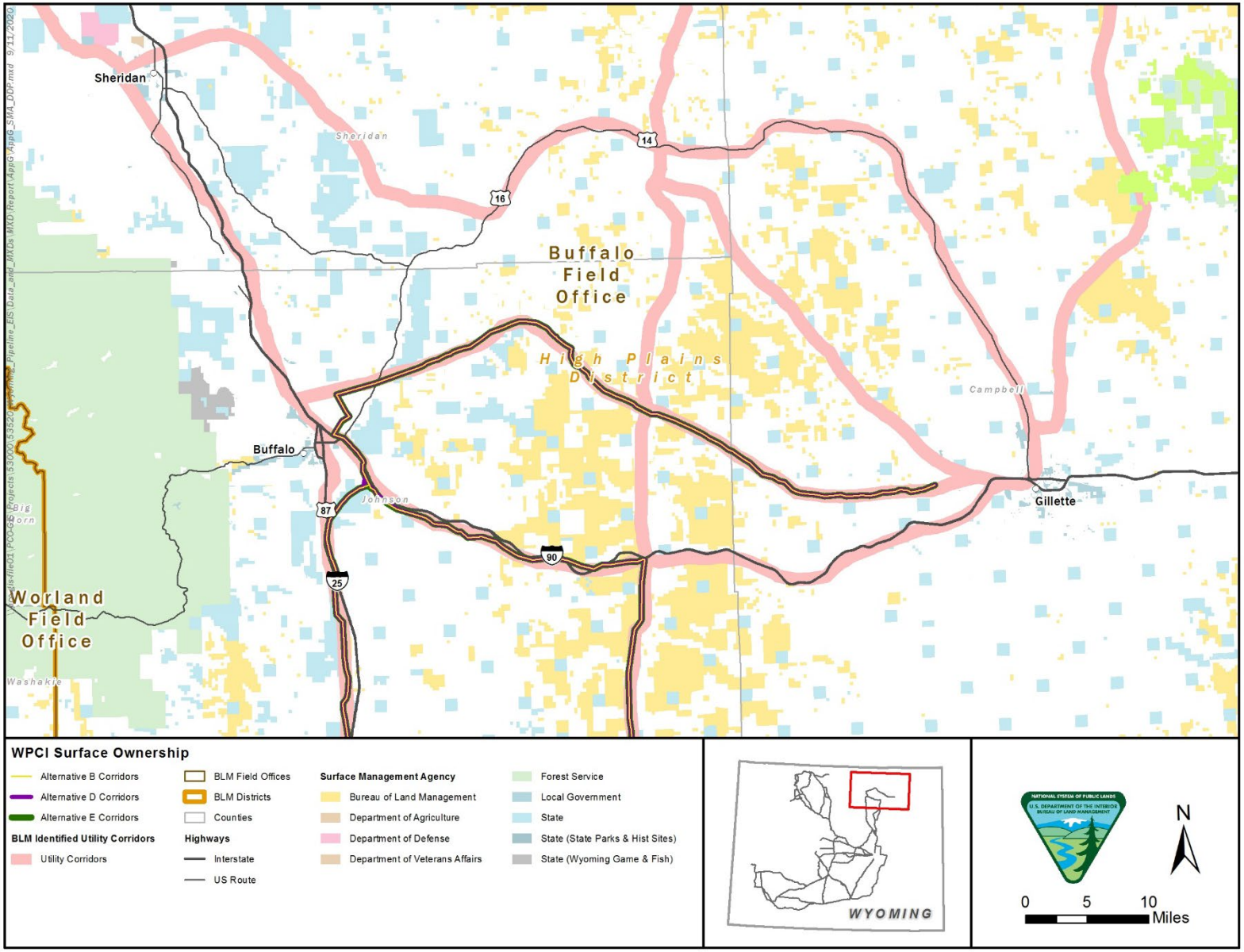

Figure G-13d. WPCI proposed corridors – Surface ownership (map 4 of 16).

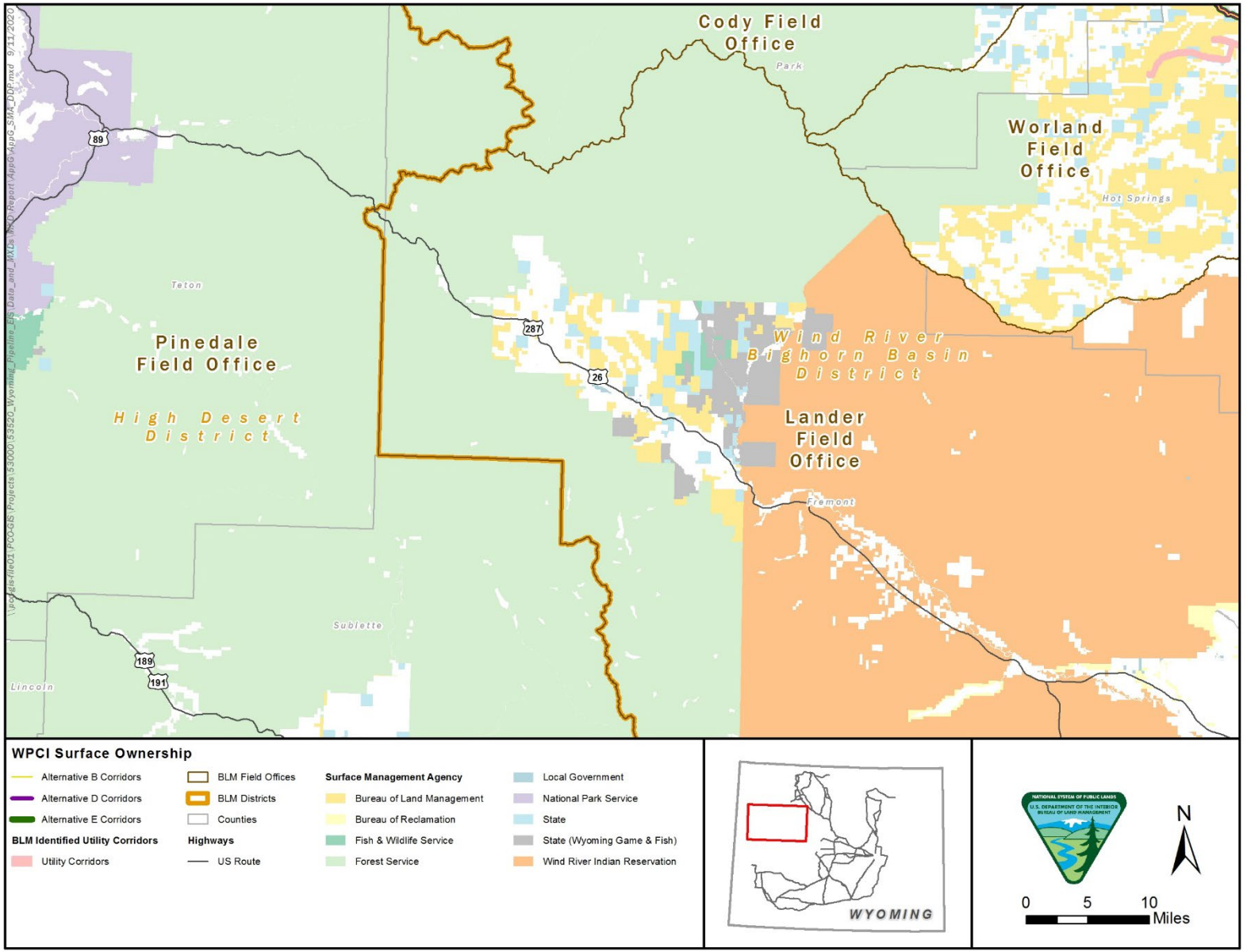

Figure G-13e. WPCI proposed corridors – Surface ownership (map 5 of 16).

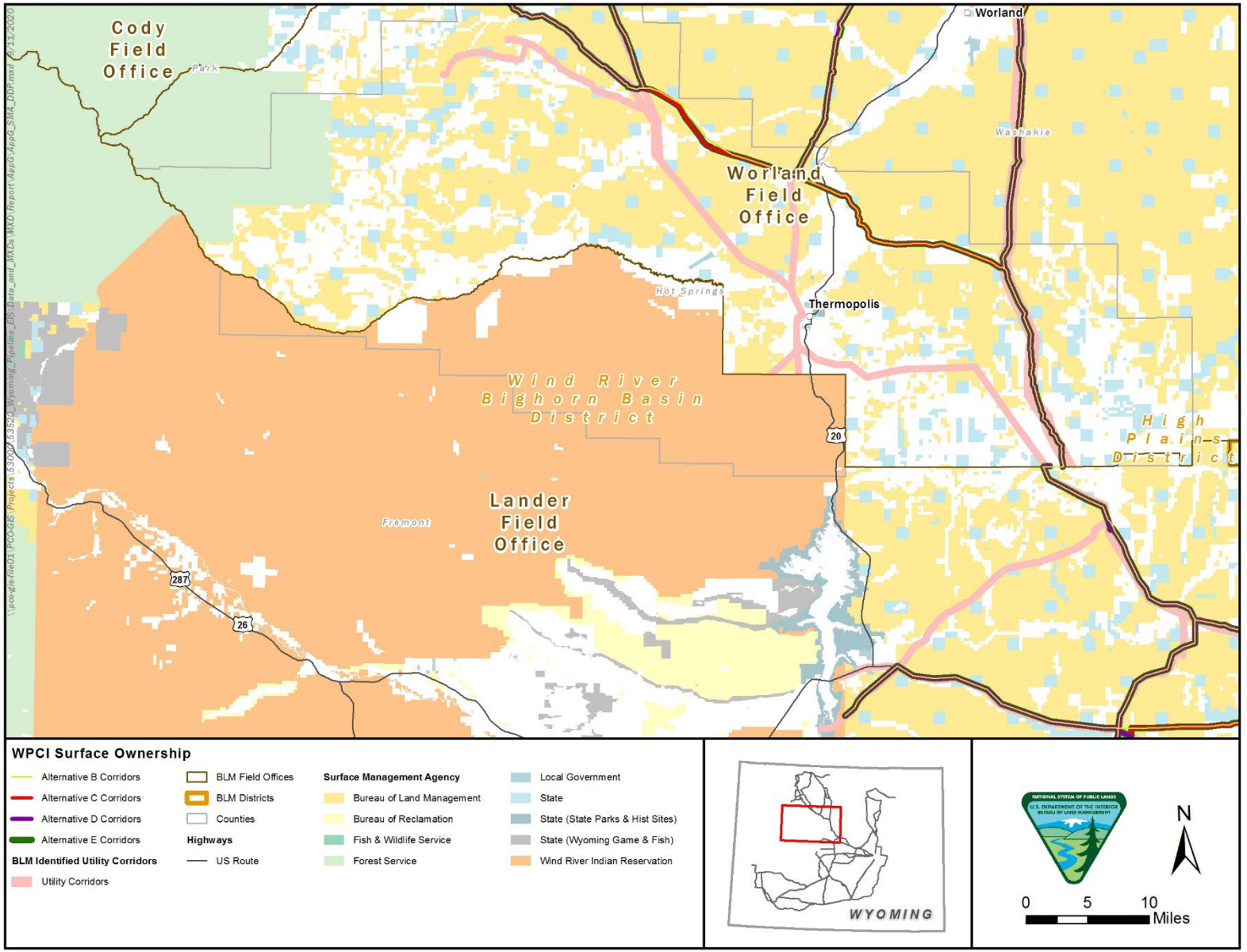

Figure G-13f. WPCI proposed corridors – Surface ownership (map 6 of 16).

