

**Lifting the Pause on the Issuance of New Federal Coal
Leases for
Thermal (Steam) Coal**

Environmental Assessment

DOI-BLM-WO-WO2100-2019-0001-EA

Department of the Interior
Bureau of Land Management (Lead Agency)
Office of Surface Mining Reclamation and Enforcement (Cooperating Agency)

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1.0 INTRODUCTION

The Mineral Leasing Act of 1920 (MLA), 30 U.S.C. § 181 *et seq.*, as amended by the Federal Coal Leasing Amendments Act of 1976, provides that federal coal deposits “shall be subject to disposition” under the Act. The Department of the Interior (DOI) has managed federal coal leasing under the MLA for nearly a century, and has promulgated regulations implementing this process, which are codified at 43 C.F.R. Subpart 3400. In addition, the Federal Land Policy and Management Act of 1976 (FLPMA), provides that public lands shall be managed in a manner that recognizes the nation’s need for domestic sources of minerals (43 U.S.C. § 1701(a) (12)). FLPMA also authorizes the Bureau of Land Management (BLM) to manage the use, occupancy, and development of public lands through leases and permits (43 U.S.C. § 1732). This statutory and regulatory framework does not provide explicit authority to pause BLM’s leasing of federal coal deposits.

1.1 Background and Overview

Despite Congressional direction under the Mineral Leasing Act of 1920 (MLA) – “an Act to promote the mining of coal, phosphate, oil, oil shale, gas, and sodium on the public domain” – in January 2016, former Secretary Sally Jewell issued Secretarial Order 3338 (the Jewell Order) pausing the processing of federal coal leases for thermal (steam) coal with several exemptions and exceptions. In addition, the Jewell Order instituted a temporary moratorium (referred to as a “pause”) on certain Federal coal leasing.

The paused actions covered a range of the BLM’s leasing activities: processing of certain new lease applications; conducting of lease sales on certain pending applications; and issuance of leases and lease modifications on certain pending applications. Notably, the Jewell Order included a series of exemptions and exclusions, to minimize economic hardship during the period of time for preparing the PEIS, which narrowed the scope of the pause and significantly limited the number of lease applications impacted.¹ Thus, the Jewell Order never intended to establish an indefinite moratorium in all coal leasing activities, rather it contemplated a limited pause in some leasing activities for the explicit purpose of facilitating the intent of the discretionary PEIS.

The Jewell Order was not accompanied by an Environmental Assessment (EA) or other analysis of environmental impacts. By the terms of the Jewell Order, the pause was contemplated “until the completion of the PEIS” initiated by the order. In January 2017, the BLM produced the scoping report for the PEIS. According to the review schedule included in the report, the PEIS Record of Decision (ROD) was anticipated in March 2019.

Subsequently on March 28, 2017, the President issued Executive Order 13783, Promoting Energy Independence and Economic Growth (the Trump Order). In order to advance domestic energy security and economic strength, the Trump Order instructed that “heads of agencies shall review all existing regulations, orders, guidance documents, policies, and any other similar agency actions . . . that potentially burden the development or use of domestically produced

¹ See Chapter 2.

energy resources . . .” Directing “particular attention” to coal and other fossil fuel resources, the Trump Order directed agency heads to revise or rescind “as soon as practicable” those agency actions that their review identified as burdensome. For purposes of the order, “burden” meant “to unnecessarily obstruct, delay, curtail, or otherwise impose significant costs on the siting, permitting, production, utilization, transmissions, or delivery of energy resources.” In addition, the Trump Order specifically directed the Secretary of the Interior to amend or withdraw the Jewell Order, lift the pause, and “commence Federal coal leasing activities consistent with all applicable laws and regulations.”

On March 29, 2017, then Secretary Ryan Zinke issued Secretarial Order 3348 (the Zinke Order), which rescinded the Jewell Order, thereby cancelling the preparation of a discretionary PEIS, and terminating the leasing pause. The Zinke Order does not authorize any new coal leasing. Rather, it requires that when coal applicants submit leasing applications, BLM process them in accord with existing law. In effect, the Zinke Order resumed the full measure of the BLM’s coal leasing activities as they had been carried out prior to the Jewell Order. The Zinke Order also accommodated the practical reality that Congress had denied the appropriations needed to complete a discretionary PEIS, which the leasing pause was designed to facilitate.² In addition, the D.C. Circuit Court of Appeals subsequently determined that completion of a PEIS for federal coal leasing activities is both discretionary and unnecessary.³ Thus, at various times, all three branches of government separately weighed in against the completion of the PEIS. In the absence of any legal obligation, funding, or intent to move forward with completing the PEIS, the purpose of the pause no longer exists.

The limited scope of the leasing pause reduced the potential impact of its rescission, and by extension, any potential impacts of the Zinke Order. Because the BLM continued normal leasing activities as to those leases exempt or excluded from the Jewell Order, rescission had no effect on a significant number of applications. Among these were nine leases issued during the pause, as well as a smaller number of leases issued following its termination, including three leases which, on their face, would have been exempt from the pause had it remained in place. As detailed in this EA, from the start of the pause to the present, 12 leases have been issued that fall within the exemptions and exclusions set forth in the Jewell Order, and as such, fall outside the

² Congress did not allocate funding for the PEIS in the Fiscal Year (FY) 2017 budget. President Obama’s FY 2017 budget requested approximately \$4.5 million for the study. At the time of the Zinke Order’s issuance, the BLM estimated that the PEIS would cost approximately \$12 million. Because this amount exceeds the BLM’s annual coal budget, in the absence of additional congressional funding, the BLM lacked the resources to complete the PEIS directed by the Jewell Order.

³ On November 24, 2014, the Western Organization of Resource Councils and Friends of the Earth filed a complaint in federal district court alleging that the Administrative Procedure Act (APA) and NEPA obliged the BLM to prepare a PEIS to analyze the effect of Federal coal leasing on climate change and the social cost of carbon. On August 27, 2015, the district court granted the United States’ motion to dismiss. *W. Org. of Res. Councils v. Jewell*, 124 F. Supp. 3d 7, 13 (D.D.C. 2015). The plaintiffs’ appeal was held in abeyance while the Jewell Order paused Federal coal leasing until the completion of the discretionary PEIS. Following the Zinke Order, the appeal proceeded. On June 19, 2018, the Court of Appeals affirmed the district court decision. The court of appeals concluded that since no statute required the BLM to prepare a PEIS, “[w]e therefore lack the authority to compel the Secretary to do so.” *W. Org. of Res. Councils et al. v. Zinke, No. 15-5294 D.C. App.* (June 19, 2018).

scope of the pause instituted therein. By comparison, only three leases have been issued since the Zinke Order that would have fallen within the scope of the Jewell Order's pause.⁴

Typically, secretarial orders that merely establish policy are not reviewable under the APA because they do not constitute final agency action.⁵ However, on April 19, 2019, the U.S. District Court of Montana in *Citizens for Clean Energy et al. v. U.S. Department of the Interior et al.*, No. CV-17-30-GF-BMM, 2019 WL 1756296 (D. Mont. Apr. 19, 2019), ruled that DOI's issuance of the Zinke Order constituted a major Federal action that triggers compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq.*).⁶ Although, the administrative policies of the DOI are categorically excluded from NEPA analysis,⁷ the BLM has elected to analyze the environmental impacts of lifting the coal pause through an EA in an effort to be responsive to this ruling.

This EA evaluates the potential environmental effects of the issues (see Section 1.3.1, Issues) and alternatives (see Chapter 2.0, Alternatives). The BLM has developed this EA pursuant to the NEPA, Council on Environmental Quality (CEQ) implementing regulations (40 C.F.R. § 1500 *et seq.*), DOI implementing regulations (43 C.F.R. Part 46), and BLM NEPA policy (H-1790-1, National Environmental Policy Act Handbook).

1.1.1 Coal

Coal is a fuel which at one time in geological history was vegetation material, which has subsequently been converted into a solid, combustible hydrocarbon through a chemical and geological process. Coal has been used as a fuel source for thousands of years and is found only in locations with the correct combination of source materials and geological processes to support its formation. Though coal has no intrinsic value, coal is subject to robust market demand for use in power generation. After coal mining extracts the resource, a combination of public and private stakeholders—including States, operators, and DOI's Office of Surface Mining Reclamation and Enforcement—direct reclamation, avoidance and remediation efforts to mitigate any adverse impacts. Coal mining takes one or two forms:

⁴ None of these decisions were made prior to the plaintiffs filing suit in *Citizens for Clean Energy et al. v. U.S. Dep't of the Interior et al.*, No. CV-17-30-GF-BMM, 2019 WL 1756296 (D. Mont. Apr. 19, 2019).

⁵ The Zinke Order merely establishes a policy that BLM will not defer proceedings on lease applications. It makes no decision on any individual lease application. Nor does it affect the legal rights or obligations of any party, or create any legally enforceable requirement on BLM. Instead, the legally enforceable obligations regarding BLM's leasing process exists separately, in the MLA, FLPMA, NEPA, the CEQ regulations, and the DOI's MLA regulations.

⁶ Like the Zinke Order, the Jewell Order was not accompanied by a NEPA analysis, making it also legally vulnerable under the district court's reasoning. Consequently, the court's reasoning supports the conclusion that the Jewell Order is a dead letter that renders the Zinke Order superfluous.

⁷ 43 C.F.R. § 46.210(i) (Listing categorical exclusions to include: "Policies, directives, regulations, and guidelines: that are of an administrative, financial, legal, technical, or procedural nature; or whose environmental effects are too broad, speculative, or conjectural to lend themselves to meaningful analysis and will later be subject to the NEPA process, either collectively or case-by-case.").

Surface mining

Conventional surface mining removes the material above the coal seam (the “overburden”), extracts the underlying coal, separates the overburden topsoil and subsoil, and replaces the overburden to reclaim the mined area. Grading, resoiling and planting may be used to further restore the surface. During operations, operators may utilize a variety of heavy equipment, such as haul trucks, excavators, draglines, and dozers. Blasting may be utilized to break up rock or coal, or to assist overburden removal.

