C/041/002 Incoming

5445

United States Department of the Interior

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Western Region Office
1999 Broadway, Suite 3320
Denver, CO 80202-3050

RECEIVED
JUL 01 2018
DIV. OF OIL, GAS & MINING

June 29, 2018

UT-0026

John D. Byars
225 North 5th Street, 9th Floor
Grand Junction, CO 81501

Dear Mr. Byars:

On June 21, 2018, the Department of the Interior approved a mining plan modification for Federal Coal Lease(s) UTU-84102 at Canyon Fuel Company, LLC's Sufco Mine. This mining plan action relates to Federal lands associated with the Utah Division of Oil, Gas and Mining's Decision Document for the Greens Hollow Lease addition to Canyon Fuel Company, LLC's, Sufco Mine, C/041/0002, in Seiver and Sanpete Counties, approved on April 23, 2018.

I have enclosed a disk containing a copy of the mining plan decision document for this modification to the mining plan. Please read the terms and conditions of the mining plan approval document contained therein. Mining and reclamation operations must be conducted in accordance with both the Utah State permit and the enclosed mining plan approval.

If you have any questions, please contact me at 303-293-5078

Sincerely,

Nicole Caveny

Nicole Caveny
Environmental Protection Specialist

Enclosure
cc: BLM Price Field Office
Utah DOGM
FS Manti-La Sal National Forest

MINING PLAN DECISION DOCUMENT

Canyon Fuel Company, LLC

Sufco Mine

Federal Lease UTU-84102

Sevier and Sanpete Counties, Utah

U.S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement

Approved June 2018

Mining Plan Modification
Sufco Mine
Federal Coal Lease UTU-84102

Fact Sheet

1. This mining plan modification will result in approximately 6,175 acres of Federal coal lease UTU-84102 to be added to the mining plan approval area of Canyon Fuel Company, LLC's, Sufco Mine, an underground mine located 16 miles from Emery, Utah.

2. Approval of this mining plan modification will authorize mining of approximately 56 million tons of Federal coal.

3. Approval of this mining plan modification will add approximately 6,175 acres of Federal surface land to the mining plan approval area.

4. The projected average annual production rate is estimated to be 5.5 to 6.3 million tons per year and the maximum production rate will be no more than 10 million tons per year.

5. The permit area for Utah Permit No. C/041/002 will increase to total approximately 6,175 acres.

6. Surface disturbance within the State permit will not increase from the currently approved 97 acres with approval of this modification.

7. The mining operation uses room and pillar, and longwall mining methods.

8. The current number of employees at the mine, approximately 398, will increase to 450 as a result of this action.

9. The current land uses of timber, grazingland and wildlife habitat will not change within the permit and mining plan area.

10. The Utah Department of Oil, Gas, and Mining determined that a reclamation performance bond of $4,680,000 in the form of a surety bond, made payable to both the State and the United States, is adequate for the State Permit and this mining plan modification.

11. The proposed action will add approximately 9 years to the life of the mine.

12. There is an appeal before the IBLA pending. On September 12, 2016, WildEarth Guardians and several other environmental groups appealed and requested a stay of the BLM's Record of Decision authorizing lease UTU-84102 (WildEarth Guardians et al. v. BLM, 188 IBLA 388 (2016)). On October 26, 2016, the IBLA denied the stay request. The appeal is pending but the decision is in effect.

13. The applicant requests a decision by June 30, 2018, for Federal coal lease UTU-84102 to prevent potential employee layoffs.

Memoranda

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Federal Lease UTU-84102
Mining Plan Decision Document

United States Department of the Interior

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Washington. D.C. 20240

JUN 0 1 2018

MEMORANDUM

To: Joseph R. Balash
Assistant Secretary
Land and Minerals Management
U.S. Department of the Interior

From: Glenda H. Owens
Deputy Director, Exercising the Authority of the Director, Office of Surface Mining Reclamation and Enforcement
U.S. Department of the Interior

Subject: Recommendation for approval of the proposed mining plan modification for Federal Lease UTU-84102 at Canyon Fuel Company, LLC's, Sufco Mine, located in Sevier and Sanpete Counties, Utah

I recommend approval, without special conditions, of this mining plan modification for Federal Lease UTU-84102 at Canyon Fuel Company, LLC's, Sufco Mine under the Mineral Leasing Act of 1920, as amended. This mining plan approval supplements all previous approvals for the Sufco Mine.

My recommendation to approve Sufco Mine's Mining Plan modification is based on:

(l) Canyon Fuel Company, LLC's complete permit application package (PAP) including the Resource Recovery and Protection Plan (R2P2);

(2) Compliance with the National Environmental Policy Act of 1969;

(3) Documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders;

(4) Comments and recommendations or concurrence of other Federal agencies, and the public;

(5) The Bureau of Land Management's findings and recommendations regarding the R2P2, the Federal lease requirements, and the Mineral Leasing Act; and,

(6) Findings and recommendations of the Utah Division of Oil, Gas and Mining, regarding the PAP and the State program.

The Secretary may approve a mining plan for Federal leases under 30 U.S.C. 207(c) and 1273(c). In accordance with 30 CFR Chapter VII, Subchapter D, I find that the proposed mining plan modification is in compliance with all applicable laws and regulations. The decision document for the proposed mining plan action is attached.

Attachment

United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
Western Region Office
1999 Broadway, Suite 3320
Denver, CO 80202-3050

MAY 29 2018

Memorandum

To: Glenda H. Owens
Deputy Director, Exercising the Authority of Director, Office of Surface Mining Reclamation and Enforcement
U.S. Department of the Interior

Through: Sterling Rideout
Assistant Director, Program Support

From: David Berry
Regional Director, Western Region

Subject: Recommendation for Approval, Without Special Conditions, of the proposed new Mining Plan Modification for Federal Lease UTU-84102 at the Canyon Fuel Company, LLC's Sufco Mine, located in Sevier and Sanpete Counties, Utah

I. Recommendation

I recommend approval, without special conditions, of a mining plan modification for Federal Lease UTU-84102 at the Sufco Mine. This is a mining plan modification for an underground coal mine being permitted under the Federal Lands Program, the approved Utah State program, and the State-Federal cooperative agreement. This mining plan approval supplements all previous approvals for the Sufco Mine.

My recommendation to approve this mining plan modification is based on:

(1) Canyon Fuel Company, LLC (CFC) complete permit application package (PAP) including the Resource Recovery and Protection Plan (R2P2);

(2) Compliance with the National Environmental Policy Act of 1969;

(3) Documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders;

(4) Comments and recommendations or concurrence of other Federal agencies and the public;

(5) The findings and recommendations of the Bureau of Land Management (BLM) with respect to the R2P2 and other requirements of the lease and the Mineral Leasing Act; and,

(6) The findings and recommendations of the Utah Division of Oil, Gas, and Mining (DOGM) regarding the PAP and the State program.

If you concur with this recommendation, please sign the attached memorandum to the Assistant Secretary, Land and Minerals Management (ASLM).

II. Background

The Sufco underground coal mine is located 16 miles from Emery, Utah, in Seiver and Sanpete counties, Utah. The mine has been in operation since 1941. The life of the currently approved mining operations within the approved permit area is estimated to be two years concluding in 2020. The mining operation uses room and pillar, and longwall mining methods. The average production rate is 5.5 million to 6.3 million tons per year (Mtpy) from the Upper and Lower Hiawatha seams. The maximum production rate is 10 Mtpy as approved by Air Permit N10665-0014, however, the mine is not anticipated to exceed 6.3 Mtpy as reported in the PAP. The mine currently employs 398 people.

The Department of the Interior (DOI) initially approved the mining plan for Federal leases U-28297, U-062453, U-47080, U-0149084, SL-062583 at the Sufco Mine on May 19, 1987. Since that date, subsequent mining plan modifications were approved on December 19, 1989, for Federal lease U-63214 and on July 20, 2000, for Federal lease UTU-76195.

DOGM approved the Sufco Mine, Permit No. C/041/0002, Significant Revision on April 23, 2018. Before approval of the Permit No. C/041/0002 Significant Revision, the State permit area consisted of approximately 20,228 surface acres, of which approximately 16,955 acres are Federal, 2,294 acres are State, 29 acres are United States Forest Service (FS), 70 acres are BLM, and 880 acres are private.

Before approval of the Permit No. C/041/0002 Significant Revision, there were approximately 97 acres approved for disturbance in State permit area, of which 59 acres are private, and 38 acres are Federal.

The currently-approved Federal mining plan area consists of approximately 16,955 acres.

Approximately 181 million tons of Federal coal have already been approved for mining, with approximately 11 million tons of recoverable Federal coal yet to be mined within the currently-approved mining plan area.

The post mining land use for the currently-approved mining plan area is timber, grazingland and wildlife habitat.

There is an appeal before the Interior Board of Land Appeals (IBLA) pending. On September 12, 2016, WildEarth Guardians and several other environmental groups appealed and requested a stay of the BLM's Record of Decision authorizing lease UTU-84102 (WildEarth Guardians et al. v. BLM, 188 IBLA 388 (2016)). On October 26, 2016, the IBLA denied the stay request. The appeal is pending but the decision is in effect.

III. The Proposed Action

This mining plan action consists of a mining plan modification for Federal coal lease UTU-84102. Specifically, the mining plan modification proposed by CFC adds Federal land and minerals to the permit area which will be mined by room and pillar, and longwall mining methods. The area where the proposed surface mining and reclamation action will occur is legally described as:

UTU-84102

T. 20 S., R. 4 E., Salt Lake Baseline and Meridian (SLM)
- Sec. 36, lot 4, E½2NE¼, NE¼SE¼

T. 20 S., R. 5 E., SLM
- Sec. 19, lots 5-8, E½SW¼, SE¼
- Sec. 20, S½
- Sec. 21, W½SW¼
- Sec. 28, W½
- Sec. 29, all
- Sec. 30, all
- Sec. 31, all
- Sec. 32, N½, N½S½
- Sec. 33, NW¼NW¼

T. 21 S., R. 4 E., SLM
- Sec. 1, all
- Sec. 2, SE¼
- Sec. 11, E½, E½W½
- Sec. 12, NE¼, W½, W½SE¼
- Sec. 13, W½NE¼, NW¼
- Sec. 14, NE¼, E½NW¼

T. 21 S., R. 5 E., SLM
- Sec. 6, all

Total number of acres: 6,175.39 acres

Attachment A of the mining plan approval shows the 6,175.39 acres consisting of the Upper and Lower Hiawatha coal seams. Approval of this mining plan modification will authorize mining of approximately 56 million tons of recoverable Federal coal.

Federal coal from UTU-84102 would be mined over nine years. Receiving Secretarial authorization to mine coal within UTU-84102 would extend the life-of-mine to approximately 2028. If Secretarial authorization is not received, mining could end as soon as 2020.

The current average production rate of 5.5 to 6.3 Mtpy would not change with the approval of this mine plan modification. The maximum production rate of 10 Mtpy would not change based on the current Utah Department of Environmental Quality approved air quality permit N10665-0014.

The number of people employed at the mine would increase to approximately 450 from 398 employees.

State approval of Permit No. C/041/0002 added approximately 6,175 permit acres; an increase from approximately 20,227 permit acres to approximately 26,402 permit acres.

State approval of Permit No. C/041/0002 added approximately zero disturbance acres to the permitted disturbance of approximately 96 acres.

Approval of this Federal mining plan modification will add approximately 6,175 Federal acres to the currently-approved mining plan area, increasing the mining plan area from approximately 16,955 acres to approximately 23,130 Federal acres.

Approval of this mining plan modification will add 56 million tons of Federal coal, increasing the total approved tonnage from approximately 181 million tons of Federal coal to approximately 237 million tons of Federal coal.

DOGM currently has three conditions to the permit, which can be found in the State Findings and Decision section of this mining plan decision document.

The post mining land use within the permit and mining plan area would not change from timber, grazingland and wildlife habitat.

IV. Review Process

The DOGM reviewed the PAP under the Utah State program, the Federal lands program (30 CFR Chapter VII, Subchapter D), and the Utah cooperative agreement (30 CFR 944). Pursuant to the Utah State program and the cooperative

agreement, Utah approved the Permit No. C/041/0002 Significant Revision on April 23, 2018.

OSMRE consulted with other Federal agencies for compliance with the requirements of applicable Federal laws. Their comments and concurrences can be found in the *Documentation of Consultation, Concurrence, and Compliance* section of this mining plan decision document.

The BLM reviewed the R2P2 for compliance with the Mineral Leasing Act of 1920, 30 U.S.C. 181 et seq. as amended, and 43 CFR Part 3480. The BLM found that maximum economic recovery of the Federal coal will be achieved in a memorandum dated March 2, 2018.

On January 29, 2018, OSMRE wrote a memorandum to the file titled: *Biological Analysis for the Sufco Coal Mine, Greens Hollow Federal Coal Lease Tract for new Federal Coal Lease UTU-84102 File.* The letter explains OSMRE's rationale for the "no effect" determinations for the following species: California Condor (*Gymnogyps californianus*), Yellow-billed Cuckoo (*Coccyzus americanus*), Heliotrope Milk-vetch (*Astragalus montii*), and Jones Cycladenia (*Cycladenia humilis var. jonesii*). With this finding, no further consultation with USFWS is required for this mining plan modification. Additionally, the Sufco Mine PAP includes commitments to develop and implement species specific protective measures if threatened or endangered species are determined to be present in the vicinity of the mine.

There are five archaeological sites within the Greens Hollow Lease boundary that might be affected by underground mining subsidence. Of these sites, only one (42SV3224) is recommended as eligible for inclusion in the National Register of Historic Places (NRHP). This site is a lithic and ceramic scatter with features visible on the site surface that are likely to yield information important in prehistory. The remaining 4 sites (42SP179, 42SP492, 42SV2774 and 42SV3217) are not eligible for inclusion in the NRHP. A Memorandum of Agreement has been created between the BLM, FS, the Utah State Historic Preservation Officer (SHPO) and the Ute Tribe that establishes procedures for avoiding, or if necessary, mitigating adverse effects to this and any other archaeological sites in the project area. This will guide the implementation of a mitigation plan for any affected eligible cultural resource sites within the area of potential effect prior to any ground disturbing activities. On November 9, 2017, OSMRE received concurrence from the Utah SHPO of concurrence with OSMRE's determinations of eligibility and effects for mining UTU-84102.

The area included in this mining plan modification has not been designated unsuitable for mining according to section 522(b) of SMCRA.

The mining plan modification is located on Federal lands west of the 100th meridian within the boundaries of the Manti-La Sal National Forest. However,

underground operations at the Sufco Mine do not conflict with the Multiple-Use Sustained Yield Act of 1960 (16 U. S. C. 528-531), the Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201 et. seq.), the National Forest Management Act of 1976 (90 Stat. 2949), and the provisions of SMCRA. Based on OSMRE's analysis and on the concurrence of the USDA Forest Service in its consent letter dated February 27, 2018, the Sufco Mine will not be incompatible with significant recreational, timber, economic, or other values of the Manti-La Sal National Forest.

On January 4, 2018, OSMRE sent a letter to the following American Indian Tribes to identify any religious concerns or other issues with the: Eastern Shoshone Tribe; Goshute Indian Tribe; Hopi Tribe; Laguna Pueblo Tribe; Navajo Nation; Northwestern Band of Shoshoni Nation; Paiute Indian Tribe of Utah; Pueblo of Jemez; Pueblo of Luguna; Pueblo of Zuni Tribe; Santa Clara Pueblo Tribe; Shoshone-Bannock Tribes; Southern Ute Tribe; Ute Indian Tribe; Ute Indian Tribe of the Uintah and Ouray Reservation, Utah; Ute Mountain Tribe of the Ute Mountain Reservation, Colorado, New Mexico and Utah ; Ute Mountain Ute Tribe; White Mesa Ute Tribe; and Zia Pueblo Tribe. The scoping letter requested comments and continued consultation with the tribes concerning OSMRE's Federal action of making a recommendation to the ASLM to approve, disapprove, or approve with conditions the proposed mining plan modification for the Permit C/041/0002 Significant Revision. The Hopi tribe responded and OSMRE resolved their comments as seen in chapter five of the environmental analysis (EA).

OSMRE has determined that approval of this mining plan modification will not have a significant impact on the quality of the human environment. The supplemental EA prepared by OSMRE, titled: *Greens Hollow Tract Mining Plan Modification Supplemental Environmental Assessment January 2018* and the OSMRE Finding of No New Significant Impact (FONNSI), describe the impacts that may result from approval of this new mining plan modification and its alternatives. The FONNSI and supporting EA are included within this mining plan modification decision document.

A legal notice announcing the availability of the *Greens Hollow Tract Mining Plan Modification Supplemental Environmental Assessment* was published in the *Richfield Reaper* newspaper on January 4, 2018, and the *Sun Advocate* newspaper on January 9, 2018. A letter announcing the availability was sent to all interested parties of record (either hard copy or email). The legal notice, outreach letter, EA, and unsigned FONNSI were published on the OSMRE Western Region website on January 4, 2018. Comments regarding the EA and FONNSI review were accepted from January 4, 2018, through February 5, 2018. A total of 90 substantive comments from a total of 5 individual commenters were received. OSMRE has reviewed and considered all comments.

OSMRE's review of the proposed action did not identify any issues that required resolution via the addition of special conditions to the mining plan approval.

The DOGM notified the public of the availability of the administratively complete Permit C/041/0002 Amendment for review, publishing four consecutive weekly notices in the *The Richfield Reaper, Emery County Progress, Sanpete Messenger.* The last publication date was June 8, 2017, June 6, 2017, and June 8, 2017, respectively. These notices notified the public of the availability of the administratively complete PAP for review over a 30 day comment period. No objections or comments regarding the application were received.

The DOGM determined that a reclamation performance bond of $4,680,000 in the form of a surety bond issued by Lexon Insurance Company and indemnified by Ironshore Indemnity Inc. was adequate. The bond is payable to both the State and the United States, is adequate for the State Permit and this mining plan modification.

A chronology of events related to the processing of both the PAP and the proposed mining plan decision is included with the attached decision document.

The content of OSMRE's decision record includes the following:

- The PAP submitted CFC;
- DOGM's Decision Document for the Permit C/041/0002 Significant Revision, provided to OSMRE under the cooperative agreement;
- The environmental analysis document titled *Greens Hollow Tract Mining Plan Modification Supplemental Environmental Assessment*;
- The FONNSI prepared by OSMRE;
- Other documents prepared by DOGM;
- The documents mentioned in this Memorandum and their corresponding correspondence.

Attachment

Location Maps

Canyon Fuel Company, LLC
SUFCO Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

SUFCO Mine

GENERAL LOCATION MAP

SCALE: NONE	DATE: 1/25/2018	DRAWN BY: J.G.C.
ENGINEER:	CHECKED BY: V.M.	PROJ:
FILE NAME: H:\DRAWINGS\MRP\PLATES\GENERAL LOCATION MAP.dwg		

SHEET NO. 1

Jason Christensen: 2/7/2018 2:35 PM

GREENS HOLLOW LEASE

SITLA MUDDY LEASE

QUITCHUPAH LEASE

PINES LEASE

LEGEND

- Modification Area - Greens Hollow Lease
- Lease Boundaries
- Currently Approved Mining Plan Area (State/Fee)
- Currently Approved Mine Plan Area (Federal)
- State Approved Permit Boundary

5000 0 5000

Canyon Fuel Company, LLC
SUFCO Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Mining Plan Approval Area
GREENS HOLLOW

SCALE: 1" = 5000'	DATE: 2/7/2018	DRAWN BY: J.G.C.
ENGINEER:	CHECKED BY: V.M.	PROJ: ####

FILE NAME: H:\DRAWINGS\MRP\PLATES_PLATES_G.H. - 1-1-18\Mining Plan Approval Areas GH.dwg

SHEET NO. 1 v2

Jason Christensen: 4/17/2018 8:01 AM

Chronology Of Events

CHRONOLOGY

Sufco Mine
Federal Lease UTU-84102
Mining Plan Decision Document

DATE	**EVENT**
February 12, 2008	The Bureau of Land Management (BLM) and the Forest Service (FS) initiated Public Scoping for the Supplemental Environmental Impact Statement
October 5, 2015	BLM and FS complete the Supplementary Environmental Impact Statement for Federal Coal Lease UTU-84102
September 12, 2016	WildEarth Guardians and several other environmental groups appealed and requested a stay of the BLM's Record of Decision. WildEarth Guardians et al. v. BLM, 188 IBLA 388 (2016). On October 26, 2016, the IBLA denied the stay request.
April 1, 2017	The Bureau of Land Management (BLM) approved the new Federal lease UTU-84102.
April 21, 2017	Canyon Fuel Company, LLC submitted the permit application package (PAP) under the approved Utah State Program to the Division of Oil, Gas and Mining (DOGM) for a permit revision for the Sufco Mine.
May 11, 2017	The DOGM determined that the Sufco Mine Significant Revision Permit Application Package (PAP), Permit No C/041/0002 was administratively complete.
May 25, 2017	The Office of Surface Mining Reclamation and Enforcement (OSMRE) determines that permit revision incorporating UTU-84102 into the mining and reclamation plan constitutes a mining plan modification and requires the preparation of a Mining Plan Decision Document is required for the Significant Permit Revision to add UTU-84102.
June 6, 2017	Canyon Fuel Company, LLC published in the *Emery County Progress* the fourth consecutive weekly notice that an administratively complete Permit Application Package for Permit No. C/041/0002 was filed with the DOGM.
June 8, 2017	Canyon Fuel Company, LLC published in the *The Richfield Reaper*, and *Sanpete Messenger* the fourth consecutive weekly notice that an administratively complete Permit Application Package for Permit No. C/041/0002 was filed with the DOGM.
November 1, 2017	OSMRE requested and received an official threatened & endangered species list from the Fish and Wildlife Service.
November 9, 2017	The Utah State Historic Preservation Office provided its comments to OSMRE.
January 4, 2018	OSMRE begins a public comment period for the Supplemental

DATE	EVENT
	Environmental Analysis (EA) and Unsigned Finding of No New Significant Impact (FONNSI) for 30 day comment period.
January 9, 2018	OSMRE requested comments and continued consultation with the Tribes.
January 29, 2018	OSMRE determines “no effect” for threatened and endangered species.
February 5, 2018	Public comment period of the Supplemental EA and unsigned FONNSI ends.
February 27, 2018	The Forest Service provided its concurrence.
March 2, 2018	The BLM provided its findings and recommendations on the approval of the Resource Recovery and Protection Plan.
April 23, 2018	DOGM approved the PAP for permit revision incorporating UTU-84102 into the mining and reclamation plan.
To be determined	The OSMRE Program Support Division Manager signed the FONNSI
To be determined	The Regional Director, OSMRE Western Region recommended to the OSMRE Director, that the mining plan modification be approved
To be determined	The OSMRE Director recommended to the Assistant Secretary, Land and Minerals Management, that the mining plan modification be approved
To be determined	The Assistant Secretary, Land and Minerals Management approves the mining plan modification

NEPA Compliance Documents

SUMMARY OF THE EIS

SUMMARY 1.1 INTRODUCTION

The Supplemental Environmental Impact Statement (SEIS) for the Greens Hollow Federal Coal Lease Tract (UTU-84102) documents the environmental analysis pertaining to the potential leasing of the Greens Hollow Federal Coal Lease-By-Application (LBA) Tract (Greens Hollow tract) for competitive bid by the United States Department of the Interior (USDI), Bureau of Land Management (BLM), Utah State Office. Where Federal coal is being considered for lease on National Forest System (NFS) lands, the BLM must have the consent of the United States Department of Agriculture (USDA), Forest Service (FS) before doing so. The Final SEIS also documents the process used to analyze the LBA submittal, the environmental impacts, and possible conditions to protect non-coal surface resources in the event the lease is issued. The Final SEIS for the Greens Hollow tract was prepared jointly by the BLM, Price Field Office, and the FS, specifically the Manti-La Sal National Forest (MLNF) and Fishlake National Forest (FLNF). The USDI Office of Surface Mining Reclamation and Enforcement (OSM) is a cooperating agency in the preparation of the SEIS. This document replaces the December 2011 *Final Environmental Impact Statement for the Leasing and Underground Mining of the Greens Hollow Federal Coal Lease Tract UTU-84102* (FEIS) in its entirety.

The Final SEIS addresses concerns that were identified after releasing the FEIS and FS Record of Decision (ROD) in December 2011. The FS consented to BLM's decision to offer a federal coal lease with conditions. The consent decision was appealed February 13, 2012. Following the appeal, the FS withdrew the ROD in order to clarify the decisions to be made and agency decision authority, analyze the environmental consequences of potential actions to be taken by each agency, make technical corrections, and address agency compliance actions and resource concerns not previously analyzed in the original 2011 FEIS. This analysis clarifies potential effects within the Greens Hollow tract and those that may be reasonably foreseeable on adjacent NFS lands, mostly under active coal leases.

A review of the applicable federal and state legal and regulatory framework regarding decision authority resulted in changes to the analysis. The decision authority for the FS pertains only to whether or not to consent to the BLM's decision to offer for lease the Greens Hollow tract and to identify which conditions are necessary to protect non-mineral resources. The decision authority of the BLM is to determine (based on FS consent) whether or not to offer the lease tract for competitive bid and under what terms, conditions, and stipulations.

The SEIS specifically addresses the consequences of implementing three alternatives including the No Action Alternative (the lease tract would not be offered for leasing), the Proposed Action in which the FS would consent to BLM offering for lease the tract with conditions and the BLM would offer it for lease, and another alternative similar to the Proposed Action, but which includes additional measures (areas where subsidence mining could not occur) to further protect specific resources. The analysis was initiated by the agencies in response to a lease-by-application (LBA) for the Greens Hollow tract originally submitted by Ark Land Company to the BLM, Utah State Office. At the time, Ark Land Company owned the Southern Utah Fuel Company (SUFCO) Mine which is operated by Canyon Fuel Company. Recently, Ark Land Company has requested assignment of the Greens Hollow LBA to Canyon Fuel Company LLC. The assignment request is being processed by the BLM.

This LBA tract is being processed under authority of the Mineral Leasing Act (MLA) of 1920, as amended by the Federal Coal Leasing Amendments Act (FCLAA) of 1976, and according to the processes in 43 CFR Part 3400. If approved, the tract would be offered at a competitive lease sale.

SUMMARY 1.2 PROPOSED ACTION

The FS proposes to consent to the BLM offering for lease the NFS lands in the Greens Hollow tract (approximately 6,175 acres) for production of federal coal reserves, with conditions for protecting non-mineral resources (Figure 1.3). Based on FS consent, the BLM proposes to offer the Greens Hollow tract for competitive bid and issue a lease with terms, conditions, and special stipulations. Under this alternative, about 56.6 million tons of recoverable coal reserves, representing some 8.8 years of mining would be offered for lease.

For the NFS lands administered by the MLNF, the Proposed Action includes conditions (all special coal lease stipulations from the MLNF Forest Plan), except for Stipulation #9. Stipulation #9 includes provisions to protect certain surface resources such as escarpments, surface structures, and perennial streams from adverse effects of underground coal mine subsidence unless specifically approved. The Proposed Action does not include this stipulation, and therefore these features where they exist on the Green Hollow tract, could be subsided. For the NFS lands administered by the FLNF, resource conditions related to coal exploration and development that require special attention are addressed through standard lease terms and conditions and special coal lease stipulations developed by the MLNF that are included in Appendix B.

For the purposes of analysis, the Proposed Action assumes a Conceptual Mine Plan and a reasonably foreseeable Surface Use Scenario (Section 2.6). The Conceptual Mine Plan assumes the tract would be mined using underground longwall mining techniques, and that full extraction mining would occur across the tract.

SUMMARY 1.3 PURPOSE AND NEED

FS PURPOSE AND NEED

The FS has a need to respond to a request from the BLM for consent to offering a federal coal lease to comply with the MLA of 1920, as amended by the FCLAA of 1976 and supplemented in 1978. The FS action responds to the MLNF and FLNF plans in Chapter 1, Sections 1.8.1 and 1.8.2. The FS must assess whether or not to consent to the BLM offering certain NFS lands for lease for coal resources.

BLM PURPOSE AND NEED

The BLM is considering the Proposed Action because coal energy development is recognized as an appropriate use of public lands and is an integral part of the nation's energy independence, and authorized under the authority of the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976 and supplemented in 1978, and by implementing regulations at 43 CFR 3425, Lease By Application.

The purpose of the BLM action is to facilitate continued development and Maximum Economic Recovery (MER) of federally managed coal energy resources in a safe and environmentally sound manner.

The agencies actions respond to the federal government's overall policy to foster and encourage private enterprise in the development of economically sound and stable industries, and in the orderly and economic development of domestic resources to help assure satisfaction of domestic and industrial energy needs, national security interests, and environmental needs (Mining and Minerals Policy Act of 1970).

SUMMARY 1.4 DECISIONS FRAMEWORK

The Responsible Officials have the following decisions:

FS – As Responsible Official for the surface managing agency, the Forest Supervisor, Manti-La Sal and the Fishlake National Forests must decide:

- Whether or not to consent to the BLM issuing Federal Coal Lease UTU-84102 according to the MLA of 1920; as amended by the FCLAA of 1976.

- If the FS consents to issue the lease, they will prescribe conditions needed for protection of non-mineral surface resources on NFS lands. The conditions of FS consent would become stipulations on the BLM lease, should it be issued.

BLM – The District Manager of the BLM must decide:

- Whether or not to offer the tract for competitive leasing and under what terms, conditions, and stipulations, contingent on the consent of the surface managing agency.

If leased, the plans for mining would be reviewed by the BLM to ensure they fulfill the requirement of Maximum Economic Recovery (MER) and that mining is consistent with all lease terms, conditions, and stipulations. If leased, OSM would also use this analysis to support its review and associated recommendation on approval actions to the USDI Assistant Secretary for Lands and Minerals on a federal mine plan provided by the BLM if and when one is brought forward.

SUMMARY 1.5 EXISTING MINE AND RELATIONSHIP TO THE GREENS HOLLOW TRACT

The Greens Hollow tract lies to the north and west of the SITLA Coal Lease Tract and the Quitchupah Lease Tract as well as other lease tracts (Figure 1.2). The coal in the Greens Hollow tract could be directly accessed from the south and east through an extension of underground workings in the SUFCO mine. The Greens Hollow tract could also be accessed from other sites, including Muddy Creek Canyon on the north end of the tract, but would require the development of new portals in adjacent undisturbed areas.

SUMMARY 1.6 PUBLIC INVOLVEMENT

NEPA requires that the public and agency personnel be involved from an early stage in decision making on federal lands. Public involvement is an important part of the environmental and socioeconomic analysis process. A public involvement plan (communications plan) was developed to describe the protocol that would be used to involve the public in the environmental and socioeconomic analysis. The plan allows the public to actively participate in the NEPA process and to communicate issues of support, benefit, and concern regarding the proposed action. In addition, involvement of local, State, and other Federal agencies help to anticipate the potential effects and benefits that could result from the project. The public involvement plan is part of the project record located in the BLM Price Field Office, the Manti-La Sal National Forest Supervisors Office, Price, Utah, and Fishlake National Forest Supervisors Office, Richfield, Utah.

The Notice of Intent (NOI) for the Greens Hollow tract EIS was printed in the *Federal Register* (Vol. 73, No. 29, pp. 8060-8062) on Tuesday, February 12, 2008 (Appendix C). The NOI designated a 45-day

comment period ending March 28, 2008. A public scoping notice was also prepared and distributed on February 22, 2008 to interested individuals on the BLM, Price Field Office and Manti-La Sal and Fishlake National Forests mailing list. A legal notice was also sent to local newspapers (*Richfield Reaper*, *Sun Advocate*, *Emery County Progress*, and *Salina Sun*) to notify the general public through newspaper releases and media coverage. Comments were directed to the agency project manager in the BLM, Price Field Office.

In addition, in 2004 the FS initiated the preparation of an EIS for the Muddy Creek tract which involved the same lands as the Greens Hollow tract. Public scoping was conducted from March 5, 2004, through April 12, 2004, and a total of 10 responses were received. Based on the scoping comments and internal agency review, four resources were identified for detailed analysis in the Muddy Creek EIS: water resources, wildlife and wildlife habitat, vegetation, and cultural/paleontological resources.

COMMENTS ANALYZED AND RESPONDED TO IN THE PREPARATION OF THE EIS

A content analysis of the comments received was prepared. A summary of issues and concerns, grouped by discipline or resource, that were identified during the scoping process follows, while a more detailed record of responses received is provided in the scoping report developed for the project.

COMMENTS ON THE DRAFT EIS

A DEIS for the Greens Hollow tract was released and distributed on March 26, 2009. The EPA Notice of Availability (NOA) appeared in the Federal Register on April 3, 2009, initiating the formal comment period on the DEIS. The BLM NOA appeared in the Federal Register on April 6, 2009. The FS Legal Notice of Proposed Action appeared in the *Emery County Progress* and *Sun Advocate* newspapers on April 14, 2009 and in the *Richfield Reaper* and *Salina Sun* newspapers on April 15, 2009. The 45-day comment period established in the EPA NOA in the Federal Register ended May 18, 2009. The NOA was also posted on the BLM's Environmental Notification Bulletin Board (ENBB) on April 3, 2009. An electronic copy of the DEIS was made available on the BLM's website. Hard copies of the DEIS were mailed to the project mailing list and additional copies were made available at the BLM and FS offices.

Following the release of the DEIS, a public comment meeting was held in conjunction with the Fair Market Value Hearing at Salina, Utah on May 6, 2009.

Instructions were given to those receiving a copy of the DEIS and those attending the public meeting as to how to submit comments. Comment letters were sent to the agency project manager at the BLM Price Field Office in Price, Utah. All comment letters were added to the project record for the EIS.

The analysis of the comments focused on substantive comments on the DEIS as directed in 40 CFR 1503.4(b). Substantive comments included those which challenge the information in the DEIS as being accurate or inadequate or which offer specific information that may have bearing on the decision. Resource specialists prepared draft responses to each substantive comment. Those responses on the DEIS are located in the project record.

INPUT RECEIVED DURING THE APPEAL OF THE RECORD OF DECISION

A FEIS and FS Record of Decision (ROD) for the Greens Hollow tract were released by the FS in December 2011. The ROD consented to the BLM offering for lease the Greens Hollow tract. Interested parties on the mailing list were sent a notification dated December 14, 2011 of the release of the FEIS and FS ROD. The notification informed the interested parties where the FEIS and FS ROD could be located electronically and included the documents or CD, if requested. An EPA NOA was published in the *Federal Register* on December 23, 2011.

An appeal of the FS ROD was filed with the Regional Forester on February 13, 2012 by the Utah Environmental Congress, Grand Canyon Trust, and Center for Biological Diversity.

The FS withdrew the ROD for the Greens Hollow tract on March 20, 2012. Concerns raised in the appeal were further addressed in this SEIS.

NOTICE OF INTENT TO PREPARE A SUPPLEMENTAL EIS

An EPA NOI was published in the *Federal Register* on October 18, 2012 announcing the intent to prepare a supplemental EIS on the Greens Hollow tract. Additional scoping was not conducted in accordance with 40 CFR 1502.9(c) (4). There was a 45-day comment period after the draft Supplemental EIS was issued.

COMMENTS ON THE DRAFT SEIS

A Draft SEIS for the Greens Hollow tract was released and distributed on March 14, 2014. The EPA NOA appeared in the *Federal Register* (Vol. 79, No. 50, pp. 14506) on Friday, March 14, 2014, initiating the formal comment period on the Draft SEIS. The FS Legal Notice of Proposed Action appeared in the Richfield Reaper and Sun Advocate newspapers on March 19, 2014 and March 20, 2014, respectively. The 45-day comment period established in the EPA NOA in the *Federal Register* ended April 28, 2014. An electronic copy of the Draft SEIS was made available to the public. Hard copies were made available at the BLM and FS offices. The project mailing list was compiled from required agencies, interested individuals, scoping activities, and subsequent requests for the Draft SEIS.

The analysis of the comments focused on substantive comments on the Draft SEIS as directed in 40 CFR 1503.4(b). Substantive comments included those which challenge the information in the Draft SEIS as being accurate or inadequate or which offer specific information that may have bearing on the decision. Comments which merely express an opinion for or against the project were not identified as a comment requiring a response. In cases where the comment was not substantive but appeared to indicate that information in the EIS was either misunderstood or unclear, a response was prepared to clarify the information. Resource specialists prepared responses to each substantive comment.

Prior to release of the Draft SEIS it was determined that the BLM - Forest Service public hearing that addressed the Fair Market Value, Maximum Economic Recovery, and Draft Environmental Impact Statement was sufficient. While some fundamental portions of the analysis were expanded requiring the FEIS to be replaced by the SEIS in order to be understood, the alternatives and proposed type of mining had not changed. Therefore, another hearing was not required.

COMMENTS LEADING TO ALTERNATIVES

All of the above mentioned comments have been taken into consideration when developing alternatives to the proposed action and are discussed in Chapter 2 under Alternatives Development.

SUMMARY 1.7 ISSUES TO BE ANALYZED

Results of public scoping and ID Team deliberation resulted in issues being raised about the following: Mining-induced subsidence or potential post-leasing surface use effects on the ground surface, seismicity, surface and groundwater resources, surface structures, wildlife (includes threatened, endangered, sensitive and management indicator species) habitat and viability, vegetation resources (including Threatened, Endangered, and Special Status species), heritage resources, paleontological resources, socioeconomics, recreation, visual quality, range resources, roadless areas and air quality.

Full issue statements are described in Section 1.11.2.

SUMMARY 1.8 ALTERNATIVES ANALYZED

Chapter 2 describes and compares the No Action and other alternatives evaluated in the Greens Hollow tract EIS. The agencies preferred alternative is Alternative 3.

Alternative 1 – No Action

Under the No Action alternative, the FS would not consent to the BLM offering for lease the Greens Hollow tract, the lease tract would not be offered by the BLM for leasing, and it was assumed there would be no coal mining within the tract at this time. Other approved activities and on-going natural processes would continue.

Alternative 2 – Proposed Action

Under the Proposed Action, the FS would consent to BLM's leasing approximately 6,175 acres of NFS lands in the Greens Hollow tract to develop federal coal resources, and prescribe conditions to protect non-mineral resources. For NFS lands, special coal lease stipulations described in the MLNF Forest Plan, except Stipulation #9 (current special coal lease stipulations are attached as Appendix B) would be included as terms of FS consent for lands administered by both the MLNF and FLNF. Excluding Stipulation #9 from this alternative allows for analyzing the effects of subsidence on all lands in the tract.

Since this alternative includes that Stipulation #9 would not be a condition of FS consent, the analysis is therefore based on the assumption that full extraction mining could occur, and in turn lead to subsidence on all lands in the tract. Figure 1.3 identifies the largest possible subsidence area boundary (Area of Subsidence Mining) assuming that full extraction mining and associated subsidence might occur, and where surface effects might occur within the angle of draw. Thus full subsidence mining will be analyzed to occur anywhere within the Area of Subsidence Mining under this alternative. In this way, this alternative represents a maximum impact scenario in terms of subsidence impacts. Subsidence mining outside the proposed Greens Hollow tract would occur within previously approved adjoining lease tracts.

The BLM would offer and issue the lease with standard BLM lease terms, conditions, and special coal lease stipulations from the FS consent for an estimated 56.6 million tons of recoverable federal coal reserves representing about 8.8 years of mining. The lease terms and conditions include a general provision to prevent "damage or degradation to any land, air, water, heritage, biological, visual, and other resources…" (BLM 1986).

For the purposes of analysis, the Proposed Action assumes a Conceptual Mine Plan and a reasonably foreseeable Surface Use Scenario (Section 2.6). The Conceptual Mine Plan assumes the tract would be mined using underground longwall mining techniques, and that full extraction mining would occur across the tract.

Alternative 3

Alternative 3 was developed to protect certain critical surface resources from the effects of subsidence within the lease tract boundary. The areas requiring additional protection are displayed on Figure 1.4 as Area of No Subsidence Mining. Issues driving this alternative include potential impacts to water, geology, vegetation, wildlife habitat, and cultural resources. This alternative assumes the Conceptual Mine Plan and reasonably foreseeable Surface Use Scenario (Section 2.6) and specifies the use of non-subsidence (e.g. full-support) mining in specific locations to protect surface resources from subsidence. Areas considered for specific protection include perennial streams where surface flow could be lost to subsidence-induced cracking of Castlegate Sandstone or where escarpments could fail.

Like the Proposed Action, under Alternative 3 the FS would consent to the BLM offering for lease approximately 6,175 acres of NFS lands in the Greens Hollow tract with conditions for the protection of non-mineral resources. However, site-specific exceptions to Stipulation #9 authorizations would not be considered for areas identified for specific protection in this alternative.

Under Alternative 3, the BLM would offer, sell, and issue the Greens Hollow tract by competitive bid for development of about 55.7 million tons of recoverable federal coal reserves (approximately 900,000 tons less than Alternative 2), representing about 8.7 years of mining. All special coal lease stipulations described in the MLNF Forest Plan would be included (Appendix B) as part of FS consent for lands administered by both the MLNF and FLNF.

SUMMARY 1.9 AFFECTED ENVIRONMENT

The affected environment chapter of the Final SEIS describes the physical, biological, social, and economic conditions of the existing environment potentially affected by implementation of alternative actions. The Council on Environmental Quality (CEQ) regulations directs agencies to describe the environment that could be affected commensurate with the importance of the impacts (40 CFR 1502.15). The data and level of detail presented are, therefore, based on the information necessary for the reader to compare the existing situation with the potential effects of the alternatives. The description of the existing environment is structured by resource. The resources discussed include Geology, Mining, Subsidence, Seismicity, and Structures and Facilities; surface and ground water resources; aquatic and terrestrial wildlife resources; vegetation resources; heritage resources; paleontological resources; socioeconomics; recreation resources; visual quality; rangeland resources; roadless resources; and air quality.

The assessment (i.e., effects analysis) area for the Final SEIS varies by resource according to the natural limits of influence for each resource. For all resources, it includes a mining analysis area boundary, which is defined by the maximum area of potential subsidence impact and the other associated elements or where cumulative effects of off lease activities might occur. Each resource area defines the limits of the applicable assessment area or areas.

SUMMARY 1.10 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

The environmental consequences associated with implementation of the proposed action and the alternatives are discussed in detail. This analytical discussion compares the impacts associated with each action alternative to the No Action Alternative. Under NEPA, actions which could significantly affect the quality of the human environment must be disclosed and analyzed in terms of the "context and intensity" that makes them significant. For an action to have an effect, it must have a demonstrable causal relationship, which can be direct, indirect, or cumulative in nature (40 CFR 1508.27). The potential effects of each alternative are identified and discussed by each resource discipline reviewed in the affected environment chapter. Impacts are discussed with respect to each issue statement developed from public and agency scoping. A summary of the treatment of direct and indirect effects for the alternatives and elements is shown in Table 2.2. Cumulative effects are described for each resource as identified in Chapter 2 of the EIS (Table 2.1). Where pertinent, each resource section also describes unavoidable adverse impacts, effects related to short-term uses versus long-term productivity, and the irreversible or irretrievable commitment of resources.