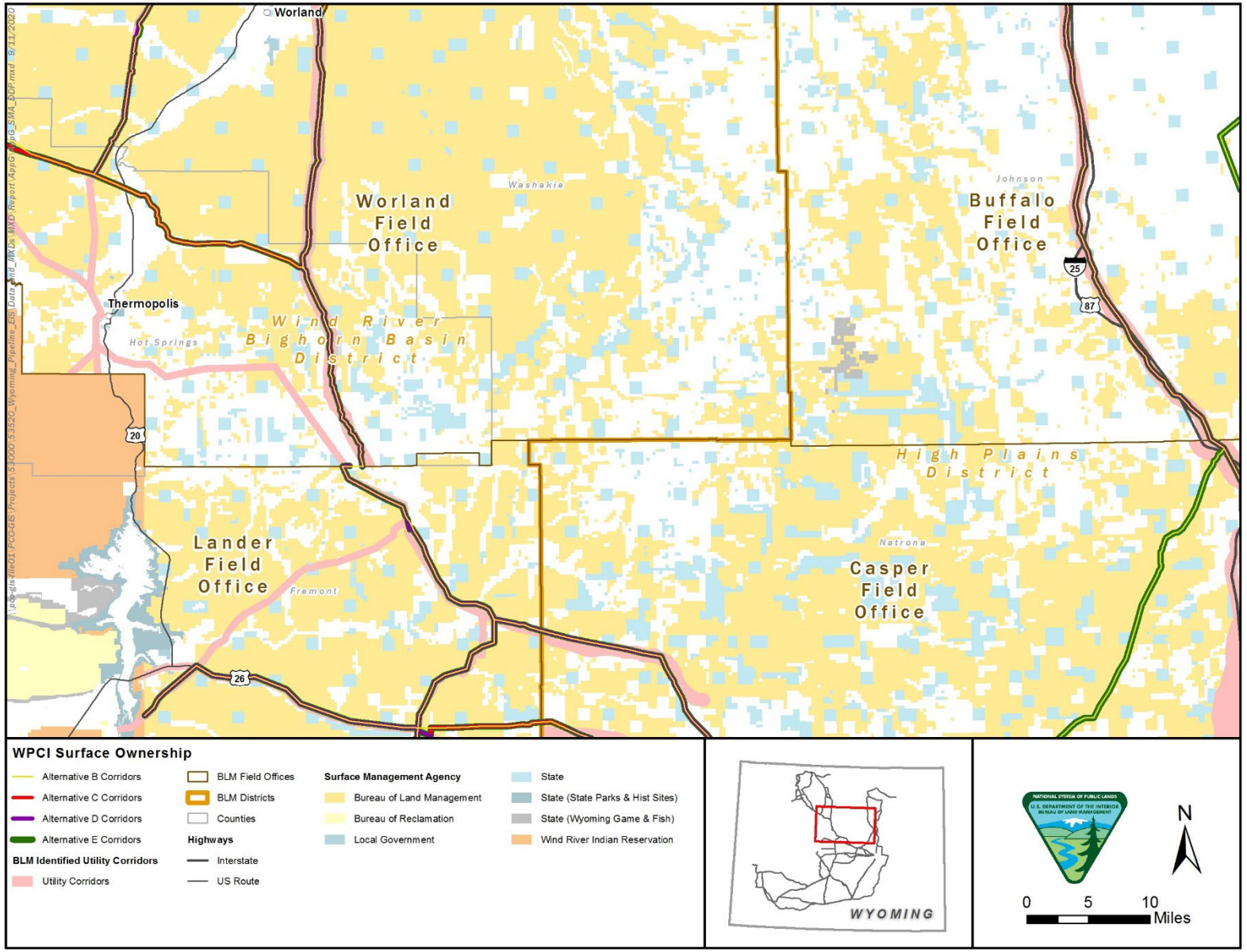

Figure G-13g. WPCI proposed corridors – Surface ownership (map 7 of 16).

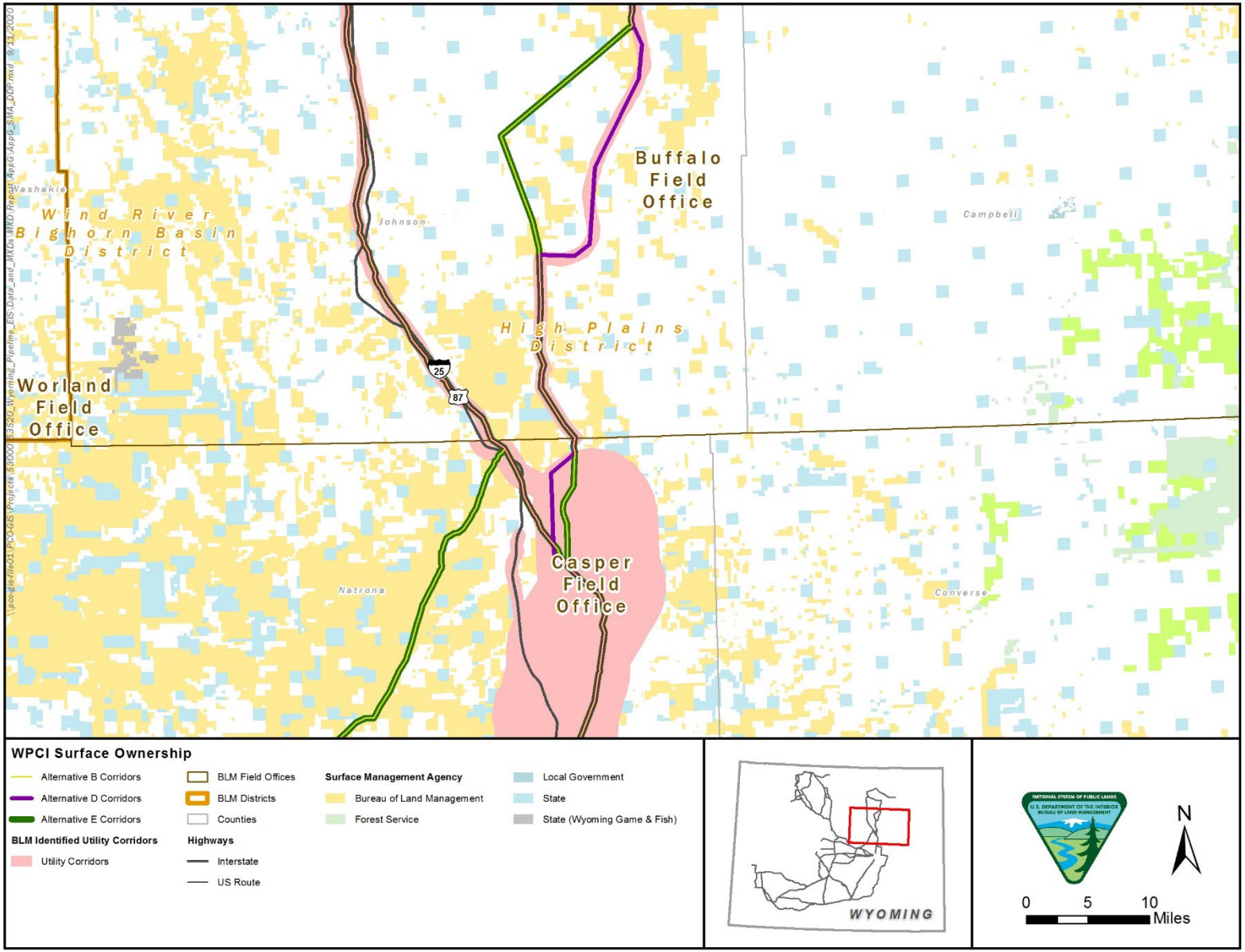

Figure G-13h. WPCI proposed corridors – Surface ownership (map 8 of 16).

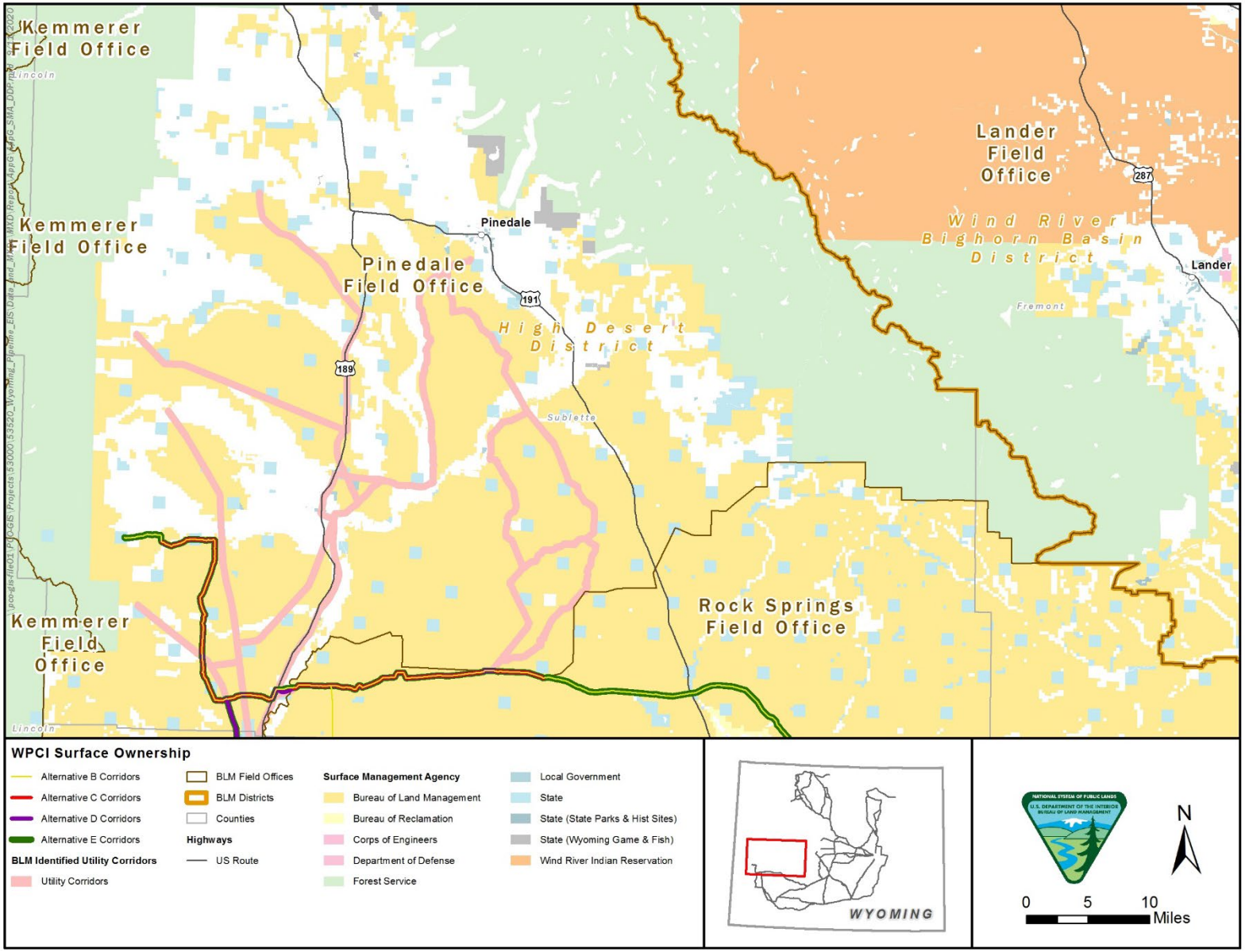

Figure G-13i. WPCI proposed corridors – Surface ownership (map 9 of 16).

