Team 2013). The BLM must limit disturbance within each LAU to 30% of the suitable habitats. BLM actions cannot change more than 15% of lynx habitats within a LAU to an unsuitable condition within a 10-year period. Each RMP considers the effects and conservation measures identified in the statewide programmatic BA and biological opinion (see Attachment A).

#### **3.1.2 Grizzly Bear (*Ursus arctos horribilis*)**

This species is addressed in the following RMPs: Cody/Worland, Lander, and Pinedale.

##### **3.1.2.1 Status**

In 1975 the USFWS listed the grizzly bear (*Ursus arctos horribilis*) as threatened in the lower 48 states under the ESA. The BLM Wyoming completed the *Final Statewide Programmatic Grizzly Bear* (*Ursus arctos*) *Biological Assessment* in 2005 and updated the BA in 2006 (BLM 2005b). *Grizzly Bear Recovery Plan* (USFWS 1993) outlines the conditions required for grizzly bears to reach recovery and establishes several demographic (population) recovery targets that must be achieved for a recovered grizzly bear population. *Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area* (Interagency Conservation Strategy Team 2007) defines a Primary Conservation Area (PCA) for the species, i.e., the recovery zone in *Grizzly Bear Recovery Plan* (USFWS 1993), and outlines a cooperative management strategy for implementation by state and federal agencies upon delisting of the population of grizzly bears therein. As of 2011 review, the Greater Yellowstone Area population was increasing 7% annually and was well distributed throughout the recovery zone (USFWS 2011a).

The Wyoming Game and Fish Department (WGFD) prepared *Wyoming Grizzly Bear Management Plan* in 2002 and amended the document in 2005 (WGFD 2002). The agency updated the plan in 2016 (WGFD 2016). The plan is consistent with the conservation strategy developed by the Interagency Conservation Strategy Team and provides management plans for areas outside the PCA to ensure the long-term viability of grizzly bears and preclude re-listing of the species; support the expansion of the grizzly bear population beyond the PCA in areas that are biologically suitable and socially acceptable; and manage grizzly bears as a trophy game animal, including allowing regulated hunting when and where appropriate.

In 2017, the USFWS announced the establishment of a distinct population segment of Greater Yellowstone Ecosystem grizzly bears that no longer meet the definition of threatened, and the agency removed that distinct population segment from the federal list of threatened and endangered wildlife. However, in 2019 the distinct population segment was again included as

part of the existing listing for grizzly bears under the ESA, and the USFWS reinstated regulatory protections for the distinct population segment.

### **3.1.2.2      *Habitat Requirements and Distribution***

Occupied grizzly bear habitat in the lower 48 states is characterized by extensive forest cover is often interspersed with grasslands and meadows; in Wyoming, these habitats are generally above 4,921 feet. Although grizzly bears do not intrinsically require such cover, populations living near developed areas may require the isolation provided by forest cover (Reed-Eckert et al. 2004). Home ranges must encompass a complex of habitat types because the bears move among these habitats seasonally to take advantage of various foods as they become available. In addition, home ranges must include sites suitable for hibernation. Denning sites are commonly located in subalpine fir stands on north-facing exposures.

Foraging areas for grizzly bears consist of a mosaic landscape containing different seasonal foods. These areas include elk wintering grounds, calving areas, tributaries of Yellowstone Lake that contain trout, and whitebark pine forests inhabited by red squirrels. Lush meadows with sedges and equisetum and areas of shrubs with berries are important. Grizzly bears move seasonally as plant resources become available. In spring, as succulent herbaceous material becomes available, bears concentrate activity at feeding sites in open areas near cover. After the growing season, bears move to moist sites where succulent grasses and forbs remain available. As valley vegetation desiccates, bears move to the lodgepole pine forests to exploit late-season foods such as whitebark pine seeds, berries, mushrooms, and smilacina rhizomes.

Grizzly bears select den sites with stable snow conditions and is typically excavated under trees where root systems provide stability for the roof. Grizzly bears are likely to use the most suitable denning habitat within their home range, but local tradition may play a role in site selection and den construction. The most frequently used denning habitat in the Greater Yellowstone Area is in subalpine fir forest.

In Wyoming and elsewhere, the grizzly bear has expanded its range in the past two decades and has reoccupied historic habitats. Current range expansion of the Greater Yellowstone Area population is particularly evident in the southern portion of the ecosystem in Wyoming. The current general extent of the grizzly bear's range in Wyoming includes Grand Teton National Park, Yellowstone National Park, and portions of adjacent national forest and private lands to the south and east extending to the eastern edge of the Absaroka Mountains, the western portion of the Owl Creek Mountains, south in the Gros Ventre Range to the Pinnacle Peak area, and south in the Wind River Range to the Green River Lakes area.

Annual monitoring reports published by the Interagency Grizzly Bear Study Team include population trends in the Greater Yellowstone Ecosystem (USGS 2020). The most recent reports indicate that the population is stable to increasing. Below is the known distribution of the species by BLM field office.

Cody/Worland: Grizzly bears occur in the Absaroka Front Management Area along the western edge of the planning area and the eastern flank of the Greater Yellowstone Ecosystem.

Lander: The planning area contains 29,000 acres of the mapped grizzly bear distribution (Schwartz et al. 2002; BLM 2005b). Grizzly bears are known to occur in the Pole/Bear Creek areas, drainages of East Fork Wind River, the Horse Creek and Tappan Creek drainages north of Dubois, the Dunoir Creek and Warm Springs Creek drainages (occasional use only), Jakeys Fork of the Wind River, and USFS lands on the north end of the Lander Slope of the Wind River Range.

Pinedale: The planning area is not within the PCA for grizzly bear but is within the WGFD's Grizzly Bear Data Analysis Unit and is considered an ecosystem transitional zone containing the southernmost portion of known grizzly bear activity in the Greater Yellowstone Ecosystem (WGFD 2002).

### **3.1.2.3      *Threats***

The key reasons for the decline of grizzly bears in North America are human-caused mortality and habitat loss. Stochastic environmental events also pose extensive threats to long-term persistence of small isolated populations and are therefore real threats to persistence of the grizzly bear population in Wyoming. A stochastic environmental event can impact a population of grizzly bears by causing direct bear mortality or by impacting important food sources and carrying capacity. Researchers are concerned about the impacts of future climate change on two important foods –whitebark pine seeds and aggregated army cutworm moths.

Large-area requirements, low reproductive potential, and sensitivity to human disturbance contribute to intrinsic vulnerability in this species. Throughout the entire grizzly bear range, documented human disturbances include helicopter and fixed-wing aircraft flight, hydrocarbon exploration and development, hydroelectric development, timber extraction, recreational activities, and road and highway use. These disturbances may result in displacement and/or disruption of normal grizzly bear behavior patterns.

Disturbances associated with roads and developments can displace grizzly bears from quality habitats; however, road avoidance varies among individuals. Generally, grizzly bears avoid areas within approximately 1.9 miles of developments and within 2.5 miles of roads (BLM 2005b).

### **3.1.2.4      *Conservation Measures***

The statewide grizzly bear BA (BLM 2005b) includes conservation measures such as ensuring that BLM-authorized activities in currently occupied grizzly bear habitat are analyzed and planned with active grizzly bear protection measures. Project proponents must adhere to activity timing restrictions and consider spatial and other parameters for grizzly bears to prevent significant disruptions to normal or expected bear behavior and activity. See Attachment A for the full list of planned conservation and minimization measures for the species and its habitats.

## **3.1.3      Northern Long-eared Bat (*Myotis septentrionalis*)**

This species is addressed in the Buffalo RMP.

### **3.1.3.1 Status**

On October 2, 2013, the USFWS proposed the northern long-eared bat (*Myotis septentrionalis*) (NLEB) for listing as endangered under the ESA (USFWS 2013a). Because of population declines caused by white-nose syndrome (WNS) and continued spread of the disease, the NLEB was listed as threatened under the ESA on April 2, 2015 (FR 80:17974).

The listing decision included an interim special rule under Section 4(d) of the ESA, which was finalized on January 14, 2016. This rule provides flexibility to landowners, land managers, government agencies, and others as they conduct activities that may impact the NLEB and its habitat. As of June 1, 2018, Wyoming is included in the WNS zone as defined in the 4(d) rule. Within the WNS zone, incidental take (unintentional harm to bats incidental to otherwise lawful activities) is prohibited under the following circumstances: 1) if it occurs within a hibernaculum, 2) if it results in tree removal activities within 0.25 mile of a known hibernaculum, or 3) if it destroys a known occupied maternity roost tree or other trees within 150 feet of a maternity roost tree during the pup season (June 1 through July 31). Furthermore, federal agencies are obligated to consult with the USFWS on projects that may affect the NLEB. This obligation may be covered if the federal agency complies with the measures outlined in the framework of the USFWS's January 5, 2016, programmatic biological opinion on the final 4(d) rule. Purposeful take, other than for human safety or removal of bats from dwellings, is prohibited (USFWS 2019b).

### **3.1.3.2 Habitat Requirements and Distribution**

NLEBs forage primarily in coniferous or deciduous forests. They are short-distance migrants, with the distance between summer habitat and hibernacula typically being 56 kilometers (35 miles) (Hester and Grenier 2005) to 89 kilometers (55 miles) (USFWS 2014) or shorter. NLEBs predominantly overwinter in hibernacula such as caves and abandoned mines. In general, NLEBs arrive at hibernacula in August or September, begin hibernation in October and November, and leave hibernacula in March or April. In the Black Hills, hibernation occurs from October into April (Tigner and Dowd Stukel 2003). NLEBs have shown a high degree of philopatry (using the same site multiple years) for hibernacula, although they may not return to the same hibernaculum in successive seasons.

Suitable summer habitat for NLEB consists of a wide variety of forested/wooded habitats where the species roosts, forages, and travels and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags  $\geq 3$  inches diameter that have exfoliating bark, cracks, crevices, and/or cavities) as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of other forested/wooded habitat. NLEBs have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat (USFWS 2020b).

NLEB breeding occurs from late July in northern regions to early October in southern regions and commences when males begin to swarm hibernacula and initiate copulation activity. Adult



females give birth to a single pup typically in late May or early June but may do so as late as July. Juveniles typically start flying at 21 days. Adult longevity is estimated to be up to 18.5 years.

The NLEB is generally less common in the western portion of its range; the species is considered common in only small portions of the western range (e.g., Black Hills) and uncommon or rare in the western extremes of the range (e.g., Wyoming, Kansas, Nebraska). The NLEB is considered abundant in the Black Hills, having been observed there hibernating and during the summer.

No limestone, dolomite, or other karst formations suitable for caves are within the Buffalo planning area east of the Bighorn Mountains in northeastern Campbell County, where one documented observation of NLEB occurred in 2000 (WYNDD 2020). No known abandoned mine shafts with hibernaculum potential are within the BLM lands in the Buffalo planning area. No winter hibernacula are known in Wyoming (Abernethy 2019). The species occupies a small area of northeastern Wyoming in the Bear Lodge Mountains, Crook County, and Black Hills National Forest, Weston County.

### **3.1.3.3      *Threats***

The greatest threat to NLEB is WNS, a disease caused by the fungus *Pseudogymnoascus (Geomyces) destructans*. First observed in New York in 2006, WNS has spread rapidly across the eastern United States, and the fungus that causes now grows in Wyoming. Throughout the range of WNS, up to 99 percent of infected bats die from the disease. Although there is uncertainty about the spread of WNS, experts agree that the fungus will likely spread throughout the United States (USFWS 2019b).

The NLEB is also threatened by the loss and degradation of summer habitat caused by human development and by collision with or barotrauma (injury to the lungs because of change in air pressure) caused by wind turbines. Mine closures and vandalism of winter roosts and hibernacula also pose threats to this species (USFWS 2019b). These additional threats (the present or proposed destruction, modification, or curtailment of its habitat or range; overutilization of habitat for commercial, recreational, scientific, or educational purposes; other natural or manmade factors affecting the species' continued existence), when combined with the impacts of WNS, heighten the level of risk to conservation of the species (USFWS 2019b).

### **3.1.3.4      *Conservation Measures***

Conservation measures in the Buffalo RMP are based on *Northern Long-Eared Bat Interim Conference and Planning Guidance* (see Attachment A).

### **3.1.4      *Black-footed Ferret (Mustela nigripes)***

This species is addressed in the following RMPs: Cody/Worland, Casper, Kemmerer, Lander, Rawlins, Green River, and Pinedale.

#### **3.1.4.1      *Status***

The black-footed ferret (*Mustela nigripes*) was first listed as federally endangered in 1967 under a precursor of the modern ESA. No designated critical habitat has been identified for this species to date. No wild populations are currently known, except those living and reproducing at actively managed reintroduction sites. Discovery of any new populations is considered unlikely (Hanebury and Biggins 2006; Lockhart et al. 2006). The state of Wyoming is designated as a special area for the re-establishment of black-footed ferret populations under Section 10(j) of the ESA. This allows management flexibility and designation of reintroduced populations as NEPs to facilitate species recovery efforts and alleviate landowner concerns about reintroducing threatened and endangered species. Consequently, for the purposes of Section 7 of the ESA, NEP species outside a national park or the National Wildlife Refuge System are treated as federally proposed species and the entire species, not individual populations, is considered when making jeopardy determinations. Therefore, by definition, individual introduced populations of a NEP species are not legally essential to the continued existence of the species and no proposed action impacting an introduced population could lead to a jeopardy determination for the entire species. The BLM supports the recovery of listed species by reviewing potential impacts from the agency's actions on NEP species, such as black-footed ferrets, in accordance with BLM Policy Manual 6840 during the NEPA process.

#### **3.1.4.2      *Habitat Requirements and Distribution***

The black-footed ferret was historically found throughout the Great Plains, mountain basins, and semi-arid grasslands of North America, and its distribution coincided with the ranges of the black-tailed prairie dog, Gunnison's prairie dog, and white-tailed prairie dog. The black-footed ferret depends almost exclusively on prairie dogs for food and on prairie dog burrows for shelter. However, recent data suggest that 33% of the diet of adult females consist of non-prairie dog prey (i.e., mice, voles, and other small mammals) annually. The researchers suggested that adult females killed prairie dogs and provisioned them for dependent young while meeting their own energetic demands by consuming alternate prey. In contrast, approximately 75% of the diet of adult males and juveniles of both sexes consisted of prairie dogs annually. Regardless of differing food habits between sexes at different times of the year, black-footed ferrets remain highly specialized predators that are obligate associates of prairie dogs (USFWS 2019c).

Black-footed ferret densities at the last known wild population, which was near Meeteetse, Wyoming, were linearly correlated with white-tailed prairie dog colony size, with an average density of one adult ferret per 40 to 60 hectare (ha) of occupied prairie dog habitat. Black-footed ferrets generally conform to a typical mustelid spacing pattern with some overlap between female home ranges and nearly complete overlap between male and female home ranges. Ferrets select for areas within prairie dog colonies that contain high burrow densities and thus high densities of prairie dogs. Home ranges of female ferrets occupying high-density black-tailed prairie dog habitat average approximately 60 ha whereas home ranges of males occupying high-density black-tailed prairie dog habitat average approximately 130 ha. Territories, or defended areas within an animal's home range, average 13 ha for females and 36 ha for males and contain higher burrow densities than the rest of the home range (USFWS 2019c).

According to USFWS (2019c), black-footed ferrets have been purposely reintroduced at 29 discrete sites within the potential range, including the Meeteetse and Shirley Basin sites in Wyoming. Although the Meeteetse population was studied intensively for only a short time (1981–1985), researchers assumed the population had persisted as a geographically isolated population over the long term before its discovery in 1981. Researchers also assumed that the observed maximum count of 43 adults and 86 juveniles in the fall of 1985 was representative of the site’s potential. In 1991, Shirley Basin, Wyoming, (Carbon, Albany, and Natrona Counties) was the first site of black-footed ferret reintroduction. White-tailed prairie dogs occupy this site. Ferret releases at Shirley Basin were suspended in 1994 because of prairie dog population declines caused by plague. Only five ferrets were observed at Shirley Basin in 1997. However, 52 ferrets were observed there in 2003, and thereafter, that population received additional augmentation of captive-born animals and grew rapidly (USFWS 2019c). Subsequent releases occurred in the Shirley Basin in 2005, 2006, and 2012. The USFWS designated this population as a NEP in accordance with the ESA.

All black-tailed prairie dog towns in Wyoming are considered unlikely for occurrence of the black-footed ferret (BLM 2005c; USFWS 2013b). However, some white-tailed prairie dog complexes in Wyoming are considered suitable for supporting black-footed ferrets. Currently, the Cody and Rawlins planning areas are the only two BLM planning areas with known populations of reintroduced ferrets. Ferrets are known to be present in the Shirley Basin and Meeteetse recovery sites (USFWS 2019d). Other BLM planning areas may feature potentially suitable habitats. Below is the known distribution by BLM field office.

**Casper:** A portion of the planning area in southeastern Natrona County is within the Shirley Basin black-footed ferret experimental release area. No black-footed ferrets have been found during extensive surveys in the planning area, and areas outside Shirley Basin have been block cleared (USFWS 2013b). The planning area overlaps portions of the Thunder Basin National Grassland where USFS lands may contribute to recovery of the black-footed ferret in the future (USFS 2020).

**Cody:** The Meeteetse reintroduction site was established in 2016, when 35 captive-bred ferrets were released on a 5,900-acre complex of white-tailed prairie dogs (WGFD 2018).

**Worland:** Manderson and Fifteenmile prairie dog complexes are important but not known to currently support wild ferrets. The last recorded observation of black-footed ferret in the area is from 1975; no black-footed ferrets have been observed in the area since then, and the area has been block cleared.

**Kemmerer:** The last recorded observation of black-footed ferret occurred in 1979. Extensive prairie dog colony mapping in 2003 and 2004 resulted in the mapping 51,046 acres of colonies. No sightings of black-footed ferret occurred during surveys for the species in 2002 through 2004. No black-footed ferrets have been observed in the area since 1979, and the area has been block cleared.

**Lander:** Three observations of black-footed ferret in the planning area occurred in Fremont County, with the most recent in 1973; however, no black-footed ferrets have been observed in the area since then, and the area has been block cleared. Pathfinder prairie dog complex overlaps the Lander and Rawlins Field Offices and is the only significant complex in the planning area.

Rawlins: Numerous black-footed ferret surveys have occurred within the Rawlins Field Office from 1978 to 2003. No ferrets have been found, but evidence of presence (e.g., skulls, scat) were found during some of the surveys. The most recent evidence of ferret presence outside reintroduction sites was observed in 1978 (BLM 2007b). Outside Shirley Basin, no black-footed ferrets have been observed, and the area has been block cleared.

Green River: Black-footed ferrets and their remains have been observed within the planning area. The latest recorded observation is from 1992. No black-footed ferrets have been observed since then, and the area has been block cleared.

Pinedale: Black-footed ferret surveys occurred in the area from 2001 through 2008, with no ferrets or sign observed. Skulls were observed during some of the surveys. No black-footed ferrets have been observed, and the area has been block cleared.

### **3.1.4.3      *Threats***

Factors influencing the current condition of the black-footed ferret population include disease, genetic fitness, drought, agricultural land conversion, recreational shooting and poisoning of prairie dogs, range management, urbanization, and energy development. Native canine distemper and non-native sylvatic plague have seriously affected both wild and captive populations of the black-footed ferret. Several other native diseases, including coccidiosis, cryptosporidiosis, and hemorrhagic syndrome, also affect captive populations but are not common in the wild. The genetic fitness of the black-footed ferret has been a concern in the captive breeding program due to the extremely low number of founder animals from the last wild population at Meeteetse (USFWS 2019c).

The western United States has been in what is characterized as a significantly harsh drought in recent years. Reduced precipitation during drought decreases primary productivity and limits the amount of succulent vegetation available to prairie dogs, which, in turn, negatively affects obligate predators such as the black-footed ferret (USFWS 2019c).

Agricultural land conversion is the change in land use from a previous use to an agricultural use, including cropland and pastureland (single-species plantings grown for livestock grazing and/or hay production). At a large scale, agricultural land conversion represents a permanent loss of habitat for black-footed ferrets and their prairie dog prey. However, the effects of such conversion on ferrets and prairie dogs may be mixed. In some instances, agricultural lands can benefit prairie dogs by providing a source of highly nutritious forage. Roads and fences associated with agricultural conversion can fragment contiguous prairie dog habitat, but agricultural lands may sometimes facilitate prairie dog dispersal (USFWS 2019c).

Several species of prairie dogs are subjected to shooting as a form of recreation and as a form of pest management. Depending on its intensity, shooting can negatively affect local prairie dog populations, and the resulting loss in prey base likely affects black-footed ferret reintroduction sites. Poisoning of prairie dogs is a major factor in the historical declines of prairie dogs and black-footed ferrets. Similar to many of the other stressors affecting ferret populations, poisoning can affect the ferret directly through inadvertent secondary poisoning of the ferret caused by consumption of poisoned prairie dogs or indirectly through the loss of the prairie dog prey base (USFWS 2019c).

Range management practices encompass both herbivory from domestic livestock and fire management. Within the black-tailed prairie dog portion of the black-footed ferret's historic range, both grazing management and fire can significantly influence vegetative community composition and thus the population resiliency of prairie dogs (USFWS 2019c). Urbanization represents a permanent loss of potential black-footed ferret habitat and can entail the direct eradication of prairie dog prey. Additionally, urbanization fragments and isolates prairie dog colonies, leading to smaller colonies with higher prairie dog densities (USFWS 2019c).

Oil and gas exploration and development as well as alternative energy development (primarily wind and solar) occur throughout the potential range of the black-footed ferret. Exploration for oil and gas may increase human activity within previously undisturbed habitats. The development of well pads and supporting infrastructure, such as roads and pipelines, reduces and fragments habitat, compacts soil, and destroys vegetation. This infrastructure also creates perches for raptors, which may increase predation pressure on prairie dog colonies near these structures. New roads may increase road mortality, and prairie dog shooting may increase with increased human access. Alternative energy development can also affect black-footed ferret habitat during the construction and operation phases, and associated projects result in some permanent loss of habitat (USFWS 2019c).

#### **3.1.4.4      *Conservation Measures***

The BLM Wyoming State Office's *Statewide Programmatic Biological Assessment: Black-footed Ferret* (*Mustela nigripes*) considers the effects of BLM management actions on the species and identifies appropriate conservation measures (BLM 2005c). The agency's management actions must comply with *Endangered and Threatened Wildlife and Plants: Establishment of a Nonessential Experimental Population of Black-footed Ferrets in Southeastern Wyoming* (FR 56[162], August 21, 1991). All BLM conservation measures and BMPs outlined in the RMPs (see Attachment A), including avoiding suitable prairie dog towns/complexes when possible, will be followed.

#### **3.1.5      *Yellow-billed Cuckoo (Coccyzus americanus)***

This species is addressed in the following RMPs: Kemmerer, Pinedale, and Rawlins. The yellow-billed cuckoo (*Coccyzus americanus*) was a candidate species at the time these RMPs were prepared. Although this species is not addressed in the 1997 Rock Springs RMP, yellow-billed cuckoo is known to occur within the boundary of that planning area. There are no known observations or occurrences on BLM administered lands at this time.

##### **3.1.5.1      *Status***

The two subspecies of yellow-billed cuckoo have been described as geographically separated by the Continental Divide; the eastern subspecies is known as *Coccyzus americanus*, and the western subspecies, which is found in western Wyoming, is known as *Coccyzus americanus occidentalis* (American Ornithologists' Union 1957; Ridgway 1887). The western yellow-billed cuckoo was subsequently determined to be a DPS and was listed as threatened in November 2014.

### **3.1.5.2      *Habitat Requirements and Distribution***

Yellow-billed cuckoos are primarily found in open, streamside deciduous woodland with low, scrub vegetation. They prefer large tracts of deciduous riparian woodlands, specifically cottonwood stands for foraging and willow thickets for nesting. Cuckoos require relatively large riparian tracks below 7,000 feet for breeding, a habitat that is very limited in Wyoming (WYNDD 2002). Canopy cover of at least 50 percent in the understory and overstory is preferred, according to habitat models established for the western population. Cuckoos generally are absent from heavily forested and urban areas. In Wyoming, the yellow-billed cuckoo is dependent on large areas of woody, riparian vegetation with a dense shrubby understory for nesting and a cottonwood overstory for foraging. Critical habitat for this species has been proposed in Wyoming (USFWS 2019e); however, the USFWS determined that sufficient areas already have been identified elsewhere and the proposed areas in Wyoming do not meet the USFWS's conservation strategy for designating critical habitat (USFWS 2020c).

Little is known about the historic distribution of cuckoos in Wyoming; relatively few reported observations have occurred. Observations of cuckoos west of the continental divide (i.e., the western DPS) have occurred along the Green River and in Teton County (WYNDD 2020). Population status and trends of the cuckoo in Wyoming are difficult to assess, but its abundance has declined in the region, especially in western Colorado and Wyoming (Wiggins 2005). Suitable cottonwood and willow riparian habitat is limited and has not been adequately surveyed. Breeding is considered unconfirmed, although observations and other anecdotal evidence suggest that breeding may occur in the Green River Basin and along the Snake River (USFWS and BLM 2003). No cuckoos were detected during surveys of riparian habitat on the Green River in Wyoming in 2006; a single cuckoo was located on the Snake River in Idaho in 2009 (USFWS 2011b). Below is the known distribution by BLM field office.

Kemmerer: This area has low likelihood of western yellow-billed cuckoo occurrence. Two sightings noted as WYNDD element occurrences, one each near Beaver Creek and the other near Abert Creek, both in Uinta County, have been reported (USFWS and BLM 2003), although these occurrences do not appear in the WYNDD (2020).

Pinedale: The species is not known to nest in the Upper Green River Basin (BLM 2008a). This area has a low likelihood of western yellow-billed cuckoo occurrence and no known records.

Rawlins: The type of habitat cuckoos prefer is limited within the planning area but may occur in the Little Snake River basin along the Colorado border.

Rock Springs: Observations of cuckoos have occurred along the Green River from the town of Green River to Seedskaadee National Wildlife Refuge (WYNDD 2020).

### **3.1.5.3      *Threats***

Because the species is restricted to riparian woodland habitat greater than 15 ha (37 acres), habitat loss and quality reduction have led to population declines in the western United States. Factors affecting habitat quantity and quality include alteration of hydrology from irrigation and dams, livestock grazing, and the introduction of non-native plant species (e.g., tamarisk [*Tamarix* spp.]) (WYNDD 2020).

#### **3.1.5.4 Conservation Measures**

The BLM Wyoming State Office completed the *Final Programmatic Biological Evaluation for the Western Yellow-billed Cuckoo Found in Wyoming* in October 2003 (BLM 2003). Conservation measures in the RMPs are based on the programmatic BE, which was prepared when this species was a candidate for listing, and include avoiding surface disturbing activities within 500 feet of perennial waters and wetland/riparian areas for protection of western yellow-billed cuckoo and identified habitat. Surface-disturbing or disruptive activities are prohibited within 0.5 mile of identified habitat during the period of April 15 to August 15 for the protection of nesting western yellow-billed cuckoos. See Attachment A for detailed conservation measures.