U.S. DEPARTMENT OF THE INTERIOR

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT (OSMRE)

FINDING OF NO NEW SIGNIFICANT IMPACT (FONNSI)

FOR

Greens Hollow Tract, Sufco Mine, Mining Plan Modification

Introduction

On October 13, 2005, the Bureau of Land Management's (BLM) Utah State Office received an application for a competitive Federal coal lease by application from Ark Land Company for lands referred to herein as the Greens Hollow Tract (Tract). Ark Land Company applied to the BLM to lease the coal reserves in the Tract for the purpose of lengthening the production life of the SUFCO Mine (the mine). The existing mine and the lease Tract are located in Convulsion Canyon in Sanpete and Sevier Counties, Utah. The Sufco underground coal mine has been in operation since 1941. After initiating the application process, the Ark Land Company later requested assignment of the LBA for the Tract to the Canyon Fuel Company, LLC. The assignment request was approved July 1, 2014 by the BLM.

The Greens Hollow Tract lies immediately adjacent to and generally northwest of the mine, and the coal in the Tract can be directly accessed through an extension of underground workings from the existing mine. There are two coal seams in the Tract, the Upper and Lower Hiawatha. The Greens Hollow Tract UTU-84102 is under National Forest lands managed by the Manti-La Sal and Fishlake National Forests. The coal resources are also federal resources and are managed by the BLM. As the surface management agency, the U.S. Forest Service must provide consent prior to BLM leasing the coal. Manti-La Sal and Fishlake National Forests, and the BLM Utah State Office, with OSMRE as a cooperating agency, completed a Final Supplemental Environmental Impact Statement (FSEIS) reviewing the impacts of the federal coal leasing action. OSMRE participated as a cooperating agency along with Utah Division of Oil, Gas and Mining. On October 5, 2015, the Forest Service issued a Record of Decision (ROD), consenting to BLM offering the Tract for competitive leasing with stipulations for the protection of non-mineral resources as described in Alternative 3 of the FSEIS. On August 12, 2016, the BLM issued a ROD, deciding to hold a Federal coal competitive lease sale for the Tract.[1] On January 4, 2017, the Greens Hollow Federal Coal Lease UTU-84102, comprising of approximately 6,175 acres and approximately 55.7 million tons of recoverable coal, was sold through a competitive bidding process to the highest bidder, which was Canyon Fuel Company. The BLM issued the lease March 14, 2017.

On April 17, 2017, Canyon Fuel Company, LLC submitted a Permit Application Package (PAP) with annual production of 5.5 to 6.3 million tons of coal per year and no additional surface facilities to the Utah DOGM. Based on new information provided in the PAP, the OSMRE prepared the accompanying Greens Hollow Tract Mining Plan Modification Supplemental Environmental Assessment (hereafter, the Supplemental EA), which details additional environmental effects of this Project. This Supplemental EA is tiered to the FSEIS. The Utah DOGM is reviewing Sufco Mine's permit amendment, and submitted

[1] For a detailed description of the full NEPA analysis conducted for the Greens Hollow tract, see Chapter 1 of the Final Supplemental Environmental Impact Statement for the Leasing and Underground Mining of the Greens Hollow Federal Coal Lease Tract UTU-84102 Sanpete and Sevier Counties, Utah (Feb. 2015).

the Canyon Fuel Company PAP for the mining plan modification to the OSMRE for review, in accordance with its responsibilities under the federal Surface Mining Control and Reclamation Act of 1977 (SMCRA).

The OSMRE is required to evaluate the PAP before Canyon Fuel Company may conduct underground mining and reclamation operations to develop the Greens Hollow Federal Coal Lease Tract UTU-84102. OSMRE is the agency responsible for making a recommendation to the ASLM to approve, disapprove, or approve with conditions the proposed mining plan modification. The ASLM will decide whether the mining plan modification is approved, disapproved, or approved with conditions.

In conducting the Supplemental EA, the OSMRE reviewed the environmental impacts of the Proposed Action (approving a mining plan modification from Greens Hollow Federal Coal Lease Tract UTU-84102) and the No Action (disapprove the mining plan modification).

If OSMRE determines that this Project would have significant effects following the analysis in the Environmental Assessment (EA), then an Environmental Impact Statement (EIS) would be prepared for the Project. If the potential effects are not determined to be "significant", a "Finding of No New Significant Impact" (FONNSI) statement[2] would document the reason(s) why implementation of the selected alternative would not result in significant environmental effects. An EA provides evidence for determining whether to prepare an EIS or a FONNSI statement.

The OSMRE has prepared the Supplemental EA based on the previously completed FSEIS and PAP, and reached a FONNSI.

Statement of Environmental Significance of the Proposed Action

Pursuant to 30 CFR Part 746, OSMRE is recommending selection and approval of the Proposed Action. The undersigned person has determined that approval of a federal mining plan modification authorizing the continuation of mining operations to recover the federal coal of approximately 55.7 tons of recoverable coal from the Greens Hollow Federal Coal Lease Tract UTU-84102 with no additional surface disturbance would not have a significant impact on the quality of the human environment under section 102(2)(C) of the NEPA, 42 USC 4332(2)(C); therefore, an EIS is not required.

Reasons

OSMRE has evaluated the information presented within this Supplemental EA and has determined that the Proposed Action would cause no new significant adverse environmental effects, that have not already been analyzed in the Greens Hollow FSEIS or that would not be mitigated in accordance with the eight standard permit conditions within the federal regulations at 30 CFR 944, the standard permit terms and specifications of the PAP, and the special stipulations attached to the Greens Hollow Lease.

The attached Supplemental EA discusses the potential environmental effects of the Proposed Action and provides sufficient evidence and analysis for this FONNSI.

Based upon OSMRE's review of the Supplemental EA and the supporting documents, OSMRE has determined, in accordance with 43 CFR 46.140, that the Proposed Action is not a major Federal action and will have no new significant effect on the quality of the human environment individually or

[2] A finding of no significant impact other than those already disclosed and analyzed in the EIS to which the EA is tiered may be called a "finding of no new significant impact" (43 CFR 46.140(c)).

cumulatively with other actions within the region, that has not already been analyzed in the Greens Hollow FSEIS.

The purpose of the action (to make a recommendation to the ASLM to approve, disapprove, or approve with conditions the proposed mining plan modification) is established by the Mineral Leasing Act of 1920 and the SMCRA, which requires the evaluation of Canyon Fuel Company's PAP before they may conduct underground mining and reclamation operations to develop the Greens Hollow Federal Coal Lease Tract UTU-84102 30 CFR Part 746: 30 United States Code (USC)/208(c). OSMRE is the agency responsible for making a recommendation to the ASLM to approve, disapprove, or approve with conditions, the proposed mining plan modification. The ASLM will decide whether the mining plan modification is approved, disapproved, or approved with conditions. If the ASLM approves this action, operations would continue at the Sufco Mine for up to 8.8 years. The need for the action is to allow Canyon Fuel Company, LLC the opportunity to exercise its valid rights granted under the Greens Hollow Federal Coal Lease Tract UTU-84102 to extract coal from their federal lease under the Mineral Leasing Act.

The Proposed Action would modify the mining plan to authorize mining a probable maximum of approximately 55.7 million tons of federal coal at a maximum rate of up to 6.3 million tons per year. No additional surface disturbance is planned. The Proposed Action would extend the mining at Sufco Mine for approximately 8.8 years.

Under the No Action Alternative, the mining decision document would not be prepared by OSMRE and therefore ASLM would not approve the mining plan modification. If DOGM approves the permit revision associated with the Proposed Action, without ASLM approval, DOGM's permit would revert to the previous permit. Under the previous permit, the Federal coal reserves in the Greens Hollow Federal Coal Lease Tract UTU-84102 would not be recovered and underground mining would continue until available coal reserves are mined out in 2020. Reclamation would last two years after closure and continue until Canyon Fuel Company's obligations for reclamation under SMCRA (and the State's equivalent statute) and the Federal lease terms were met.

The attached Supplemental EA considers a reasonable range of alternatives and in conjunction with the previously completed NEPA reviews, discloses the potential environmental effects. These reviews provide sufficient evidence and support for a FONNSI.

The Supplemental EA was prepared by a third-party consulting firm at the direction of OSMRE. During the development of the Supplemental EA, OSMRE independently reviewed the document to ensure compliance with 43 CFR Part 46, Subpart D and all Council of Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), and other program requirements. This independent review included OSMRE's evaluation of all environmental issues analyzed in the Supplemental EA. OSMRE takes full responsibility for the accuracy, scope, and the content of this document.

The undersigned has determined that the public involvement requirements of NEPA have been met. OSMRE released the Supplemental EA and unsigned FONNSI for public review and comment for a 30-day period beginning on January 4, 2018.

This finding is based on determining the significance as defined by the context and intensity found in 40 CFR 1508.27 of effects from the Proposed Action.

a) **Context.** This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the

case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

The Proposed Action continue mine operations at the Sufco mine through at least 2028 by:

- Securing a Federal mining plan modification approval authorizing mining of leased Federal coal; and,
- Continuing to mine (5.5 to 6.3 million tons of coal per year), process, and ship (via rail and truck) coal to customers in need of coal.

Under the No Action Alternative, mining would continue until 2020. The effects of both the Proposed Action and No Action have been analyzed at the local and regional scale.

b) **Intensity.** This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity.

The 10 Significance Criteria in the federal regulations at 40 CFR 1508.27 have been considered in evaluating the severity of impacts.

1. Impacts that may be both beneficial and adverse.

Beneficial and adverse impacts from the Proposed Action are described in the attached Supplemental EA. Particulate matter, criteria pollutants, and greenhouse gas emissions would be within the permitted limits and would not exceed the National Ambient Air Quality Standards; therefore, direct and indirect impacts would be minor and long-term (Supplemental EA Sections 3.3.1.1 - 3.3.1.5). For analysis purposes, the Hunter Power Plant was used as a representative consumer of coal from the Greens Hollow Tract. Actual consumers are not known and would be subject to coal market conditions therefore making a more specific analysis would be too speculative and not useful to the decision maker.

None of the newly analyzed environmental effects from the Proposed Action discussed in the EA are considered to be significant.

2. The degree to which the Proposed Action affects public health or safety.

Air quality effects from the Proposed Action that could affect health and safety. Air impacts are analyzed in Section 3.3 of the EA. Impacts on air quality would be minor and short term.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.

There are no park lands, prime farmlands, wild and scenic rivers, or ecologically critical areas within the Project Area. The FSEIS analyzed potential impacts to wetlands in Section 4.5.2.3 and 4.5.3.2 which is incorporated by reference into the Supplemental EA. The FSEIS found that there were 80 wetlands that occur within the Greens Hollow tract boundary under Alternative 2 totaling approximately 11.7 acres, which could be subsided as a result of mining. There are no wilderness areas within or near the Project Area. Inventories of historic or cultural resources have been completed, which identified two potentially eligible historic sites in the Project Area. The 2015 Record of Decision determined there were little potential impacts from subsidence. On November 9, 2017, the Utah State Historical Preservation Office concurred with OSMRE's determination that there would be no adverse effects.

4. The degree to which the impacts on the quality of the human environment are likely to be highly controversial.

As a factor for determining within the meaning of 40 CFR 1508.27(b)(4)—whether or not to prepare a detailed environmental impact statement—"controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). The term 'highly controversial' refers to instances in which "a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).

Approvals of Federal mining plans and mining plan modifications have been made for the Sufco Mine since 1941. The lease stipulations and reclamation plan would reduce the effects on the environment.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

There are no direct, indirect, or cumulative effects on the human environment under the Proposed Action that are highly uncertain or involve unique or unknown risks. OSMRE has experience implementing similar actions in similar areas.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principal about future consideration.

This decision is not precedent setting. The issues considered in the Supplemental EA were developed by the interdisciplinary team within the context of past, present, and reasonably foreseeable actions. Significant cumulative impacts are not anticipated.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts – which include connected actions regardless of land ownership.

The interdisciplinary team evaluated the possible issues in context of past, present, and reasonably foreseeable actions, including the Sufco Mine operation and other mining operations, the transport of coal from the mine, the combustion of that coal, and ranching, recreation and other mines in the cumulative effects analysis area. The indirect emissions from coal combustion mined annually from the Sufco Mine were disclosed in the Supplemental EA (Section 3.3.1). There were no significant cumulative effects identified (Supplemental EA Section 3.4.1).

8. The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific, cultural, or historical resources.

The Project Area was previously surveyed for cultural and historic resources. The 2015 BLM and USFS Record of Decision determined there was little potential impact from subsidence. On November 9, 2017, the Utah State Historic Preservation Office concurred with OSMRE's determination that there would be no adverse effects.

9. The degree to which an action may adversely affect a threatened or endangered species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

There would be no impacts on listed species because habitat does not exist in the Project Area.

10. Whether the action threatens a violation of a federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment, where non-federal requirements are consistent with federal requirements.

The Proposed Action would not violate any known Federal, state, local, or tribal law or requirement imposed for the protection of the environment. During the public and agency involvement for this Supplemental EA, state, local, and tribal interests would be given the opportunity to participate in the environmental analysis process as well as cooperating agencies, BLM, USFS, and Utah DOGM. The Proposed Action is consistent with applicable plans, policies, and programs.

Elizabeth Shaffer - acting for 5/25/18

Marcelo Calle, Manager
Program Support Division
Western Region
OSMRE

Date

Greens Hollow Tract Mining Plan Modification
Supplemental Environmental Assessment

Prepared in cooperation with the
US Department of the Interior Bureau of Land Management, US Department of Agriculture Forest Service, and Utah Division of Oil, Gas, and Mining

US DEPARTMENT OF THE INTERIOR

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

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Acronyms Used in the EA

(acronyms used in comments not included)

ASLM	Assistance Secretary of Lands and Minerals
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
DAQ	Division of Air Quality
DEQ	Department of Environmental Quality (Utah)
DOGM	Division of Oil, Gas and Mining (Utah)
EA	Environmental Assessment
EIA	Energy Information Agency (US Department of Energy)
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
FONNSI	Finding of No New Significant Impact
HAPs	Hazardous Air Pollutants
IWG	Interagency Working Group
MRP	Mine and Reclamation Plan
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
OSMRE	Office of Surface Mining Reclamation and Enforcement
PAP	Permit Application Package
PM_{10}	Particulate Matter smaller than 10 microns
$PM_{2.5}$	Particulate Matter smaller than 2.5 microns
PSD	Prevention of Significant Deterioration
SCC	Social Cost of Carbon
SMCRA	Surface Mining Control and Reclamation Act

SO_2	sulfur dioxide
TBtu	Trillion British thermal units
USC	United States Code
VOC	volatile organic carbons

Chapter 1
Purpose and Need

1.1 Introduction

Canyon Fuel Company, LLC, operator of the Sufco Mine in Utah, submitted a permit application package (PAP) to the Utah Division of Oil, Gas, and Mining (DOGM) on April 21, 2017, to modify its approved Mine and Reclamation Plan (MRP) to add the federal coal included in the Greens Hollow Federal Coal Lease Tract UTU-84102 (**Figure 1**). DOGM implements the Utah Coal Rules (Utah Administrative Code R645) following the terms of the Federal Surface Mining Control and Reclamation Act of 1977 (SMCRA) under the oversight of the United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE) via the permanent program for Utah (30 Code of Federal Regulations [CFR] 944) (OSMRE, 1994). The OSMRE is required to evaluate the PAP before Canyon Fuel Company may conduct underground mining and reclamation operations to develop the Greens Hollow Federal Coal Lease Tract UTU-84102. OSMRE is the agency responsible for making a recommendation to the United States Department of the Interior Assistant Secretary for Land and Minerals Management (ASLM) to approve, disapprove, or approve with conditions the proposed mining plan modification.

As a federal agency, OSMRE is subject to the National Environmental Policy Act of 1969 (NEPA), therefore, must conduct an environmental review, in form of either adoption of a prior NEPA document for the same project that the environmental effects of the proposed action, supplementing a prior NEPA document to assess the effects of the proposed actions for the same project, or creation of a new NEPA analysis, before proceeding with the federal action of making a recommendation to the ASLM regarding the mining plan modification. The OSMRE has prepared this supplemental environmental assessment (EA) in accordance with 40 CFR 1502.9[c][1], because of new circumstances identified regarding how OSMRE characterizes air emissions in light of recent litigation (see Section 1.5) and based on new information provided in the PAP and additional information collected by OSMRE that is relevant to environmental concerns and have a bearing on the proposed action or its impacts. In accordance with 40 CFR 1502.9[c][2], OSMRE determined that the preparation of the supplemental EA would further the purposes of NEPA (42 U.S.C. 4321) by providing additional information on air emissions, which as shown in Chapter 5 as an important resource to the public, to "enrich the understanding of the ecological systems and natural resources important to the Nation". The new or updated information included in the PAP consisted of annual production data (5.5 to 6.3 million tons per year) and identification of no additional surface facilities (no powerline or vent shaft) that were previously identified in the *Final Supplemental Environmental Impact Statement for the Leasing and Underground Mining of the Greens Hollow Federal Coal Lease Tract UTU-84102* (referred to as the Greens Hollow FSEIS throughout this EA). Based on the new information obtained by OSMRE and the reduction of surface disturbing activities analyzed under the Proposed Action it was determined to prepare a supplemental EA. The supplemental EA focuses on only those sections that required updating and does not repeat the information from the

Greens Hollow FSEIS. The supplemental EA provides evidence for determining whether to prepare an EIS or Finding of No New Significant Impact (FONNSI) statement[1].

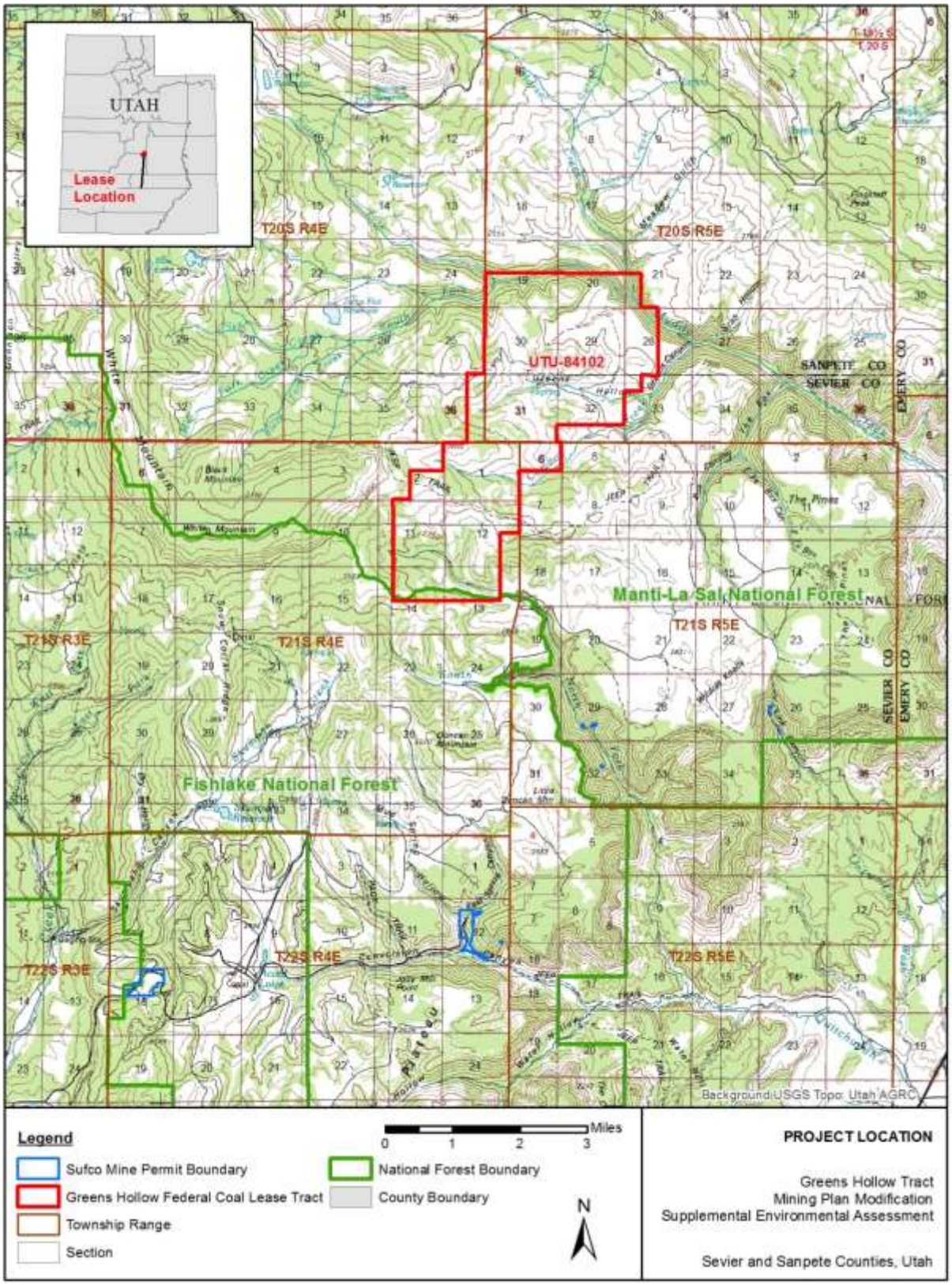
NEPA requires federal agencies to disclose the potential environmental impacts of projects they authorize. Additionally, NEPA requires agencies to make a determination as to whether the analyzed actions would "significantly" affect the environment. "Significantly" is defined by NEPA and is found in regulation 40 CFR 1508.27. If OSMRE determines that this project would have significant effects following the analysis in the EA, then an environmental impact statement (EIS) would be prepared. If the potential effects are not determined to be "significant", a FONNSI statement would document the reason(s) why implementation of the selected alternative would not result in significant environmental effects.

This EA is tiered to the descriptions and environmental analysis contained in the Greens Hollow FSEIS (BLM and Forest Service, 2015). The FSEIS adequately analyzed potential environmental consequences of the Proposed Action and Alternatives based on information available to the Bureau of Land Management (BLM) and U.S. Forest Service (Forest Service) at the time the FSEIS was prepared. The following resource area impacts were analyzed: geology, mining, subsidence, and seismicity (FSEIS Section 4.2); surface and ground water resources (FSEIS Section 4.3); aquatic and terrestrial wildlife resources (FSEIS Section 4.4); vegetation resources (FSEIS Section 4.5); heritage resources (FSEIS Section 4.6); paleontological resources (FSEIS Section 4.7); socioeconomics (FSEIS Section 4.8); recreation resources (FSEIS Section 4.9); visual resources (FSEIS Section 4.10); rangeland resources (FSEIS Section 4.11); roadless resources (FSEIS Section 4.12); and air quality (FSEIS Section 4.13). The FSEIS is incorporated by reference into this supplemental EA in accordance with 40 CFR 46.135 and available (along with associated documents) at: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=92529.

The Forest Service, Manti-La Sal National Forest, BLM, Price Field Office, and the Utah DOGM are cooperating agencies in the preparation of this supplemental EA. The Forest Service and BLM were co-lead agencies on the Greens Hollow FSEIS with Forest Service issuing consent to BLM decision to offer a federal coal lease with conditions. Both agencies are serving as cooperating agencies on this EA due to their special expertise and jurisdiction related to the Proposed Action. Utah DOGM is serving as a cooperating agency on this EA because they have the authority and responsibility to make decisions to approve surface and underground coal mining permits and regulate coal mining in Utah under Utah Administrative Code R645-301. The Utah DOGM will review the Permit Application Package (PAP) specifying the mining and reclamation methods to be employed in the permit amendment. Once Utah DOGM finds the PAP administratively complete, the PAP will be submitted to OSMRE for review. The Utah DOGM will continue to work with the permittee to finalize the PAP. Utah DOGM will issue their findings and recommendations to OSMRE and, if deemed appropriate, issue the permit to the permittee.

[1] A finding of no significant impact other than those already disclosed and analyzed in the EIS to which the EA is tiered may be called a "finding of no new significant impact" (43 CFR 46.140(c)).

Figure 1. Greens Hollow Federal Coal Lease Tract Location Map



1.2 Background

The Sufco underground coal mine, in Sevier County, Utah has been in operation since 1941. The Greens Hollow Federal Coal Lease Tract UTU-84102 is under National Forest lands managed by the Manti-La Sal and Fishlake National Forests. The coal resources are also federal resources and are managed by the BLM. On January 4, 2017, the BLM sold the Greens Hollow Federal Coal Lease Tract UTU-84102 to the highest bidder, which was Canyon Fuel Company (BLM, 2017). Prior to the lease sale, the BLM and the U.S. Forest Service conducted an EIS, supplemental EIS, and made their respective decisions. The Forest Service consented to the leasing of the Greens Hollow Federal Coal Lease Tract UTU-84102 on October 5, 2015 and the BLM issued the lease March 14, 2017. OSMRE participated as a cooperating agency along with Utah DOGM.

The Greens Hollow FSEIS decisions approved the sale of the Greens Hollow Federal Coal Lease Tract UTU-84102, approximately 6,175 acres, for production of federal coal reserves, along with conditions to protect the environment which were included as lease stipulations. The lease sale made approximately 56.6 million tons of recoverable coal available. Additional background information is available in the Greens Hollow FSEIS Section 1.2.

1.3 Purpose and Need for Action

The purpose of the action (to make a recommendation to the ASLM to approve, disapprove, or approve with conditions the proposed mining plan modification) is established by the Mineral Leasing Act of 1920 and the SMCRA, which requires the evaluation of Canyon Fuel Company's PAP before they may conduct underground mining and reclamation operations to develop the Greens Hollow Federal Coal Lease Tract UTU-84102 30 CFR Part 746: 30 United States Code (USC)/208(c). OSMRE is the agency responsible for making a recommendation to the ASLM to approve, disapprove, or approve with conditions, the proposed mining plan modification. The ASLM will decide whether the mining plan modification is approved, disapproved, or approved with conditions. If the ASLM approves this action, operations at current production rates would continue at the Sufco Mine for approximately 9 to 10 years. The need for the action is to allow Canyon Fuel Company, LLC the opportunity to exercise its valid rights granted under the Greens Hollow Federal Coal Lease Tract UTU-84102 to extract coal from their federal lease under the Mineral Leasing Act.

1.4 Regulatory Framework

The extensive regulatory framework for management of coal leasing, mining, reclamation, and environmental protection are described in detail in Section 1.5.2 of the Greens Hollow FSEIS (BLM and Forest Service, 2015). The major regulations (statutes) relevant to OSMRE's evaluation of the Proposed Action are:

- Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1975, which authorizes the leasing of coal reserves and conditions of the leasing; and
- SMCRA, which provides a framework under which coal mining and surface uses are managed.

1.5 Issues

In accordance with 40 CFR 1501.1 and 1506.3, OSMRE has identified the following environmental issues, that are deserving of further study, to supplement the existing analysis completed in the Greens Hollow FSEIS for the proposed action and the no action alternatives.

- Non-greenhouse gas emissions from mining (particulate matter less than 2.5 microns ($PM_{2.5}$) and hazardous air pollutants (HAPs)), described in section 3.3.1.1;
- Emissions from the transportation of coal to the Hunter Power Plant, described in Section 3.3.1.2;
- Emissions from employee transportation, described in Section 3.3.1.3;
- Emissions from coal combustion, described in Section 3.3.1.4; and
- Mercury emissions from coal combustion in Section 3.3.1.5.

Chapter 2
Alternatives

2.1 Introduction

This section presents the description of the Proposed Action for which the issues identified in Section 1.5 are analyzed, along with the description of the No Action alternative for effects comparison purposes.

2.2 Proposed Action

The Proposed Action is for the OSMRE to submit a mining plan decision document to make a recommendation to the Department of the Interior, Assistant Secretary for Land and Minerals Management. The mining plan modification incorporates the revisions to the MRP submitted to Utah DOGM and is substantially similar to Alternative 3 selected by the Forest Service and BLM in their respective Record of Decision documents (Forest Service, 2015; BLM, 2016).

The modifications from the currently approved mining plan are:

- Add the Greens Hollow Federal Coal Lease Tract UTU-84102 (6,175 acres, 56.6 million tons);
- A ventilation and escape way shaft facility may be required to safely mine the Greens Hollow Federal Coal Lease Tract UTU-84102. Such a shaft has not been permitted, nor has it been proposed; and
- Extend the Sufco Mine life by 9 to 10 years, depending on the production rate (the Greens Hollow FSEIS projects 8.8 years extra mine life).

The mining plan modification would not change several aspects of the ongoing mining activity that may affect air and emissions:

- Mining will continue to be by underground longwall and room-and-pillar methods;
- Coal production would stay within the limits established by the Air Quality Approval Order which is up to 10 million tons of coal. Coal production from 2017 through 2021 is predicted to range from approximately 5.5 million to 6.3 million tons[2] per year; and
- The Sufco Mine will continue to be considered a minor source of air emissions according to the Utah Department of Environmental Quality (DEQ).

Table 1 shows the recent annual coal production at the Sufco Mine. **Table 2** shows the amount of coal that was shipped and which power plants the coal was shipped to in the recent past. Coal that was not shipped to power plants was shipped to US industrial sites (Drysdale, 2018). In 2015 and 2016, all of the

[2] The Greens Hollow FSEIS used a slightly higher production rate of 6.43 million tons per year which estimated an 8.8-year mine life. This supplemental EA uses a range instead of a single rate. As shown in **Table 1**, production has decreased slightly since the Greens Hollow FSEIS analysis. In several locations in the Greens Hollow FSEIS, there was either 6.43 million tons per year, 7 million tons per year, or 10 million tons per year depending on the resource. These different rates were deliberate to indicate the "conservative" impacts on economics and air quality.

coal from the Sufco Mine was used in the US. Coal production reported for any given year is not always shipped during that year. Coal may be stored and shipped later (referred to as "drawdown").

Table 1. Annual Coal Production at the Sufco Mine

	2015[a]	2016[a]	2017[b]
Production (short tons)	6,024,483	5,375,171	5,883,975
Average Number of Employees	369	370	

Sources:
a (EIA, 2016a)
b (Drysdale, 2018)

Table 2. Shipments from the Sufco Mine to United States Power Plants (Short Tons)

Plant	2015	2016[1]	2017
Hunter	1,238,753	21,846	-
Hunter Sales Reported as Hunter Prep Plant	1,112,409	2,042,898	2,379,466
Huntington	1,042,569	984,094	112,942
Intermountain Power Project	1,957,865	1,902,571	1,797,596
Total Shipped to Power Plants	5,351,596	4,951,409	4,290,004
Production (short tons)	6,024,483	5,375,171	5,883,975
Not shipped to Power Plants	672,887	423,762	1,593,971
Percent (%) of Sufco Coal Shipped to United States Power Plants	89%	92%	73%
Other Industrial	672,887	491,911[2]	

Source: (EIA, 2016b; Drysdale, 2018)

[1]Note that data for the most current time periods (2016) typically represent preliminary estimates based on samples collected by the surveys. After the end of a calendar year, the estimates are replaced by actual values from a final data collection, except in the case of missing values. The number of missing values (non-responses) are typically minimal.

[2] Domestic shipments exceeded production in 2016 as a result of inventory drawdown (Drysdale 2018).

In 2014, the Norwest Report evaluated potential market conditions (domestic and international markets) for the Greens Hollow, Flat Canyon, and Long Canyon tracts for the BLM. The report used representative destinations, but did not provide exact buyer locations or transportation routes that would allow for an in-depth analysis to be conducted. According to the report, "*the results of the analysis clearly show that exports from these tracts (Greens Hollow, Flat Canyon, and Long Canyon) are unlikely because domestic markets offer a much higher selling price at the mine gate…In that case (Greens Hollow Tract), the net selling price for export coal is near or below zero*" (Norwest Corporation, 2014).

Indirect air emissions from the Proposed Action were estimated for activities that are reasonably foreseeable, and included; coal transport (where a destination and quantity of delivered coal is known), mine worker commutes, and downstream coal combustion (see Section 3.3).

2.3 No Action

Under the No Action Alternative, the OSMRE would not recommend approval of the mining plan modification. The ASLM would deny the action and as a result, the coal reserves in the Greens Hollow Federal Coal Least Tract UTU-84102 would not be recovered. DOGM would still have authority to approve the significant permit revision (to include the Greens Hollow Federal Coal Lease Tract UTU-84102 into its state SMCRA permit), however, as stated above, mining would not occur within the Greens Hollow Federal Coal Lease Tract UTU-84102. Assuming an approval authorizing mining in the tract was not later obtained the Sufco Mine would continue to operate and mine coal until its other reserves run out in about 2020.

Chapter 3
Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the existing conditions of the issues shown in Section 1.5, then evaluates the direct, indirect, and cumulative impacts that would likely occur as a result of implementing the Proposed Action and No Action. Impacts are described by level of significance:

- Minor Impact: Impacts that potentially could be detectable but slight.
- Negligible Impact: Impacts in the lower limit of detection of an impact that could cause an insignificant change or stress to an environmental resource or use.
- No Impact: No discernible or measurable impacts.

3.2 Affected Environment

The air quality evaluation conducted for the Greens Hollow FSEIS included a review of the Manti-La Sal Coal Tracts Air Quality Evaluation Muddy Creek Technical Report (Marquez Environmental Services, Inc., 2004), the area of significant impacts based on stationary and mobile sources, and potential receptors within a 100-kilometer (62-mile) radius of the surface facility. The analysis provided in this supplemental EA is provided to supplement the information and analysis contained within the Greens Hollow FSEIS.

The air quality of a region is determined by the topography, meteorology, location of air pollutant sources, and type, quantity, and combination of air pollutants. The calculated or measured concentrations of various pollutants are compared to established standards to evaluate the impact of a given source and to evaluate regional air quality.

3.2.1 Regional Air Quality

Air quality in the region is affected by emissions from the Sufco Mine, trucks used in hauling the coal, and two power plants in the area: the Hunter Power Plant located near Castle Dale, Utah and the Huntington Power Plant located in Huntington Canyon, Utah. Additionally, potential local sources of air pollution include minor point sources, automobiles, trains, generators, and wood stoves/fireplaces (in the winter). These sources typically generate carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and other nitrous oxides, volatile organic compounds (VOCs), and particulate matter less than 10 microns (PM_{10}). Ozone may also form when nitrogen oxides (NO_x) and VOCs react with sunlight.

Utah's air monitoring network includes monitoring stations throughout Utah (DAQ, 2016a) and monitors conditions where there is a concern based on the annual emissions inventory. **Table 3** presents the results of the 2014 triennial inventory (most recently available) reported for Sevier County, Utah. There are no stations in Sevier and Sanpete counties, Utah because air quality is in compliance with the National Ambient Air Quality Standards (NAAQS) and, there is no indication from the emissions inventory that there is a concern.

Table 3. Triennial Emissions Inventory (Tons Per Year) for Sevier County (2014)

County	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Sevier County	9,058	2,012	7,512	1,092	36	16,843
Sanpete County	6,847	1,175	5,430	813	14	14,835

Source: Table 4 (DAQ, 2016a).

The analysis area is classified as a Class II area for all criteria pollutants. The only Class I area within 100 kilometers of the project area is Capitol Reef National Park which is located approximately 27 miles from the project area. Numerous air pollutant sources are located in the area that could impact the Class I area. Table 1.3 of the Air Quality Summary Report (Marquez Environmental Services, Inc., 2004), in the Greens Hollow FSEIS, outlines the point source emissions from numerous sources near Capitol Reef National Park. The largest contributors to air pollutant emissions in the region are power plants and generating stations.

Coal is currently mined at the Sufco Mine under an air quality permit issued by the Utah DEQ, Division of Air Quality (DAQ) approval order DAQE-AN106650014-13 (DAQ, 2013). The allowable emissions from this source, as stated in the approval, and permitted air quality emissions sources (DEQ, 2017) located in Sevier County are presented in **Table 4**.

Table 4. Large Industrial Source Emissions by Facility (Tons Per Year) - 2014

Site Name[2]	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Sufco Mine[1]	15.59	65.70	20.29	10.15	5.25	4.83
United States Gypsum Company	12.72	12.80	9.25	4.53	0.86	5.54
Western Clay Company	7.42	15.82	29.07	13.83	1.14	2.60
Hales Sand & Gravel Inc.	1.55	6.63	2.26	0.82	1.09	0.22
Georgia Pacific Gypsum - Sigrud Plant	0.02	0.04	2.47	0.94	0.00	0.00

Source:
[1] (DAQ, 2013)
[2] (DEQ, 2017)

3.2.2 Regulatory Requirements

Federal actions must meet the requirements of the Clean Air Act and must not cause or contribute to a violation of applicable air quality standards. The DAQ is the delegated authority for implementing the Clean Air Act in Utah and has developed a State Implementation Plan, outlining the requirements and regulations that the state will follow to assure that it is and will remain in compliance. There are no county or local air quality requirements. The Greens Hollow FSEIS describes regulatory requirements for the Proposed Action, including the NAAQS, clean air designations, and Prevention of Significant Deterioration (PSD). The section below addresses HAPs and how they relate to the Proposed Action.

3.2.2.1 Hazardous Air Pollutants

The Clean Air Act enacted the New Source Performance Standards and National Emissions Standards for HAPs for specific types of equipment located at new or modified stationary pollutant sources. The New Source Performance Standards regulations limit emissions from source categories to minimize the

deterioration of air quality. Stationary sources are required to meet these limits by installing newer equipment or adding pollution controls to older equipment that reduce emissions below the specified limit. The Proposed Action would not include equipment that is subject to these regulations. The New Source Performance Standards and National Emissions Standards for HAPs will apply to final coal combustion.

Unlike criteria pollutants, there are no NAAQS for HAPs. Although, these pollutants are also regulated under the Clean Air Act, the approach taken is focused on restricting or limiting emission of pollutants, setting emission standards and control requirements, and requiring record keeping and reporting of emissions to demonstrate on-going compliance with applicable limits and requirements.

HAPs are defined in 40 CFR 61 as pollutants that cause or may cause cancer or serious health impacts such as birth defects. There are currently 187 listed HAPs (EPA, 2005). The majority of HAPs originate from stationary sources (factories, refineries, power plants) and mobile sources (cars, trucks, buses), as well as indoor sources (building materials and cleaning solvents). Specific permitting requirements are a function of the type of source or activity to be permitted, the type(s) of pollutants, and the quantity of pollutants to be emitted. Sources that have the potential to emit greater than 10 tons per year of any one HAP; or more than 25 tons per year of all HAPs in aggregate; are classified as major sources. Sources are considered minor if they are less than the limits for major sources.

3.2.2.2 Social Cost of Carbon

A protocol to estimate what is referenced as the "social cost of carbon" (SCC) associated with greenhouse gas emissions was developed by a federal Interagency Working Group (IWG), to assist agencies in addressing Executive Order (EO) 12866 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 carbon dioxide emissions and is intended to be used as part of a cost-benefit analyses 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 carbon dioxide (CO_2) emissions into cost-benefit analysis of emissions." Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 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 the Greens Hollow Supplemental EA for a number of 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 Executive Order 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 greenhouse gases 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" (EO 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 Executive Order requirement to apply the SCC protocol to project decisions.

Further, NEPA does not require a cost-benefit analysis (40 CFR § 1502.23), although NEPA does require consideration of "effects" that include "economic" and "social" effects. 40 CFR § 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 a SCC cost analysis would be unbalanced, potentially inaccurate, and not useful in facilitating an authorized official'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, inasmuch 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 will 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 carbon dioxide 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, 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 generated in a range and provides little benefit in assisting the authorized officer's decision for project level analyses. For example, in a recent environmental impact statement, OSM 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 9 to 10 additional years of operation under the mining plan modification, and that the SCC protocol and similar models were developed to estimate impacts of regulations over long time frames, this EA quantifies direct and indirect greenhouse gas emissions and evaluates these emissions in the context of U.S. and State/County emission inventories as discussed in Section 3.3 of the EA.

To summarize, this supplemental EA 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 IWG, technical supporting documents, and associated guidance have been withdrawn; 3) NEPA does not require cost-benefit analysis; and 4) because the full social benefits of coal-fired energy production have not been monetized, and quantifying only the costs of greenhouse gas emissions but not the benefits would yield information that is both potentially inaccurate and not useful.

3.3 Direct and Indirect Effects

The following sections address potential impacts from the Proposed Action on ambient air quality, specifically non-greenhouse gas emissions from mining, emissions from transportation of coal, employee transportation, and emissions including mercury emissions from coal combustion.

3.3.1 Proposed Action

3.3.1.1 Non-Greenhouse Gas Emissions from Mining

Criteria Pollutants

The Proposed Action would utilize existing surface facilities and coal movement operations at the Sufco Mine. The emission rates for the existing mining operation were included in the Greens Hollow FSEIS. The reported total annual emissions are shown in **Table 5**.

Table 5. Reported Total Annual Emissions (Tons)

PM_{10}	NO_X	CO	SO_X	VOCs
24.1	62.0	17.7	4.7	4.7

Source: (Cirrus, 2004)

$PM_{2.5}$

Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. Airborne PM comes from many different sources. Primary particles are released directly into the atmosphere from sources such as cars, trucks, heavy equipment, forest fires, and other burning activities. Primary particles also consist of crustal material from sources such as unpaved roads, stone crushing, construction sites, and metallurgical operations. Secondary particles are formed in the air from reactions involving precursor chemicals (EPA, 2017a).

PM_{10} (PM less than 10 microns) included $PM_{2.5}$ (PM less than 2.5 microns). A 2006 study (Krause & Smith, 2006) showed that generally the $PM_{2.5}$ accounted for 29.2 percent of PM_{10} in surface coal mines. Using this percentage, the estimated $PM_{2.5}$ emission rate would be 7.04 tons per year (also see Table 4). This is considered to be a conservative estimate as the mining associated with the Proposed Action is underground rather than on the surface. PM_{10} emissions in **Table 5** are from mining activities including excavation, hauling, and reclamation.

Emissions of criteria pollutants and $PM_{2.5}$ impacts under the Proposed Action would be considered minor because concentrations would not exceed the NAAQS and short term because they would only occur during mining operations.

3.3.1.2 Emissions from Transport of Coal to Hunter Power Plant

As an example of emissions from hauling coal by diesel truck from the Sufco Mine, the haul to Hunter Power Plant was used to calculated using the EPA's Diesel Emissions Quantifier (EPA, 2017). The Hunter Power Plant has been the recipient of the largest portion of Sufco's coal recently (**Table 2)**. The diesel calculator does not calculate PM_{10}, SO_2 or VOCs, so the EPA's MOVES program was used to calculate these emissions. The calculator and MOVES uses the number of vehicles, annual miles, annual

idle time, and age of vehicle to make the calculation. The results are shown in **Table 6**. The calculations were generated using the following assumptions:

- The fleet is on-road, Class 8 combination long haul truck.
- The Sufco Mine reports there were 14,388 average trips per month for the most recent 3- month period reported.
- Default annual fuel usage generated by the calculator is 17,349 gallons per truck.
- Round trip distance is 72 miles for 12,431,232 miles traveled per year (14,388 trips per month for 12 months at 72 miles each).
- Annual truck idle time is 520 hours (an average of 2 hours per day for 260 working days).
- Average truck was made in 2010 and will be replaced in 2020.
- It is uncertain where the coal will be shipped. **Table 6** also indicates the emissions per mile for Sufco coal shipped by diesel truck, based on the analysis described above.