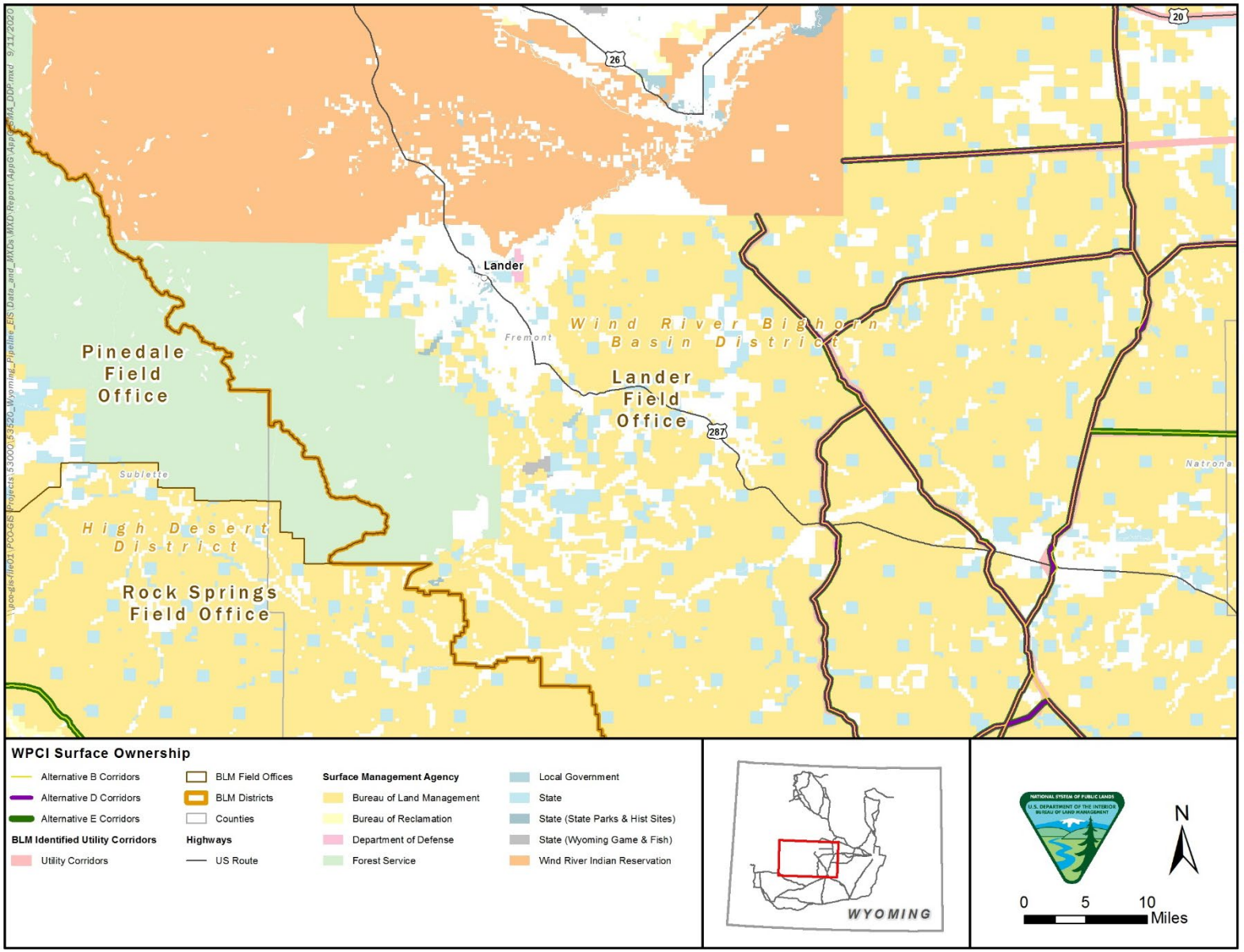

Figure G-13j. WPCI proposed corridors – Surface ownership (map 10 of 16).

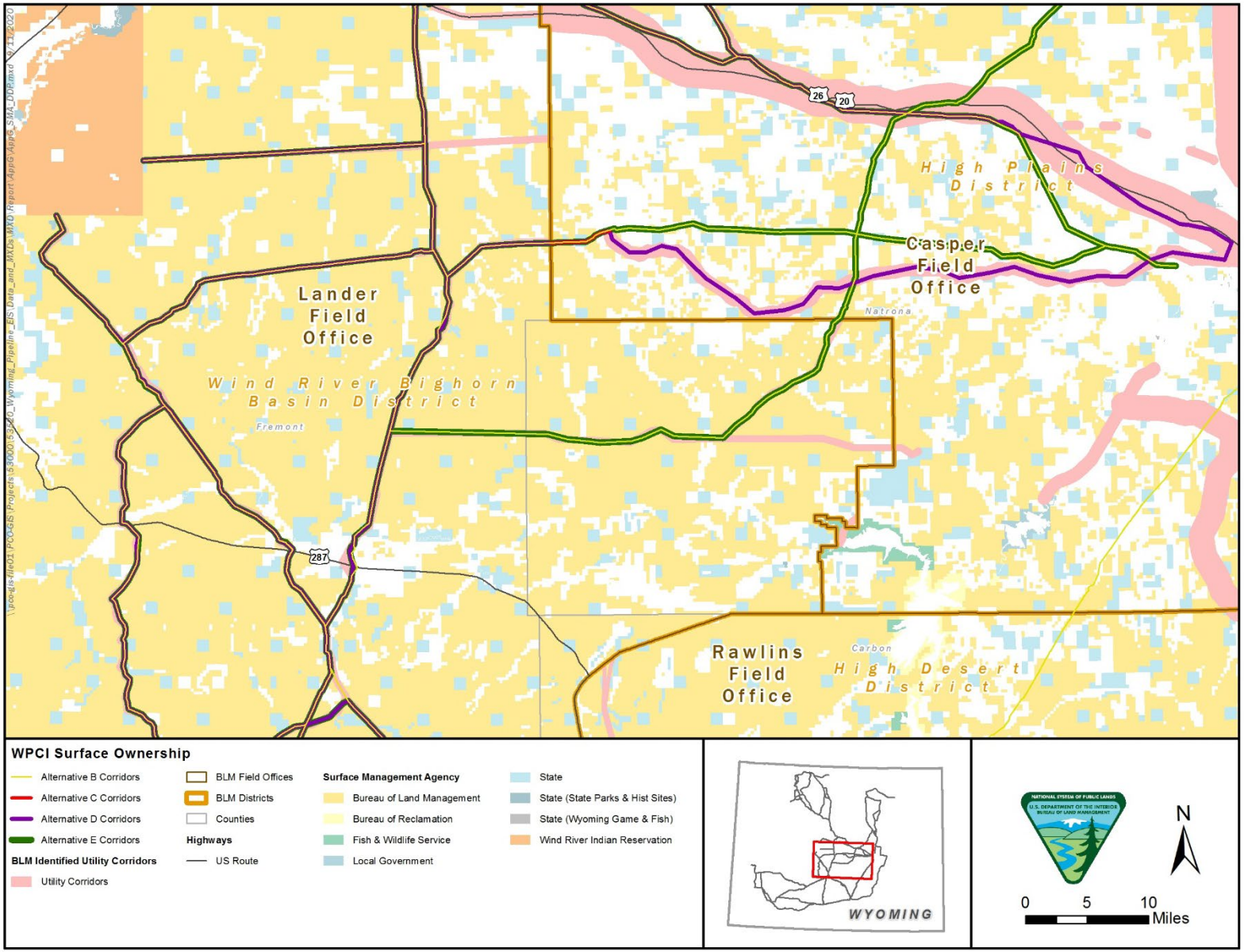

Figure G-13k. WPCI proposed corridors – Surface ownership (map 11 of 16).

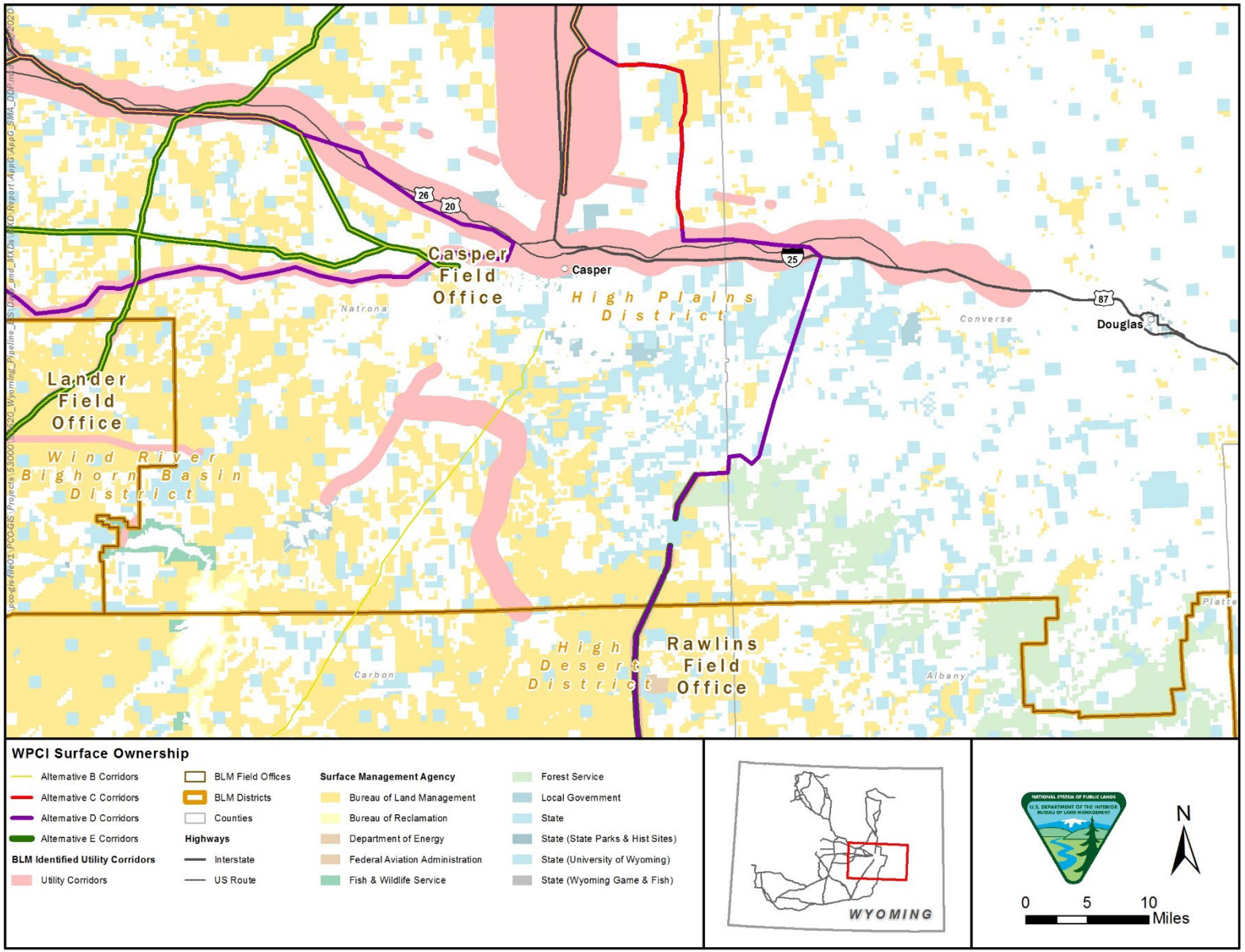

Figure G-13l. WPCI proposed corridors – Surface ownership (map 12 of 16).