#### **3.1.6 Ute Ladies-tresses (*Spiranthes diluvialis*)**

This species is addressed in the following RMPs: Cody/Worland, Buffalo, Casper, Kemmerer, Lander, Rawlins, Green River, and Pinedale.

##### **3.1.6.1 Status**

On January 17, 1992, the USFWS listed the Ute ladies'-tresses orchid (*Spiranthes diluvialis*) as threatened under the ESA. The orchid is ranked as critically imperiled at the global and state level because of the plant's extreme rarity (Fertig 2000). The WYNDD (2020) lists the Ute ladies'-tresses orchid as sparse and as a high conservation priority.

##### **3.1.6.2 Habitat Requirements and Distribution**

Ute ladies'-tresses orchid populations in Wyoming are found in subirrigated wet meadow habitat near streams and occasionally in areas fed by springs and seeps (Heidel 2007). The species occurs primarily in areas in which the vegetation is relatively open and not overly dense, overgrown, or overgrazed.

Ute ladies'-tresses orchid is currently known from nine sites in eastern Wyoming, including a small population along a tributary of Antelope Creek (a tributary of the Cheyenne River); a population along North Wind Creek, which is a tributary of Antelope Creek; and a population along Stinking Water Creek, a tributary of Sand Creek, which is a tributary of Antelope Creek; all three of these populations are on BLM Casper Field Office-administered lands in northwest Converse County. Populations on BLM lands are monitored annually, and each of these populations appears to have been relatively stable through time. Below is the known distribution of Ute ladies'-tresses orchid populations by BLM field office.

Cody/Worland: No known populations are in the Bighorn Basin planning area.

Buffalo: No known populations are in the Buffalo planning area. The WYNDD predicts that within the Buffalo planning area the Ute ladies'-tresses orchid would most likely occur in southern Campbell County near known populations in northwestern Converse County (Andersen et al. 2016).

Casper: The species occurs in northwestern Converse County and southwestern Goshen County (WYNDD 2020). The population in Converse County is on a tributary of Antelope Creek on

public lands administered by the BLM Casper Field Office. The population in Goshen County is located on Bear Creek on public lands administered by the State of Wyoming. Predictive modeling indicates a low probability of occurrence in the east half of the Casper planning area (Andersen et al. 2016).

Kemmerer: No known populations are in the Kemmerer planning area.

Lander: No known populations are in the Lander planning area.

Rawlins: Four known populations occur on state and private lands within the planning area; no known populations are on BLM-administered public lands within the planning area (Andersen et al. 2016; WYNDD 2020).

Pinedale: No known populations are in the Pinedale planning area.

### **3.1.6.3      *Threats***

Ute ladies'-tresses orchids, in general, are not common. The plants are rare in their distribution and often limited in population sizes, often numbering less than 100 individuals at a site. This makes assessing the stability of any given population or subpopulation difficult. The naturally occurring low populations make the species susceptible to localized extirpation caused by natural or man-made disasters. Historical accounts typically help realize the population trends, but populations in Wyoming were not discovered until 1993. Although no trend data are available, populations in Wyoming appear to be stable.

Changes in large ungulate populations may have affected the distribution of Ute ladies'-tresses orchid. This species likely evolved according to the seasonal presence of large herbivores such as American bison, elk, deer, and bighorn sheep. Changes in these animals' distribution could have adversely affected Ute ladies'-tresses orchid populations via consumption of the plants during late winter and early spring. Additionally, cattle grazing may alter both plant communities and stream ecology. Depending on when a site is grazed, flowering or fruiting orchid stalks may be removed. With cattle introduction comes the risk of noxious weed invasion; some of which pose threats because they compete vigorously with Ute ladies'-tresses orchid. Herbicides applied to control noxious weeds and fertilizers from agricultural fields possibly affect Ute ladies'-tresses orchid. Both direct applications to nearby agricultural fields and runoff from sites upstream have potentially harmful effects on Ute ladies'-tresses orchid. Pesticides applied to nearby sites could affect bumblebee populations, which are the primary pollinators of Ute ladies'-tresses orchid. Development in or near wetlands has affected the distribution of Ute ladies'-tresses orchid. Water diversion, channelization, and irrigation have affected the species. All of these factors decrease the input of water into riparian systems or completely destroy habitat, thus eliminating potential habitat for this species. Conversely, some irrigated plots have fostered habitat for Ute ladies'-tresses orchid.

### **3.1.6.4      *Conservation Measures***

The BLM Wyoming State Office completed the *Final Statewide Programmatic Biological Assessment: Ute Ladies'-Tresses Orchid* (*Spiranthes diluvialis*) in 2007 (BLM 2007c). All BLM conservation measures and BMPs outlined in the RMPs (see Attachment A) must be followed;



this includes surveying riparian habitats before disturbance and locating ROWs for projects (e.g., powerlines, pipelines, roads, etc.) at least 0.25 mile from any known or newly discovered Ute ladies'-tresses orchid habitat to minimize disturbances.

### **3.1.7 Blowout Penstemon (*Penstemon haydenii*)**

This species is addressed in the following RMPs: Casper, Lander, and Rawlins.

#### **3.1.7.1 Status**

On October 1, 1987, the USFWS listed blowout penstemon (*Penstemon haydenii*) as endangered under the ESA (USFWS 1987). The species is imperiled because of rarity at the global level and is critically imperiled because of extreme rarity at the state level. The WYNDD (2020) lists the blowout penstemon as a species of concern with a contribution rank of Very High, meaning that Wyoming populations contribute greatly to the species' rangewide persistence.

#### **3.1.7.2 Habitat Requirements and Distribution**

The blowout penstemon occurs in scattered "blowouts," sparsely vegetated depressions in actively shifting sand dunes created by wind erosion. In Wyoming, blowout penstemon primarily occurs on steep north-facing slopes of active blowout-like sand dunes with sparse cover of grasses and forbs. This species flowers from May to early July and produces fruits from late June to mid-July (Fertig 2000).

Blowout penstemon occupies 22 dunes in the Ferris Dunes in northern Carbon County, all of which are found within the Rawlins planning area. These are the only known populations in Wyoming despite intensive surveys in areas of potentially suitable habitat elsewhere in the state. Thirteen dunes of the dunes are on lands managed by the Rawlins BLM FO, three are on lands managed by the State of Wyoming, two are on lands managed by U.S. Bureau of Reclamation, and four are on private land (Heidel 2018). Below is the known distribution of blowout penstemon populations by BLM field office.

Casper: Some suitable habitats are present. The WYNDD completed surveys in the Casper Dune Field and found no plants (Heidel 2012). No populations of blowout penstemon are known to occur within the Casper planning area boundary.

Lander: Some suitable habitats present. The WYNDD has completed surveys on BLM public lands with eolian sand deposits and found no plants (Heidel 2012). No populations of blowout penstemon are known to occur within the Lander planning area boundary.

Rawlins: Three known Wyoming populations (Bradley Peak, Bear Mountain-Junk Hill-Ferris, and Pathfinder) consisting of 19 subpopulations (each subpopulation occupying discrete blowout areas) occur within the Ferris Dunes of northern Carbon County. The Bear Mountain-Junk Hill-Ferris population contains 15 subpopulations (Heidel 2012). The Ferris Dunes and Killpecker Dunes (within the Rock Springs planning area) have been thoroughly surveyed and are unlikely to yield new populations or subpopulations (Heidel 2012).

### **3.1.7.3      *Threats***

Threats to blowout penstemon populations include surface-disturbing activities associated with energy and water development and other construction of infrastructure such as fences or pipelines, changes to habitat quality, off-road vehicle use, livestock trampling and grazing, over-collection, pesticide use, small population size, and encroachment by other plants (USFWS 2012). With the designation of the Blowout Penstemon ACEC in 2008, implemented under the Rawlins RMP (BLM 2008d) and the final amendment of the RMP, many of these threats have been eliminated or greatly reduced through the implementation of associated conservation measures.

### **3.1.7.4      *Conservation Measures***

The BLM Wyoming State Office's *Statewide Programmatic Biological Assessment: Blowout Penstemon* (Penstemon haydenii), completed in August 2005, identifies effects and conservation measures for the species (BLM 2005d). The Rawlins RMP (BLM 2008d) outlines BLM conservation measures and BMPs for blowout penstemon, including the 0.25-mile no surface occupancy (NSO) restriction in any known blowout penstemon habitat to minimize disturbances. Management decisions, which include conservation measures, are identified in *Decision Record for the Rawlins Resource Management Plan Amendment for Visual Resource Management Rawlins Field Office, High Desert District, Wyoming* (BLM 2018) features management decisions for the species, including conservation measures. See Attachment A for detailed conservation measures.

## **3.1.8      Desert Yellowhead (*Yermo xanthocephalus*)**

This species and its critical habitat are addressed in the Lander RMP.

### **3.1.8.1      *Status***

On March 14, 2002, the USFWS listed the desert yellowhead as threatened rangewide under the ESA (FR 67:11442). At the time of the species' listing, desert yellowhead was threatened by surface disturbances associated with recreation, oil and gas development, mineral extraction, trampling by livestock, soil compaction by vehicles, and invasive plant species. On March 16, 2004, the USFWS designated a 360-acre unit of federal lands managed by the BLM in the Beaver Rim area in the Lander planning area as critical habitat (FR 69:12278). Within the unit, desert yellowhead occurs in three subpopulations. In 2010, an additional desert yellowhead population was discovered outside the designated critical habitat area.

### **3.1.8.2      *Habitat Requirements and Distribution***

Desert yellowhead occurs on relatively barren sites with less than 25 percent total vegetative cover and is restricted to shallow deflation hollows in outcrops of Miocene sandstones and limestones of the Split Rock Formation at the geological unit's junction with the White River Formation. These wind-excavated hollows accumulate drifting snow and may be more mesic (moist) than surrounding areas. The vegetation of these sites is typically sparse, consisting primarily of low cushion plants and scattered clumps of grass.

The Sand Draw population is widely scattered over an area of approximately 75 acres in Fremont County within the designated critical habitat. In June 2010, another desert yellowhead population was discovered in the BLM Lander planning area outside the designated critical habitat (the Cedar Rim population). The Cedar Rim population is on sparsely vegetated gravel slopes approximately 5 miles northeast of the Sand Draw population and consists of seven subpopulations that cover a total of 0.85 acre in an approximately 20-acre area.

### **3.1.8.3      *Threats***

An inherent vulnerability of desert yellowhead is the species' small population size and restricted distribution. At the time of the species' listing, oil and gas development was the most severe and immediate threat to desert yellowhead populations through habitat destruction. Desert yellowhead occurs on relatively barren sites with less than 25 percent total vegetative cover and may be intolerant of competition. Competition from plants not native to the area would pose a greater threat than competition from species with which desert yellowhead has evolved. Livestock and wild ungulate grazing may present a threat to desert yellowhead individuals and habitat quality. The critical habitat area is within an existing grazing allotment. Recreational off-highway vehicle use presents a threat to desert yellowhead through the crushing of plants, destruction of seeds, and compaction or erosion of soil. This threat is greatest in the spring and summer, when plants are in flower or heavy with fruit.

### **3.1.8.4      *Conservation Measures***

In 2005, the BLM and the USFWS completed the *Conservation Agreement, Assessment and Strategy for the Desert Yellowhead* (*Yermo xanthocephalus*) to identify specific actions that will contribute to reducing threats to and provide for the long-term conservation of the species (BLM and USFWS 2005). Implementation of this strategy has reduced threats facing the species. On February 25, 2010, the USFWS completed *Recovery Outline for Yermo xanthocephalus (desert yellowhead)* (USFWS 2010). This document lays out a preliminary course of action for the recovery of desert yellowhead and serves to guide recovery efforts and inform consultation and permitting activities; a recovery plan for this species is under development (USFWS 2020d). See Attachment A for existing conservation measures.

The BLM and USFWS have agreed on management actions for the Cedar Rim population. An NSO restriction for mineral leasing and development applies to the 85 acres surrounding the Cedar Rim population, and the designated corridors for ROWs must be adjusted so that they lie outside the protected area covered under the NSO restriction. Unlike management for the Sand Draw population, management of the Cedar Rim population is not anticipated to involve critical habitat designation and is not yet subject to a locatable mineral withdrawal or motorized vehicle use closure. It is anticipated that additional project and site-specific conservation measures would be implemented as necessary in future proposed actions to further reduce the likelihood of any potentially adverse consequences for this important species.

### **3.1.9      *Platte River Species***

Platte River species do not occur in Wyoming but do occur downstream and may be affected by BLM-authorized actions (e.g., water withdrawals) in Wyoming. Western prairie fringed orchid (*Platanthera praeclara*), least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*),

whooping crane (*Grus americana*) and its critical habitat, and pallid sturgeon (*Scaphirhynchus albus*) are addressed in the following RMPs: Casper, Lander, Rawlins, Pinedale.

### **3.1.9.1      *Status***

On September 28, 1989, the USFWS listed western prairie fringed orchid as threatened under the ESA (FR 54:39863).

On December 11, 1985, piping plover was listed endangered in its entire range, except in the Great Lakes watershed, where it is listed endangered (FR 50:50726–50734).

On May 28, 1985, the USFWS listed least tern as endangered throughout the interior portions of its range in the United States; however, since data have indicated this species has recovered and no longer meets the definition of an endangered or threatened species, on October 24, 2019, least tern was proposed for removal from the list (FR 84:56977).

On March 11, 1967, whooping crane was listed endangered (FR 32:4001) except in the cases of NEPs in Colorado, Indiana, Florida, New Mexico, Utah, and the western half of Wyoming (FR 66:33903–33917, June 26, 2001; FR 62:38932–38939, July 21, 1997; and FR 58:5647–5658, January 22, 1993). Critical habitat for the whooping crane has been designated along the Platte River between Lexington and Denman, Nebraska.

On September 6, 1990, pallid sturgeon was listed endangered (FR 55:36641).

### **3.1.9.2      *Habitat Requirements and Distribution***

Historically, western prairie fringed orchid was found in tallgrass prairies west of the Mississippi river, from southern Canada to Oklahoma. The current distribution of this species includes Minnesota; Iowa; Missouri; Nebraska; North Dakota; and Manitoba, Canada. Western prairie fringed orchid, which is associated with wetlands, is believed to be extirpated from South Dakota and Oklahoma.

Piping plovers prefer exposed, sparsely vegetated sandy shores and islands within shallow lakes and ponds. They breed in south-central Alberta and Manitoba to eastern Montana and central and eastern Nebraska. In addition, plovers breed in the Great Lakes region, from northern Michigan and southern Ontario to the shores of Lake Michigan and Lake Ontario. Piping plovers winter in eastern Texas and in other coastal locations along the Atlantic seaboard, from South Carolina to Florida.

Interior least terns nest along more than 2,800 miles of river channels across the Great Plains and the Lower Mississippi Valley, with nesting colonies documented in Montana, North Dakota, South Dakota, Nebraska, Colorado, Iowa, Kansas, Missouri, Illinois, Indiana, Kentucky, New Mexico, Oklahoma, Arkansas, Tennessee, Texas, Louisiana, and Mississippi. Interior least terns generally nest on the ground in open areas away from trees and on or near bodies of water that provide them with fish. Although interior least terns are primarily found along river channels, they also nest on reservoirs as well as sand and gravel mines, coal mines, and industrial sites where conditions are appropriate and occasionally on the rooftops of buildings near bodies of water.

Whooping cranes use a variety of habitats during migration including croplands (for feeding) and large palustrine (marshy) wetlands (for roosting). The distribution of the whooping crane is limited as a result of habitat loss and extremely low population size. Whooping cranes breed near Wood Buffalo National Park in Northwest Territories and Alberta, Canada. The birds winter near Arkansas National Wildlife Refuge along the Texas Gulf Coast and occasionally venture northeast into Louisiana. Migrating between these locations, whooping cranes use the Platte River flyway.

Pallid sturgeons use large, free-flowing and turbid warm water habitat and a diverse assemblage of physical attributes in constant state of change. Pallid sturgeons are found almost exclusively in the headwaters of the Missouri River (in the vicinity of Fort Benton and Great Falls, Montana) downstream to the Mississippi River near New Orleans, Louisiana. In addition, pallid sturgeons are found in the Platte River near drainage's confluence with the Missouri River.

### **3.1.9.3      *Threats***

Threats to Platte River species include water depletions and accidental spill of toxic materials, which are addressed by the Platte River Recovery Implementation Program (see Section 3.1.9.4). The major factor contributing to the decline of Western prairie fringed orchid is the conversion of native prairie to croplands.

Flood abatement activities, such as water diversions that permit shoreline vegetation to flourish, and human activity in general threaten piping plover habitats and populations. Alterations of water flow change the structure of sandbars, which piping plovers prefer for nesting (though the birds nest on sandy shores as well), and irregular flows may flood nests or leave sandbars connected to the shore and therefore any nests there more vulnerable to predation.

At the time of interior least tern's listing, the species was believed to have been eliminated from much of its summer nesting range by the construction of dams or other forms of river engineering, such as channelization that inundated and destroyed nesting islands and bars and altered flow regimes. Several proposed water withdrawal projects on the Southern Plains posed potential threats to interior least tern habitat.

Primary threats to the whooping crane population include the drainage of wetland habitats, coastline development, and human activity near breeding and nesting sites.

Modification of pallid sturgeon habitat by human activities has blocked fish movement, destroyed or altered spawning areas, reduced food sources or the ability to obtain food, altered water temperatures, reduced turbidity, and changed the hydrograph of the river system. Overfishing, pollution, and hybridization that occur as a result of habitat alterations have likely contributed to the species' population decline.

### **3.1.9.4      *Conservation Measures***

In 2006, the governors of Colorado, Nebraska, and Wyoming and the U.S. Secretary of the Interior signed an agreement to implement the basin-wide Platte River Recovery Implementation Program, in which the BLM participates (see Attachment A). The purpose of the program is to ensure ESA compliance among water users in the Platte River basin upstream of the drainage's

confluence with the Loup River in Nebraska for effects on the target species and whooping crane critical habitat while managing certain land and water resources to provide benefits for those species. An important benefit of the program for individual water-related projects in the Platte River basin of Wyoming is the provision of, in most cases, a streamlined process for addressing depletion-related impacts to the target species and whooping crane critical habitat.

Depletions include evaporative losses and or consumptive use of surface or groundwater, often characterized as diversions less return flows. If the water source is hydrologically connected to the North Platte River, consultation with USFWS is required unless the depletion is less than 0.1 acre-foot/year. The Wyoming State Engineer's Office depletion plan may cover existing water-related activities. If the Wyoming State Engineers' Office determines an activity to be a new water-related activity that may affect the quantity or timing of water reaching the Platte River system, then the project proponent may request coverage under the depletions plan and complete the program and prepare a BA to address effects on downstream listed species.

### **3.1.10 Colorado River Species**

Four endangered fish species not found in Wyoming but found in the Colorado River in Colorado may be affected by BLM-authorized actions (e.g., water withdrawals) in Wyoming. Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), bonytail (*Gila elegans*), and humpback chub (*Gila cypha*), and their downstream critical habitat are addressed in the following RMPs: Kemmerer, Pinedale, Rawlins, and Rock Springs.

#### **3.1.10.1 Status**

On March 11, 1967, Colorado pikeminnow was listed as endangered except in Salt and Verde River drainages, Arizona (FR 32:4001). In addition, Colorado pikeminnow is listed as threatened by the State of Colorado and is legally protected by the State of Utah. The USFWS has designated critical habitat for Colorado pikeminnow downstream in portions of the Yampa, Green, White, Gunnison, Colorado, and San Juan Rivers and their respective 100-year floodplains.

On October 23, 1991, razorback sucker was listed as endangered (FR 56:54957–54967). In addition, razorback sucker is listed as endangered in the state of Colorado and is legally protected by the State of Utah. Razorback sucker designated critical habitat is downstream in portions of the Yampa, Green, White, Duchesne, Gunnison, Colorado, and San Juan Rivers and their respective 100-year floodplains.

On April 23, 1980, bonytail was listed as endangered (FR 45:27710–27713). In addition, bonytail is listed as endangered in the State of Colorado, and the species is legally protected by the State of Utah. Bonytail designated critical habitat is downstream in portions of the Yampa, Green, and Colorado Rivers.

On March 11, 1967, humpback chub was listed as endangered (FR 32:4001). However, on January 22, 2020, the USFWS proposed to reclassify humpback chub from an endangered species to a threatened species and a 4(d) rule to provide conservation of the fish by prohibiting certain activities (FR 85:3586). In addition, humpback chub is listed as endangered by the State of Colorado, and the species is legally protected by the State of Utah. Humpback chub

designated critical habitat is in downstream riverine habitat in the Yampa, Green, and Colorado River systems in Colorado and Utah (FR 59:13374–13400, March 21, 1994).

### **3.1.10.2      *Habitat Requirements and Distribution***

Colorado pikeminnow prefers eddies and pools in large, deep rivers such as the Colorado River and Green River. Colorado pikeminnow was historically abundant in the Colorado River and most of the drainage's major tributaries, such as the Yampa River and Green River. Though a single individual was collected in 1990 from the Little Snake River, Colorado pikeminnow is currently thought to be extirpated from Wyoming.

Razorback sucker prefers fast, turbid waters in large rivers, such as the Colorado River and Green River. Razorback sucker was historically well distributed in the Colorado River and in many of the drainage's major tributaries.

Bonytail prefers fast-flowing, turbid waters in large, deep rivers in the upper Colorado River Basin, such as the Green River and Colorado River. Historically bonytail was abundant in the Colorado River and in the drainage's major tributaries, such as the Green River and the Yampa River. Bonytail is precariously extant in the Colorado River downstream of Lake Powell, and the species is nearly extinct upstream of Lake Powell.

Humpback chub prefers fast waters, such as the riffles and rapids of river canyons and their tributaries (canyon sections) in the Colorado River Basin. Historically, humpback chub was abundant in the canyons of the Colorado River and in the canyons of four tributaries: the Green River, the Yampa River, the White River, and the Little Colorado River. Presently, two stable humpback chub populations are known to exist, both near the Colorado-Utah border: Westwater Canyon in Utah and Black Rocks in Colorado. The largest known humpback chub population exists in the Little Colorado River in the Grand Canyon. Smaller populations can be found in the main stem of the Colorado River in Arizona and in sections of the drainage's tributaries, such as the Green River in Utah and Colorado and the Yampa River near Dinosaur National Monument.

### **3.1.10.3      *Threats***

Colorado pikeminnow populations have been dramatically reduced throughout their historic range as a result of past and present human activities. Pervasive threats to this species result from habitat alterations associated with water development and diversions. However, non-native fish introductions are the most pressing impediment to the recovery of this species: predatory non-native fishes profoundly affect recruitment by consuming juveniles (Minckley and Deacon 2003). Recovery efforts, however, are expanding the abundance and distribution of this species where the effects of habitat fragmentation and habitat alteration can be directly addressed.

Razorback sucker abundance and distribution have been dramatically reduced because of water developments such as dams and water diversions. In addition, the introduction of non-native trout into the historical razorback sucker habitats has almost eliminated the species' recruitment and survival (Minckley and Deacon 2003). Stress caused by direct and delayed mortality related to incidental catch may pose a threat to the species.

Bonytail is the most imperiled fish among the federally listed fish species native to the Colorado River drainage. Water development projects and activities, such as dams and water diversions, have caused a nearly catastrophic decline in bonytail populations and preferred habitats. Further, the introduction of predatory non-native trout in the Colorado River drainage has contributed to the decline in bonytail abundance and distribution.

Water developments and introduced fishes are the primary threats to the viability of humpback chub populations. Providing adequate spring runoff conditions, establishing additional populations, and reducing the stocking of non-native trout are all conducive to maintaining viable populations of humpback chub. Both historical water depletions and any new water depletions are likely to negatively affect population and habitat conditions downstream, though assessing the effects on species viability may be difficult.

#### **3.1.10.4      *Conservation Measures***

The Upper Colorado River Endangered Fish Recovery Program exists to address depletions, which include evaporative losses and or consumptive use of surface or hydrologically connected groundwater, often characterized as diversions less any return flows. Any water removed from the Colorado River system for any period, such as for hydrostatic testing, is considered a depletion and requires formal consultation with the USFWS. The consultation process has been streamlined so the USFWS issues tiered biological opinions based on depletion volumes. Depletions of greater than or equal to 100 acre-feet require a one-time fee that goes to recovery program efforts. Any depletion from the Colorado River system results in a “may affect, likely to adversely affect” determination for the four endangered fishes of the Colorado River. See Attachment A.

## **4      EFFECTS ANALYSIS**

Section 501 of the Federal Land Policy and Management Act authorizes the BLM to grant ROWs for infrastructure and facilities that are in the public interest and require ROWs over, under, upon, or through BLM-administered lands. The BLM ROW program consists of the evaluation, authorization, and management of ROWs, including corridors, for a variety of uses on public or federal land. A ROW grant is an authorization to use specific pieces of public land for certain projects, such as developing roads, pipelines, transmission lines, and communications sites. The grant authorizes rights and privileges for a specific use of the land for a specific period. A ROW corridor is an area with specific boundaries that has been designated as the preferred location for ROWs and facilities.

The analysis for the WPCI is based on the Lands and Realty and/or Rights-of-Way and Corridor program for each BLM planning area. If development occurs in the designated corridors under those programs, direct and indirect impacts would occur. If development does not occur, no impacts would occur.



## 4.1 Types of Impacts

An action area is “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402.02). This analysis is not limited to the “footprint” of the action, nor is it limited by the BLM’s authority. Rather, this analysis is a biological determination of the reach of the Proposed Action on listed species. Subsequent analyses of the environmental baseline; effects of the action; and levels and likelihood of impact, including risk or level of incidental take, would be based upon the action area.

### 4.1.1 Habitat Loss and Fragmentation

With the designation of corridors for the transport of CO<sub>2</sub> and EOR products and for other compatible uses, some development presumably would occur in those areas. Table 5 quantifies habitats present within the corridors and within 1 mile of the corridors, as indicated by GAP cover type mapping (USGS 2011). The suitability of these habitats for supporting listed species would be determined during project-level field surveys. Removal of suitable habitat of listed species within corridors would result in both short-term and long-term habitat loss. Although unoccupied suitable habitats could be removed, preconstruction surveys designed to search all suitable habitats for listed species would identify any listed plant or wildlife populations present in the corridors. It is anticipated that all areas determined to contain any ESA listed populations would be avoided or addressed according to the measures in the RMPs (see Attachment A).

**Table 5. Habitats Crossed by Corridors**

Cover Type	Acres in Corridors	Acres within 1 Mile of Corridors
Shrubland, desert scrub	49,786	2,101,287
Marsh, meadow	2,329	110,664
Grassland	1,749	75,434
Riparian	889	44,608
Cliff, rock, scree	767	54,441
Developed, disturbed	912	35,531
Barren, badland	542	23,923
Forest, woodland	397	29,564
Agricultural	404	35,376

Source: USGS (2011).