Table 6. Annual Sufco Mine Emissions from Truck Transportation of Coal

Annual Results (tons)	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOCs
Baseline of Entire Fleet	0.971	0.487	23.471	4.910	0.236	2.164
Annual Emissions per mile	0.013	0.007	0.326	0.038	0.003	0.030

The estimated emission rates presented in **Table 6** would be emitted during the transport of coal via Sufco Mine diesel trucks from the Sufco Mine to the Hunter Power Plant for an additional 1.2 years under the Proposed Action. Therefore, the Proposed Action would have a short-term, negligible effect on air quality.

Black carbon is a form of particulate air pollution that can be emitted through gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. It comprises a significant portion of PM. Black carbon emissions from diesel tailpipe emissions are an expected by-product from haul trucks used during coal mining operations. The level of emissions from diesel tailpipe emissions are largely dependent upon the content of the diesel fuel used and, therefore black carbon emissions from the Proposed Action have not been quantified as part of this analysis, although PM concentrations were calculated and reported in Section 4.13.1.1 in the Greens Hollow FSEIS and reported in **Table 5** above in this supplemental EA. Black carbon is an unregulated pollutant; however, the EPA regulates diesel fuel quality.

Compared to the emissions inventory for Sevier County, Utah shown in **Table 3,** the emissions from truck transportation are negligible.

3.3.1.3 Emissions from Employee Transportation

Emissions from employee or delivery traffic have been estimated in **Table 7**. Emissions are generally limited to gasoline or diesel vehicles. Table 3.21 in the Greens Hollow FSEIS explains the criteria pollutants and the NAAQS.

Table 7. Estimated Annual Employee and Delivery Traffic Emissions

Vehicle Type	Daily Trips[2]	Daily Average Miles[3]	Work-days per Year[4]	CO_2 Emission Factor (pounds per mile)	Methane Emission Factor (pounds per mile)	N_2O Emission Factor (pounds per mile)	CO_2 (pounds)	CH_4 (pounds)	N_2O (pounds)
Commuting to Mine (Monday – Friday)									
Car	65	30	260	0.802	0.068	0.071	406,614	34,476	35,997
Passenger Vans[1]	6	30	260	1.14	0.079	0.104	53,352	3,697	4,867
Bus	6	30	260	0.236	0.001	0.001	11,045	47	47
Commuting to Salina Bus Stop (Monday – Friday)									
Car	193	15	260	0.802	0.068	0.071	603,665	51,184	53,442
Commuting to Mine (Saturday – Sunday)									
Car	13	30	104	0.802	0.068	0.071	32,529	2,758	2,880
Passenger Vans[1]	2	30	104	1.14	0.079	0.104	7,114	493	649
Bus	2	30	104	0.236	0.001	0.001	1,473	6	6
Commuting to Salina Bus Stop (Saturday – Sunday)									
Car	65	15	104	0.802	0.068	0.071	81,323	6,895	7,199
Total Annual Emissions (pounds)							1,197,115	99,556	105,087
Total Annual Emissions (Tons)							598.56	49.78	52.54

Source: (EPA, 2008)

[1]Considered equivalent to light-duty truck emission factor.

[2]Provided by Sufco Mine.

[3]Estimated from proximity to nearby communities, actual mileage unknown.

[4]Based on 52-week calendar year.

The impacts from vehicles under the Proposed Action by extending current operations at the Sufco Mine through 2028 would be short term because they would only occur during mining operations and, would have minor impacts when compared to air quality in the region (see **Table 4**) and would not exceed any of the NAAQS.

3.3.1.4 Emissions from Coal Combustion

As discussed in the Greens Hollow FSEIS, burning of coal is an indirect impact that is a reasonable progression of the mining activity. The Hunter Power Plant is again used to reflect effects from coal combustion because of proximity, it has historically received 38 to 40 percent of Sufco Mine coal and it is forecast to operate fairly far into the future (to 2042). Permitted air quality emissions from the Hunter Power Plant are presented in **Table 8**. In the past, Hunter and other power plants and industrial facilities have received coal from the Sufco Mine. Intermountain Power Plant is slated for closure in 2025 or conversion to gas (Power Engineering, 2017). Actual future coal consumers and quantities are not known at this time and would be too speculative to predict due to fluctuations in coal market conditions.

Impacts from coal going to other locations would be too speculative to quantify and therefore would not be meaningful to the decision maker.

The Hunter Power Plant burns approximately 4.5 million tons per year of coal (PacifiCorp, 2011). For purposes of this analysis, it has been assumed that emissions from the Hunter Power Plant will be at their maximum permitted level when burning 4.5 million tons of coal per year. Additionally, because the Hunter Power Plant has historically been one of the largest consumer of coal from the Sufco Mine, emission rates calculated from the Hunter Power Plant have been applied to all indirect emissions from the Proposed Action. In actuality, the various control technologies that may or may not be utilized by operators of facilities that ultimately burn the coal will cause emission rates to vary.

Based on the permitted emissions data presented in **Table 8**, and the reported 4.5 million tons of coal burned per year, emission rates have been extrapolated and used to estimate the indirect emissions from the Proposed Action. The estimated range of emissions due to the Proposed Action are presented in **Table 8**. The estimates provided are for information purposes only, as the end users of the coal produced from the Proposed Action are unknown at this time, and the rate at which the coal is burned is also unknown. Table 4.13 of the Greens Hollow FSEIS includes potential greenhouse gas emissions from combustion of coal, reporting 21.8 million metric tons per year of CO_2. Based on this yearly estimate, the total for coal produced for 8.8 years would be 191.8 million metric tons of CO_2.

Table 8. Estimated Indirect Range of Emissions from Coal Combustion (Tons Per Year)

Coal Burned	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC
4.5 Million Tons (current)	4,343.40	11,491.17	747.44	426.03	3,939.31	125.93
5.5 Million Tons	5,308.60	14,044.76	913.54	520.70	4,814.74	153.91
6.3 Million Tons	6,080.76	16,084.64	1,046.42	596.44	5,515.03	176.30

Source: (PacifiCorp, 2011; DEQ, 2017).

Mercury Emissions from Coal Combustion

The final destination of the coal from the Proposed Action varies, so again, the Hunter Power Plant is used for the disclosure of impacts. Ultimately, the actual mercury emissions from the Proposed Action will depend on the final destination and emissions control technology and permit requirements at those facilities. Hunter Power Plant's Title V air permit 1500101002 (DAQ, 2016b) limits emissions of mercury to no greater than 1.2 pounds per TBtu and requires monitoring, record keeping, and reporting to demonstrate continuous compliance. Because the effects would be within the air permit limits, which are set to be protective of the environment, the impacts from mercury emissions would be negligible.

The mercury content of the Blackhawk Formation coal (which is what Sufco mines) is 3.7 pounds per trillion British thermal unit (TBtu) (Tabet, et al., 2009). The Btu content of bituminous coal is about 24 million Btu per ton of coal. **Table 9** shows the calculated mercury present in coal consumed annually at the Hunter Power Plant and the total coal that would be mined from the Greens Hollow lease. The indirect mercury emissions from combustion of the coal cannot consider specific control strategies and equipment. Mercury emissions from burning coal depends on control strategies and equipment used to minimize emissions and the quality and characteristics of the coal.

Table 9. Mercury Produced from Coal Combustion

Million Tons of Coal	TBtu Generated	Mercury (3.7 pound per TBtu)	2011 Source[1] Pounds Total Suspended Particle
4.5 Annual consumed at Hunter	108.0	399.6	8.45
56.6 Total	1,358.4	5026.08	106.28[a]

Notes:
1 Hunter Power Plant Source (DEQ, 2017)
a Calculated amount (annual 8.45 ÷ 4.5 tons annually X 56.6 tons total)

Power plants can emit mercury into the atmosphere with coal combustion which can then affect the quality of surface water as it settles into streams and lakes through deposition or precipitation. Mercury can go through a series of chemical transformations that convert it to a highly toxic form, which may concentrate in fish and birds (Irwin, 2007). However, mercury contamination through atmospheric deposition is extremely difficult to determine as atmospheric mercury can be derived from any number of local, regional, or global sources. The Hunter Power Plant is used as the representative user of coal from the Greens Hollow Federal Coal Lease Tract UTU-84102 and actual buyers and combustion locations would vary depending on coal market conditions. Thus, it is not possible to determine how much mercury emissions would be deposited into surface water or where it would be deposited as an indirect impact of mining the Greens Hollow Federal Coal Lease Tract UTU-84102 at the Sufco Mine.

3.3.2 No Action

Under the No Action, the Greens Hollow Federal Coal Lease Tract UTU-84102 coal would not be produced, shipped, or burned. Therefore, there would be no additional impacts on air quality. As Sufco is an operating coal mine with coal reserves to mine through 2020, the direct and indirect impacts of the No Action would be similar to those discussed in Section 3.3.1 for criteria pollutants, greenhouse gas emissions, and mercury emissions, except they would conclude in 2020 instead of extending another 9 to 10 years.

Based on the No Action Alternative for two years of operation:

- Annual criteria pollutant emissions **Table 5**;
- Annual estimated emissions from transportation of coal **Table 6;**
- Annual estimated emissions from employee transportation **Table 7**);
- Annual emissions of criteria pollutants from coal combustion **Table 8**); and
- Mercury emissions from coal combustion at the Hunter Power Plant would be 16.9 pounds over 2 years (see **Table 9**).

3.4 Cumulative Effects

When considering which actions had or will have cumulative effects, activities that are completed and reclaimed are assumed to not be producing cumulative impacts on air or emissions. Air quality and emissions impacts from those activities have already dissipated or are reflected in the current air quality, but cannot be differentiated individually from projects within or even outside of the cumulative impacts analysis area. For this reason, only current and reasonably foreseeable actions that will be occurring

during the same time frame as the mining and use of the coal from the Greens Hollow Federal Coal Lease Tract UTU-84102 are considered in the cumulative impacts analysis. For example, it is assumed that coal mined prior to 2017 has been consumed.

In evaluating the potential cumulative impacts of the alternatives when combined with the effects of the past, present, and reasonably foreseeable future actions, the Table 2.1 in the Greens Hollow FSEIS listed actions considered. Actions identified in the Greens Hollow FSEIS that have cumulative effects on air and emissions are summarized below in **Table 10**. These actions are also included in the cumulative impacts analysis for this supplemental EA. The Table 2.1 in the Greens Hollow FSEIS indicated which past and present actions were having residual effects and on which resources these residual effects were occurring. Actions which did not list residual effects that may affect air were eliminated from **Table 9**. After the Greens Hollow FEIS Record of Decision, additional actions have been proposed that may have cumulative air and emissions impacts. These actions are shown in **Table 11.** Construction of roads and a new transmission line are considered reasonably foreseeable. However, specific details regarding the construction design, timing, and equipment needed for these actions is unknown and would be too speculative to quantify associated impacts.

Table 10. Past, Present, and Reasonably Foreseeable Actions with Air and Emissions Effects

Actions	Dates	Residual, Current, and Future Effects
Ongoing Actions		
Minerals		
Oil and gas leases	ongoing	Closest is 15 miles. No incremental impacts due to distance from Proposed Action.
Vent fan operating in the North Fork of Quitchupah Canyon.	1996 to present	Fan site includes 0.70 acres of disturbance. Continual noise is produced by the fan.
Link Canyon power line and substation.	2000 to present	Current facility includes 0.25 acres of disturbance.
Link Canyon intake ventilation breakout and access.	2003 to present	Current structure encompasses 0.38 acres of disturbance.
Recreation and Transportation		
Vehicle (passenger, off-highway vehicle, snowmobile) access for Christmas tree cutting, firewood gathering, grazing management, mining, recreation, hunting, timber and private land access.	Ongoing	Emissions from vehicles.
Future Actions		
Minerals		
Seven exploratory drill holes to determine geologic factors. Drill holes would be considered a cumulative action since their authorization occurs independently.		Each drill pad is approximately .006 acres for a total permitted disturbance of 0.042 acres. In sensitive areas or areas of extreme terrain, helicopter assisted drilling may be used. Drill holes will be plugged, reclaimed, and revegetated. Exposed soil that could contribute PM would be short-term until the pads are revegetated.

Actions	Dates	Residual, Current, and Future Effects
Vehicle access and road use for construction and maintenance of an electrical power line to supply the Sufco Mine and the vent fan. Access would be via existing National Forest System roads (no new road construction).		Emissions from vehicle access to the vent shaft site(s) would be required on a daily basis.

The Sufco Mine has decided not to construct a previously approved coal segregation facility which was considered in the cumulative impacts analysis in the Greens Hollow FSEIS. Associated air quality impacts from additional disturbance will not occur.

Table 11. Reasonably Foreseeable Actions Since the Greens Hollow FEIS Record of Decision

Actions	Dates	Residual, Current, and Future Effects
Minerals		
South Fork Lease Modifications	2018-2019	Emissions from 6.35 million tons of coal mined, transported, and combusted.
3 Right 4 East Panel Amendment (Quitchupah Lease) (received by Utah DOGM 24-Jan-2017). Includes mining part of the Quitchupah Tract which was previously approved but not mined. The panel orientation has been modified. No additional surface disturbance would occur.	2017-2021	Emissions from 2.01 million tons of coal mined, transported, and combusted.
4 Right 4 East Panel Amendment (received by Utah DOGM 26-Oct-2017). Includes mining part of the Quitchupah Tract which was previously approved but not mined. No additional surface disturbance would occur.	2017-2021	Emissions from1.67 million tons of coal mined, transported, and combusted.

3.4.1 Proposed Action

Vehicle use for recreation and management of National Forest resources is ongoing, and not increasing above previous levels that are reflected in the current condition. As discussed in Section 3.2.1, these ongoing activities are not adversely affecting air quality to the degree that air quality standards for criteria pollutants are not being met.

Emissions from ongoing and future mining listed in **Table 11** (including drilling and ventilation) would contribute additional cumulative effects in the cumulative impacts analysis area during the same time frame as the Proposed Action, however, as described in Section 3.3.2, the impacts are not additive due to atmospheric dissipation.

The combined amount of coal added to the Sufco Mine mining plan that is reasonably foreseeable is 10.03 million tons, the total of the three proposed mining actions. Based on the annual production rate of 5.5 million to 6.3 million tons per year identified in Section 2.2, this amount of coal would extend the Sufco Mine life by 1.5 to 1.8 years. The amount of non-greenhouse gas emissions annually reported in **Table 5** from mining would continue for 1.5 to 1.8 years. Likewise, the annual rate of $PM_{2.5}$ emissions from mining (7.04 tons per year, see Section 3.3.1.1) would continue for the same amount of time. The

annual emissions from employees and delivery traffic are reported in **Table 7**. Emissions from employees and delivery traffic would continue at the same rate for the extended 1.5 to 1.8 years.

Indirect emissions from the combustion of coal mined from the reasonably foreseeable actions has been estimated below.

Combustion of the 10.03 million tons of coal that would be mined in the reasonably foreseeable future (as identified in **Table 11**) are shown in **Table 12**.

Table 12. Additional Estimated Indirect Emissions from Coal Combustion (based on Tons Per Year)

Coal Burned	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC
10.03 Million Tons	9,680.956	25,612.54	1,665.961	949.5735	8,780.284	280.684

3.4.2 No Action

As the No Action would have no additional direct or indirect effects on air quality or emissions. Cumulative effects would be the same as the Proposed Action until the mine closed in 2020 including vehicle use for recreation and National Forest management (described in Section 3.2.1), annual emissions from employees and delivery traffic (**Table 7**), and ongoing and future mining as shown in **Table 12**.

Chapter 4
Consultations and Coordination

This supplemental EA was prepared by the people listed in **Table 13**.

Table 13. List of Preparers

Name	Role
Gretchen Pinkham	Project Manager
Nicole Caveny	Mining Plan Decision Document Manager
Cameo Flood	Project Description
Chris Hayes	Air Quality

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Appendix A
Response to Comments

Response to Comments

A legal notice announcing the availability of the Greens Hollow Supplemental EA was published in the *Richfield Reaper* newspaper on January 4, 2018 and the *Sun Advocate* newspaper on January 9, 2018. A letter announcing the availability was sent to everyone on the mailing list (either hard copy or email), and the following tribes: Eastern Shoshone Tribe; Goshute Indian Tribe; Hopi Tribe; Laguna Pueblo Tribe; Navajo Nation; Northwestern Band of Shoshoni Nation; Paiute Indian Tribe of Utah; Pueblo of Jemez; Pueblo of Luguna; Pueblo of Zuni Tribe; Santa Clara Pueblo Tribe; Shoshone-Bannock Tribes; Southern Ute Tribe; Ute Indian Tribe; Ute Indian Tribe of the Uintah and Ouray Reservation, Utah; Ute Mountain Tribe of the Ute Mountain Reservation, Colorado, New Mexico and Utah ; Ute Mountain Ute Tribe; White Mesa Ute Tribe; and Zia Pueblo Tribe.

Three letters were received. Substantive comments and OSMRE's responses to those comments are in **Table A-1**. Comments on the Draft EA and FONNSI and Responses.

Number	Commenter	Comment	Response
1-1	Sam Baker	To Whom it May Concern, I am fully in favor of granting SUFCO's permit for the greens hollow tract. Having worked in the coal industry in neighboring Colorado and as mining engineering graduate I have the utmost confidence in both OSM and SUFCO's abilities to protect the environment while producing energy and providing jobs. Our modern mining methods and laws ensure that coal production can be done safely and responsibly in Utah and the rest of the country.	Comment noted.
2-1	Michael Drysdale Dorsey & Whitney LLP	On behalf of Canyon Fuel Company, LLC ("CFC"), I am pleased to submit comments on the Greens Hollow Tract Mining Plan Mining Environmental Assessment ("Greens Hollow EA") prepared by the Office of Surface Mining, Reclamation, and Enforcement ("OSMRE"), dated December 2017. Following a brief discussion of CFC's interest in the Greens Hollow EA, CFC's comments are organized by Section of the published document.	Comment noted.
2-2	Michael Drysdale Dorsey & Whitney LLP	**CFC's Interest** As identified in the Greens Hollow EA, CFC is the owner and operator of the Sufco Mine and the applicant for the proposed mining plan modification. Equally importantly, CFC is the lessor of the Greens Hollow Federal Coal Lease Tract UTU-84102. As acknowledged in Section 1.3 of the Greens Hollow EA, CFC thus possesses valid existing rights and obligations to mine the Greens Hollow Tract. These rights and obligations constrain OSMRE's discretion in reviewing the proposed mining plan modification. OSMRE correctly states that it has broad authority to "approve, disapprove, or approve with modifications" the proposed mining plan modification, but OSMRE does not have the authority to disapprove	Comment noted.

		or require modifications to the proposed mining plan modification based on environmental impacts that are necessarily incident to the granting of a federal coal lease, such as the downstream combustion of the federal coal. Consequently, OSMRE has no legal duty to examine such impacts. *DOT v. Public Citizen,* 541 U.S. 742 (2004). Case law to the contrary outside of the Tenth Circuit Court of Appeals, *see* the recent *Signal Peak Energy* decision (D. Mont. CV 15-106-M-DWM, Order of August 14, 2017), is not binding on OSMRE.[1] At the same time, analysis of such impacts is not legally prohibited, and as discussed below, CFC does not object to the analysis in this specific instance.	
2-3	Michael Drysdale Dorsey & Whitney LLP	**Section 1.1 - Introduction** The Greens Hollow EA makes the following statement: As a federal agency, OSMRE is subject to the National Environmental Policy Act of 1969 (NEPA), and therefore must conduct an environmental review, in form of either adoption of a prior NEPA document for the same project, supplementing a prior NEPA document for the same project, or creation of a new NEPA analysis, before proceeding the federal action of making a recommendation to the ASLM regarding the mining plan modification. The OSMRE has prepared this supplemental environmental assessment (EA), based on new information provided in the PAP. This statement could be interpreted as a broad statement of law regarding mining plan modifications generally, and the statement omits that NEPA analyses are not required for all federal actions, including minor mine permitting actions. The statement's use of the term "project" could also be confusing. CFC therefore recommends clarifying the statement as follows: As a federal agency, OSMRE is subject to the National Environmental Policy Act of 1969 (NEPA) for all major federal actions significantly impacting the human environment. OSMRE has determined that the proposed mining plan modification is a major federal action. OSMRE therefore must conduct an environmental review, in form of either adoption of a prior NEPA document for the same project that adequately analyzes the environmental effects of the proposed action. supplementing a prior NEPA document as necessary to assess the effects of the proposed action, for the same project, or creation of a new NEPA analysis, before proceeding with the federal action of making a recommendation to the ASLM regarding the mining plan modification. The OSMRE has prepared this supplemental environmental assessment (EA), based on new information provided in the PAP and additional information collected by OSMRE.	OSMRE agrees that the suggested language is correct in part and has modified Section 1.1 Introduction with language similar to the suggested language. OSMRE does not agree that the Proposed Action constitutes a major federal action significantly impacting the human environment and therefore that language was not included.
2-4	Michael Drysdale	**Figure 1**	The legend did not clearly identify the

	Dorsey & Whitney LLP	Figure 1 provides a location map that requires a correction. The Legend describes various areas outlined or colored in blue as the "Sufco Mine Permit Boundary." Under Utah's permitting regulations, permit areas are surfaces that are disturbed and subject to reclamation (hence the small and isolated character of the permitted areas). Of these, the "fish-shaped" area in T21S RSE, Sections 2, 3, 10, 11, 12, and 14 is technically not part of the Sufco Permit boundary and should be deleted from Figure 1. There is some water management occurring in that area but no surface disturbance and no reclamation, and it is not part of Sufco's Permit.	permit boundary displayed. Figure 1 has been updated as specified.
2-5	Michael Drysdale Dorsey & Whitney LLP	**Section 1.2 - Background** Because Section 1.2 is concise, it may be useful for readers to expressly point out that additional background information is available in the Greens Hollow FSEIS.	To further emphasize that the Greens Hollow FSEIS addresses impacts analysis, Section 1.2- Background was updated to further describe the connection between the two NEPA documents.
2-6	Michael Drysdale Dorsey & Whitney LLP	**Section 1.3 - Purpose and Need for Action** Section 1.3 contains the following statement: If the ASLM approves this action, operations would continue at the Sufco Mine for up to 8.8 years. Because market conditions and demand for coal fluctuates, and there may be future proposed actions, the Greens Hollow EA should not overstate the precision of forecasts of the life of future operations. CFC recommends that the statement be amended as follows: If the ASLM approves this action, operations at current rates of production would continue at the Sufco Mine for approximately 9-10 years. This revision would also be consistent with the "depending on the production rate" qualifier and duration stated in Section 2.2.	The estimated life-of-mine is slightly adjusted in the Greens Hollow Supplemental EA from the Greens Hollow FSEIS, therefore Section 1.3 Purpose and Need was updated to include the suggested statement.
2-7	Michael Drysdale Dorsey & Whitney LLP	**Section 1.4 - Regulatory Framework** It may be helpful to clarify that the "major regulations" referenced in Section 1.4 are statutes.	Section 1.4 – Regulatory Framework was updated to include statues.
2-8	Michael Drysdale Dorsey & Whitney LLP	**Section 1.5 - Issues** It is not correct to assert that the listed issues "have not been covered" by a prior environmental review. To the contrary, in the Greens Hollow FSEIS, BLM discussed each of the listed issues, and provided rational, non-arbitrary, and legally sufficient reasons for the scope of examination devoted to each subject. This does not preclude OSMRE from looking further into each issue, but OSMRE should not state or imply that the issues were not considered in the Greens Hollow	OSMRE agrees that the Greens Hollow FSEIS considered the issues, thus, Section 1.5-Issues. Statement was updated to clarify that issues were considered in the Greens Hollow FSEIS.

<table>
<tr><td></td><td></td><td>FSEIS.</td><td></td></tr>
<tr><td>2-9</td><td>Michael Drysdale
Dorsey & Whitney LLP</td><td><u>Section 1.5 - Issues</u>
In addition to the listed issues, CFC recommends that an additional issue be listed:
"Combustion effects arising from the No Action Alternative, as identified in the decision WildEarth Guardians v. United States Bureau of Land Management, 870 F.3d 1222 (10th Cir. 2017)." ("Wright Area"). The reason for identifying this issue is further discussed in Section
3.3.2.</td><td>Section 1.5 Issues were not changed because they apply to all the alternatives, however, the description of the impacts was revised slightly to reflect the ongoing impacts that would result from the No Action. See response to comment 2-19.</td></tr>
<tr><td>2-10</td><td>Michael Drysdale
Dorsey & Whitney LLP</td><td><u>Section 2.2. - Proposed Action</u>
Section 2.2 at page 6 and Table 2 summarize Sufco production for the past several years, and provides Energy Information Agency ("EIA") data on shipments to U.S. power plants.
The Greens Hollow EA assumes that all other Sufco production was exported. This misinterprets the EIA data in two important respects. First, Sufco has shipped substantial quantities of coal over the past two years to the Hunter Coal Preparation Plant, which commenced operations in 2015. This coal is then used at Hunter. Table 2 omits shipments to the Hunter Coal Preparation Plant, undercounting the amount of Sufco coal that has gone to Hunter. Second, the EIA does not report data on shipments to industrial customers, again undercounting shipments to domestic consumers. A corrected Table 2 for the years 2015-2016 is set forth below:
<table>
<tr><td>Sufco Mine - Sales History</td><td></td><td></td></tr>
<tr><td>Plant</td><td>2015</td><td>2016</td></tr>
<tr><td>Carbon</td><td></td><td></td></tr>
<tr><td>Hunter</td><td>1,238,753</td><td>21,846</td></tr>
<tr><td>Hunter Sales Reported as Hunter Prep Plant</td><td>1,112,409</td><td>2,042,898</td></tr>
<tr><td>Huntington</td><td>1,042,569</td><td>984,094</td></tr>
<tr><td>Intermountain Power Project</td><td>1,957,865</td><td>1,902,571</td></tr>
<tr><td>North Valmy</td><td></td><td></td></tr>
<tr><td>Reid Gardner</td><td></td><td></td></tr>
<tr><td>Sheldon</td><td></td><td></td></tr>
<tr><td>Total Shipped to Power Plants</td><td>5,351,596</td><td>4,951,409</td></tr>
</table></td><td>Table 2 has been updated.</td></tr>
</table>

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>Production (Short Tons)</td><td>6,024,483</td><td>5,375,171</td></tr>
<tr><td>Not Shipped to Power Plants</td><td>672,887</td><td>423,762</td></tr>
<tr><td>Percent(%) of Sufco Coal Shipped to United States Power Plants</td><td>88.8%</td><td>92.1%</td></tr>
<tr><td>Other Industrial</td><td>672,887</td><td>491,911*</td></tr>
</table>
</td><td></td></tr>
<tr><td>2-11</td><td>Michael Drysdale
Dorsey & Whitney LLP</td><td>After correction, it is clear that very little Sufco coal is exported. In fact, Sufco's entire production for 2015 and 2016 was consumed domestically. (*Domestic shipments actually exceeded production in 2016 as a result of inventory drawdown).
It is also important to note that this is not necessarily a prediction of the future disposition of coal from the Greens Hollow Tract. As CFC has previously explained, CFC blends its coals from multiple mines to provide optimal service to its customers. Whether any Greens Hollow coal would be exported was depend on the specific mix of then-available coals and customer needs. Overall, however, it is fair to conclude that much less coal from Sufco was be exported over the near term than is conveyed in the Greens Hollow EA, and both the table and text should be corrected accordingly.</td><td>Table 2 and surrounding text has been updated.</td></tr>
<tr><td>2-12</td><td>Michael Drysdale
Dorsey & Whitney LLP</td><td><u>Section 2.3 - No Action Alternative</u>
Section 2.3 describes the No Action Alternative as resulting in an essentially permanent denial. There are many reasons why the No Action Alternative could be selected, many of which would only result in a temporary denial. Consequently, CFC recommend the following edits:
Under the No Action Alternative the OSMRE would not recommend approval of the mining plan decision document. The ASLM would deny the action and as a result, the coal reserves in the Greens Hollow Federal Coal Least Tract UTU-84102 would not be recovered <u>until such time as an approval could be obtained.</u> DOGM would still have authority to approve the significant permit revision (to include the Greens Hollow Federal Coal Lease Tract UTU-84102 into its state SMCRA permit), however, as stated above, mining would not occur within the Greens Hollow Federal Coal Lease Tract UTU-84102. <u>Assuming an approval authorizing mining in the tract was not later obtained,</u> the Sufco Mine would continue to operate and mine coal until its other reserves run out in about 2020.</td><td>OSMRE agrees that Sufco could submit an amended application that could be reviewed and approved in the future. Text was modified to convey this possibility.</td></tr>
<tr><td>2-13</td><td>Michael Drysdale
Dorsey & Whitney LLP</td><td><u>Section 3.2.2.1 - Hazardous Air Pollutants</u>
Carbon dioxide and other greenhouse gases are not HAPs, but a discussion of the social cost of carbon ("SCC") is located in Section 3.2.2.1. This should be relocated to its own section.</td><td>This formatting error was corrected. Social Cost of Carbon was intended to be its own section (3.2.2.2).</td></tr>
</table>

2-14	Michael Drysdale Dorsey & Whitney LLP	**Sections 3.3.1.2 and 3.3.1.4 - Emissions of Transport and Combustion of Coal at Hunter Power Plant** The Greens Hollow EA discusses in several locations that it is estimating coal transport emissions to the Hunter Power Plant, and provides the calculations in Section 3.3.1.2. In Section 3.3.1.4 OSMRE explains that Hunter is chosen as a "representative" plant for purposes of calculating emissions from coal combustion. It appears that was also true, but unstated, with regards to coal transportation. Section 3.3.1.2 should make that clear.	Text in Sections 3.3.1.2 and 3.3.1.4 was clarified that Hunter is a plant used for calculating emissions related to coal combustion and transportation.
2-15	Michael Drysdale Dorsey & Whitney LLP	In addition, it is important to be clear in both this section and everywhere else that Hunter is used as a representative facility because the future mix of trips and destination facilities for Greens Hollow tract coal is not known, especially in light of CFC's fuel-blending practices. (This fundamental uncertainty was a major reason why the BLM appropriately decided not to estimate transport and non-GHG combustion emissions in the Greens Hollow FSEIS). OSMRE attempts to address this uncertainty in Section 3.3.1.4, but the discussion could be clearer. When OSMRE states that "any other potential end users are unknown" (p. 15), it is not so much that Hunter is known and others are not, but rather the quantities of Greens Hollow tract coal going to *any* specific end user (Hunter or otherwise) cannot be forecast with any reliability. OSMRE has selected Hunter as "representative" because it is close, has historically received a large fraction of Sufco coal, and is forecast to operate fairly far into the future. To the extent the Hunter example provides value, it is principally to show the *relative magnitude* of historical effects. The specific calculations have *no value* as a predictive exercise of future quantities and effects associated with Greens Hollow tract coal. The Section concludes with the following statement: The Hunter Power Plant would likely continue as one end user of coal from the Proposed Action. The Hunter Power Plant is anticipated to continue operations for the life of the facility; therefore, regional impacts to ambient air quality from the combustion of coal within the region would be generally the same for the Proposed Action.	In accordance with NEPA, OSMRE must disclose potential impacts based on available information. OSMRE chose to evaluate the Hunter Power Plant as the receiver of Sufco coal in the future, which is reflected in the text of Section 3.3.1.2. OSMRE agrees that the final destination(s) of coal from the Greens Hollow tract is uncertain, which is also disclosed in section 3.3.1.2. This section also states that Hunter is used to present potential effects of the Proposed Action to aid the decision-maker. The analysis has been expanded to include the "per mile" emissions so reviewers can see how distance affects the emissions. The statements referred to by the commenter have been removed to avoid confusion and additional text explaining the analysis approach has been added to Section 3.3.1.2.

2-16	Michael Drysdale Dorsey & Whitney LLP	This should be clarified and expanded upon as follows: The Hunter Power Plant would likely continue as one end user of coal from the Proposed Action. The Hunter Power Plant is anticipated to continue operations for the life of the facility; therefore, regional impacts to ambient air quality from the combustion of coal within the region would be generally the same as between the Proposed Action and No Action Alternatives. The potential consequences of the No Action Alternative on net coal combustion are discussed in more detail in Section 3.3.2.	The statements referred to by the commenter have been removed to avoid confusion and additional text explaining the analysis approach has been added to Section 3.3.1.2. No additional edits similar to those suggested were included in the EA because while the No Action and Proposed Action are similar they represent differences in the amount of time coal is mined and therefore impacts are distinguishable.
2-17	Michael Drysdale Dorsey & Whitney LLP	**Section 3.3.1.5 - Mercury Emissions from Coal Combustion** OSMRE's discussion of the uncertainties regarding mercury emissions is generally correct. However, for consistency with the remainder of the document in the use of Hunter as a representative facility, OSMRE should report Hunter's actual mercury emissions since Hunter came into compliance with the Mercury Air Toxics Rule, rather than theoretical emissions based on the mercury content of the coal. At a minimum, the 1.2 lbs/Tbtu rate should be included in Table 9 along with the 3.7 lbs/Tbtu rate. This is what is actually emitted and potentially relevant to decision makers.	Section 3.3.1.5 Mercury Emissions **Table 9** has been updated with Hunter's actual emissions and calculated total for all of Greens Hollow coal. The 1.2 pounds per TBtu is included in the text above the table as a standard.
2-18	Michael Drysdale Dorsey & Whitney LLP	Section 3.3.1.5 - Mercury Emissions from Coal Combustion CFC also recommends that the following statement be added. "Whether approval of the mining plan modification would contribute to net combustion of coal, and therefore net combustion of mercury, is discussed in Section 3.3.2."	Additional text was added to Section 3.3.2 (No Action) to reflect that the No Action would have similar effects as the proposed action, but for a shorter period. Including the text suggested in the analysis of the proposed action would be inconsistent with the rest of the document, which does not discuss the ongoing emissions from power plants without the approval of the Greens Hollow mining plan modification.
2-19	Michael Drysdale Dorsey & Whitney LLP	**Section 3.3.2 - No Action Alternative** The Greens Hollow EA provides a very brief discussion of the environmental consequences of the No Action Alternative, stating that the No Action Alternative will result in no mining and therefore no impacts. This conclusion is correct with respect to *direct* impacts, but further discussion is warranted as to *indirect*	Additional qualification and references to the life of mine without the modification have been added to Section 3.3.2. OSMRE discloses both direct and indirect impacts from

		impacts associated with the No Action Alternative. Specifically, in *Wright Area,* the Tenth Circuit Court of Appeals held that, in the context of a coal *leasing* action, the BLM erred in assuming that selection of the No Action Alternative would have no effect on net coal combustion. As the Tenth Circuit explained, the failure to lease coal could have an impact on net supply and demand, and therefore net coal combustion. Consequently, the Tenth Circuit remanded the leasing decisions to the BLM to conduct supplemental analysis, which is ongoing. There are a number of important distinctions between leasing and mine plan review, and between the Wright Area decisions and Greens Hollow, which will be discussed below. However, because the Tenth Circuit decision is recent and from a federal appellate court, and the Tenth Circuit has not addressed OSMRE's duties to analyze the indirect combustion effects of a mine plan modification, an express discussion of these issues would be prudent in the final EA and/or Record of Decision.	mining, transportation, and coal combustion under the Proposed and No Action Alternatives. As outlined in the Wright Area 10th Circuit Court decision, OSMRE does not use "perfect substitution" in its analysis. OSMRE discloses both direct and indirect impacts from mining, transportation, and coal combustion under the Proposed and No Action Alternatives. This presents a conservative range of potential impacts associated with the approval or disapproval of coal to help the decision maker draw a distinction between the alternatives. It is always possible that other suppliers would pick up the coal that is not brought to market from the Greens Hollow lease under a No Action Alternative, but that would depend on the highly variable coal market making any assumptions and analysis too speculative. OSMRE is not required to complete a cost-benefit analysis under CEQ's NEPA Implementing Regulations (40 CFR 1502.23.
2-20	Michael Drysdale Dorsey & Whitney LLP	*Leasing v. Mine Planning* As previously noted, leasing and mining plan modifications are inherently different exercises. Leasing is highly discretionary with the Secretary of the Interior. In contrast, once a lease issued, both the lessor and federal government have rights and obligations to diligently develop the leased coal. As a matter of law, this precludes OSMRE from selecting the No Action Alternative on the basis of the effects of coal combustion. *Wright Area v. Greens Hollow*	Impacts related to the No Action Alternative are described in Section 3.3.2. OSMRE is the agency responsible for making a recommendation to the ASLM and can recommend that the mining plan modification not be approved to the ASLM.

		In the Wright Area FEIS, the BLM did not attempt to assess the end-users of the Wright Area coal or their sensitivity to differing leasing outcomes. In contrast, in the Greens Hollow FSEIS, and in the draft EA, the BLM and OSMRE identified the historically and currently largest consumers of Sufco coal, including the Hunter, Huntington, and lntermountain power plants. The BLM, and now OSMRE in the Greens Hollow EA, made specific determinations regarding the lifespan of these facilities. In each case the lifespan was determined to be independent of the proposed action *See, e.g.,* Greens Hollow EA at 15. Because of this difference, BLM and OSMRE were justified in concluding that selection of the No Action Alternative was not likely to affect net coal combustion. While this conclusion may by itself be a sufficient reason for not conducting further analysis of the indirect coal combustion effects of the No Action Alternative, it is also true that Hunter, Huntington, and lntermountain are not the sole consumers of Sufco coal, and their relative future consumption of Greens Hollow coal may differ from historic patterns. Consequently, it is also prudent to more generally assess the sensitivity of the market for Greens Hollow coal. Recent analyses by the Forest Service and SLM for the West Elk Mine provide useful information for such an exercise. *The West Elk Example* The West Elk Mine is located near Somerset, Colorado. West Elk coal is very similar in characteristics to what is known to date about Greens Hollow coal (i.e., high BTU, low ash, low mercury, low sulfur "compliant" and "super-compliant" coal), and therefore they will be competing in similar markets. Indeed, the Forest Service and BLM specifically identified Uinta Basin coal as being highly comparable to West Elk coal, and a competitor for the Hunter, Huntington, and lntermountain facilities. *See* the Colorado Roadless Rule Final Supplemental Environmental Impact Statement ("CRR FSEIS") at App. C, Tables E-1, E-9. The CRR FSEIS is available at https://www.fs.usda.gov/lnternet/FSE DOCUMENTS/fseprd525072.pdf. As part of the repromulgation of the North Fork Exception to the Colorado Roadless Rule following the Colorado federal district court's decision in *High Country Conservation Alliance,* the Forest Service and BLM analyzed the sensitivity of the market for West Elk coal to changes in coal supply. After conducting extensive modeling as part of the rulemaking process, the Agencies determined that the market for West Elk (and Uinta Basin) coal is especially "inelastic," meaning that demand for coal (and resulting combustion) was not significantly affected by changes in supply. The Agencies specifically noted that there was low capability in the Western Electric	OSMRE does not assert that selection of the No Action Alternative "was not likely to affect net coal combustion" and the EA states that air quality impacts would continue through 2020 under the No Action Alternative. See response to 2-19. OSMRE is aware of the Colorado Roadless Rule Final Supplemental Environmental Impact Statement coal analysis. OSMRE is not required to conduct a coal market analysis and it is considered to be out of scope for this EA. OSMRE discloses the potential impacts associated with the Proposed and No Action alternatives and does not make any assumptions about the future coal market conditions as those would be too speculative. This EA's analysis is not similar to the analysis in the Wright Area case because OSMRE does not assume that the coal market will adjust and substitute the coal reserves lost if OSMRE approves a No Action Alternatives. OSMRE analyzes potential impacts under both the Proposed and No Action alternatives with and without the coal reserves. Also, the amount of coal from the two mines in the Wright Area case comprised approximately 19% of the annual domestic coal production whereas coal from Greens Hollow on an annual basis would equal approximately 6 million tons. This

		Coordinating Council NERC Region (the region that Sufco and other Uinta Basin producers principally supply) to readily switch from coal to natural gas. CRR FSEIS App. C at Table C-18. The Agencies' methodology and market conclusions are set forth in detail in Appendix C to the CRR SFEIS. OSMRE may rely on the West Elk modeling to conclude that selection of the No Action Alternative for Greens Hollow would be unlikely to have a significant effect on net coal combustion.	would equal <1% of the annual domestic coal production using those values outlined in the Wright Area decision (see footnote 2). Therefore, due to the large difference in tonnages it is not appropriate to have the same level of analysis.
2-21	Michael Drysdale Dorsey & Whitney LLP	<u>*Rationale for No Action*</u> An important issue that was not addressed in the *Wright Area* decision is that the No Action Alternative is never selected in a vacuum, but rather for specifically stated reasons. Because coal combustion is an indirect effect of coal mining, and the ample federal reserves of comparable Uinta Basin or Colorado Plateau coal, the impact of the denial of Greens Hollow Mine Plan Modification will depend critically on the reasons given by OSMRE. For example, certain commenters urged rejection of the Greens Hollow lease application out of concern for alleged impacts to Greater Sage Grouse. If OSMRE denied the mine plan modification for that reason, that would inform the coal market that there might a be a (short or long term) problem at Sufco, but it would not signal to the market that is likely to be significant interruption in coal supply (i.e., the loss of Greens Hollow coal can be readily balanced by expanded production and leasing elsewhere). Conversely, if OSMRE denied the mine plan modification because of concerns about coal combustion, that would send a strong shock to the market, because it would potentially signal a broader curtailment of federal coal leasing and production. This dynamic squarely presents the question whether OSMRE could or would deny the mine plan modification on the basis of the effects of coal combustion. In addition to the fact coal supply is fundamentally the domain of the Secretary in leasing policy rather than OSMRE in enforcing SMCRA and other federal statutes, an individual mine plan modification decision is a uniquely poor (and perhaps illegal) mechanism in which to signal a change in federal coal supply policy. Policy changes should be developed through programmatic changes or rulemakings rather than individual applications. To make policy through individual applications would be highly prejudicial to both the individual applicant and the industry generally. For these reasons, it is highly unlikely (and perhaps illegal) that OSMRE would select the No Action Alternative on the basis of the effects of coal combustion. If the No Action Alternative was selected, it would be because of site-specific	OSMRE is the agency responsible for making a recommendation to the ASLM and can recommend that the mining plan modification not be approved to the ASLM. The rational for making that decision would be supported by the NEPA analysis and decision document. OSMRE discloses the potential impacts associated with the Proposed and No Action alternatives and does not make any assumptions about the future coal market conditions as those would be too speculative.