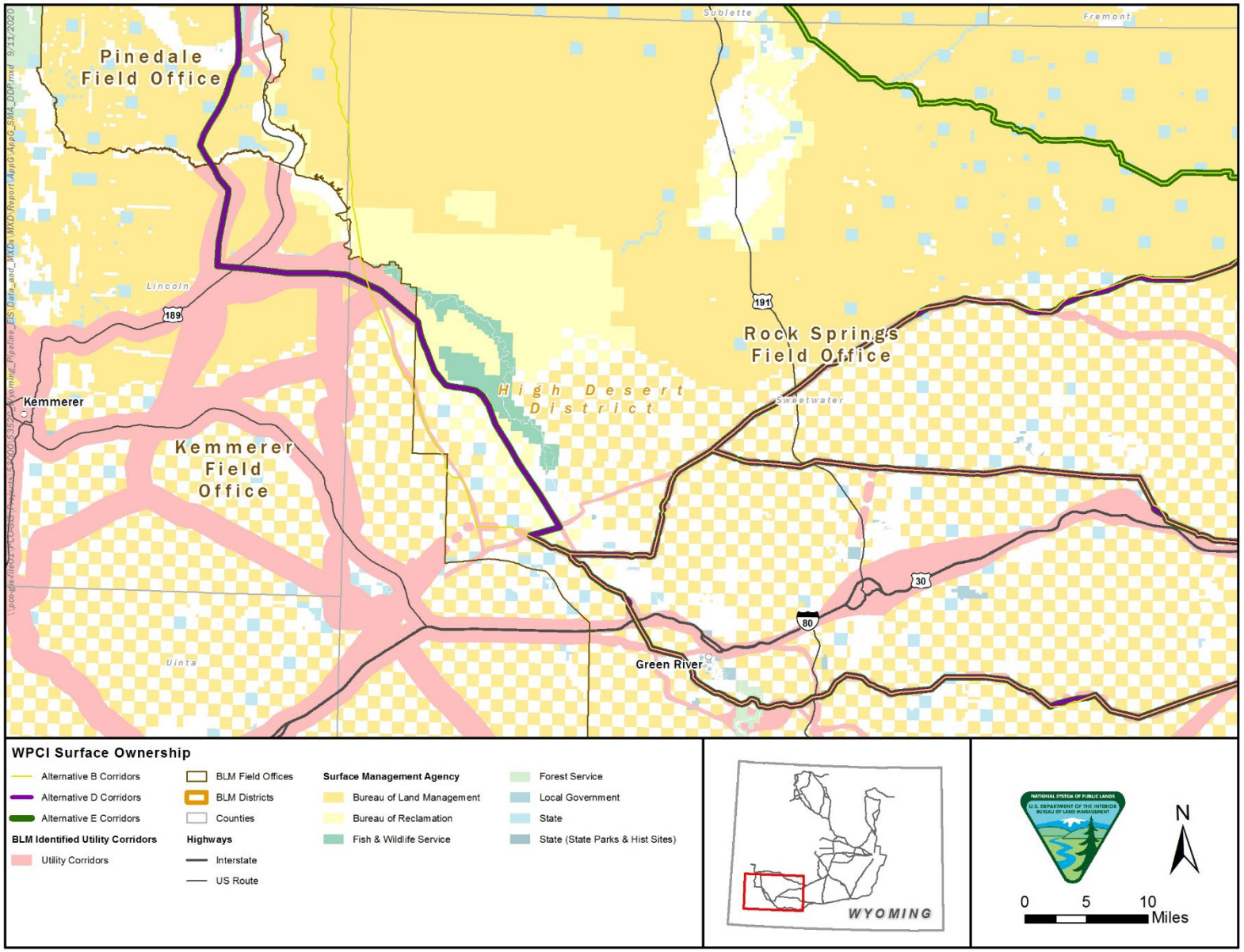

Figure G-13m. WPCI proposed corridors – Surface ownership (map 13 of 16).

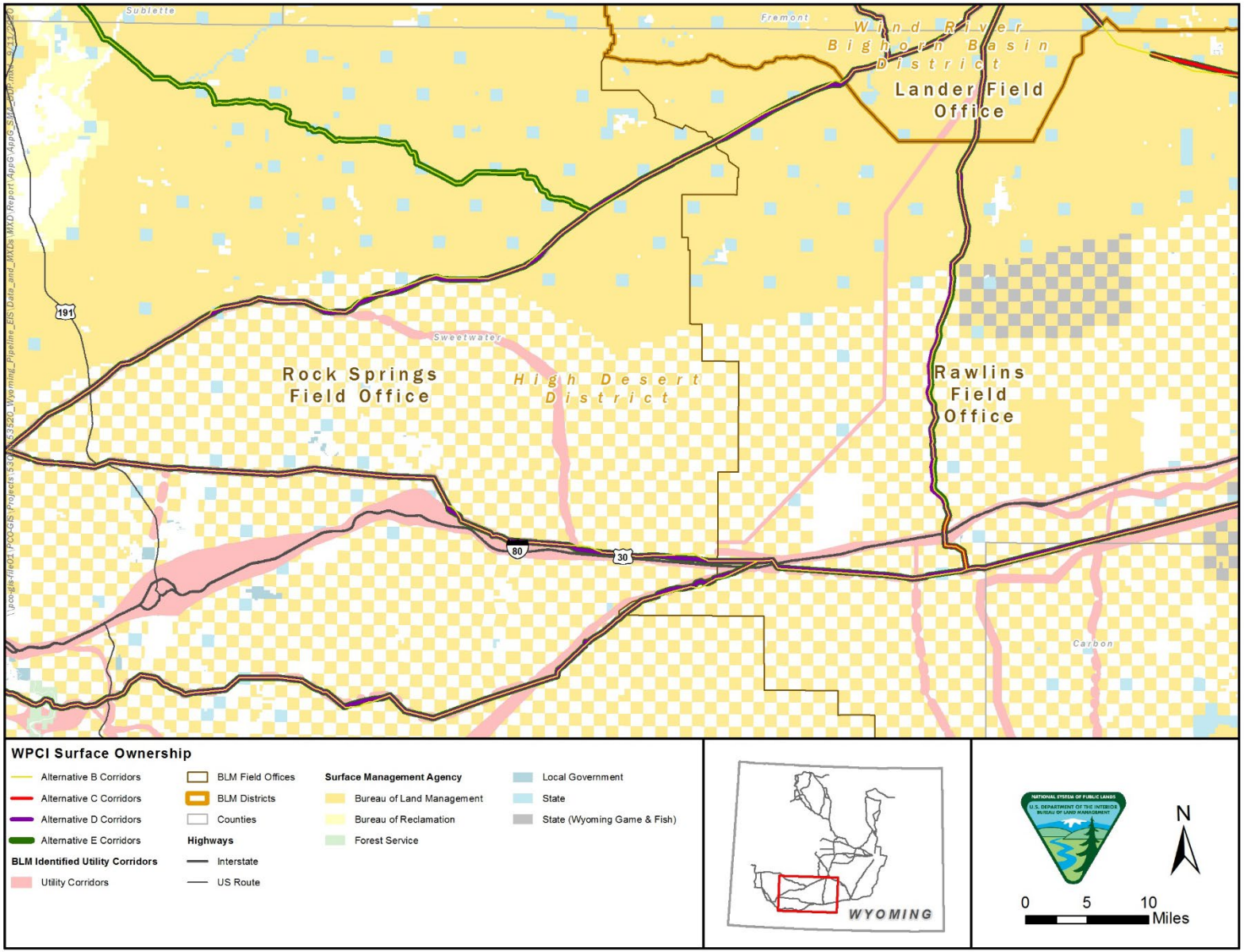

Figure G-13n. WPCI proposed corridors – Surface ownership (map 14 of 16).

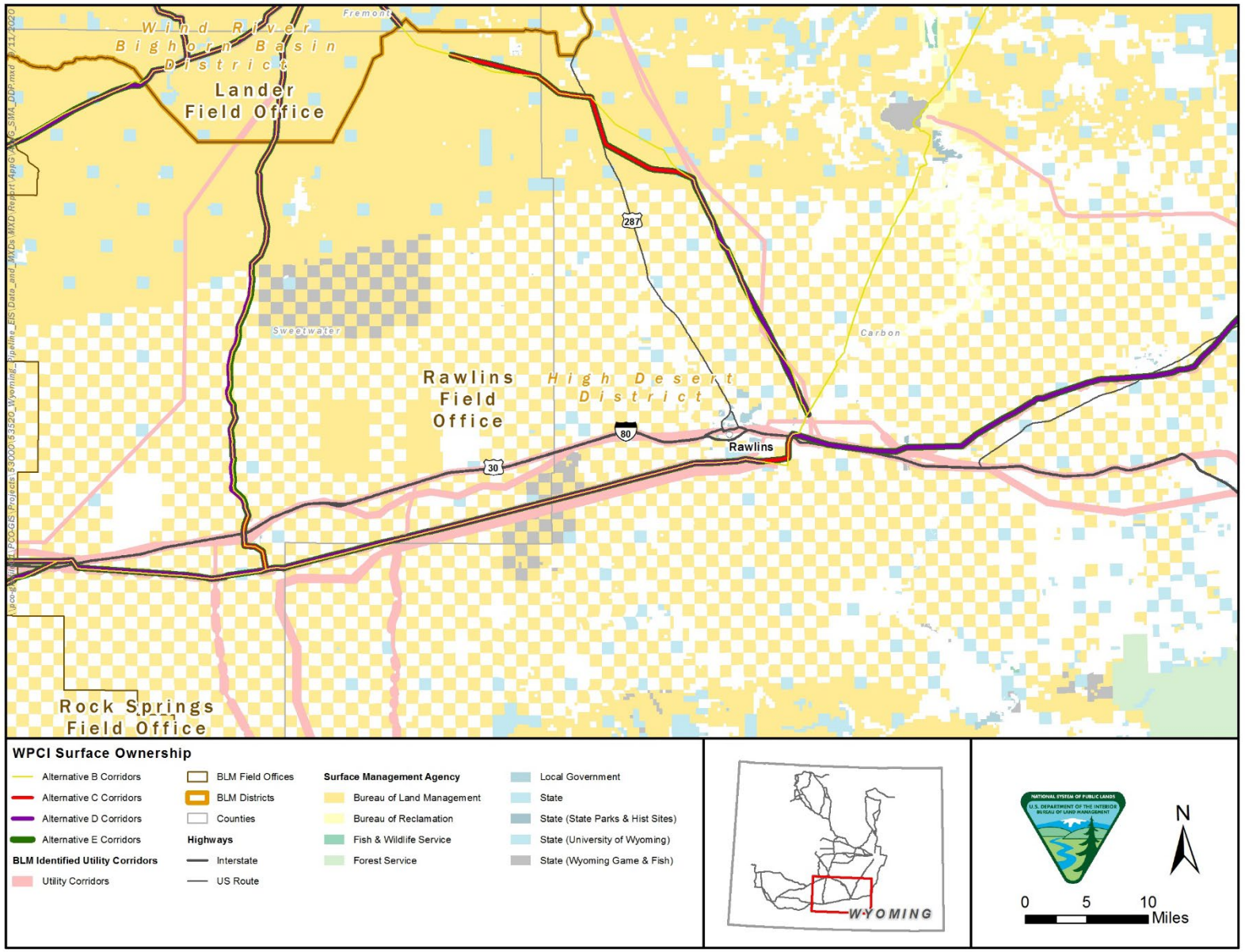

Figure G-13o. WPCI proposed corridors – Surface ownership (map 15 of 16).