Underground mining

Underground mining is used for coal that cannot be economically mined by surface extraction methods. Because the coal is found as a bedded deposit, underground mining is usually accomplished by utilizing “room and pillar” or “longwall” methods. Standard room and pillar underground mining typically leaves sufficient coal unmined to support the mine’s roof, both for safety and to minimize the amount of surface subsidence after mining has occurred, while longwall or pillar extraction underground mining causes surface subsidence in a predictable and controlled manner. In underground mining, the surface disturbance is limited to the surface facilities necessary to support the underground operations and is generally minimal.

1.1.2 Overview of BLM’s Coal Leasing Activity

The BLM has responsibility for coal leasing on approximately 570 million acres of coal mineral estate owned or otherwise administered by the Federal government. The owner of the overlying surface estate varies and may be, as to any particular tract: the BLM; other Federal agencies; state or local governments; tribal entities; or private landowners. Under various authorities, including the MLA, the Mineral Leasing Act for Acquired Lands, and FLPMA, the BLM conducts sales and leasing of the Federal coal estate.

The BLM’s regulations authorize two separate competitive coal leasing processes: regional leasing where the BLM selects tracts within a region for competitive sale; and leasing by application, where the public nominates a particular tract of coal for competitive sale. In practice, however, all of the BLM’s coal leasing is done by application.

As of Fiscal Year 2018, the BLM administered 299 Federal coal leases, encompassing 458,636 acres in 12 states, with an estimated 6.5 billion tons of recoverable Federal coal reserves. Over the last decade (2009-2018), the BLM has held 21 coal lease sales and managed leases that produced approximately 3.9 billion tons of coal and \$9.81 billion in royalty revenue.

1.2 Disposition of Coal Lease Applications Related to the Jewell and Zinke Orders

As shown in Table 1.1 below, 45 lease applications were pending with the BLM on the date of the Jewell Order. Of these, 17 applications (38 percent) were either excluded or exempt from the pause, and leases were issued for nine of these applications during the 14 months the Jewell Order was in effect. Of the remaining 28 pending applications, seven were withdrawn. As directed by the Jewell Order, the BLM continued to process 21 non-exempt applications in the

same manner as they would if no pause were in-place.⁸ Therefore, the timeline for processing these 21 applications was not affected by the Zinke Order. The BLM received two new applications during the 14 months the Jewell Order was in place. Consistent with section 5(a)(i) of the Jewell Order, these new applications were not processed until the pause was lifted by the Zinke Order. Both of these applications were subsequently withdrawn by the applicants.

Table 1.1. Coal Leasing Applications and Leases Issued between January 15, 2016, and March 2019.⁹

Lease Applications	Jewell Order January 2016-March 2017 (14 Months)	Zinke Order (March 2017-March 2019 (24 Months)	Leases Issued (Sub-Total)
Exempt Applications Pending on Date of Jewell Order	17	--	--
In Progress	6	4	--
Withdrawn	2	--	--
Lease issued	9	2	11[i]
Non-Exempt Pending on Date of Jewell Order	28	--	--
In progress	21	19	--
withdrawn	7	--	--
Lease Issued	0	2	2[ii]
All Applications Submitted After Issuance of Jewell Order	2[iii]	10	--
In progress	--	8	--
withdrawn	--	2[iii]	--
Lease Issued (Would have been exempt)	--	1	1[i]
Lease issued (Would not have been exempt)	--	1	1[ii]
Total	47	10	15

[i] A total of 12 exempt leases were issued between January 15, 2016, and March 2019.

[ii] A total of 3 non-exempt leases were issued between January 15, 2016, and March 2019.

[iii] Two new applications were submitted in 2016 under the coal lease pause. These two applications were not considered until the pause was lifted under the Zinke Order and were later withdrawn, for non-policy reasons.

⁸ Section 5(a)(ii) of the Jewell Order states that at an applicant’s request, “preparatory work on pending applications may continue (including the preparation of NEPA analyses), but no final decision on whether to hold a lease sale will be made unless one of the exceptions listed in Section 6 of this Order applies.”

⁹ This represents the timeframe between the Jewell Order and the scheduled date of the PEIS ROD.

In the 24-month period from the Zinke Order to the anticipated date when normal coal leasing activities would resume, the BLM received 10 new lease applications. Of these 10 applications, two were issued leases, and eight are pending applications that the BLM continues to process. The processing actions that BLM field staff have taken with respect to these eight pending leases have occurred since the Zinke Order. By the terms of the Jewell Order, BLM's processing of these pending applications would have been delayed 24 months in the absence of the Zinke Order.¹⁰ Of the eight leases the BLM is still processing, the BLM is unable to speculate which, if any, would be issued, and any impacts to the leasing decisions themselves based on early termination of the pause are inherently speculative for these leases.

The BLM issued a total of six leases during the 24-month timeframe between the lifting of the pause and the presumptive date on which the BLM would have resumed leasing activities had the Jewell Order remained in effect. Of these six leases, three of the applications would have been facially exempt from the pause under the terms of the Jewell Order. The remaining three non-exempt leases and their respective issue dates represent the universe of lease issuances traceable to the Zinke Order's resumption of normal leasing procedures.

1.2.1 Federal Coal Leasing Since the Zinke Order

The BLM herein reviews the environmental effects of the three Federal coal leases issued due to the Zinke Order, defined as those leases issued after the Zinke Order which would not have qualified as excluded or exempt under the terms of the Jewell Order. As shown below, each of these three leases were subject to an individualized site-specific NEPA analysis memorialized in a contemporaneous NEPA document.

Alton Coal Tract Lease by Application (UTU-081895)

- Issued February 14, 2019.
- Final EIS (DOI-BLM-UT-C040-2015-0011-EIS); BLM Kanab Field Office, Utah. Available online at: <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=79446&dctmId=0b0003e880ef641f>

Pollyanna 8 Coal Lease (OKNM-091190)

- Issued May 25, 2018.
- Modification Application EA (DOI-BLM-NM-0040-2018-0001-EA); BLM Oklahoma Field Office, Oklahoma. Available online at: <https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=91329>.

South Fork Federal Coal Lease Modification (UTU-84102)

- Issued February 14, 2019.

¹⁰ Section(a)(i) of the Jewell Order provides that, “[n]o new applications for thermal (steam) coal leases or lease modifications will be processed, subject to the enumerated exclusions in Section 6 of this Order.”

- EA (DOI-BLM-UT-G020-217-0053-EA)¹¹; BLM Price Field Office, Utah; USDA Forest Service Fishlake and Manti La-Sal National Forests, Utah. Available online at: <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=89382&dctmId=0b0003e880fa638c>.

As appropriate, this EA incorporates this previous work by reference (40 CFR §1500.4(j) and §1502.21) and focuses its analysis on the environmental impacts of the resumption of normal leasing procedures.

1.3 Purpose and Need

The purpose and need for this EA is to respond to the U.S. District Court of Montana's Order issued on April 19, 2019, *Citizens for Clean Energy et al. v. U.S. Dep't of the Interior et al.*, No. CV-17-30-GF-BMM, 2019 WL 1756296 (D. Mont. Apr. 19, 2019), indicating that the Zinke Order constituted a major Federal action triggering compliance with NEPA. This EA analyzes the environmental impacts of Federal coal leases, not exempt or excluded from the Jewell Order's coal leasing pause, issued between March 29, 2017, and March 2019.

The need for this EA is, as directed by the U.S. District Court of Montana's Order, to analyze and disclose the environmental impacts of the Zinke Order's termination of the Federal coal leasing pause set forth in the Jewell Order, as they relate to the BLM's issuance of Federal coal leases not otherwise exempt or excluded from the pause.

1.4 Scoping and Issues

Scoping is not required for EAs (40 CFR §1501.7). As described in section 1.1, *Background and Overview*, the impetus to conduct an environmental review of the effects of the Zinke Order's resumption of normal leasing procedures is the April 19, 2019, court order. Based on current public comments and readily available court cases, the BLM determined that no external scoping is needed for this EA, and that a 15-day comment period is appropriate to obtain public comment.

The BLM conducted internal scoping using an interdisciplinary team. This internal process was used to formulate and refine the purpose and need, define issues and alternatives, and identify data needs and other information that needed analysis to determine impacts. Interdisciplinary team members also sought information from BLM Field Offices and other agencies and land managers, as appropriate, to identify any connected, cumulative, or similar actions associated with this EA.

¹¹ This document jointly analyzed two applications to modify the South Fork Federal Coal (SUFCA) lease. The second, SUFCA lease modification UTU-63214, fell below the acreage threshold outlined in the Jewell Order and would have been exempt from the coal pause on that basis.

1.4.1 Issues

The interdisciplinary team identified potential issues associated with the resumption of normal leasing procedures in March 2017, as compared to March 2019, the planned publication date of the PEIS ROD. As outlined in the BLM NEPA Handbook (H-1790-1), an “issue” is a point of disagreement, debate, or dispute with a proposed action based on some anticipated environmental effects. An issue is more than just a position statement: an issue reflects a cause and effect relationship with the proposed action or alternatives.

Based on the internal scoping for this project, which included review of the information available from documents and history associated with the March 2015 Listening Sessions, the June 2018 Court of Appeals decision,¹² and the April 19, 2019, District Court Order, the BLM identified several preliminary issues. Not all of these issues warrant detailed analysis. The BLM analyzes issues in detail when:

- The issue is related to how the proposed action or alternatives respond to the purpose and need; or
- The issue is significant (an issue associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of impacts).

The following issues are analyzed in detail in *Chapter 3 - Affected Environment and Environmental Effects* of this EA:

- **Issue 1:** How would lifting the Federal coal leasing pause in March 2017 impact greenhouse gas emissions from mining of Federal coal and the associated downstream combustion?
- **Issue 2:** How would lifting the Federal coal leasing pause in March 2017 change socioeconomic impacts associated with coal production levels?
- **Issue 3:** How would lifting the Federal coal leasing pause in March 2017 affect water quality, quantity, and riparian areas?

1.4.2 Issues Considered, but Not Analyzed in Detail

The issues identified below were not carried forward for detailed analysis either because they did not relate to the purpose and need, or the impacts did not rise to the level of potentially significant.