		concerns that are unlikely to affect net coal combustion. OSMRE should consider and discuss all of these issues and reasons, to ensure that any obligation that might later be determined to arise under the *Wright Area* decision is satisfied.	
2-22	Michael Drysdale Dorsey & Whitney LLP	**Section 3.4 - Cumulative Effects** Table 10 identifies two ventilation shafts as "reasonably foreseeable future actions" that "could be necessary." As stated elsewhere, CFC presently believes that additional ventilation shafts was not be necessary, and has not identified locations in the event that one or both do become necessary. CFC does not object to referencing the ventilation shafts, but they are too uncertain and unlikely at this point to be fairly described as "reasonably foreseeable" under NEPA nomenclature.	Based on the uncertainty, the ventilation shaft has been removed from **Table 10**.
2-23	Michael Drysdale Dorsey & Whitney LLP	**Section 3.4.1 - Proposed Action(s)** On page 19, the EA should state more clearly the 10.03 million tons of coal referenced is the total of the three proposed mining actions described in Table 11, and correct the "Error!" message in the text.	The referenced text was revised to reflect the three projects. The error message has been corrected.
2-24	Michael Drysdale Dorsey & Whitney LLP	**Section 3.4.2 - No Action** The discussion in this section should cross-reference the expanded No Action discussion in Section 3.3.2.	Discussion was cross reference Section 3.3.2.
2-25	Michael Drysdale Dorsey & Whitney LLP	CFC thanks OSMRE for its significant efforts to date in preparing the Greens Hollow EA and associated documentation, and looks forward to prompt finalization of the EA and ROD, and issuance of the mine plan modification. Let us know if you have any questions about any of the foregoing comments.	Comment noted.
2-26	Michael Drysdale Additional Follow Up Comment Email 2/5/2018	In the email referenced below I transmitted Canyon Fuel Company LLC's comments on the Greens Hollow Mining Plan Modification Supplemental Environmental Assessment. One comment that is not in the letter, but CFC would also to like to OSMRE to consider, concerns the emissions inventories for Sevier and Sanpete Counties. These are discussed in Section 3.2.1-Regional Air Quality, and Table 3. The text and Table 3 present the 2014 triennial emissions inventory for Sevier county, but not Sanpete County. CFC believes that there is an inventory for Sanpete County as well, see hhps://documents.deq.utah.gov/air-quality/annual-reports/DAQ-2018-001005.pdf. Assuming there was no technical reason to exclude the Sanpete County inventory, CFC recommends that the Sanpete County data also be presented in the final document. Thank you.	**Table 3** was updated to include Sanpete County.
3-1	WildEarth Guardians,	As a threshold issue, we are first concerned that the modification proposal is	While a challenge to the BLM

	Center for Biological Diversity, and Sierra Club Environmental Law Program	based on an invalid federal lease, and modification of a mining plan for an invalid lease would be in violation of the Surface Mining Control and Reclamation Act ("SMCRA").	compliance with NEPA and the Administrative Procedures Act in approving the Greens Hollow Lease is pending, BLM's sale of the lease has not been stayed or enjoined. Accordingly, the lease is in effect and it is appropriate for OSMRE to tier to the EIS. CEQ encourages tiering to reduce redundancy in analysis. Per the CEQ regulations implementing NEPA (40 C.F.R. §§ 1502.20 and 1508.28), tiering is appropriate when proceeding from a broader environmental impact statement on a specific action to an analysis at a later stage, so that the agencies can focus on the issues which are ripe for decision and exclude from consideration issues already decided.
3-2	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	In addition to the underlying lease's non-compliance with SMCRA, we are concerned that OSM is using a Supp. EA to correct deficiencies in a Final Supplemental Environmental Impact Statement ("FSEIS"), which is not provided for in the National Environmental Policy Act ("NEPA") regulations. Using an EA or Supp. EA to correct an Environmental Impact Statement ("EIS") or FSEIS is expressly prohibited in NEPA regulations and guidance, and therefore presents an immovable obstacle to the approval of this proposed modification.	OSMRE prepared a supplemental EA based on new circumstance and new information as described in Section 1.1. It was not prepared to, as the commenter states, "correct deficiencies" in the Greens Hollow FSEIS. Text has been updated to clarify using an EA to supplement an EIS and why this is appropriate. The preparation of an EA or supplemental EA in this case is not prohibited under CEQ's NEPA implementing regulations or guidance because OSMRE is not, as the commenter states, correcting an EIS or FSEIS. See footnote 1 in Section 1.1 "*A finding of no significant impact other than those already disclosed and analyzed in the EIS to which the EA is tiered may be called a "finding*

			of no new significant impact" (43 CFR 46.140(c))." An EA is the appropriate form of NEPA when the effects are not significant. Also see Section 1.1 for DOGM's coal program.
3-3	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Moreover, aside from using an incorrect process to supplement an FSEIS, we are further concerned that OSM seems to assume its Supp. EA is sufficient to patch the holes of its faulty air quality and climate analysis in the prior FSEIS, while also tiering to the insufficient FSEIS. While it is appropriate in some instances to tier an EA to a prior EIS, this is only the case when the EIS is proper and complete. OSM cannot have it both ways; either the FSEIS is insufficient and needs to be supplemented, or the FSEIS is complete and can be tiered to. While it seems that OSM understands its analysis in the prior FSEIS were insufficient, OSM has not provided sufficient additional analysis to fill in the gaps. Finally, even while ignoring that an incomplete FSEIS cannot be tiered to, OSM attempts to paper over its poor analysis using a Supp. EA and still ends up stopping short of the hard-look, high-quality analysis that NEPA requires. Guardians, CBD, and Sierra Club urge OSM to halt its review, or to disapprove of the mining plan modification. OSM must reject the preparation of an EA and move to conduct a full EIS, consistent with § 102(2)(C) of NEPA. *See* 42 USC 4332(2)(C).	See response to comment 3-2. OSMRE completed a "hard look" of the new issues described in Section 1.5. A "hard look" included review of new and previously available data, performing calculations to disclose potential air emissions from mining operations, employee vehicle use, transportation, and coal combustion, and analyzing available data on mercury emissions. The use of a supplemental NEPA analysis does not render the prior NEPA analysis insufficient or inadequate. A supplemental NEPA analysis as outlined in 40 CFR 1502.9 can be prepared based on new circumstances and information, when substantial changes are made to the Proposed Action, and when an agency determines that the purposes of the Act will be furthered by doing so. The rational for supplementing the Greens Hollow FSEIS is provided in Section 1.1. Tiering to the Greens Hollow FSEIS is appropriate under 40 CFR 1502.20 which states that, "Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual

			issues ripe for decision at teach level of environmental review." The supplemental EA focuses on those issues that required updated and tiers to the Greens Hollow FSEIS regarding other resource area analyses. As further described in 40 CFR 1508.28, "Tiering is appropriate when the sequence of statements or analyses (b) from an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation). In this case the early stage is leasing and OSMRE is taking the preferred approach of supplementing for an analysis at a later stage which is the mining plan modification which includes any lease or permit stipulations and/or mitigation. An EIS is not required as no new significant impacts were determined in the supplemental EA's analysis. Rationale and findings are included in the FONNSI.
3-4	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	1. **OSM Cannot Approve a Modification Because the Greens Hollow Lease is Invalid** As a threshold matter, we are concerned that this modification relates to a federal lease that was not legally approved. Specifically, the BLM was prohibited from approving the Greens Hollow lease because it was legally required to declare the lease area unsuitable, in accordance with Sage Grouse management direction, in addition to BLM's own coal regulations, 43 C.F.R. § 3461.5(o). In fact, Guardians, Sierra Club, Grand Canyon Trust, and CBD currently have an appeal before the Interior Board of Land Appeals ("IBLA") challenging the BLM's legal	See response to comment 3-1. A Coal Unsuitability Criteria Assessment was completed on the Greens Hollow. Lands were determined to not be unsuitable. Per 43 CFR 3461.1, *coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no*

		basis for approving the lease. *See* IBLA 2016-0279. Under SMCRA, before leasing federal lands for surface coal mining, the agency "shall" determine whether the lands must be considered "unsuitable" and prohibited from leasing. 43 C.F.R. § 3461.3-1(a). When the BLM did not, and instead approved the Greens Hollow lease despite legal prohibitions, the lease became invalid and illegal. As contended in *WildEarth Guardians, et al*. Statement of Reasons, in authorizing the sale and issuance of the Greens Hollow coal lease, the BLM violated the Federal Land Management and Policy Act ("FLPMA") and implementing regulations by failing to comply with applicable Resource Management Plan ("RMP") direction regarding sage grouse conservation, as well as related coal leasing regulations. *See WildEarth Guardians, et al., Statement of Reasons, Appeal of the Greens Hollow Federal Coal Lease, UTU-084102,* IBLA 2016-0279 (8/15/2017) (Statement of Reasons challenging the BLM's ROD authorizing the s sale of the Greens Hollow Lease) (Exhibit 1).	*surface coal mining operations*. (As stated in Section 1.2.5 and Appendix A of the Greens Hollow FSEIS, "BLM used the unsuitability criteria as described in 43 CFR, Subpart 3461, and Table C-1and C-2 of the Manti-La Sal Land and Resource Management Plan (LRMP) to determine the suitability of National Forest lands for coal leasing. The determination of coal mining suitability within the Sage-Grouse Management Area (SGMA) was assessed under Criterion Number 15. Under Criterion Number 15, federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for residents species of high interest to the state and which are essential for maintaining these priority wildlife species should be considered unsuitable. It is important to note that an exception can be made and a lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected. The Greens Hollow proposed federal coal lease tract lies within the Parker Mountain – Emery SGMA established by Utah's Conservation Plan for Greater Sage-grouse. Currently, greater sage-grouse and underground coal mining coexist within the SGMA. Specifically, the greater sage-grouse lek in the immediate area of the lease

			tract, named Wildcat Knolls, has experienced underground coal mining directly underneath the lek, with no measureable effect upon the population attending the lek. Therefore, it was determined with the concurrence of other federal and state agencies, that underground coal mining below the SGMA, in the Greens Hollow tract would not affect sage-grouse habit and would not have a significant long-term impact on the greater-sage grouse (BLM and Forest Service 2015)." (BLM and Forest Service, 2015).
3-5	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	OSM's recommendation as to whether to approve, disapprove, or conditionally approve a mining plan modification must be based on, among other criteria, "[d]ocumentation assuring compliance with the applicable requirements of other Federal laws, regulations and executive orders other than the Act." *Id.* at § 746.13(c). Under SMCRA implementing regulations, the Secretary of the Interior can only approve mining of "leased Federal coal." 30 C.F.R. § 746.11(a). Here, OSM had an independent duty to verify that federal coal was validly leased prior to recommending any approval of a mining plan or mining plan modification. In this case, because the BLM was required to designate the Greens Hollow Lease area "unsuitable" for mining, it is not validly leased federal coal. Where there is no validly leased federal coal, neither OSM nor the Secretary have any legal authority to take any action under 30 C.F.R. § 746 to review a mining plan or mining plan modification. Moreover, the Mineral Leasing Act and SMCRA bestow upon the Secretary full discretion to reject mining plans or to condition their approval. *See* 30 U.S.C. § 207(c); *see also* 30 C.F.R. § 746.14.	See response to comment 3-1 and 3-4.
3-6	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Because the BLM was required to declare the Greens Hollow lease unsuitable, it is therefore not a valid lease, and OSM may not recommend approval, based noncompliance with required laws. OSM must, at a minimum, delay their decision until the pending IBLA case is resolved.	See response to comment 3-1 and 3-4.
3-7	WildEarth Guardians, Center for Biological Diversity, and Sierra	**2. <u>OSM Must Conduct a Full Environmental Impact Statement Analysis</u>** We are additionally extremely concerned OSM is preparing an EA to supplement its insufficient analysis in its 2015 FSEIS. This is an improper use of an EA, and	See response to comments 3-2 and 33. BLM, USFS, and Utah DOGM participated as cooperating agencies

	Club Environmental Law Program	illegal under NEPA. A full EIS, not an EA, is required here to analyze the significant impacts of past, present, and reasonably foreseeable future impacts in the region as a result of the proposal. It appears that BLM may be acting as a cooperating agency in this Supp. EA only to address deficiencies in its own FSEIS.[1] OSM must prepare an independent analysis of the effects of coal mining for the Greens Hollow Lease.	because of their special expertise and jurisdiction related to the Proposed Action. Additional language regarding cooperating agencies can be found in Section 1.1.
3-8	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	**a. OSM's Decision to Issue an Supp. EA is Unsupported by NEPA** There are several issues with OSM's decision to issue a Supp. EA to avoid preparing its own EIS or a Supplemental EIS. First, this decision is not supported by Interior Department NEPA regulations, which state: An environmental assessment may be prepared, and a finding of no significant impact reached, for a proposed action with significant effects, whether direct, indirect, or cumulative, if the environmental assessment is tiered to a broader environmental impact statement which fully analyzed those significant effects. 43 C.F.R § 46.140. Here, Bowie's 2015 FSEIS was insufficient to comply with NEPA requirements. Its insufficiency is acknowledged with the mere presence of this Supp. EA. OSM even acknowledges the 2015 FSEIS's shortcomings in its current Supp. EA, identifying specific areas that were not previously analyzed in the FSEIS, including: 1) non-greenhouse gas emissions from mining, 2) emissions from transport to the Hunter Power Plant, 3) emissions from Employee Transportation, 4) emissions from coal combustion, and 5) mercury emissions from coal combustion. Supp. EA § 1.5. This is further supported by the pending court case disputing the analysis and insufficient assessment of the FSEIS. *See* IBLA 2016-0279. Thus, while an EA may tier to a prior EIS, it may only do so when the underlying EIS offers complete analysis. Here, it is clear the underlying FSEIS analysis is incomplete as the case arguing currently sits fully briefed, the extent of which will be more fully understood once the IBLA has ruled on the merits. [1] A in a Notice of Supp. Authority on 1/26/2018 in the pending *ardians, et al*., IBLA No. 2016-0279, (Exhibit 2).	See response to comments 3-2 and 3-3. This EA tiers to the EIS which is appropriate according to 40 CFR 1508.28 because the EA is "*a subsequent statement or analysis at a later stage*…" and excludes "*from consideration issues already decided or not yet ripe*." See response to comment 3-1.
3-9	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Second, not only does this Supp. EA tier to an insufficient FSEIS, the use of a Supp. EA as created here, may not *supplement* an insufficient FSEIS. The use of this Supp. EA, then, is invalid at the outset. It is instructive to look to the BLM's NEPA Handbook for guidance on this issue, which states that "[s]upplementation is a process applied only to draft and final EISs, not EAs." H-1790-1-National	The EA was prepared in accordance with OSMRE's NEPA Handbook and NEPA implementing regulations. The CEQ NEPA implementing regulations does not prohibit the use of a

		Environmental Policy Act Handbook, available at: https://www.ntc.blm.gov/krc/uploads/366/NEPAHandbook_H-1790_508.pdf p. 29 (excerpt attached as Exhibit 3). attached as Exhibit 3). Nowhere does NEPA provide that an EIS may be supplemented with an EA. Further, while tiering to an FSEIS or prior EIS is supported in some instances, the Handbook states that, when tiering to an EIS, "[i]f there are new circumstances or information that would result in significant effects of an individual action not considered in the EIS, tiering to the EIS cannot provide the necessary analysis to support a FONSI for individual action[.]" BLM NEPA Handbook, § 5.2.2 at 27. Thus, OSM's Finding of No New Significant Impact ("FONNSI") based on tiering to an EIS (let alone an insufficient one) is wholly in violation of NEPA. Further, OSM's use of a Supp. EA to fills gaps in an FSEIS is unsupported by, and in violation of, NEPA.	supplemental EA. The use of supplemental EAs tiering to EISs is common practice among Federal agencies including but not limited to the Department of Energy, Department of Defense, Federal Aviation Administration, and Federal Emergency Management Agency. OSMRE's NEPA analyses are not subject to conformance with another agency's NEPA handbook. A FONNSI can be issued in accordance with 43 CFR 46.140(c). A supplemental EA was prepared based on new circumstances and information as described in Section 1.1, not due to insufficient analysis in the Greens Hollow FSEIS. See also response to comment 3-2 and 3-3.
3-10	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	To its credit, OSM does appear to acknowledge the 2015 FSEIS shortcomings, what OSM does not appear to understand, however is that an EA or Supp. EA cannot tier to a deficient EIS or FSEIS, nor can it serve to "fix" deficiencies in an EIS or FSEIS. If an FSEIS is inadequate, then the proper means of doing this is through a revised or Supp. EIS, not through an EA or Supp. EA. Put another way, if an EIS or FSEIS fails to disclose significant impacts, an EA cannot be the vehicle for disclosing those impacts under NEPA, only an EIS can be utilized to analyze and assess significant environmental impacts under NEPA. *See* 40 C.F.R. § 1502.3.	See response to comment 3-7. OSMRE does not acknowledge that the FSEIS has any shortcomings as alleged by the commenter. OSMRE is preparing a supplemental EA based on new circumstances and information as described in Section 1.1 that was not previously available to BLM or USFS. The analysis in the EA did not show significant impacts that would require an EIS. The unsigned FONNSI published with the EA provides rationale supporting the FONNSI.
3-11	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental	**b. An EIS is Warranted Because the Impacts are Significant** Outside of the improper patchwork NEPA process, OSM further violated NEPA by failing to adequately analyze and assess the reasonably foreseeable impacts of issuing the Greens Hollow coal lease. Such reasonably foreseeable impacts	See response to comment 3-2 and 3-9. OSMRE's NEPA analyses are not subject to conformance with another agency's NEPA handbook.

	Law Program	include coal combustion impacts, coal transport impacts, and coal export impacts. The BLM Handbook states that, "[a]n EIS would need to be prepared for the individual action only if there are significant effects that have not been analyzed in the broader EIS." BLM NEPA Handbook, § 5.2.2. at 27.	Section 3.3.1 of the EA includes discussion of coal combustion and coal transportation related impacts. See Table 2 and Section 2.2 for information on historic coal buyers.
3-12	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Here, there are significant impacts related to the mining of the Greens Hollow tract that were not considered in the 2015 FSEIS. Expanded mining poses significant direct, indirect, and cumulative impact to air quality, water quality, and special status species in the region. Further, the Supp. EA unfortunately falls short of adequately addressing several potentially significant impacts related to the mining of the Greens Hollow tract, including a number of potentially significant impacts that we flagged in earlier Statement of Reasons in our pending case. *See Statement of Reasons*. Accordingly, in addition to the reasons above, tiering would not be allowed in this instance. Given this, an EIS or a Supp. EIS must be prepared, not a Supp. EA.	See response to comment 3-2 and 3-3. The Proposed Action analyzed in this EA does not analyze expanded mining operations from that previously analyzed in the Greens Hollow FSEIS. OSMRE, as evidenced in this EA and FONNSI, did not find significant impacts related to the Proposed or No Action Alternatives.
3-13	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Regardless, an EIS is compelled based solely on the Interior Department's Departmental Manual, 516 DM 13. The Manual states that, approval of a mining plan requires an EIS where "[t]he environmental impacts of the proposed mining operations are not adequately analyzed in an earlier environmental document covering the specific leases or mining activity," "[t]he area to be mined is 1280 acres or more, or the annual full production level is 5 million tons or more," and "[m]ining and reclamation operations will occur for 15 years or more." 516 DM 13.4(A)(4). Upon review of available information, it appears that all three criteria are met. Additionally, OSM acknowledges that the FSEIS was indeed inadequate, and failed to adequately analyze the reasonably foreseeable impacts of mining the Greens Hollow lease.	See response to comment 3-2 and 3-3. The environmental impacts of the proposed mining operations are adequately analyzed in the FSEIS. A supplemental EA was prepared by OSMRE in response to new circumstances and information specific to our agency needs as described in Section 1.1. The Proposed Action does not meet the scenario described in the Departmental Manual 516 DM 13, which requires **all three criteria** to be met to initiate an EIS. OSMRE determined that the environmental impacts of the proposed mining operations is adequately analyzed in a previous environmental document covering the Greens Hollow tract lease, see Greens Hollow FSEIS.

			Departmental Manual 516 13 also explicitly recognizes that OSMRE may choose not to prepare an EIS for any of the listed actions "If for any of these actions it is proposed not to prepare an EIS, an EA will be prepared and handled in accordance with Section 1501.4(e)(2))".
3-14	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Here, the area to be mined is 6,557 acres, well over the required 1,280, and the annual production level is approximately 6 million tons per year, over the required minimum 5 million tons. Additionally, if the mining proposal is approved, it will continue the life of the Sufco mine almost 9 years, until 2028, after which it is reasonably foreseeable that reclamation would last for another 6 years or more. Thus, under the Interior Department's Manual, an EIS or Supp. EIS is required, not a Supp. EA.	See response to comment 3-13.
3-15	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Sufco Mine produces about 6 million tons of coal each year, making it the largest mine in Utah. By allowing for coal mining on the lease modification and ongoing mining on the existing lease, the Agencies' decisions will, in effect, authorize myriad other indirect impacts, including connected road construction and maintenance, truck traffic, the operation and maintenance of coal processing facilities on site, the disposal of mine waste, the development of mine ventilation systems, and other impacts. If OSM does not believe that the proposed activities are significant in terms of the context of the area that may be impacted, then OSM must explain why and include an explanation as to the thresholds upon which it based its assessment. Here, the Supp. EA fell short of proper analysis when it determined that proposed impacts were insignificant. Here the direct, indirect, and cumulative impacts of coal mining and combustion associated with the proposed Sufco coal mine expansion will undoubtedly have a significant effect on the environment. To this end, it does not appear that an Supp. EA or a FONNSI is warranted. We again urge OSM to prepare an EIS or Supplemental EIS for the modification and comply with the relevant procedures governing the preparation. The Secretary of the Interior has discretion to disapprove mining plans pursuant to the Mineral Leasing Act, 30 U.S.C. § 207(c), and the Surface Mining Control and Reclamation Act ("SMCRA"), 30 C.F.R. § 746, meaning rejection is wholly authorized.	The degree and significance of impacts are described in the FONNSI, which found the Greens Hollow mining plan modification "*will have no new significant effect on the quality of the human environment individually or cumulatively with other actions within the region, that has not already been analyzed in the Greens Hollow FSEIS.*" As stated in the EA Section 3.3.1.4, the exact destination of the coal produced under the Proposed Action is unknown and would be too speculative to analyze any indirect impacts associated with exact transportation routes. The EA discloses potential emissions from vehicles in Section 3.3.1.2. The operations of coal processing facilities at the mine and disposal of mine waste (i.e. waste rock disposal sites) are analyzed as part of the

			Alternatives from the Greens Hollow FSEIS and thereby incorporated by referenced into this EA. As explained in Section 3.4 of this EA, the vent shaft is no longer being proposed as a reasonably foreseeable action for mine ventilation and therefore did not warrant further analysis. See response to comment 3-2 and 3-3.
3-16	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	If OSM decides to continue to process the proposed mining plan modification, despite the legal barriers, we request the Agency address the following issues: **3. The Supp. EA Fails to Fully Analyze and Assess the Direct and Indirect Impacts of <u>Mining the Greens Hollow Tract</u>** The Supp. EA falls short of adequately addressing a number of potentially significant impacts related to the mining the Greens Hollow tract, including a number of potentially significant impacts that we flagged in our earlier appeal of the FSEIS. *See* IBLA 2016-0279.	See response to comment 3-15 and 3-13. OSMRE, as evidenced by the EA and FONNSI, determined that the Proposed Action (direct and indirect) would not result in significant impacts. Impacts were adequately analyzed presenting quantitative emissions data and comparing those against Federal standards, such as the NAAQS.
3-17	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	NEPA is our "basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). The law requires federal agencies to fully consider the environmental implications of their actions, considering "high quality" information, "accurate scientific analysis," "expert agency comments," and "public scrutiny," prior to making decisions. *Id*. at 1500.1(b). This consideration is meant to "foster excellent action," meaning decisions that are well-informed and that "protect, restore, and enhance the environment." *Id*. at 1500.1(c). The U.S. Supreme Court has called the disclosure of impacts the "key requirement of NEPA" and held that agencies must "consider and disclose the actual environmental effects" of a proposed project in a way that "brings those effects to bear on [an agency's] decisions." *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 96 (1983). NEPA regulations require agencies to provide "a clear basis for choice among options by the decision maker and the public." 40 C.F.R. § 1502.14.	Comment noted.
3-18	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	To fulfill the goals of NEPA, federal agencies are required to analyze the "effects" of their actions on the human environment in an EIS. 40 C.F.R. § 1502.16(d). To this end, OSM must analyze the "direct," "indirect," and "cumulative" effects of its actions, and assess their significance. 40 C.F.R. §§ 1502.16(a), (b), and (d).	Direct, indirect (EA Section 3.3) and cumulative effects (EA Section 3.4) are analyzed in this EA as well as in the Greens Hollow FSEIS. The degree and significance of impacts are

			described in the EA and FONNSI.
3-19	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Unfortunately, as described in detail below, the Supp. EA, and tiered FSEIS, fails to adequately describe air quality impacts, climate impacts, and other related direct and indirect impacts that will occur from the mining, transportation, and combustion of Greens Hollow coal. OSM did not present sufficient information to justify a FONNSI. Therefore, OSM must fully analyze and assess the surface impacts of mining the proposed lease. We impress upon OSM to fully analyze and assess the impacts of mining to the following:	The degree and significance of impacts are described in the EA and FONNSI. Section 3.3.2 of the EA includes analysis of air quality impacts related to mining, transportation, and combustion of coal.
3-20	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	**a. Impacts to Air Quality** OSM was required to sufficiently analyze and address impacts to air quality related to the combustion of coal from the Greens Hollow Tract, and failed to do so. The FONNSI, in fact, indicated that impacts on air quality due to mining the Greens Hollow Tract would be "minor and short term." FONNSI at 4. However, without undertaking a full analysis, there is no way to determine whether these impacts would indeed be insignificant (or "minor and short term"). In fact, in this Supp. EA, OSM acknowledged that the FSEIS for the Greens Hollow coal lease did not fully analyze and assess environmental impacts related to air emissions from the transportation of coal to the Hunter coal-fired power plants, as well as greenhouse gas and mercury emissions from coal combustion. *See Statement of Reasons* at 4.	See response to comments 3-3 and 3-7. Section 3.3.2 of the EA presents updated analysis related to new information obtained by OSMRE. ... OSMRE does not consider the FSEIS inadequate, only that new issues and new information were identified relevant to OSMRE's federal action.
3-21	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	OSM was required to fully analyze and assess direct, indirect, and cumulative impacts to air quality, including impacts to air quality in the context of all NAAQS, prevention of significant deterioration ("PSD") increments for Class I and II areas, and visibility impacts to Class I areas. Here, OSM identified five areas which were "deserving of further study" which had not been covered by a prior analysis. Supp. EA §1.5. As mentioned previously, these areas were: non-greenhouse gas emissions from mining, emissions from transportation of the coal to the Hunter Power Plant, employee transportation emissions, coal combustion emissions, and mercury emissions. *Id.* While OSM acknowledges that the FSEIS is lacking in air quality analysis, the Supp. EA still does not sufficiently analyze the full impacts to air quality.	See response to comments 3-7, 3-20, and 3-22 through 3-31. OSMRE fully analyzed those issues identified in Section 1.5 of this EA in the context of direct and indirect (EA Section 3.3) and cumulative impacts (EA Section 3.4). Emissions presented in this EA and the Greens Hollow FSEIS are analyzed in the context of NAAQS (EA Section 3.3.1 and FSEIS 4.13.3.1). Emissions from the Proposed Action would be below the Prevention of Significant Deterioration (PSD) threshold of 250 tons per year, so PSD requirement do not apply as explained

			and thereby incorporated by reference in the Greens Hollow FSEIS (FSEIS Section 3.13.2.3 and 4.13.3.2). Potential visibility impacts to Class I areas is explained and thereby incorporated by reference in the Greens Hollow FSEIS which states that the visibility screening analysis indicates that visibility in the Capitol Reef National Park Class I area would not be impacts from operations of the Greens Hollow tract (FSEIS Section 3.13.4.1 and 4.13.3.4). OSMRE does not consider the FSEIS inadequate, only that new issues and new information were identified relevant to OSMRE's federal action.
3-22	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	We are primarily concerned that current monitoring for the area is not even occurring. While the Supp. EA states that emissions from the mine are not contributing to ozone exceedances, this statement does not represent an accurate assessment when monitoring stations are not even placed in Sevier or Sanpete county. *See* Supp. EA § 3.3. What's more, the Supp. EA did not contain any expression of whether the mileage of the air quality monitoring system to the mine would cause an impact to the monitoring results. Because no state monitoring stations exist near the project area, background air quality levels, therefore, are based on data from surrounding areas and information provided by the state. Utah DEQ 2008. Thus, OSM must undertake its own modeling analysis and assessment to comply with NEPA. Additionally, OSM did not analyze quantified fugitive emissions from particulate matter from excavation, hauling, and reclamation activities.	To determine which areas need monitoring, Utah DAQ evaluates the emissions inventory. Areas that have high emissions are monitored. In Utah, this includes areas that also have documented poor air quality such as Salt Lake City. See Section 3.2.1. OSMRE is not required to complete monitoring or modeling effort if existing data is available to characterize the affected environment and monitoring and/or modeling is not required for the decision maker to make a reasoned choice (40 CFR 1502.22). Section 3.3.1 of the EA discusses $PM_{2.5}$.
3-23	WildEarth Guardians, Center for Biological Diversity, and Sierra	*1. Coal Transport* OSM was required to explain how its analysis concluded that coal transport impacts were insignificant, and failed to do so. OSM dismissed coal trucking data	OSMRE has determined that the EA has adequately demonstrated that the foreseeable effects of implementing

	Club Environmental Law Program	as insignificant compared to the rest of the county. In the FSEIS, the agency did not deny that greenhouse gas emissions would be released, both directly from mining operations, including trucking, and indirectly from coal combustion, and that these emissions would contribute to climate change. *See* FSEIS at 285. However, the agency stopped short of a full analysis when it denied the impacts of daily trucking from the mine to Hunter Power Plant and their contribution to climate change and air quality. The comparison of a mine's impacts to the rest of Sevier County does not give automatic conclusion to its insignificance under NEPA. Rather, the agency should have taken the extra step to establish a well-known baseline for comparison, and then compared. Here, the mine-to-county comparison is arbitrary and unsupported by NEPA.	the Sufco mining plan and those effects would not significantly affect the quality of the human environment. The uncertainty regarding future combustion locations and the exact transportation routes to ship the coal to those destinations, make analysis of truck and/or train traffic too speculative. Therefore, transportation related impacts could occur throughout the county and a comparison to local county emissions is an appropriate measure to determine significance. GHG emissions resulting from mining, processing, shipping, and combusting coal are disclosed in Section 3.3.1 of the EA.
3-24	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Further, the agency only looked at the impacts of coal hauling from the mine to one particular power plant nearby. This is not sufficient to meet NEPA's "hard look" requirement.	As explained in Section 3.3.1.4, the use of the Hunter Power Plant was to reflect potential impacts from coal hauling and combustion. Actual future consumers of the coal produced under the Proposed Action are unknown at this time and would be too speculative to predict due to uncertainties in the coal markets. OSMRE determined that it would not be useful to the decision maker nor is it necessary to determine significance to present emissions from every potential or previous buyer of coal from SUFCO and chose to analyze potential impacts from one likely buyer, Hunter Power Plant as presented in Section 3.3.1.4 thereby meeting the NEPA "hard look" standard.

<table>
<tr><td></td><td></td><td></td><td>See also the response to comment 2-15.</td></tr>
<tr><td>3-25</td><td>WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program</td><td>Additionally, in order for coal extraction impacts to be fully addressed, the agency must analyze other impacts that occur day-to-day. For example, there is no disclosure of CO2 emissions associated with heavy equipment that will be required to construct roads, the new ventilation shaft, new fan shaft, and the new transmission line. Until these deficiencies are corrected, the agency continues to fall short of the analysis required by NEPA.</td><td>The emissions are regulated on an annual basis, regardless of the hours per day the mine operates. See Section 3.3.1.
Construction of roads, and a new transmission line are considered reasonably foreseeable in Section 3.4. However, specific details regarding the construction design, timing, and equipment needed for these actions is unknown and would be too speculative to quantify associated impacts.
Ventilation shafts are no longer considered reasonably foreseeable (Section 3.4).</td></tr>
<tr><td>3-26</td><td>WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program</td><td>2. Coal Combustion
OSM was required to analyze the eventual combustion of such coal, in relation to air quality. In 2017, Sufco coal was burnt at Huntington, Hunter, and Intermountain Power Project generating stations. OSM must examine the impact of these generating stations on air quality, especially as it relates to death and disease attributable to fine particle pollution. While the following data is several years old, it points to the incredible health impact that coal combustion has on the community surrounding the generating station:
<table><tr><th>Type of Impact</th><th>Annual Incidence</th><th>Valuation</th></tr><tr><td>Deaths</td><td>12</td><td>$86,000,000</td></tr><tr><td>Heart attacks</td><td>18</td><td>$2,000,000</td></tr><tr><td>Asthma attacks</td><td>260</td><td>$14,000</td></tr><tr><td>Hospital admissions</td><td>8</td><td>$190,000</td></tr><tr><td>Chronic bronchitis</td><td>8</td><td>$3,700,000</td></tr><tr><td>Asthma ER visits</td><td>10</td><td>$4,000</td></tr></table></td><td>As explained in Section 3.3.1.4, theuse of the Hunter Power Plant was to reflect potential impacts from hauling and combustion actual future consumers of the coal produced under the Proposed Action are unknown and would be too speculative to predict due to uncertainties in the coal markets.
Any existing impacts at the generating stations listed by the commenter would fall under other state and federal agencies jurisdiction.

OSMRE determined that it would not be useful to the decision maker to present emissions from every potential or previous buyer of coal from SUFCO and therefore OSMRE analyzed potential impacts from one</td></tr>
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		Clean Air Task Force, "Find Your Risk from Power Plant Pollution". Here, OSM found that these impacts were "negligible", against the weight of evidence of significant health impacts. In order to fully analyze and assess the impacts to health and air quality, OSM must complete a modeling analysis, especially considering local residents' health.	likely buyer, Hunter Power Plant as well as presenting a per-mile value which can be extrapolated if the public choses to.. Health and air quality modeling is outside the scope of the analysis and would not be useful to the decision maker since OSMRE was able to determine through a quantitative analysis that air emissions would not be significant and under the NAAQS which were created to protect human health. Since future coal consumers are unknown any related impacts at the power plant or industrial facility would be too speculative to quantify, regulated by other permitting agencies, and outside of OSMRE's jurisdiction.
3-27	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Further, a recent study found a new toxin existing in coal combustion emissions. *Nature* *Communications* 8, Article number: 194(2017) doi:10.1038/s41467-017-00276-2, available at: https://www.nature.com/articles/s41467-017-00276-2. The study suspected that in the U.S., scrubbers capture the material, reducing its prevalence, however, there is no monitoring of this particular harmful toxin, which contributes to the estimated 3 million air-pollution related deaths worldwide. Roston, Eric, "Coal Plants Might be More Toxic Than We Thought." Bloomberg News, 8/8/2017, available at: https://www.bloomberg.com/news/articles/2017-08-08/coal-plants- might-be-even-more-toxic-than-we-thought. Thus, OSM must include an analysis of this particular new toxin's prevalence in the effects of coal combustion. Until OSM undertakes this analysis, it is not in compliance with NEPA.	The study referenced was related to coal ash spill data from North Carolina related to aquatic organism exposure, which is outside the scope of the analysis for the decisions to be made for the mining plan as the Proposed Action does not involve a coal ash spill and is in a different geographic location. . The study goes on to state that it is an "initial assessment… clearly invites further toxicity studies."
3-28	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	*3. Mercury* OSM was required to analyze and assess the impacts of mercury from coal combustion. In addition to greenhouse gas emissions, coal combustion also releases emissions of hazardous air pollutants including mercury that deposit near the power plant and pose risks to both human health and the survival of endangered and other native fish in the Green River. As indicated in the	Section 3.3.1.5 addresses the potential for mercury deposition from coal combustion. However, an in-depth analysis of potential mercury deposition and impacts to fish species is not warranted because the potential

		Statement of Reasons, the FSEIS's discussion of impacts to the listed Colorado pikeminnow, razorback sucker, humpback chub, and bonytail are limited solely to discussion of water diversions, and makes no mention of the known threat to those species posed by mercury deposited from coal combustion. *See* FSEIS at 198. Also indicated in the Statement of Reasons, because mercury accumulates in the environment and in organisms, the relevant concern is not the rate of combustion but the total pollutant contribution. While the Supp. EA acknowledged that atmospheric mercury from coal combustion can be converted to methyl mercury and bio-magnify through the food chain, any analysis stops there. *See* Supp. EA § 3.3.1.	end user of the coal from the Greens Hollow tract is unknown and too speculative to predict with any accuracy that would be helpful to the decision maker. As stated in Section 3.3.1.5, "Because the effects would be within the air permit limits, which are set to be protective of the environment, the impacts from mercury emissions would be negligible."
3-29	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	OSM states that because atmospheric deposition can be difficult to quantify it is "not possible" to determine how much mercury would be deposited into water sources, or more generally as an indirect impact of mining the Greens Hollow tract. *Id.* As indicated in the Statement of Reasons, OSM cannot ignore this significant impact under NEPA due to minor uncertainty regarding the precise destination and combustion conditions for Greens Hollow coal. *See Northwest Envt'l Defense Ctr. v. NMFS*, 647 F. Supp. 2d 1221, 1247 (D. Or. 2009) ("Clearly, there can be a significant impact on a species [under NEPA] even if its existence is not jeopardized.") (quotation omitted).	Table 9 has been updated to include the mercury emissions from combustion of coal at the Hunter Power Plant. As stated in Section 3.3.1.5, "Because the effects would be within the air permit limits, which are set to be protective of the environment, the impacts from mercury emissions would be negligible."
3-30	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Mining at Sufco occurs 24 hours a day, and runs equipment which emits pollution 24 hours a day. These impacts cannot be dismissed as "insignificant." Until OSM has corrected these deficiencies in monitoring data and analyses, it cannot conclude the impacts will not be significant.	The emissions are regulated on an annual basis, regardless of the hours per day the mine operates. See Section 3.3. 1. See comment response for 3-22 on monitoring. Rational and findings are in the FONNSI.
3-31	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	**a. Climate Change Impacts** The Supp. EA indicates that OSM would not undertake carbon cost analysis and in refusing to do so, continues to fail to analyze and assess the full climate change impacts of approving the modification. OSM was required to analyze and assess the extent to which these emissions are likely to contribute to global climate change. In this case, it appears that any level of extended carbon dioxide emissions would pose significant impacts. OSM reasserts the dismissal of significant climate impacts by claiming that available tools are not accurate or sufficient enough to analyze the impacts of climate change. *See* FSEIS at 285; *see*	See Section 3.2.2.2 for rational on why a social cost of carbon analysis was not conducted. This approach is consistent with the approach that federal courts have upheld when considering NEPA challenges to BLM federal coal leasing decisions. *See WildEarth Guardians v. Jewell*, 738 F.3d 298,

		also Supp. EA § 3.3.1. This argument is unsupported. As asserted in our Statement of Reasons, there are tools available for this type of assessment, that are both supported by scientific evidence as well as the Department of Interior, and the federal courts. *See* Greens Hollow, Statement of Reasons at 21. However, at a minimum, to properly assess climate impacts under NEPA, OSM must analyze and assess the cost of carbon emissions using the social cost of carbon protocol.	309 n.5 (D.C. Circuit 2013) where the District of Columbia Circuit Court affirmed that the BLM's environmental analysis of the climate change impacts of the leased coal was adequate under NEPA. The court thus held that "because current science does not allow for the specificity demanded by the [plaintiffs], the BLM was not required to identify specific effects on the climate in order to prepare an adequate EIS."
3-32	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	In our prior Statement of Reasons, we detailed the need and appropriateness of carbon cost analysis and suggested the use of the widely-acknowledged "Social Cost of Carbon" tool. *Id*. In the Supp. EA, OSM provides various reasons for rejecting such a carbon costs analysis, namely that: 1) it is not engaged in a rulemaking, 2) the guidelines have been withdrawn, 3) NEPA does not require it, 4) the inclusion of a Social Cost of Carbon analysis would be one-sided and uncertain.	See revised text in Section 3.2.2.2 and the response to comment 3-31.
3-33	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Despite its contentions, OSM must analyze and assess the climate impacts of mining the Greens Hollow Tract using the social cost of carbon protocol. The social cost of carbon protocol for assessing climate impacts is a method for "estimat[ing] the economic damages associated with a small increase in carbon dioxide (CO2) emissions, conventionally one metric ton, in a given year [and] represents the value of damages avoided for a small emission reduction (i.e. the benefit of a CO2 reduction)." EPA, "Fact Sheet: Social Cost of Carbon", (Nov. 2013) at 1 (Exhibit 4). Here, the Supp. EA referenced only the increase of economic activity and dismissed the economic costs because they were "uncertain."	See revised text in Section 3.2.2.2. 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 a SCC cost analysis would be unbalanced, potentially inaccurate, and not useful in facilitating an authorized official's decision.
3-34	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	*1. Social Cost of Carbon Can be Used for Project-Level Analyses* One reason OSM gave for not using the Social Cost of Carbon is that the tool was designed for rulemakings and not for project-level analyses. *Id.* This is false; although often utilized in the context of agency rulemakings, the protocol has been recommended for use and has been used in project-level decisions. For instance, the EPA recommended that an EIS prepared by the U.S. Department of State for the proposed Keystone XL oil pipeline include "an estimate of the 'social cost of carbon' associated with potential increases of GHG emissions." EPA, Comments on Supplemental Draft EIS for the Keystone XL Oil Pipeline	See response to comment 3-33.