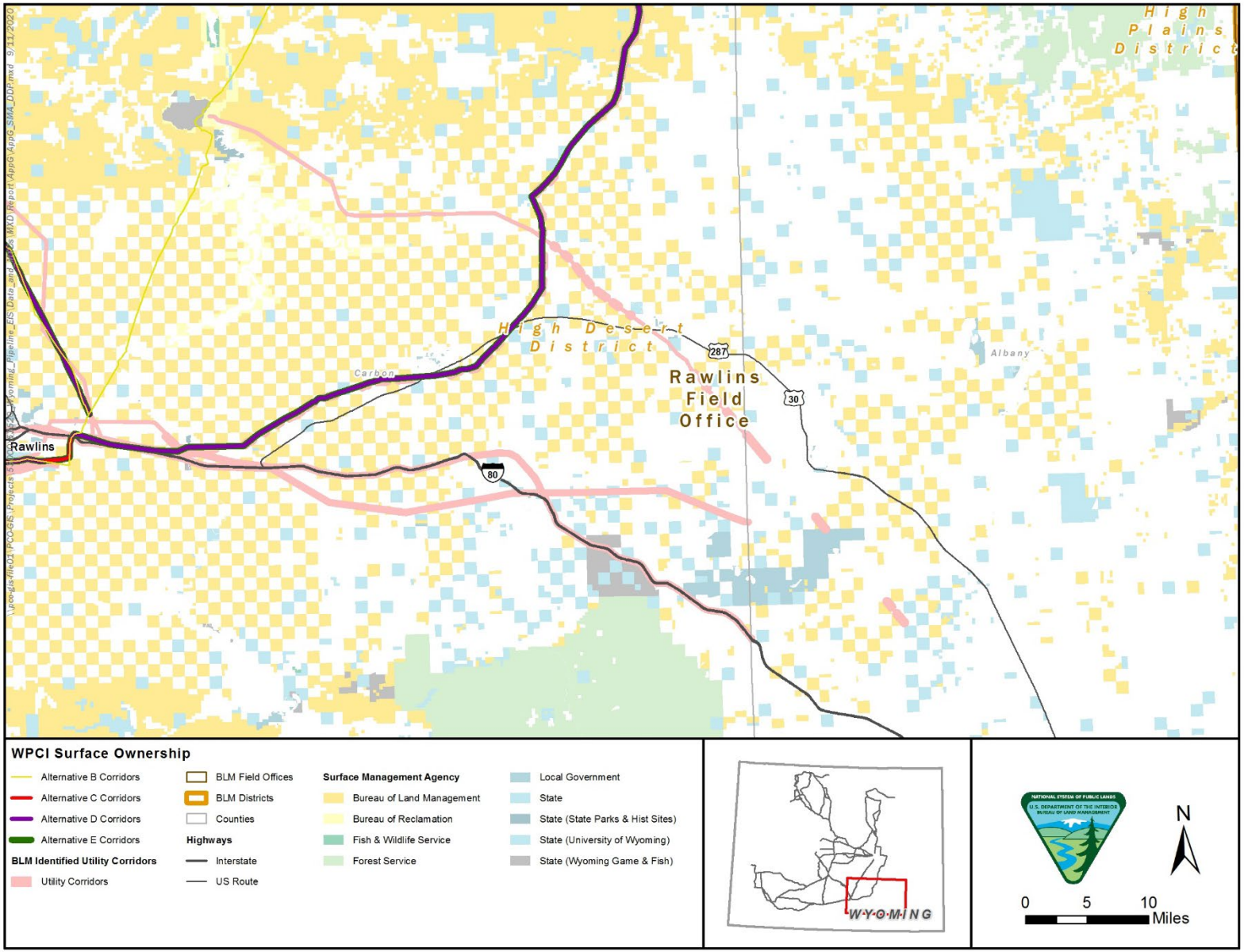

Figure G-13p. WPCI proposed corridors – Surface ownership (map 16 of 16).

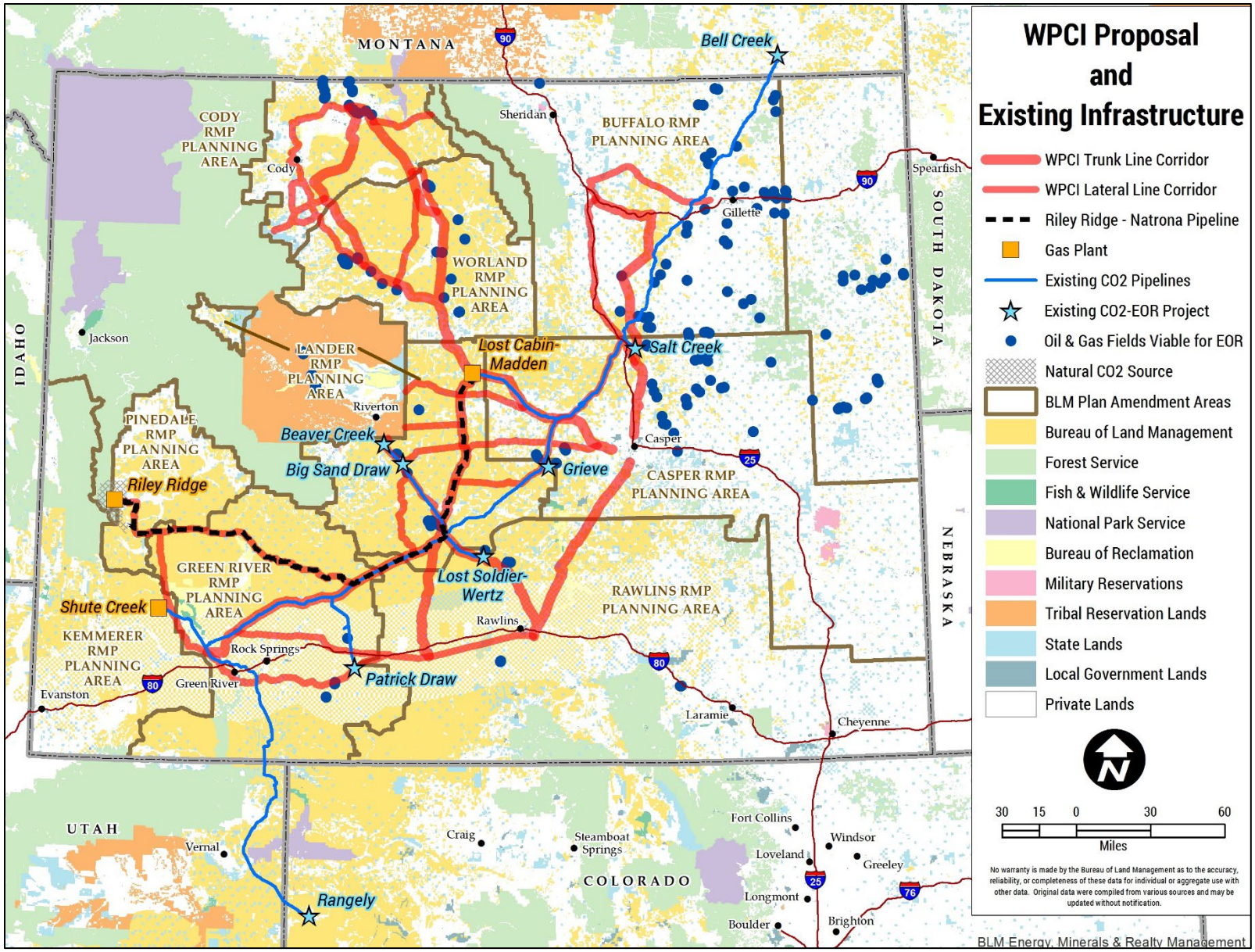

Figure G-14. Existing Infrastructure and Oil Fields that are Potential Candidates for CO_2-EOR.

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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 area 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
Buffalo Field Office						
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
Casper Field Office						
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.
Cody Field Office						
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
Lander Field Office						
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
Pinedale Field Office						
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.r	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.
Rawlins Field Office						
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
Rock Springs Field Office						
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 aces	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.
Worland Field Office						
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
High Desert District						
Riley Ridge to Natrona CO_2 Pipeline Project	Two ROW applications have been submitted to the BLM for this project to construct and operate a CO_2 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_2 129 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.
Statewide						
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.
U.S. Forest Service						
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

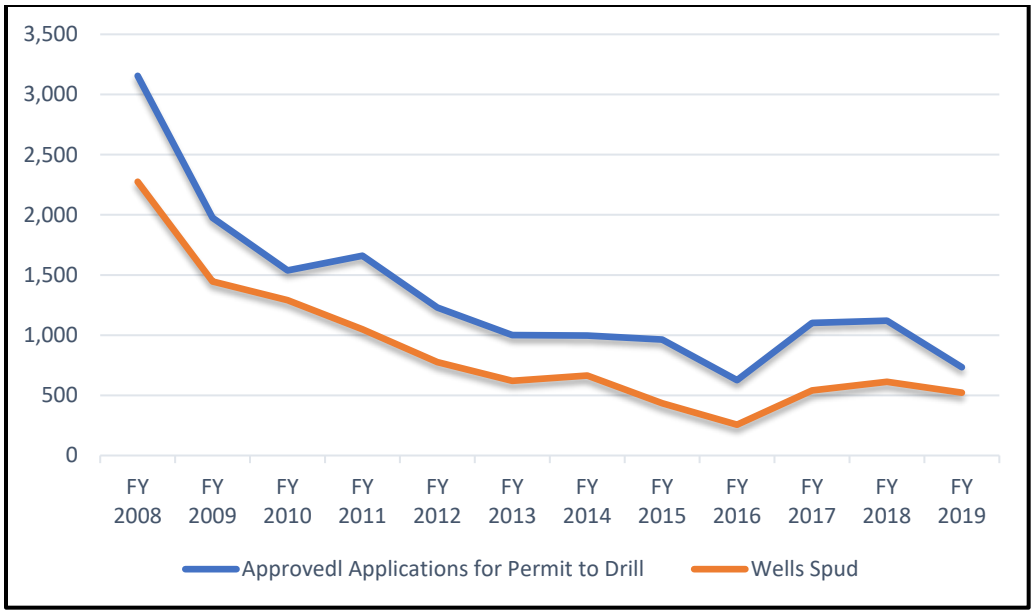
Bureau of Land Management Federal Well Activity in Wyoming from October 1, 2008 to September 30, 2018					
Planning Document	**Field Office**	**Approved Applications for Permit to Drill**	**Wells Started**	**Wells Completed for Production**	**Average Well Completions/Year**
Greater Sage-Grouse Approved 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
Statewide Annual Average		**894.2**	**766.9**	**744.6**	**Average Number of Completions per Field Office/Year: 74.5**

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_2e) 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_2e 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_2e 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_2e 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_2e 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_2e/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_4) 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[1] 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_2 Eq.) for carbon dioxide (CO_2), 47.6 MMT CO_2 Eq. for methane (CH_4), and 5.5 MMT CO_2 Eq. for nitrous oxide (N_2O). Compared to 2005, the 2014 totals represent decreases in emissions for all three greenhouse gases (decreases of 6.1 percent for CO_2, 10.5 percent for CH_4, and 20.3 percent for N_2O). Emissions from fossil fuels produced on Federal lands represent, on average, 23.7 percent of national emissions for CO_2, 7.3 percent for CH_4, and 1.5 percent for N_2O 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_2e 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_2e[2], 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_2e[3], and combustion emissions from coal use and mobile combustion make up the remainder (Merrill et al. 2018).

[1] 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_2, even though the Environmental Protection Agency (EPA) Equivalencies Calculator reports them as CO_2e. All calculated indirect emission estimates presented in this EIS were calculated using the EPA Equivalencies Calculator and are presented as CO_2e. Regional emission comparisons are also presented in CO_2e, even though they are reported as CO_2 in Merrill et al., for consistency purposes.

[2] 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."

[3] 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_2e; the Buffalo Field Office has the largest share of coal production in the continental United States.