Section 3.1 includes descriptions of the habitats used by the species considered in this BA. The vegetation within corridors could be impacted if development of the corridors occurs, leading to habitat loss and fragmentation. Vegetation in the surrounding areas could be impacted by dust and the spread of invasive weeds. Surface disturbance could lead to the spread and establishment of noxious and invasive weeds that can interfere with reclamation success. Noxious and invasive weeds may encroach onto disturbed areas and also potentially expand into adjacent weed-free areas. Herbicide drift related to chemical weed control could impact listed plant species; however, the BLM requires adherence to standard BMPs and avoidance measures for known populations (see Attachment A). Habitat alteration can result in increased predation. Some habitats have slow recovery rates after reclamation and revegetation.

Portions of the corridors and surrounding areas are currently disturbed by existing pipelines, roads, and oil and gas field infrastructure. Approximately 74% of the corridors are within existing designated corridors or 0.5 mile from existing pipeline ROWs. Plans for reclamation, site stabilization, and weed control are included in the BMPs and mitigation measures planned for the WPCI (BLM 2020).

#### **4.1.2 Noise and Human Activity**

Future construction and operations that may be authorized within the designated corridors could increase noise and human activity that can disrupt the wildlife life-cycle activities of foraging, resting, and migrating and other patterns of behavior. Although wildlife already existing in proximity to human development may already be habituated to noise from land use and human disturbance, changes to these baseline activities may still result in behavioral disruption. Sensitivity to noise varies from species to species. Specific noise levels and construction timing would be determined for each project within the corridors.

Some wildlife (e.g., grizzly bear) could be attracted to an area by human activity. Standard habitat avoidance measures, minimization of attractants in suitable habitat areas within the range of the species, and safety measures would minimize this likelihood of this potential. Construction traffic related to projects within designated corridors could result in vehicle collisions with wildlife. Vehicles could also run over unmapped populations of listed plant species.

#### **4.1.3 Soil Erosion and Sedimentation**

Potential removal of vegetation and construction activities within the designated corridors could lead soil erosion. Sedimentation in water can decrease water quality by increasing suspended sediment and turbidity (i.e., the cloudiness of a liquid) with the potential to affect light penetration and general ecological productivity (Castro and Reckendorf 1995). Suspended sediment also has the potential to transmit absorbed pesticides and nutrients into water systems; this can lead to an upset of chemical balance and aquatic habitat for preferred species.

Sedimentation in nearby waterbodies may reduce water quality that would impact fisheries. Corridors would cross perennial streams at 116 locations. Stream crossing methods are unknown at this time, but channel crossings for pipelines are generally designed and constructed using an open-cut trench or a bore under waterways. Horizontal directional drilling methods would likely be used to cross under sensitive streams to minimize construction-related sedimentation and turbidity. Impacts to streams from crossings would require analysis at the project-specific level. Plans for reclamation and site stabilization are included in the BMPs and mitigation measures planned for the WPCI (BLM 2020).

#### **4.1.4 Water Use**

Water use that may be authorized for use during future construction within the designated corridors, such as for hydrostatic testing and dust abatement, could lead to depletions that affect downstream species. Water depletions from project actions within the Platte or Colorado River Basins could cause downstream impacts that could adversely affect Platte and Colorado River species. In addition to downstream effects, water use could reduce flows and impact Ute ladies'-

tresses habitat. However, water use would be temporary, therefore having minimal effect on the hydrology associated with subirrigated riparian and wet meadow habitat.

The amount of water needed and the sources of that water are not known at this time. Water withdrawals would require analysis at the project-specific level.

## 4.2 Impacts by Species

Table 6 lists the miles of proposed corridors within each species' AOI. AOIs encompass areas in which a listed species is known to occur as well as areas in which direct and indirect effects to the species and their habitat may occur. Crossing an AOI may not necessarily result in effects to the species or their habitats. Table 6 is intended to show which proposed segments are in areas where effects are possible (i.e., AOIs) and which BLM field office would address any impacts through the office's RMP.

**Table 6. Miles of Species' Area of Influence Crossed by Corridors**

Common Name	Scientific Name	BLM Field Offices	Segment Number	Miles of AOI Crossed
Canada lynx	<i>Lynx canadensis</i>	Pinedale	5	6.0
		Cody	25	1.0
Grizzly bear	<i>Ursus arctos horribilis</i>	Cody	21, 23, 24	68.3
		Pinedale	5	1.6
NLEB	<i>Myotis septentrionalis</i>	Buffalo	18	6.1
Black-footed ferret	<i>Mustela nigripes</i>	Cody	23, 24	9.3
		Rawlins	6	9.6
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Kemmerer	1	26.3
		Pinedale	1, 5	45.8
		Rawlins	1, 2	12.7
		Rock Springs	1, 2, 4, 5	284.5
Ute ladies-tresses	<i>Spiranthes diluvialis</i>	Buffalo	16, 17, 18	207.2
		Casper	10, 11, 12, 15, 16, 17	245.9
		Cody	4, 19, 21, 22, 23, 24, 25	246.3
		Kemmerer	1	26.3
		Lander	4, 3, 7, 8, 9, 11, 12, 13, 14, 15	318.2
		Pinedale	1, 5	19.4
		Rawlins	1, 2, 3, 4, 6, 7	207.8
		Rock Springs	1, 2, 4, 5	257.8
		Worland	4, 19, 20, 21, 22	228.2
Blowout penstemon	<i>Penstemon haydenii</i>	Rawlins	7	17.3
Desert yellowhead	<i>Yermo xanthocephalus</i>	Lander	8, 9, 13	62.8

Common Name	Scientific Name	BLM Field Offices	Segment Number	Miles of AOI Crossed
Platte River Species	<i>Sterna antillarum</i>	Casper	6, 10, 11, 12, 17	122.3
		Lander	3, 4, 7, 8, 9	139.8
		Rawlins	2, 6, 7	99.5
Colorado River Species	<i>Gila elegans</i>	Kemmerer	1	26.3
		Pinedale	1, 5	45.9
		Rawlins	1, 2	16.1
		Rock Springs	1, 2, 4, 5	284.1

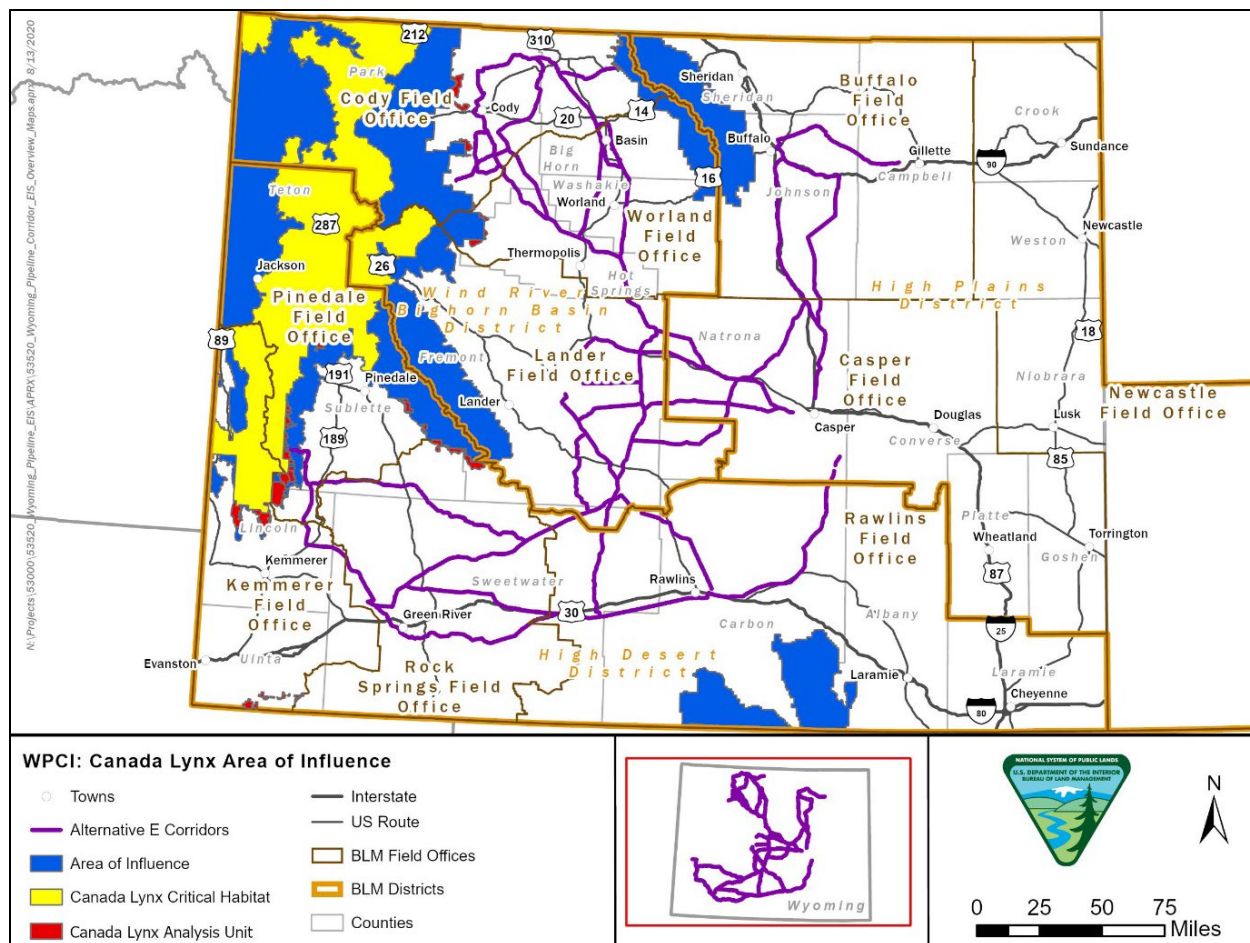
Approximately 74% of the proposed corridors are within existing corridors or within 0.5 mile of existing pipeline ROWs. The preferred alternative (Alternative E in the final EIS for the WPCI [BLM 2020]) would designate new corridors and would change the designated use of existing designated corridors to dedicate corridor use for the transport of CO<sub>2</sub> and EOR products and for other compatible uses.

Information on habitat availability, soils, associated vegetation, species presence, and other factors is needed to make supportable determinations about the magnitude or degree to which a particular species may be affected. These details would be gathered and project modifications would be made (if needed) before potential future projects take place within the designated corridors.

#### 4.2.1 Canada Lynx

ROW and corridor management actions can lead to fragmentation of lynx habitat, resulting in reduced opportunity for dispersal and mobility and increased mortality to lynx from collisions with vehicles. Any improved access may open areas to human activity, which may cause lynx to avoid or abandon otherwise occupied habitats. The degree of these impacts is correlated with traffic volume and speed and road width. The acquisition of access easements and the issuance of ROW grants may affect the lynx if associated construction is within the vicinity of travel corridors. The associated presence of human activity may cause short-term avoidance of these areas by the lynx. Existing ROW corridors are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites, which do not typically feature Canada lynx habitats.

Portions of segments 5 and 25 (Pinedale and Cody Field Offices, respectively) would cross the Canada lynx AOI (Figure 2; see Table 6). Segment 5 is 0.7 mile outside designated critical habitat, and segment 25 and other segments in the Cody Field Office are more than 15 miles from designated critical habitat; therefore, the segments are anticipated to have no measurable or unanticipated effects on the designated critical habitats of lynx. Approximately 0.4 mile of segment 25 would be located in the Porcupine/Mann Creek LAU in the Cody Field Office. Information from habitat evaluations within that LAU indicate that the proposed corridor avoids intersecting any habitats described as important (Ehle and Keinath 2002). Lynx are not known to occur within Porcupine/Mann Creek LAU, and it is unlikely that lynx would be present during future pipeline construction activities. Any lynx short-term avoidance of these marginal habitats in LAUs or nearby forested lands because of increased human activity, construction traffic or noise would be unlikely, and any impacts would be so small as to be immeasurable.



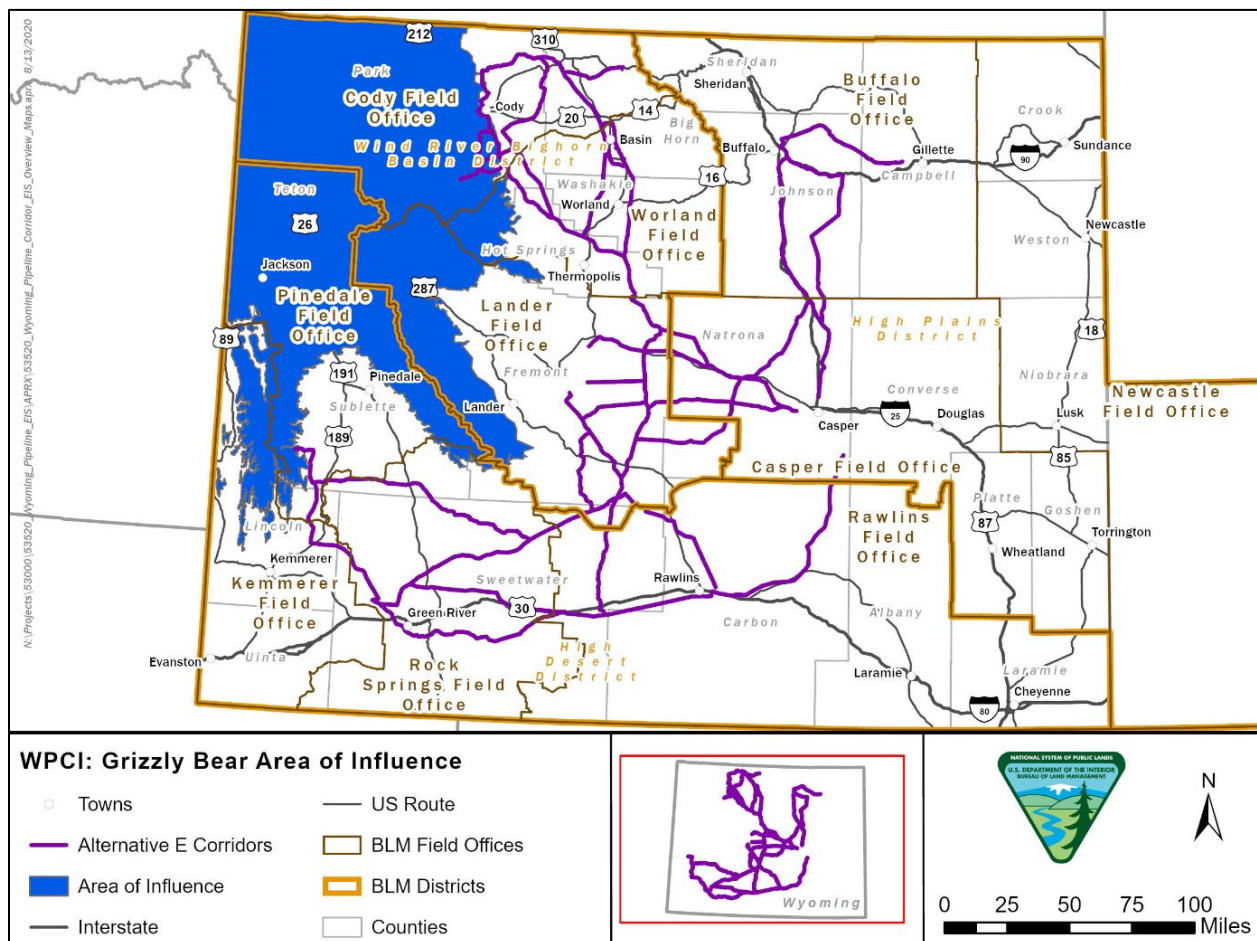
**Figure 2. Corridors within the Canada lynx Area of Influence.**

The Pinedale RMP includes conservation measures listed for lynx habitat within the LAUs. The RMP encourages use of those conservation measures for areas of lynx habitat or potential lynx habitat not fitting the criteria of a LAU.

#### 4.2.2 Grizzly Bear

Development of ROWs and corridors can be a source of fragmentation of grizzly bear habitat, resulting in reduced opportunity for dispersal and mobility and in increased mortality to grizzly bear from collisions with vehicles. The degree of these impacts is correlated with traffic volume and speed. The issuance of ROW grants and leases for pipelines may affect the grizzly bear if the associated construction is within the vicinity of travel corridors. The associated presence of human activity may cause short-term behavioral avoidance of these areas by grizzly bear. Any improved access may open areas to human activity, which may cause grizzly bear to avoid occupied habitats or, conversely, may result in increased bear/human interactions if food and trash are not properly stored. Fragmentation of grizzly bear habitat may reduce the species' mobility and use of otherwise secure habitat. Existing ROW corridors are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites, which do not typically feature grizzly habitats.

Portions of segments 5, 21, 23, and 24 would cross the grizzly bear AOI in the Cody and Pinedale Field Offices (Figure 3; see Table 6). Development in these segments is likely to result in the removal of forested habitat in the grizzly's range, increasing disturbance and fragmentation of available habitat. However, the change from forested to cleared habitat would not prevent use of those areas by grizzly bear or affect the species' movement. Construction-related traffic is unlikely to lead to vehicle collisions because of enforced speed restrictions on access roads and since construction occurs during daylight hours. The proposed corridors are primarily in shrubland, desert scrub, and grassland habitats rarely used by the grizzly bear, which reduces the likeliness of effects from fragmentation and traffic. The short-term effects of human activity, noise, and construction traffic would be minimized because of the implementation of the specific measures for avoidance of human-bear interactions described in the Cody and Pinedale RMPs (see Attachment A).



**Figure 3. Corridors within the grizzly bear Area of Influence.**

### 4.2.3 Northern Long-eared Bat

The NLEB is known to occur in northeastern Campbell County. Approximately 18% of potential NLEB habitat identified in Campbell County is within BLM-administered surface; however, species distribution maps provided by the WYNDD (2020) indicate that the likelihood that all of this habitat would be occupied by the species is minimal. WYNDD predicted occurrence models for the species include only a small portion of forested habitats in the northeast portion of



Campbell County. Because one individual bat was captured in the Spring Creek area, forested areas in close proximity to that area may also be occupied. ROW and corridor activities may lead to impacts to the species if such actions occur in suitable or occupied habitats during spring and summer months or result in habitat loss; however, the BLM would regulate the timing of construction in such areas, avoiding sensitive periods of maternity roosting. No hibernacula are known to occur on or near any of these identified NLEB habitats on BLM lands.

An approximately 6-mile-long portion of segment 18 would cross the NLEB AOI in the Buffalo Field Office (Figure 4; see Table 6). The segment is more than 30 miles from the known occurrence in northeast Campbell County. The segment crosses scattered areas of forested habitat (Central Rocky Mountain Dry Lower Montane-Foothill Forest) interspersed with shrubland and grassland habitats. Forested areas may be removed as a result of activities within the segment, and surveys are needed to assess whether the habitat is suitable for bats. Habitat availability is not thought to be a limiting factor affecting the survival and conservation of the species, like WNS. In addition, no known hibernaculum or maternity roost trees are near the designated corridor and potentially occupied habitat that could be affected is limited. The corridors are primarily within existing ROWs and established corridors, which decreases adverse effects. Construction could affect suitable habitat, but the presence of occupied habitat is unlikely; therefore, effects are unlikely.

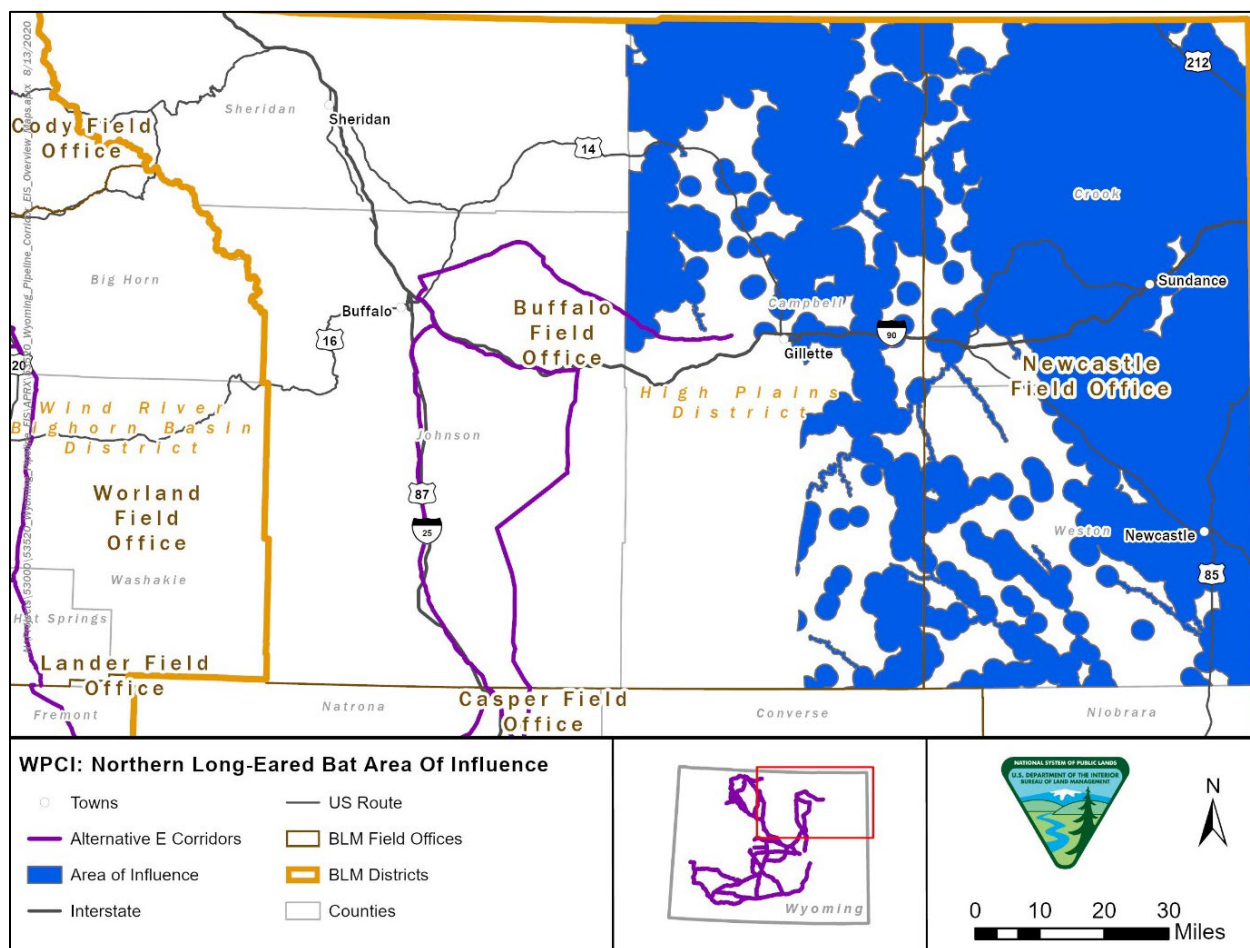


Figure 4. Corridors within northern long-eared Bat Area of Influence.

#### 4.2.4 Black-footed Ferret

Portions of the proposed corridors would likely pass through prairie dog colonies; however, most prairie dog colonies in Wyoming do not provide enough extensive suitable habitat to support black-footed ferret populations. If development occurs within large prairie dog colonies suitable for supporting the ferret, only the portion of the colony within the corridor (200 to 300 feet wide) would be temporarily disturbed. Prairie dogs would be likely to move back into the disturbed area after construction, and the colony's suitability as ferret habitat would not be affected. These areas could still be used for black-footed ferret reintroduction sites in the future. The USFWS's "block clearance" letter for the species indicates that non-introduced black-footed ferrets are not expected to occur throughout Wyoming (USFWS 2013b). With the issuance of the block clearance, any ferret occurring within Wyoming is considered a part of the NEP. No NEPs of ferret are anticipated to be impacted by the corridor designation outside the recovery sites, which are depicted in Figure 5 as the species' AOI.

Portions of segments 23 and 24 in the Cody Field Office and a portion of segment 6 in the Rawlins Field Office would cross the AOI of black-footed ferret (see Figure 5; Table 6). Removal of prairie dog colonies within the 19 miles of corridors in the AOI could impact suitable ferret habitat within reintroduction sites. Segment 6 in the Rawlins and Casper planning areas crosses the Shirly Basin/Medicine Bow Reintroduction Site in northern Carbon County and southern Natrona County.

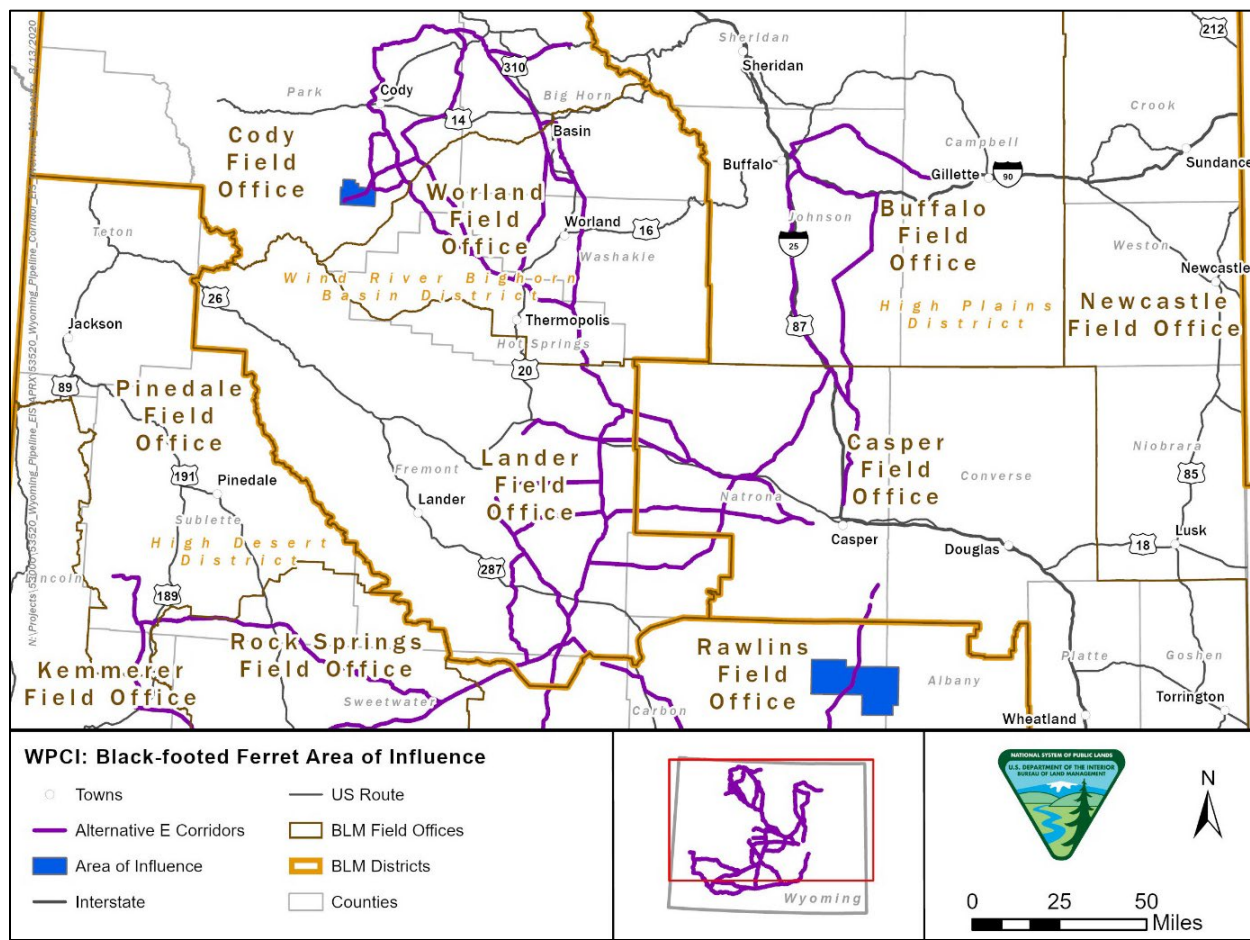


Figure 5. Corridors within the black-footed ferret Area of Influence.