		(June 6, 2011) (Exhibit 5). Furthermore, although it was initially developed to help agencies develop regulatory impact assessments of proposed rules, the social cost of carbon should not be limited to this application. Such statements, according to Council of Environmental Quality, reflect the nature of climate change rather than the impact of any particular project. Consideration of Greenhouse Gas Emissions and Climate Change Effects in NEPA Reviews, 79 Fed. Reg. at 77,825. Thus, OSM is not only allowed to, but *required* to undertake a balanced assessment of the costs of climate impacts, using a tool like the Social Cost of Carbon.	
3-35	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	*2. Despite Federal Withdrawal of Guidance, Social Cost of Carbon is Still Regarded as the Best Tool to Estimate Cost of GHG* OSM also stated it would not use the Social Cost of Carbon because the technical supporting documents have been withdrawn. While it is true Trump's Executive Order 13783 technically disbanded the IWG in March, 2017, in a recent letter published in the journal, *Science*, scholars urged the government and private sector to continue using IWG's the estimate of $50 per ton of carbon dioxide, as it is the "best estimate of the social cost of greenhouse gases". Revesz, R., "Best Cost Estimate of Greenhouse Gases", *Science* 357 (6352), 655. DOI: 10.1126/science.aao4322 (Exhibit 6). In the letter, scholars reasoned that IWG's estimated "already are the product of the most widely peer-reviewed models and best available data." *Id.* While the IWG is no longer collected, agencies are still obligated to analyze the costs of GHG emissions. Specifically, federal agencies' obligation to use the social cost of carbon to analyze the costs associated with GHG emissions through NEPA was directly affirmed by the court in *High Country,* 52 F. Supp. 3d 1174. In his decision, Judge Jackson identified the IWG's social cost of carbon protocol as a tool to "quantify a project's contribution to costs associated with global climate change." *Id.* at 1190. "The critical importance of [climate change] . . . tells me that a 'hard look' has to include a 'hard look' at whether this tool, however imprecise it might be, would contribute to a more informed assessment of the impacts than if it were simply ignored." *Id.* at 1193. To fulfill this mandate, they agency must use the social cost of carbon to disclose the "ecological[,] . . . economic, [and] social" impacts of the proposed action. 40 C.F.R. § 1508.8(b). Thus, OSM's excuse not to use the Social Cost of Carbon because its working group was disbanded and support documents withdrawn, is insufficient as it continues to stand as the best model under NEPA.	See revised Section 3.2.2.2. Executive Order 13783 withdrew the Technical Support Documents upon which the protocol and directed agencies to ensure that estimates of the social cost of greenhouse gases "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" (EO 13783, Section 5(c)). While interim protocols have been developed for use in the rulemaking context, they do not apply to project decisions, so there is no Executive Order requirement to apply the SCC protocol to project decisions.
3-36	WildEarth Guardians, Center for Biological Diversity, and Sierra	The Social Cost of Carbon provides decision makers and the public with an informative, accessible mechanism for both analyzing and understanding the climate impacts of a proposed decision. Although OSM indicated in the Supp. EA	See response to comment 3-35

	Club Environmental Law Program	that it quantified the *amount* of carbon emissions from mining and burning coal from the Greens Hollow lease, OSM has yet to take the next step of employing the Social Cost of Carbon to tell the public about the *impact* of those emissions. An isolated calculation of the amount of carbon emissions that would result from a particular project does not provide any meaningful insight as to the effect that those emissions will have on our climate. By contrast, the Social cost of Carbon offers an actual estimate of the damage caused by each ton of carbon emissions.	
3-37	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	*3. NEPA Requires OSM to use the Social Cost of Carbon* An additional reason the Supp. EA provided for not using the Social Cost of Carbon is that NEPA does not require a cost-benefit analysis. *See* Supp. EA at 12. This is an incorrect assessment of what NEPA requires. NEPA specifically requires federal agencies to analyze and disclose the environmental effects of their actions, including "ecological . . . aesthetic, historic, cultural, economic [and] health" impacts. 40 C.F.R. § 1508.8. Where "information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known," NEPA regulations direct agencies to evaluate a project's impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22(b)(4). NEPA requires OSM to use the social cost of carbon because it is the best tool available to analyze the economic and environmental impact of increased carbon dioxide emissions.	See Section 3.2.2.2. OSMRE is not required to use the SCC tool because the SCC is for a rulemaking, the IWG, technical supporting documents, and associated guidance have been withdrawn; NEPA does not require cost-benefit analysis; and the benefits of coal-fired energy production have not been monetized and quantifying only the costs of greenhouse gas emissions but not the benefits would yield information that is both potentially inaccurate and not useful.
3-38	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	The requirement to analyze the social cost of carbon is also supported in federal case law. The courts have ruled agencies cannot ignore the effects of GHG emissions from mining operations or coal combustion. *High Country Consv. Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1190 (2014). Nor can they "completely [] ignore a tool in which an interagency group of experts invested time and expertise." *Id.* at 1193. NEPA requires agencies to engage in "a reasonable, good faith, objective presentation of the topics," such that it "foster[s] both informed decision-making and informed public participation." *Custer Cnty. Action Ass'n v. Garvey*, 256 F.3d 1024, 1035 (10th Cir. 2001) (citations omitted). The Social Cost of Carbon is based on generally accepted research methods and years of peer-reviewed scientific and economic studies. It was developed by experts at a dozen federal agencies and offices, and it is both widely used and generally accepted in the scientific community. As such, it is the best tool now available for agencies to use in predicting and analyzing the climate impacts of proposed federal actions.	See response to comment 3-37 regarding SCC. OSMRE does not ignore the potential impacts from greenhouse gas emissions associated with the Proposed and No Action Alternatives, see FSEIS Section 4.13.3.6 and EA Sections 3.3.1.2, 3.3.1.3, and 3.3.1.4.
3-39	WildEarth Guardians, Center for Biological	Here, OSM tiered to an FSEIS that did not take the hard look at climate impacts, specifically the Social Cost of Carbon, as required by NEPA, and further refused	The Greens Hollow FSEIS took a hard look at the impacts on climate

	Diversity, and Sierra Club Environmental Law Program	to do so in its Supp. EA.	change by quantifying impacts when possible and disclosing that which is unknown to the agencies in Section 4.13.3.6, which is incorporated by reference and considered in the FONNSI. As stated in FSEIS Section 4.13.3.6, "The climate change research community has not yet developed tools specifically intended for evaluating or quantifying end-point impacts attributable to the emissions of GHGs from a single source, and there is a lack of any scientific literature to draw from regarding the climate effects of individual, facility-level GHG emissions." OSMRE is not required to use the SCC tool as described in Section 3.2.2.2.
3-40	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	*4. The Social Cost of Carbon Provides a Balanced Analysis* A primary reason OSM gave for not completing a social cost of carbon analysis is that "inclusion solely of a SCC analysis would be unbalanced, potentially inaccurate, and not useful." Supp. EA at 12. The social cost of carbon provides a concrete assessment of a project's social and environmental impacts and provides a tangible sense of the scale of damage that both the public and decision makers can readily understand. As explained by one legal commentator, the social cost of carbon "allow[s] agencies to consider those GHG emissions . . . in a meaningful way," and that "assigning a price to carbon emissions – even a conservative price – makes the cost of those emissions concrete for agency decision makers." Squillace, Mark & Hood, Alexander, *NEPA, Climate Change, and Public Land Decision Making*, 42 ENVTL. L. 469, 510, 517 (2012). Thus, OSM's decision not to complete a social cost of carbon analysis because it does not present all the data is flawed in a major way. As indicated, OSM calculated the economic *benefits* of the modification, while ignoring any detriments. FSEIS at 56 (OSM lauded the 370 jobs the expansion would provide, and the "$1.87 billion" the leasing would generate). This type of one-sided analysis is a principal example of	See response to comment 3-37. The Greens Hollow Supplemental EA and FSEIS does not claim any socioeconomic benefits.

		the inadequate evaluation engaged in by OSM. To that end, a federal district court in Montana recently ruled that a NEPA analysis that included the economic benefits of a project was incomplete without an assessment of the carbon costs that would result from the development. *Mont. Envtl. Info. Ctr. v. U.S. Office of Surface Mining*, No. CV 15-106-M-DWM (D. Mont. Aug. 14, 2017) (Exhibit 7). To the extent that a project's impacts can be quantified, the Social Cost of Carbon is the best and most rigorous tool currently available for understanding the damages linked to carbon emissions, rather than simply the extent of the emissions themselves. Thus, OSM must at least attempt to quantify the costs of its impacts, even with a disclaimer that there could be many more impacts that are not quantified.	
3-41	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Further, the courts disagree that the Social Cost of Carbon is not useful. In 2008, the U.S. Court of Appeals for the Ninth Circuit ordered the National Highway Traffic Safety Administration to include a monetized benefit for carbon emissions reductions in an Environmental Assessment prepared under NEPA. *Ctr. for Biological Diversity v. Nat'l. Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008). States and public interest groups challenged a rule that the Highway Traffic Safety Administration had proposed to create fuel economy standards for light trucks for, among other things, failing to monetize the benefits that would accrue from a decision that led to lower carbon dioxide emissions, while at the same time monetizing the benefits of the proposed action. *Id*. at 1199. While the agency argued, that valuing the costs of carbon emissions was too uncertain, the court found this argument to be arbitrary and capricious. *Id*. at 1200. Similar to the Supp. EA's stated reasoning to refuse analysis of the costs, the court in *Nat'l. Highway* noted that the agency monetized other benefits that were also uncertain. *Id*. at 1202. More recently, a federal court began its analysis by recognizing that a monetary cost-benefit analysis is not universally required by NEPA, but when an agency prepares a cost-benefit analysis, it "cannot be misleading". *See* 52 F.Supp.3d 1174, 1182, citing 40 C.F.R. § 1502.23. Similar to the Greens Hollow Supp. EA, in that case, the NEPA analysis included a quantification of benefits of the project, but did not quantify the costs, which the court found was arbitrary and capricious because the NEPA analysis had misleading economic assumptions. *Id*. At 1196.	See response to comment 3-33. The case referenced by the commenter *Ctr. for Biological Diversity v. Nat'l. Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008) was for a national rulemaking regarding new fuel economy standards on light duty vehicles. The decision before OSMRE to make a recommendation is not considered a rulemaking and therefore would not require an SCC analysis. The Greens Hollow Supplemental EA and FSEIS does not quantify any benefits associated with the Alternatives.
3-42	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Further, a federal district court in Montana reaffirmed the reasoning in *High Country*, indicating that a NEPA analysis that included the economic benefits of a project was incomplete without an assessment of the carbon costs that would result from the development. *Mont. Envtl. Info. Ctr.,* CV 15-106-M-DWM. In agreeing with the Plaintiffs, the Court specifically mentioned the Social Cost of	See Section 3.2.2.2 and comment response for 3-33 OSMRE does not quantify or otherwise attribute any benefits of the Proposed or No Action Alternatives in

		Carbon as one tool to use to quantify the costs associated with the mine expansion. *Id.* at 35. Further, a D.C. Circuit Court ruled that an agency's assessment of the environmental impact of pipelines was inadequate, reasoning that it did not contain enough information on the greenhouse-gas emissions resulting from burning the gas that the pipelines carry. *Sierra Club, et al., v. Fed. Energy Regulatory Comm'n,* No. 16-1329 (D.C. Cir. Aug. 22, 2017) (Exhibit 8). Thus, the most recent rulings indicate a robust analysis of GHG is necessary.	the EA or FSEIS therefore case, *Mont. Envtl. Info. Ctr.,* CV 15-106-M-DWM, is not applicable to this action. The case referenced by the commenter, *Mont. Envtl. Info. Ctr.,* CV 15-106-M-DWM, does mention the SCC tool but does not require the agency to use it. The case referenced by the commenter, *Sierra Club, et al., v. Fed. Energy Regulatory Comm'n,* No. 16-1329 (D.C. Cir. Aug. 22, 2017), states that, "Our discussion so far has explained that FERC must either quantify and consider the project's downstream carbon emissions or explain in more detail why it cannot do so." OSMRE discloses potential greenhouse gas emissions in Sections 3.3.1.2 – 3.3.1.4 of this EA and in Section 4.13.3.6 of the FSEIS. The case goes on to state that, "We do not decide whether those arguments are applicable in this case as well, because FERC did not include them in the EIS that is now before us. On remand, FERC should explain in the EIS, as an aid to the relevant decisionmakers, whether the position on the Social Cost of Carbon that the agency took in EarthReports still holds, and why." OSMRE discloses those arguments why an SCC analysis is not necessary in Section 3.2.2.2.
3-43	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental	The combustion of coal from the proposed expansion will likely result in massive economic damages associated with climate change. Granted, there may be uncertainty around these numbers, however, NEPA does not allow an agency to forego analyzing impacts completely simply because there may be some	See Section 3.2.2.2. Also, the Greens Hollow FSEIS addresses climate change "on the wider climate" in section 4.13.3.6, which is incorporated

	Law Program	uncertainty, especially where the information may still be of "high quality" according to 40 C.F.R. § 1500.1. The court in *Nat'l. Highway* noted that while estimates of the value of carbon emissions reductions occupied a wide range of values, the correct value was certainly not zero. 538 F.3d 1172, 1202. OSM seems to understand this as the FSEIS analyzes and discloses a number of reasonably foreseeable impacts that are uncertain, including economic impacts, which OSM tiers to in its own analysis. FSEIS at 243 (that Greens Hollow coal lease "could" extend the life of the mine by almost 9 years and that the coal "could be recovered" and provide revenue). As previously argued in the *Statement of Reasons*, the agency made no effort to assess climate impacts, and just indicated it was not possible. Thus, as we argued before, the agency continues to fail to analyze climate impacts, and thus the underlying FSEIS OSM tiers to contradicts NEPA's requirements that information and analysis be of "high quality." 40 C.F.R § 1500.1.	by reference and considered in the FONNSI. The Greens Hollow Supplemental EA and FSEIS does not quantify any benefits associated with the Alternatives. The case referenced by the commenter *Ctr. for Biological Diversity v. Nat'l. Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008) was for a national rulemaking regarding new fuel economy standards on light duty vehicles. The decision before OSMRE to make a recommendation is not considered a rulemaking and therefore would not require an SCC analysis.
3-44	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	To this end, OSM was required to fully analyze and disclose the carbon costs of authorizing the proposed mining plan modification, and failed to do so. Under any analysis, it is unsupported that OSM could find the climate impacts of this proposal to be insignificant.	See response to comment 3-42. OSMRE did analyze the potential impacts of climate change and quantified potential greenhouse gas emissions, see EA Sections 3.3.1.2 – 3.3.1.4 and FEIS Section 4.13.3.6. OSMRE determined that None of the newly analyzed environmental effects from the Proposed Action discussed in the EA are considered to be significant as stated in the FONNSI. OSMRE is not required to disclose carbon costs for the mining plan modification as explained in Section 3.2.2.2 of the EA.
3-45	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	**b. <u>Coal Export Impacts</u>** The Supp. EA does not sufficiently analyze the impacts of coal exports, because OSM believes they are "too speculative" to provide any meaningful information. This is an inaccurate assessment, and in fact, the report relied upon by OSM shows a complete disregard for any chance that Greens Hollow coal could be shipped abroad. Supp. EA § 2.2 ("the results of the analysis clearly show that	**Table 2** and surrounding text has been revised based on new information. Nearly all of Sufco's coal is used domestically.

		export from [Greens Hollow] are unlikely[…]"). This is incorrect. Bowie's exports from the Greens Hollow tract, and the Sufco mine are certain. In fact, Bowie has continued to grow its export business, recently having been entangled in a pacific terminal battle in Oakland, California. Bowie is currently engaged in a pending federal case, hoping to reverse Oakland's decision to ban coal handling (specifically, unloading, loading, storage and intermodal transfer within the city). *See* Maffly, Brian, "Utah's top coal produce is fighting to reverse a California city's ban on exporting coal and open new markets for local mines", The Salt Lake Tribune, 1/8/2018, (Exhibit 9). The firm that would operate the Oakland export station is a subsidiary of Bowie. *Id.*	
3-46	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	This is further supported, as the Supp. EA acknowledges, by the eventual closure date of the largest consumer of Sufco coal, Intermountain Power Project. O'Donoghue, Amy, "Intermountain Power Project Will Shutter Coal-Fired Power Plant Near Delta," Desert News, 5/23/2017, available at: https://www.deseretnews.com/article/865680637/Intermountain-Power- Project-will-shutter-coal-fired-power-plant-near-Delta.html. Intermountain Power is a huge consumer of Sufco coal; through October of 2017, Intermountain Power consumed 1.6 million tons of Sufco coal, and likely thousands of tons more through the end of 2017.[2] U.S. Dept. of Energy, The Energy Information Administration, Fuel Receipts and Cost Time Series File, 2017 October, EIA-923 report. The Supp. EA acknowledges that less than half of its coal went to United States power plants in 2016. Despite the inevitable closure of Intermountain Power, its major domestic customer, Bowie feels confident that its international consumers will support its proposed expansion to mine coal from Greens Hollow. What's more, the number of coal to domestic customers dropped significantly from the year prior, where almost two-thirds of the mine's shipments when to domestic consumers, indicating its general downward projection. Supp. EA § 2.2, Table 2. This decline is a clear signal that domestic consumers will continue to dwindle and Bowie will have to look for other purchasers for its coal. Thus, the export of coal looks to be a certainty and not speculative as claimed in the Supp. EA.	See response to comment 3-45.
3-47	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Moreover, because Bowie is engaged in the details of this terminal project, it is crystal-clear that coal transport data can be quantified. For example, the news media has reported that 104-car unit trains, hauling more than 10,000 tons of Utah coal, which would take 5.2 hours to unload, would travel into the terminal every day. *See* Maffly, Brian, "Port developer attacks Oakland coal ban and city's claims that Utah shipments would endanger public health", The Salt Lake Tribune, 1/18/2018, (Exhibit 10). Thus, with some data extrapolation, an analysis	Sufco's coal in recent years and for the foreseeable future is shipped by truck. **Table 2** and surrounding text has been revised based on new information. Nearly all of Sufco's coal is used domestically.

		and assessment of exporting coal would not be speculative, as OSM claims, nor very difficult and would provide the decision-maker would valuable information regarding the significant impacts of exporting coal from the Greens Hollow lease. While OSM may believe that the ultimate destination of the coal is uncertain, this does not remove the responsibility of analyzing the exporting of coal, nor does it absolve the agency of addressing these impacts in accordance with NEPA.	The coal terminal in Oakland has not received permits to construct or begun construction and is currently under litigation. Therefore, the proposed port could not be considered reasonably foreseeable.
3-48	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	When coal is burned domestically, we can be reasonably certain of the pollution control regulations to which it will be subject. However, there is no guarantee that equivalent regulations will be in place in the Asian countries where the exported coal will be sold and burned. As a result, the air pollution impacts of exporting U.S. coal may be greater than if the coal were to be burned domestically. Yet these impacts will not stay in Asia. Airborne transport of soot, sulfur compounds, mercury, ozone, and other byproducts of coal combustion can travel across the Pacific Ocean and affect the health of western states' ecosystems and residents.	See response to comment 3-47. Coal from the Greens Hollow tract would be burned domestically.
3-49	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Given this, OSM was required and failed to fully analyze and assess the impacts of exporting coal from the Greens Hollow tract. Such an analysis and assessment should have considered the impacts of hauling the coal by rail through the western United States, the impacts of shipping it overseas to be burnt abroad, and the eventual combustion of the coal. To that end, OSM should have also addressed the reasonably foreseeable impacts of the new coal export facility in Oakland, California.	See response to comment 3-47. Coal from the Greens Hollow tract would be burned domestically.
3-50	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Further, the general purpose of coal mining under SMCRA is to meet the Nation's energy needs. The nation's energy needs are not met when domestic coal, a natural resource owned by all Americans, is shipped overseas. In light of this, OSM's authority conveys full discretion upon the agency to reject this coal leasing. Specifically, Congress intended the MLA "to provide for a more orderly procedure for the leasing and development" of coal the United States owns, while ensuring its development "in a manner compatible with the public interest." *Northern Cheyenne Tribe v. Hodel*, 851 F.2d 1152, 1156 (9th Cir. 1988) (citation omitted). As it seems that shipping domestic coal abroad for the benefit of non-American citizens, to the detriment of Americans, is not compatible with the public interest, OSM has full authority to not recommend this modification.	See response to comment 3-47. Coal from the Greens Hollow tract would be burned domestically.
3-51	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	4. The Supp. EA Still Fails to Address the Impacts of Similar and **Cumulative Actions** The Supp. EA indicated that there were no significant cumulative effects identified. Supp. EA § 3.4.1. Under NEPA, an agency must analyze the impacts	As explained in the EA, emissions are regulated by annual limits, and the cumulative effects of permitted emissions are reflected in the current air quality, which is disclosed in Section 3.2.1. Cumulative effects for

		of "similar" and "cumulative" actions in the same NEPA document in order to adequately disclose impacts in an EIS or provide sufficient justification for a FONNSI in an EA. *See* 40 C.F.R. §§ 1508.25(a)(2) and (3). Similar actions include actions that, "when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together." 40 C.F.R. § 1508.25(a)(3). Key indicators of similarities between actions include "common timing or geography." *Id*. We are concerned by the potentially significant cumulative impacts posed by nearby coal mines and associated power plants in the area. As indicated in WildEarth Guardians' scoping comments for the South Fork Lease Modification, OSM was required to fully analyze and assess the impacts of similar federal coal leasing and mining approvals being undertaken throughout the region in order to properly account for the climate impacts of mining and the reasonably foreseeable impacts of combustion. *See* WildEarth Guardians, Scoping Comments, South Fork Lease Modification Environmental Assessment, 10.10.2017. Here, the U.S. Department of the Interior is currently weighing numerous coal decisions, similar to the proposed action at hand, which pose similar and cumulative impacts in terms of greenhouse gas emissions, climate, and other impacts, particularly in terms of carbon costs. Further, neither the FSEIS nor the Supp. EA accounted for the 65 active oil and gas wells in Sevier County alone. *See* Utah Department of Environmental Quality, Data from Interactive Map, available at: https://enviro.deq.utah.gov/. This oil and gas development is arguably a similar action, the direct, indirect, and cumulative impacts of which must also be analyzed and assessed. OSM cannot justify a FONNSI unless and until it fully accounts for the cumulative impacts of past, present, and reasonably foreseeable mining at Sufco mine and other nearby fossil fuel projects, including oil and gas development. Therefore, an EIS must be prepared to fully analyze and assess these impacts.	other resource areas including wildlife, cultural, geology, vegetation, visual, rangeland, and water resources are analyzed in Chapter 4 of the FSEIS and OSMRE considered the impacts in the FONNSI. Section 3.4 of the EA analyzes potential future mining operations. OSMRE is unaware of any newly proposed oil and gas wells that would require additional analysis under cumulative impacts. Any active oil and gas wells in the County would be captured as part of the baseline data collected and shown in Table 3 of this EA. Text in Section 3.4 has been revised to describe oil and gas wells. Section 3.4 of this EA analyzes potential oil and gas development within the project vicinity and future mining development, see Tables 10 and 11.
3-52	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	OSM acknowledges that when it comes to greenhouse gas emissions, emissions at both a national and statewide scale are relevant for analyzing and assessing impacts. *See* Supp. EA at 41 (disclosing national greenhouse gas emissions from fossil fuel combustion and coal mining, as well as state-wide energy-related carbon dioxide emissions). As the agency explicitly states, the analysis area for consideration of climate impacts includes the states of Montana, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. *Id*. at 29. This is due to the fact that, as OSM acknowledges, "climate change and global warming are regional and global phenomena." *Id*. Here, however, the Supp. EA analyzed only local impacts and disregarded the impacts on the wider climate.	The Greens Hollow FSEIS addresses climate change "on the wider climate" in section 4.13.3.6, which is incorporated by reference.

3-53	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	As the Supp. EA is inadequate in this regard, among others, it is imperative that OSM analyze the impacts of mining at the Sufco consistent with the scope required under NEPA in order to ensure that impacts of cumulative and similar are fully analyzed and assessed consistent with 40 C.F.R. § 1508.25(a).	See response to comment 3-2 and 3-3. Section 3.4 of the EA analyzes potential cumulative impacts.
3-54	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	CONCLUSION We appreciate your time and attention to this issue. As OSM reviews and the Secretary weighs approval of additional mining plans, it is more important than ever to ensure clarity around SMCRA compliance. As explained, mining plans are not meant to be rubberstamped, but rather acted upon after careful consideration of substantive factors. The approval of mining the Greens Hollow tract was have devastating effects to the climate and air quality.	Comment noted.
3-55	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	Here, the Supp. EA relates to modification of an invalid lease, and should halt approval of the modification in its path at the outset.	See response to comment 3-1.
3-56	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	However, even if OSM disagrees, the Supp. EA still did not fully analyze the significant impacts of leasing and mining the lease. Specifically, OSM did not consider the impacts of additional CO2, methane, and other emissions from both the mining and the combustion of the coal. Further, the Supp. EA fails to address a number of potentially significant impacts, including the climate impacts related to the reasonably foreseeable consequence of coal combustion, air quality impacts, and cumulative impacts related to additional federal coal management decisions, including additional leasing that had occurred since the original lease was granted.	The EA and the Greens Hollow FSEIS (incorporated by reference) covers the analysis of mining operations, transportation, and combustion of coal in Section 4.13.3.6. Section 3.4 of the EA includes future coal mining operations.
3-57	WildEarth Guardians, Center for Biological Diversity, and Sierra Club Environmental Law Program	The Supp. EA is insufficient to analyze these impacts, as only an EIS can be utilized to analyze and assess significant environmental impacts under NEPA. *See* 40 C.F.R. § 1502.3. Thus, OSM cannot possibly determine whether or not the impacts of emissions are significant, because its Supp. EA analysis was woefully insufficient. Until the agency is able to correct these deficiencies properly, the analysis is insufficient to comply with NEPA. As such, Guardians, CBD, and Sierra Club urge OSM to halt its review, or to disapprove of the mining plan modification. OSM must reject the preparation of an EA and move to conduct a full EIS, consistent with § 102(2)(C) of NEPA. *See* 42 USC 4332(2)(C).	See response to comment 3-2 and 3-3. Along with the additional analysis in the Greens Hollow Supplemental EA, OSMRE considered all the effects disclosed in the Greens Hollow FSEIS.
3-58	WildEarth Guardians, Center for Biological	We appreciate the opportunity to comment. Thank you.	Comment noted.

	Diversity, and Sierra Club Environmental Law Program		
4-1	The Hopi Tribe	The Hopi Tribe claims cultural affiliation to earlier identifiable cultural groups in Utah. The Hopi Cultural Preservation Office supports the identification and avoidance of our ancestral sites, and we consider the archaeological sites of our ancestors to be Traditional Cultural Properties. Therefore we appreciate the Office of Surface Mining (OSM)'s, Forest Service's and Bureau of Land Management's ongoing solicitation of our input and your efforts to address our concerns.	Comment noted.
4-2	The Hopi Tribe	The Hope Cultural Preservation Office has previously responded to correspondences on this mine and effects to cultural resources resulting from subsidence from underground mining. In the enclosed letter dated March 3, 2014, regarding SUFCO 2014 Exploration License, UTU-090269, a proposal to explore for coal deposits on Fishlake National Forest and Bureau of Land Management, Price Field Office lands in Sevier County, DOI-BLM-UT-G023-2014-0017-EA, we stated we previously responded to correspondences regarding SUFCO mine expansions in letters dated June 12, July 2, September 35, November 25, and December 19, 2012, and May 20, 2013. We determined that future mining as a result of this proposal may affect cultural resources significant to the Hopi Tribe. In the enclosed letter dated April 7, 2014 to Manti La Sal and Fishlake National Forests regarding leasing of the Greens Hollow Federal Coal Leasing Tract UTU-84102, we reviewed the draft Supplemental Environmental Impact Statement and Stated We understood the Proposed Action is likely to result in adverse effects to Seven National Register eligible prehistoric sites from ground subsidence including two sites with two rock shelters each, while Alternative 3 may adversely affect one legible prehistoric site. We further state we are aware of several eligible rock shelters that were disturbed by subsidence in the Muddy Creek area due to underground mining activities. Therefore, we concluded either of the action alternatives will result in adverse effect to National Register eligible prehistoric sites. We acknowledge that Alternative 3 in the Draft Supplemental Environmental Impact Statement was developed to provide protection for important non-mineral surface resources from the effect of subsidence, including water and cultural resources, and concluded that either of the action alternatives will result in adverse effects to National Register eligible prehistoric sites. In the enclosed letter dated March 30, 2015, we reviewed the Final Environmental Impact Statement and stated we understood Alternative 3 will be approved. We also stated we appreciated the efforts of the Grand Canyon Trust, Utah	BLM and Forest Service selected an alternative that includes a stipulation (#9) which will avoid subsidence of all but one of the eligible sites. The remaining site was mitigated. Consultation with tribes will continue (See Section 3.6.1.2 in the Greens Hollow FSEIS).

		Environmental Congress and Center for Biological Diversity in appealing the initial Record of Decision. Therefore, we requested continuing consultation on this proposal including being provided with a copy of the proposed treatment plan for review and comment. We have not reviewed the supplemental environmental assessment for a federal mining plan modification based on new information for future mining activities into the 6,175 acres Greens Hollow Federal Coal Lease Tract, UTU-84102, as part of Canyon Fuel Company's Sufco Mine on Fishlake and Manti-La Sal Forest Lands.	
5-1	Six County Association of Governments	Authorized mining of recoverable coal in the Greens Hallow lease, will be part of Canyon Fuel Company's SUFCO Mine, also located in Sevier and Sanpete Counties. This industry is extremely important to the economic vitality of the Six County region. It creates hundreds of direct and indirect jobs, provides a substantial tax base, and significantly impacts the economic viability of the Six County area. Approval of the Greens Hollow lease extends SUFCO Mine operations by 8.7 years.	Comment noted.
5-2	Six County Association of Governments	We expect an immediate approval by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to begin mining operations on the Greens Hollow lease once the Surface Mining Control Act of 1977 (SMCRA) permit is approved through the regulatory authority of the Utah Division of Oil, Gas, and Mining (DOGMA); and, the approval of a required mining plan is approved by the Assistant Secretary for Land and Minerals Management (ASLM).	OSMRE is following the regulatory process as quickly as possible.
5-3	Six County Association of Governments	We feel that the previous permitting process required by the Bureau of Land Management (BLM) to offer the Greens Hollow lease for sale to the highest bidder satisfied the required public involvement process.	Comment noted.

Consultations, Concurrence, & Compliance

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1345
https://www.blm.gov/utah

In Reply Refer To:
3482/ (UT-9223)
UTU-84102

MAR 02 2018

18-03-13-07

OSMRE/DOI

MAR 05 2018

Received

Memorandum

To: David Barry, Regional Director
Western Region, Office of Surface Mining Reclamation and Enforcement

From: Roger Bankert, Chief, Branch of Minerals Roger L Bankert

Subject: Resource Recovery and Protection Plan (R2P2), Federal Coal Lease UTU-84102, Greens Hollow Lease, Sufco Mine, Canyon Fuel Company LLC

As part ofthe Permit Application Package to add new Federal coal lease UTU-84102 to the existing Sufco Mine Permit, the Bureau of Land Management (BLM) has prepared and updated a Geologic and Engineering Report which includes the mining plan (R2P2). This R2P2 plan is based on geologic data and a BLM review of a mine plan submitted by Canyon Fuel Company LLC (CFC). The R2P2 is required by the Mineral Leasing Act of 1920, as amended, to assure conservation of the coal resource, meet maximum economic recovery (MER), and to diligently develop the Federal coal lease. This letter documents the BLM's findings for the R2P2.

CFC has or will submit mining and reclamation plans (the CFC R2P2 being part of the submission) to Utah Division of Oil Gas and Mining to add the new Greens Hollow coal lease (UTU-84102) to the existing Sufco Mine Permit. The lease will be produced using only underground mining methods. Access to this lease will come from existing Sufco mine underground workings adjacent to the lease. Existing Sufco mine surface facilities will be used along with a ventilation-service shaft on an existing adjacent lease, helping ensure the safety of the workers continues.

1. The geologic data provides sufficient detail for mine planning.
2. The R2P2 provides for first mining only (no subsidence) in areas where surface resources could be adversely effected.
3. Provides for full extraction mining to achieve MER.
4. Modified the proponent's mine design to keep all mining within the boundaries of this UTU-84102 coal lease.

The BLM finds the submitted R2P2 in compliance with the Mineral Leasing Act of 1920, as amended, the lease terms and conditions, the regulations at 43 CFR 3480, and will achieve MER of the Federal coal. Therefore, we recommend that the Secretary approve the R2P2 as part of the permit application.

If you have any questions, please contact Jeff McKenzie of this office at (801) 539-4038.

cc:
Dana Dean, Associate Director
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

BLM Price Field Office, UTG020

USDA United States Department of Agriculture | Forest Service | Manti-La Sal National Forest
599 West Price River Drive
Price, UT 84501
435-637-2817
Fax: 435-637-2817

Fishlake N.F. Supervisor's Office
115 E 900 N
Richfield, UT 84701
435-896-1600
Fax: 435-896-9347

File Code: 2820
Date: February 27, 2018

David Berry
Regional Director
Western Region
U.S. Office of Surface Mining/DOI
1999 Broadway, Suite 3320
Denver, CO 80202-3050

Dear Mr. Berry:

The Manti-La Sal and Fishlake National Forests (FS) reviewed the federal mining plan modification to add the Greens Hollow Federal Coal Lease to Bowie Resources, LLCs, Sufco Mine's coal mining permit. The FS is responding as the federal land management agency according to 30 CFR 740.5(e)4.

The FS consented to the Bureau of Land Management (BLM) leasing these lands in October 2015. The BLM issued the lease on April 1, 2017. As part of the leasing process, the Forest Service applied the unsuitability criteria in 43 CFR 3461. None of the affected National Forest System (NFS) lands in the lease were found unsuitable for surface control mining and reclamation pursuant to Section 522 of SMCRA. The FS also advises that no significant recreational, timber, economic or other values that were incompatible with issuing the lease were found (February 2015 Greens Hollow Coal Lease Tract FEIS Appendix A).

The Greens Hollow Federal Coal lease contains 3,847 acres of priority sage grouse habitat as shown on the attached map. The FS September 2015 Greater Sage-grouse Record of Decision for Idaho and Southwest Montana, Nevada and Utah, amended FS land management plans for sage-grouse management, including the Manti-La Sal Forest Plan. The amendment includes the following standard for leased coal mines (GRSG-M-CML-ST-093):

"In priority habitat management areas and sagebrush focal areas do not authorize new appurtenant surface facilities related to existing underground mines unless no technically feasible alternative exists. If new appurtenant surface facilities associated with existing mine leases cannot be located outside of priority habitat management areas and sagebrush focal areas, locate them within any existing disturbed areas, if possible. If location within an existing disturbed area is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements as identified by the Mine Safety and Health Administration mine-plan approval process and locate the facilities in an area least harmful to greater sage-grouse habitat based on vegetation, topography, or other habitat features."

To implement this standard, the FS requires that the following be included as a condition to the permit application package (PAP), along with the aforementioned map:

To protect sage-grouse habitat, locate new appurtenant surface facilities outside priority habitat management areas, unless no technically feasible alternative exists. If new appurtenant surface facilities cannot be located outside of priority habitat management areas, locate them within any existing disturbed areas, if possible. If location within an existing disturbed area is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements in the established mine-plan approval process and locate the facilities in an area least harmful to greater sage-grouse habitat based on vegetation, topography, or other habitat features. Provided that this condition and its reference map is included in the PAP documents, the Forest Service concurs to the terms of the federal mining plan approval.

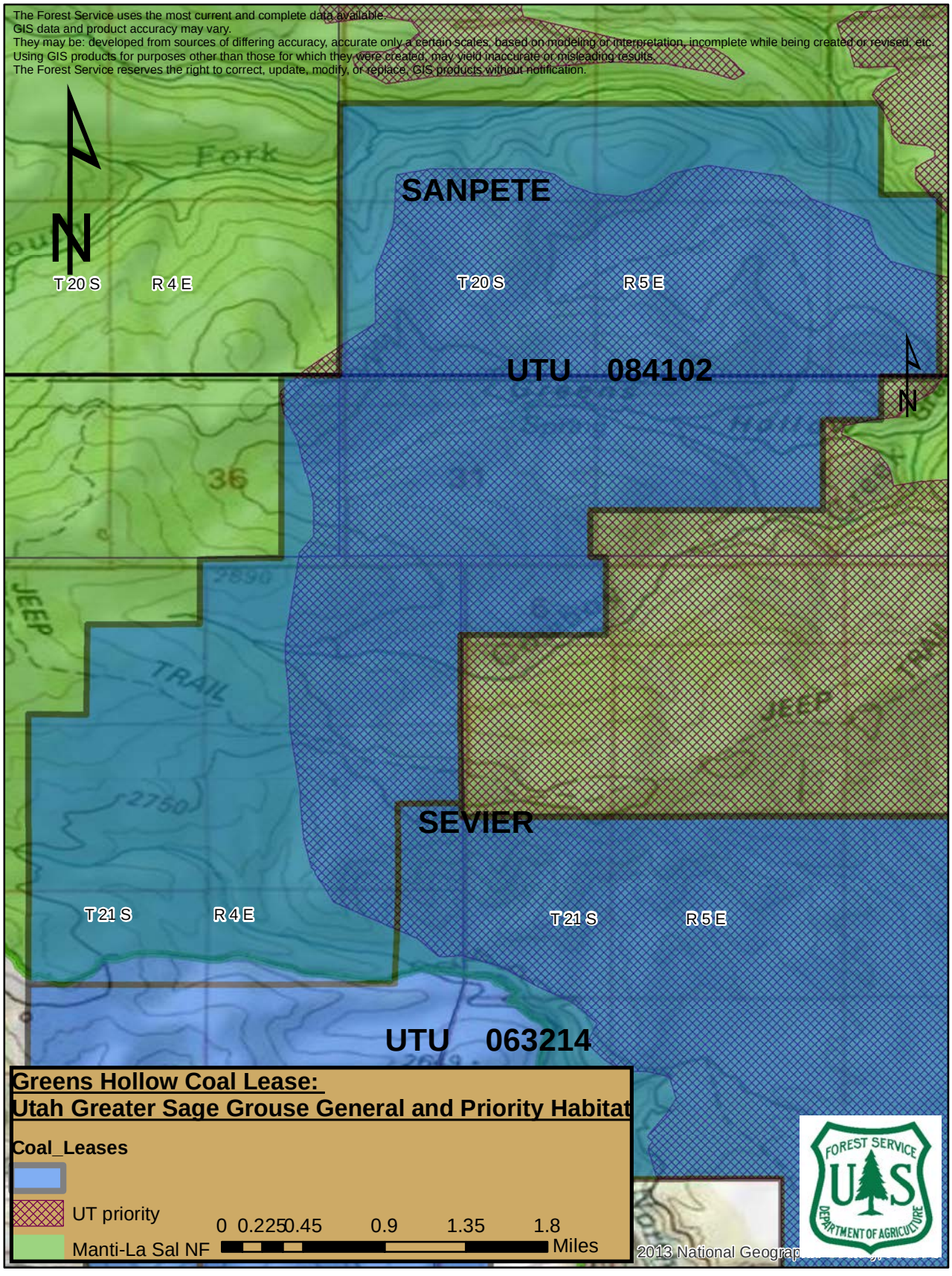
If you have any questions or concerns, please contact Jeff Salow at 435-636-3596 or jsalow@fs.fed.us.

Sincerely,

BRIAN M. PENTECOST
Forest Supervisor
Manti-La Sal National Forest

MEL BOLLING
Forest Supervisor
Fishlake National Forest

cc: Daron Haddock, UDOGM; Becky Hammond, FS – Intermountain Regional Office


The Forest Service uses the most current and complete data available.
GIS data and product accuracy may vary.
They may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc.
Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results.
The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification.
SANPETE
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36
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UTU 063214
Greens Hollow Coal Lease:
Utah Greater Sage Grouse General and Priority Habitat
Coal_Leases
UT priority
Manti-La Sal NF
0 0.225 0.45 0.9 1.35 1.8
Miles
FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Jill Remington Love
Executive Director
Department of
Heritage & Arts

Utah Division of
State History

Brad Westwood
Director

17-11-21 12

November 9, 2017

Elizabeth Shaeffer, Manager
Field Operations Branch
Office of Surface Mining
Reclamation and Enforcement
1999 Broadway, Suite 3320
Denver, CO 80202-3050

RE: Greens Hollow Tract

For future correspondence, please reference Case No. 17-1815

Dear Ms. Shaeffer:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking. We concur with your determinations of eligibility and effect for this undertaking.

Beginning November 27, 2017, all consultation requests will be accepted through the UT-SHPO's new e106 system. Please visit www.community.utah.gov/e106 to learn more and create an account. If you need additional information or help access our e106 system, please contact me.

This letter serves as our comment on the determinations you have made, within the consultation process specified in §36CFR800.4. If you have questions, please contact me at 801-245-7263 or cmerritt@utah.gov.

Sincerely,

Chris Merritt, Ph.D.
Deputy State Historic Preservation Officer
Archaeology

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Utah Ecological Services Field Office
2369 West Orton Circle, Suite 50
West Valley City, UT 84119-7603
Phone: (801) 975-3330 Fax: (801) 975-3331
http://www.fws.gov
http://www.fws.gov/utahfieldoffice/

In Reply Refer To:
Consultation Code: 06E23000-2018-SLI-0047
Event Code: 06E23000-2018-E-01056
Project Name: Greens Hollow Federal Coal Lease

May 11, 2018

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Utah Ecological Services Field Office
2369 West Orton Circle, Suite 50
West Valley City, UT 84119-7603
(801) 975-3330

Project Summary

Consultation Code: 06E23000-2018-SLI-0047

Event Code: 06E23000-2018-E-01056

Project Name: Greens Hollow Federal Coal Lease

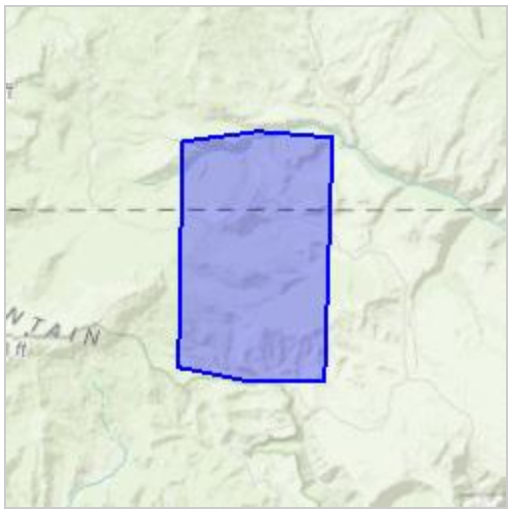
Project Type: MINING

Project Description: The proposed Greens Hollow tract is located on the Manti-La Sal and Fishlake National Forests on the southern end of the Wasatch Plateau, in the Wasatch Plateau Known Recoverable Coal Resource Area. The surface and coal resources are both federally managed: the Manti-La Sal and Fishlake National Forests administer the surface resources, while the BLM manages all mineral resources. The Greens Hollow tract is located in the Muddy Creek and North Fork Quitchupah Creek drainages. The tract is approximately 10.5 air miles west of the town of Emery, Utah. The final coal lease tract, as amended by the BLM Tract Delineation Team, encompasses approximately 6,175 acres of federal coal estate. Approximately 6,096 acres of the tract lies on the Manti-La Sal National Forest; while 79 acres on the southern edge of the tract lie on the Fishlake National Forest. Figure 1.1 shows the location of the proposed lease tract.

Two or more coal seams occur in the lease area, primarily in the Upper and Lower Hiawatha. The Lower Hiawatha coal seam has mineable coal thickness throughout the lease; the Upper Hiawatha does not. Therefore, it is foreseen that all mining would occur in the Lower Hiawatha seam. Coal reserves in the Greens Hollow tract are estimated at 73.4 million in-place tons of coal. Based on these estimates, it is projected that approximately 56.6 million tons of coal are recoverable. The lease application indicated the purpose was to lease reserves to continue production at the SUFCO Mine. The tract lies adjacent to and north and west of the existing SUFCO Mine.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.019308622146305N111.40857489925403W



Counties: Sanpete, UT | Sevier, UT

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Flowering Plants

NAME	STATUS
Heliotrope Milk-vetch *Astragalus montii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7704	Threatened
Jones Cycladenia *Cycladenia humilis var. jonesii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3336	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Western Region Office
1999 Broadway, Suite 3320
Denver, CO 80202-3050

MEMORANDUM UT-0026

DATE: May 11, 2018

TO: Environmental Assessment for the Sufco Coal Mine, Greens Hollow Federal Coal Lease Tract for new Federal Coal Lease UTU-84102 File

FROM: Nicole Caveny, Environmental Protection Specialist

RE: Endangered Species Act Section 7 Consultation for the Sufco Coal Mine, Greens Hollow Federal Coal Lease Tract for new Federal Coal Lease UTU-84102, Sevier & Sanpete Counties, Utah

In accordance with the Mineral Leasing Act of 1920 and the Surface Mining Control and Reclamation Act of 1977 (SMCRA), the Office of Surface Mining Reclamation and Enforcement Western Region (OSMRE) is required to review all new mining plans, or mining plan modifications submitted to the State's coal mining regulatory authority, that propose to mine federal coal. OSMRE is the agency responsible for making a recommendation to the Assistant Secretary of Land and Minerals Management (ASLM) to approve, disapprove, or approve with conditions the proposed mining plan or mining plan modification. On April 23, 2018, the Utah Department of Gas and Mining (DOGM) approved the Canyon Fuel Company, LLC's permit application package for SMCRA permit C/041/0002, which added the new Greens Hollow Federal Coal Lease Tract, federal coal lease UTU-84102 (the Project). Pursuant to 30 CFR 746, no mining shall be conducted on federal lands until the ASLM has approved the mining plan and signed a mining plan approval document.