From 2005 through 2014, the highest CO_2e 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_2, 10.5 percent for CH_4, and 20.3 percent for N_2O [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 CO2 emissions from fuels produced on Federal lands. . . . The CO2 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 CH4 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 CO2, CH4, and N2O. 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_2 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_2e emissions from all (federal, state, and private) oil and gas production in Wyoming was approximately 140,100,00 MT (140.1 MMT) CO_2e, whereas total oil production was 75,706,328 BBLs and natural gas production was 1,966,535,934 million cubic feet (MCF[4]) (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_2e 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_2 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_2) 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_2 Eq.). The decrease in total greenhouse gas emissions between 2016 and 2017 was driven in part by a decrease in CO_2 emissions from fossil fuel combustion. The decrease in CO_2 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.

[4] Volumes converted to CO_2e 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_2 emissions from fossil fuel combustion increased from 4,738.8 MMT CO_2 Eq. to 4,912.0 MMT CO_2 Eq., a 3.7 percent total increase over the twenty-eight-year period. Conversely, CO_2 emissions from fossil fuel combustion decreased by 832.8 MMT CO_2 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_2 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 CO2 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 CO2 emissions in the United States are almost all from the electric power sector. Only about 10% of coal CO2 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_2 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 CO2, 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 $CO_{2)}$] 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 CO2 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 CO2 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 CO2 that can be added to the atmosphere. Eventually stabilizing the global temperature requires CO2 emissions to approach zero. Thus, for a 3.6° F (2°C) or any desired global mean warming goal, an estimated range of cumulative CO2 emissions from the current period onward can be calculated. The key sources of uncertainty for any compatible, forward looking CO2 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 CO2 emissions, and the influence of past and future non-CO2 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 [1]	Million-metric tons (Mmt) of CO2 needed for EOR [2]		
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 [1]	Million-metric tons (Mmt) of CO2 needed for EOR [2]		
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	108,723.4	106,685.5	104,647.6	102,609.7	100,571.9	98,534.0	96,496.1	94,458.2	92,420.3	1,824,546.7	1.824546724	0.131367364	0.006791693		
MUSH CREEK	13,952	2,408.1	16,360.1	18,768.2	21,176.3	23,584.5	25,992.6	28,400.7	30,808.8	33,216.9	35,625.0	38,033.2	37,346.0	36,658.9	35,971.8	35,284.7	34,597.5	33,910.4	33,223.3	32,536.2	31,849.0	31,161.9	615,193.1	0.615193115	0.044293904	0.002289995		

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 [1]	Million-metric tons (Mmt) of CO2 needed for EOR [2]		
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	218,189.8	213,940.8	209,691.8	205,442.8	201,193.9	196,944.9	192,695.9	3,804,170.4	3.80417044	0.273900272	0.014160644		
SLICK CREEK	6,360	1,097.7	7,457.7	8,555.5	9,653.2	10,750.9	11,848.7	12,946.4	14,044.2	15,141.9	16,239.6	17,337.4	17,024.1	16,710.9	16,397.7	16,084.5	15,771.2	15,458.0	15,144.8	14,831.6	14,518.3	14,205.1	280,434.9	0.280434935	0.020191315	0.001043891		
TORCHLIGHT	61,214	10,565.5	71,779.5	82,345.1	92,910.6	103,476.1	114,041.7	124,607.2	135,172.8	145,738.3	156,303.8	166,869.4	163,854.6	160,839.9	157,825.1	154,810.4	151,795.7	148,780.9	145,766.2	142,751.4	139,736.7	136,722.0	2,699,142.2	2.699142153	0.194338235	0.010047287		
	Sum of Production		14,620,132.8	16,772,132.5	18,924,132.3	21,076,132.0	23,228,131.8	25,380,131.5	27,532,131.3	29,684,131.0	31,836,130.8	33,988,130.6	33,374,085.0	32,760,039.4	32,145,993.8	31,531,948.3	30,917,902.7	30,303,857.1	29,689,811.5	29,075,766.0	28,461,720.4	27,847,674.8	549,150,115.5		**39.5830196**	**2.046442113**	39.5830196	BCF of CO_2 necessary
	CO2e Produced from Oil		6,286,657.1	7,212,017.0	8,137,376.9	9,062,736.8	9,988,096.7	10,913,456.6	11,838,816.5	12,764,176.3	13,689,536.2	14,614,896.1	14,350,856.5	14,086,816.9	13,822,777.3	13,558,737.7	13,294,698.2	13,030,658.6	12,766,619.0	12,502,579.4	12,238,539.8	11,974,500.2	236,134,549.7				2.046442113	Mmt of CO_2 necessary
	CO2e Produced from Gas		15516606.27	17806366.53	20096126.78	22385887.04	24675647.3	26965407.56	29255167.81	31544928.07	33834688.33	36124448.59	35162419	34200389.41	33238359.82	32276330.23	31314300.64	30352271.05	29390241.47	28428211.88	27466182.29	26504152.7	566538132.8					
		Total CO2e Produced	21,803,263.4	25,018,383.5	28,233,503.7	31,448,623.8	34,663,744.0	37,878,864.1	41,093,984.3	44,309,104.4	47,524,224.6	50,739,344.7	49,513,275.5	48,287,206.4	47,061,137.2	45,835,068.0	44,608,998.8	43,382,929.6	42,156,860.4	40,930,791.2	39,704,722.1	38,478,652.9	802,672,682.4					

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 CO_2e 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
Luckey 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 (bbls)		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[1].

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

[1] 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

Allotment Name	Allotment Number
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
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

Allotment Name	Allotment Number
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

Public Comment Summary Report

Wyoming Pipeline Corridor Initiative Project
Draft Environmental Impact Statement

August 2020

PREPARING OFFICE

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

CONTENTS

Appendices

Tables

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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 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
Total	**85**	**57**

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%
Total	**544**	**100%**

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

Submission Number	Date Received	Submission Type	Name
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 anywher 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 commetn 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 https://eplanning.blm.gov/eplanning-ui/project/1502028/570.

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 northe rn 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 2 016 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 es 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 supp multitude of local jobs, industries, and activities.” Page 37 Paragraph 1: “The Uinta Piceance Basin contains eightort a 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 pr iority 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 Blan co 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: o Within existing pipeline corridors or within or adjacent to existing pipeline or similarly compatible rights of way. o To minimize impact to visual, wildlife, recreation, and water resources o In consideration of the West-wide Energy Corridors Programmatic EIS and Review o Outside of Sweetwater County road rights of way and in compliance with all Sweetwater County transportation and development guidelines and regulations. o With full final reclamation bonding paid to the governing jurisdiction prior to any pipeline construction o In compliance with federal and state guidelines and regulations regarding historic trails and landscapes	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 values 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 Tl 7N Rl06W Section 10 and Tl7N 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 utilizes 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.

Comment Letter Number	Comment Number	Comment	Response
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 impo1tance 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 https://www.nathpo.org/thpos/find-a-thpo/; and, The National Conference of State Historic Preservation Offices – Directory https://ncshpo.org/directory/ 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.

Comment Letter Number	Comment Number	Comment	Response
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.

Comment Letter Number	Comment Number	Comment	Response
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 thelong-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 arean 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 ofprivate surface, there could. be some tangible benefits of getting CO2 to the County through this infrastructure proposalby promoting opportunities to develop additional lateral pipelines for enhanced oil recovery to multiple existing oil fieldcomplexes. 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 endorses comments submitted by the WCCA unless inconsistent with the specific issues outlined below. State of Wyoming -- We generally endorses 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 endorses 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	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 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.	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.
016	009	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.	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.
016	010	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.
016	011	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.
016	012	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.	Applicants would be required to analyze these impacts during site-specific analysis.
016	013	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.	Comment noted.
017	001	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.	Comment noted.
017	002	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.	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.
017	003	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.	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.
017	004	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.	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.
017	005	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	Broadband would be considered a compatible use within the proposed corridors and could be permitted in these areas in the future.
018	001	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.	Thank you for your comment.
018	002	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.	Larger scale maps were provided as part of the scoping materials and the alternative shapefiles are publicly available on the E-Planning site.
018	003	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”.	Details of what specific resource concerns were avoided in Alternative D are provided in Section 2.4.
018	004	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.	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.
018	005	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.	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.
018	006	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.	Comment noted.

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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 Seedskadee 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	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." 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.	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	DEIS page 3-90 to 3-98 Water Section 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.	The BLM would require any specific project to follow all state requirements and policies.
019	008	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." 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.	Section 3.19.5.1 revised to include this information.
019	009	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 premitting requirements via a permit with the USACE." 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."	Section 3.19.5.2 revised to include this information.
019	010	DEIS page 3-97 "Table 3.19-1. Surface and Groundwater Impact Indicators by Alternative Acres of hightly erodible soils adjacent to water resources" "Number of perennial streams crossed by proposed corridors..." 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: httQ://deg.filoming.gov/wgd/water- guali ty-assessment/ Recommend adding the data source for initial depth to groundwater of less than 20 feet.	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	DEIS page 3-97 Table 3.9-2. Wetland Impcats Indicators by Alternative Recommend adding source of wetlands data and source of water bodies data.	Section 3.19 of the final EIS has been revised to include data sources for NWI to Table 3.19-1.
019	012	General. 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.	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	General. 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 ofexempt activities must furnish the information required by W.S 35-12-109 (a)(iii), (iv), (v), and (viii). A brief summary of the statuteinformation below: -A description of the nature and location of thefacility/project; -Estimated time of construction andconstruction time; -Estimated number and job classifications, by calendar quarter, of employees ... during construction ... ; and -A copy of any studies which may have been made of the environmental impact facility 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.	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	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.	Comment noted.
020	002	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.	Comment noted.
020	003	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.	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.

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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 Seedskadee 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.1 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 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	The BLM has not sufficiently established the purpose and need for this project in violation of NEPA. 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." DEIS at Page i. (emphasis added). 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." DEIS at i. 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.	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	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. DEIS at 3-42. 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. DEIS at 3-47 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. 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."	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	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. DEIS at i. And further The BLM action responds to the need to reverse the downward trend of declining oil production by stimulating economic development through EOR. DEIS at 1-1. Governor Gordon's proposal, available online at https://www.wyopipeline.com/projects/wpci/,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.	Comment noted.

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021	009	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 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 (1) will be occupied by facilities which constitute the project for which the right-of-way is granted, issued, or renewed, (2) to be necessary for the operation or maintenance of the project, (3) to be necessary to protect the public safety, and (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. 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.	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.
021	010	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 & 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.	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.
021	011	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. 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. 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 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.	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.

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021	012	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. 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. 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. 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.2 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.	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.
021	013	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.	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.
021	014	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).3 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. 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.	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.

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	015	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. DEIS at 3-109. 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: 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, Thuermer 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). The authors conclude that 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. Id. At 9. 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.	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.
021	016	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. BLM's responsibility to fully evaluate cumulative impacts was recently clarified in WildEarth Guardians v. Zinke. 368 F. Supp. 3d 41 (D.D.C. 2019) [hereinafter WildEarth Guardians] (attached as Appendix 4 and incorporated by reference). NEPA requires that the environmental consequences should be considered together when several projects that may have cumulative environmental impacts are pending concurrently. Kleppe, 427 U.S. at 410. NEPA also requires that agencies do more than merely catalogue relevant projects in the area. Great Basin Mine Watch v. Hankins, 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." Churchill Cty. v. Norton, 276 F.3d 1060, 1080 (9th Cir. 2001) (quoting City of Carmel-by-the-Sea v. U.S. Dept' of Transp., 123 F.3d 1142, 1160 (9th Cir. 1997)). WildEarth Guardians at 23. 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 WildEarth Guardians, 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. 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. Lands Council v. Powell, 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 Klamath-Siskiyou 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. Tiering to the 2015 plans alone cannot satisfy the requirement to review cumulative impacts. The recent order in Western Watersheds Project 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. Mem. Order and Decision, Western Watersheds Project v. Schneider, 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. 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.	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.
021	017	Additionally, the BLM's cumulative impacts analysis must consider development that has occurred since the relevant RMP amendments went into effect, as the WildEarth Guardians made clear. WildEarth Guardians, 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.	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.