The proposed corridors are primarily in existing utilities corridors and within 0.5 mile of existing pipeline ROWs, which decreases the potential for adverse effects from future actions within the corridors. Development within designated corridors that crosses existing reintroduction areas could increase predation, noise, disease, and human activity, which could affect prairie dogs and ferrets, if present. However, the conservation strategies in place for ferret protection during construction activities include avoidance of suitable prairie dog towns and ferret reintroduction sites (see Attachment A). Existing conservation measures would avoid or minimize the effects of lands and realty program activities, including those within the proposed corridor designations that are on black-footed ferret recovery areas.

#### **4.2.5 Yellow-billed Cuckoo**

Portions of segments 1, 2, 4, and 5 cross the yellow-billed cuckoo AOI in the Kemmerer, Pinedale, Rawlins, and Rock Springs Field Offices (Figure 6; see Table 6). The cuckoo is rare in Wyoming but has been observed in Seedskaadee National Refuge and along the Green River (WYNDD 2020). The large tracts of riparian habitat cuckoos prefer is limited in Wyoming. No confirmed breeding has been identified in Wyoming (FR 85:11458).

Although BLM policy stipulates that no surface-disturbing activities will take place within 500 feet of riparian areas, ROWs may be routed through riparian areas, causing habitat disturbance and fragmentation from removal of cottonwood or willow vegetation. Since the yellow-billed cuckoo is not known to breed or nest in these areas, impacts related to the species' avoidance of disturbed habitats there would not occur. Suitable habitat is limited on BLM lands in the area. Any water depletions, sedimentation in streams, and/or noxious and invasive weed invasion from surface-disturbing activity within the limited suitable habitat would be avoided through the implementation of conservation measures (see Attachment A). Conservation measures would be implemented to maintain riparian habitats and ensure that this species would not be adversely affected by construction of future projects within the corridors.

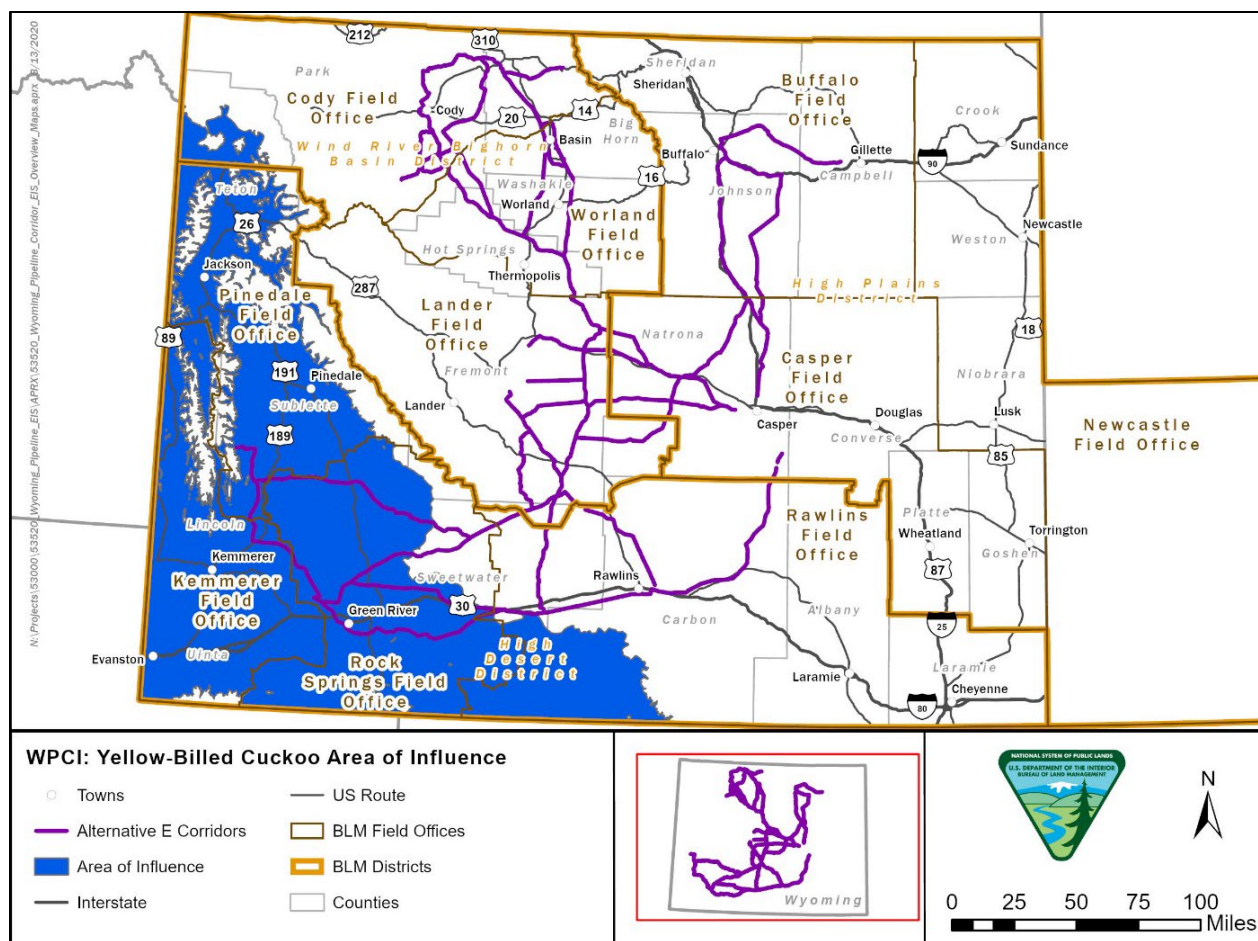
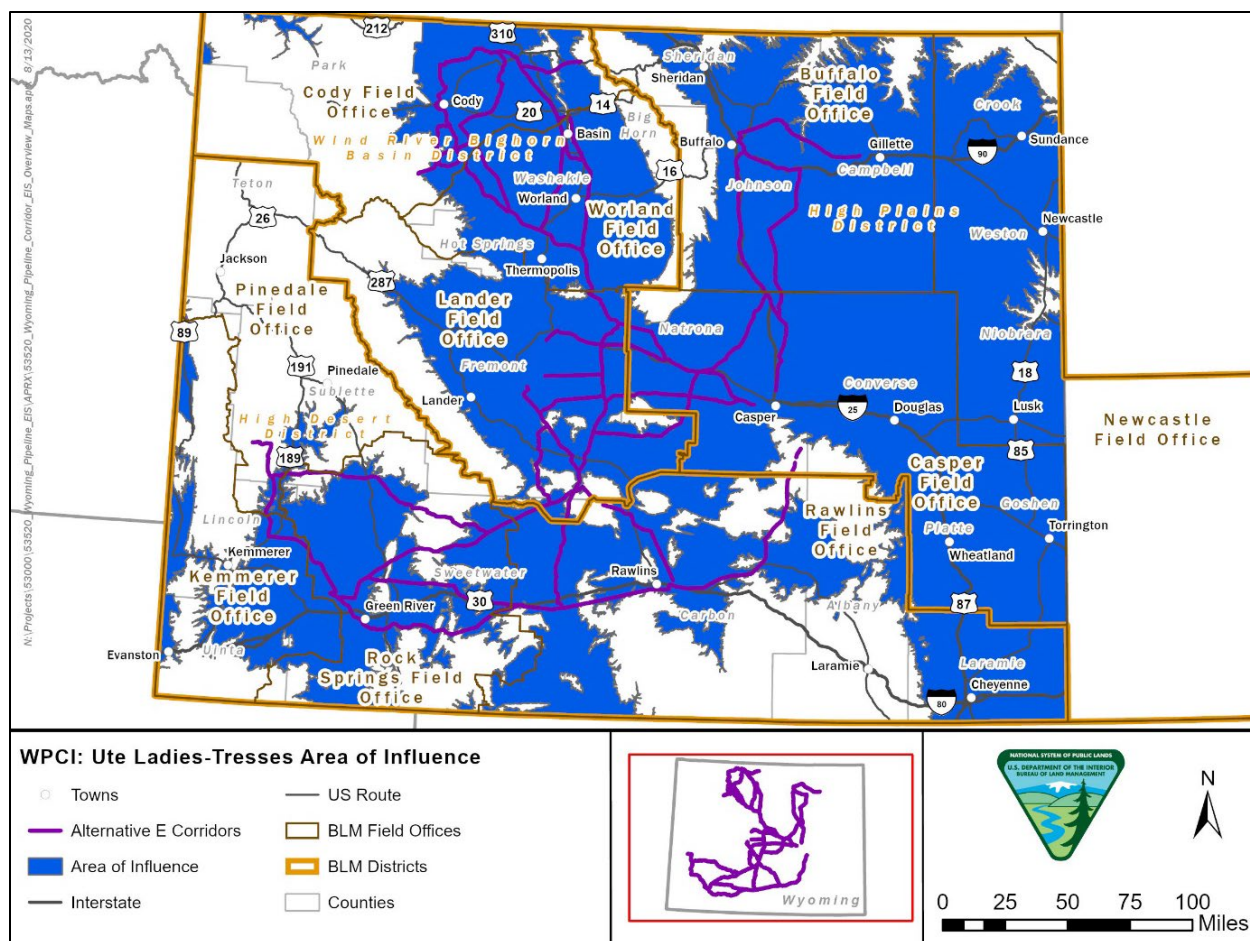


Figure 6. Corridors within the yellow-billed cuckoo Area of Influence.

#### 4.2.6 Ute Ladies'-tresses

All the proposed segments cross the AOI of Ute ladies'-tresses (Figure 7; see Table 6), but no populations are currently known to occur within or near the corridors. The closest known population is 20 miles east of segment 17 in northwestern Converse County, which is under the jurisdiction of the Casper Field Office (WYNDD 2020). Approximately 74% of the corridors are within existing designated utilities corridors, and potential habitat for this species is limited to the points at which segments would cross streams. Corridors would cross perennial streams at 116 locations. Stream crossing methods for future projects are unknown at this time, but channel crossings for pipelines are generally designed and constructed using an open-cut trench or a bore under the waterway. Boring methods would likely be used to cross under streams if sensitive resources, such as Ute ladies'-tresses, are present.



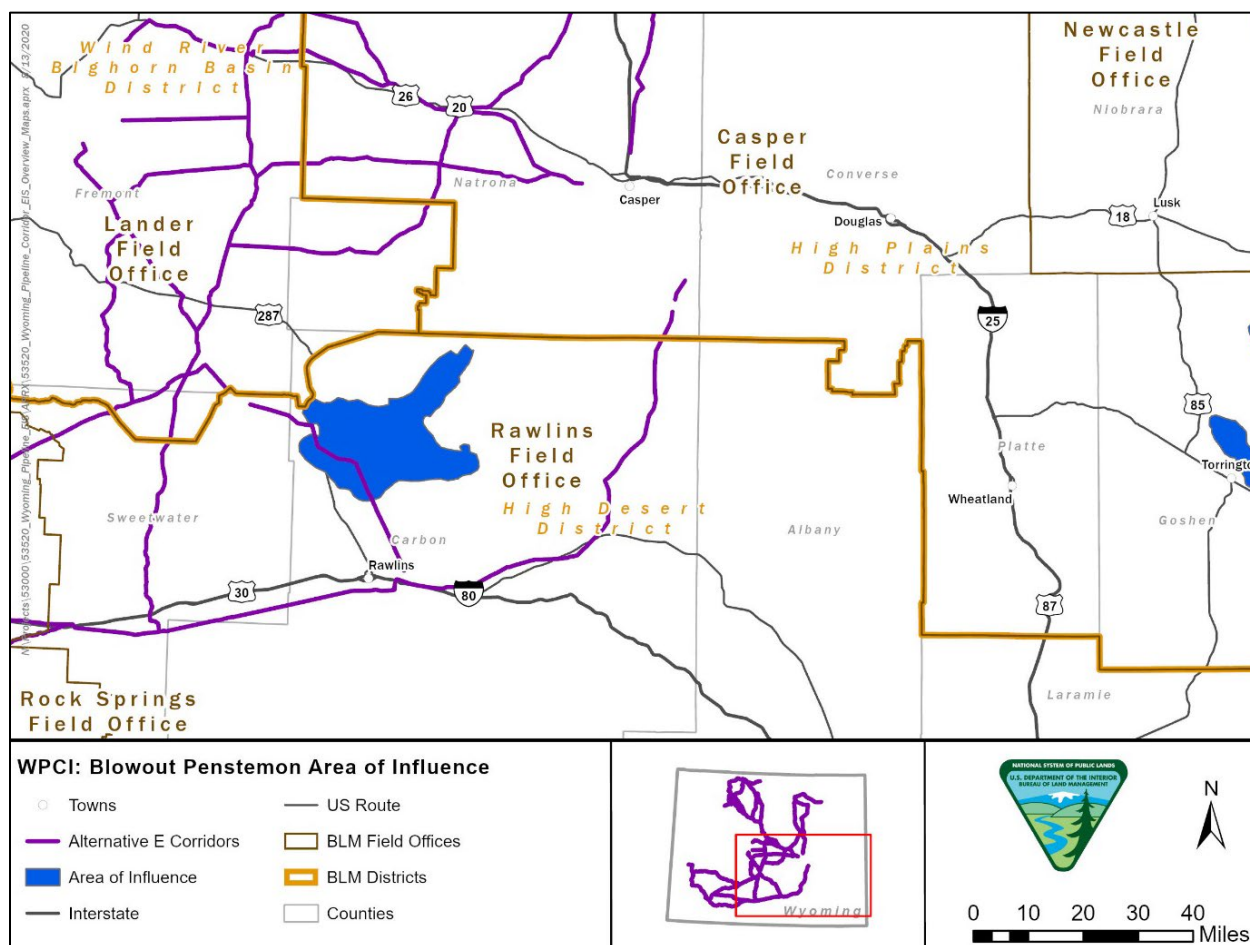
**Figure 7. Corridors within the Ute ladies'-tresses Area of Influence.**

Potential direct impacts to Ute ladies'-tresses resulting from development within the corridors include destruction of plants or suitable habitat. However, suitable habitat is likely to be limited because much of the project area is arid. Site-specific surveys are needed to determine whether moist riparian areas and meadows are present, and, where moist soils are present, if the appropriate site-specific conditions are not found. Ute ladies'-tresses could be indirectly affected by activities that occur at some distance from any plants and habitat, such as herbicide use, release of pollutants, and potential changes to downstream hydrology; however, regulations in place to protect water quality would further decrease the likelihood that suitable habitat, if present, would be impacted. Plans for reclamation, site stabilization, and weed control are included in the final EIS for the WPCI (BLM 2020).

Future pipeline ROWs would require analysis to determine whether potential habitat is present in project areas. With the conservation measures in place for Ute ladies'-tresses, riparian/wetland habitats would be avoided to the extent possible to minimize impacts to suitable habitat. Presence/absence surveys for the species would be required within suitable habitat before the authorization of activities in the habitat. Conservation measures require all proposed ROW projects to be designed and located at least 0.25 mile from any known Ute-ladies'-tresses occupied habitat, as described in Attachment A.

#### 4.2.7 Blowout Penstemon

A portion of segment 7 in the Rawlins Field Office crosses the AOI of blowout penstemon (Figure 8; see Table 6). No known blowout penstemon populations are within the corridors (WYNDD 2020). It is unknown whether suitable habitat (blowout-like sand dunes with sparse cover) is within the corridor. Most of the BLM land within the AOI is within the Blowout Penstemon ACEC, which is more than 4 miles east of the corridor. BLM management of the ACEC includes relocation of ROW actions to areas outside the ACEC to protect known populations; the proposed corridor is outside the ACEC boundary (BLM 2013). Portions of segment 7 are within existing corridors and adjacent to State Highway 789 where existing disturbance has likely reduced the suitability of the habitat to support this species.



**Figure 8. Corridors within blowout penstemon Area of Influence.**

In the Rawlins Field Office, impacts may occur if corridor development results in loss of habitat or individual plants. Future projects in the corridors would require an analysis to determine if potential habitat is present and surveys to determine if that habitat is occupied. Conservation measures require all proposed ROW projects to be designed and located at least 0.25 mile from any known blowout penstemon occupied habitat to minimize disturbances to the species (see Attachment A). Plans for reclamation, site stabilization, and weed control are included in the final EIS for the WPCI (BLM 2020).



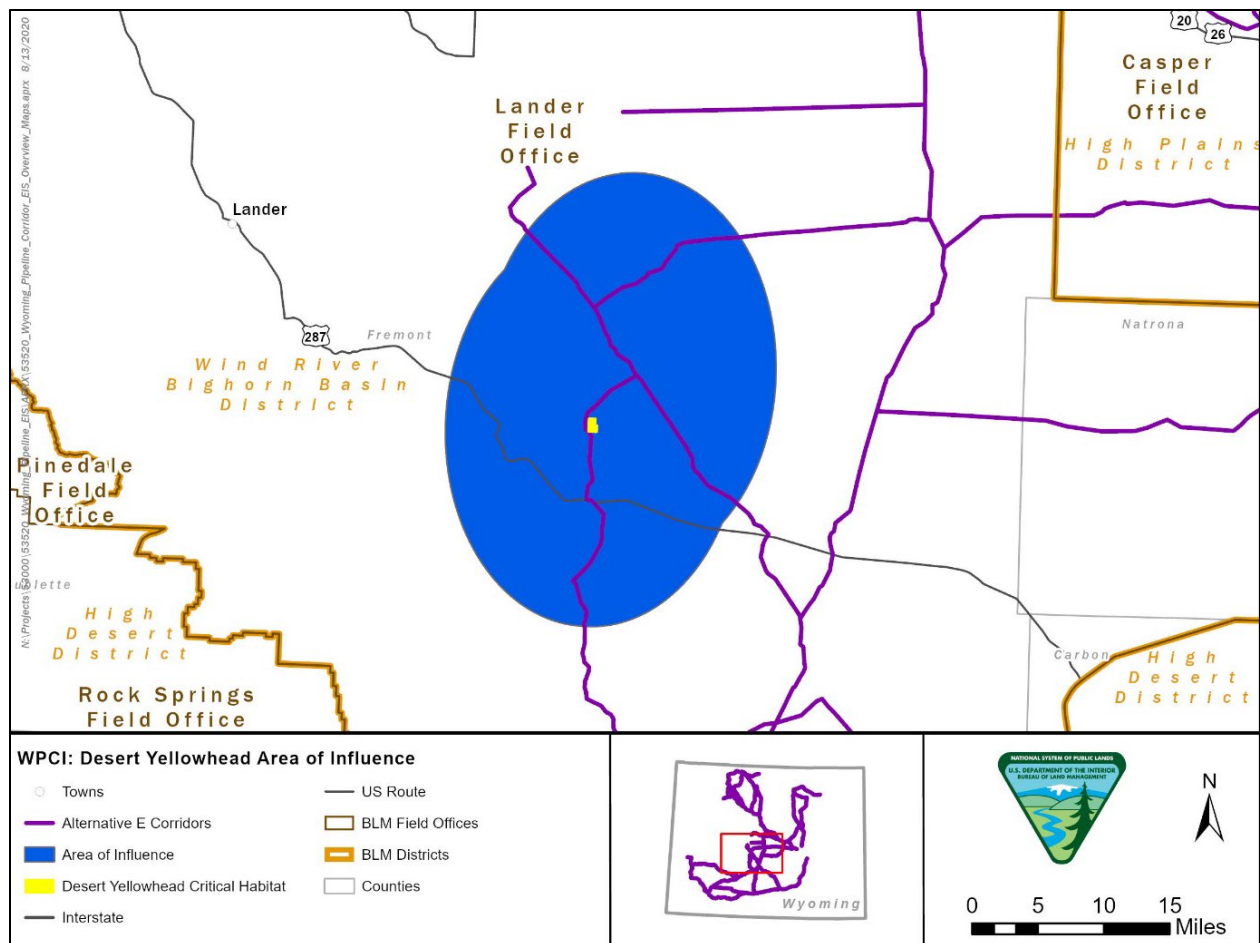
#### **4.2.8 Desert Yellowhead**

No known populations of desert yellowhead are within the corridors (WYNDD 2020; USFWS 2013c). Portions of segments 8, 9, and 13 in the Lander Field Office cross the AOI of desert yellowhead but are outside known populations (Figure 9; see Table 6). Segment 8 is 2,500 feet from the Sand Draw population. Segment 9 is 1,077 feet from the Cedar Rim population and within an existing disturbed corridor. Both known populations are on lands managed by the BLM Lander Field Office. Surveys are needed to determine whether sandstone and limestone outcrops suitable for the species are present within the corridors and, if so, whether those area could be impacted by development within the corridors.

Critical habitat is designated where the Sand Draw population occurs approximately 200 feet from segment 8. Critical habitat is excluded from all ROW development; therefore, WPCI corridor designation is not anticipated to impact the desert yellowhead designated critical habitat that encompasses the Sand Draw population.

The Cedar Rim population is within a protected area subject to an NSO restriction, and no surface disturbance would occur within the currently known populations. Because of the close proximity of the corridor to these populations, indirect effects from construction of future projects, including fugitive dust, herbicide drift, the spread of weeds, and undesirable vegetation conditions, could occur in habitat occupied by or suitable for the species. Competition from plants not native to the area would pose a greater threat than competition from species with which desert yellowhead has evolved. To minimize potential impacts from future projects within the corridors, the final EIS for the WPCI includes plans for reclamation, site stabilization, and weed control (BLM 2020).

In the Lander Field Office, adverse impacts may occur if corridor development results in loss of habitat or individual plants. Future projects within the designated corridors would require analysis to determine whether potential habitat is present in specific project areas; if potential habitat is present, conservation measures may require that all proposed ROW projects be designed and located at least 0.25 mile from any known desert yellowhead habitat to minimize potential disturbances.



**Figure 9. Corridors within the desert yellowhead Area of Influence.**

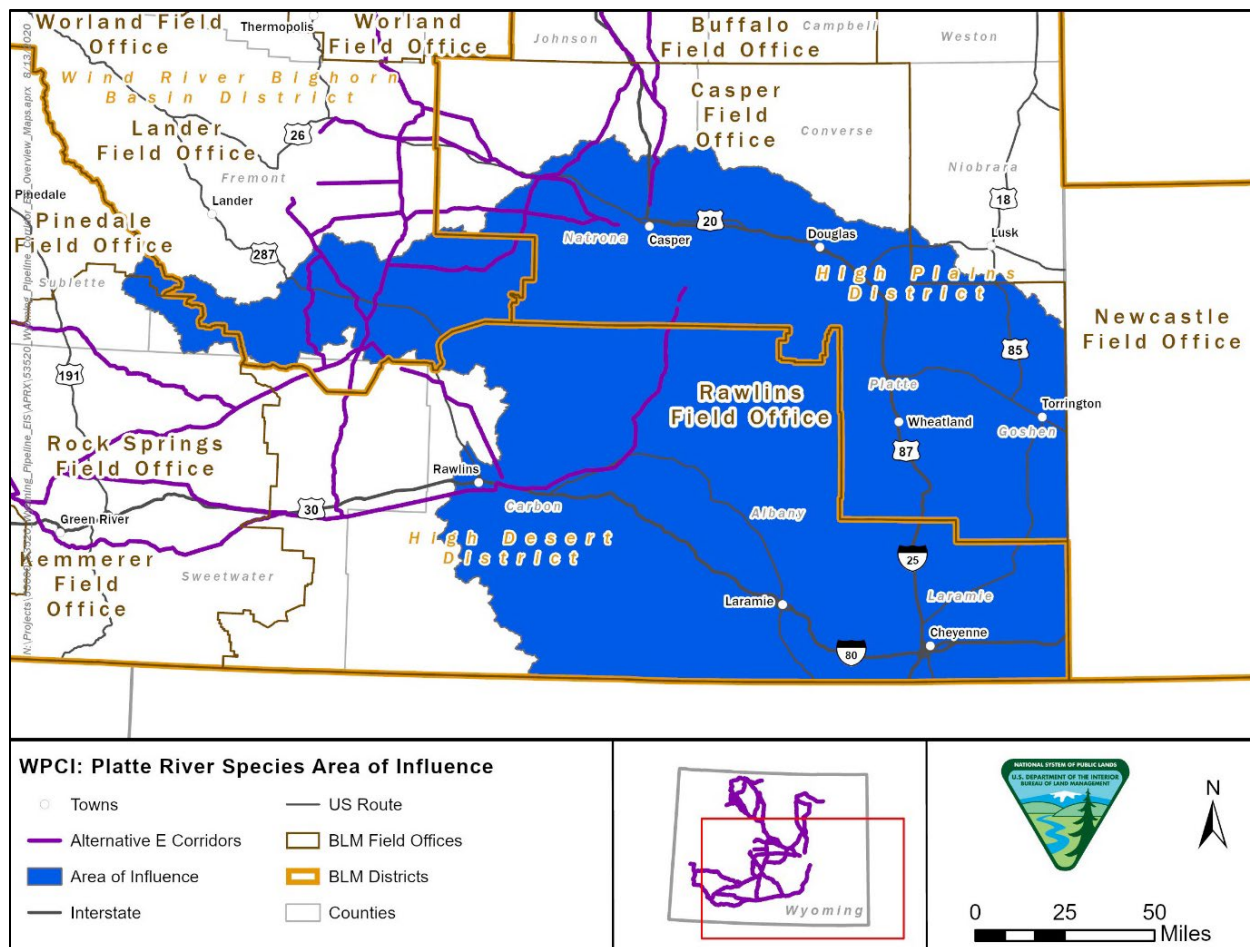
#### 4.2.9 Platte River Species

Portions of 11 segments (2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 17) in the Casper, Rawlins, and Lander Field Offices cross the AOI of Platte River species (Figure 10; see Table 6). Federally listed species in the Platte River that may be affected by water depletions resulting from actions in the corridors are listed in Table 4. Designated critical habitat for the whooping crane downstream in Nebraska may also be affected by depletions. The sources of risks to these species are water depletions and accidental spills of toxic materials. If water depletions within the Platte River Basin result from activities related to corridor development (e.g., dust abatement, hydrostatic testing), Platte River species would be adversely affected because of downstream impacts.

The BLM participates in the basin-wide Platte River Recovery Implementation Program (BLM 2007d). The program ensures ESA compliance among water users in the Platte River Basin upstream of the drainage's confluence with the Loup River in Nebraska for effects on the target species and whooping crane critical habitat as well as other federally listed species occurring in the Platte River Basin while managing certain land and water resources to provide benefits for those species. Water-related activities in the Platte River resulting in more than 0.1 acre-

foot/year of consumptive use of water hydrologically connected to the Platte River system have an adverse effect and require consultation with the USFWS.