¹² See *Infra* note 8.

1.4.2.1 How would lifting the pause on Federal coal leasing in March 2017 affect the issuance of Federal coal leases and the potential associated impacts?

The BLM considered, but did not analyze in detail, the effects of lifting the pause on Federal coal leasing and potential impacts associated with Federal leasing because this issue does not relate to the purpose and need or inform a question of significance.

Prior to approving and issuing a coal lease, the BLM makes an informed decision of where to lease, what to lease, if to lease, and if leased, the conditions required for the lease. The resumption of normal leasing procedures allowed lease applications to be reviewed, considered for leasing, publicly sold, and issued as before the Jewell Order. The rescission of the Jewell Order reflected the DOI's view that a PEIS was both discretionary and unnecessary. This view is consistent with the determination of the D.C. Circuit Court of Appeals that "neither NEPA nor the APA requires the Secretary to update the PEIS" for Federal coal leasing. It is speculative whether completing the discretionary PEIS initiated by the Jewell Order would have identified, recommended, or resulted in changes to Federal coal leasing—let alone what form any changes might have taken or what impact, if any, any such changes would have on the dispositions of individual leases.

In addition, the decision to lift the pause on issuance of coal leases does not preclude future evaluation of Federal coal leasing. The Secretary retains discretion to determine whether and how to review Federal coal leasing to consider if modifications are advisable and consistent with policy objectives. Therefore, lifting the pause returned Federal coal leasing to the status quo that existed before the Jewell Order, and did not implement any new regulations or restrict future review or changes that could affect Federal coal leasing or its associated impacts.

1.4.2.2 How would lifting the pause on Federal coal leasing in March 2017 affect the issuance of Federal coal leases and the evaluation of potential impacts from such leasing?

The BLM considered, but did not analyze in detail, the effects resumption of normal leasing procedures would have on leasing and evaluation of its potential effects because this issue does not relate to the purpose and need or inform a question of significance. The pause under the Jewell Order was temporary and estimated to be lifted in March 2019. Terminating the pause 24 months earlier than initially planned had no bearing on the ultimate decision to issue the three relevant leases or on the environmental impacts of these leases.

The decision to issue the three above-referenced leases was made after a review of each application, including disclosure and consideration of the environmental impacts consistent with NEPA. It is purely speculative whether the outcome of a discretionary PEIS would have identified or recommended changes to Federal coal leasing that would have materially impacted the disposition of those lease applications. The only known and measurable difference resulting from the resumption of normal leasing procedures is that these three leases were issued between 1 and 11 months earlier than they could have been in the absence of the Zinke Order. In the context of a typical 20-year lease, even a 24-month difference in issuance does not rise to the level of significance and would not generate impacts additional to those defined in the lease-specific NEPA documentation.

1.4.2.3 How would lifting the pause on Federal coal leasing in March 2017 affect management of greater sage-grouse and its habitat?

The BLM considered, but did not analyze in detail, the effects that resumption of normal leasing procedures would have on the BLM's management of greater sage-grouse and its habitat. No detailed analysis was conducted because the issue neither relates to the purpose and need, nor informs a question of significance.

As explained below, of the three coal leases issued, none would affect greater sage-grouse habitat.

- The Pollyanna #8 leasing action is located too far east to affect any greater sage-grouse habitat.
- The SUFCO application UTU84102 lease modification area does not overlap any greater sage-grouse priority habitat management areas (PHMA), or areas that were previously identified as general habitat management areas (GHMA) in the 2015 Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA). Accordingly, the biological assessment for the SUFCO lease modification notes that there would be no impacts to greater sage-grouse. Additionally, the analysis associated with the SUFCO lease modification did not anticipate any surface disturbing activity and noted that surface disturbance from subsidence in the modification area would be minimal due to the thick overburden compared to the thin coal seam to be removed. The combination of no habitat in the lease modification area and the lack of surface impacts from lease development results in no impacts to greater sage-grouse or its habitat, regardless of whether the parcel was part of the leasing pause.
- The Alton Coal Development area is located in PHMA and one greater sage-grouse lek is located within the lease area. The lease included stipulations and design features specifically to prevent, minimize, and restore impacts from mining operations on greater sage-grouse and their habitat. This included management actions to ensure conformance with the Kanab Resource Management Plan (RMP), as amended by the 2015 Utah Greater Sage-Grouse ARMPA. After leasing, there were changes to the greater sage-grouse management in Kanab RMP through the 2019 Utah Greater Sage-Grouse ARMPA; however, changes made as part of the 2019 Utah ARMPA would not have changed the management applied to the Alton lease. The 2019 Utah ARMPA changes related to coal unsuitability, mitigation requirements, disturbance and density caps, and lek buffers all require close coordination with the appropriate State of Utah agency to ensure sagebrush systems are conserved, enhanced, or restored. Throughout the Alton lease consideration process the BLM coordinated closely with the State of Utah Public Lands Policy Coordinating Office and Division of Wildlife Resources. This involved the development of the Greater Sage-Grouse Mitigation Strategy and evaluating local greater sage-grouse monitoring data to determine seasonal use areas and associated lek buffers necessary to provide for lek persistence in concert with other management to provide habitat for the affected greater sage-grouse population.

Due to the location of the affected leases issued and the nature of the changes in the 2019 Utah Greater Sage-Grouse ARMPA, the resumption of normal leasing procedures did not result in any additional impacts to greater sage-grouse.

2.0 ALTERNATIVES

Chapter 2 presents the alternatives considered in this EA.

2.1 Alternatives Analyzed in Detail

The NEPA directs the BLM to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources...” (NEPA 42 U.S.C. § 4332(E)). The range of alternatives explores alternative means of meeting the purpose and need for the action. In determining the alternatives to be analyzed in detail, the emphasis is on what is “reasonable.” This means analyzing those alternatives necessary to permit a reasoned choice (40 C.F.R. §1502.14). As such, an alternative is only “reasonable” in reference to the purpose and need for the action.

Based on review of the information available from documents and history associated with the court case, the BLM identified two alternatives for detailed analysis in this EA.

2.1.1 Alternative 1 - No Action Alternative

The No Action alternative provides a baseline for comparison of environmental effects and demonstrates the consequences of not meeting the need for action. The No Action alternative is typically a description of what would (or would not) occur if the BLM does not take action. Specific to this EA, the No Action alternative is defined as the conditions that would have continued if the Zinke Order had not immediately lifted the pause on coal leasing on March 29, 2017.

The No Action alternative retains the pause on the issuance of coal leases established by the Jewell Order through the timeframe in which the BLM would have completed the PEIS evaluating Federal coal leasing. Accordingly, a 24-month timeline is the baseline for defining the relevant time frame since the review of new lease applications and the issuance of coal leases for non-exempt, approved applications likely would not have happened until March 2019.

As noted above, the Jewell Order’s leasing pause did not preclude all coal leasing. There were exemptions and exclusions that allowed many lease applications to be processed and issued. The exemption and exclusion criteria included:

- leases for metallurgical coal;
- emergency leases as defined in 43 C.F.R. § 3425.1-4;
- lease modifications, as defined in 43 C.F.R. § 3432.1, that do not exceed 160 acres or the number of acres in the original lease, whichever is less;
- lease exchanges as defined in 43 C.F.R. § 3425.1, 3436.1, and 3436.2;

- the rights of preference right lease applicants based on prospecting permits issued prior to August 4, 1976; and
- the sale and issuance of new thermal coal leases by application, 43 C.F.R. Subpart 3425, or the issuance of thermal coal lease modifications, 43 C.F.R. Subpart 4332, under permitting applications for which environmental analysis under NEPA has been completed and a Record of Decision or Decision Record had been issued by the BLM or the applicable Federal surface management agency as of the date of the Jewell Order. This exception extended to previously issued Records of Decision or Decision Records that had been (or may be) vacated by judicial decisions and are undergoing re-evaluation in accordance with the judicial decision.

There were 45 lease applications pending with the BLM when the Jewell Order was issued. (See Table 1.1) The processing and review of these 45 applications would have continued March 2019 at the same rate without pause with or without the Zinke Order. The BLM would have continued to process lease applications and issue leases meeting the exemption or exclusion criteria, which resulted in the issuance of 12 total leases between January 2017 through March 2019.

2.1.2 Alternative 2 – Resume Normal Leasing Procedures in March 2017

Consistent with the April 19, 2019, court ruling, the action for analysis is the Zinke Order's rescission of the Jewell Order. Under this alternative, the pause was terminated and BLM's ability to process new applications and issue leases for non-exempt coal leases was restored beginning March 29, 2017, approximately 24 months before the BLM would have begun issuing such leases under the No Action alternative.

Because the anticipated date for when the BLM would have begun issuing coal leases, March 2019, predates this EA, the BLM is able to identify with certainty the number of and respective dates of leases that were issued as a result of the resumption of normal leasing procedures, which otherwise would not have been issued before March 2019.

As detailed above (section 1.2, *Disposition of Coal Lease Applications Related to the Jewell and Zinke Orders*), the BLM processed new applications and issued three non-exempt Federal coal leases during the 24 months between the date of the Zinke Order and the anticipated date the pause would have been lifted. Two of the leases issued were non-exempt Federal coal applications the BLM had received prior to the issuance of the Jewell Order (Table 2.1).

Table 2.1. Non-exempt leasing applications the BLM received prior to January 15, 2016, where leases were issued between March 29, 2017, and March 2019.

State	Mine	Application Type (Serial No.)	Acres	Leased Tons (Millions)	Mining Type	Application Date	Issued and Effective Dates
OK	Pollyanna #8	LMA (OKNM-91190)	520	3.37	Underground	1-Sep-09	25-May-18; 1-May-18
UT	Alton Coal Development	LBA (UTU-81895)	2,682	30.8	Surface and Underground	12-Nov-04	14-Feb-19; 1-Feb-19

The remaining lease issued was a non-exempt federal coal lease application that was received after issuance of the Zinke Order on March 29, 2017, but before the projected termination of the pause in March 2019 (Table 2.2).

Table 2.2. Non-exempt leasing application the BLM received after January 15, 2016, where lease issued between March 29, 2017, and March 2019.