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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 https://eplanning.blm.gov/public_projects/1502028/200341243/20019820/250026024/WPCI_WIldlife-03-2016-final.pdf).	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	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. 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. 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.	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 https://eplanning.blm.gov/public_projects/nepa/1505373/20017843/250023832/2020Q3_DOIBLM-WY-0000-2020-0009-EA.pdf.	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.

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021	032	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. Id. at Appendix D, 11. 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: 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. Id. at 3-8. 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. 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." 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. 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.	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.
021	033	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.	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.
021	034	The BLM must adhere to Section 106 of the NHPA 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) 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. 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. 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.	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.
021	035	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.	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.

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021	036	Consultation is inadequate under NEPA, Executive Order 13175, and Presidential Memorandum for the Heads of Executive Departments and Agencies April 29, 1994 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.	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.
021	037	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.	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.
021	038	The proposed tiering precludes adequate tribal consulation 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.	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.
021	039	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": 1. Begins early in the life cycle of a proposed action; 2. Directly involves the agency official who has delegated authority for disposition of the proposed action; 3. Recognizes the transparent and deliberative nature of consultation; 4. Includes a reasonable and sustained effort to invite tribes to consult, which may include several invitations and/or other methods of offering engagement; 5. Is carried out in the context of an ongoing relationship involving regularly scheduled meetings and other forms of communications; 6. Communicates final decisions with a summary explanation of how tribal concerns were taken into account; and 22 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. 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.	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.

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021	040	The BLM must consider off-reservation treaty rights in its analysis 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 Herrera v. Wyoming, 136 S. Ct. 1686 (2019) and McGirt v. Oklahoma, 140 S. Ct. 659 (2020). The case of Herrera v. Wyoming 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 Herrera would be considered unoccupied. see State v. Tinno, 94 Idaho 759 (1972) and State v. Arthur, 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 Herrera 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). Herrera, 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. U.S. v. Sioux Nation of Indians, 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. Id. 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. 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.	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.
021	041	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." Western Watersheds Project v. Zinke 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." Id. § 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.5 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.6 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.	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.
21	42	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.	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.
022	001	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 https://www.washakiecd.com/publications.html.	Comment noted.
022	002	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.	Comment noted.
022	003	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.	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.
022	004	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.	The BLM will continue to coordinate and consult the public and other interested parties, as required by NEPA during any site-specific project.
022	005	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.	The BLM will continue to coordinate and consult the public and other interested parties, as required by NEPA during any site-specific project.
022	006	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.	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.

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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	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). 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. 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.	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 *Federal Register* 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_2 floods for successful tertiary recovery efforts (see Appendix G). EORI reports “[T]he estimated recoverable reserves for the candidate fields using CO_2-EOR are approximately 1.5 billion barrels of oil” (Jones and Freye 2019). Of these fields, 28 are near existing CO_2 delivery infrastructure and 26, according to the same report, are economically and technically viable. Seven of the fields are undergoing existing CO_2-EOR production. Section 3.9.3.1 also states: "Going forward, total supply, cost of CO_2, and pipeline capacity would likely determine where additional production can be realized using CO_2-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	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). The DEIS includes three action alternatives. Alterative 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. 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.	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	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.") 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.	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.
023	015	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.	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.
023	016	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.	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.
023	017	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). 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. 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	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.
023	018	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.	Comment noted.
023	019	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.	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.
023	020	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).	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.

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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 WYNDD species models were used for this programmatic level analysis and project level analysis of habitat patches will be done at that time.
023	022	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. 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.	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	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 form 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	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). 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 & 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).	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	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. 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). 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). 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.	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	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. 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.	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 that 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	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). 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. 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.	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	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. 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.	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	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.	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.
023	049	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. 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. 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. 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.	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.
023	050	Table in comment. 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. 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). 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.	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.
023	051	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. 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. 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	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.
023	052	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. 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. 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.	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.
023	053	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.	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.
023	054	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. 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.	Comment noted.
023	055	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.	Comment noted.

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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	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. 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.	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	065	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. 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). 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). 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." Edwardsen v. United States Dep't of the Interior, 268 F.3d 781, 786 (9th Cir. 2001), citing 40 C.F.R. § 1508.25(c)(3); Kettle Range Conservation Group v. United States Forest Serv., 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." Lands Council v. Powell, 395 F.3d 1019, 1028 (9th Cir. 2005). See also Western Watersheds Project v. Kraayenbrink, 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); League of Wilderness Defenders-Blue Mountains Biodiversity Project v. United States Forest Serv., 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); Oregon Natural Res. Council Fund v. Goodman, 505 F.3d 884, 892-93 (9th Cir. 2007); Oregon Natural Res. Council Fund v. Brong, 492 F.3d 1120, 1133 (9th Cir. 2007).	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	066	B. Deficiencies in the BLM cumulative impact analysis 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. 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 https://www.peer.org/blm-grazing-data/ 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. 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).	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.
023	067	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.	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.
023	068	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.	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.

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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	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: 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. 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).	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	BLM's WPCI efforts appear to violate the Federal Land Management Policy Act and NEPA and its implementing regulations. 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. The State of Wyoming began working on the Wyoming Pipeline Corridor Initiative proposal about 11-12 years ago.17 It met with various stakeholders to site the 25 pipeline corridor segments, including federal, state, county, and private landowners. DEIS at iv. Tribes were not included in these meetings, nor did the state consider tribal treaty rights on off-reservation lands. 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.	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	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. 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.	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	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. 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. 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. 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.	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	C. The DEIS Fails to Take a "Hard Look" at Impacts to Environmental Justice Populations 1. The DEIS's methodology for identifying "environmental justice populations" is too narrow and does not conform to CEQ Environmental Justice Guidance. 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: 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). 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.	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	2. The DEIS fails to analyze the direct effects of designating WPCI corridors and amending the nine RMPs on environmental justice populations. 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. 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. (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.	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	082	3. The DEIS fails to analyze the indirect effects of the proposed WPCI corridors on environmental justice populations. 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. 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. 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. 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.	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	083	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.	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	084	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.	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.

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023	085	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. 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. Similarly, a 2017 study of the impacts of resource-extraction worker camps on the First Nations of western Canada31 found increased vulnerability for women and youth,32 increased road safety problems,33 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. 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. 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.	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	086	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.	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. EIS analysis revised to discuss cumulative impacts to environmental justice populations.
023	087	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.	More descriptive information for the Census tracts was provided in the DEIS. Additionally, Census tracts can be mapped here: https://censusreporter.org/
023	088	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: "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." WPCI Scoping Report at 20 (DEIS Appendix C). 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.	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	089	The DEIS fails to analyze the cumulative impacts of the proposed WPCI corridors on environmental justice populations. 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. 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.	EIS analysis revised to discuss cumulative impacts to environmental justice populations.

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023	090	The DEIS does not identify unavoidable, adverse impacts to environmental justice populations or include mitigation measures to reduce or avoid them. 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.38 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.39 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.	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	091	D. The DEIS does not consider potential impacts on tribes' ability to exercise their off-reservation treaty rights. 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. Herrera v. Wyoming. 139 S.Ct. 1686 (2019). 38 Ibid. 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).	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. EIS analysis revised to discuss cumulative impacts to Environmental Justice populations.

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023	092	The DEIS's Greenhouse Gas and Climate Change Analysis is Deficient and Must Be Revised A. Climate Change Impacts are Already Occurring and Must Be Analyzed and Disclosed with Greenhouse Gas Emissions 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.40 The IPCC also found that "[i]mpacts on natural and human systems from global warming have already been observed."41 Additional warming will likely lead to further impacts according to the IPCC, including: • Warming of extreme temperatures in many regions. The number of hot days is projected to increase in most land regions;42 • Increases in frequency, intensity, and/or amount of heavy precipitation in several regions;43 • Increase in intensity or frequency of droughts in some regions;44 • 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;45 • 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;46 • 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: • 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;48 • Ocean acidification-driven impacts to the growth, development, calcification, survival, and thus abundance of a broad range of species;49 • Risks to fisheries and aquaculture via impacts on the physiology, survivorship, habitat, reproduction, disease incidence, and risk of invasive species;50 • 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;51 • 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;52 • 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;53 and • Potential adverse impacts to livestock, depending on the extent of changes in feed quality, spread of diseases, and water resource availability.54 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."55 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."56 NCA4 found that: 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.57 • 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.58 • 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.59 • Rising temperatures are projected to reduce the efficiency of power generation while increasing energy demands, resulting in higher electricity costs.60 • 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.61 • 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.62 • Groundwater depletion is exacerbating drought risk in many parts of the United States, particularly in the Southwest and Southern Great Plains.63 • 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.64 • 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.65 • 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. 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.67 • 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.68 • 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.69 • 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.70 • 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.71 • 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.72 • 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.	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.

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023	093	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).74 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.75 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."76 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.77 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.78 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 States79 and fossil fuel combustion is the largest source of energy-related GHG emissions.80 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.81	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. 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.
023	094	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).82 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."83	Comment noted.
023	095	BLM Fails to Analyze and Disclose the Impacts Associated with Enhanced Oil Recovery 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."84 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."85 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.	Text and sources have been added for clarification.
023	096	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.87 The carbon intensity of oil is only reduced if the carbon dioxide used is from anthropogenic sources or captured from the atmosphere.	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.
023	097	First, less than 15 percent of the C02 usied 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.88 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.89 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.90 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."91 "Additionally, human-made sources of CO2, mainly power plants, can be used for EOR projects."92 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.	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. 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."
023	098	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.	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.
023	099	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."	These types of measures would be implemented at the project specific level, through project-specific NEPA analysis.

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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.97 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.99 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."	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)." 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.
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	BLM Must Analyze and Disclose the True Magnitude of GHG Pollution Using the Best Available Science 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.102 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.103 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).104 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.105 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). 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.106 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. Here, BLM mentions the 100-year GWP, but not the 20-year GWP.107 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.108 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). W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt., CV16-21-GF-BMM, 2018 WL 1475470, at *18 (D. Mont. Mar. 26, 2018).	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	BLM Must Fully Analyze and Disclose the Direct and Indirect Emissions Resulting from their Actions 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."	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	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). 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.113 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 Enf't, 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 Enf't, 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."). 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."114 Agencies "need not foresee the unforeseeable, but … reasonable forecasting and speculation … is implicit in NEPA."115 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. As BLM acknowledges, most of the information needed is indeed readily available.116 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.	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	108	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.117 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.	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	109	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 Birckhead 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.	GHG emissions are disclosed in Section 3.2.5.1 with supporting documentation in Appendix I.
023	110	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). 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.	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.