The Sufco underground coal mine, in Sevier County, Utah, has been in operation since 1941. The Greens Hollow Federal Coal Lease Tract UTU-84102 is approximately 10.5 air miles west of the town of Emery, Utah, and is under National Forest lands managed by the Manti-La Sal and Fishlake National Forests. The coal resources are also federal resources and are managed by the BLM. On January 4, 2017, the BLM sold the Greens Hollow Federal Coal Lease Tract UTU-84102 to the highest bidder, which was Canyon Fuel Company. The lease sale consisted of 6,175 acres and made approximately 55.7 million tons of recoverable coal available, which will allow for an annual production rate 5.5 to 6.3 million tons per year. If the Greens Hollow Federal Coal Lease Tract is approved by the ASLM, the Sufco Mine would be able to add 9 to 10 years to their current operation, concluding in 2030 or 2031.

OSMRE analyzed the effects of the Project on threatened and endangered species, and their critical habitat. This analysis is to meet federal agency requirements under the Endangered Species Act of

1973, as amended (16 U.S.C. 1531 et seq.) and OSMRE Federal regulations at 30 CFR 746.13 (c) and 816.97.

Consultation History for the Greens Hollow Federal Coal Lease Tract

In 2015, the Manti-La Sal National Forest Service (FS) and the Bureau of Land Management (BLM) Price Field Office completed an Supplemental Environmental Impact Statement (SEIS) and a biological assessment (BA) for the Greens Hollow Federal Coal Lease Tract. When considering the California condor (*Gymnogyps californianus*), Utah prairie dog (*Cynomys parvidens*), Heliotrope milkvetch (*Astragalus montii*), San Rafael Cactus (*Pediocactus despainii*), Winkler cactus (*Pediocactus winkleri*), Wright fishhook cactus (*Sclerocactus wrightiae*), and Last Chance Townsendia (*Townsendia aprica*), the FS and BLM found there to be no evidence that the species are in the Project area and that mining activities would not affect the species, therefore those species were not considered (FS, 2014). The following spices were considered: Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*) but were determined to have "No effect" (FS, 2014).

Analysis Process

On May 11, 2018, OSMRE requested an official species list via the Information for Planning and Consultation through the Fish and Wildlife Service (FWS) for the associated mining plan decision document that OSMRE is preparing for the Project. The FWS responded with a list of the following species: California Condor, Yellow-billed Cuckoo (*Coccyzus americanus*), Heliotrope Milk-vetch, and Jones Cycladenia (*Cycladenia humilis var. jonesii*) (FWS, 2017). OSMRE concurs with the FS 2014 BA findings that "(t)here is no evidence of historical occupation or current and likely recurring presence of this species in the project area" (FS, 2014) for the California condor. The 2015 SEIS analyzed the Yellow-billed cuckoo and found that "There is no evidence of historical occupation or current and likely recurring presence of yellow-billed cuckoo in the analysis area" (FS & BLM, 2015) and "No suitable habitat for yellow-billed cuckoo is present in the analysis area and the analysis area is above the elevation range of the species" (FS & BLM, 2015), therefore a "No effect" determination was made. OSMRE concurs with the determination. OSMRE also concurs that the "(p)roject area is outside of the elevational range and habitat constraints of this species" (FS, 2014) for the Heliotrope milkvetch.

Jones Cycladenia

Jones Cycladenia is part of the Dogbane family (Apocynaceae). Jones' waxy dogbane is a long lived herbaceous perennial forb. At maturity, plants are 10 to 15 cm (4 to 6 in) tall with wide, oval or elliptical leaves (USDA, 2011). The flowers are trumpet shaped, whitish pink to purple, and somewhat resemble morning glory flowers. The plant forms an underground woody crown extending to a deep taproot (USDA, 2011). The plants are clonal and may spread via rhizomes and stolons (USDA, 2011). Jones' waxy dogbane has been found in Emery, Grand, Garfield and Kane Counties Utah and in Mohave County, Arizona (USDA, 2011). Jones' waxy dogbane grows in arid

sites at 1,300 to 1,800 m (4,300 to 6,000 ft) elevation in desert scrub and juniper plant communities receiving 6 to 9 inches of mean annual precipitation (USDA, 2011).

The Greens Hollow Tract covers about 10 square miles with elevations that range from approximately 7,400 feet to about 9,700 feet (FS & BLM, 2015). Additionally, the Sufco mine receives an average annual precipitation of 13.8 inches (FS & BLM, 2015). Due to the higher elevation and the amount of rainfall the Project area receives, the Project area does not provide desirable habitat for the Jones Cycladenia.

Determinations of Effect

Based on the information listed above, OSMRE has determined that the Project will have the following effect:

No effect on **California condor** because there is no evidence of historical occupation or current and likely recurring presence of this species in the project area; therefore, the proposed project would have no effect on this species.

No effect on **yellow-billed cuckoo** because there is no suitable habitat in the direct or indirect effects analysis areas and the elevation is above the elevation range for the species; therefore, the proposed project would have no effect on this species.

No effect on **Heliotrope milkvetch** because the project area is outside of the elevational range and habitat constraints of this species; therefore, the proposed project would have no effect on this species.

No effect on **Jones Cycladenia** because the project area is outside of the elevational range and habitat constraints of this species; therefore, the proposed project would have no effect on this species.

References

Tilley, D., St. John, L. and D. Ogle (2010). *Plant guide for Jones' waxy dogbane (Cycladenia humilis var. jonesii)*. USDA-Natural Resources Conservation Service, Idaho Plant Materials Center. Aberdeen, ID. Retrieved from http://www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.pdf

U.S. Forest Service Manti-La Sal and Fishlake National Forests (2014). *Biological Assessment for the Proposed Greens Hollow Federal Coal Lease Tract*. Ferron, UT

Mining Plan
Approval Documents

UNITED STATES

DEPARTMENT OF THE INTERIOR

This mining plan approval document is issued by the United States of America to:

Canyon Fuel Company, LLC
597 South SR 24
Salina, Utah 84654

for a mining plan modification for Federal lease UTU-84102 at the Sufco Mine. This mining plan approval supplements all previous mining plan approvals for the Sufco Mine. The approval is subject to the following conditions. Canyon Fuel Company, LLC is hereinafter referred to as the operator.

1. Statutes and Regulations: This mining plan approval is issued pursuant to Federal lease UTU-84102; the Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.); and in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351 et seq.). This mining plan approval is subject to all applicable laws and regulations of the Secretary of the Interior which are now or hereafter in force; and all such laws and regulations are made part hereof. The operator shall comply with the provisions of the Federal Water Pollution and Control Act (33 U.S.C. 1251 et seq.), the Clean Air Act (42 U.S.C. 7401 et seq.), and other applicable Federal laws.

2. This document approves the mining plan modification for Federal lease UTU-84102 at the Sufco Mine and authorizes coal development or mining operations on the Federal lease within the area of mining approval. This authorization expands the approved mining plan area into the following Federal coal lands:

UTU-84102
T. 20 S., R. 4 E., Salt Lake Baseline and Meridian (SLM)
Sec. 36, lot 4, E½2NE¼, NE¼SE¼
T. 20 S., R. 5 E., SLM
Sec. 19, lots 5-8, E½SW¼, SE¼
Sec. 20, S½
Sec. 21, W½SW¼
Sec. 28, W½
Sec. 29, all
Sec. 30, all
Sec. 31, all
Sec. 32, N½, N½S½
Sec. 33, NW¼NW¼

T. 21 S., R. 4 E., SLM
Sec. 1, all
Sec. 2, SE¼
Sec. 11, E½, E½W½
Sec. 12, NE¼, W½, W½SE¼
Sec. 13, W½NE¼, NW¼
Sec. 14, NE¼, E½NW¼
T. 21 S., R. 5 E., SLM
Sec. 6, all

These lands in Federal lease UTU-84102 encompass approximately 6,175 acres and are found on the United States Geological Service 7.5 minute Quadrangle maps of Heliotrope Mountain, Acord Lakes, Emery West, and Flagstaff Peak, as shown in the map appended hereto as Attachment A.

3. The operator shall conduct coal development or mining operations only as described in the complete permit application package, and approved by the Utah Division of Oil, Gas and Mining, except as otherwise directed in the conditions of this mining plan approval.

4. The operator shall comply with the terms and conditions of the lease, this mining plan approval, and the requirements of Utah Permit No. C/041/0002 issued under the Utah State program, approved pursuant to the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.).

5. This mining plan approval shall be binding on any person conducting coal development or mining operations under the approved mining plan and shall remain in effect until superseded, canceled, or withdrawn.

6. If, during mining operations, unidentified prehistoric resources are discovered, the operator shall ensure that the resources are not disturbed and shall notify the Utah Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement. The operator shall take such actions as are required by the Utah Division of Oil, Gas and Mining in coordination with the Office of Surface Mining Reclamation and Enforcement.

7. The Secretary retains jurisdiction to modify or cancel this approval, as required, on the basis of further consultation with the U.S. Fish and Wildlife Service pursuant to section 7of the Endangered Species Act, as amended, 16 U.S.C. 1531 et seq.

Joseph R. Balash
Assistant Secretary
Land and Minerals Management
U.S. Department of the Interior

6/21/18
Date

Attachment

GREENS HOLLOW LEASE

SITLA MUDDY LEASE

QUITCHUPAH LEASE

PINES LEASE

LEGEND

- Modification Area - Greens Hollow Lease
- Lease Boundaries
- Currently Approved Mining Plan Area (State/Fee)
- Currently Approved Mine Plan Area (Federal)
- State Approved Permit Boundary

5000 0 5000

ATTACHMENT A

Canyon Fuel Company, LLC
SUFCO Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Mining Plan Approval Area
GREENS HOLLOW

SCALE: 1" = 5000'	DATE: 2/7/2018	DRAWN BY: J.G.C.
ENGINEER:	CHECKED BY: V.M.	PROJ: ####

FILE NAME: H:\DRAWINGS\MRP\PLATES_PLATES_G.H. - 1-1-18\Mining Plan Approval Areas GH.dwg

SHEET NO. 1 v2

Jason Christensen: 4/17/2018 8:01 AM

State Permit Findings

UTAH DIVISION OF OIL, GAS AND MINING
STATE DECISION DOCUMENT
For
GREEN'S HOLLOW LEASE PERMIT

Canyon Fuel Company, LLC
Sufco Mine
C/041/0002
Sevier County, Utah

April 19, 2018

CONTENTS

ADMINISTRATIVE OVERVIEW

Canyon Fuel Company, LLC
Sufco Mine
Green's Hollow Tract Revision
C/041/0002
Sevier County, Utah

April 19, 2018

Canyon Fuel Company, LLC made application to the Division of Oil, Gas and Mining for adding additional federal lease acreage to the existing SUFCO mine. This additional area is known as the Green's Hollow Lease Tract (UTU-84102) and comprises 6,175.39 acres, all of which will be mined using underground mining methods. The Green's Hollow Tract is contiguous to, and will be accessed through, the existing SUFCO mine. No new surface facilities or disturbance is planned for this lease.

BACKGROUND

The Sufco Mine, formerly known as the Convulsion Canyon Mine and operated by Southern Utah Fuel Company (Sufco), is located approximately 30 miles east of Salina, Utah, with the surface facilities and access portals on U. S. Forest Service land in East Spring Canyon, within Section 12, Township 22 South, Range 4 East, Salt Lake Baseline and Meridian. The mine commenced operations in 1941, mining federally owned coal. The original mine plan was submitted to the U. S. Geological Survey (USGS) and the Utah Division of Oil, Gas and Mining (DOGM) in 1977. Additional information was submitted, and the mine plan was approved by DOGM pursuant to the Utah Mined Land Reclamation Act on September 14, 1977. The USGS approved the plan on February 3, 1978.

In October of 1979, Sufco submitted additional information to comply with the regulation of the newly implemented Surface Mining Control and Reclamation Act of 1977. A joint OSM/DOGM review was conducted and the mine plan application was declared complete on July 18, 1983. A permanent program permit was issued to the Coastal States Energy Company on May 19, 1987, consisting of five federal leases and one fee lease for a total of 7,355 acres. The need for a waste rock disposal site was soon apparent. Coastal States applied for a disposal site located on a 40-acre tract of private land located approximately 6 miles west of the mine portals. This waste rock site was approved on August 26, 1988, bringing the revised permit area to a total of 7395 acres.

On July 3, 1989, application was made to add another federal lease known as the Quitchupah Lease to the permit area. Approval for the new lease was obtained and a revised permit was issued effective December 21, 1989. This new lease brought the total permit area to 17,301 acres.

On December 20, 1996 the permit was transferred to Canyon Fuel Company, LLC.

A lease modification to the Quitchupah lease (150 acres) was submitted in January 1999. This was approved as an incidental boundary change and added to the existing permit area on October 20, 1999.

Canyon Fuel Company, LLC acquired the Pines Tract lease through a lease by application (LBA) process. An EIS was completed for the Pines Tract lease on January 28, 1999 and the lease was issued to Canyon Fuel Company, LLC on September 1, 1999. The state issued a permit on June 22, 2000, and the mining plan approval was signed by the Secretary on July 25, 2000. The SITLA Muddy Tract was approved on January 20, 2006.

Lease modifications known as the west lease modifications, to add the following federal coal leases: SL-062583, U-47080, and U-63214 were submitted by Canyon Fuel Company, LLC in January 2011. The addition of these three lease modifications added 2,312.74 acres to the area authorized for mining bringing the total area authorized for mining to 27,605.17 acres. The West Coal Lease Modifications were approved on March 23, 2011.

At about the same time Sufco applied to reduce the permit area to just the disturbed and bonded area (a result of a legislative audit). This changed the permitted area to 720.483 acres. The permit was renewed on May 21, 2012 with the same permit and authorized mining area. On January 16, 2013, the Division approved the South Fork Quitchupah 2R2S amendment. While this action did not change the permit area, it did change the area authorized for mining primarily because of lease relinquishments that occurred at the time. The area authorized for mining totaled 23,820.58 acres. In 2016 Canyon Fuel Company relinquished the South Fork Lease which further reduced the area authorized for mining to 20,227.25 acres. In May of 2017, the proposed Quitchupah fan and shaft were dropped from the permit leaving a total of 691.728 acres of permit area. A renewed mine permit was issued on May 21, 2017.

Canyon Fuel Company is now expanding their area authorized for mining to include the Greens Hollow lease. This expansion will add 6175.39 acres of new lease. There are no planned disturbances associated with this lease, so the permit/disturbed area will not change. Canyon Fuel, LLC acquired the Greens Hollow lease through a lease by application (LBA) process starting on December 7, 2005. The lease was signed by the BLM State Director on March 14, 2017 (effective April 1, 2017) after a lengthy NEPA process spanning several years.

ANALYSIS

The Canyon Fuel proposal to permit the Green's Hollow lease was submitted on April 21, 2017. After an initial review, Canyon Fuel Company submitted additional information that satisfied the Division's completeness requirements. The application was determined to be administratively complete on May 11, 2017. An extensive technical review was initiated which also involved coordination with other state and federal agencies.

The Division has completed a thorough technical analysis of the proposed Mining and Reclamation Plan submitted by Canyon Fuel and has found that the applicant has met the requirements of the R645 coal mining regulations. Besides the NEPA that was completed during the leasing process, an EA is being prepared by the Office of Surface Mining with DOGM as a

cooperating agency for the mining plan decision document (MPDD).

Extraction of coal will primarily be by longwall mining methods with room and pillar development. The LBA as applied for is estimated to contain about 56.6 million tons of recoverable federal coal. The addition of this lease to the mine will extend the life of the SUFCO mine by approximately 9-10 years. It is estimated that production will range from 5.5 thru 6.3 million tons per year.

RECOMMENDATION

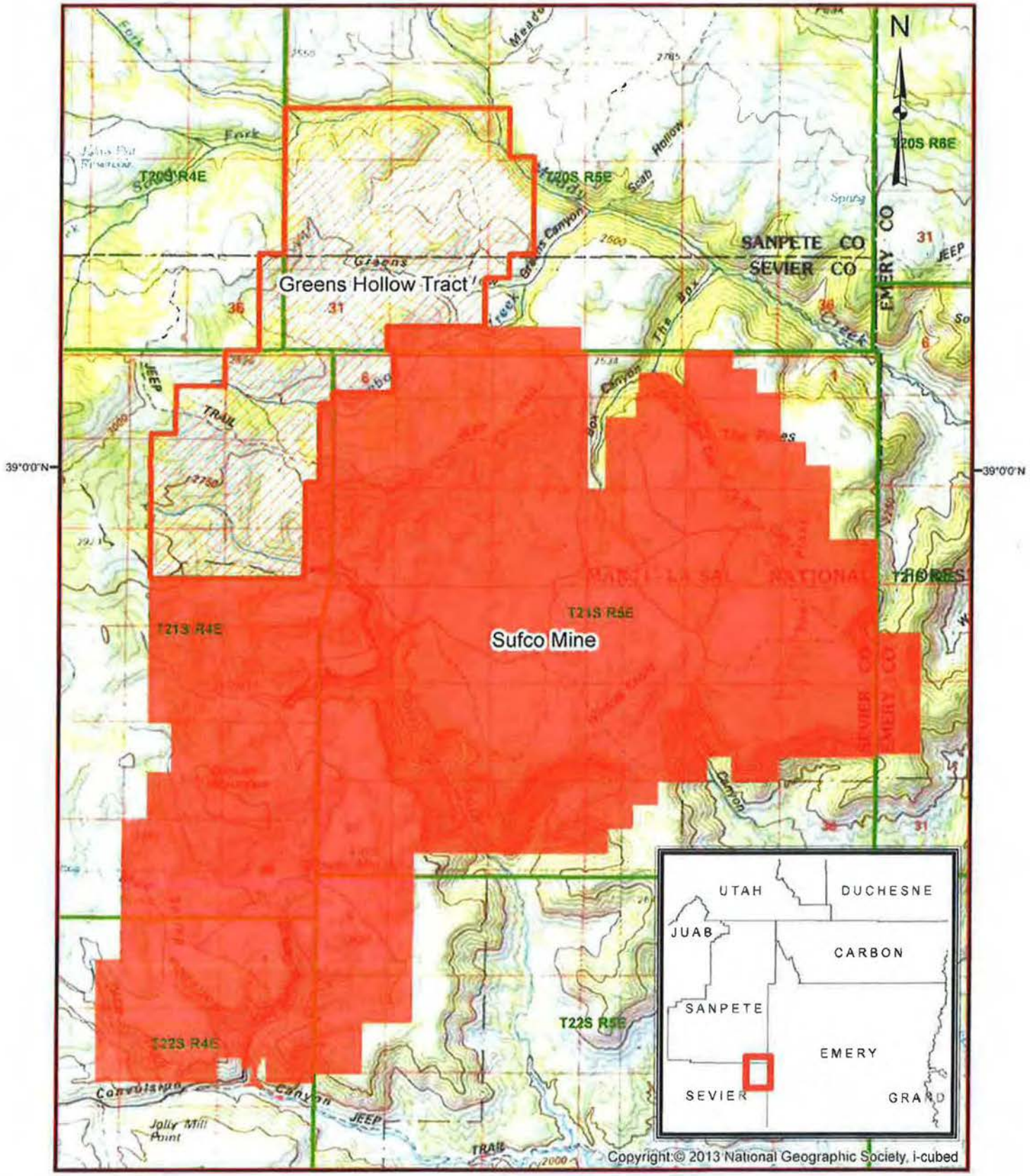
Approval for this permit renewal is recommended. This recommendation is based on the complete permit application package (PAP), the Technical Analysis (TA) conducted by the Division, the Cumulative Hydrologic Impact Assessment (CHIA) also prepared by the Division, and the administrative record. Canyon Fuel Company, LLC has demonstrated that mining of the Green's Hollow Lease Tract can be done in conformance with the Surface Mining Control and Reclamation Act and the corresponding Utah Act and performance standards. The 510 (C) report on the Applicant Violator System for this mine has an issue recommendation.

The public notice for this permit renewal was last published on June 6, 2017 in the Emery County Progress and in The Richfield Reaper and the Sanpete Messenger on June 8th, 2017. The public comment period ended on July 10, 2017 with no comments received.

It is recommended that approval be given for the addition of the Green's Hollow Tract to the SUFCO mine with conditions as outlined in Attachment A to the Permit.

State of Utah, Division of Oil, Gas and Mining

Sufco Mine C/041/0002



5/11/2017

PERMITTING CHRONOLOGY

Canyon Fuel Company, LLC
Sufco Mine
Green's Hollow Tract Revision
C/041/0002
Sevier County, Utah

April 19, 2018

April 21, 2017	Canyon Fuel Company, LLC submits application for permitting the Green's Hollow Lease Tract.
May 11, 2017	Division notifies Canyon Fuel Company, LLC that the application is administratively complete.
May 11, 2017	Division notifies Canyon Fuel Company, LLC other federal, state, and local governmental agencies and water users that the application is determined administratively complete.
May 16, 23, 30, and June 6, 2017	Canyon Fuel Company, LLC published notice in Emery County Progress for four consecutive weeks.
May 18, 25, and June 1, 8, 2017	Canyon Fuel Company, LLC published notice in The Richfield Reaper for four consecutive weeks.
May 18, 25, and June 1, 8, 2017	Canyon Fuel Company, LLC published notice in Sanpete Messenger for four consecutive weeks.
July 10, 2017	End of public comment period. No comments received.
October 4, 2017 January 22, 2018 April 4, 2018	Canyon Fuel Company, LLC submits revised information in response to deficiencies identified.
April 19, 2018	Division conditionally approves the application for mining the Green's Hollow lease and forwards the Decision Document to OSM for Federal Mine Plan approval.

PERMIT FINDINGS

Canyon Fuel Company, LLC
Sufco Mine
Green's Hollow Lease Tract Addition
C/041/0002
Sevier County, Utah

April 19, 2018

1. The revised plan and the permit application are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act, and the approved Utah State Program (the "Act") have been complied with (R645-300-133.100). See attached Technical Analysis dated April 18, 2018.

2. No additional surface reclamation is required since the additional lease area will be mined as an underground extension of the existing mine. There will be no new surface facilities (R645-300-133.710).

3. The assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been conducted by the regulatory authority and no significant impacts or material damage findings were identified. The Mining and Reclamation Plan (MRP) proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site areas (R645-300-133.400 and UCA 40-10-11 {2}{c}) (See Cumulative Hydrologic Impact Analysis [CHIA], updated April 17, 2018).

4. The proposed lands to be included within the permit area are:

    a. not included within an area designated unsuitable for underground coal mining operations (R645-300-133.220) ;

    b. not within an area under study for designated lands unsuitable for underground coal mining operations (R645-300-133.210) ;

    c. not on any lands subject to the prohibitions or limitations of 30 CFR 761.11 {a} (national parks, etc.), 761.11 {f} (public buildings, etc.) and 761.11 {g} (cemeteries);

    d. not within 100 feet of the outside right-of-way of a public road (R645-300-133.220);

    e. not within 300 feet of any occupied dwelling (R645-300-133-220).

5. The regulatory authority's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (R645-300-133.600). The acreage proposed in this incidental boundary change is not planned for any surface disturbing activity.

6. The applicant has the legal right to enter and complete mining activities through a federal coal lease issued by the Bureau of Land Management (Lease UTU - 84102) (R645-300-133.300).

7. A 510(c) report has been run on the Applicant Violator System (AVS), which shows that: prior violations of applicable laws and regulations have been corrected; neither Canyon Fuel Company, LLC or any affiliated company, are delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations with a demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (R645-300-133.730). (See attached evaluations dated April 17 and 24, 2018).

8. Underground mining operations to be performed under the permit will not be inconsistent with other operations anticipated to be performed in areas adjacent to the proposed permit area. There are no other permits adjacent to the SUFCO Mine.

9. The applicant has posted financial assurance for the SUFCO Mine Complex in the amount of $4,680,000.00. (Bond #1093364 issued by Lexon Insurance Company and indemnified by Ironshore Indemnity Inc.). No additional surety will be required, since there is no additional surface disturbance proposed (R645-300-134).

10. No lands designated as prime farmlands or alluvial valley floors occur within the permit area or the Green's Hollow lease areas (R645-302-313.100) (R645-302-321.100).

11. The proposed postmining land-use of the permit area is the same as the pre-mining land use and has been approved by the regulatory authority. (See R645-301- 400)

12. The regulatory authority has made all specific approvals required by the Act, the Cooperative Agreement, and the Federal Lands Program.

13. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (R645-300-133.500).

14. All procedures for public participation required by the Act, and the approved Utah State Program have been complied with. This permitting action was published for four consecutive weeks with a 30-day public comment period. No comments were received. (R645-300-120).

15. No existing structures will be used in conjunction with mining of the underground lease addition other than those constructed in compliance with the performance standards of R645-301 and R645-302 (R645-300-133.720).

Permit Supervisor

Associate Director of Mining

Director

FEDERAL

May 21, 2017
Revised April 17, 2018

PERMIT
C/041/0002

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple
Box 145801
Salt Lake City, Utah 84114-5801
(801) 538-5340

This permit, C/041/0002, is issued for the State of Utah by the Utah Division of Oil, Gas and Mining (DOGM) to:

Canyon Fuel Company, LLC
225 North 5th Street, Suite 900
Grand Junction, Colorado 85101
(970) 263-5130

for the Sufco Mine (previously the Convulsion Canyon Mine.) Canyon Fuel Company, LLC is the lessee of federal, state and fee-owned property. A performance bond is filed with the DOGM in the amount of $4,680,000.00 payable to the state of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement (OSMRE). DOGM must receive a copy of this permit signed and dated by the permittee.

Sec. 1 **STATUTES AND REGULATIONS** - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.

Sec. 2 **PERMIT AREA** - The permittee is authorized to conduct surface disturbing activities only as described in the approved Mining and Reclamation Plan and within areas covered by the Performance Bond which are within the described permit area at the Sufco Mine situated in the state of Utah, Sevier and Emery Counties, and located as follows:

Mine Site Facility, Water Tank, South Portals, Spring Collection Field, Pump House, Pipeline, Leachfield (Approximately 64.403 acres)

Township 22 South, Range 4 East, SLBM

Section 12: A Portion of the following: E1/2NW1/4, SW1/4NW1/4NE1/4, S1/2

Portals – 3 East, 4 East, Quitchupah and Link Canyon, Link Canyon Substation No.1 and No. 2 (Approximately 3.368 acres)

Township 21 South, Range 5 East, SLBM

Section 26:	A portion of the following: SE1/4SW1/4SW1/4NW1/4, E1/2NW1/4NW1/4SW1/4, SE1/4NE1/4SW1/4SW1/4
Section 29:	A portion of the following: NW1/4NW1/4SW1/4SE1/4, NE1/4NW1/4SE1/4SW1/4, NE1/4NE1/4SE1/4SW1/4
Section 32:	A portion of the following: NE1/4SW1/4SW1/4NE1/4

Waste Rock Disposal Site (Approximately 81.25 acres)

Township 22 South, Range 4 East, SLBM

Section 18:	S1/2NW1/4NE1/4, S1/2N1/2NW1/4NE1/4, S1/2S1/2NE1/4NW1/4NW1/4NE1/4, S1/2S1/2NW1/4NE1/4NW1/4NE1/4, W1/2SW1/4NE1/4NE1/4, W1/2E1/2SW1/4NE1/4NE1/4, S1/2SW1/4NW1/4NE1/4NE1/4, S1/2N1/2SW1/4NE1/4NE1/4, NW1/4SW1/4NE1/4, W1/2NE1/4SW1/4NE1/4, NW1/4SW1/4SW1/4NE1/4, N1/2NE1/4SW1/4SW1/4NE1/4, SW1/4NE1/4NE1/4SW1/4NE1/4, N1/2NE1/4NE1/4SW1/4NE1/4, N1/2NW1/4SE1/4SW1/4NE1/4, NE1/4NE1/4SE1/4NW1/4, SE1/4NW1/4NE1/4SE1/4NW1/4, S1/2NE1/4SE1/4NW1/4, S1/2SE1/4NW1/4SE1/4NW1/4, NE1/4SW1/4SE1/4NW1/4, N1/2SE1/4SE1/4NW1/4

North Water Mitigation Area (Approximately 542.260 acres)

Township 21 South, Range 5 East, SLBM

Section 2:	A portion of the following: SW1/4SW1/4SW1/4
Section 3:	A portion of the following: S1/2SE1/4
Section 10:	A portion of the following: NE1/4, N1/2NE1/4SE1/4,
Section 11:	A portion of the following: W1/2NW1/4, W1/2SE1/4NW1/4, E1/2SW1/4, E1/2NW1/4SW1/4, S1/2SE1/4, NW1/4SE1/4, S1/2NE1/4SE1/4
Section 12:	A portion of the following: W1/2SW1/4
Section 14:	A portion of the following: W1/2NE1/4, NE1/4NW1/4

Sinkhole (Approximately 0.45 acres)

Township 22 South, Range 4 East, SLBM

Section 2:	A portion on the following: SW1/4NE1/4

Total approximately 691.73 acres

Sec. 3 **AUTHORIZED MINING AREA** - The permittee is authorized to conduct underground coal mining and reclamation activities only as described in the approved Mining and Reclamation Plan and on lands where the "Right-of-Entry" has been acquired. This area includes the area above underground works and areas subject to subsidence and is described as follows:

Federal Coal Lease U-28297 - (716.51 acres)

T.21 S., R. 5 E., SLM, Utah

Sec. 32, lot 1, N1/2S1/2
Sec. 33, NW1/4SW1/4

T.22 S., R. 5 E., SLM, Utah

Sec. 5, W1/2W1/2
Sec. 7, S1/2NE1/4, E1/2SW1/4, W1/2SE1/4
Sec. 8, W1/2NW1/4

Federal Coal Lease U-062453 – (480 acres)

T.21 S., R. 5 E., SLM, Utah

Sec. 28, SW1/4SW1/4
Sec. 29, SE1/4SE1/4
Sec. 32, N1/2
Sec. 33, W1/2NW1/4

Federal Coal Lease U-0149084 - (240 acres)

T.22 S., R. 4 E., SLM, Utah

Sec. 12, NE1/4 and N1/2SE1/4

Federal Coal Lease SL-062583 - (3,079.83 acres)

T.21 S., R. 4 E., SLM, Utah

Sec. 36, S1/2

T.21 S., R. 5 E., SLM, Utah

Sec. 31, all

T.22 S., R. 4 E., SLM, Utah

Sec. 1, lots 1 to 4 S1/2N1/2, S1/2
Sec. 2, SE1/4, S1/2SW1/4
Sec. 3, SE1/4SE1/4
Sec. 10, E1/2NE1/4, NE1/4SE1/4
Sec. 11, N1/2, N1/2S1/2
Sec. 12, NW1/4

T.22 S., R. 5 E., SLM, Utah

Sec. 6, all
Sec. 7, N1/2NE1/4, E1/2NW1/4

Federal Coal Lease U-47080 - (1,953.73 acres)

T.21 S., R. 4 E., SLM, Utah

Sec. 25, all
Sec. 35, E1/2, E1/2SW1/4
Sec. 36, N1/2

T.21 S., R. 5 E., SLM, Utah

Sec. 30, lots 2-4, W1/2SE1/4

T.22 S., R. 4 E., SLM, Utah

Sec. 2, lots 1-4, S1/2NE1/4, S1/2NW1/4, N1/2SW1/4
Sec. 3, NE1/4SE1/4

Federal Coal Lease U-63214 - (6.336.34 acres)

Tract 1:

T. 21 S., R. 4 E., SLM, Utah

Sec. 12, E1/2SE1/4
Sec. 13, E1/2NE1/4, Sl/2
Sec. 14, E1/2SW1/4, SE1/4
Sec. 23, E1/2, E1/2W1/2
Sec. 24, all

T.21 S., R. 5 E., SLM, Utah

Sec. 16, W1/2NW1/4, W1/2SW1/4, W1/2E1/2NW1/4, W1/2E1/2SW1/4
Secs. 17-19, all
Sec. 20, NE1/4, W1/2SE1/4, SW1/4, NW1/4
Sec. 21, W1/2NW1/4, W1/2E1/2NW1/4
Sec. 26, W1/2NW1/4SW1/4, SW1/4SW1/4
Sec. 27, NE1/4, SE1/4, S1/2SW1/4, S1/2N1/2SW1/4
Sec. 28, S1/2SE1/4, S1/2N1/2SE1/4, S1/2N1/2SW1/4, SE1/4SW1/4
Sec. 29, S1/2NE1/4SE1/4
Sec. 30, lot 1, N1/2NE1/4
Sec. 33, NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4
Sec. 34, NW1/4NE1/4, NW1/4, NW1/4SW1/4

Tract 3:

T. 21 S., R. 4 E., SLM, Utah

Sec. 26, E1/2, E1/2SW1/4
Sec. 35, NW1/4, W1/2SW1/4

Federal Coal Lease UTU-76195 - (4,148.15 acres)

T.21 S., R. 5 E., SLM

Sec. 2, lots 3, 4, S1/2SW1/4, SW1/4SE1/4

Sec. 10, NE1/4NE1/4
Sec. 11, NE1/4, SE1/4, NW1/4NW1/4, NE1/4NW1/4, SE1/4NW1/4, N1/2SW1/4NW1/4, SW1/4SW1/4NW1/4, E1/2SW1/4, E1/2NW1/4SW1/4, SE1/4SW1/4NW1/4
Sec. 12, S1/2SW1/4, NW1/4SW1/4
Sec. 13, NW1/4, Sl/2
Sec. 14, NE1/4, E1/2NW1/4, E1/2E1/2SE1/4
Sec. 22, S1/2S1/2SE1/4
Sec. 23, SE1/4, E1/2SW1/4, S1/2SW1/4SW1/4, S1/2SE1/4NW1/4, SE1/4NW1/4NE1/4, S1/2NE1/4NE1/4, NE1/4NE1/4NE1/4, S1/2SW1/4NE1/4, NE1/4SW1/4NE1/4, SE1/4NE1/4
Sec. 24, all
Sec. 25, N1/2, Nl/2Sl/2
Sec. 26, N1/2, NE1/4SW1/4, E1/2NW1/4SW1/4, SE1/4

T.21 S., R. 6 E., SLM

Sec. 19, lots 3-4, E1/2SWl/4
Sec. 30, lots 1-3, E1/2NW1/4, NE1/4SW1/4

Federal Coal Lease UTU-84102 – (6,175.39 acres)

T.20 S., R. 4 E., SLM

Sec. 36, lot 4, E1/2NE1/4, NE1/4SE1/4

T.20 S., R. 5 E., SLM

Sec. 19, lots 5-8, E/2SW1/4, SE1/4
Sec. 20, S1/2
Sec. 21, W1/2SW1/4
Sec. 28. W1/2
Sec. 29, all
Sec. 30, all
Sec. 31, all
Sec. 32, N1/2, N1/2S1/2
Sec. 33, NW1/4NW1/4

T. 21 S., R. 4 E., SLM

Sec. 1, all
Sec. 2, SE1/4
Sec. 11, E1/2, E1/2W1/2
Sec. 12, NE1/4, W1/2, W1/2SE1/4
Sec. 13, W1/2NE1/4, NW1/4
Sec. 14, NE1/4, E1/2NW1/4

T. 21 S., R. 5 E., SLM

Sec. 6, all

BLM Right of Way UTU-91108 (70 acres)

T.21 S., R. 4 E. SLB&M

Sec. 1, E1/2SE1/4SE1/4, SE1/4NE1/4SE1/4
Sec. 12, E1/2E1/2NE1/4

State of Utah Coal Lease ML 49443-OBA - (2,294.19 acres)

T.21 S., R. 5 E., SLB&M

Sec. 4: Lots 1 - 4, Sl/2Sl/2
Sec. 5: Lots 1 - 4, Sl/2Sl/2
Sec. 7: Lots 1 - 4, NE1/4, SE1/4
Sec. 8: All
Sec. 9: All

Fee lands owned by Canyon Fuel Company, LLC as follows:

T.21 S., R. 5 E., SLB&M, Utah

Sec. 29, SW1/4, NW1/4, W1/2NE1/4, W1/2SE1/4
Sec. 30, S1/2NE1/4, E1/2SE1/4
containing 640.00 acres

T. 22 S., R. 4 E., SLB&M, Utah

Sec. 18, NE1/4, SE1/4NW1/4, NE1/4SE1/4
containing 240 acres

U. S. Forest Service special use permit areas

T. 22 S., R. 4 E., SLB&M, Utah

Sec. 12, S1/2
containing 28.5 acres

This legal description is for the authorized mining area of the Sufco Mine included in the mining and reclamation plan on file at the Division. The permittee is authorized to conduct coal mining and reclamation operations connected with underground mining on the foregoing described property subject to the conditions of the leases, the approved mining plan, including all conditions and all other applicable conditions, laws and regulations.

Sec. 4 **COMPLIANCE** - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.

Sec. 5 **PERMIT TERM** - This permit expires on May 21, 2022.

Sec. 6 **ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the approval of the Director, DOGM. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13(e) and R645-303.

Sec. 7 **RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the DOGM, including but not limited to inspectors, and representatives of OSMRE, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:

(a) have the rights of entry provided for in 30 CFR 840.12, R645-400-110, 30 CFR 842.13 and R645-400-220; and,

(b) be accompanied by private persons for the purpose of conducting an inspection in accordance with R645-400-100 and 30 CFR 842, when the inspection is in response to an alleged violation reported by the private person.

Sec. 8 **SCOPE OF OPERATIONS** - The permittee shall conduct surface disturbing activities only on those lands specifically designated as within the permit area (in section 2 above) on the maps submitted in the mining and reclamation plan and permit application and approved for the term of the permit and which are subject to the performance bond. All coal mining and reclamation operations are to be conducted within the bounds of the authorized mining area.

Sec. 9 **ENVIRONMENTAL IMPACTS** - The permittee shall minimize any adverse impact to the environment or public health and safety through but not limited to:

(a) accelerated monitoring to determine the nature and extent of noncompliance and the results of the noncompliance;

(b) immediate implementation of measures necessary to comply; and

(c) warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

Sec. 10 **DISPOSAL OF POLLUTANTS** - The permittee shall dispose of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

Sec. 11 **CONDUCT OF OPERATIONS** - The permittee shall conduct its operations:

(a) in accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and

(b) utilizing methods specified as conditions of the permit by DOGM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 12 **EXISTING STRUCTURES** - As applicable, the permittee will comply with R645-301 and R645-302 for compliance, modification, or abandonment of existing structures.

Sec. 13 **RECLAMATION FEE PAYMENT** - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.

Sec. 14 **AUTHORIZED AGENT** - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.

Sec. 15 **COMPLIANCE WITH OTHER LAWS** - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq,) and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.

Sec. 16 **PERMIT RENEWAL** - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State program and Federal lands program.

Sec. 17 **CULTURAL RESOURCES** - If during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify DOGM. DOGM, after coordination with OSMRE, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by DOGM within the time frame specified by DOGM.

Sec. 18 **APPEALS** - The permittee shall have the right to appeal as provided for under R645-300.

Sec. 19 **SPECIAL CONDITIONS** - There are special conditions associated with this permitting action as described in Attachment A.

The above conditions (Secs. 1-19) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of DOGM and the permittee at any time to adjust to changed conditions or to correct an oversight. DOGM may amend these conditions at any time without the consent of the permittee in order to make them consistent with any new federal or state statutes and any new regulations.

THE STATE OF UTAH

By: _____

Date: 4/23/18

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.

_____

Authorized Representative of the Permittee

Date: _____

ATTACHMENT A

1) Canyon Fuel Company, LLC must submit water quality data for the Sufco Mine in an electronic format through the Electronic Data Input web site, http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi.

2) Underground coal mining and reclamation activities in federal coal lease UTU-84102 (Green's Hollow) may not commence until a mining plan approval is authorized by the Secretary of the Interior.

3) To protect sage-grouse habitat, Canyon Fuel Company, LLC will locate new appurtenant surface facilities outside priority habitat management areas, unless no technically feasible alternative exists, If new appurtenant surface facilities cannot be located outside of priority habitat management areas, locate them within any existing disturbed areas, if possible. If location within an existing disturbed area is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements in the established mine-plan approval process and locate the facilities in an area least harmful to greater sage-grouse habitat based on vegetation, topography, or other habitat features.

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

Technical Analysis and Findings

Utah Coal Regulatory Program

April 18, 2018

PID: C0410002
TaskID: 5445
Mine Name: SUFCO MINE
Title: GREENS HOLLOW LEASE

General Contents

Identification of Interest

Analysis:

The application meets the State of Utah R645 requirements for Identification of Interest.

On April 13, 2018, Canyon Fuel Company, LLC submitted to the Division Revisions to Update Ownership. The submittal included an Organizational Chart (Figure 1-1) which included all of the partnerships and companies within the organization. The submittal also included Appendix 1-1, Organizational Ownership, Officers and Director information. The submittal was forwarded to the Office of Surface on April 17, 2018 for entry into the Applicant/Violator System.

ssteab

Violation Information

Analysis:

The application meets the State of Utah R645 requirements for Violation Information.

An AVS Permit Evaluation Report was generated for the SUFCO Mine C/041/0002 on April 17, 2018. The report retrieved 12 violations. The violations are coded "conditional" indicating a settlement, payment plan, or pending challenge, linking entity is John Joseph Siegel Jr.

ssteab

Legal Description

Analysis:

The amendment meets the State of Utah R645 requirements for providing an accurate legal description of the area to be included in the permit. The legal description provided on pages 1-11 and 1-12 titled Federal Coal Lease UTU-84102 – (6,175.39 acres) matches the legal description found in Appendix 1 of the ROD (p. 22) and the UTU-84102 BLM Coal Lease. The properties listed in the lease match the properties listed on pages 1-11 and 1-12 of the MRP as well as the properties delineated on Plate 5-6 (Land Ownership, Lease, and Permit Area Map).

tmiller

Environmental Resource Information

Historic and Archeological Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for historic and archeological resource information. Plate 5-10C shows the lease boundary, boundaries of No Subsidence Mining, limits of potential subsidence, and the locations of cultural sites. The map titled "Cultural Resource Sites Greens Hollow EIS" in Appendix 4-2 shows the size and shape of cultural sites located in the Greens Hollow EIS analysis area. Included in the Chapter 4 narrative of the amendment is the monitoring plan as outlined in the MOA. The MOA in its entirety is also found in Chapter 4 of the amendment.