State	Mine	Application Type (Serial No.)	Acres	Tons (Millions)	Status	Application Date	Issued and Effective Dates
UT	SUFCO	LMA (UTU-84102)	740	5.85	Underground	8-May-17	14-Feb-19; 1-Mar-19

Additionally, because the anticipated date for when the BLM would have begun processing non-exempt coal applications predates this EA, the BLM is able to identify with certainty the number of leases the BLM began processing as a result of the resumption of normal leasing procedures without the additional 24-month delay contemplated by the Jewell Order and reflected in the No Action alternative.

As detailed above (section 1.2, Disposition of Coal Lease Applications Related to the Jewell and Zinke Orders), the BLM resumed processing of applications of eight non-exempt Federal coal leases during the 24 months between the date of the Zinke Order and the anticipated date the pause would have been lifted (Table 2.3).

Table 2.3. Pending Coal Leasing Applications received after Zinke Order.

State	Mine	Application Type (Serial No.)	Acres ¹	Coal Authorized/ Applied for (Million Tons)	Status 1	Status 2
CO	King II	LBA (COC-078825)	3,182.07	6.8	New	Pending
CO	Twenty-mile	LBA (COC-78449)	640	5.2	New	Pending
ND	Coyote Creek	LBA (NDM 110277)	320.00	4.91	New	Pending
OK	Pollyanna #8	LMA (OKNM 91190)	270.00	--	New	Pending
UT	Lila Canyon	LMA (UTU-014218)	317	2.4	New	Pending
UT	Lila Canyon	LMA (UTU-126947)	1,252	6.7	New	Pending
UT	Walker Flat Tract	LBA (UTU-093214)	2,236.00	--	New	Pending
WV	NA	LBA (WVES-59357)	6,384.00	21.9	New	Pending

The three issued, non-exempt leases, and eight pending, non-exempt leases, are the context of this action alternative, as they are the specific actions that were taken as a result of the resumption of normal leasing procedures without the additional 24-month delay contemplated by the Jewell Order and reflected in the No Action alternative.

2.2 Alternatives Considered, but Not Analyzed in Detail

Based on the internal scoping for this project, which included review of the information available from documents and history associated with the court case, the BLM did not identify any additional preliminary alternatives beyond those presented in section 2.1, *Alternatives Analyzed in Detail*. As such, BLM analyzed in detail each of the alternatives it considered.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Chapter 3 of this EA discloses the affected environments and environmental effects of the issues identified for detailed analysis (see Section 1.4.1, *Issues*).

3.1 Issue 1: How would lifting the pause on Federal coal leasing in March 2017 impact greenhouse gas emissions from mining of Federal coal and the associated downstream combustion?

The three most common greenhouse gasses (GHGs) associated with the production, transportation, and downstream combustion of coal are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). When quantifying GHG emissions, BLM presents results in terms of CO₂ equivalents (CO₂e) which allows for an “apples to apples” comparison of emissions of different gases. The impact of a given GHG on global warming depends both on its radiative

forcing and how long it lasts in the atmosphere. Emissions of each GHG are converted to a common term using the global warming potential (GWP) of each gas. Each GHG has a different atmospheric lifetime: for example, CH₄ reacts in the atmosphere relatively quickly (on the order of 12 years), whereas other gases such as CO₂ typically last for hundreds of years or longer. GHGs also vary with respect to the amount of outgoing radiation absorbed by each gas molecule relative to the amount of incoming radiation it allows to pass through, i.e., its level of radiative forcing. A molecule of N₂O is far more effective at absorbing outgoing radiation than a molecule of CO₂. GWPs have been developed for several GHGs over different time horizons including 20 year, 100 year, and 500 year. The choice of emission metric and time horizon depends on the type of application and policy context. The 100-year GWP was adopted by the United Nations Framework Convention on Climate Change and its Kyoto Protocol. In addition, the Environmental Protection Agency (EPA) uses the 100-year time horizon in its Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2016 (EPA 2018a), GHG Reporting Rule requirements under 40 CFR Part 98 Subpart A, and in its science communications, consistent with the IPCC Fifth Assessment Report, Climate Change Synthesis Report, 2014 (IPCC 2014). In this EA, the BLM uses the 100-year GWP time horizon in its GHG emission calculations and also includes a comparison of GHG emissions using the 20 year time horizon. The GWPs used for CO₂ are 1 for both time horizons. For CH₄ GWPs of 28 and 84 are used for the 100-year and 20-year time horizons, respectively. For N₂O, GWPs of 265 and 264 are used for the 100-year and 20-year time horizons, respectively.

Coal mining operations typically result in GHG emissions from several phases, including: onsite mining operations; storage and transportation of produced coal; onsite equipment; and the end use of the produced coal. Emissions of GHGs from mining operations may be emitted from sources such as the combustion of fuel (e.g., diesel) in excavation and processing equipment, methane released from the coal seam/face, and the electricity used to power equipment. Emissions from storage and transportation may include off-gassing of methane from storage piles and the transportation of produced coal via diesel locomotive or truck. The end use of produced coal typically includes combustion for electricity generation but may also include the use of metallurgical coal for steel production.

For purposes of this EA, the BLM evaluated and compared GHG emissions between alternatives for the end use phase only. This evaluation considered the effects from the downstream combustion and assumed that 100% of potentially produced coal would be consumed in a typical U.S. power plant for electricity generation. According to the U.S. Energy Information Administration, in 2017, 81% of all U.S. produced coal was used for U.S. electricity generation (EIA 2019a). Table 3.1 shows the mining actions considered in this evaluation and the associated tonnages of coal for each mine as included in either the mining action application or authorization.

Direct emissions of GHGs (onsite mining processes) and indirect GHG emissions from storage and transportation from each of the individual mining actions considered in this EA were not quantified for purposes of this EA, because the degree of speculation inherent in quantifying these emissions for the summation of the evaluated mining actions would not provide additional useful information to the public or the decision maker. The BLM is disclosing that GHG emissions would be emitted from these phases of operations at each potential mining location to

varying degrees depending on life of mine, type of and depth to coal, production rates, mining methods, equipment types and fuels, and distribution of produced coal (i.e. mine-mouth vs. transport to terminal). In addition, these emissions were not quantified for the following reasons:

- These emissions have been or will be evaluated under the appropriate NEPA analysis completed/to be completed for each action;
- The multiple parameters used to evaluate direct GHG emissions at each mine are not known at this time for many of the proposed/pending mining actions and it would be speculative to look at the summation for the total number of actions considered under this EA;
- The proportion of direct emissions from mining operations compared to the downstream combustion emissions is typically very small for individual mines. The summation of direct emissions for the total number of actions considered under this EA, are likely to be negligible compared to the downstream combustion emissions;
- The quantification of indirect emissions due to storage and transport are highly dependent on the specifics at each mine. Storage location and duration are not known for all of the evaluated mining actions. Transport to an adjacent power plant vs. transport by rail or truck and associated distances are not known for all of the evaluated mining actions; and
- Evaluation of the estimated GHG emissions from the downstream combustion of the potential produced coal from all of the evaluated mining actions provides a reasonable and relevant criteria with which to compare alternatives, inform a decision, and disclose potential impacts.

Table 3.1 shows the mining action status and estimated coal production for all 57 Federal coal leasing applications that were either received or pending during the time period between this issuance of the Jewell Order and April 19, 2019. Non-exempt coal leases issued after the pause was rescinded by the Zinke Order are bolded. Non-exempt lease applications received after the issuance of the Jewell Order that the BLM began processing following the issuance of the Zinke Order are italicized.

Table 3.1. Mining Action Status and Estimated Coal Production.

State	Mine	Application Type (Serial No.)	Current Status	Coal Applied for/ Authorized (million tons)
Mining Actions considered Exempt under the Jewell Order				
AL	Narley Mine No. 3	LBA (ALES55199)	Issued	0.5
CO	Colowyo	LMA (COC123475)	Issued	0.0
CO	Foidel Creek	LMA (COC54608)	Issued	0.3
CO	West Elk	LMAs (COC1362 & COC67232)	Issued	10.1
ND	Center Mine	LBA (NDM102083)	Issued	2.4
ND	Falkirk Mine	LBA (NDM107039)	Issued	2.2

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State	Mine	Application Type (Serial No.)	Current Status	Coal Applied for/ Authorized (million tons)
UT	SUFCO Mine	LBA (UTU84102)	Issued	55.7
WY	Antelope	LMA (WYW177903)	Issued	13.6
CO	King II Mine	LMA (COC62920)	Issued	4.7
WY	Black Butte	LMA (WYW6266)	Issued	8.7
UT	SUFCO	LMA (UTU63214)	Issued	0.4
MT	Rosebud	LMA (MTM080697)	Pending	5.9
OH	Buckingham Coal	LBA (OHES57390)	Pending	1.4
WY	Black Thunder	LBA (WYW164812)	Pending	467.6
WY	Cordero Rojo	LBA (WYW180711)	Pending	271.0
WY	Bridger	LMA (WYW154595)	Withdrawn	0.70
WY	Buckskin	LBA (WYW172684)	Withdrawn	167.0
Mining Actions Paused under the Jewell Order				
OK	Pollyanna #8	LMA (OKNM-91190)	Issued	3.4
UT	Alton Coal Development	LBA (UTU81895)	Issued	30.8
AL	Cassidy	LBA (ALES55797)	Pending	22.8
AL	Yellow Creek	LBA (ALES56519)	Pending	27.3
AR	Bates	LBA (ARES57757)	Pending	0.10
CO	Bookcliffs	LBA (COC70538)	Pending	783.0
CO	New Elk Coal Co	LBA (COC71978)	Pending	9.0
KY	Alma Deep	LBA (KYES55296)	Pending	5.3
MT	Decker	LMA (MTM101099)	Pending	17.5
MT	Decker	LBA (MTM108494)	Pending	203.4
MT	Spring Creek	LBA (MTM105485)	Pending	198.2
MT	Spring Creek	LMA (MTM094378)	Pending	6.9
ND	Center Mine	LBA (NDM105513)	Pending	22.7
OK	Heavener	LBA (OKNM130536)	Pending	TBD
OK	Heavener	LMA (OKNM91569)	Pending	TBD
OK	Liberty No. 8	LBA (OKNM124610)	Pending	3.2