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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.119 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_2-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 CO2." 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 CO2 to mean thousand cubic feet of CO2 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 CO2 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 "CO2e" is the indirect emissions from the additional production calculated in Table I-3, it is not clear what the second row labelled CO2e references or how it was estimated. The "Total CO2e" row can be determined as the sum of those two CO2e rows, but without knowing the purpose of the second CO2e 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 CO2 (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 CO2 estimated to be necessary, which is reported in Table I-3 as 395.830196 BCF CO2. 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 CO2 needed (billion cubic feet) to a mass of CO2 input needed (metric tons) requires utilization of density of CO2. That calculation to determine mass of CO2 in metric tons of input gas needed would be as follows: Mass CO2 [metric tons] = Volume CO2 [billion cubic feet] x Density CO2 [metric tons/billion cubic feet]. However, what density to use for CO2 is unknown. In order to end up with a result of 7,619 million metric tons CO2, the density of CO2 used would need to have been 19.25 million metric tons per billion cubic feet. This does not correspond to the densities of CO2 at standard temperature and pressure (51.4 million metric tons per billion cubic feet) or at miscible supercritical phase referenced in EOR papers120,121 (0.6-0.8 g/cm3122 = 17,027 - 22,700 million metric tons per billion cubic feet123). The assumptions underlying this conversion calculation are essential because the total CO2 input in terms of mass is used in the DEIS to suggest CO2 sequestration. This potential sequestration of 381 million metric tons CO2 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 CO2 come from? If the CO2 is derived from natural sources, as most are, then more CO2 input here would mean the possibility of more corresponding indirect emission activity (e.g. more injection wells needed or more CO2 reprocessing), which must be disclosed.	Commenter noted an error in the conversion of CO2 from volume to weight, which has been corrected. Information on the assumption for conversion of BCF CO2 to Mmt CO2 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 CO2 reprocessing and reinjection of CO2 used in EOR. The agency noted that "the produced gas stream [from EOR]… may include CO2 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 CO2 is purchased for use, operators would recapture CO2 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 CO2 compression as energy intensive components and they contribute between 9-54% and 32-46% of operating emissions, respectively.124 However, no emissions associated with this process were disclosed. BLM should analyze and disclose the emissions associated with the process whereby "[p]roduced CO2 is separated from the produced gas and recompressed for reinjection along with additional volumes of newly-purchased CO2." DEIS at 3-8. BLM could disclose any uncertainty regarding how much reprocessing could occur by normalizing to total CO2 input (i.e. percent of CO2 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	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.	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.
023	117	BLM Must Fully Analyze and Disclose the Cumulative Emissions of its Actions and the Resulting Impacts on the Climate 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. 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. 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.	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.
023	118	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. 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.	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.
023	119	Agencies Must Analyze and Disclose the Significance of their Actions' Greenhouse Gas Emissions and Implications for Climate Change 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. 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).	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. "

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023	120	Further, in Wildearth Guardians v. BLM, 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." Id. (internal citations omitted). 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: 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. 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.128 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. W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt., 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. Id. (citing California v. Block, 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 Robertson v. Methow Valley Citizens Council, 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"). BLM should not place the burden of analyzing data and drawing conclusions from it on the public. WildEarth Guardians v. Zinke, 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. Id. (citing WildEarth Guardians v. Jewell, 738 F.3d 298, 303 (D.C. Cir. 2013) (quoting New York v. Nuclear Regulatory Comm'n, 681 F.3d 471, 476 (D.C. Cir. 2012)).	The EIS does not state that emissions from the proposed action represent only a small fraction of global emissions. 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. "
023	121	To take the required "hard look," agencies must tell the public what quantitative estimates mean in terms of "actual environmental effects." Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 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."); Or. Nat. Res. Council v. U.S. Bureau of Land Mgmt, 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); Klamath-Siskiyou Wildlands Ctr. v. U.S. Bureau of Land Mgmt., 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). 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. WildEarth Guardians v. Zinke, 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 Or. Nat. Desert Ass'n v. U.S. Bureau of Land Mgmt., 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.129	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. "
023	122	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.130 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.	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.

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023	123	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,131 which – even though purportedly withdrawn by Executive Order 13783132 – 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.133 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.134 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.	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.

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023	124	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.135 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. The SCC was developed by the Interagency Working Group (IWG) on Social Cost of Greenhouse Gases.136 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.137 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."138 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.139 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., Sierra Club v. FERC, 867 F.3d 1357, 1375 (D.C. Cir. 2017); Montana Envtl. Info. Ctr. v. U.S. Office of Surface Mining Reclamation and Enf't, 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); Zero Zone, Inc. v. U.S. Dep't of Energy, 832 F.3d 654, 679 (7th Cir. 2016) (holding estimates of the SCC used to date by agencies were reasonable); High Country Conservation Advocates v. U.S. Forest Serv., 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 Montana Envtl. Info. Ctr., 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." High Country Conservation Advocates, 52 F. Supp. 3d at 1192; see also Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 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"). 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.140 For this reason, OMB cautioned against using high discount rates for decisions with intergenerational consequences.141 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.	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. 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023	125	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,142 adopting a similar methodology for evaluating the climate impact of each additional ton of methane and nitrous oxide emissions.143 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. 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."144 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.145 The IWG estimated that each additional ton of methane emitted in 2020 will cost between $540 and $3,200 dollars (measured in 2007 dollars).	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." WildEarth Guardians v. Zinke, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)
023	126	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."147 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."148 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.149 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. "'Accurate scientific analysis' is 'essential to implementing NEPA.'" WildEarth Guardians v. Zinke, 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." Id. (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." Id. "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." Id. (citing Zero Zone, Inc. v. U.S. Dep't of Energy, 832 F.3d 654, 677 (7th Cir. 2016)); see High Country Conservation Advocates v. U.S. Forest Serv., 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."). 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).	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." WildEarth Guardians v. Zinke, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)

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023	127	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: • 420 Gigatonnes of CO2 (GtCO2) for a two-thirds chance of limiting warming to 1.5°C; • 580 GtCO2 for a 50 percent chance of limiting warming to 1.5°C; 1170 GtCO2 for a two-thirds chance of limiting warming to 2°C;153 and • 1500 GtCO2 for a 50 percent chance of limiting warming to 2°C.154 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 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." 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. 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).	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." WildEarth Guardians v. Zinke, (D.D.C. No. 1:16-cv-01724-RC) (March 19, 2019)
023	128	Agencies Must Consider A Range of Reasonable Alternatives, including those that Reduce GHG emissions 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." Westlands Water Dist. v. U.S. Dep't of Interior, 376 F.3d 853, 868 (9th Cir. 2004). 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. Center for Biological Diversity v. NHTSA, 538 F.3d. at 1217- 1219; see also WildEarth Guardians v. U.S. Bureau of Land Management, 870 F.3d 1222, 1236 (10th Cir. 2017); Montana Environmental Information Center v. OSMRE, 274 F.Supp.3d 1074, 1098 (D. Mont. 2017); Sierra Club v. FERC, 867 F.3d at 1375. Further, in Western Organization of Resource Councils (WORC) v. BLM, 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." Id. 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." Id. at *17. Similarly, in Wilderness Workshop v. U.S. Bureau of Land Mgmt., 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). 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." Conversely, BLM provides no analysis of the GHG emissions associated with each alternative. Instead BLM defers this analysis to an unknown later time: 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 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.	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.

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023	129	VII. BLM Must Comply with The Endangered Species Act (ESA) A. Statutory requirements under the ESA 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). 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) & (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). 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 tiered. 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).	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	130	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. 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 reinitiate consultation. See 50 C.F.R. § 402.16. 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.	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	131	B. The BLM Fails to Comply with the ESA 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.	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	132	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.") 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.	Section 7 consultation with the USFWS is ongoing including preparation of a Biological assessment.
023	133	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.	BLM is currently preparing a Biological Assessment in coordination with the USFWS. The resulting determinations will be incorporated by reference.
023	134	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.	Comment noted.
023	135	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.	Comment noted.
024	001	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	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 https://ieefa.org/wp-content/uploads/2020/06/IEEFA-Public-Comments-on-Rocky-Mountain-Power-2019-Integrated-Resource-Plan_April-2020.pdf 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_2 (which could include retrofitting existing plants) and pipeline capacity would likely determine where additional production can be realized using CO_2-EOR. We refer the reader to Section 3.9.3 for a discussion of existing and potential future sources of CO_2.
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 utiliied 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 (Altemative 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 emminent 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.

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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.

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028	002	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: 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). 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. 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. 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. 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. 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). 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. 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. 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. 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. Policy Range #6: The District supports and strongly encourages the control of noxious weeds and pests by owners, managers, and users of all lands.	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 (CO_2) 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 CO_2, 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 CO_2 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 (CO_2) 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 CO_2 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 CO_2, 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	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 CO_2, EOR products, or other "compatible uses". a. We support maximizing the use of existing corridors and NOT reserve a portion of those corridors exclusively for CO_2 and EOR products. 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. 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. 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.	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 l0D) 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.*

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.* 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 (CO2), 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 CO2, 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 CO2 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 CO2, 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 CO2, 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 CO2, 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 CO2, EOR products, and other compatible uses. Additional new corridors (200 ft or 300 ft wide) would be created for the transport of CO2, 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 CO2, 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 CO2, 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_brownscanyon@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

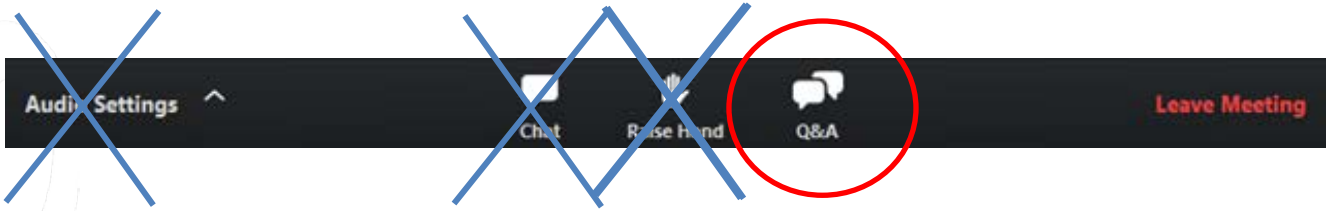
For additional information on the proposal:

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



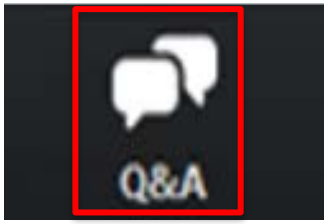
Audio, chat, and raise hand are disabled.

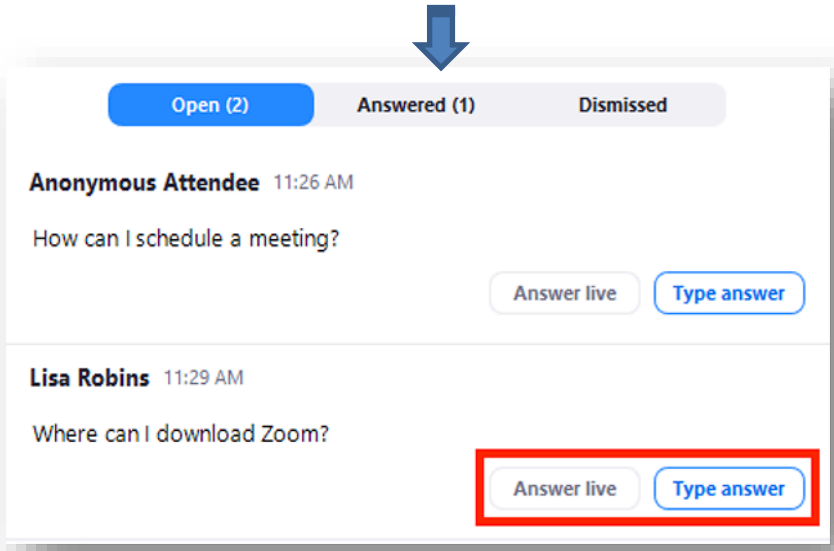
***To get this to show on your screen you may have to move your curser towards the bottom

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

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 CO2, 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 CO2, 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 CO2 or EOR pipelines, site-specific NEPA would be completed for those projects.