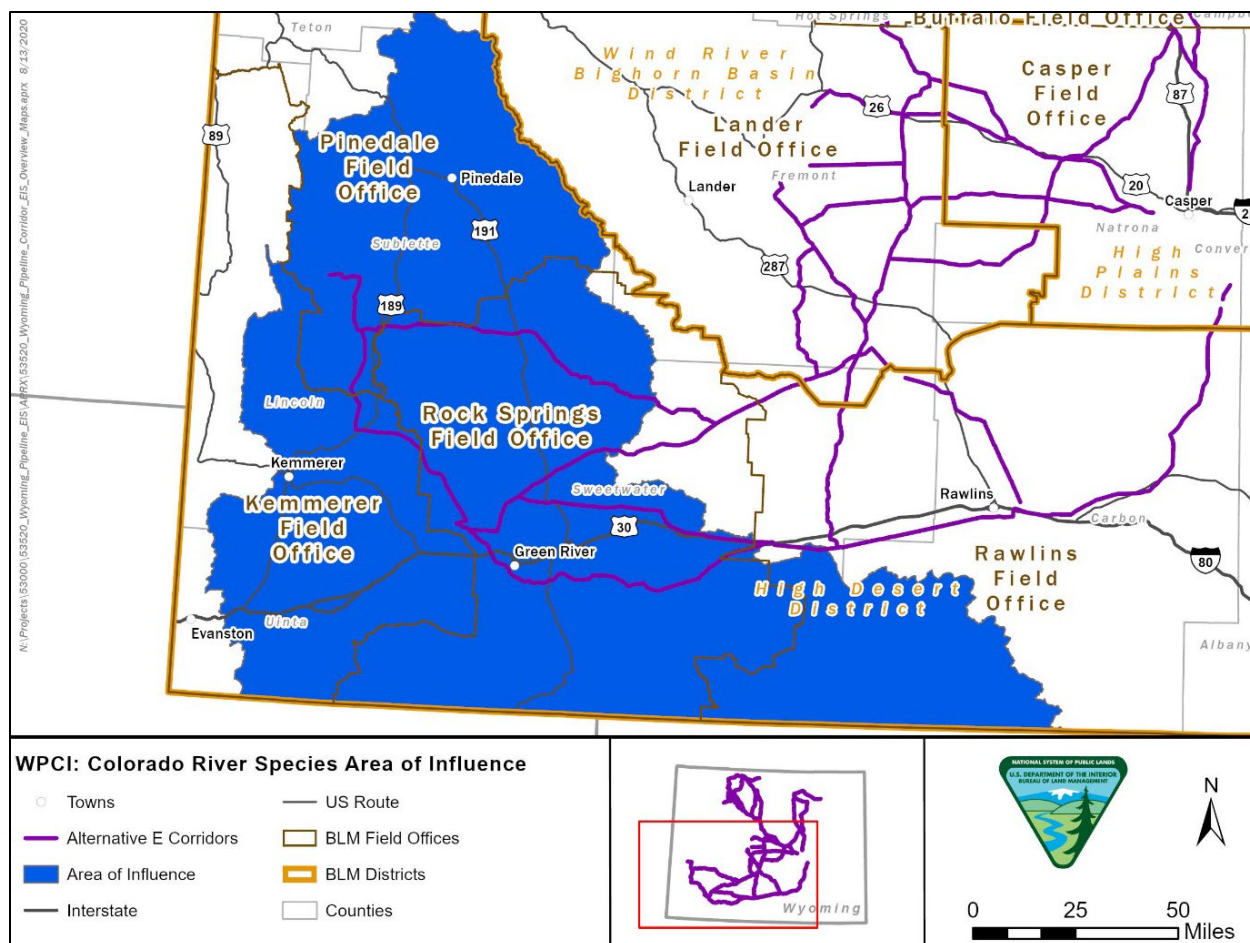
Water use within the corridors cannot be quantified until future projects therein that include activities such as dust abatement and hydrostatic testing are known. Information such as the number of and size of pipes as well as the source of water would be determined for potential projects within designated corridors. If consumptive use of water from project actions (e.g., dust abatement, hydrostatic testing) within the Platte River Basin is more than 0.1 acre-foot per year, Platte River species would be adversely affected because of downstream impacts.



**Figure 10. Corridors within the Platte River species Area of Influence.**

#### 4.2.10 Colorado River Species

Portions of segments 1, 2, 4, and 5 in the Kemmerer, Pinedale, Rawlins, and Rock Springs Field Offices cross the AOI of four Colorado River fish species (Figure 11; see Table 6). These fish species are not found in the corridors but exist downstream. Designated critical habitat for the species is approximately 75 miles downstream in the Yampa and Green Rivers. The risks to these fish species are water depletions. If water depletions occur from project actions (e.g., dust abatement, hydrostatic testing) within the Colorado River Basin, Colorado River fish species would be adversely affected because of downstream impacts.



**Figure 11. Corridors within Colorado River species Area of Influence.**

The Upper Colorado River Endangered Fish Recovery Program is a partnership among entities working to recover the endangered fish of the Upper Colorado River Basin. Under the Recovery and Implementation Program (RIP) for Endangered Fish Species in the Upper Colorado River Basin (USFWS 2009), which was developed in support of Section 7 consultation, “any water depletions from tributary waters within the Colorado River drainage are considered as jeopardizing the continued existence of these fish.” *Tributary water* is defined as water that contributes to instream flow habitat. *Depletion* is defined as water that would contribute to the river flow if not intercepted and removed from the system.

The USFWS has determined that progress made under the RIP has been sufficient to merit a waiver of the depletion fee, which helps fund the RIP, for depletions of 100 acre-feet per year or less (USFWS 2009). The number of and size of pipes and the source of water for potential projects within designated corridors are unknown. Therefore, water use cannot be quantified. If depletions for any given project within the corridors are more than 100 acre-feet per year, a one-time depletion fee may be required.



### 4.3 Cumulative Effects

For the purposes of effects analysis under the ESA, cumulative effects are defined as effects on a species caused by other projects and activities unrelated to the action under consideration and effects of future state or private activities not involving federal activities that are reasonably certain to occur within the action area of the federal action subject to consultation. Future federal actions would be subject to the consultation requirements established in Section 7 of the ESA and therefore are not considered cumulative to the Proposed Action.

Wind farms, utility systems (transmission lines), and oil and gas development on private lands without federal nexus could alter or remove habitats for listed species or their prey (e.g., prairie dogs). Human-introduced foraging opportunities (refuse) could lure predators (foxes, skunks, raccoons, etc.) that could prey on black-footed ferrets and compete for prairie dogs. Wind farms and utility systems could also cause additive mortality to avifauna, including yellow-billed cuckoos.

Projects, including ROWs, that pass through private and state lands may cause additional mortality of threatened, endangered, or candidate species because of collisions with vehicles. Increases of lynx, grizzly bear, and black-footed ferret (or prairie dog) mortalities because of vehicle collisions may occur. ROW and corridor activities on state and private lands may also remove and fragment habitat that is suitable for black-footed ferret reintroduction (i.e., large prairie dog towns) or used by other listed wildlife. Construction and maintenance of ROWs on state and private lands contribute to short- and long-term losses of vegetation and increased sedimentation.

Off-highway vehicle use on private and state lands presents a threat to desert yellowhead and blowout penstemon through the crushing of plants, destruction of seeds, and compaction or erosion of soil. This threat is greatest in the spring and summer, when plants are in flower or heavy with fruit. Livestock grazing and vegetation management on private and state lands could impact listed plant species through the removal of habitat, spread of weeds, and/or use of herbicides. Impacts to Ute ladies'-tresses from livestock grazing on private lands could be beneficial (maintaining habitat through grazing or haying) or detrimental (limiting individual plant reproductive fitness by removal of fruiting parts through trampling or ingestion). Livestock and wild ungulate grazing may present a threat to desert yellowhead individuals and habitat quality (USFWS 2010).

Cumulative effects to downstream species primarily are the result of water developments and water uses in the basin. Also, introduced species such as rainbow trout are an important component of the cumulative effects that impact the Colorado River fish; exotic trout tend to prey on young age classes of the sensitive fish.

## 5 EFFECTS DETERMINATIONS

The following determinations are applied to each species according to the above analysis.

**No effect (NE):** The appropriate conclusion when the Proposed Action will not affect listed species. The principle factor for this determination is that “suitable habitat” does not exist for the species in the area where the activity would occur.

**May affect, but is not likely to adversely affect (NLAA):** The appropriate conclusion when effects on listed species are expected to be discountable (so rare as to be considered extremely unlikely to occur) or insignificant (so small or immeasurable that they could not be meaningfully measured, detected, or evaluated) or completely beneficial. This type of effect requires informal Section 7 consultation with the USFWS and agency concurrence with the determination.

**May affect, is likely to adversely affect (LAA):** The appropriate conclusion if any adverse effect to the listed species may occur as a direct or indirect result of the Proposed Action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. In the event the overall effect of the Proposed Action is beneficial to the listed species but also is likely to cause some adverse effects, then the proper effect determination for the Proposed Action “is likely to adversely affect” the listed species. An “is likely to adversely affect” determination requires formal Section 7 consultation.

The following determinations are based on analysis of impacts to listed species from the WPCI corridors presented in this BA, including implementation of conservation measures in Attachment A. The WPCI would designate new corridors reserved for the transportation of CO<sub>2</sub> and EOR products and for other compatible uses and would also reserve a portion of the existing designated corridors exclusively for CO<sub>2</sub> and EOR product pipelines or other compatible uses. In most cases, the designation of new corridors and existing corridors is similar to the present RMP management actions (Lands and Realty, ROWs and Corridors). In some cases, a change in a species effects determination within an RMP may be warranted, as indicated by the use of **bold** in Table 7. As with existing BLM management of ROWs and designated corridors, conservation measures would be implemented to avoid, minimize, and reduce the effects of potential future projects on listed species.

**Table 7. Determinations for WPCI Designated Corridor Management Actions by Field Office**

Common Name	Buffalo	Casper	Bighorn Basin	Kemmerer	Lander	Pinedale	Rawlins	Rock Springs
Canada lynx	–	–	NLAA	NLAA	NLAA	NLAA	NLAA	–
Canada lynx critical habitat	–	–	<b>NLAA</b>	–	–	<b>NLAA</b>	–	–
Grizzly bear	–	–	NLAA	–	NLAA	NLAA	–	–
NLEB	NLAA	–	–	–	–	–	–	–
Black-footed ferret	–	<b>NJ</b>	<b>NJ</b>	<b>NJ</b>	<b>NJ</b>	<b>NJ</b>	<b>NJ</b>	<b>NJ</b>
Yellow-billed cuckoo	–	–	–	<b>NLAA</b>	–	<b>NLAA</b>	<b>NLAA</b>	<b>NLAA</b>
Ute ladies-tresses	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA	<b>NLAA</b>

Common Name	Buffalo	Casper	Bighorn Basin	Kemmerer	Lander	Pinedale	Rawlins	Rock Springs
Blowout penstemon	–	NE	–	–	NLAA	–	NLAA	–
Desert yellowhead	–	–	–	–	NLAA	–	–	–
Desert yellowhead critical habitat	–	–	–	–	NLAA	–	–	–
Platte River species	–	LAA	–	–	LAA	–	LAA	–
Whooping crane critical habitat	–	LAA	–	–	LAA	–	<b>LAA</b>	–
Colorado River fish	–	–	–	–	--	LAA	LAA	LAA
Colorado River fish critical habitat	–	–	–	–	--	LAA	LAA	LAA

Note: Bold indicates that the WPCI determination differs from the RMP BA determination for ROW management actions. NJ = not likely to jeopardize the continued existence of the species, and – = not addressed in the existing RMP BA because of lack of overlap with the species range.

## 5.1 Canada Lynx

The corridors do not intersect mapped lynx habitats within any LAUs. Removal of forested habitats could occur, adding to the cumulative fragmentation of available habitats. A temporary increase in traffic during construction is unlikely to result in vehicle collisions because of enforced speed restrictions and since construction occurs during daylight hours. Designation of proposed corridors in observance of the associated conservation measures in the existing RMPs *may affect, but is not likely to adversely affect* (NLAA) the lynx. This determination is based on the unlikely presence of the species in the corridors and the mitigation actions provided for protection of habitats in LAUs.

### 5.1.1 Canada Lynx Critical Habitat

The closest proposed corridor is 0.7 mile from designated critical habitat. Designation of proposed corridors in observance of the associated conservation measures in the existing RMPs *may affect, but is not likely to adversely affect* (NLAA) Canada lynx critical habitat. This determination is based on lack of ROW development within critical habitat and the distance of the proposed corridors from the critical habitat.

## 5.2 Grizzly Bear

Removal of potentially suitable forested habitat could occur, adding to the cumulative fragmentation of available habitat. Vehicle collisions are not anticipated because of enforced speed restrictions on access roads and since construction occurs during daylight hours. Designation of proposed corridors in observance of the associated conservation measures in the existing RMPs *may affect, but is not likely to adversely affect* (NLAA) the grizzly bear. This determination is based on the unlikely presence of the species in the corridors and the mitigation actions provided for protection of the species and its habitats from human activities and interactions.

### 5.3 Northern Long-eared Bat

Designation of proposed corridors in observance of the associated conservation measures in the existing RMPs *may affect, but is not likely to adversely affect* (NLAA) the species within the Buffalo Field Office planning area. This determination is based on the low potential that the proposed corridors are located in areas occupied by NLEB and the existing safeguards for protection, including timing limitations and avoidance of special-status species habitat. Future site-specific actions may require the BLM to consult under the 4(d) rule and the USFWS's programmatic agreement.

### 5.4 Black-footed Ferret

The USFWS has “block cleared” Wyoming and does not require Section 7 consultation for black-footed ferret. However, the BLM analyzes NEP species as a “proposed” species for the purposes of conducting Section 7 compliance. Black-footed ferrets and their habitats, if determined to be present, would be evaluated for the implementation of reasonable conservation measures from the RMPs in an effort to support recovery. Designation through amendment of the proposed corridors in observance of the associated conservation measures in the existing RMPs *is not likely to jeopardize the continued existence* of the species.

### 5.5 Yellow-billed Cuckoo

Yellow-billed cuckoo was a candidate species when the RMPs were prepared, but the species is currently listed as threatened; therefore, the determinations in Table 7 have changed. Based on the bird's current status as a threatened species and potential impacts to riparian habitat, implementing potential future projects *may affect, not likely to adversely affect* (NLAA) the yellow-billed cuckoo. This determination is because no cuckoos have been recorded in the corridors, suitable habitat is severely limited in planning areas, and conservation measures in place would help project proponents avoid breeding or nesting activity observed during project planning survey efforts.

### 5.6 Ute Ladies'-tresses

Ute Ladies'-tresses is currently known to occur only in the Casper Field Office planning area. The closest known population is 20 miles from the proposed corridors; however, habitat investigations and surveys have been limited in major portions of the range of the species in Wyoming. Implementing any potential future projects *may affect, not likely to adversely affect* (NLAA) the Ute ladies'-tresses orchid. This determination is based on the corridors' lack of overlap with any known Ute ladies'-tresses orchid populations at present and the unlikely discovery of this relatively rare or uncommon species on the landscape. Where conservation measures, including habitat clearance surveys and riparian/perennial water avoidance measures, are in place, and because wetland and riparian areas would be avoided for new construction when possible, it is unlikely that any future adverse impacts would occur. Any impacts from water use to this species' habitat would be temporary and so small as to be considered immeasurable.

## 5.7 Blowout Penstemon

The effects determination for the Casper RMP will remain *no effect* (NE) based on the absence of blowout penstemon in the planning area and the distance between the corridors and known populations. Extensive surveys have not documented any populations within the planning area (BLM 2007e; Heidel 2018). The effects determination for the Lander RMP will remain *may affect, not likely to adversely affect* (NLAA) based on the lack of blowout penstemon populations documented in the planning area and the conservation measures that are in place to protect blowout penstemon habitat. The effects determination for the Rawlins RMP will remain NLAA based on the conservation measures that are in place to protect known blowout penstemon habitat and populations. The proposed corridors are outside the Blowout Penstemon ACEC. As with existing BLM management of ROWs and corridors, all ROWs would require an analysis to determine whether potential habitat is present in project areas. If present, avoidance of any occupied blowout penstemon habitats would be required to avoid disturbance.

## 5.8 Desert Yellowhead

The corridors are outside the Cedar Rim population NSO restriction area and the designated critical habitat containing the known Sand Draw population. The corridors are in close proximity to these protected areas and the plant populations they contain; therefore it is possible that additional protection measures may be necessary for avoiding adverse impacts in the case of future proposals and associated site-specific assessments. Indirect effects from construction, including fugitive dust, the spread of weeds, and undesirable vegetation conditions, would be mitigated through existing measures in the RMP. Surveys for the species and its suitable habitats would be required before the authorization of potential future projects in the corridor, and future actions would also be subject to consultation with USFWS. Based on the existing protections, including NSO for the Cedar Rim population and the ROW exclusions in designated critical habitat for the Sand Draw population, the designation of the proposed ROW corridors *may affect, but is not likely to adversely affect* (NLAA) the desert yellowhead.

### 5.8.1 Desert Yellowhead Critical Habitat

Segment 8 is in close proximity to designated critical habitat, which contains the known Sand Draw population. All potential indirect effects from development within the segment are anticipated to be mitigated and controlled sufficiently enough that the designation of the proposed ROW corridor *may affect, but is not likely to adversely affect* (NLAA) the designated critical habitat of desert yellowhead.

## 5.9 Platte River Species

Surface water and groundwater withdrawals have not been determined, but potential future projects may involve consumptive use in excess of the 0.1 acre-feet per year considered by the USFWS to be the threshold for causing adverse effects. With the potential for water use, implementation of the proposed ROW and corridor activities *may affect, and is likely to adversely affect* (LAA) the Platte River species. The BLM will continue to participate in the Platte River Recovery Implementation Program.

### **5.9.1 Platte River Species Critical Habitat**

With the potential for consumptive use of water, implementation of the proposed ROW and corridor activities *may affect, and is likely to adversely affect* (LAA) designated critical habitat of the whooping crane.

## **5.10 Colorado River Species**

Surface water and groundwater withdrawals have not been determined, but potential future projects may involve depletions in excess of the of 0.1 acre-feet per year considered by the USFWS to be the threshold for causing adverse effects. Therefore, implementing the proposed ROW and corridor activities *may affect, is likely to adversely affect* (LAA) the endangered fish of the Colorado River. Proponents of projects with depletions more than 100 acre-feet per year may be required to pay a depletion fee to the Upper Colorado River Endangered Fish Recovery Program to offset impacts.

### **5.10.1 Colorado River Species Critical Habitat**

Implementing the proposed ROW and corridor activities *may affect, is likely to adversely affect* (LAA) the designated critical habitats of the Colorado River fishes.

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**ATTACHMENT A.**  
**Conservation Measures**





# CONSERVATION MEASURES

## General Measures

The following are general conservation measures and BMPs for the BLM rights-of-ways and corridors management actions.

### ***Big Horn Basin Resource Management Plan (RMP) Revision Project (BLM 2015a) for Cody and Worland and Final Biological Assessment (BLM 2014)***

- The preferred location of new ROWs will be in or adjacent to existing disturbed areas associated with existing ROWs or high traffic gravel roads or highways, where possible.
- Avoid ROW authorizations in areas having a 25 percent or greater average slope.
- Apply dust abatement on roads, well pads, and other surface disturbances.

### ***Buffalo Field Office RMP (amended 2019) and Final Biological Assessment (BLM 2015b)***

- Allow ROWs within areas containing habitat for special status species plants, though not within areas of known populations.
- NSO or use allowed within special status species plant populations (SS Plant-4008).

### ***Casper RMP (amended 2009, 2010, 2011, and 2012) (BLM 2007a) and Final Biological Assessment (BLM 2007b)***

- Future corridor adjustments and new corridor designations will be made only when facility placement within an existing designated corridor is incompatible, unfeasible, or impractical, and when the environmental consequences can be adequately mitigated. Problems of technical compatibility between facilities and spacing of facilities in corridors will be solved on a case-by-case basis.
- Speed limits on access roads will be limited to 35 mph, where possible.

### ***Kemmerer RMP (BLM 2010a) and Final Biological Assessment (BLM 2008a)***

- Evaluation of effects on key special status species linkage areas will be taken in situations of proposed land exchanges, land sales, and special use permits.
- Speed limits on access roads will be limited to 35 mph, where possible.
- Follow the Wyoming BLM Mitigation Guidelines for Surface Disturbing and Disruptive Activities (BLM 2010).

### ***Lander Field Office RMP (BLM 2014a) and Final Biological Assessment (BLM 2012)***

- The preferred location for new ROWs and access route authorizations is in areas already disturbed by existing ROWs.

### ***Pinedale RMP (BLM 2008b) and Final Biological Assessment (BLM 2008c)***

- Proposed projects would be designed and locations selected to minimize disturbances to habitat essential to T&E species. Early coordination with the USFWS to benefit the species would be implemented on a case-by-case basis.
- Areas with high erosion potential and/or rugged topography (i.e., steep slopes [ $>25$  percent], stabilized sand dunes, floodplains, and erosive and sandy soils) would be avoided, where possible, or specialized impact minimizing measures would be applied on a case-by-case basis to benefit T&E species.
- Proposed projects within identified T&E habitats would not be authorized during critical time periods to reduce impacts to these species. Additional impact minimizing measures for species would be designed on a site-specific and case-by-case basis, in consultation with BLM and USFWS.
- To reduce impacts to T&E species, construction within 500 feet of open water and 100 feet of intermittent or ephemeral channels would be avoided. Stream crossings for roads and pipelines would be constructed during the period of lowest flow (i.e., late summer or fall). All required stream crossings would be constructed perpendicular to flow. No surface water or shallow groundwaters in connection with surface waters would be used for proposed projects. Proper erosion control techniques (e.g., water bars, netting, riprap, and mulch) would be implemented.
- The PFO biologists, or BLM-approved contractor, would conduct site-specific surveys for T&E species and associated habitats before any surface disturbance in areas determined by BLM to contain potential habitat for such species (BLM Manual 6840). Data from these surveys would be analyzed by BLM, and recommendations for avoidance or impact minimizing measures would be implemented. Relocations of project facilities would be made to avoid T&E species and/or their habitats on a case-by-case basis. Informal or formal consultation with the USFWS will be initiated for site-specific projects which may affect listed species.
- Herbicide applications would be kept at least 500 feet from known T&E populations.

### ***Rawlins RMP (amended 2012, 2013, 2014, and 2018) (BLM 2008c) and Biological Assessment (BLM 2007c)***

- RMPPA biologists will conduct surveys (following established protocol) or assume species presence for all likely affected T&E and Special Status Species habitat, or potential habitat, prior to authorizing surface disturbing activities. Proposed projects will be designed and locations selected to minimize disturbances to species and habitat, and if avoidance is not possible, the Bureau will reinstate consultation with the Service if the

effects determination is different than that stated in this BA. Projects will not be authorized during critical time periods to reduce impacts to these species. Early coordination with the Service to benefit the species will be conducted on a case-by-case basis. When project proposals are received, BLM will initiate coordination with the FWS at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include species conservation measures, determined as appropriate by the FWS.

- Areas with high erosion potential and/or rugged topography (i.e., steep slopes [ $>25\%$ ], stabilized sand dunes, floodplains, erosive and sandy soils) will be avoided in T&E and Special Status Species habitat, unless it benefits the habitat for a T&E species.
- Construction activities located within potential and/or known habitat for T&E and Special Status Species will be minimized through construction site management by utilizing previously disturbed areas, using existing ROWs, and designating limited equipment/materials storage yards and staging areas to benefit habitat for T&E and Special Status Species.
- Construction activities located within identified 100-year flood plains, 500 feet of open water and/or 100 feet of intermittent or ephemeral channels in potential and/or known habitat for T&E and Special Status Species will be avoided. Stream crossings for roads and pipelines will be constructed during the period of lowest flow (i.e., late summer or fall) and perpendicular to flow.
- No surface water or shallow groundwaters in connection with surface waters will be utilized for proposed projects. Proper erosion control techniques, such as water bars, netting, riprap, and mulch would be implemented.
- Pesticide applications and biological control agents will be allowed within known T&E and Special Status Species habitat on a case by case basis. Where possible, biological control of pests would be used rather than chemical control. Where needed, pesticide use would be applied by hand within 1/4-mile of habitat and only in cases where insect or noxious and invasive weed outbreaks have the potential to degrade area ecological health. Outside the 1/4-mile buffer, aerial application of pesticides would be carefully planned to prevent drift. The Bureau shall work with APHIS and the Service to select a pesticide and method of application that will most effectively manage the infestation and least affect the species

### ***Green River RMP for Rock Springs (BLM 1997) and Biological Assessment (BLM 1995)***

- Inventories and clearances are required for authorized BLM activities in areas known or suspected to be essential habitat for animals and plants classified as a threatened, endangered, or special status species. These studies will be done in accordance with BLM and USFWS guidelines to verify the presence or absence of these species. In the event that a listed species is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of the species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

## Canada lynx (*Lynx canadensis*)

This species is addressed in the following RMPs: Bighorn Basin, Kemmerer, Lander, Rawlins, Rock Springs, and Pinedale. All RMPs state that the BLM will follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO. Rock Springs RMP does not contain measures specific to lynx and was prepared prior to the Statewide Programmatic BA and BO.

### ***BLM statewide programmatic BA (BLM 2005b) and the BO (USFWS 2005b)***

- Within an LAU, the BLM shall ensure that mapping occurs of lynx habitat and non-habitat, and that denning habitat, foraging habitat, and topographic features important for lynx movement are mapped. The BLM or project proponent shall identify whether all lynx habitat within an LAU is in suitable or unsuitable condition. This will involve interagency coordination where LAUs cross administrative boundaries.
- The BLM shall limit disturbance in each LAU to 30 percent of the suitable habitat within the LAU. If 30 percent of the habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of management activities. The BLM shall map oil and gas production and transmission facilities, mining activities and facilities, dams, timber harvest, and agricultural lands on public lands and evaluate projects on adjacent private lands to assess cumulative effects. This will involve interagency coordination where LAUs cross administrative boundaries, primarily with the USFS.
- BLM management actions shall not change more than 15 percent of lynx habitat within an LAU to an unsuitable condition within a 10-year period. This will involve interagency coordination where LAUs cross administrative boundaries.
- The BLM shall maintain denning habitat in patches generally larger than 5 acres, comprising at least 10 percent of lynx habitat. Where less than 10 percent is currently present in an LAU, defer any management actions that would delay development of denning habitat structure. This will involve interagency coordination where LAUs cross administrative boundaries.
- The BLM shall ensure that key linkage areas that may be important in providing landscape connectivity within and between geographic areas across all ownerships are identified, using best available science.
- The BLM shall ensure that habitat connectivity within and between LAUs is maintained.
- The BLM shall document lynx observations (tracks, sightings, along with date, location, and habitat) and provide these to the WYND; and request an annual update from them on all sightings for review in each field office.
- If activities are proposed in lynx habitat, the BLM shall ensure that stipulations and COA for limitations on the timing of activities and surface use and occupancy are developed at the leasing and Notice of Staking/APD stages. For example, requiring that activities not

be conducted at night, when lynx are active; and avoiding activity near denning habitat during the breeding season (April or May to July) to protect vulnerable kittens.