Lifting the Pause on the Issuance of New Federal Coal Leases for Thermal (Steam) Coal EA

State	Mine	Application Type (Serial No.)	Current Status	Coal Applied for/ Authorized (million tons)
OK	McCurtain	LBA (OKNM127509)	Pending	3.6
OK	Rock Island	LMA (OKNM91571)	Pending	TBD
OK	Shady Point/Cavanal	LMA (OKNM91590)	Pending	TBD
UT	UT Am.Energy-Williams Draw	LBA (UTU080043)	Pending	32.2
WY	Antelope	LBA (WYW184599)	Pending	441.0
OK	Decker Mine	LBA (OKNM131007)	Withdrawn	0.2
OK	Milton	LMA (OKBLM17902)	Withdrawn	1.8
OK	Pollyanna	LBA (OKNM134392)	Withdrawn	4.5
WY	Belle Ayr	LBA (WYW180238)	Withdrawn	253.0
WY	Black Thunder	LBA (WYW172388)	Withdrawn	440.4
WY	Haystack	LBA (WYW159423)	Withdrawn	14.3
WY	Rawhide	LMA (WYW83395)	Withdrawn	26.6
Mining Actions submitted after the Zinke Order				
CO	<i>King II</i>	<i>LBA (COC-078825)</i>	<i>Pending</i>	6.8
CO	<i>Twentymile</i>	<i>LBA (COC-78449)</i>	<i>Pending</i>	5.2
ND	<i>Coyote Creek</i>	<i>LBA (NDM 110277)</i>	<i>Pending</i>	4.9
OK	<i>Pollyanna #8</i>	<i>LMA (OKNM 91190)</i>	<i>Pending</i>	TBD
UT	<i>Lila Canyon</i>	<i>LMA (UTU-014218)</i>	<i>Pending</i>	2.4
UT	<i>Lila Canyon</i>	<i>LMA (UTU-126947)</i>	<i>Pending</i>	6.7
UT	<i>Walker Flat Tract</i>	<i>LBA (UTU-093214)</i>	<i>Pending</i>	21.0
WV	<i>NA</i>	<i>LBA (WVES-59357)</i>	<i>Pending</i>	21.9
UT	Alton	LBA (UTU-091615)	Withdrawn	<i>Not Determined</i>
WY	Bridger	LBA (WYW-185637)	Withdrawn	22.7
Total tons considered in cumulative =				3,402.55

Direct and Indirect Effects

Under the No Action alternative, it is assumed that the coal leasing pause would have continued until March of 2019, and that the status of each mining action would have remained the same as stated in Table 3.1 through that date. The action of not lifting the coal leasing pause would have no direct effect on the quantity of GHG emissions potentially emitted from the mining actions other than to delay the timing of those emissions by an estimated 24 months.

Under Alternative 2, the three mining leases approved between March 2017 and March 2019 will have an impact on GHG emissions earlier than would have occurred under Alternative 1. Each of these approved leases underwent NEPA analysis that included quantification of emissions of criteria air pollutants, some hazardous air pollutants, and greenhouse gases. Those analyses of GHG emissions included direct emissions from mining operations, indirect emissions including transportation of produced coal, and downstream emissions from the combustion of produced coal. Emissions were evaluated on an annual and life of mine basis. Table 3.2 shows the estimated emissions for each mining action in million metric tonnes per year (MMmt/yr).

Table 3.2. Estimated GHG Emissions for Alternative 2.

Mine	Annual GHG Emissions Direct (Mining Operations) CO ₂ e (MMmt/yr)	Annual GHG Emissions Indirect (Transportation) CO ₂ e (MMmt/yr)	Annual GHG Emissions Indirect (Combustion) CO ₂ e (MMmt/yr)	Annual GHG Emissions Total CO ₂ e (MMmt/yr)	Life of Mine GHG Emissions Total CO ₂ e (MMmt)
SUFCO	0.116	0.016	14.76	14.89	22.33
Alton	5.182		4.36	9.55	153
Pollyanna #8	0.127	0.001	6.40	6.53	52.25
Total =	5.43	0.02	25.52	30.97	227.34

1.South Fork Federal Coal Lease Modifications UTU-84102 and U-63214 Environmental Assessment, DOI-BLM-UT-G020-2017-0053-EA, June 2018

2.Alton Coal Tract Lease by Application, DOI-BLM-UT-C040-2015-0011-EIS, Final Environmental Impact Statement, July 2018

3.Pollyanna 8 Coal Lease Modification Application OKNM 091190 Environmental Assessment, DOI-BLM-NM-0040-2018-0001-EA, November 2017

Cumulative Effects

Cumulative GHG emissions were evaluated by considering emissions from the past and present actions, the alternatives, and the reasonable foreseeable future actions (RFFA). GHG emissions from past and present actions are assumed to be represented in the national GHG emissions inventory completed by the EPA, which accounts for many source categories including energy generation, manufacturing, agriculture, and motor vehicles. GHG emissions were estimated for the downstream combustion of all the coal that could potentially be produced by the mining

actions included in Table 3.1. This includes the proposed action and the RFFA. The potential coal production was then multiplied by GHG emission factors developed by the U.S. EPA for the stationary combustion of coal. Because the rank of coal that could potentially be produced at each mine is not known, averages of the emission factors for each GHG for bituminous and sub-bituminous coal were used (4,410 lb CO₂/ton coal, 0.51 lb CH₄/ton coal, and 0.07 lb N₂O/ton coal). Table 3.3 shows the estimated GHG emissions from the downstream combustion of the coal that could potentially be produced from the listed mining actions in million metric tonnes (MMmt). The quantities of coal used in the emissions estimates are based on the total amount of coal estimated over the extended life of the mine due to the applied for authorization. In some cases, mine life is only extended for a few months. For many mining actions, the mine life may be extended for several years. For ease of comparison and as a maximum (but realistic) case, it was assumed that the mine life for each action would be extended by one year. This means that the emissions result shown in Table 3.3 can be considered annual as well as gross emissions. The results are compared to the total U.S. GHG emissions and GHG emissions from electricity generation and the energy sector for 2017.

Table 3.3. Cumulative GHG Emissions Comparison.

Mining Action Category	Coal Applied for/ Authorized (million tons)	Cumulative GHG Emissions Indirect (Combustion) CO_{2e} 100-yr (MMmt/yr)	Cumulative GHG Emissions Indirect (Combustion) CO_{2e} 20-yr (MMmt/yr)	2017 U.S. Electricity Generation GHG Emissions CO_{2e} (%)	2017 U.S. Energy Sector GHG Emissions CO_{2e} (%)	2017 U.S. Total GHG Emissions CO_{2e} (%)
Exempt	8,44.48	1,702.	1,713.4	1.0	0.35	0.26
Paused	2,510.16	5,060.6	5,093.0	2.9	1.03	0.78
New	47.91	96.6	97.2	0.1	0.02	0.01

U.S. Total GHG Emissions 2017 = 6,472 MMmt

U.S. Energy Sector Fossil Fuel Combustion GHG Emissions 2017 = 4,912 MMmt

U.S. Electricity Generation Fossil Fuel Combustion GHG Emissions 2017 = 1,732 MMmt

Source: EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, Public Review of Draft U.S. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2017

The lifting of the coal leasing pause would not change the cumulative levels of GHG emissions resulting from coal leasing between Alternative 1 and Alternative 2. As described above in the direct and indirect effects, the total quantity of GHG emissions would be the same under both alternatives. The only difference is that Alternative 2 would produce GHG emissions for the three issued leases 1-11 months earlier, and up to 24-months earlier for the eight pending leases, than would have been produced under Alternative 1. The release of these levels of GHG emissions less than a year earlier for the three issued leases, and up to 24 months earlier for the eight pending leases, would result in negligible differences temporarily to GHG cumulative effects from these mines.

Energy related CO₂ emissions have declined for seven of the ten years in the decade from 2007 to 2017 and were 14% (849 MMmt) lower than 2005 levels in 2017 (EIA 2018a). Energy related CO₂ emissions rose by 2.9% in 2018, however, the EIA forecasts that these CO₂ emissions will decline by 1.6% in 2019 and by 0.5% in 2020 (EIA 2019b). The 2018 increase largely reflected increased weather-related natural gas use because of additional heating needs during a colder winter and for higher electric generation to support more summer cooling use than in 2017. The EIA expects emissions to fall in 2019 and 2020 because of forecasted temperatures that will

return to near normal and natural gas and renewables making up a higher share of electricity generation. The portion of the projected decrease attributable to coal is between 28 – 87 MMmt per year (EIA 2019b).

Coal has historically been the second largest source of energy related CO₂ emissions since 1990 and coal related CO₂ emissions have been declining since 2007. Petroleum and other liquids continue to be the largest source of energy related CO₂ emissions. In 2015, natural gas related CO₂ emissions exceeded coal related CO₂ emissions. The natural gas share of electricity generation has generally been growing, while the coal share has been declining. Natural gas CO₂ emissions surpassed those from coal in 2015. However, because natural gas produces more energy for the same amount of emissions as coal, growth in natural gas consumption contributed to the overall 2017 decline in carbon intensity and emissions. CO₂ emissions from electricity generation has decreased overall by 28 percent from 2005 to 2017 (EIA 2018a).

Forecasting into the future, the EIA's *Annual Energy Outlook* for 2018 projects that carbon intensity (CO₂ emissions per BTU of energy consumed) will decrease by 9% due to energy efficiency, improved fuel economy, reductions in the consumption of carbon intense fuels, and the use of low or no-carbon fuels. Coal-fired electric generating capacity is projected to decrease through 2030 then levels off through 2050 while coal production generally decreases through 2022 and then levels off through 2050 primarily due to retirements of coal-fired power plants (EIA 2018b). Electric generating related CO₂ emissions are anticipated to remain relatively flat in part due to increased natural gas use and policies supporting renewable sources compared to coal (EIA 2018b). However, different fuel prices, especially for natural gas could increase the use of existing coal-fired generation units for electricity and thus coal related CO₂ emissions (EIA 2018b).