The monitoring plan is to be implemented for sites 42SV3224, 42SV2584, and 42SV2589. The first step of the plan is to create detailed baseline maps and photographic records of the three sites. These records, in the form of site forms, are found in Appendix 4-2 of the amendment. The next step of the monitoring plan is to monitor each of the three sites yearly while mining is occurring in the area of the site. Site 42SV3224 ended up being part of another lease and a visit to that site will be planned in 2018 or 2019, once it has been determined that subsidence has most likely ended in the area. The area around the remaining two sites, 42SV2584 and 42SV2589, is not scheduled to be mined until approximately 2025. When it has been determined that subsidence is concluded in that area, a site visit with mine personnel, DOGM representatives, and Manti-La Sal National Forest Heritage Program representatives will be scheduled to evaluate any potential effects from subsidence. If no effects are found, that will conclude the monitoring plan and further monitoring will not be required. If effects are found, further consultation with MLSNF, Utah SHPO, and interested Tribes will be conducted to resolve the effects.

tmiller

Climatological Resource Information

Analysis:

The application meets the State of Utah R645 requirements for Climatological Resource Information.

The Permittee provides a statement of the climatological factors in Chapter 4 and Volume 9 of the MRP

aumarva

Vegetation Resource Information

Analysis:

The amendment meets the State of Utah R645-301-321 requirements for vegetation resource information. Volume 1, Chapter 3, Section 3.2.1, pages 3-3 through 3-5 provide vegetation information. This amendment updates Ch.3 on page 3-5 to include a summary of vegetation in the Greens Hollow Tract. Detailed vegetation information is located in the EIS (Environmental Impact Statement) prepared by the BLM. Plate 3-1 is updated to include the vegetation within the Greens Hollow Lease.

lreinhart

Fish and Wildlife Resource Information

Analysis:

The amendment meets the State of Utah R645-301-322 requirements for fish and wildlife resource information. Volume 1, Chapter 3, Section 3.2.2, pages 3-6 through 3-27 provide fish and wildlife information. Section 3.2.2.3 contains the Fish and Wildlife Service Review. Appendices are located in Volume 5 Appendix 3-1 includes a report of field investigations from 1983. Appendix 3-2 is an aquatic resource inventory of the permit area. Appendix 3-3 is a wildlife assessment of the permit and adjacent area. Appendix 3-4 discusses raptors and avifauna Appendix 3-5 discusses fauna of the permit and adjacent area. Appendix 3-7 discusses power lines Appendix 3-8 is a bat survey for the SUFCO Mine Appendix 3-9 discusses vegetation and wildlife of the Pines Tract Appendix 3-10 is a monitoring and mitigation plan for mining under the east fork of Box Canyon. Appendix 3-11 discusses wildlife in the Muddy Creek area. Appendix 3-12 is the Mexican Spotted Owl survey for the Muddy Tract Appendix 3-13 discusses vegetation and wildlife of the West Coal Lease Modifications Appendix 3-14 is the Monitoring and Mitigation plan for undermining the south fork of

Quitchupah 2R2S Block A and 3R2S Block B. This amendment adds Appendix 3-15 which is the Wildlife Technical Report for Greens Hollow Coal Lease Tract. Federal and State sensitive species within the Greens Hollow Tract were evaluated. As noted on pages 294 and 295 of the FSEIS, the BLM analyzed the impacts of underground coal mining on wildlife and plant species listed under the ESA. None of the potential impacts from the project would be contrary to any of the laws, regulations, and orders included in the ESA of 1973, as amended. A supplemental biological assessment was prepared for the proposed Greens Hollow tract (Cirrus 2014f). That assessment determined there would be no effect on federally-listed threatened and endangered species under the alternatives analyzed. Therefore, consultation with the U.S. Fish and Wildlife Service was not required. There are no known federally listed plant species in the project area. One sensitive plant species (Link Canyon columbine) occurs in the general analysis area but not in the permit area and would not be affected by project. As required by the Migratory Bird Treaty Act, the BLM analyzed the impacts of the project on migratory birds. None of the potential impacts of the project would be contrary to any of the laws, regulations, and orders included in the Migratory Bird Treaty Act of 1918. The level of detail of the information is sufficient to design the protection and enhancement plan under R645-301-333 should one be required. The amended permit area contains habitats of unusually high value for fish and wildlife. However, none of these areas should be adversely affected from underground coal mining. Any surface disturbing activities will be evaluated separately. Pursuant to the Executive Order Implementing the Utah Conservation Plan for Greater Sage-Grouse, consultation with Utah Division of Wildlife occurred on 11/22/2016. DWR did not request any additional mitigation or monitoring at this time. Based on the analysis conducted by the BLM and the Divisions evaluation of the IPac Trust Resource Report generated November 22, 2016 and again on May 18, 2017, Consultation Code: 06E23000-2017-E-00883, the Division determined that approval of this amendment would not affect a listed species or designated critical habitat and therefore did not initiate informal consultation with U.S. Fish and Wildlife Service. Potential water depletions from mining operations that may have an effect on endangered fish species identified in pertinent fish recovery programs of the USFWS have been evaluated by the Windy Gap Process as it applies to existing coal mines in the Upper Colorado River Basin on pages 3-40A-B. Total mining operations net water gain is 5365.2 ac-ft/yr.

lreinhart

Soils Resource Information

Analysis:

Analysis: The R645-301-200 soils environmental regulations do not apply to this application, because it does not describe any surface disturbance. The application adds 6,696.41 acres in BLM Greens Hollow Lease UTU-84102 within T. 20 S., R. 4 E., Sec 36, 14, 23, 24; and T 20 S., R. 5 E. Sec. 19, 20, 21, 28, 29, 30, 31, 32, and Sec 33; and T 21 S, R 4 E Sec 1, 2, 11, 12, 13, and 1; and T 21 S, R 5 E Sec 6. The Greens Hollow lease surface is managed by Fishlake (79 acres) and Manti LaSal National Forests (the remainder). The application revises the total permitted disturbed area boundary (96.416 acres) and the currently disturbed acreage (48.825 acres, pg 1-15) due to the previously permitted waste rock expansion and sink hole disturbance. There is no revision to Chapter 2, Soils, other than a statement that the 2015 FEIS provides background information. A general Order III survey is included as Dwg 2-3, Soil Types SITLA Muddy & Greens Hollow Tract.The potential for a ventilation and escapeway shaft facility is anticipated in Section 5.2.6.1 with a statement that permitting of the potetial shaft will follow the acquisition of the Greens Hollow Lease. Confidential Appendix 4-5 Memorandum of Agreement between USFS and SHPO outline requirements of shaft development.

pburton

Land Use Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for land use information. Volume 1, Chapter 4, Section 4.10, pages 4-1 through 4-12A provide information on premining land use. This amendment adds land use information for the Greens Hollow Tract on page 4-7. The land is under USFS management and therefore is managed for multiple use. Recreational use is light and livestock grazing and wildlife are the primary uses. The narrative analyzes the landuse in conjunction with other environmental resources and provides analysis of the capability of the land before any coal mining and reclamation operations to support a variety of uses. Plates 4-1 and 4-1c are land use maps.

lreinhart

Alluvial Valley Floors

Analysis:

The application meets the State of Utah R645 requirements for the Alluvial Valley Floor Determinations.

The Permitee provides sufficient information regarding the absence of alluvial valley floors in the Greens Hollow Lease Area in Chapter 9 of the MRP. The information provided in this section is part of the conceptual mine plan that assumed full extraction mining with maximum associated impacts as determined by the BLM's Final EIS.

The Canyons of Greens Hollow Tract contain a steep gradient and limited narrow deposits of unconsolidated alluvium. The canyon bottoms contain shallow alluvium, with much of the channel resting directly on bedrock. The unconsolidated sediments have not been mapped in detail but are depicted in the Geologic Fence Diagram in Appendix 6-4. Additional information is provided in Chapters 2, 3, 6, and 7, determining that alluvial valley floors are not present in this tract.

aumarva

Geologic Resource Information

Analysis:

The application meets the State of Utah R645-301-600 requirements for Geologic Resource Information. Chapter 6 of the MRP has been updated to include the Greens Hollow Lease tract. A specific geologic report has been added to the MRP which discusses the geology of the tract (Appendix 6-4). This report entitled," Geology Technical Report Greens Hollow Coal Lease Tract" was prepared by Paul B. Andreson and does contain a Statigraphic column of the Green's Hollow lease and a map showing a fence diagram using borehole data from the Green's Hollow area. This report was only partially available and was missing most of the pages in the original submittal of the Greens Hollow application. Upon discussing this with the Operator, the missing pages were located and in the October 4, 2017 resubmittal the entire report has been provided and the missing information is now available.

Since this is an extension of an existing mine a lot of the geologic information carries over from the existing mine plan. The formations are essentially the same, although most of the Greens Hollow is a little deeper in the geologic column and is covered by the North Horn formation. The report prepared by Paul Anderson specifically for the Greens Hollow tract is found in Appendix 6-4. The Geology Technical Report (Appendix 6-4) contains a General Stratigraphic column (Figure 1) of the Greens Hollow Coal lease tract. It is accompanied by Plate 2 which is a Geologic Fence Diagram of the tract. These adequately describe the stratigraphy of the area. Plate 6-1 of the MRP is the Geology and drill hole location map and has been updated to include the Greens Hollow lease tract.

Lithologic drill logs are found in Appendix 6-1 which is marked confidential because of the proprietary information contained therein. The logs are done on drill holes that reflect the general geology of the area, and are specific to the Green's Hollow lease. The same is true for the chemical analyses that were done on the drill samples and which are also contained in Appendix 6-1. R645-301-624.300 et. seq. requires samples from test borings or drill cores to provide lithologic characteristics, including physical properties and thickness of each stratum that may be impacted, and location of groundwater where occurring. Chemical analyses for acid or toxic forming materials, including the total sulfur and pyritic sulfur of the coal seam and the strata immediately above and below the coal seam must be provided.

Drill hole logs have now been provided in Appendix 6-1 which characterized the formation and lithology of the Greens Hollow Lease area. The following drill holes were logged and the information is now provided; Well 04-29-3, Well 04-33-1, Well 06-30-1, Well 07-31-1, Well 15-13-1 and Well 16-1-1. The second number in the description corrresponds to the section number where the well is located. Wells 04-29-3, 04-33-1. 06-30-1 are also located on Plate 6-1 for reference.

Chemical sampling has been provided for the strata above, through and below the coal seam. This included base to acid ratios and total sulfur and pyritic sulfur. The sulfur is relatively low with samples being generally less than 2%. The base to acid ratios are positive in all the samples provided. This is not surprising given the alkaline nature of most strata in Utah. No toxic or acid forming materials were identified that would present a problem within the Greens Hollow Coal lease.

dhaddock

Hydro Sampling and Analysis

Analysis:

The application meets the State of Utah R645 requirements for Sampling and Analysis.

The Permitee states on page 7-3 in Section 7.2.3 that all water samples collected for use in accordance with this MRP will comply with methods described in "Standard Methods for Examination of Water and Wastewater" of 40 CFR parts 136 and 434.

Hydro Baseline Information

Analysis:

The application meets the State of Utah R645 requirements for Baseline Information.

Ground Water Information

The application includes baseline hydrologic locations on Plate 7-3. To characterize the Greens Hollow Tract and adjacent areas, baseline monitoring was conducted to identify springs, wells, and streams in the area. The sampling frequency, sampling parameters, and UTM coordinate locations are listed in Table 1 of Appendix 7-28. The sampling analysis results for all the baseline sites is presented in Table 2A and 2B.

A spring and seep survey was performed by Cirrus Ecological Solutions for the Greens Hollow Tract in 2000-2004. A narrative describing the spring and seep survey can be found on 7-30. A summary for selected springs, including a discharge hydrograph, temperature, pH, specific conductance, and Palmer Hydologic Drought Index, are presented in Attachment A. Water level hydrographs are shown for selected wells in Attachment C. As summarized on page 7-26, Petersen Hydrologic has travesed all major surface water drainages quarterly since 2000, in order to coincide with sampling requirements. Peterson Hydrologic observed the hydrologic conditions and spring discharge locations within and adjacent to the tract. In addition, baseline monitoring activities were conducted specifically for the Greens Hollow Tract from 2014-2017. It was during the course of these visits that surveyers identified a new spring, USP-2. The Permittee states no additional springs or seeps have been identified over the course of numerous field investigations between 2000 - 2017, and all springs identified during the 2000-2004 spring and seep survey have been "visited, monitored, and observed" during the second, third, and fourth quarters of 2015 through 2017. The narrative includes methodology and location specifics.

Overall, the current baseline monitoring includes 64 springs. Forty springs have been monitored as recently as 2014 or sooner. Twenty-two sites were last monitored in 2004. Two additonal sites were monitored once in 2009. The 40 springs that were monitored most recently includes the most significant springs. All springs and seeps found in the Tract emit from the North Horn or Price River Formation. Though the hydrology of the region is climatology/recharge driven and significant time has passed since the last suvey, the Permittee has accessd and traversed the area at least quarterly, and has provided a confirmation from the principal professional hydrologist in the region, that no new significant springs, other than USP-2, have been observed since the 2001 spring and seep survey.

Surface Water Information

The major surface water drainages in the Greens Hollow Tract include the Muddy Creek and Quitchupah Creek. The Muddy Creek Drainage includes the central and northern portions of the tract. This drainage includes the Cowboy Creek Drainage, the Greens Hollow Drainage, and the South Fork of Muddy Creek Drainage, as well as, a series of unnamed drainages that drain directly to Muddy Creek to the North.

The Cowboy Creek sub-drainage flows into the Castlegate Escarpment and across the Blackhawk Formation. This portion of the stream is monitored using M-STR04, with monitoring beginning in 2001. In the past five years of quarterly monitoring the stream has recorded flow only once, in July 2015. The Greens Hollow sub-drainage flows in the North Horn Formation in the northwestern most reaches of the drainage, then along the Castelgate Sandstone for 0.5 miles. This portion of the stream is monitored using M-STR06. Inflows to Greens Hollow Creek, according to the Cirrus 2001 survey and the quarterly monitoring in 2015-2016, is predominantly spring driven from M-SP04, M-SP05, and M-SP06. M-STR06 is used to monitor the composite stream flow. In the past 5 years of quarterly monitoring, M-STR06 has recorded flow only once, in June 2015. The stream is usually dry to the confluence with Cowboy Creek in Greens Canyon. An additional monitoring point, M-STR01, records flow downstream, after the confluence with Cowboy Creek but before the confluence with Muddy Creek. This will allow an estimate of Greens Hollow and Cowboy Creek contributions to Muddy Creek.

The adjacent drainage, Box Canyon Creek, should not experience influences from mining in the Greens Hollow Tract due to isolation from the Big Ridge uplands and Greens Canyon.

Muddy Creek is a major drainage with flows that vary climatically, with peaks in May or June from springtime snowmelt, and baselow conditions in the late fall and winter. Discharge typically ranges >100 cfs to <10 cfs. Flows can exceed 500 cfs during wet years. Releases from reservoirs in the headwaters can impact discharge rates. The Permitee discusses

the gain/loss study on Muddy Creek on page 52 and Figure 8 in Appendix 7-28. Station 1 is in the headwaters of Muddy Creek, just outside the Greens Hollow Tract, Station 2 is just within the eastern boundary of the Tract, and Station 3 is downstream, near monitoring location Pines 405. No appreciable or statistically significant change in discharge rates occured between Station 1 and 2, which is the portion of the tract overlying Greens Hollow Tract. Between Station 2 and 3, no appreciable or statistically significant change. Overall, no loss or gain in flow in Muddy Creek has been noted. Due to the culinary importance of Muddy Creek, SUFCO will monitor several points downstream of Greens Hollow as well. These include Muddy ABF and Pines 406. Both of these points are upstream of Pines 406B and the USGS gaging station. The Muddy ABF monitoring can help assess any flow differential across the Joes Valley graben.

Quitchupah Creek Drainage is in the southern portions of the Greens Hollow Tract, with most of drainage within the North Fork of Quitchupah. Monitoring of the North Fork of Quitchupah occurs at SUFCO 007, and has been ongoing quarterly since 1979. Dishcarge at Sufco 007 is seasonally variable with peaks during spring snowmelt and baseflow in late fall. The North Fork of Qutichupah Creek flows across the Flagstaff Limestone, North Horn Formation, and Price RIver Formation within the Tract. Monitoring of the South Fork of Quitchupah Creek, which covers only a small southern portion of the Tract, is monitored at SUFCO 006, and has been monitored quarterly since 1979. The South Fork of Quitchupah Creek flows across the Castlegate Formation and Blackhawk Formation. Discharge at Sufco 006 is seasonally variable with peaks during spring snowmelt and baseflow in late fall. Typically, discharge rates in the South Fork is less than that flowing at the same time in the North Fork. Baseflow discharge rates in the South Fork can be zero. A diversion exists upstream of South Fork that may contribute to low or no flow. The diversion is used to divert water from the South Fork into the Skutumpah drainage. An additonal USFS maintained diversion exists higher in the drainage.

Discharge hydrograph information associated with major streams in the Greens Hollow Tract is presented in Attachment B of Appendix 7-28. Water quality data is presented in Table 2A and 2B. Baseline monitoring of streams, including when they have been monitored and analyzed for water quality, is presented in Table 1. The baseline monitoring occured beginning in 2001 by Cirrus Ecological Solutions.

An additional 15 surface water monitoring locations exist on tributaries throughout the Greens Hollow Tract. These sites were added in 2017. Baseline information on these sites was collected for high and low flow during 2017, The flow and water quality information is presented in Tables 2A and 2B. These sites include Cowboy Top, Cowboy Middle, Cowboy Bottom, SP60 Creek, CPC Upper, CPC Middle, CPC Lower, North Fork Upper, North Fork Middle, ULGF, URGH, GH at Road, Muddy Creek below Horse, Muddy Creek above Horse, and Horse Creek.

Stock water ponds within and adjacent (within an approximate 1 mile radius of the Lease boundary) have been monitored by the Permittee for 10 years, 2008-2017. The historic information, including select pictures, for these ponds (M-P-02 - 05, 07 - 10, and GH-P01 - P09) is provided in Appendix 7-27.

Geologic Information
The permitee discusses structural information for the Greens Hollow Tract in Appendix 7-28, on page 15.

The permitee states that no major faulting has been identified in the Greens Hollow Tract, though displacement faults, of three feet or less, have been encountered in the SUFCO mine. The application states that both minor faults and joints are likely to exist in the Greens Hollow Tract, especially in the Castlegate Sandstone. The faults in the SUFCO Mine area most commonly strike approximately N10 degrees to 15 degrees W and are inclined nearly vertical. Joints are both parallel and normal to the fault trend. Joints in the Castlegate are common. On page 60 of the PHC description, the Permitee states that groundwater inflows along fault zones that are intercepted by the mine workings in the Greens Hollow Tract may occur. However, the application states the due to the geologic similarity to the existing SUFCO mine, it is likely the Greens Hollow Tract will behave similarly. Therefore, it is likely any water that is encountered will be minimal and short-lived. Appendix 6-4 provides more detailed information on structural geology.

aumarva

Hydro Baseline Cumulative Impact Area

Analysis:

The amendment meets the State of Utah R645 requirements for Cumulative Hydrologic Impact Assessment (CHIA).

The Permitee provides sufficient hydrologic information to complete the CHIA.

aumarva

Probable Hydrologic Consequences Determination

Analysis:

The application meets the State of Utah R645 requirements for Probable Hydrologic Consequences Determination.

728.300: Hydrologic Balance
Continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined in the Greens Hollow Lease area. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. Furthermore, waters in the Castlegate Sandstone and Star Point Sandstone, immediately above and below the coal strata, respectively, do not discharge within the Greens Hollow Tract. The R645 definition of "aquifer" means "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." As no specific use for the waters above and below the coal strata could be identified within and adjacent to the Greens Hollow Tract, the Division does not qualify the Star Point and Castlegate as aquifers. In addition, the geology does not lend itself to communication between surface and subsurface water, the details of which are outlined below.

Formation specifics:

North Horn Formation consists of groundwater flow within shallow sandstone paleochannels. Due to the presence of low-permeability shales throughout the formation, groundwater flow is restricted to the sinuous nature of the sandstone paleochannels and does not flow widely throughout the formation with lateral and vertical flow largely constrained. Based on these characteristics, the North Horn formation does not meet the definition of "aquifer" per R645-100-200 rules.

Price River Formation consists of mudstone drapes separated by fluvial sandstones. Vertical flow of groundwater is restricted causing perched zones and springs to appear at higher topographic positions.

Castlegate Sandstone overlying the coal seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. However, the interbedded mudstone drapes limit groundwater flow in the formation. The typical direction is controlled by local stratigraphic dip, typically toward the north-northwest direction. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers and permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate qualities discharged. The only surface exposure of the Castlegate is along the rims of the North Fork of Quitchupah, South Fork of Quitchupah, Box Canyon, and Muddy Creek Canyon. No water rights exist on the Castlegate within the tract and no surface expression is observed. Therefore, the Castlegate Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water in sufficient quantities for a specific use.

There is no surface expression for the Star Point Sandstone Formation within the Tract, therefore the water is not put to a specific use as required by R645-100-200 to qualify as an aquifer. Further, flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. The Permittee provides information on the bounding impermeable layer below the Blackhawk that separates the Star Point formation, as well as, isotopic evidence to show surface water and groundwater are not in communication.Therefore, the Star Point Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water for a specific use within the areas expected to be impacted by mining.

Furthermore, there is limited potential for communication between these formations naturally. Active mining within the Greens Hollow Tract has potential to increase subsurface connectivity between formations, however, it is unlikely that this will substantially and permanantly affect surface water resources. However, there is potential for groundwater discharging as springs to migrate from the original spring location where near-surface tension cracking is extensive. All of the Greens Hollow Tract has an overburden exceeding 800 feet. The Permitee outlines on pages 60-61 several reasons why groundwater systems in the near-surface Price River and North Horn Formations will be minimally impacted by mining operations and water resources are unlikely to migrate downward. To summarize, the presence of clays in the subsurface will likely impede the development of cracks due to the plasticity, or heal any cracks that do form by infilling or swelling.

In the Sufco Mine, Pines Tract, the surface formation is the Castlegate Sandstone. This formation is a brittle sandstone with dominant joints and fractures. The near-surface fracturing allows for substantial groundwater recharge (unlike the North Horn or Price River formations). When undermining occurred beneath springs discharging from near-surface

fractured sandstone perches, discharge ceased at locations where joints and/or fractures dilated in response to subsidence, compromising the clay-rich perching layers causing the groundwater to migrate deeper. Because not all undermined springs in the area were affected by subsidence, it is likely the spring loss was a localized, not regional effect. As compared to the Pines Tract, the hydrogeologic features in the Greens Hollow Tract are different. These differences include:
- The Greens Hollow Tract is overlain by the North Horn and Price River Formation for the majority of the surface. In these formations, the groundwater flow is in interbedded sequences of sandstone and low-permeability shale that deform plastically, instead of brittlely like the Castlegate.
- Developing no-subsidence mining buffer zones underlying all perennial reaches above the Tract where the Castlegate Sandstone is exposed at the surface or is within 50-feet of the surface. This means no longwall mining and the accompanying subsidence is proposed in these areas: portions of lower Cowboy Creek, lower Greens Hollow, lower North Fork Quitchupah, and Muddy Creek.

The decrease in discharge from springs in the Pines Tract overlie the mined coal seam by only 100 feet. By contrast, springs discharging in the Greens Hollow Tract overlie the mined seam by several hundred feet, discharging from the North Horn and Price River Formations. It is not expected that this type of hydrologic impact occurs in the Greens Hollow Tract.

Similarly, additional concerns existed in the Pines and Qutichupah Tract regarding loss of water to stock water ponds. Due to the lack of baseline and ongoing drought conditions, no determination of impact was made. Impacts to stock water ponds in the Greens Hollow Tract are considered minimal due to the depth of overburden, however, a baseline monitoring and ongoing biannual monitoring plan throughout the life of the mine has been implemented.

Inside the mine, the Permitee uses evidence from previous SUFCO mining activity to predict water intercepted in the Greens Hollow Tract will likely be from the Blackhawk formation, perched groundwater systems in sandstone channels, in the mine roof. Actual flow rates and quantities of water to be encountered cannot be inferred until mining commences. It is expected, however, the mining will dewater these perched groundwater systems immediately above the mining. Furthermore, subsidence-related changes to the subsurface will occur in longwalled areas, altering pre-mining hydrogeology. Deformation of strata above longwall panel mined areas will be in line with what is expected in most coal mines, as outlined on Page 67-68 in Appendix 7-28. The Permitee uses the Mining Engineers Handbook to conclude that upwardly propagating fracturing will likely extend approximately 60 times the mining height, or 600 feet. The mining height in Greens Hollow is 10-15 feet. In the Greens Hollow Tract, all overburden in subsidence mining areas exceeds 800 feet. The overburden in non-subsidence mining areas exceeds 500 feet. Also, in Appendix 7-28, page 41, the Permitee states that discharge from an old sealed longwall gob area and other abandoned long wall areas consistently decrease with time especially from inactive-zone mine inflows. Reduced discharge is one indicator of poor hydrologic communication between systems overlying the mine and shallow groundwater. The Permitee provides the data to support this in Appendix 7-17, using the contents of Mayo and Associates literature. Overall, due to the amount of overburden, the poor hydrologic communication between the surface and groundwater, the plastic nature of the subsurface due to the presence of hydrophyllic clays, the lack of surface expression of the Star Point Sandstone and Blackhawk Formation within the Tract, the isolation of the coal seam from the Star Point Sandstone due to shaley lagoonal deposits, it is unlikely that shallow active hydrologic systems will be impacted by mining as several hundred feet is expected to exist between the surface and the top of the fractured zone.

728.320: Acid-forming and toxic-formation materials
Sufco Mine discharge waters have routinely been within permitted discharge limits. Though small quantities of sulfide minerals are known to exist, no significant acid-or-toxic forming materials are believed to be present in the Greens Hollow Tract. Rocks in the Wasatch Plateau typically act to neutralize any acid produced. Acid forming or toxic forming materials have seldom been of concern in past Sufco mining operations and it is believed little to no potential exists within the Greens Hollow Tract.

728.331: Sediment Yield
No new surface facilities are planned for the Greens Hollow Tract as mining will enter through existing channels. Therefore, any potential for additional sedimentation impact will come from subsidence-induced changes in the stream channels. All perennial streams within the Tract will be undermined using no-subsidence mining techniques, the potential for sedimentation impacts in these channels is negligible. Any subsidence-induced gradient changes in streams with longwall undermining may experience short-lived sediment yield increases due to gradient changes from differential subsidence.

728.332: Water Quality
The water quality information for the Greens Hollow Tract is presented in Appendix 7-28 with the water quality data

tabulated in Table 2A and 2B. No adverse impacts to water quality are expected. The Permitee has recommended a monitoring plan for Greens Hollow in Table 8 - 11 in Appendix 7-28, including parameters to be sampled, and site specific monitoring. According to the Monitoring Plan on Page 7-51 in the MRP, Table 7-2, all PHC recommended sites have been incorporated into the monitoring plan.

Probable hydrologic consequences from equipment and facilities is considered minimal because the Greens Hollow Tract will be accessed through the existing mains in Sufco Mine and no new surface facilities are to be developed.

728.333: Flooding or streamflow alteration
Due to the geologic similarity between Sufco Mine and the Greens Hollow Tract, flooding and streamflow alteration potential is not expected to increase above what is already observed at the Quitchupah Creek discharge.

728.334: Ground-water and surface-water availability; 728.350 State-appropriated water rights
It is likely that groundwaters in the inactive Blackhawk Formation will be encountered and dewatered during mining. Inflows will likely decrease over time as these groundwaters perched and not replenished. However, there are no known uses or state-appropriated water rights on these waters. The Permitee presents Plate 7-2 to show the state-appropriated water supply locations within and adjacent to the Greens Hollow Tract. Additional information on water rights is provided in Appendix 7-1. All state-appropriated water rights within the Greens Hollow Tract belong to the USFS.

Inactive zone groundwater intercepted within the mine will discharge into Quitchupah Creek at Sufco 047. As described previously, the deep, inactive zone groundwater has minimal hydrologic communication with active zone, shallow groundwater and surface water systems. Also, no surface expression of the Blackhawk Formation groundwaters exists within or adjacent to the Greens Hollow Tract. Consequently, the water intercepted within the mine and discharging into Quitchupah Creek is likely not resulting in diminution of surface water resources in the overlying drainage basin. Conversely, the mine water discharge is likely making previously inaccessible, ancient groundwater available for use to downstream users, by increasing natural flow.

aumarva

Hydro GroundWater Monitoring Plan

Analysis:

The application meets the State of Utah R645 requirements for hydrologic groundwater monitoring plan.

In 2001, a spring and seep survey and baseline monitoring program was performed, in conjunction with NEPA analysis, for the Greens Hollow Tract and adjacent areas by Cirrus Ecological Solutions, LLC. The Permitee describes the groundwater monitoring plan for baseline characterization in Appendix 7-28, page 3. The information collected included discharge rates, field water quality parameters, locations collected via handheld GPS, and baseline monitoring of selected sites for laboratory water quality parameters. The information gathered is tabulated in Table 1, including monitoring site geographic coordinates, elevations, associated geologic formations, monitoring periods, baseline monitoring parameters, and information on water usage. The monitoring locations are plotted on Figure 2 and included on Plate 7-3. Discharge and water-quality data for springs and seeps, including field and laboratory chemical and field parameters are presented in Table 2a. Discharge hydrographs for springs in the study area are shown in Attachment A. Geochemistry is summarized via stiff diagrams on Figure 6 and 7, compiled using the chemical composition listed in Table 5.

Groundwater was characterized, as applicable, for each of the geologic formations present at SUFCO mine. The North Horn Formation was monitored using 33 springs. The Price River Formation was monitored using 29 springs. In the Greens Hollow Tract, no springs discharge from the Castlegate Sandstone, Blackhawk Formation, or Star Point Sandstone. The Permitee monitored the Castlegate Sandstone using MW-15-5-2, however, the well has been consistently dry. In the past, several springs in the Pines Tract discharging from the Castlegate have experienced a diminution of flow, likely attributable to the Sufco Mining Operations in the area. Because of this history, the monitoring plan includes no-subsidence buffer zones in areas where the Castlegate Sandstone is known to occur within 50 feet or less of the surface. The Castlegate Sandstone is not considered to be a regional aquifer. The groundwater occurs within the Castlegate Sandstone occurs as isolated, perched zones, does not outcrop within the mining or adjacent areas, and is not transmitted nor stored within the Tract for a specific use. Consequently, the Castlegate Formation does not meet the R645-100-200 criteria for "aquifer." Therefore, the current monitoring plan for the Castlegate Formation will suffice.

The Blackhawk Formation, underlying the Castlegate, will be mined by Sufco as it contains the Upper Hiawatha coal seam. The Blackhawk Formation does not discharge within the Greens Hollow Tract area. Water encountered in the

mine, through working faces, or faults, fractures and roof bolts, will likely be from the Blackhawk Formation and/or the overlying Castlegate Formation. SUFCO Mine has four wells screened in the Blackhawk, and six springs, which can be used to characterize the water quality in the adjacent region, however, no additional were added within the Greens Hollow Tract.

The Star Point Sandstone is beneath the mineable coal seam. In the Greens Hollow Tract, the Star Point Sandstone does not discharge. Furthermore, the water is not put to a specific use and therefore does not qualify as an aquifer under R645-100-200. However, due to its proximity to mining and adjacent discharge areas, the Division has requested monitoring. The Permitee has proposed an in-mine well, to be screened in the Star Point Formation. The well will be drilled once Sufco has advanced close enough access to the Greens Hollow Tract. The estimated time for well completion will be Fall/Winter 2018. All information relevant to the new well, including drilling logs, will be provided to the Division. Once completed, water level monitoring will occur quarterly. The information will allow for further characterization of the Star Point Sandstone.

Overall, the springs and wells monitored in the Greens Hollow Tract for water quality and quantity provide sufficient information to characterize the groundwater resources within and adjacent to the tract.

aumarva

Hydro SurfaceWater Monitoring Plan

Analysis:

The application meets the State of Utah R645 requirements for Surface Water Monitoring Plan.

Surface water monitoring in the Greens Hollow Tract for baseline characterization includes 31 sites, located within the major drainages of the Greens Hollow Tract. Monitoring occurred in Cowboy Creek, Greens Hollow Creek, Muddy Creek, South Form of Quitchupah Creek, and North Fork of Quitchupah Creek. The baseline monitoring information collected included discharge rates, field water quality parameters, locations collected via handheld GPS, and baseline monitoring of selected sites for laboratory water quality parameters. The information gathered is tabulated in Table 1, including monitoring site geographic coordinates, elevations, associated geologic formations, monitoring periods, baseline monitoring parameters, and information on water usage. The locations of monitoring locations are presented on Plate 7-3. Baseline information of water quality is available in Table 2A and 2B, Appendix 7-28. Surface water resources are described in detail beginning on page 46. Hydrogaphs and PHDI data for surface sites is provided in Attachment B of Appendix 7-28.

In 2015, Peterson Hydrologic performed a gain/loss study on Muddy Creek. The results of that study are described on page 50, tabulated in Table 7, and plotted on Figure 9 in Appendix 7-28. The results indicate that no appreciable flow loss had been noted, and water quality measurements do not indicate appreciable groundwater/surface water interaction.

Quitchupah Drainage is described beginning on page 53. In 2012, a gain/loss study was performed on South Fork of Quitchupah Creek. South Fork of Quitchupah extends mostly in the area adjacent to the Greens Hollow Tract. During this evaluation, discharge was low or non-existent, likely due to drought conditions.

Stock water ponds within and adjacent (within an approximate 1 mile radius of the Lease boundary) have been monitored by the Permitee for 10 years, 2008-2017. The historic information, including select pictures, for these ponds (M-P-02 - 05, 07 - 10, and GH-P01 - P09) is provided in Appendix 7-27.

Overall, the surface water monitored in the Greens Hollow Tract for water quality and quantity provide sufficient information to characterize the surface water resources within and adjacent to the tract.

aumarva

Maps Affected Area Boundary Maps

Analysis:

The amendment meets the State of Utah R645-301-323 requirements for maps and aerial photographs. This amendment updates Plate 3-1 (plant communities and reference areas), 3-2 (elk range), 3-3 (deer range and raptor nests) and 4-b1(land use) to include the Greens Hollow tract.

lreinhart

Maps Affected Area Boundary Maps

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permitee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Maps Monitoring and Sampling Locations

Analysis:

The application meets the State of Utah R645 requirements for Maps Monitoring and Sampling Locations.

Maps of Historic Hydrologic Monitoring Stations, including all baseline monitoring locations for Sufco Mine, is presented on Plate 7-3. This plate includes the current operational monitoring locations as well.

aumarva

Maps Subsurface Water Resources

Analysis:

The application meets the State of Utah R645 requirements for Subsurface Water Resources Maps.

According to R645-301-722, Cross Sections and Maps, the Permitee must provide depictions of locations and extent of subsurface water, with aerial and vertical extent distribution of aquifers and and portrayal of seasonal difference of head in different aquifers on cross-sections and contour maps. However, the formations within the Greens Hollow Tract do not qualify a "aquifers" under R645-100-200 rules. The definition of aquifer means "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." Details of formation characteristics that support these claims are provided in Appendix 7-27 in Section 3.1.1 Groundwater Aquifers and Springs, Appendix 7-28 of the MRP, and portions of Appendix 7-17 provides a summary of the groundwater systems.

Further, the Permitee states on page 29 of the PHC that continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined in the Greens Hollow Lease area. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. Furthermore, waters in the Castlegate Sandstone and Star Point Sandstone, immediately above and below the coal strata, respectively, do not discharge within the Greens Hollow Tract. As described previously, the R645 definition of "aquifer" is that which is "sufficient quantities for a specific use." As no specific use for the waters above and below the coal strata could be identified within and adjacent to the Greens Hollow Tract, the Division does not request additional subsurface water resource maps.

The Permitee provides a generalized conceptual cross-section as Figure 38 in the Cirrus Surface and Groundwater Technical Report for the Greens Hollow Tract.

Formation specifics:

North Horn Formation consists of groundwater flow within shallow sandstone paleochannels. Due to the presence of low-permeability shales throughout the formation, groundwater flow is restricted to the sinuous nature of the sandstone paleochannels and does not widely flow throughout the formation. Based on these characteristics, the North Horn formation does not meet the definition of "aquifer" per R645-100-200 rules.

Price River Formation consists of mudstone drapes separated by fluvial sandstones. Vertical flow of groundwater is restricted causing perched zones and springs to appear at higher topographic positions. Due to the discontinuous and perched nature of groundwater in this formation, mapping is not feasible.

Castlegate Sandstone overlying the coal seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. However, the interbedded mudstone drapes limit

groundwater flow in the formation. The typical direction is controlled by local stratigraphic dip, typically toward the north-northwest direction. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers and permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate qualities discharged. The only surface exposure of the Castlegate is along the rims of the North Fork of Quitchupah, South Fork of Quitchupah, Box Canyon, and Muddy Creek Canyon. Due to the discontinuous nature of this formation, mapping is not feasible. Further, no water rights exist on the Castlegate within the tract and no surface expression is observed. Therefore, the Castlegate Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water in sufficient quantities for a specific use.

There is no surface expression for the Star Point Sandstone formation within the Tract, therefore the water is not put to a specific use as required by R645-100-200 to qualify as an aquifer. Further, flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. The internal fifth-order bounding surface restricts horizontal and vertical flow. The Permitee provides information on the bounding impermeable layer below the Blackhawk that separates the Star Point formation, as well as, isotopic evidence to show surface water and groundwater are not in good communication.Therefore, the Star Point Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water for a specific use within the areas expected to be impacted by mining.

aumarva

Maps Surface and Subsurface Ownershiip

Analysis:

The amendment meets State of Utah R645 requirements for Surface and Subsurface Ownership Maps.

A previous deficiency outlined the need for the Permitee to amend all plates to show only approved Sufco leases and pending Green's Hollow lease boundaries. All plates now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Maps Surface Water Resource

Analysis:

The application meets the State of Utah R645 requirements for Surface Water Resource Maps.

The Permitee provides in Plate 7-2 and Plate 7-3 a location of all water resources and water monitoring locations, historic and operational, that are within and adjacent to the Greens Hollow Tract.

aumarva

Operation Plan

Mining Operations and Facilities

Analysis:

The amendment meets State of Utah R645 requirements for Mining Operations and Facilities.

A previous deficiency outlined the need for the Permitee to include a detailed description of proposed mining methods and procedures, including anticipated annual and total coal production within the Green's Hollow Lease. Amendments to section 5.2.3 describe the use of continuous miners and longwall mining techniques to recover coal within the Green's Hollow Lease. Anticipated annual coal production throughout the life of the Green's Hollow Lease is projected to be between 5.5 - 6.3 Million tons.

jeatchel

Air Pollution Control Plan

Analysis:

The amendment meets the State of Utah R645-301-420 requirements for Air Quality. The approved MRP references DAQ Permit Approval Order DAQE-AN0106650013-11 dated March 30, 2011 and DAQEEN0106590004-11. With the addition of the Greens Hollow Lease, Sufco will continue to be considered a ""Minor Source"" by the Utah Department of

Environmental Quality and the mining of the Greens Hollow Lease is not a significant acid rain source (FSEIS, 2015). The demand for coal from the Sufco mine is established, the addition of the coal in the Greens Hollow Lease extends the supply of coal for years. Coal production and therefore trucking is intended to remain within the limits of the existing Air Quality Approval Order (Review production quantities in Section 5.2.3). Should mining changes require a revision; the Air Quality Approval Order will be updated at that time.

lreinhart

Coal Recovery

Analysis:

The amendment meets State of Utah R645 requirements for Coal Recovery.

A previous deficiency outlined the need for the Permitee to include a narrative describing sequencing of operations, measures used to maximize use and conservation of coal resource, expected recovery, and R2P2 details for the Greens Hollow Lease. As outlined in section 5.2.3, anticipated annual coal production throughout the life of the Greens Hollow Lease is projected to be between 5.5 - 6.3 Million tons and will be extracted using a longwall, thus ensuring the maximum amount of coal will be extracted using best available technology. Section 5.1.2 and appendix 1-1 includes a discussion about the R2P2, although the details haven't yet been finalized but will be sent to the BLM once it is complete.

jeatchel

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets the State of Utah R645-301-332 requirements for describing impacts of subsidence to fish, wildlife, and vegetative resources. Volume 1, Chapter 3, Section 3.3.3 provides a description of the anticipated impacts of subsidence. Subsidence associated with the Greens Hollow Lease is consistent with information in the approved MRP. As noted on pages 3-43 and 3-45A, the permittee has implemented a program to monitor the effect of subsidence on the vegetative communities. The applicant uses color infrared photography (CIR) to document changes in vegetation. This CIR coverage began in 1987 and will be updated at least every 5 years. Because of the depth and type of cover, Sufco anticipates there will be little impact to upland vegetation due to the subsidence. Subsidence cracks that form that are determined to be a safety hazard will be mitigated as discussed in section 3.3.3.

lreinhart

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets State of Utah R645 requirements for Renewable Resource Subsidence Control Plan.

A previous deficiency outlined the need for the Permitee to clarify whether the stock troughs and man-made ponds within the permit area are state-appropriated water supplies. Narrative in section 5.2.5.1 states that according to water right records, no man-made ponds or troughs are assigned state appropriated water supplies.

jeatchel

Subsidence Control Plan Subsidence

Analysis:

The application meets the State of Utah R645-301-623.300 requirements for a subsidence Control plan.

Subsidence mining has the potential to be excluded from areas identified for protection such as stream segments where the overburden is insufficient in thickness or rock types to facilitate healing of surface tensile cracks. Mining may also be excluded along cliff escarpments where subsidence would impact cultural features or raptor habitat. Each exclusion will be evaluated on a case by case basis and permitted as required. Prior to mining the Greens Hollow Lease, the subsidence monitoring points will be located and the site surveyed for baseline information.

dhaddock

Subsidence Control Plan Subsidence

Analysis:

The amendment meets the State of Utah R645 requirements for Subsidence Control Plan.

R645-301-521, R645-301-525.420 - A previous deficiency stated that Permittee must provide a map that illustrates projected subsidence throughout the Greens Hollow Lease in addition to addressing subsidence control measures to prevent damage to sensitive areas such as archaeological sites or raptor nests.

Narrative in sections 5.2.5.1 and 5.2.5.2 state that a buffer zone will be designed and built into the mine plan to protect areas such as cultural resource sites and other areas designated as No Subsidence. Buffer zones consist of barrier pillars that are left in place a sufficient distance from sensitive surface resources meant to be protected.

Plates 5-10 and 5-10C illustrate the limits of expected subsidence that is anticipated within the Greens Hollow Lease. The potential subsidence limits disturb a wider surface area in areas where the overburden is thicker. A comparison between the potential subsidence limits on Plates 5-10 and 5-10C against the overburden isopach contours on Plate 5-11 confirms this relationship.

jeatchel

Subsidence Control Plan Performance STD

Analysis:

The amendment meets State of Utah R645 requirements for Subsidence Control Plan Performance STD.