- The BLM shall ensure that snow compaction is minimized when authorizing and monitoring developments. The BLM shall encourage remote monitoring of sites that in lynx habitat so that they do not have to be visited daily.
- Identify and protect potential security habitats in and around proposed developments or expansions.
- Protect existing snowshoe hare and red squirrel habitat.

### ***Bighorn Basin***

- Canada lynx analysis units (LAUs) are closed to over-snow travel.

### ***Lander***

- Manage travel corridors for threatened and endangered species and BLM sensitive species on a case-by-case basis (only Canada lynx units have been identified to date).

## **Grizzly bear (*Ursus arctos horribilis*)**

This species is addressed in the following RMPs: Bighorn Basin, Lander, and Pinedale. All RMPs state that the BLM will follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO.

### ***BLM statewide programmatic BA (BLM 2006) and the BO (USFWS 2006c)***

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.
- The BLM shall provide a packet of educational materials to authorized permittees in grizzly habitat, including, but not limited to, special recreation permittees, livestock permittees, and timber operators.
- In occupied grizzly bear habitat, and in areas of bear conflicts, the BLM shall install bear-resistant refuse containers in developed campgrounds and picnic areas where refuse containers are provided and maintained. In areas receiving dispersed recreational use, the BLM shall inform the public of proper storage techniques for food and refuse.
- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by

grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.

- The BLM shall require that the PFC of existing aquatic systems and riparian zones in occupied grizzly bear habitat be maintained for all BLM-administered public lands. If these areas are polluted and/or damaged from activities, lessee/permittee/ grantee or the BLM will be required to assume full responsibility for rehabilitation and restoration of such areas (from IGBC 1986).
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.
- The BLM should include a clause on all use authorizations that allows for permanent cancellation, temporary cancellation, or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation.
- Wherever possible, the BLM should reduce motorized access routes in occupied grizzly bear habitat and will try to avoid authorizing any new motorized access in occupied grizzly bear areas (e.g., big game ranges).
- Wherever possible, the BLM will implement appropriate closures or seasonal restriction areas to cross-country motorized travel to provide more security in occupied grizzly bear habitat.
- In areas of vital importance to grizzly bears (e.g., known denning areas, army cutworm moth aggregations, cutthroat trout spawning sites, spring ungulate concentration sites, etc.) activities that adversely affect grizzly bear populations and/or their habitat should be avoided. Adverse habitat effects could result from land surface disturbances; water table alterations; reservoirs, ROWs, roads, pipelines, canals, transmission lines, or other structures; increased human foods and reduced availability of natural foods. Areas of vital importance to grizzlies are identified through the evaluation process described in the Grizzly Bear Management Guidelines (IGBC 1986).

### ***Pinedale***

- BLM will include a clause on all use authorizations that allows for temporary cessation of activities, temporary cancellation, or as a last resort permanent cancellation if needed to resolve a grizzly-human conflict situation.

### **Northern long-eared bat (*Myotis septentrionalis*)**

This species is addressed in the Buffalo RMP. The conservation measures are based on the Northern Long-Eared Bat Interim Conference and Planning Guidance.

## **Buffalo**

- Implement strict adherence to sediment and erosion control measures and reclamation standards.
- BLM will avoid disturbing/killing/injuring Northern Long-Eared Bats during spring staging/fall swarming by not clearing occupied spring staging and fall swarming habitat near known Northern Long-Eared Bat hibernacula during the staging and swarming seasons. Surveys will be conducted to determine occupancy prior to any tree clearing activities.
- BLM will avoid killing or injuring Northern Long-Eared Bats during tree clearing activities by not clearing occupied maternity colony summer habitat during the summer maternity season. Surveys will be conducted to determine occupancy prior to any tree clearing activities.
- BLM will minimize other direct effects to Northern Long-Eared Bats by not clearing occupied summer habitat during the time of year when females are pregnant or the pups are incapable of flight. Surveys will be conducted to determine occupancy prior to any tree clearing activities.
- BLM will avoid/minimize altering clean drinking water and foraging areas by: Implementing sediment and erosion control measures and reclamation standards; Siting equipment servicing and maintenance areas at least 300 feet away from waterbodies (e.g., wetlands, streams). Following available standards on spill prevention, containment, and control.
- BLM will maintain summer maternity habitat by: Retaining known roost trees, which includes live or dead trees and snags  $\geq 3$  inches diameter at breast height that have exfoliating bark, cracks, crevices, or cavities. Surveys will be conducted to determine occupancy prior to any tree clearing activities; Clearly demarcating trees to be protected vs. cut to help ensure that contractors do not accidentally remove more trees than anticipated.

## **Black-footed ferret (*Mustela nigripes*)**

This species is addressed in the following RMPs: Bighorn Basin, Casper, Rawlins, and Rock Springs.

### ***BLM Statewide Programmatic BA (BLM 2006b) and the BO (USFWS 2006b)***

- Observations of black-footed ferrets, their sign, or carcasses on a project area and the location of the suspected observation, however obtained, shall be reported within 24 hours to the appropriate local BLM wildlife biologist and Field Supervisor of the USFWS's office in Cheyenne, Wyoming, (307) 772-2374. Observations will include a description including what was seen, time, date, exact location, suspected cause of death, and observer's name and telephone number. Carcasses or other "suspected" ferret remains shall be collected by the USFWS or BLM employees, and deposited with the USFWS's

Wyoming Field Office or the USFWS's law enforcement office. This type of specimen collection is authorized as described in 50 CFR 17.21(c)(3-4). It is imperative that any fresh black-footed ferret carcass be salvaged and immediately transported to the USFWS so pertinent information concerning the cause of death can be gathered, including photographs in order to document an accurate depiction of the fatality.

- If black-footed ferrets or their sign are found on public lands outside of the Non-essential Experimental population areas in Wyoming, all previously authorized surface disturbing activities (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex ongoing) in the complex in which black-footed ferrets are found shall temporarily cease until further direction is developed by a task force consisting of the BLM Field Office Manager, the USFWS Field Office Supervisor, the Wyoming Game and Fish Department (WGFD) Non-game Coordinator, and other potentially affected parties. This task force will be formed within 48 hours of the find to determine appropriate conservation/protection actions. The BLM shall coordinate with these affected parties to ensure that ferret surveys or appropriate actions are conducted as deemed necessary. The BLM will also re-initiate section 7 consultation with the USFWS. An emergency road closure limiting access to the site will be enacted by the BLM within 48 hours of the find to protect the newly discovered black-footed ferrets. This emergency road closure will be for all non-paved roads within at least one mile of the find. On a case-by-case basis and with approval of the USFWS, certain surface disturbing activities within the town or complex may be allowed to continue.
- Information on ferret identification shall be provided and posted in common areas and circulated in a memorandum among all employees and service providers. This information shall illustrate the black-footed ferret and its sign; describe morphology, tracks, scat, skull, habitat characteristics, behavior, and current status; and the relationship between project development and possible impacts to black-footed ferrets, especially regarding canine distemper and recreational shooting.
- New prairie dog towns shall be allowed to become established on public lands in all circumstances where they would not interfere with other previously established activities.
- Follow the guidelines outlined in the Wyoming Black-tailed Prairie Dog Management Plan and the White-tailed Prairie Dog Conservation Assessment (Seglund et al. 2004).

## ***Bighorn Basin***

- Follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO, where appropriate.
- Control surface-disturbing activities to avoid or mitigate adverse effects on about 1,300 BLM administered surface acres of active prairie dog colonies within the Meeteetse complex. This requirement will remain in effect until completion of a site-specific activity plan being prepared to manage ferrets in this area. The restriction will then be reassessed for its continued appropriateness. This restriction applies to such things as mineral leasing, geophysical exploration (except casual use), and construction activities.



- If the USFWS and Wyoming Game and Fish Department (WGFD) determine that large prairie dog colonies and/or complexes in the Planning Area are suitable for black-footed ferret reintroduction, apply a no surface occupancy (NSO) restriction on these areas.
- No surface occupancy is permitted within the Sage Creek Prairie Dog Town (4127).

### ***Casper***

- Follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO
- Habitats managed for reintroductions of black-footed ferrets will be addressed on a case-by-case basis.
- If suitable prairie dog town/complex avoidance is not possible, surveys of towns/complexes for black-footed ferrets shall be conducted in accordance with USFWS guidelines and requirements. This information shall be provided to the BLM and USFWS in accordance with section 7 of the ESA, and the Interagency Cooperation Regulations.
- If any black-footed ferrets or their sign are found within a prairie dog town or complex previously determined to be unsuitable for, or free of, ferrets, all previously authorized, project related actions (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex) on-going in such towns or complexes shall be suspended immediately and section 7 consultation re-initiated with the USFWS.
- BLM shall ensure that black-footed ferret surveys are conducted at prairie dog towns and complexes where any evidence of black-footed ferrets is found, such as skeletal material or hair.
- Operators and contractors shall prohibit or discourage dogs from being brought to black-footed ferret reintroduction sites by project employees. BLM shall require current distemper vaccinations on any dogs that will be entering the Shirley Basin black-footed ferret management area and any new black-footed ferret reintroduction sites. Vaccinated puppies shall not be allowed until one month after their final distemper vaccination due to effects of the modified live virus vaccine.
- For BLM project-related actions, vehicle speed limits shall not exceed 35 mph at night when in black-footed ferret reintroduction areas.

### ***Kemmerer***

- Follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO.

### ***Lander***

- Follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO.
- Require black-footed ferret surveys before authorizing surface-disturbing activities in prairie dog towns suitable as potential habitat for black-footed ferrets, unless cleared by the USFWS.

## **Rawlins**

- If prairie dog towns/complexes suitable as black-footed ferret habitat are present at the proposed project level, attempts will be made to locate all project components at least 50 meters (up to 200 meters pursuant to the Federal Land Policy and Management Act [FLPMA]) from these towns/complexes to avoid direct impact to towns.
- All white-tailed prairie dog towns/complexes greater than 200 acres in size and black-tailed prairie dog towns/complexes greater than 80 acres will be avoided. If avoidance is not possible, these areas will be assessed and mapped at the proposed project level. Associated burrow densities of potentially affected towns will be determined, and, when habitat is present, a black-footed ferret survey will be conducted pursuant to the Service- and Bureau-approved techniques.
- If any black-footed ferrets or their sign are found within a prairie dog town or complex previously determined to be unsuitable for or free of ferrets, all previously authorized, project-related activities (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex) ongoing in such towns or complexes shall be suspended immediately, and Section 7 consultation reinitiated with the Service. The Bureau shall ensure that ferret surveys or other appropriate actions are conducted at such locations.
- If suitable prairie dog town/complex avoidance is not possible, surveys of towns/complexes for black-footed ferrets shall be conducted in accordance with the Service guidelines and recommendations. This information shall be provided to the Bureau and to the Service in accordance with Section 7 of the Act and the Interagency Cooperative Regulations.

## **Rock Springs**

- No measures specific to black-footed ferret.

## **Pinedale**

- All white-tailed prairie dog towns/complexes greater than 200 acres in size and black-tailed prairie dog towns/complexes greater than 80 acres shall be assessed and mapped for any projects that are proposed within such areas, and associated burrow densities on potentially affected towns shall be determined, when necessary, pursuant to USFWS and BLM approved techniques to determine whether the criteria established for ferret occupancy in the USFWS (1989) guidelines for black-footed ferrets are met.

## **Yellow-billed cuckoo (*Coccyzus americanus*)**

This species is addressed in the following RMPs: Kemmerer, Pinedale, and Rawlins. The yellow-billed cuckoo was a candidate species at the time the RMPs were prepared. Although this species is not addressed in the 1997 Rock Springs RMP, yellow-billed cuckoo is known to be present in portions of the planning area.

## ***Kemmerer***

- Consider carefully the effects to the western yellow-billed cuckoo from any activities within or adjacent to cuckoo habitats.
- Apply a 500-foot buffer through seasonal restrictions to include the breeding season from May 15 through August 15 and rehabilitation standards in or adjacent to yellow-billed cuckoo habitat, when necessary.
- Where roads, pipelines, and powerlines must be routed through riparian habitat, the construction work should not be accomplished during the period from mid-May to mid-August while the cuckoos are nesting.
- Topography should be returned to its original condition to the greatest extent possible to ensure the hydrology remains intact.
- Combine multiple roads and ROWs to one stream-crossing site.
- ROW should be placed near current habitat edge areas to reduce fragmentation of larger blocks of pristine habitat.
- Avoid building roads or new trails parallel to streams in riparian zones or through wet meadows.
- Stream crossings should be at right angles to minimize impacts on riparian vegetation, stream banks, soils, and water quality.
- Avoid depleting groundwater and diverting streams outside their natural stream channels.

## ***Pinedale***

- Surface disturbing activities would be avoided within 500 feet of perennial waters and wetland/riparian areas for protection of Western yellow-billed cuckoo and identified habitat.
- Surface-disturbing or disruptive activities will be prohibited within ½-mile of identified habitat during the period of April 15 to August 15 for the protection of nesting western yellow-billed cuckoos.
- Avoid building roads or new trails parallel to streams in riparian zones or through wet meadows that have the potential, or are identified as containing, habitat for the western yellow-billed cuckoo. If stream crossings are required, then they shall be constructed at right angles to minimize impacts to riparian vegetation, stream-banks, soils, and water quality. Roads and trails shall be placed near current habitat edge areas to reduce fragmentation of larger blocks of pristine habitat. Combine multiple roads and rights-of-ways to one stream crossing site.
- Avoid depleting ground water and diverting streams outside their natural stream channels in riparian areas that contain potential western yellow-billed cuckoo habitat.

## **Rawlins**

- Surface disturbing activities would be avoided within 500 feet of perennial waters and wetland/riparian areas for protection of Western yellow-billed cuckoo and identified habitat.
- Surface disturbing or other disruptive activities will be prohibited within 1/2-mile of identified habitat during the period April 15 to August 15 for the protection of nesting Western yellow-billed cuckoos.
- Best management practices would be applied to surface disturbing and other disruptive activities to maintain or enhance the Western yellow-billed cuckoo and their habitats.

## **Ute ladies-tresses (*Spiranthes diluvialis*)**

This species is addressed in the following RMPs: Bighorn Basin, Buffalo, Casper, Kemmerer, Lander, Rawlins, and Pinedale. All RMPs state that the BLM will follow the conservation measures and BMPs in the BLM Statewide Programmatic BA and BO.

### ***BLM statewide programmatic BA (BLM 2007) and the BO (USFWS 2007c)***

- Surface disturbance will be prohibited within 500 feet of surface water and/or riparian areas.
- NSO will be allowed within SMAs (e.g., known threatened or endangered species habitat).
- Portions of the authorized use area are known or suspected to be essential habitat for threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of this species. In the event that an occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).
- Within the potential of the ecological site (soil type, landform, climate, and geology), the BLM will ensure that the soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff. The BLM will ensure that upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.
- In any proposed new access, wetland and riparian areas will be avoided where possible.
- Biological control of noxious plant species will be prohibited within 1.0 mile from known Ute ladies'-tresses habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The BLM will monitor biological control vectors.
- Except in cases of extreme ecological health (insect or weed outbreaks, infestations), herbicide treatment of noxious plants/weeds will be well-regulated within 0.25 miles of

known populations of the Ute ladies'-tresses and insecticide/pesticide treatments will be well regulated within 1.0 mile of known populations of the orchid to protect pollinators.

- Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above the following will apply: where needed and only on a case-by-case basis, a pesticide use proposal or other site specific plan will address concerns of proper timing, methods of use, and chemicals. Pesticides specific to dicots will be preferred where these are adequate to control the noxious weeds present.
- Aerial application of herbicides will be carefully planned to prevent drift in areas near known populations of the Ute ladies'-tresses (outside of the 0.25-mile buffer). The BLM will work with the APHIS, the Service, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the orchid.
- If revegetation projects are conducted within 0.25 miles of known habitat for the orchid, only native species will be selected. This conservation measure will reduce the possibility that nonnative species will be introduced and will compete with Ute ladies'-tresses orchid.
- The BLM will limit the use of off road vehicles (OHVs) to designated roads and trails within 0.5 mile of known Ute ladies'-tresses populations, with no exceptions for the "performance of necessary tasks" other than firefighting and hazardous material cleanup allowed using vehicles off of highways. No OHV competitive events will be allowed within 1.0 mile of known Ute ladies'-tresses orchid populations. Roads that have the potential to impact Ute ladies'-tresses orchid are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the Bureau.
- All proposed ROW projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service.
- In the event that a new population of the orchid is found, the USFWS Wyoming Field Office (307-772-2374) will be notified within 48 hours of discovery.
- For the protection of the Ute ladies'-tresses and its potential habitat, surface-disturbing activities listed above should be avoided in the following areas when they occur outside the protective 0.25-mile buffer from populations of the Ute ladies'-tresses: (a) identified 100-year flood plains, (b) areas within 500 feet from perennial waters, springs, wells, and wetlands, and (c) areas within 100 feet of the inner gorge of ephemeral channels.
- Conduct inventories for the orchid in areas with potential habitat.
- Maintain a database of all searched, inventoried, or monitored orchid sites. Analyze vegetation treatments (mowing, prescribed fire, mechanical treatments, etc.) in known or potential habitat for the orchid to determine impacts to the species.

## **Blowout penstemon (*Penstemon haydenii*)**

This species is addressed in the Casper, Lander, and Rawlins RMPs. All RMPs state that the BLM will follow the conservation measures and BMPs in the BLM statewide programmatic BA and additional measures are provided for the Area of Critical Environmental Concern in the Rawlins office.

### ***BLM statewide programmatic BA (BLM 2005c)***

- Biological control of noxious plant species will be prohibited in blowout penstemon habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The BLM will monitor biological control vectors.
- Except in cases of extreme ecological health (insect or weed outbreaks/infestations), herbicide treatment of noxious plants/weeds will be prohibited within 0.25 mile of known blowout penstemon populations and insecticide/pesticide treatments will be prohibited within 1.0 mile of known blowout penstemon populations to protect pollinators.
- Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above, at the discretion of the BLM's Authorized Officer and with concurrence by the USFWS, the following will apply: where needed, and only on a case-by-case basis, pesticide use within 1.0 mile of known blowout penstemon populations will be applied by hand and herbicides applied by hand within 0.25 mile of blowout penstemon populations, with care taken not to spray blowout penstemon plants.
- Aerial application of herbicides will be carefully planned to prevent drift in areas near known blowout penstemon populations (outside of the 0.25-mile buffer). The BLM will work with the Animal and Plant Health Inspection Service (APHIS), the USFWS and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the blowout penstemon.
- If revegetation projects are conducted within 0.25 miles of known penstemon habitat, only native species will be selected. However, no revegetation projects will be done in known or potential blowout penstemon habitats as the plants requires open non-vegetated to sparsely vegetated sand dunes due to the early seral stage nature of the plant and shifting sand dune habitat substrate. This conservation measure will be applied within 0.25 miles of known blowout penstemon habitat and will be done to keep non-native species from competing with the blowout penstemon.
- All proposed ROW projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 mile from any known blowout penstemon habitat to minimize disturbances. If the avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the USFWS.

## ***Rawlins RMP Amendment for the Blowout Penstemon Area of Critical Environmental Concern (BLM 2018)***

- The ACEC will be closed to new oil and gas leasing. The existing No Surface Occupancy (NSO) stipulation within 0.25 miles of occupied blowout penstemon habitat will apply to proposed projects on existing leases. Surface disturbances on existing leases outside the 0.25 mile NSO will be intensively managed.
- Limit the use of OHVs to existing road and trails, until they are designated. Off-road motor vehicle use for “necessary tasks” is not allowed, except for the performance of authorized necessary tasks specifically related to firefighting, hazardous material cleanup, existing ROW maintenance and inspection, and fence maintenance.
- Roads that are not required for routine operations or maintenance of developed projects, or that lead to abandoned projects, will be reclaimed.
- Surface disturbing activities will not be authorized within 0.25 mile of occupied habitat. Surface disturbing activities will be intensively managed outside of the 0.25 mile of occupied habitat within the ACEC.
- Herbicide treatments (aerial, vehicle, and ground) of noxious and invasive weeds are prohibited within 0.5 mile of occupied blowout penstemon habitat. Insecticide treatments are prohibited within 1.0 mile of occupied habitat in areas where treatments have the potential to impact blowout penstemon pollinators, Preliminary Final Blowout Penstemon Statewide Programmatic Biological Opinion (BO).
- For insecticide treatments, no aerial applications of malathion or carbaryl would occur within 3.0 miles of occupied habitats; only carbaryl bran bait or diflubenzuron combined with Reduced Agent Area Treatment methodology will be used within the 3-mile buffer; and no application of carbaryl bran bait will be applied within a 0.25 mile buffer of occupied blowout penstemon habitats.
- All proposed ROW projects will be designed and locations selected at least 0.25 mile from any occupied habitat.
- Revegetation projects are not authorized within 0.25 mile of occupied blowout penstemon habitat.

## **Desert yellowhead (*Yermo xanthocephalus*)**

This species and its critical habitat are addressed in the Lander RMP.

### ***Lander***

- No surface occupancy or use is allowed within desert yellowhead population management areas (4084).
- Apply specific measures to protect known special status plan populations from BLM-authorized activities and close desert yellowhead critical habitat to motorized and mechanized travel.

- Prohibit biological control of weeds in desert yellowhead habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The BLM will monitor biological control vectors.
- Conduct inventories for desert yellowhead in areas with potential habitat in the Lander FO.
- Use a GIS-based model of potential habitat.
- Maintain a database of all searched potential desert yellowhead sites.

## Platte River Species

Platte River species downstream include Western prairie fringed orchid (*Platanthera praeclara*), Least tern (*Sterna antillarum*), Piping plover (*Charadrius melodus*), Whooping crane (*Grus americana*), and Pallid sturgeon (*Scaphirhynchus albus*). These species and their downstream critical habitat are addressed in the Casper, Lander, Rawlins, Pinedale RMPs. For actions projected to deplete water from the Platte River watershed, the BLM will initiate formal consultation with the USFWS prior to activity approval. The BLM will continue to participate in the Platte River Recovery Implementation Program or current Platte River recovery process.

## Colorado River Species

Colorado River species include Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*). These species and their downstream critical habitat are addressed in the following RMPs: Kemmerer, Rawlins, Rock Springs, and Pinedale. For actions projected to deplete water from the Colorado River system, the BLM will initiate formal consultation with the USFWS prior to activity approval. The BLM will continue to participate in the Cooperative Agreement for the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin.



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## **APPENDIX M**

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**Table 3.2-1. Wyoming's 2014 Emissions**

Pollutant Source	Pollutant (tons/year)							
	CO	Lead	NOx	PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	VOCs <sup>†</sup>	Total
Biogenics	118,413	N/A	16,930	N/A	N/A	N/A	539,515	674,858
Stationary	70,211	< 1	94,797	29,268	184,554	56,078	237,356	672,264
Mobile	140,185	< 1	64,712	2,275	2,824	149	18,180	228,325
Fire	82,465	N/A	891	6,952	8,226	545	19,259	118,338
<b>Total</b>	<b>411,274</b>	<b>2</b>	<b>177,330</b>	<b>38,495</b>	<b>195,604</b>	<b>56,772</b>	<b>814,310</b>	<b>–</b>

Source: EPA (2014).

Notes: NOx = nitrogen oxide; PM<sub>2.5</sub> = PM that is 2.5 micrometers in diameter or less; PM<sub>10</sub> = PM that is 10 micrometers in diameter or less; VOCs = volatile organic compounds; N/A = not applicable.

<sup>†</sup> Reported as a contributor to ozone.

**Table 3.2-2. Criteria and Hazardous Air Pollutant Emissions from Future Pipeline Construction**

Project or Alternative	Total Pipeline Miles (Multiplier)	Combustion Emissions from Pipeline Construction (tons)						
		NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	VOCs	HAPs
Riley Ridge to Natrona Project: Segment 2, Proposed Action*	129	74.8	4.1	27.3	8.2	4.2	7.6	0.8
Alternative B	1,958 (15.2)	1,137.0	62.3	415.0	124.6	63.8	115.5	12.2
Alternative C	237 (1.8)	134.6	7.4	49.1	14.8	7.6	13.7	1.4
Alternative D	1,860 (14.4)	1,077.1	59.0	393.1	118.1	60.5	109.4	11.5
Alternative E	1,970 (15.3)	1,144.4	62.7	417.7	125.5	64.3	116.3	12.2

\* BLM (2018).

**Table 3.3-1. Summary of Class III Survey Coverage by Alternative**

Alternative	APE (acres)	Class III Survey Area (acres)	Class III Survey Area (percentage of coverage)
B	313,778	80,525	25.66%
C	38,641	10,008	25.90%
D	298,401	72,170	24.19%
E	314,432	81,026	25.77%

Source: Campbell et al. (2020).

Note: Alternative C excludes areas crossing existing utilities corridors and therefore shows lower acres overall than either Alternative B or Alternative D.

**Table 3.3-2. Available Class I Regional-Scale Cultural Resource Overviews by Field Office**

BLM Field Office	Year	Coverage Area	Source
Buffalo	2010	Resource Management Planning Area	BLM Buffalo Field Office (2010b)
Cody and Worland	2009	Bighorn Basin Planning Area	BLM Wyoming State Office (2009)
Lander	2011	Lander Field Office Planning Area	BLM Lander Field Office (2011)
Kemmerer	2004	Kemmerer Field Office Planning Area	BLM Kemmerer Field Office (2004c)

BLM Field Office	Year	Coverage Area	Source
Pinedale	2006	Resource Management Planning Area	McNees et al. (2006)
Rawlins	2010	Resource Management Planning Area	TRC Environmental Corporation (2010)
Rock Springs	2013	Rock Springs Field Office Planning Area	BLM Rock Springs Field Office (2013)

**Table 3.3-3. Number (n) and General Age of Cultural Resources by Alternative**

Alternative	Prehistoric Sites (n)	Historic Sites (n)	Multicomponent Sites (n)	Unknown Sites (n)	Total Sites (n)	Sites per 100 Acres Surveyed (n)	Total Sites Projected for APE (n)
B	1,552	298	193	59	2,102	2.61	8,191
C	211	39	12	13	275	2.75	1,062
D	1,406	312	144	65	1,927	2.67	7,968
E	1,535	313	186	67	2,101	2.59	8,153

**Table 3.3-4. National Register of Historic Places Eligibility of Cultural Resources by Alternative**

Alternative	NRHP-listed Sites	NRHP-eligible Sites	NRHP-not eligible Sites	Unevaluated Sites	Unknown Sites	Total Sites
B	4	503	1,244	320	31	2,102
C	0	46	162	63	4	275
D	7	425	1,151	305	39	1,927
E	4	483	1,261	315	38	2,101

**Table 3.3-5. National Historic Trails and Other Significant Emigrant Trails that Cross the Corridors**

Emigrant Trail	Route Name	Contributing Segments	Alternative
California, Oregon, Mormon Pioneer NHT/Pony Express NHT	Primary Route	4	B
		N/A	D
		3	E
	Sublette Cutoff	3	B, E
		N/A	D
	Slate Creek Cutoff	N/A	D, E
	Baker - Davis Road	None	B
	Kinney Cutoff	1	B
	West-side Kinney Cutoff	None	B
	Deep Sand Route	None	B
	Deep Sand Route Alternate	1	B
	Seminole Cutoff	N/A	B, E
	Child's Cutoff	N/A	D
	Emigrant Gap Route	4	B, E



Emigrant Trail	Route Name	Contributing Segments	Alternative
Bozeman Trail	–	N/A	B, D, E
Bridger Trail	–	14	B
		2	D
		3	E
Overland Trail	48SW1226	8	B, D, E

Note: The N/A designation indicates no segments have been officially recorded and assigned a Smithsonian trinomial segment number in the WPCI APE but the trail is identified as crossing the WPCI APE based on Wyoming SHPO data (Campbell et al. 2020).