Current understanding of the climate system comes from the cumulative results of observations, experimental research, theoretical studies, and model simulations. The Intergovernmental Panel on Climate Change (IPCC) is the body created under the auspice of the United Nations that reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.

The Fifth Assessment Report of the IPCC (AR5) makes certain conclusions about the future impacts of GHG emissions on climate change based largely on several modeling analyses that evaluate the natural systems and feedback mechanisms that contribute to climate variability over the entirety of the Earth. The modeling analyses consider a range of global GHG emissions scenarios known as Representative Concentration Pathways (RCPs). The RCPs evaluate different pathways of GHG emissions and atmospheric concentrations, air pollutant emissions, and land use patterns. The anthropogenic GHG emissions represented in each scenario are influenced by assumptions of population size, economic activity, lifestyle, energy use, land use patterns, technology and climate policy. The RCPs include a stringent mitigation scenario (RCP2.6), two intermediate scenarios (RCP4.5 and RCP6.0) and one scenario with very high GHG emissions (RCP8.5) (IPCC, 2014 pg. 8).

Each RCP scenario has been used in multiple global integrated assessment models to make predictions about future warming associated with those GHG emissions. For example, by 2050,

global surface temperature change is projected to *likely* range from 0.5 to 2.0 degrees Celsius (°C) for the high emissions scenario (RCP8.5), but likely to range from 0.3 to 1.0°C for the low emissions scenario (RCP2.6) (IPCC, 2014 pg. 59-60).

In addition to the IPCC predictions, the Fourth National Climate Assessment (NCA, 2018) provides an assessment of the science of climate change, with a focus on the United States, and was developed by three federal agencies (National Oceanic and Atmospheric Administration, NASA, Department of Energy) and other contributing authors under the auspices of the U.S. Global Change Research Program (NCA, 2018 pg. 1). The NCA includes climate model predictions of a warmer future in the Northern Great Plains (Montana, Wyoming, North Dakota, South Dakota, and Nebraska) with conditions becoming consistently warmer in two to three decades and temperatures rising steadily towards the middle of the century, irrespective of the climate scenario modeled. The NCA also used RCPs as the basis for its modeled predictions including the “lower scenario” (RCP4.5) which assumes lower emissions and concentrations of GHGs and aerosols and projects a lower change in radiative forcing by 2100 and the “higher scenario” (RCP8.5) which assumes a continued dependence on fossil fuels, higher GHG emissions and concentrations, and projects a larger change in radiative forcing by 2100 (NCA, 2018 pg. 16). Although global temperature changes are predicted to be in the range of 0.3 – 2.0°C by 2050, warming rates can vary across the globe and are greater at higher latitudes due in part to reduced snow cover and reduced albedo. For the Northern Great Plains, the NCA reports that temperature increases of 2 degrees Fahrenheit (°F) (approx. 1°C) for the lower scenario and between 2 to 4°F (approx. 1-2°C) projected by 2050 under the lower scenario (NCA, 2018 pg. 196-197).

The US Geological Survey recently published a report on GHG emissions from extraction and use of fossil fuels produced on Federal lands and GHG sinks (carbon storage by terrestrial ecosystems) on Federal lands in the US (USGS 2018). In 2014, nationwide emissions from fossil fuels (oil, gas, and coal) extracted from Federal lands were 1,279.0 MMmt carbon dioxide equivalents (CO₂e) of carbon dioxide, 47.6 MMmt CO₂e of methane, and 5.5 MMT CO₂e of nitrous oxide based on 100-year GWPs. (USGS, 2018 pg. 6). In 2014, carbon storage by terrestrial ecosystems on Federal lands in the conterminous United States (not including Alaska and Hawaii) was 83,600 MMmt CO₂e. Soils stored 63 percent of carbon, with vegetation and dead organic matter storing 26 percent and 11 percent, respectively (USGS, 2018 pg. 12). Between 2005 and 2014, the annual rate of net carbon uptake by terrestrial ecosystems in the conterminous US ranged from a sink (sequestration) of 475 MMmt tons of CO₂e per year to a source (emission) of 51 MMmt CO₂e per year due to changes in climate/weather, land use, land cover change, wild fire frequency, and other factors. Terrestrial ecosystems on Federal lands sequestered an average of 195 MMmt CO₂e per year nationally between 2005 and 2014 (USGS, 2018 pg. 13-17).

A protocol to estimate what is referenced as the “social cost of carbon” (SCC) associated with GHG emissions was developed by a Federal Interagency Working Group (IWG), to assist agencies in addressing EO12866, which requires Federal agencies to assess the cost and the benefits of proposed regulations as part of their regulatory impact analyses. The SCC is an estimate of the economic damages associated with an increase in CO₂ emissions and is intended to be used as part of a cost-benefit analysis for proposed rules. As explained in the Executive

Summary of the 2010 SCC Technical Support Document, “the purpose of the [SCC] estimates...is to allow agencies to incorporate the social benefits of reducing CO₂ emissions into cost-benefit analyses of regulatory actions that have small, or ‘marginal,’ impacts on cumulative global emissions,” (Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under EO 12866 February 2010 (withdrawn by EO13783)). While the SCC protocol was created to meet the requirements for regulatory impact analyses during rulemakings, there have been requests by public commenters or project applicants to expand the use of SCC estimates to project-level NEPA analyses.

The decision was made not to expand the use of the SCC protocol for lifting the coal leasing pause 24 months early for several reasons. Most notably, this action is not a rulemaking for which the SCC protocol was originally developed. Second, on March 28, 2017, the President issued EO 13783 which, among other actions, withdrew the Technical Support Documents upon which the protocol was based and disbanded the earlier Interagency Working Group on Social Cost of Greenhouse Gases. The Order further directed agencies to ensure that estimates of the social cost of GHGs used in regulatory analyses “are based on the best available science and economics” and are consistent with the guidance contained in OMB Circular A-4, “including with respect to the consideration of domestic versus international impacts and the consideration of appropriate discount rates” (E.O. 13783, Section 5(c)). In compliance with OMB Circular A-4, interim protocols have been developed for use in the rulemaking context. However, the Circular does not apply to project decisions, so there is no EO requirement to apply the SCC protocol to project decisions.

Further, NEPA does not require a cost-benefit analysis (40 C.F.R. § 1502.23), although NEPA does require consideration of “effects” that include “economic” and “social” effects. 40 C.F.R. 1508.8(b). Without a complete monetary cost-benefit analysis, which would include the social benefits of the proposed action to society as a whole and other potential positive benefits, inclusion solely of an SCC cost analysis would be unbalanced, potentially inaccurate, and not useful in facilitating an authorized officer’s decision. Any increased economic activity, in terms of revenue, employment, labor income, total value added, and output, that is expected to occur with the proposed action is simply an economic impact, rather than an economic benefit, in as much as such impacts might be viewed by another person as negative or undesirable impacts due to potential increase in local population, competition for jobs, and concerns that changes in population would change the quality of the local community. Economic impact is distinct from “economic benefit” as defined in economic theory and methodology, and the socioeconomic impact analysis required under NEPA is distinct from cost-benefit analysis, which is not required.

Finally, the SCC, protocol does not measure the actual incremental impacts of a project on the environment and does not include all damages or benefits from carbon emissions. The SCC protocol estimates economic damages associated with an increase in CO₂ emissions – typically expressed as a one metric ton increase in a single year – and includes, but is not limited to, potential changes in net agricultural productivity, human health, and property damages from increased flood risk over hundreds of years. The estimate is developed by aggregating results “across models, over time, across regions and impact categories, and across 150,000 scenarios” (Rose et al. 2014). The dollar cost figure arrived at based on the SCC calculation represents the

value of damages avoided if, ultimately, there is no increase in carbon emissions. But the dollar cost figure is expressed in a broad range, reflecting a degree of uncertainty that greatly diminishes the SCC's utility as an input to the Secretary's decision making. For example, in a recent environmental impact statement, OSMRE estimated that the selected alternative had a cumulative SCC ranging from approximately \$4.2 billion to \$22.1 billion depending on dollar value and the discount rate used. The cumulative SCC for the no action alternative ranged from \$2.0 billion to \$10.7 billion. Given the uncertainties associated with assigning a specific and accurate SCC resulting from the proposed action and that the SCC protocol and similar models were developed to estimate impacts of regulations over long time frames, this analysis quantifies direct and indirect GHG emissions and evaluates these emissions in the context of U.S. and global GHG emission inventories as discussed above in this section.

To summarize, this analysis does not undertake an analysis of SCC because 1) it is not engaged in a rulemaking for which the protocol was originally developed; 2) the Interagency Working Group, technical supporting documents, and associated guidance have been withdrawn; 3) NEPA does not require cost-benefit analysis; and 4) the full social benefits of coal-fired energy production have not been monetized, and quantifying only the costs of GHG emissions, but not the benefits, would yield information that is both potentially inaccurate and not useful.

3.2 Issue 2: How would lifting the pause on Federal coal leasing in March 2017 change socioeconomic impacts associated with coal production levels?

The BLM has analyzed the socioeconomic effects associated with coal production levels from lifting the pause on new coal leasing activities by comparing the scenario under Alternative 2 with one in which the pause was not lifted until March 2019 under Alternative 1- No Action.

For the purpose of this analysis, the BLM assumes that only a change in coal production activities would result in any economic, social, or environmental impact. Absent such a change, there is no difference in the reality experienced at these coal mines and in the communities impacted by their development that would be relevant for consideration here.

Direct and Indirect Effects

The BLM measured the impact of lifting the pause as follows for these three leasing applications:

Polyanna #8 LMA (underground - OKNM-91190)

- Alternative 1: Lease effective on April 1, 2019
- Alternative 2: Lease effective on May 1, 2018
- Difference: Leasing timeline advanced by 11 months

Alton Coal Development LBA (surface - UTU-81895)

- Alternative 1: Lease effective on April 1, 2019
- Alternative 2: Lease effective on February 1, 2019
- Difference: Leasing timeline advanced by 2 months

SUFCO LMA (underground - UTU84102)

- Alternative 1: Processing begins May 8, 2017, lease effective April 1, 2019
- Alternative 2: Lease processing begins May 8, 2017, lease effective March 1, 2019
- Difference: Leasing timeline advanced by 1 month

For each of these three mines, the effect of lifting the lease issuance pause resulted in potential changes to their anticipated productive life by allowing development of additional reserves. The calculation of these changes is as follows:

Polyanna #8 LMA (underground - OKNM-91190)

- 3.4 million short tons (MMst) of new reserves.
- Expected annual production rate of 0.4 MMst.
- Extension of the mine life by 8 years.