**Table 3.3-6. Number (n) of Native American Sites by Alternative**

Alternative	Eligible Sites (n)	Not Eligible Sites (n)	Unevaluated Sites (n)	Total Sites (n)	Tribal Sites per 100 Acres Surveyed (n)	Total Tribal Sites Projected for APE (n)
B	47	39	29	115	0.14	448
C	4	10	5	19	0.19	73
D	35	36	24	95	0.13	370
E	41	39	33	113	0.14	439

**Table 3.5-1. Summary of Potential Soil Disturbance Acreages**

Alternative	Acres of Potential Soil Disturbance
B	57,514
C	7,266
D	55,535
E	57,775

**Table 3.6-1. Hazardous Waste Sites within the Analysis Area**

Hazardous Waste Site Name	Site Description	Alternative/Location
Sinclair Wyoming Refining Company	Research Conservation and Recovery Act (RCRA) corrective action: this petroleum refining site was designated a large quantity generator of hazardous waste. As of August 2019, the site needed to resolve minor administrative issues with the RCRA electronic Biennial Reporting System (BRS), which summarizes previous year's hazardous waste generation figures.	Alternatives D and E: this site is in Carbon County, lies within Segment 6, and is east of Sinclair, just north of Lincoln Avenue.
Questar Pipeline Company Eakin Station	No violations identified: limited information is available for this site, although compliance history does not show any violations.	Alternatives D and E: this site is in Lincoln County. The exact location of this site was not identified, although based on location description information, this site is near Wyoming State Highway 189 in Kemmerer and may, therefore, be near or within Segment 1.

Hazardous Waste Site Name	Site Description	Alternative/Location
Yellowstone Cody Refinery	Active cleanup site: this crude oil refining site is an active cleanup site for soils, evaporation ponds, and groundwater. Human exposures and groundwater migration are in compliance and currently controlled.	Alternatives D: this site is in Park County and lies approximately 0.22 mile from Segment 3, west of Belfry Highway and northwest of the town of Cody.
BLM-Cody Landfill	No violations identified: there are no violations reported for this lined, sanitary municipal solid waste disposal facility.	Alternatives B, D, and E: this site is located in Park County on Cody Landfill Road, approximately 0.14 mile east of Segment 1 and Segment 3.

Sources: EPA (2019a, 2020); Park County (2020).

**Table 3.7-1. Landownership and Uses by Acreages within the Analysis Area**

Landowner and Land Use	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)	Alternative E (acres)
<i>Landownership</i>				
BLM land	32,534	4,589	29,268	32,774
BOR*	1,077	234	1,120	1,263
DOD*	1	1	1	1
Federal Aviation Administration*	–	–	7	–
USFWS*	–	–	16	16
USFS*	38	–	133	122
State*	3,673	366	3,957	3,448
Local government*	86	–	129	104
Private*	20,043	1,870	20,988	20,082
<b>Total Acres</b>	<b>57,452</b>	<b>7,060</b>	<b>55,120</b>	<b>57,810</b>
<i>Land Uses</i>				
Agricultural	313	270	813	350
Existing ROW and utility corridor	36,990	0	45,560	42,746

\* Corridor designation would occur only on BLM lands. Acres under entities with asterisks are not acres of corridor designation but rather are acres that could be indirectly impacted if designated corridors were to be utilized.

Table 3.8-1. Grazing Allotment Federal Acres and Animal Unit Months by Bureau of Land Management Field Office

Field Office	Total Federal Acres within Allotments				Allotment Federal Acres within the Proposed Corridor				Percentage of Allotment Federal Acres in the Proposed Corridor				Total Federal AUMs within Allotments				Federal AUMs in the Proposed Corridor from Allotments			
	Alt. B	Alt. C	Alt. D	Alt. E	Alt. B	Alt. C	Alt. D	Alt. E	Alt. B	Alt. C	Alt. D	Alt. E	Alt. B	Alt. C	Alt. D	Alt. E	Alt. B	Alt. C	Alt. D	Alt. E
Buffalo	180,789	0	189,336	180,789	1,205	0	1,227	1,173	0.67%	0%	0.65%	0.65%	23,657	0	25,126	20,685	158	0	163	134
Casper	484,247	756,64	358,646	456,315	2,868	304	2,126	2,937	0.59%	0.40%	0.59%	0.64%	79,371	13,096	79,650	56,805	470	53	472	366
Cody	444,332	204,091	423,216	446,668	4,328	1,115	4,012	4,807	0.97%	0.55%	0.95%	1.08%	54,264	12,331	52,034	35,253	529	67	493	379
Kemmerer	473,095	0	230,836	230,836	203	0	616	617	0.04%	0%	0.27%	0.27%	49,445	0	22,149	11,103	21	0	59	30
Lander	1,456,798	109,110	1,249,196	1,444,816	8,199	141	7,313	8,315	0.56%	0.13%	0.59%	0.58%	270,163	18,462	237,601	146,327	1,520	24	1,391	842
Pinedale	189,653	189,653	293,033	293,033	606	513	898	865	0.32%	0.27%	0.31%	0.30%	55,492	21,784	63,292	29,713	177	59	194	88
Rawlins	1,173,360	404,434	1,205,174	1,205,174	4,409	824	4,514	4,498	0.38%	0.20%	0.37%	0.37%	297,947	66,844	332,252	132,116	1,119	136	1,244	493
Rock Springs	2,368,881	182,558	1,619,400	2,029,363	6,236	412	4,168	5,922	0.26%	0.23%	0.26%	0.29%	553,167	25,432	500,222	157,316	1,456	57	1,287	459
Worland	689,439	279,924	683,331	683,331	4,896	1,302	4,877	5,003	0.71%	0.47%	0.71%	0.73%	109,510	48,249	124,891	68,342	778	224	891	500
Total	7,460,593	1,445,434	6,252,168	6,970,325	32,950	4,612	29,751	34,135	4.51%	2.24%	4.69%	4.90%	1,493,016	206,198	1,437,217	657,660	6,229	621	6,196	3,291

Source: BLM (2020b).  
Note: Alt. = Alternative

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**Table 3.9-1. Notable Wyoming Commercial Carbon Dioxide-Enhanced Oil Recovery Projects**

Project	CO <sub>2</sub> Source	As of 2018		CO <sub>2</sub> First Began
		Active Wells	CO <sub>2</sub> wells*	
Wertz	Shute Creek Gas Plant	51	61	1986
Lost Soldier	Shute Creek Gas Plant	87	84	1989
Patrick Draw	Shute Creek Gas Plant	140	77	2003
Salt Creek <sup>†</sup>	Shute Creek Gas Plant	606	503	2003
Grieve	Shute Creek Gas Plant	8	9	2012
Beaver Creek	Shute Creek Gas Plant	76	17	2008
Big Sand Draw	Shute Creek Gas Plant	17	19	2013

\* Recycling gas through reservoir.

<sup>†</sup> Largest CO<sub>2</sub> project in entire United States.

**Table 3.11-1. Potential Fossil Yield Classification by Alternative**

PFYC	Alternative B		Alternative C		Alternative D		Alternative E	
	Acres	%	Acres	%	Acres	%	Acres	%
1	255	< 1%	0	0%	397	1%	184	< 1%
2	6,706	12%	1,407	20%	6,935	13%	6,464	11%
3	21,171	37%	2,056	29%	19,782	36%	21,242	37%
4	966	2%	71	1%	789	1%	790	1%
5	23,758	41%	2,782	39%	21,777	40%	24,043	42%
U	4,562	8%	744	11%	5,387	10%	5,045	9%

Note: Digital geologic maps and PFYC values provided by the BLM (2019c).

**Table 3.11-2. Landownership of Combined Potential Fossil Yield Classifications U, 3, 4, and 5 by Alternative**

Landowner	Alternative B		Alternative C		Alternative D		Alternative E	
	Acres	%	Acres	%	Acres	%	Acres	%
BLM	29,257	58%	3,780	67%	26,052	55%	29,683	58%
BOR	1,069	2%	234	4%	1,113	2%	1,255	2%
DOD	1	< 1%	1	< 1%	1	< 1%	1	< 1%
Federal Aviation Administration	0	0%	0	0%	7	< 1%	0	0%
USFWS	0	0%	0	0%	16	< 1%	16	< 1%
USFS	25	< 1%	0	0%	25	< 1%	27	< 1%
State	3,050	6%	260	5%	2,847	6%	2,914	6%
State (Wyoming Game and Fish Department)	68	< 1%	0	0%	67	< 1%	68	< 1%
Local government	72	< 1%	0	0%	104	< 1%	78	< 1%

Landowner	Alternative B		Alternative C		Alternative D		Alternative E	
	Acres	%	Acres	%	Acres	%	Acres	%
Wind River Indian Reservation	1	< 1%	0	0%	1	< 1%	1	< 1%
Private	16,915	34%	1,378	24%	17,503	37%	17,071	33%
<b>Total</b>	<b>50,457</b>	<b>100%</b>	<b>5,653</b>	<b>100%</b>	<b>47,735</b>	<b>100%</b>	<b>51,120</b>	<b>100%</b>

Note: Digital geologic maps and PFYC values provided by the BLM (2019c).

**Table 3.13-1. Recreational Facilities and Designations per Alternative and Acreages**

Facility	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)	Alternative E (acres)
Campgrounds	4 (5)	–	2	2
Day use area	13	1	15	13
OHV-designated areas	5 (7)	–	4 (7)	4 (7)
ERMAs	25 (15,293)	9 (2,192)	24 (13,112)	24 (15,485)
SRMAs	33 (1,220)	7 (0)	32 (1,162)	33 (1,173)
NSTs*	1 (5)	0	1 (5)	1 (5)
Dispersed recreation area	1 (97)	–	–	–
Recreation use area	9 (296)	–	9 (272)	9 (289)
Total recreational facilities	90	17	86	85
Acreages of disturbance to recreational areas	16,918	2, 192	14,552	16,953
<b>Total acreage</b>	<b>57,452</b>	<b>7,060</b>	<b>55,120</b>	<b>55,776</b>

Note: For NST, the number in parenthesis is the number of times the proposed alternative crosses NST.

**Table 3.14-1. Population and Demographic Characteristics of Regions within the Analysis Area**

Population	Southwest	Northwest	Central	Northeast	Wyoming
Total population 2017	72,598	94,037	94,850	54,718	579,315
Population change 2010–2017	0.6%	0.7%	3.8%	0.0%	2.8%
Projected population change 2017–2040	3.0%	2.1%	2.5%	4.1%	6.1%
Minority residents	15.7%	19.0%	14.5%	11.7%	15.7%
Individuals below poverty level	10.7%	11.2%	10.4%	9.7%	10.9%
Average annual unemployment	4.3%	4.7%	5.1%	4.8%	4.2%
Vacant housing units	8,184	6,848	5,930	3,266	42,851

Sources: U.S. Census (2010, 2017a, 2017b); WYED (2018, 2019).

**Table 3.14-2. Select Economic Characteristics of Regions within the Analysis Area**

Economic Characteristics	Southwest	Northwest	Central	Northeast	Wyoming
<b>Total employment</b>	<b>33,067</b>	<b>44,710</b>	<b>45,108</b>	<b>25,967</b>	<b>269,591</b>
From mining and oil and gas (% of total)	18.4%	3.5%	5.5%	23.2%	7.3%
From construction (% of total)	8.1%	5.2%	6.9%	7.9%	7.3%
From travel and tourism* (% of total)	7.3%	14.7%	9.3%	7.0%	15.012.0%
<b>Total annual wages (\$ millions)</b>	<b>\$1,804</b>	<b>\$1,535</b>	<b>\$2,131</b>	<b>\$1,465</b>	<b>\$12,474</b>
From mining and oil and gas (% of total)	33.8%	7.9%	10.2%	34.5%	13.8%
From construction (% of total)	7.7%	6.5%	7.7%	7.7%	8.0%
From travel and tourism (% of total)	3.43.6%	6.211.4%	5.86.2%	3.53.2%	7.08.2%

Sources: Dean Runyan and Associates (2020); WYEAD (2018).

\* The percentage of employment and earnings in the travel and tourism sector were calculated using travel and tourism statistics from Dean Runyan and Associates (2020) and total employment and wages information from WYEAD (2018).

**Table 3.14-3. Revenues Generated within Regions of the Analysis Area**

Tax Revenues	Southwest	Northwest	Central	Northeast	Wyoming
Sales and use tax revenues	\$129,620,741	\$73,610,719	\$89,149,727	\$110,086,858	\$686,766,223
From mining and oil and gas (% of total)	32.5%	8.4%	7.6%	26.7%	16.7%
Property tax revenues	\$350,656,196	\$133,933,640	\$129,021,182	\$294,550,201	\$1,344,432,107
From mining and oil and gas (% of total)	66.0%	36.4%	26.3%	76.5%	48.2%
Severance tax revenues	\$224,023,277	\$40,124,071	\$32,515,841	\$245,988,455	\$691,690,569

Sources: WYEAD (2018); Wyoming Department of Revenue (2019).

**Table 3.15-1. Areas of Critical Environmental Concern, Field Office, Acreage, and Relevant and Important Values**

ACEC	Field Office	Area (acres)	Relevant and Important Values
Jackson Canyon	Casper	14,000	Bald eagle ( <i>Haliaeetus leucocephalus</i> ) winter communal night roosts
Greater Sand Dunes	Rock Springs	38,650	Outstanding geologic features, prehistoric and historic values of national significance, and recreation values of regional/national importance

**Table 3.15-2. Wilderness Study Areas, Field Office, and Area**

WSA	Field Office	Area (acres)
Bennett Mountains	Rawlins	5,850.5
Alkali Basin/East Sand Dunes	Rock Springs	13,084.8
Alkali Draw	Rock Springs	18,154.8
South Pinnacles	Rock Springs	10,894.4
Cedar Mountain	Worland	20,627.1

**Table 3.15-3. Future Potential Development within Areas of Critical Environmental Concern by Alternative**

ACEC	Area (acres)	Acres within Analysis Area			
		Alternative B	Alternative C	Alternative D	Alternative E
Jackson Canyon	14,000	146.0	0	0	0
Greater Sand Dunes	38,650	6.9	0	6.9	6.9

**Table 3.15-4. Impacts to Wilderness Study Areas by Alternative**

WSA	Area (acres)	WSA Acreage Impacted			
		Alternative B	Alternative C	Alternative D	Alternative E
Bennet Mountains	5,850.5	162.5	0	0	0
Alkali Basin/East Sand Dunes	13,084.8	1,504.6	0	1,534.6	1,534.7
Alkali Draw	18,154.8	6,856.7	0	258.8	6,727.8
South Pinnacles	10,894.4	3,707.9	0	3,535.4	3,535.5
Cedar Mountain	20,627.1	3,037.6	2,591.1	3,037.6	3,037.4

**Table 3.16-1. Summary of Transportation Routes Crossed by Proposed Corridors**

Alternative	Number of Roads and Routes Crossed by the Proposed Corridors	Miles of Roads and Routes Crossed by the Proposed Corridors
B	2,450	247.2
C	314	27.1
D	2,402	255.9
E	2,278	243.9

**Table 3.17-1. Vegetation Types within Proposed Corridors**

GAP Vegetation Class	General Vegetation Category
Central Rocky Mountain Montane-Foothill Grassland & Shrubland	Shrubland, desert scrub
Great Basin Saltbush Scrub	Shrubland, desert scrub
Great Basin-Intermountain Dry Shrubland & Grassland	Shrubland, desert scrub
Great Basin-Intermountain Dwarf Sagebrush Steppe & Shrubland	Shrubland, desert scrub
Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland	Shrubland, desert scrub
Southern Rocky Mountain Montane Shrubland	Shrubland, desert scrub
Great Plains Mixed grass & Fescue Prairie	Grassland
Great Plains Sand Grassland & Shrubland	Grassland
Great Plains Shortgrass Prairie	Grassland
Rocky Mountain-Vancouverian Subalpine-High Montane Mesic Meadow	Grassland
Great Plains Floodplain Forest	Riparian
Rocky Mountain-Great Basin Montane Riparian Forest	Riparian



<b>GAP Vegetation Class</b>	<b>General Vegetation Category</b>
Arid West Interior Freshwater Marsh	Marsh, meadow
Great Plains Marsh, Wet Meadow, Shrubland & Playa	Marsh, meadow
Great Plains Saline Wet Meadow & Marsh	Marsh, meadow
North American Boreal & Sub-Boreal Acidic Bog & Fen	Marsh, meadow
Open Water	Marsh, meadow
Warm & Cool Desert Alkali-Saline marsh, Playa & Shrubland	Marsh, meadow
Western North American Montane-Subalpine Marsh, Wet Meadow & Shrubland	Marsh, meadow
Central Rocky Mountain Dry Lower Montane-Foothill Forest	Forest, woodland
Great Plains Forest & Woodland	Forest, woodland
Intermountain Singleleaf Pinyon - Utah Juniper - Western Juniper Woodland	Forest, woodland
Rocky Mountain Subalpine-High Montane Conifer Forest	Forest, woodland
Southern Rocky Mountain Lower Montane Forest	Forest, woodland
Herbaceous Agricultural Vegetation	Agricultural
Introduced & Semi Natural Vegetation	Agricultural
Pasture & Hay Field Crop	Agricultural
Barren	Barren, badland
Great Plains Badlands Vegetation	Barren, badland
Great Plains Cliff, Scree & Rock Vegetation	Cliff, rock, scree
Intermountain Basins Cliff, Scree & Badlands Sparse Vegetation	Cliff, rock, scree
Western North American Temperate Cliff, Scree & Rock Vegetation	Cliff, rock, scree
Developed & Urban	Developed
Quarries, Mines, Gravel Pits and Oil Wells	Developed
Recently Disturbed or Modified	Developed

Source: USGS (2011).

**Table 3.17-2. Bureau of Land Management Sensitive Plant Species**

<b>Common Name</b>	<b>Scientific Name</b>
Beaver Rim phlox	<i>Phlox pungens</i>
Cedar Rim thistle	<i>Cirsium aridum</i>
Evert's wafer-parsnip	<i>Cymopterus evertii</i>
Green River (low) greenthread	<i>Thelesperma caespitosum</i>
Large-fruited bladderpod	<i>Lesquerella macrocarpa</i>
Limber pine	<i>Pinus flexilis</i>
Meadow milkvetch	<i>Astragalus diversifolius</i>
Owl Creek miner's candle	<i>Cryptantha subcapitata</i>
Ownbey's thistle	<i>Cirsium ownbeyi</i>
Persistent sepal yellowcress	<i>Rorippa calycina</i>
Porter's sagebrush, wormwood	<i>Artemisia porter</i>
Rocky Mountain (Fremont County) twinpod	<i>Physaria saximontana</i> var. <i>saximontana</i>

Common Name	Scientific Name
Shoshonea	<i>Shoshonea pulvinata</i>
Trelease's milkvetch	<i>Astragalus racemosus</i> var. <i>treleasei</i>
Whitebark pine	<i>Pinus albicaulis</i>

Sources: BLM (2010c); WYNDD (2020).

**Table 3.17-3. Acres of Vegetative Cover Type within the Analysis Area**

Cover Type	Alternative B		Alternative C		Alternative D		Alternative E	
	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Shrubland, desert scrub	49,957	2,082,744	5,704	271,655	45,913	1,942,918	49,786	2,101,287
Marsh, meadow	2,208	108,163	443	19,108	2,335	106,574	2,329	110,664
Grassland	1,570	67,096	61	4,096	1,900	83,865	1,749	75,434
Riparian	869	43,978	155	5,878	974	45,890	889	44,608
Cliff, rock, scree	754	55,799	169	12,282	754	51,341	767	54,441
Developed, disturbed	732	33,827	199	7,209	1,251	41,818	912	35,531
Barren, badland	544	23,938	0	30	482	17,522	542	23,923
Forest, woodland	466	34,578	24	1,872	592	37,734	397	29,564
Agricultural	355	33,886	312	21,040	904	51,839	404	35,376
Total	57,457	2,484,009	7,067	343,170	55,105	2,379,500	57,776	2,510,828

Source: USGS (2011).

Note: Assumes +/- 1% error in acreage totals because of rounding.

Table 3.17-4. Invasive Plants within the Proposed Corridors

Symbol	Common Name	Scientific Name	County	Alt. B No. of Populations	Alt. B Total Acres	Alt. C No. of Populations	Alt. C Total Acres	Alt. D No. of Populations	Alt. D Total Acres	Alt. E No. of Populations	Alt. E Total Acres
ACRE3	Hardheads	<i>Acroptilon repens</i>	Big Horn, Johnson	1	< 1	0	0	3	9	1	< 1
ARM12	Lesser burdock	<i>Arctium minus</i>	Johnson	1	< 1	0	0	1	< 1	0	0
BRTE	Cheatgrass	<i>Bromus tectorum</i>	Fremont, Natrona	97	68	65	8	96	21		54
CADR	Whitetop	<i>Cardaria draba</i>	Hot Springs, Park	12	4	1	< 1	13	4	12	4
CANU4	Nodding plumeless thistle	<i>Carduus nutans</i>	Fremont, Johnson, Sublette	8	< 1	6	< 1	8	< 1	8	< 1
CIAR4	Canada thistle	<i>Cirsium arvense</i>	Fremont, Johnson, Sublette, Natrona	13	29	1	< 1	13	48	3	14
CIVU	Bull thistle	<i>Cirsium vulgare</i>	Johnson	6	2	0	0	6	2	1	< 1
COAR4	Field bindweed	<i>Convolvulus arvensis</i>	Johnson	4	< 1	0	0	4	< 1	4	< 1
ELAN	Russian olive	<i>Elaeagnus angustifolia</i>	Big Horn	1	< 1	0	0	1	< 1	1	< 1
EUES	Leafy spurge	<i>Euphorbia esula</i>	Johnson	3	11	0	0	3	14	3	14
HAGL	Saltlover	<i>Halogeton glomeratus</i>	Fremont	28	11	9	< 1	28	11	18	6
HYNI	Black henbane	<i>Hyoscyamus niger</i>	Sublette	5	< 1	5	< 1	5	< 1	5	< 1
ONAC	Scotch cottonthistle	<i>Onopordum acanthium</i>	Fremont, Johnson, Natrona	10	47	0	0	11	46	11	46
RUCR	Curly dock	<i>Rumex crispus</i>	Johnson	2	< 1	0	0	2	< 1	2	< 1
SAKA	Russian thistle	<i>Salsola kali</i>	Fremont	3	< 1	0	0	3	< 1	3	< 1
SATR12	Prickly Russian thistle	<i>Salsola tragus</i>	Fremont, Natrona	48	12	36	5	48	12	19	4
SORO	Buffalobur nightshade	<i>Solanum rostratum</i>	Johnson	2	< 1	0	0	2	< 1	2	< 1
TARA	Saltcedar	<i>Tamarix ramosissima</i>	Johnson	2	33	0	0	2	33	2	33
XANTH2	Cocklebur	<i>Xanthium</i>	Johnson	1	< 1	0	0	3	8	1	< 1

Source: BLM (2020c).

Table 3.17-5. Threatened and Endangered Plant Species and Their Potentially Suitable Habitat (acres) within the Analysis Area

Common Name	Scientific Name	Status	Alternative B		Alternative C		Alternative D		Alternative E	
			Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Blowout penstemon	<i>Penstemon haydenii</i>	Endangered	7	381	1	126	1	126	1	128
Desert yellowhead	<i>Yermo xanthocephalus</i>	Threatened	32	3,429	6	388	31	2,363	33	3,411
Ute ladies-tresses	<i>Spiranthes diluvialis</i>	Threatened	668	32,080	20	1,337	763	34,376	664	32,837
Whitebark pine	<i>Pinus albicaulis</i>	Candidate	0	112	0	0	1	112	0	112
Desert yellowhead critical habitat			0	357	0	0	0	357	0	357

Sources: USFWS (2020a); WYNDD (2020).  
Note: assumes +/- 1% error in acreage totals due to rounding.

Table 3.17-6. Bureau of Land Management Sensitive Plant Species and Their Potentially Suitable Habitat (acres) within the Analysis Area

Common Name	Scientific Name	Alternative B		Alternative C		Alternative D		Alternative E	
		Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Porter's sagebrush, wormwood	<i>Artemisia porter</i>	6,453	259,022	231	12,954	5,960	237,684	6,426	259,088
Meadow milkvetch	<i>Astragalus diversifolius</i>	2,243	96,642	0	0	2,220	96,748	2,244	96,675
Trelease's milkvetch	<i>Astragalus racemosus var. treleasei</i>	16,115	670,033	1,860	88,140	15,496	648,159	16,048	671,258
Cedar Rim thistle	<i>Cirsium aridum</i>	23	2,624	0	0	22	2,624	22	2,624
Ownbey's thistle	<i>Cirsium ownbeyi</i>	61	6,970	8	3,399	138	9,249	138	9,252
Owl Creek miner's candle	<i>Cryptantha subcapitata</i>	0	1	0	0	0	1	0	1
Evert's wafer-parsnip	<i>Cymopterus evertii</i>	35	4,762	6	188	33	4,405	35	4,762
Large-fruited bladderpod	<i>Lesquerella macrocarpa</i>	58	6,916	8	3,408	76	6,310	75	6,301
Beaver Rim phlox	<i>Phlox pungens</i>	3	830	0	0	0	0	20	830
Rocky Mountain (Fremont County) twinpod	<i>Physaria saximontana var. saximontana</i>	60	6,119	16	3,668	82	5,923	82	5,952
Limber pine	<i>Pinus flexilis</i>	443	32,834	24	1,845	569	35,997	374	27,825
Persistent sepal yellowcress	<i>Rorippa calycina</i>	390	21,256	79	3,482	474	22,182	449	21,745
Shoshonea	<i>Shoshonea pulvinata</i>	81	7,279	37	2,144	80	5,471	81	7,279
Green River (low) greenthread	<i>Thelesperma caespitosum</i>	1,280	59,931	0	0	1,495	74,200	1,495	74,200

Sources: BLM (2010c); WYNDD (2020).  
Note: assumes +/- 1% error in acreage totals due to rounding.

**Table 3.18-1. Alternative B Visual Resource Management Classification Acreage**

<b>VRM Classification</b>	<b>Acres</b>
Class I	22,845
Class II	625,852
Class III	1,939,295
Class IV	3,212,798

**Table 3.18-2. Alternative C Visual Resource Management Classification Acreage**

<b>VRM Classification</b>	<b>Acres</b>
Class I	4,377
Class II	85,828
Class III	190,542
Class IV	633,420

**Table 3.18-3. Alternative D Visual Resource Management Classification Acreage**

<b>VRM Classification</b>	<b>Acres</b>
Class I	13,595
Class II	542,988
Class III	1,758,034
Class IV	3,226,467

**Table 3.18-4. Alternative E Visual Resource Management Classification Acreage**

<b>VRM Classification</b>	<b>Acres</b>
Class I	21,704
Class II	588,154
Class III	1,897,206
Class IV	3,344,052

**Table 3.19-1. Surface and Groundwater Impact Indicators by Alternative**

<b>Impact Indicator</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Alternative E</b>
Acres within proposed corridors	57,412	7,067	55,105	57,776
Number of Subwatersheds Crossed	360	66	342	365
Acres of highly erodible soils adjacent to water resources within proposed corridors	320	34	321	253
Number of perennial streams crossed by proposed corridors	246	31	283	245
Number of intermittent streams crossed by proposed corridors	2,906	346	2,769	3,007

Impact Indicator	Alternative B	Alternative C	Alternative D	Alternative E
Number of seeps/springs within proposed corridors	1	0	1	1
Number of groundwater wells within proposed corridors	69	16	117	136
Number of Class 1 Waters crossed	1	0	0	0
Number of streams with impairment within proposed corridors	6	0	9	6
Miles of depth to initial groundwater of less than 20 feet	153	32	188	147

Source: NRCS (2013); USGS (2020c); WDEQ Water Quality Division (2019, 2020b); Wyoming State Engineer's Office (2020).

**Table 3.19-2. Wetlands Impact Indicators by Alternative**

Impact Indicator	Alternative B	Alternative C	Alternative D	Alternative E
Acres of wetlands within proposed corridors	843	178	967	923
Number of Subwatersheds containing wetlands within proposed corridors	333	56	317	274
Number of waterbodies crossed by proposed corridors	27	4	27	33

Source: USFW (2020c).

**Table 3.20-1. Impacts to Herd Management Areas from All Alternatives**

Alternative	Number of HMAs Impacted	Acres of HMAs Impacted	Percentage of HMA Acres Impacted
A	0	0	0.00%
B	15	433,285	13.5%
C	3	48,770	5.3%
D	15	362,205	11.3%
E	15	399,547	12.5%

**Table 3.20-2. Impacts to Revegetation from All Alternatives**

Alternative	Acres of HMAs that Could Require Revegetation	Percentage of Acres of HMAs that Could Require Revegetation
A	0	0.00%
B	9,659	0.30%
C	1,029	0.11%
D	8,204	0.26%
E	8,806	0.28%

**Table 3.21-1. Threatened and Endangered Wildlife Species and their Habitats within the Analysis Area**

Common Name	Scientific Name	Status	General Habitat
Black-footed ferret	<i>Mustela nigripes</i>	Nonessential experimental	Grassland
Canada lynx	<i>Lynx canadensis</i>	Threatened	Forest, woodland
Colorado River fish AOI <sup>†</sup>	–	–	Riparian; marsh, meadow
Grizzly bear	<i>Ursus arctos horribilis</i>	Threatened	Forest, woodland
North American wolverine	<i>Gulo gulo luscus</i>	Proposed threatened	Forest, woodland
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Forest, woodland
Platte River species AOI <sup>*</sup>	–	–	Riparian; marsh, meadow
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened	Riparian; marsh, meadow

Sources: USFWS (2020a); WYNDD (2020).

Note: General habitat types used by these species are based on GAP vegetation in Table 13.17-1.

<sup>\*</sup>AOI for least tern, endangered; pallid sturgeon, endangered; piping plover, threatened; and whooping crane, endangered.

<sup>†</sup> AOI for bonytail (*Gila elegans*), endangered; Colorado pikeminnow (*Ptychocheilus lucius*), endangered; humpback chub (*Gila cypha*), endangered; and razorback sucker (*Xyrauchen texanus*), endangered.

**Table 3.21-2. Bureau of Land Management Sensitive Wildlife Species and their Habitats**

Common Name	Scientific Name	General Habitat
<b>Mammals</b>		
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	Grassland
Fringed myotis	<i>Myotis thysanodes</i>	Forest, woodland; Riparian
Idaho pocket gopher	<i>Thomomys idahoensis</i>	Shrubland, desert scrub; grassland
Long-eared myotis	<i>Myotis evotis</i>	Forest, woodland; Riparian
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Shrubland, desert scrub
Spotted bat	<i>Euderma maculatum</i>	Forest, woodland; Riparian
Swift fox	<i>Vulpes velox</i>	Grassland
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Forest, woodland; Riparian
White-tailed prairie dog	<i>Cynomys leucurus</i>	Shrubland, desert scrub, grassland
Wyoming pocket gopher	<i>Thomomys clusius</i>	Shrubland, desert scrub, grassland
<b>Birds</b>		
Baird's sparrow	<i>Ammodramus bairdii</i>	Grassland
Bald eagle	<i>Haliaeetus leucocephalus</i>	Riparian; marsh, meadow
Brewer's sparrow	<i>Spizella breweri</i>	Shrubland, desert scrub
Burrowing owl	<i>Athene cunicularia</i>	Grassland
Ferruginous hawk	<i>Buteo regalis</i>	Grassland
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Shrubland, desert scrub
Loggerhead shrike	<i>Lanius ludovicianus</i>	Shrubland, desert scrub; grassland; developed, disturbed
Long-billed curlew	<i>Numenius americanus</i>	Grassland; marsh, meadow
Mountain plover	<i>Charadrius montanus</i>	Grassland
Northern goshawk	<i>Accipiter gentilis</i>	Forest, woodland
Peregrine falcon	<i>Falco peregrinus</i>	Forest, woodland; Cliff, rock, scree
Sage thrasher	<i>Oreoscoptes montanus</i>	Shrubland, desert scrub

Common Name	Scientific Name	General Habitat
Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>	Shrubland, desert scrub
Trumpeter swan	<i>Cygnus buccinators</i>	Riparian, marsh, meadow
White-faced ibis	<i>Plegadis chihi</i>	Riparian, marsh, meadow
<b>Fish</b>		
Bluehead sucker	<i>Catostomus discobolus</i>	Riparian, marsh, meadow
Colorado River cutthroat trout	<i>Oncorhynchus clarkii pleuriticus</i>	Riparian, marsh, meadow
Flannelmouth sucker	<i>Catostomus latipinnis</i>	Riparian, marsh, meadow
Roundtail chub	<i>Gila robusta</i>	Riparian, marsh, meadow
Yellowstone cutthroat trout	<i>Oncorhynchus clarkii bouvieri</i>	Riparian, marsh, meadow
<b>Reptiles/Amphibians</b>		
Great Basin spadefoot	<i>Spea intermontana</i>	Shrubland, desert scrub; Riparian; forest, woodland
Midget faded rattlesnake	<i>Crotalus viridis concolor</i>	Shrubland, desert scrub; grassland; cliff, rock, scree
Northern leopard frog	<i>Rana pipiens</i>	Riparian, marsh, meadow

Sources: BLM (2010c); WYNDD (2020).

Note: General habitat types used by these species are based on GAP vegetation in Table 13.17-1.

**Table 3.21-3. Acreages and Linear Miles of Alternative B Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis**

Species	Seasonal Habitat Type	Acre within Area of Analysis	Percentage of Seasonal Habitat Type Impacted	Linear Miles within Area of Analysis
Elk	Crucial winter range	109,318	2.51%	84
	Parturition area	22,806	0.75%	16
Mule deer	Crucial winter range	277,913	4.39%	208
	Parturition area	2,118	0.92%	1
	Migration corridor	26,312	2.16%	20
Pronghorn	Crucial winter range	514,974	8.62%	420
	Parturition area	373	1.36%	0
Moose	Crucial winter range	21,355	1.65%	13
	Parturition area	1,338	1.52%	0
Bighorn sheep	Crucial winter range	1,495	0.16%	1
	Parturition area	0	0.00%	0
White-tailed deer	Crucial winter range	0	0.00%	0



**Table 3.21-4. Special-Status Fish Species Area of Influence by Watershed, Alternative B**

Species	HUC-8 Name	Acres in 1-Mile Buffer	Acres in Corridor
Bluehead sucker	Big Sandy	17,646	317
	Blacks Fork	19,667	328
	Upper Green	54,488	1,042
	Upper Green-Flaming Gorge Reservoir	10,708	187
	Upper Green-Slate	35,028	850
	<b>Total</b>	<b>137,537</b>	<b>2,724</b>
Colorado River cutthroat trout	Upper Green	54,488	1,042
	Upper Green-Flaming Gorge Reservoir	10,708	187
	<b>Total</b>	<b>65,196</b>	<b>1,229</b>
Flannelmouth sucker	Big Sandy	21,754	407
	Bitter	103,389	2,008
	Blacks Fork	19,667	328
	Upper Green	71,253	1,367
	Upper Green-Flaming Gorge Reservoir	10,708	187
	Upper Green-Slate	35,028	850
	<b>Total</b>	<b>261,799</b>	<b>5,147</b>
Roundtail chub	Blacks Fork	19,667	328
	<b>Grand Total</b>	<b>19,667</b>	<b>328</b>
Yellowstone River cutthroat trout	Big Horn Lake	33,365	713
	Clarks Fork Yellowstone	7,044	89
	Greybull	71,718	1,635
	Little Wind	46	0
	Shoshone	81,043	1,657
	Upper Bighorn	53,026	1,352
	<b>Total</b>	<b>246,244</b>	<b>5,446</b>

**Table 3.21-5. Acreages of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas, Alternative B**

PHMA		GHMA	
Acres within Corridor	Acres within 4-Mile Buffer	Acres within Corridor	Acres within 2-Mile Buffer
22,558.0	3,510,624.9	34,898.8	2,892,962.0

**Table 3.21-6. Average Peak Male Count at Leks within the Analysis Areas, Alternative B**

Average Peak Male Count at Leks within 2 miles	Average Peak Male Count at Leks within 4 miles
13.9	25.6

**Table 3.21-7. Acreages and Linear Miles of Alternative C Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis**

Species	Seasonal Habitat Type	Acres within Area of Analysis	Percentage of Seasonal Habitat Type Impacted	Linear Miles within Area of Analysis
Elk	Crucial winter range	8,627	0.20%	6
	Parturition area	361	0.01%	0
Mule deer	Crucial winter range	79,854	1.26%	54
	Parturition area	0	0.00%	0
	Migration corridor	0	0.00%	0
Pronghorn	Crucial winter range	70,641	1.18%	51
	Parturition area	0	0.00%	0
Moose	Crucial winter range	6,355	0.49%	3
	Parturition area	965	1.09%	0
Bighorn sheep	Crucial winter range	0	0.00%	0
	Parturition area	0	0.00%	0
White-tailed deer	Crucial winter range	0	0.00%	0

**Table 3.21-8. Special-Status Fish Species Area of Influence by Watershed, Alternative C**

Species	HUC-8 Name	Acres in 1-Mile Buffer	Acres in Corridor
Bluehead sucker	Upper Green	44,769	757
	<b>Total</b>	<b>44,769</b>	<b>757</b>
Colorado River cutthroat trout	Upper Green	44,769	757
	<b>Total</b>	<b>44,769</b>	<b>757</b>
Flannelmouth sucker	Upper Green	44,769	757
	<b>Grand Total</b>	<b>44,769</b>	<b>757</b>
Roundtail chub	None	0	0
Yellowstone River cutthroat trout	Big Horn Lake	18,411	418
	Clarks Fork Yellowstone	5,370	81
	Shoshone	31,794	597
	Upper Bighorn	31,259	812
	<b>Grand Total</b>	<b>86,834</b>	<b>1,908</b>

**Table 3.21-9. Acreages of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas, Alternative C**

PHMA		GHMA	
Acres within Corridor	Acres within 4-Mile Buffer	Acres within Corridor	Acres within 2-Mile Buffer
0	228,742.3	7,053.4	646,418.2

**Table 3.21-10. Average Peak Male Count at Leks within the Analysis Areas, Alternative C**

Average Peak Male Count at Leks within 2 miles	Average Peak Male Count at Leks within 4 miles
23.0	23.8

**Table 3.21-11. Acreages and Linear Miles of Alternative D Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis**

Species	Seasonal Habitat Type	Acres within Area of Analysis	Percentage of Seasonal Habitat Type Impacted	Linear Miles within Area of Analysis
Elk	Crucial winter range	91,860	2.11%	72
	Parturition area	15,929	0.52%	12
Mule deer	Crucial winter range	296,384	4.67%	220
	Parturition area	812	0.35%	0
	Migration corridor	17,146	1.41%	13
Pronghorn	Crucial winter range	501,116	8.39%	403
	Parturition area	373	1.36%	0
Moose	Crucial winter range	17,057	1.32%	10
	Parturition area	2,419	2.74%	1
Bighorn sheep	Crucial winter range	0	0.00%	0
	Parturition area	0	0.00%	0
White-tailed deer	Crucial winter range	0	0.00%	0

**Table 3.21-12. Special-Status Fish Species Area of Influence by Watershed, Alternative D**

Species	HUC-8 Name	Acres in 1-Mile Buffer	Acres in Corridor
Bluehead sucker	Blacks Fork	8,476	84
	Upper Green	52,912	1,012
	Upper Green-Flaming Gorge Reservoir	10,705	187
	Upper Green-Slate	48,916	1,124
	<b>Total</b>	<b>191,009</b>	<b>2,407</b>
Colorado River cutthroat trout	Upper Green	56,672	1,087
	Upper Green-Flaming Gorge Reservoir	10,705	187
	<b>Total</b>	<b>67,376</b>	<b>1,274</b>
Flannelmouth sucker	Bitter	103,934	2,016
	Blacks Fork	8,476	84
	Upper Green	57,339	1,092
	Upper Green-Flaming Gorge Reservoir	10,705	187
	Upper Green-Slate	48,916	1,124
	<b>Total</b>	<b>229,370</b>	<b>4,503</b>
Roundtail chub	Blacks Fork	8,476	84
	<b>Total</b>	<b>8,476</b>	<b>84</b>

Species	HUC-8 Name	Acres in 1-Mile Buffer	Acres in Corridor
Yellowstone River cutthroat trout	Big Horn Lake	33,186	716
	Clarks Fork Yellowstone	5,370	81
	Greybull	69,330	1,593
	Little Wind	46	0
	Shoshone	82,032	1,666
	Upper Bighorn	53,148	1,355
	<b>Total</b>	<b>243,113</b>	<b>5,411</b>

**Table 3.21-13. Acreages of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas, Alternative D**

PHMA		GHMA	
Acres within Corridor	Acres within 4-Mile Buffer	Acres within Corridor	Acres within 2-Mile Buffer
16,954.8	2,932,712.2	37,823.5	3,060,471.0

**Table 3.21-14. Average Peak Male Count at Leks within the Analysis Areas, Alternative D**

Average Peak Male Count at Leks within 2 miles	Average Peak Male Count at Leks within 4 miles
14.3	23.4

**Table 3.21-15. Acreages and Linear Miles of Alternative E Area of Analysis within Big Game Seasonal Habitats and Percentage of Seasonal Habitats within Area of Analysis**

Species	Seasonal Habitat Type	Acres within Area of Analysis	Percentage of Seasonal Habitat Type Impacted	Linear Miles within Area of Analysis
Elk	Crucial winter range	143,344	3.29%	111
	Parturition area	22,805	0.75%	16
Mule deer	Crucial winter range	296,623	4.68%	224
	Parturition area	2,118	0.92%	1
	Migration corridor	27,918	2.30%	5
Pronghorn	Crucial winter range	542,045	9.08%	442
	Parturition area	373	1.36%	0
Moose	Crucial winter range	21,662	1.68%	13
	Parturition area	2,792	3.17%	1
Bighorn sheep	Crucial winter range	0	0.00%	0
	Parturition area	0	0.00%	0
White-tailed deer	Crucial winter range	0	0.00%	0

**Table 3.21-16. Special-Status Fish Species Area of Influence by Watershed, Alternative E**

<b>Species</b>	<b>HUC-8 Name</b>	<b>Acres in 1-Mile Buffer</b>	<b>Acres in Corridor</b>
Bluehead sucker	Big Sandy	17,646	317
	Blacks Fork	8,476	84
	Upper Green	57,437	1,098
	Upper Green-Flaming Gorge Reservoir	10,705	187
	Upper Green-Slate	48,916	1,124
	<b>Total</b>	143,180	2,811
Colorado River cutthroat trout	Upper Green	61,196	1,173
	Upper Green-Flaming Gorge Reservoir	10,705	187
	<b>Total</b>	71,901	1,360
Flannemouth sucker	Big Sandy	21,754	407
	Bitter	103,934	2,016
	Blacks Fork	8,476	84
	Upper Green	61,863	1,178
	Upper Green-Flaming Gorge Reservoir	10,705	187
	Upper Green-Slate	48,916	1,124
	<b>Total</b>	255,649	4,996
Roundtail chub	Blacks Fork	8,476	84
	<b>Total</b>	8,476	84
Yellowstone River cutthroat trout	Big Horn Lake	711	33,233
	Clarks Fork Yellowstone	89	7,044
	Greybull	1,636	71,539
	Little Wind	0	46
	Shoshone	1,657	81,043
	Upper Bighorn	1,355	53,160
	<b>Total</b>	5,448	246,065

**Table 3.21-17. Acreages of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas, Alternative E**

<b>PHMA</b>		<b>GHMA</b>	
<b>Acres within Corridor</b>	<b>Acres within 4-Mile Buffer</b>	<b>Acres within Corridor</b>	<b>Acres within 2-Mile Buffer</b>
21,516.9	3,533,748.8	36,162.9	2,949,903.4

**Table 3.21-18. Average Peak Male Count at Leks within the Analysis Areas, Alternative E**

<b>Average Peak Male Count at Leks within 2 miles</b>	<b>Average Peak Male Count at Leks within 4 miles</b>
14.2	25.8

**Table 3.21-19. List of Alternatives and Whether They Would affect a Big Game Seasonal Habitat**

Species	Seasonal Habitat Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Elk	Crucial winter range	No	Yes	Yes	Yes	Yes
	Parturition area	No	Yes	Yes	Yes	Yes
Mule deer	Crucial winter range	No	Yes	Yes	Yes	Yes
	Parturition area	No	Yes	No	Yes	Yes
	Migration corridor	No	Yes	No	Yes	Yes
Pronghorn	Crucial winter range	No	Yes	Yes	Yes	Yes
	Parturition area	No	Yes	No	Yes	Yes
Moose	Crucial winter range	No	Yes	Yes	Yes	Yes
	Parturition area	No	Yes	Yes	Yes	Yes
Bighorn sheep	Crucial winter range	No	Yes	No	No	No
	Parturition area	No	No	No	No	No
White-tailed deer	Crucial winter range	No	No	No	No	No

**Table 3.21-20. Potential Disturbance to Blue and Red Ribbon Streams, by Alternative**

Alternative	Blue Ribbon Stream Crossings	Total Length* of Blue Ribbon Stream Crossings (meters)	Percentage of Potential Disturbance	Red Ribbon Stream Crossings	Total Length* of Red Ribbon Stream Crossings (meters)	Percentage of Potential Disturbance
B	2	500	1.4%	9	2,250	5.1%
C	0	0	0.000%	1	250	8.0%
D	6	1,500	5.2%	14	3,393	8.1%
E	1	250	0.94%	9	2,250	4.89%

\* Quantified by a buffer of 200 meters downstream and 50 meters upstream of each crossing.

Table 3.21-21. Threatened and Endangered Wildlife Species and Their Habitats (acres)

Common Name	Scientific Name	Status	Alternative B		Alternative C		Alternative D		Alternative E	
			Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Canada lynx	<i>Lynx canadensis</i>	Threatened	22	1,783	0	200	20	996	22	1,765
Canada lynx critical habitat		–	0	155	0	0	0	0		
Grizzly bear	<i>Ursus arctos horribilis</i>	Threatened	35	4,172	6	189	33	3,811	35	4,172
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	0	0	0	0	0	0	0	0
Black-footed ferret	<i>Mustela nigripes</i>	Nonessential experimental	20	240	0	0	199	8,590	199	8,592
North American wolverine	<i>Gulo gulo luscus</i>	Proposed threatened	0	98	0	0	0	98	0	98
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened	23	1,109	4	91	55	1,544	23	917
Platte River species AOI <sup>*</sup>		–	10,725	32,080	545	32,345	10,826	463,341	10,962	462,281
Colorado River fish AOI <sup>†</sup>		–	9,320	461,175	1,013	61,045	8,152	403,029	9,540	475,563

Sources: USFWS (2020a); WYNDD (2020).

<sup>\*</sup> AOI for least tern, endangered; pallid sturgeon, endangered; piping plover, threatened; and whooping crane, endangered.

<sup>†</sup> AOI for bonytail (*Gila elegans*), endangered; Colorado pikeminnow (*Ptychocheilus lucius*), endangered; humpback chub (*Gila cypha*), endangered; and razorback sucker (*Xyrauchen texamus*), endangered.

Table 3.21-22. Bureau of Land Management Sensitive Wildlife Species and Their Habitats (acres)

Common Name	Scientific Name	Alternative B		Alternative C		Alternative D		Alternative E	
		Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Mammals									
Pygmy rabbit	<i>Brachylagus idahoensis</i>	23,684	1,019,691	1,803	89,560	19,809	866,505	22,486	996,072
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	1,001	60,988	138	7,169	1,193	66,288	912	56,455
White-tailed prairie dog	<i>Cynomys leucurus</i>	44,730	1,864,552	5,413	255,880	40,909	1,727,284	44,739	1,891,436
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	1,365	57,954	24	2,145	1,558	68,014	1,365	57,950
Spotted bat	<i>Euderma maculatum</i>	411	24,531	101	3,884	391	23,398	418	24,862
Long-eared myotis	<i>Myotis evotis</i>	1,082	64,702	157	6,221	1,356	69,590	1,060	60,569
Fringed myotis	<i>Myotis thysanodes</i>	750	43,242	150	5,534	927	47,029	689	37,778
Wyoming pocket gopher	<i>Thomomys clusius</i>	9,093	377,124	214	12,385	8,183	348,018	8,727	368,953
Idaho pocket gopher	<i>Thomomys idahoensis</i>	2,928	143,902	938	51,250	2,995	153,105	3,076	156,234
Swift fox	<i>Vulpes velox</i>	1,516	64,362	39	2,653	1,847	81,646	1,695	72,700
Birds									
Baird's sparrow	<i>Ammodramus bairdii</i>	915	39,672	11	836	997	44,036	998	43,942
Northern goshawk	<i>Accipiter gentilis</i>	466	34,578	24	1,872	592	37,734	397	29,564
Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>	49,957	2,082,744	5,704	271,655	45,913	1,942,918	49,786	2,101,287
Burrowing owl	<i>Athene cunicularia</i>	1,570	67,096	61	4,096	1,900	83,865	1,749	75,434
Ferruginous hawk	<i>Buteo regalis</i>	1,570	67,096	61	4,096	1,900	83,865	1,749	75,434
Greater sage-grouse	<i>Centrocercus urophasianus</i>	49,957	2,082,744	5,704	271,655	45,913	1,942,918	49,786	2,101,287
Mountain plover	<i>Charadrius montanus</i>	1,570	67,096	61	4,096	1,900	83,865	1,749	75,434
Trumpeter swan	<i>Cygnus buccinators</i>	480	22,535	183	8,134	555	24,597	520	24,203
Peregrine falcon	<i>Falco peregrinus</i>	1,221	90,377	193	14,154	1,346	89,075	1,164	84,004
Bald eagle	<i>Haliaeetus leucocephalus</i>	869	43,978	155	5,878	974	45,890	889	44,608
Loggerhead shrike	<i>Lanius ludovicianus</i>	52,259	2,183,667	5,964	282,960	49,064	2,068,600	52,448	2,212,252

Common Name	Scientific Name	Alternative B		Alternative C		Alternative D		Alternative E	
		Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer	Proposed Corridors	1-Mile Buffer
Long-billed curlew	<i>Numenius americanus</i>	3,779	175,259	505	23,204	4,235	190,439	4,079	186,099
Sage thrasher	<i>Oreoscoptes montanus</i>	49,957	2,082,744	5,704	271,655	45,913	1,942,918	49,786	2,101,287
White-faced ibis	<i>Plegadis chihi</i>	869	43,978	155	5,878	974	45,890	889	44,608
Brewer's sparrow	<i>Spizella breweri</i>	49,957	2,082,744	5,704	271,655	45,913	1,942,918	49,786	2,101,287
Fish									
Bluehead sucker	<i>Catostomus discobolus</i>	2,724	137,537	757	44,769	2,407	121,009	2,811	143,180
Flannelmouth sucker	<i>Catostomus latipinnis</i>	5,147	261,799	757	44,769	4,503	229,370	4996	255,649
Roundtail chub	<i>Gila robusta</i>	328	19,667	0	0	84	8,476	84	8,476
Yellowstone cutthroat trout	<i>Oncorhynchus clarkii bouvieri</i>	5,446	246,243	1,908	86,834	5,411	243,113	5448	246,065
Colorado River cutthroat trout	<i>Oncorhynchus clarkii pleuriticus</i>	1,229	65,196	757	44,769	1,274	67,376	1360	71,900
Reptiles/Amphibians									
Great Basin spadefoot	<i>Spea intermontana</i>	19,298	854,327	1,785	86,922	16,479	728,543	19,202	862,926
Midget faded rattlesnake	<i>Crotalus viridis concolor</i>	52,282	2,205,639	5,934	288,033	48,567	2,078,123	52,303	2,231,162
Northern leopard frog	<i>Rana pipiens</i>	869	43,978	155	5,878	974	45,890	889	44,608

Sources: BLM (2010c); WYNDD (2020).

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**Table 3.21-23. Acreages of Priority Habitat Management Areas and General Habitat Management Areas within the Analysis Areas**

Alternative	PHMA		GHMA	
	Acres within Corridor	Acres within 4-Mile Buffer	Acres within Corridor	Acres within 2-Mile Buffer
B	22,558.0	3,510,624.9	34,898.8	2,892,962.0
C	0	228,742.3	7,053.4	646,418.2
D	16,954.8	2,932,712.7	37,823.5	3,060,471.0
E	21,516.9	3,533,748.8	36,162.9	2,949,903.4

**Table 3.21-24. Number of Leks and Average Peak Male Count at those Leks within the Analysis Areas**

Alternative	PHMA		GHMA	
	Number of Leks	Average Peak Male Count within 4 miles	Number of Leks	Average Peak Male Count within 2 miles
B	266	25.6	57	13.9
C	28	23.8	12	23.0
D	211	23.4	54	14.3
E	263	25.8	56	14.2

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