Alton Coal Development LBA (surface - UTU-81895)

- 30.8 MMst of new reserves.
- Expected annual production rate of 2.0 MMst.
- Extension of the mine life by 16 years.

SUFCO LMA (underground - UTU84102)

- 5.85 MMst of new reserves.
- Expected annual production rate of 3.9 MMst.
- Extension of the mine life by 1.5 years.

The BLM does not regard the starting dates for production of the acreage in these LMA and LBA agreements under the two alternatives as relevant to their impact on expected mine life. In other words, the mine life extensions listed above would be the same with BLM approval prior to March 2019 under current circumstances (Alternative 2), as well as with BLM approval in March 2019 (Alternative 1).

The only avenue through which there would be a difference between Alternatives 1 or 2 is if any of the coal leases issued, between their actual dates of approval and March 2019, would have had to idle production activities during that interim period. Because each of the three coal leases issued already had sufficient reserves to continue operations through March 2019, they would have been able to continue producing at the rates observed under the Zinke Order (Alternative 2) as would have occurred with a coal leasing pause remaining in-place (Alternative 1). The BLM does not find there to be any socioeconomic impact from the Zinke Order and lifting the leasing pause on these three leases issued. The BLM has determined that the approvals received for these three mines because of the Zinke Order did not alter coal production levels or cause any change to its associated socioeconomic impacts.

The socioeconomic impacts from the eight pending leases that the BLM began processing after the pause was lifted are entirely too speculative to assert. The BLM has determined these eight pending leasing actions would have a negligible socioeconomic impact. This is particularly the case given the relatively low reserve volumes involved for these applications (only one for more than 20 MMst). In addition, any potential difference between the two alternatives for these eight

actions is limited by the fact that even in the current, two-year-accelerated case, no production occurs until the future. This means that at least some discounting of costs and benefits occurs under either alternative. This pushes any difference in impact from an accelerated timeframe further into the future, minimizing its net present value.

Cumulative Effects

Cumulative effects are defined by CEQ as “. . . 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 actions” (40 CFR 1508.7). In other words, an action must have direct and indirect effects in order for there to be an incremental impact of the action. As there are no direct or indirect effects to socioeconomics associated with coal production levels, there cannot be any cumulative effects.

3.3 Issue 3: How would lifting the pause on Federal coal leasing in March 2017 affect water quality, quantity, and riparian areas?

Coal mining construction, development and operations may intercept ground or surface waters. This can impact water quality, quantity, and riparian areas (for this analysis in surface coal mining). This interception may result in dissolution of minerals within the coal mine/area that could be transported into groundwater or surface water. Analysis indicates that discharge of dissolved constituents in waters from these mines will not exceed water quality standards. Surface disturbing activities (e.g., roads, staging areas, mines, or other infrastructure) on top of riparian areas may temporarily remove riparian areas at those locations until reclamation is possible. In addition, these surface activities can cause release of sediment loads that are mostly mitigated onsite by retention ponds, however some sediment may be transported to surface waters. Indirect impacts to water resources from surface subsidence as a result of underground coal mining may cause surface water flow disruption as well as groundwater flow and quality degradation until mitigation is achieved. Groundwater impacts from subsidence will be minimal due to the slow hydraulic conductivities of Tropic Shale at Alton and deep overburden at SUFCO. Because of project design features included in Pollyana #8, it is not expected to have subsidence. Mining operations may require the use of some of the groundwater and/or surface water collected onsite for the safety of mining operations or for activities such as dust control and drilling.

The BLM evaluates coal mining applications and operations to determine what protective project design features are needed to apply to provide for the appropriate protection of water quality, quantity, and riparian resource management consistent with applicable laws, regulations, and governing RMPs. Lease terms, stipulations or conditions of approval to the plan are added to ensure these controls are implemented.

Direct and Indirect Effects

Because the BLM reviews all coal leases to determine appropriate protections for water resources, lifting the coal leasing pause, by itself, would have no direct or indirect effects on

water quantity, quality, or riparian areas. The implementation of the three leases issued as described under Alternative 2 would result in impacts to water quality, quantity, and riparian areas as disclosed in each NEPA document developed for the approval of each the Pollyanna #8, Alton, and SUFCO mines. Each of these effects are effects that would also occur under Alternative 1, except that they would have been delayed, at a minimum, between 1 and 11 months compared to Alternative 2. Similarly, the effects from the eight pending leases that the BLM began processing after the pause was lifted would be the same under Alternative 1 and Alternative 2, only they would occur up to 24 months earlier under Alternative 2.

The following summarizes the conclusions reached by each NEPA review completed for the three leases issued between March 2017 and March 2019 regarding water resources:

Pollyanna #8

Coal and adjacent strata often contain iron sulfide minerals that can, when exposed to oxygen and water, can chemically break down to produce acid. Underground mining equipment, continuous miners and coal shuttle cars, require a certain roof height to operate. If the coal bed thickness is less than that height, a portion of the roof rock must be ground away with the coal. However, the rock at the Pollyanna #8 mine is generally left mixed in with the coal and shipped to the power plant.

Further, underground development waste is earth material excavated from adjacent strata to access the coal either during construction of the portal or when a fault or other geologic feature within the mine works must be crossed. Underground development waste, a type of coal mine waste, is separated from the coal and deposited in onsite disposal pits. Groundwater within a saturated coal mine waste deposit might discharge to the nearby Poteau River or spread outward to water wells.

The land disturbance at portals 1 and 2, including their associated coal waste disposal features, has not had a consistent effect on local monitored groundwater or Poteau River water. Statistical analysis of the available water data reported to OSMRE suggests that, to date, the coal mine waste has not been a major contributor of solutes, and that this is unlikely to change with mining of the 520-acre LMA. This inference is consistent with the nature of the overburden in the tract for which tests show a lack of acid-forming strata above the coal bed. Based on these conclusions, the Proposed Action is unlikely to result in impacts to shallow groundwater or Poteau River water quality due to the permanent storage of coal mine waste. Therefore it would not contribute to cumulative effects when added to current coal mine waste storage at the portal areas or storage of coal mine waste resulting from mining the future Pollyanna #8 LMA. As a result, there would be no impacts to fish and wildlife species that depend on the Poteau River and would not interfere with recreational uses of the river.

Poteau River water showed no statically significant change at the 95% confidence level in solutes or suspended solids when comparing samples collected at upstream station SWMP-7 and downstream station SWMP-6. While SWMP-7 appears to be located above any influence from Pollyanna #8 Mine, a sediment pond at portal 2 discharges below SWMP-6. Consequently, sampling at SWMP-6 captures effects of most but not all mine-related surface runoff and

groundwater discharge into the adjacent Poteau River. In summary, land disturbance at portals 1 and 2, including their associated coal waste disposal features, has not had a consistent effect on local monitored groundwater or Poteau River water.

Based on the implementation of the design features along with the results from the Ground Control Analysis completed in the area east of the Pollyanna #8 LMA tract, no measurable subsidence would occur.

Alton Coal Tract

Irreversible and Irrecoverable Commitments of Water Resources: The following commitments of water resources would be irretrievable **until** successful reclamation was completed under the action alternatives:

- Loss of Robinson Creek's (ephemeral) channel function and riparian vegetation
- Changes to Robinson Creek's (discharge volume and water quality resulting from its realignment)
- Loss of wetland area and function due to its removal and reconstruction
- Loss of riparian area and function due to its removal along Robinson Creek
- Surface disturbance to floodplains and probable AVFs as a result of the construction of dispersed facilities and relocation of Kanab Field Office

At the existing Coal Hollow Mine (which is an underground mine located on private lands adjacent to the south end of the Alton Coal tract), the water monitoring plan includes 54 monitoring sites that are monitored quarterly. The monitoring information is submitted to Utah Division of Oil, Gas and Mining (DOG M), which reviews and analyzes the monitor data. The water monitoring information is available to the public through the DOGM on-line coal water quality database. The water monitoring program at the Coal Hollow Mine includes monitoring at 10 stream locations, 12 spring locations, and 32 well monitoring locations. Water quantity parameters (flow rates for streams and springs and water levels for wells) are collected at all 54 monitoring stations. Field water quality measurements including temperature, pH, and specific conductance (and dissolved oxygen concentrations at streams) are performed at 29 monitoring sites. Laboratory water quality analyses are performed on water samples from 20 monitoring locations.

Surface Water Quantity: Under the Proposed Action, adverse short-term impacts to surface-water quantity would occur from the implementation of sediment- and erosion-management BMPs. Under this alternative, 1,993 acres of the tract would be disturbed by surface mining, the construction of centralized and dispersed facilities, and road relocation (completed in 2010)). Impacts to surface-water quantity at Alton (Alternative K1-BLM Preferred Action Alternative) would be of the same nature as those under the Alternative B (the Proposed Action) and Alternative C (Reduced Acreage Limitations), but would be of lesser magnitude. Under this alternative, 905 acres of the tract would be disturbed by surface mining and the construction of centralized facilities (905 acres more than would be disturbed under the No Action Alternative). Under the Proposed Action, no direct adverse impacts to surface-water quality are likely. Runoff from disturbed areas on the tract would be captured in retention ponds, which do not release water into downstream receiving waters.

Surface Water Quality: The action alternatives would result in indirect impacts on surface water quality from the diversion of surface runoff to retention ponds, and an associated loss of surface water from evaporation and infiltration. There would be small sediment loads into streams from dispersed facilities and road relocation. The loss of instream dilution could increase concentrations of total dissolved solids, which are already over the state water quality standard of 1,200 milligrams per liter. The primary pollutant that could pose a concern to Kanab Creek is TDS, because current concentrations of TDS in surface water in and around the tract already exceed the standard of 1,200 mg/L. Reduced instream flows could also result in less water available for irrigation downstream because water captured in retention ponds is not discharged downstream. There would be a small risk of surface-water contamination from accidental spills on 13.8 miles of stream that are within 100 feet of the reasonably foreseeable coal haul transportation route. There would also be a small increase in fine particles in streams associated with deposition of fugitive dust and coal dust.

Under the Proposed Action, no direct adverse impacts to surface-water quality are likely. Runoff from disturbed areas on the tract would be captured in retention ponds, which do not release water into downstream receiving waters. Erosion of sediment from dispersed facilities and the relocation of KFO Route 116 would be controlled with silt fences and other sediment-control Best Management Practices (BMPs). These BMPs are more than 90% effective in capturing sediment when installed and maintained properly. Therefore, most of the sediment and associated contaminants found in surface runoff from the tract would be contained, and would not pose any direct threat to surface waters.

Impacts to surface-water quality under Alternative K1 would be the same as those under the Proposed Action but would be of a lesser magnitude. Under Alternative K1, approximately 14 acre-feet of water would be captured from disturbed areas. This quantity of water would no longer reach receiving waters downstream, resulting in reduced dilution and therefore a potential increase in the concentration of pollutants in associated surface waters compared to the No Action Alternative.

Ground Water: In the absence of appreciable groundwater or surface-water resources in the Alton area, there is no significant potential for the underground mining activities to impact important overlying groundwater or surface water resources. Because of the presence of thick sequences of low-permeability Tropic Shale bedrock in potential underground mining areas, the potential for the downward migration of recharge waters from the land surface through the Tropic Shale to underlying strata is considered low. Any discharge from mining operations will be monitored and regulated under a Utah Pollutant Discharge Elimination System (UPDES) permit. Groundwater in the coal and in the geologic units above and below the underground mine workings would enter the underground workings during mine development and are partly dissipated by removal with the mined coal, by evaporation through the mine ventilation system, or drainage into mined out areas of the underground workings. Excess water that interferes with mining operations is collected from the underground mine workings, will meet UPDES standards, and be discharged at the surface into the same basin.

Groundwater would be affected by the action alternatives through the use of groundwater for dust suppression, the removal of groundwater as moisture contained in coal, and the evaporation of groundwater exposed in pits.

Town of Alton Water Source: Due to the appreciable distances between springs used by the town of Alton and the tract, and because these springs discharge from strata that are not present in the tract, water quality and water quantity at these springs should not be impacted by the Proposed Action.

SUFCO

The analysis area for water resources consists of the lease modifications area and an additional 0.25- mile area around the lease modifications. This analysis considers the water resources downstream of the lease modifications that may experience potential effects from the proposed mining. There are no registered water supply wells in the analysis area and groundwater is only used at the point of surface discharge at springs and seeps).

The lease modifications are on the boundary of two drainage basins: the Sevier River/Sevier Lake basin and the western Colorado River basin. The Sevier River basin is a closed basin, where surface water flow eventually terminates at Sevier Lake. Surface waters in the eastern half of the lease modifications are within the Muddy Creek watershed.

Springs and seeps located in the lease modifications are most likely supported by shallow water migration through the Flagstaff Limestone and discharged from the North Horn Formation. The springs and seeps are separated from the coal seams proposed for mining by a sequence of interbedded, low-permeability claystones, mudstones, and shales, indicating that the potential for vertical groundwater flow through this low-permeability, heterogeneous rock sequence is low.

Existing inflow into the SUFCO Mine is from isolated groundwater that is stored in sandstone paleochannels or localized perched aquifers. Groundwater in the coal and in the geologic units above and below the SUFCO Mine would enter the underground workings during mine development and longwall mining will be partly dissipated by removal with the mined coal, by evaporation through the mine ventilation system, or drainage into mined out areas of the underground workings. Excess water that interferes with mining operations is collected from the SUFCO Mine, treated to meet UPDES standards and discharged at the surface into the same basin. The water encountered in the mining sequence becomes a part of a closed-circuit system whereby the water is directed, stored and then used for dust suppression during mining.

Removing infiltrating groundwater (dewatering) from the mine which is then discharged is not anticipated to affect the surface water quality of local creeks and tributaries. SUFCO has been discharging excess water into local creeks without a change in flow or water quality. Thirty-eight stream sites are being monitored within and adjacent to the SUFCO Mine permit area. With only one exception the SUFCO Mine has not identified any mining-related impacts and future diversion of stream flow is considered to be an overall low risk. No increase in mine-related discharge to surface water is expected; therefore, changes to the stream flow, impacts from erosion, and impacts from degradation of surface water quality from dewatering are not

anticipated. No loss or relocation of perennial water sources are expected to occur from mining the lease modifications.

The interbedded claystones, siltstones, and sandstones of the Wasatch Plateau are known to be rich in swelling clays which absorb water and expand appreciably relative to their dry volume. These swelling clays reduce the hydraulic conductivity of the rock or soil that contains them and contributes to the rapid closing or healing of tension fractures that could result from subsidence). Due to the lack of connectivity between the groundwater and the seeps and springs, impacts on the flow to surface water systems are not expected.

The primary impact resulting from mine dewatering and drawdown of groundwater would be related to the direct discharge to surface waters. Effects from mining the South Fork Federal Coal Lease Modifications at the SUFCO mine are expected to remain the same.

Drawdown or water pressure reductions in the coal due to mine dewatering could create a groundwater flow gradient toward the mine; however, the drawdown flow rates are expected to be very low due to the low vertical permeability of the interbedded silts, shale, sandstones, and coals of the Blackhawk Formation.

Effects on groundwater from the underlying Star Point Sandstone or from the hydrogeologic units located stratigraphically above the coal are expected to be localized, short-term, negligible and unmeasurable (Cirrus, 2014). Due to the thickness of the overburden in the lease modifications area, it is unlikely that water quality in shallower perched aquifers would be affected by caving and fracturing of the overburden allowing groundwater to flow into the mine. The Utah DOGM has discovered that water quality downstream from coal mines in the Wasatch Plateau is often better than natural spring flow or base flow.

Based on the above analysis and due to the thick overburden compared to the thin coal seam to be removed, impacts to groundwater quality and quantity are expected to be minimal. No surface disturbing activity or subsidence are foreseen in the modification areas. Monitoring for subsidence impacts is required.

Cumulative Effects

There are no cumulative effects of the lifting of the coal leasing pause on water quality, quantity, or riparian areas. There is no possibility for a combined cumulative effect of the coal leases issued between March 2017 and March 2019, as none of those mines have direct, indirect, and cumulative effects for those resources that intersect.

Summary

In summary, removing the leasing pause will not result in direct or indirect effects, or cumulative effects to water resources (i.e., surface water, groundwater, and riparian areas). Implementation of mining operations could cause effects on those resources as described and analyzed in the respective NEPA documents for each coal mine. Combined cumulative effects of coal leases issued between March 2017 and March 2019 are not possible because there is no direct

connection between water resources at those locations. Impacts to water resources (e.g., riparian areas along with surface and ground water at Alton and groundwater at SUFCO and the Pollyanna #8) at individual mines are adequately disclosed in NEPA analysis, and are expected to be short-term and/or fully reclaimed unless otherwise disclosed.

4.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

This chapter describes the coordination and consultation that occurred during the preparation of this EA.

4.1 Cooperation

The BLM may invite any agency with jurisdiction by law, or with special expertise, to participate as a cooperating agency in an EA (43 CFR 46.225(e)). Special expertise means, "... statutory responsibility, agency mission, or related program experience" (40 CFR 1508.26). The BLM invited the Office of Surface Mining Reclamation and Enforcement (OSMRE) to participate as a cooperating agency in this EA, because the agency has special expertise with the federal coal program and NEPA review process. OSMRE accepted this invitation and has provided their special expertise in the preparation of this EA

4.2 Consultation

The BLM has determined that the decision to lift the coal leasing pause does not constitute an "undertaking" as defined by the Endangered Species Act (ESA) or the National Historic Preservation Act (NHPA). As such, no consultation under section 7 of the ESA or section 106 of the NHPA is necessary. Further, the Department's Tribal Consultation Policy states that it does not apply to matters that are in litigation. See Department of the Interior Policy on Consultation with Indian Tribes, Section III, p. 3.

The BLM met its consultation requirements from section 7 of the ESA for each separate leasing action. For all three projects the U.S. Fish and Wildlife Service (USFWS) provided official lists of endangered or threatened species (or species proposed for listing) that may occur on the tracts or that may be affected by mining on the tracts. For the SUFCO and Pollyanna projects it was determined that there would be "no effect" on any of the federally listed species or designated critical habitat; therefore, further consultation was not required (see BLM 2017 and BLM 2018). For the Alton project, the BLM received a letter from the USFWS concurring with the BLM's determination that the Proposed Action was not likely to adversely affect threatened or endangered species and that a biological assessment was not needed (see Alton Final EIS section 5.2.3 and Alton ROD section 7.7).

The BLM conducted government-to-government consultation with tribes that would be potentially affected by the individual leases traceable to the Zinke Order prior to their issuance. Table 4.1 outlines the extent of this consultation.

Table 4.1. List of Tribes Consulted during the original project specific NEPA.

Coal Project Name	Tribes Consulted during the original project specific NEPA
Polyanna #8	Caddo Nation, Cherokee Nation, Choctaw Nation, Osage Nation, Thlopthlocco Tribal Town, Wichita and Affiliated Tribes
Alton	Cedar Band of Paiutes, Hopi Tribe, Indian Peak Band of Paiutes, Kaibab-Paiute Tribe, Kanosh and of Paiutes, Koosharem Band of Paiutes, Navajo Nation – Bodaway/Gap Charter, Ute Cultural Rights and Preservation
SUFCO	Hopi Tribe, Navajo Nation, Paiute Indian Tribe of Utah, Ute Indian Tribe

4.3 List of Preparers

The team members listed below prepared this EA and the analyses needed to assess the impacts in compliance with NEPA, as directed by the U.S. District Court of Montana’s Order.

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