R645-301-525.440 - Narrative in 5.2.5.1 clarifies that numerous control points have been established within the lease to assist in the subsidence surveys. The coordinates of the control points are provided in Table 5-2, and additional points will be added as necessary once existing points become influenced by subsidence. Additionally, supplemental subsidence monitoring locations have been added within the vicinity of the Greens Hollow lease, and those locations have been added to Plates 5-10 and 5-10C. More subsidence locations will be added within the Greens Hollow Lease as mining progresses to the North.

jeatchel

Subsidence Control Plan Notification

Analysis:

The amendment meets State of Utah R645 requirements for Subsidence Control Plan Notification.

A previous deficiency outlined the need for the Permitee to define a clear plan of specific areas to be protected from subsidence and a notification sent to the appropriate surface owners affected by said subsidence. Narrative in section 5.2.5.1 states that mining may be excluded along cliff escarpments where subsidence would impact cultural features or raptor habitat, but will be evaluated on a case by case basis and permitted as required. There is no private surface ownership as the surface rights for the entirety of the Greens Hollow tract is owned by the USFS.

jeatchel

Fish and Wildlife Protection and Enhancement Plan

Analysis:

The amendment meets the State of Utah R645-301-333 requirements to describe how using best technology currently available to minimize adverse impacts to fish and wildlife, including compliance with the Endangered Species Act. Volume 1, Chapter 3, Section 3.3.3 provides a plan to minimize disturbance and adverse impacts to fish and wildlife. Since this amendment does not include additional surface disturbance, the approved MRP is adequate. Appendix 3-15 contains a sound monitoring report conducted by Tetra Tech, Inc from 2008. The monitoring was conducted to collect baseline data in association with the potential development and operation of a ventilation shaft near Quitchupah Canyon. The data was collected around an existing ventilation fan and at selected sensitive resource location such as

Forest System Roads, and Greater Sage-grouse leks. The collected sound level data will be used to determine measures which could reduce sound related impacts associated with the operation of the proposed ventilation fan.

lreinhart

Vegetation

Analysis:

The amendment meets the State of Utah R645-301-331 requirements for protection of vegetation. Volume 1, Chapter 3, Section 3.3.1 provides protection measures for vegetation. Potential impacts to vegetative, fish and wildlife resources and the associated mitigation plans are presented in Sections 3.30 and 3.40 of the approved MRP. Since this amendment is an expansion of underground mine workings with no additional surface disturbance, the existing protection measures are adequate. However, this amendment includes Appendix 3-15, a sound monitoring report in association with the potential development and operation of a vent shaft near Quitchupah Canyon. The collected sound level data will be used to determine measures which could reduce sound related impacts associated with the operation of the proposed ventilation fan. Additional monitoring information for the upper reaches of Quitchupah Creek is provided on page 3-34.

lreinhart

Hydrologic Ground Water Monitoring

Analysis:

The application meets the State of Utah R645 requirements for hydrologic groundwater monitoring plan.

The Permitee includes a groundwater monitoring plan based upon the PHC determination and the analysis of baseline hydrologic and geologic information in the permit application. Groundwater Plan is outlined in Table 7-2, beginning on page 7-50. The locations are depicted on Plate 7-10. All PHC monitoring recommendations were incorporated into the monitoring program. The Permitee commits to monitoring 27 springs and 2 wells specifically associated with the Greens Hollow Tract. The North Horn Formation will be monitored using 22 springs and the Price River Formation will be monitored using 5 springs. The springs will be monitored quarterly, as access permits, for flow and field parameters: TDS, total iron, and total manganese. In the Greens Hollow Tract, no springs discharge from the Castlegate Sandstone, Blackhawk Formation, or Star Point Sandstone. The Permitee monitors the Castlegate Sandstone using MW-15-5-2, however, the well has been consistently dry. In the past, springs discharging from the Castlegate have experienced a diminution of flow, likely attributable to the Sufco Mining Operations in the Pines Tract area. Because of this history, the monitoring plan includes no-subsidence buffer zones in all perennial reaches where the Castlegate Sandstone is known to occur within 50 feet or less of the surface. The Castlegate Sandstone is not considered to be a regional aquifer. The groundwater occurring within the Castlegate Sandstone is isolated, perched, does not outcrop within the mining or adjacent areas, and is not transmitted nor stored, within the Tract for a specific use. Consequently, the the Castlegate Formation does not meet the R645-100-200 criteria for "aquifer." Therefore, the current monitoring plan for the Castlegate will suffice.

The Blackhawk Formation, underlying the Castlegate, will be mined by Sufco as it contains the Upper Hiawatha coal seam. The Blackhawk Formation does not discharge within the Greens Hollow Tract area. Water encountered in the mine, through working faces, or faults, fractures and roof bolts, will likely be from the Blackhawk Formation and/or the overlying Castlegate Formation. Within the groundwater monitoring plan for Sufco Mine, there are four wells screened in the Blackhawk, and six springs discharging from the Blackhawk. As no surface expression or specific use for the Blackhawk Formation groundwaters exist in the Greens Hollow Tract, this monitoring plan will suffice.

The Star Point Sandstone is beneath the mineable coal seam. In the Greens Hollow Tract, the Star Point Sandstone does not discharge. Furthermore, the water is not put to a specific use and therefore does not qualify as an aquifer under R645-100-200. However, due to its proximity to mining and adjacent discharge areas, the Division has requested monitoring. The Permitee has proposed an in-mine well, to be screened in the Star Point Formation. The well will be drilled once Sufco has advanced close enough access to the Greens Hollow Tract. The estimated time for well completion will be Fall/Winter 2018. All information relevant to the new well, including drilling logs, will be provided to the Division. Plate 7-3 and 7-10 will also be updated to reflect the well location. Once completed, water level monitoring will occur quarterly.

Furthermore, there is limited potential for communication between these formations naturally. Active mining within the Greens Hollow Tract has potential to increase subsurface connectivity between formations. There is potential for groundwater discharging as springs to migrate from the original spring location where near-surface tension cracking is

extensive. However, all of the Greens Hollow Tract has an overburden exceeding 800 feet. The Permitee uses the Mining Engineers Handbook to conclude that upwardly propagating fracturing will likely extend 60 times the mining height, or 600 feet. The Permitee outlines on pages 60-61 several reasons why groundwater systems in the near-surface Price River and North Horn Formations will be minimally impacted by mining operations and water resources are unlikely to migrate downward. The presence of clays in the subsurface will likely impede the development of cracks due to the plasticity, or heal any cracks that do form by infilling or swelling.

On page 7-65, the Permitee provides a commitment to notify the Division in the comments section of the quarterly water monitoring reports if any spring is believed to have moved locations.

Overall, the springs and wells to be monitored in the Greens Hollow Tract will be monitored for water quality and quantity, with quarterly reports sent to the Division. The groundwater monitoring plan is sufficient to determine the impacts of the operation upon the hydrologic balance.

During operation, the mine water management system is used to pump water to and from mining districts underground. The permitee commits, in the event water is encountered in-mine at a rate of 1 cfs, continuously flowing for 30 days, to collect a sample for lab analysis. The commitment is provided on page 7-12. The permitee writes "should water underground be encountered due to faulting that is flowing greater than 1 cfs, which continually flows for 30 days, a sample will be collected for lab analysis." The water must be flowing directly from the formation. Further, the sample will be analyzed according to Table 7-2, subcategory D9, which includes C14, C13, and Tritium analysis. The analysis for tritium will occur once during the 30 day sampling period. Flow measurements will be taken weekly until access is no longer available and/or flow stabilizes or stops. The Permitee includes a commitment to provide weekly flow data, as well as a map showing an approximate location (approximate means which panel and ballpark area within panel) of where the flows have been encountered. In the event this information is collected, the data monitoring information and map will be incorporated into Appendix 7-27.

aumarva

Hydro Surface Water Monitoring

Analysis:

The application meets the State of Utah R645 requirements for Surface Water Monitoring.

Operations in the Greens Hollow Tract have potential to impact surface water resources and therefore, a surface water monitoring plan will be implemented. Surface water monitoring plan is outlined in Table 7-2, beginning on page 7-50. The locations are depicted on Plate 7-10. All PHC monitoring recommendations were incorporated into the monitoring program. The surface locations are located within major drainages of the Greens Hollow Tract. Monitoring will occur at Cowboy Creek (M-STR04, discharge and field parameters), Greens Hollow Creek (M-STR06, discharge and field parameters), Muddy Creek (U-Mud, discharge and field parameters), Muddy Creek below the Tract (Pines 405, discharge and field parameters), South Form of Quitchupah Creek (Sufco 006, discharge, field and lab parameters), and North Fork of Quitchupah Creek (Sufco 007, discharge, field and lab parameters.) An additional 15 surface water monitoring locations exist throughout the tract to provide monitoring of tributaries and water above and below longwall panels. The total number of surface monitoring locations within and adjacent to the tract is 25 sites.

The major drainages includes a no-subsidence buffer zones in the perennial reaches above the Tract and where the Castlegate Sandstone is known to occur within 50 feet or less of the surface. The buffer zone provides extra protection for the surface water resources. The no subsidence zones are depicted on Appendix 7-27, Figure 4.4. Furthermore, there is limited potential for communication between these formations naturally. Active mining within the Greens Hollow Tract has potential to increase subsurface connectivity between formations, however, it is unlikely that substantial and permanant impacts will affect surface water resources. All of the Greens Hollow Tract has an overburden exceeding 800 feet. The presence of clays in the subsurface will likely impede the development of cracks due to the plasticity, or heal any cracks that do form by infilling or swelling.

The streams chosen to be monitored include no-subsidence mining zones and in areas where subsidence mining will occur. The locations are depicted on Table 7-10. A mine progress map, to be submitted to the Division quarterly-coinciding with water monitoring, is described on page 7-69. The maps will be submitted confidentially to the Division within 30 days following the end of the previous quarter.

The permittee will monitor all stock water ponds within and immediately adjacent (1-mile) to the Greens Hollow Tract be monitored. This will include a commitment from SUFCO to visit the ponds within the Greens Hollow Tract as soon as

they are accessible in the spring of each year (typically late April to early May), photographing the condition of each pond, observe the pond for evidence of cracking, estimate the depth and surface area of water contained in the pond, inspect the immediate drainage area for evidence of surface cracking, note general soil moisture conditions, and note the general condition of the pond. The information will be supplied in table format. Additional monitoring visits will be made in the Fall (late September to early October) of each year. This information will be submitted to the Division annually in the Annual Report or provided to the Division Hydrologist at any time upon written request (e-mail, etc.). This commitment is on page 7-24 of the MRP.

The monitoring plan for all surface sites includes a commitment to submit discharge and field parameter measurements to the Division, quarterly.

The surface water monitoring plan is sufficient to detect impacts to the hydrologic balance.

aumarva

Maps Affected Area

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permitee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Maps Mine Workings

Analysis:

The application meets the State of Utah R645 requirements for Maps Mine Workings.

The Permittee provides a commitment to provide a longwall progress map to coincide with quarterly water monitoring data. The maps will be submitted confidentially to the Division within 30 days following the end of the previous quarter. The maps will have the most recent quarters longwall advancement highlighted, with monthly completion dates labeled and showing the current location of the longwall. The commitment is provided on page 7-85.

aumarva

Maps Monitoring and Sampling Locations

Analysis:

The application meets the State of Utah R645 requirements for Maps Monitoring and Sampling Locations.

Tje map of Operational Hydrologic Monitoring Stations, including only the current monitoring plan locations for Sufco Mine, is presented on Plate 7-10.

aumarva

Reclamation Plan

PostMining Land Use

Analysis:

The amendment meets the State of Utah R645-301-412 requirements for postmining land use. Volume 1, Chapter 4, Section 4.1.2 pages 4-16 through 4-16 provide the post-mining land use plan. The Greens Hollow mining area is managed by U.S. Forest Service under the multiple use under the Federal Land Policy and Management Act. Present management emphasizes livestock grazing, wildlife, timber and watershed development. The postmining land uses will be consistent with the land use plans prepared by the Forest Service. Final reclamation activities such as grading and seeding as detailed within the MRP will be completed in a manner to provide uses of the lands consistent with those uses required by the U.S. Forest Service land use plans. Retention of pre-SMCRA highwalls is discussed in Section 5.5.3.6. Volume 1, Chapter 4, Section 4.1.3 pages 4-19 through 4-20 provide the postmining land use plan which is the

same as the premining land use.

lreinhart

WildLife Protection

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation. The amendment does not propose any additional surface disturbance and therefore the existing MRP adequately meets the requirements. Volume 1, Chapter 3, Section 3.4.2 provides a wildlife enhancement plan. Enhancement measures include range improvements within the lease area and reclamation seed mixes are designed to provide nutritional value and cover to wildlife. Table 3-1 (pg. 3-15) provides information on federally protected threatened, endangered, and listed species. Table 3-2 (pg 3-27/28) provides a list of Utah species that are protected. Table 3-3 (pg 3-29/30) provides a list of USDA-FS Region 4 Sensitive species. The proposed amendment will not affect the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act.

lreinhart

Mine Openings

Analysis:

The application meets the State of Utah R645 301-631 requirements for managing mine openings and sealing explorartion holes had boreholes.. Since this application is for an extension of an existing underground mine, there are no plans for additional or new portals in the Greens Hollow tract. Reclamation of exploration boreholes has been addressed. The plan for casing and sealing of wells is found in section 7.6.5 of the MRP. When no longer needed for monitoring or approved for transfer as a water well, each well will be sealed and backfilled by placing a concrete plug from TD to the surface.

dhaddock

Contemporaneous Reclamation General

Analysis:

The amendment meets the State of Utah R645-301-352 requirements for contemporaneous reclamation. Volume 1, Chapter 3, Section 3.5.2 page 3-52 provides the contemporaneous reclamation plan. The amendment does not contemplate any surface disturbance and therefore, the approved MRP meets the regulations.

lreinhart

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-341 requirements for a revegetation plan. Volume 1, Chapter 3, Section 3.40 provides the revegetation plan which covers all lands disturbed by coal mining and reclamation operations. Nothing has been added to the existing reclamation plan with this amendment since additional surface disturbance is not proposed at this time.

lreinhart

Revegetation Mulching and Other Soil Stabilization

Analysis:

The amendment meets the State of Utah R645-301-353 requirements for vegetative cover. Volume 1, Chapter 3, Section 3.5.3 page 3-53 through 3-58 provides general requirements for revegetation. The amendment does not contemplate any surface disturbance and therefore, the approved MRP meets the regulations.

lreinhart

Maps Affected Area Boundary

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permitee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

CHIA

CHIA

Analysis:

The application meets the State of Utah R645 requirements for the Cumulative Hydrologic Impact Assessment (CHIA).

aumarva

QUITCHUPAH AND MUDDY CREEK CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

For

Canyon Fuel Company

SUFCO Mine
C/041/0002

In

Sevier County, Utah

April 17, 2018

I. INTRODUCTION

The Quitchupah and Muddy Creek Cumulative Impact Area (CIA) are located in Sevier County, Utah, west of the town of Emery (Plate 1). There is currently one active mine in the Quitchupah/Muddy Creek CIA – Canyon Fuel Company's SUFCO Mine. The SUFCO Mine presently encompasses three existing tracts of land: The Pines Tract, the Quitchupah Tract and the SITLA Muddy Tract. Expansion of the SUFCO Mine with the addition of the Greens Hollow Lease Area located north-west of the existing lease area has prompted this review and update of the Quitchupah/Muddy Creek Cumulative Hydrologic Impact Assessment (CHIA). The addition of Greens Hollow adds approximately 6,175.39 acres and will expand the total lease area to 26,402.64 acres.

The Division has the responsibility to assess the potential for mining impacts both inside and outside permit areas. The CHIA is a findings document prepared by the Division that assesses whether existing, proposed, and anticipated coal mining and reclamation operations have been designed to prevent material damage to the hydrologic balance outside the permit areas. The Division cannot issue a permit to a proposed coal mining operation if the probable, anticipated hydrologic impacts will create material damage to the hydrologic balance outside the permit area. The CHIA is not only a determination if coal mining operations are designed to prevent material damage beyond their respective permit boundaries when considered individually, but also if there will be material damage resulting from effects that may be acceptable when each operation is considered individually but are unacceptable when the cumulative impact is assessed.

The objective of a CHIA document is to:

1.	Identify the Cumulative Impact Area (CIA)	**(Part II)**
2.	Describe baseline conditions in the CIA; identify hydrologic systems, resources and uses; and document baseline conditions of surface and ground water quality and quantity	**(Part III)**
3.	Identify hydrologic concerns	**(Part IV)**
4.	Identify relevant standards against which predicted impacts can be compared	**(Part V)**
5.	Estimate probable future impacts of mining activity with respect to the parameters identified in 4	**(Part VI)**
6.	Assess probable material damage	**(Part VII)**
7.	Make a statement of findings	**(Part VIII)**

This CHIA complies with the federal Surface Mining Control and Reclamation Act of 1977 (SMCRA) and subsequent federal regulatory programs under 30 CFR 784.14(f), and with Utah regulatory programs established under Utah Code Annotated 40-10-et seq. and the attendant State Program rules under R645-301-729.

II. CUMULATIVE IMPACT AREA (CIA)

Reviewing Permit Application Packages (PAPs) and Mining and Reclamation Plans (MRPs) alone are not sufficient to assess impacts to the geologic and hydrologic regimes. Specific knowledge of the geology and hydrology is crucial in assessing the dynamics and interactions of chemistry, surface- and ground-water movement, and surface disturbance and subsidence impact associated with the mine sites. The Division uses pertinent information from many sources, including federal and state agencies; geological and hydrological reports; textbooks and other publications; site visits; and a knowledge-base built on experience and training.

Plate 1 depicts the location of the Quitchupah/Muddy Creek drainage area relative to the southeast/central portion of the State of Utah. Plate 2 delineates the CIA for current and projected mining in the Quitchupah/Muddy Creek area. The CIA boundary encompasses approximately 95 square miles. It is bounded on the south by Quitchupah Creek and Convulsion Canyon, from a point where Quitchupah Creek crosses State Highway 10, northeast to a point east of Christensen Wash, along Christensen Wash to the ridge that lies east of Rock Wash

Canyon, then along the ridge to Muddy Creek. It proceeds northwest along the northeast side of Muddy Creek and along the South Fork of Muddy Creek. The CIA boundary then ranges south along the drainage divide separating Skutumpah Canyon drainage from the Quitchupah Canyon drainage from White Mountain south to the ridge dividing Collier Hollow and into Convulsion Canyon to join Quitchupah Creek.

Within the CIA, SUFCO Mine is the only SMCRA permitted coal mining operation. The SUFCO Mine operations generally comprises of five major tracts: the Quitchupah Tract, the Pines Tract, the SITLA Muddy Tract, the WLM tract, and the Greens Hollow Tract (Plate 2). The whole CIA area is truncated to the south and southeast by the steeply eroded Convulsion and East Spring Canyons. This upland plateau is dissected by a series of valleys predominantly trending northwest/southeast including Duncan Draw, Mud Spring Hollow and Pin/Broad Hollow. The surface topographic relief in the Greens Hollow Tract ranges from 7,400 feet in eastern portion of Muddy Canyon to 9,760 feet at the western edge of White Mountain. The physiographic setting of the Greens Hollow Tract is in the Wasatch Plateau, bounded to the north and northeast by the deep Muddy Creek and Cowboy Creek canyons, to the west by White Mountain, and to the south by the North Fork of Quitchupah Creek. The general slope of the land is reported to the south/southeast. Elevations in the CIA range from less than 5,000 feet in the lower reaches of Muddy Creek to approximately 9,760 feet on the western edge of the Quitchupah/Muddy Creek (Plate 2).

A small part of the northeast portion of the Pines Tract extends across the Muddy Creek drainage and outside the CIA. The coal seam ends in the escarpment south of the creek, so the CIA should include all impacts. The mine facilities are located within the Quitchupah Tract. Mining activities in the Pines and SITLA Muddy Tracts take place underground with no planned breakouts or surface disturbances.

HISTORY OF MINING

The Convulsion Canyon Mine commenced operation in 1941, mining federal owned coal. There was no previous mining activity prior to the 1941 operation. From 1941 through 1974, coal was extracted using only conventional mining techniques. Between 1974 and 1978, both conventional and continuous mining methods were used. Then, until 1985, only continuous miners were used for coal extraction. Since 1985, SUFCO has utilized both continuous mining and longwall mining techniques.

Currently, the SUFCO lease area encompasses a total of 26,402.64 acres that includes 23,129.95 acres of Federal coal leases, 2,294.19 acres of State of Utah coal leases, 640 acres of fee coal leases, the 240-acre waste rock disposal site, 28.5 acres under U.S. Forest Service special use permit, and 70 acres of BLM R-O-W. The majority of mining has been and will continue to be full-extraction, longwall mining.

The mine is portaled in the Upper Hiawatha coal seam, occurring in the lower portion of the Blackhawk Formation. The Upper Hiawatha coal seam is the seam mined in the majority of the SUFCO mine. The Lower Hiawatha Coal Seam will only be mined in the western portion of the

Quitchupah lease where the seam is of mineable thickness. Anticipated annual production of coal from SUFCO Mine during the 2017-2021 years will range from 5.5 to 6.3 million tons. The projected life of the SUFCO Mine, with the Greens Hollow extension, is estimated to be until May 2030 and produce an estimated 59.7 million tons of mineable coal.

Most of the mine and coal processing facilities are located in the Quitchupah Creek drainage, in East Spring Canyon. The portal and facilities in East Spring Canyon receive coal from the face by underground conveyor and then the coal is transported by truck. A waste rock disposal site with sedimentation pond is located approximately 5.3 miles west of the mine facilities. Three sedimentation ponds are located in East Spring Canyon in the immediate vicinity of the surface facilities. A concrete sediment trap is located near the southern end of the mine yard which captures all disturbed area runoff from the mine yard area. The primary and overflow ponds are located directly below the mine facilities where disturbed area flow drops down a steep slope to get to the pond. The overflow pond is located 800 feet downstream of the primary sedimentation pond. A buried sewage septic system in lower East Spring Canyon treats all mine sewage. In September 2010, the Permittee submitted an amendment to reduce the permit area of the mine to only the disturbed portions. With the expansion of the Waste Rock Site, and SUFCO taking responsibility for the North Water Spring area, the permitted acres for the mine have increased. Currently, the permitted and bonded area comprises 691.728 acres. The disturbed area is 96.42 acres.

Table 1 presents the annual production in millions of tons of the SUFCO mine from 1983 to 2017. The production values were obtained from the Utah Geological Survey (Coal Production and Recoverable Reserves in Utah by Coal Mine 2001-2015) and Canyon Fuel Company. Currently, the SUFCO Mine is the highest producing coal mine in the State of Utah. The mine is estimating that their advancement of longwall panels into the Greens Hollow Tract area will occur in Fall 2017, extending the life of the mine through May 2030.

III. HYDROLOGIC SYSTEM and BASELINE CONDITIONS

Predominant features that exist in the CIA are sandstone cliffs, narrow steep canyons, valleys, highly exposed rock formations and an extensive fracture system. Drainage in the CIA is characterized by the two major drainage systems of Quitchupah and Muddy Creeks which are perennial streams with headwaters that originate at elevations of 7,500 to 9,000 feet.

The SUFCO mine area exists entirely within the Muddy River Basin. Big Ridge, in the southern portion of the Greens Hollow Tract, forms the drainage divide between Muddy Creek Watershed and Quitchupah Creek Watershed. The majority of the mine area drains south into Quitchupah Creek via the North Fork of Quitchupah Creek and ephemeral tributaries. The north and northeast portions of the mine area, including the majority of Pines Tract and Greens Hollow Tract, drain into Muddy Creek.

Surface-water resources in the CIA consist of streams and stock watering ponds. Stock water ponds capture water from adjacent springs or precipitation. Similarly, most streamflow is climatically driven, attributed to runoff from snowmelt or rain. Peak perennial monthly stream flows typically occur in May or June, likely as a result of snowmelt runoff. In the later summer and fall months, baseflow is driven by spring discharge. Ephemeral streamflow in the area is often of a short duration with high intensity because it largely results from precipitation events occurring in the summer months of July, August, and September.

Ground-water resources in the CIA consist of springs and mine-water discharge. Spring discharge from the shallow formations is largely climatically driven, with recharge at outcrops and surface exposure. Recharge to the deeper formation is through overlying strata. Groundwater resources have been analyzed for water quality and seasonal flow patterns. The information used to make findings on groundwater trends was compiled by Mayo and Associates and Petersen Hydrologic, Inc. for the SUFCO Mine. Data was collected at springs, wells, in-mine flows, and mine discharge sites. A previous water resource study was conducted by the U.S. Geologic Survey (Thiros and Cordy, 1991).

GEOLOGY

The geology of the CIA consists of stratigraphic units of rock ranging in age from Late Cretaceous to Tertiary (Eocene) as seen in Table 2 and Plate 3. The oldest exposed rocks include members of the Mancos Shale. The Mesaverde Group overlies the Mancos Shale and consists of the Star Point Sandstone, Blackhawk Formation, Castlegate Sandstone, and Price River Formation. Overlying the Mesaverde Group in the CIA is the North Horn Formation, a member of the Wasatch Group of Paleocene to Eocene age. Unconsolidated deposits formed by weathering and erosion exist as soils, terrace deposits and gravels along canyon streams, and pediments at the base of escarpments. The geology and the general hydrologic properties of each of these formations are described herein:

Geologic Units

North Horn Formation

The North Horn Formation is a variegated, slope-forming shale unit with minor sandstone, conglomerate and freshwater limestone. The North Horn Formation is of late Cretaceous – Early Tertiary age and outcrops in the west/northwest portion of the CIA and present at the surface on Duncan Mountain and throughout the Greens Hollow Tract. The reported thickness of the North Horn Formation in the general CIA area was reported to be approximately 1,490 feet. The shaley nature of the formation and its occurrence in high precipitation areas make landslides and mass movement common along outcrops. Groundwater movement through this unit is considered minimal due to the pervasiveness of the low-permeability of the shale horizons. Groundwater transport is primarily through fractured or weathered zones that may percolate to the underlying Price River Formation, but it is not considered appreciable.

Price River Formation

The upper member of the Price River Formation consists of interbedded sandstone, shale, siltstone with minor conglomerate. The formation was deposited in fluvial environments. The full formation thickness in the CIA is approximately 500 feet. The Price River Formation has been reported to have the capability of transmitting water but is limited by the lenticular geometry of the sandstone units, prohibiting water from traveling significant distances. Because this unit represents the land surface in the majority of the CIA, recharge to this unit from precipitation and snowmelt is heavily influenced by climatic conditions.

Castlegate Sandstone

The Castlegate Sandstone is a formation consisting of massively bedded coarse-grained sandstone that formed in a braided fluvial depositional system. The Castlegate has been described as a formation that is sufficiently permeable to transport appreciable groundwater but the discontinuity of interbedded lithologies of mudstone, shale, and sandstone limit its ability to transmit water over significant distances. Therefore long, regional flow systems do not generally develop in the Castlegate Sandstone (Petersen 2010). Low discharge rates from springs and lack of water in some drill-holes and wells are further evidence that an extensive groundwater system is not present in the Castlegate. Ground-water systems that feed Castlegate springs are localized, and recharged on the plateau or outcrops. Spring discharge hydrographs show flow is strongly dependent on precipitation and snowmelt. Flow is localized, occurring at joints/fractures and intergranular spaces in weathered rock. Near cliff faces and along stream bottoms, the Castlegate Sandstone becomes friable and more able to transmit groundwater due to dissolution of carbonate cement.

Blackhawk Formation

The upper Blackhawk Formation consists of fine- to medium- grained sandstones, interbedded with subordinate gray and black carbonaceous shale, with coal found mostly in the lower quarter of the formation. The Blackhawk formation deposition was part of a broad deltaic plain sequence with coal accumulating in coastal plain and shoreface environments. These sandstones are separated vertically and laterally by overbank and inter-deltaic deposits of shale and mudstone. Sandstone decreases towards the base of the Blackhawk and the sandstone units become even more separated and isolated. Swelling clays throughout the Blackhawk decrease the effectiveness of fractures as conduits for water. Because of the lateral and vertical discontinuity of the sandstone horizons, the potential for movement of groundwater is limited in the Blackhawk Formation.

Mining operations are restricted to the lower Blackhawk Formation, where the main coal seam is the Upper Hiawatha, averaging approximately 7 feet thick and is known to directly overlay the Star Point Sandstone. The Upper Hiawatha coal seam is the coal to be mined in the WLM and Greens Hollow area. The Lower Hiawatha Seam is thick enough and is separated from the Upper Hiawatha by sufficient interburden to allow it to be mined in the western portion of the Quitchupah tract. The Duncan Seam, above the Upper Hiawatha, is of minable thickness

over only 50 acres, so it is not economical to mine. Overburden thickness over the Upper Hiawatha ranges from approximately 600 feet to 2,500 feet and averages 800 feet. Large areas where coal seams have burned and fired the rock to resistant, reddish clinker are exposed in the canyon walls. The Blackhawk Formation is well exposed in the cliffs of Convulsion Canyon.

Star Point Sandstone

The Star Point sandstone is described as an interbedded sandstone, siltstone and shale deposited in a near shore beach environment. The thickness of the Star Point Sandstone averages about 280 feet and is found throughout the lease area. The lower portion of the formation inter-tongues with the underlying Masuk Member of the Mancos Shale. Groundwater flow in the Star Point Sandstone is primarily transported through joints and fractures.

Mancos Shale, Masuk Member

The Masuk Member of the Mancos Shale is described as a blue-gray fissile claystone or silty claystone that weathers to a light blue-gray to light tan. The unit forms steep, barren, easily erodible slopes. The Mancos shale is a deep marine shale unit considered to be a confining layer due to its poor water transmitting properties due to its high clay content.

Structure

There are no major disconformities. Dip is approximately 2° to the northwest due to the rise of the San Rafael Swell located to the southeast. North-south oriented faults are common in the Wasatch Plateau. At least 200 feet of offset on one of these faults formed the closed basin that holds Accord Lakes, located 6 miles southwest of the SUFCO Mine. Lisonbee Spring issues from this fault. Offsets on bounding faults of the Joes Valley graben lies only a few miles east of the SUFCO Mine and approach 1,000 feet.

Neither Spieker (1931), Doelling (1972), nor Thiros and Cordy (1991) mapped any faults within the CIA between the Accord Lakes fault and Joes Valley graben. A group of ten echelon normal faults have been mapped between East Spring Canyon and Duncan Mountain: vertical offsets are indicated on Plate H-II of Appendix 7-2 of the MRP as being greater than 2 feet. Another group of parallel faults, located north of Duncan Mountain, is shown between the South and North Forks of Quitchupah Creek on Plate 6-1: the basis for mapping these faults is unknown but is assumed to be photo geology. Two short faults mapped near the head of Box Canyon were encountered in the mine, but may not show at the surface. Strike of all these faults is approximately N 25^{0} W to N 30^{0} W. Major faulting has not been identified in the Greens Hollow area (Petersen, 2010).

Most faults within the SUFCO Mine have displacements of less than a foot, but a fault encountered near Duncan Draw had 16 feet of displacement (oral communication from Chris Kravits, mine geologist, reported by both Thiros and Cordy (1991), and Mayo and Assoc. (1997)).

Fractures measured in the SUFCO Mine strike generally N 26 ^{0} W. Fractures observed in the Castlegate Sandstone, Blackhawk Formation, and Star Point Sandstone are oriented N 20 ^{0} W to N 27 ^{0} W, and strongly influence surface drainage development. Orientation of a secondary set of fractures, measured at a Castlegate Sandstone outcrop centered on N 65 ^{0} E (Thiros and Cordy, 1991). Joints in the Castlegate Sandstone are common and can be traced up to approximately 1,000 feet in length.

CLIMATE

In the Quitchupah/Muddy Creek CIA, temperatures are elevation dependent and range from 32^O to 90^O F in the summer and –10 ^{O} to 40^O F in the winter. Prevailing winds are from the west and northwest. Annual precipitation ranges from 10 inches per year at lower elevations to more than 20 inches per year at higher elevations. Approximately half of the total annual precipitation falls during localized thunderstorm events from July through November (Thiros and Cordy, 1991).

The Palmer Hydrologic Drought Index (PHDI) indicates long-term climatic trends for the region. The PHDI is a monthly value generated by the National Climatic Data Center (NCDC) that indicates the severity of a wet or dry spell. The PHDI is computed from climatic and hydrologic parameters, such as temperature, precipitation, evapotranspiration, soil water recharge, soil water loss, and runoff. Because the PHDI takes into account parameters that affect the balance between moisture supply and moisture demand, it is useful for evaluating the long-term relationship between climate and groundwater recharge and discharge. The Quitchupah/Muddy Creek CIA straddles the boundary between PHDI Regions 4 and 7 and is near Region 5. Figure 1 shows the PHDI for 2000 through 2017. Overall, the area has been experiencing mild-moderate wet spells up to moderate-severe drought conditions since 2000.

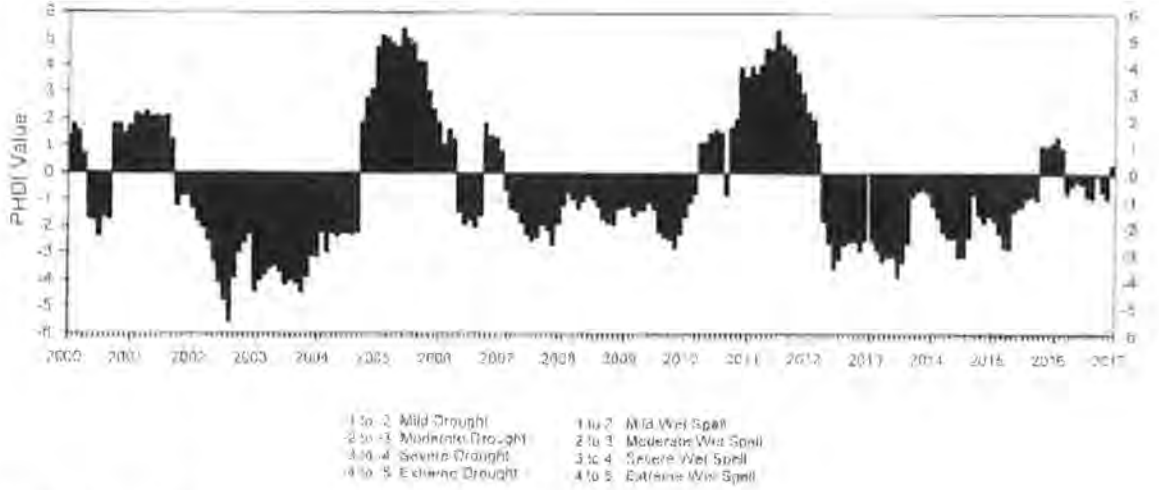


Figure 1 - PHDI, Division 4

REGIONAL AQUIFER

Regional aquifer is a phrase commonly used by mine operators in the Book Cliffs and Wasatch Plateau coal fields. In such usage, regional aquifer usually refers to any water found in the Star Point Sandstone and Blackhawk Formation irrespective of quality, quantity, use, storage, flow and transport, and discharge. In preparing this CHIA, the Division has adhered to the definition of aquifer as found in the Coal Mining Rules (R645-100-200), and the term regional aquifer has been deliberately used or avoided, as appropriate, throughout this CHIA. Although there are local perched and fracture-related aquifers in the Quitchupah/Muddy Creek CIA, the quality, quantity, use, storage, flow and transport, and discharge of groundwater do not indicate the presence of a regional aquifer or aquifer system. Continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. After evaluating the geologic and hydrologic evidence, the Division does not consider the saturated strata in the Starpoint, Blackhawk and associated formations in the CIA to be a regional aquifer.

Sedimentology and Transmissivity

In sedimentary rocks, there is a wide range of textures or fabrics that determine the hydraulic characteristics of the unfractured medium. These textures or fabrics are related to the mineralogy or composition of the sediments, the range of sizes of the sedimentary particles (sorting), the spatial distribution of different sediment-sizes (grading), the shape and spatial orientation or arrangement of the sediment particles after compaction (packing), cementation, and properties acquired or altered as and after the sediments were lithified. Lateral and vertical variations in these characteristics can create internal low-permeability zones or barriers resulting in formations with limited storage capacity or low hydraulic conductivity. Such vertical and lateral heterogeneities are common within the sandstone units of the CIA.

The hydrogeologic conditions within formations in the CIA are summarized below.

North Horn Formation consists of groundwater flow within shallow sandstone paleochannels, under perched conditions. Groundwater flow is largely constricted to these paleochannels due to the pervasiveness of low-permeability shales that limit vertical and horizontal movement of water. Recharge of the North Horn Formation occurs in the western adjacent reaches of the CIA in sandstones present at or near the surface. Groundwater flow in the unit increases locally due to bedrock fracturing. This unit has not been identified as a significant aquifer. Transmissivity for the North Horn Formation on average is 10 ft2/day.

Price River Formation consists of individual fluvial sandstones (paleochannels) capable of transmitting water. Due to the lenticular geometry of sandstone units and the presence of low-permeability shales throughout the formation, groundwater flow is restricted and does not typically transmit laterally and vertically in the formation. The restricted vertical flow creates perched zones and springs appear at higher topographic positions. Recharge is limited due to the

poor vertical groundwater transmitting properties of the overlying North Horn Formation. This unit has not been identified as a significant aquifer. The springs discharging from this formation are seasonal, climatically driven. Transmissivity averages for the Price River Formation averages 0.8 ft2/day.

Castlegate Sandstone overlying the Hiawatha seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. Recharge and storage in the Castlegate is most readily available at surface exposures. For instance, in the Pines area, recharge to springs in the Box Canyon tributaries is derived primarily from the area within 1,000 feet of canyon rims. These surface exposures create more storage and greater hydraulic conductivity from the widening and increased fracturing from canyon erosion. In areas where the Castlegate is overlain by other formations, the interbedded mudstone drapes limit recharge and groundwater flow in the formation. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers, therefore permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate qualities discharged. The formation is not considered to be a significant regional aquifer as the groundwater occurrence within the Castlegate Sandstone is limited to isolated perched zones contained in permeable sandstone lenses, within weathered bedrock, or fractures/joint systems. Transmissivity averages in the Castlegate Sandstone ranges from 0.003 to 0.02 ft2/day.

Blackhawk formation underlies the Castlegate Sandstone and is the unit which contains the mineable Hiawatha coal seam. Recharge to the Blackhawk appears to be downward percolation from the Castlegate Sandstone. The Blackhawk Formation contains layers of low-permeability rock units, such as shales and clays that may impede downward movement of groundwater. Therefore, some springs and seeps found in the CIA issue from the base of the Castlegate Sandstone due to the possible perched effect caused by the Blackhawk Formation. Groundwater flow within the Blackhawk typically occurs along fractures, and springs and seeps may appear at sandstone lens outcrop areas. Groundwater encountered in the underground workings is said to be primarily at working faces, associated with faults, fractures, and roof bolt holes. It has been noted that water inflow rates, initially less than 5 gpm, decrease as mining progresses. This indicates that mining is likely dewatering perched, isolated zones of limited areal extent. This unit has not been identified as a significant aquifer. Transmissivity averages in the Blackhawk Formation ranges from 2.0 to 100 ft2/day.

Flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. There exists a bounding impermeable layer below the Blackhawk that separates the Starpoint formation. Based on slug tests and determinations from core samples, hydraulic conductivity of the Star Point Sandstone is typically low. Transmissivity averages in the Starpoint ranges from 2.0 to 100 ft2/day. The movement of groundwater through unfractured Star Point Sandstone is slow and generally not considered to be an aquifer. However, hydraulic conductivity values within the Star Point Sandstone vary several orders-of-magnitude where fractured units exist, enabling local transmission of groundwater in sufficient quantities to sustain small springs or wells. The CIA is underlain by the largely massive, unfractured Star Point Sandstone.

*All transmissivity values are represent values taken from parts of the formation supplying water to a well, not the full saturated thickness of the unit. Overall, "aquifers" typically have hydraulic conductivities of 10^{-5} cm/sec or greater. The formations above the Star Point Sandstone have hydraulic conductivities that are generally as low as or lower than those in the Star Point Sandstone.

Swelling Clays

Groundwater is not readily recharged by groundwater contained within the overlying strata of the Castlegate, Price River, or North Horn formations.Strata with limited surface exposure in the Mesaverde Group receive limited recharge from overlying formations because they are interbedded with low-permeability claystones and siltstones. Large volumes of these rocks may be unsaturated or even dry. Generally, sandstone aquifers occur where there is sufficient intergranular porosity and permeability in lenticular fluvial-channel and tabular overbank deposits. However, in th CIA, the sandstones are laterally and vertically discontinuous, pinch-out over short distances, and individual sandstone units are poorly interconnected, becoming isolated by claystones and siltstones. It is however feasible for these sandstones, especially where fractured, to produce significant groundwater flows from local systems. For instance, in many of the areas of the CIA, the surface exposure of sandstone units and fractures provides a mechanism for groundwater to recharge the Castlegate Sandstone.

Movement of water is also impeded by the presence of swelling clays in the formation of the Wasatch Plateau. The interbedded claystones, siltstones, and sandstones of the Wasatch Plateau are rich in swelling clay minerals of the montmorillonite or smectite group. Swelling clays absorb water and expand to as much as 150 percent of 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 result from subsidence. Genwal Resources, Inc. examined six shale and siltstone samples from the Blackhawk Formation in the East Mountain region of the Wasatch Plateau, located approximately 25 miles northeast of the Quitchupah/Muddy Creek CIA. The samples were analyzed by X-ray diffraction and cross-polarized light microscopy. The samples contained 3 to 34 percent of smectitic clays, with an average of 24 percent. Siltstones and shales in the Castlegate (three samples) averaged 19 percent smectitic clay, and the Price River Formation (three samples) averaged 15 percent smectitic clay. Non-swelling clays, which also inhibit ground-water flow, constituted an additional 1 to 6 percent of the rock volume (Crandall Canyon Mine MRP, App. 7-41).

HYDROLOGY

As part of the SUFCO mining and reclamation plan (MRP), SUFCO has implemented a baseline and operational surface- and ground-water monitoring program for their permit and adjacent areas. Several studies have been conducted within the CIA in order to assess hydrologic conditions and potential effects due to coal mining in the area. These studies include Thiros and Cordy, 1991; Mayo and Associates, 1997; Mayo and Associates, 1999; Pines Tract Final Environmental Impact

Statement, 1999; Cirrus Ecological Solutions, 2004; Surface and Groundwater Technical Report Greens Hollow Coal Lease Tract, 2014; Petersen Hydrologic, 2005, 2010, and 2017. Information presented in these studies is used to describe baseline hydrologic conditions for the CIA.

Groundwater

Groundwater systems identified in the Quitchupah/Muddy Creek region are either of shallow, meteoric origin water, or deep, ancient origin water. The North Horn, Price River and Castlegate formations are shallow, subject to recharge from meteoric water. Once recharge enters the ground, the rate and direction of groundwater flow is governed mainly by geology. Lateral groundwater flow dominates in the gently dipping Tertiary and Cretaceous strata of the Wasatch Plateau, where layers of low-permeability rock that impede downward movement are common. Both lateral and vertical flow may be channeled through faults and fractures, but plastic or swelling clays that can seal faults and fractures impede movement. Ground-water movement is controlled mainly by fractures, dip of the beds (dip is approximately 1 - 2 degrees to the northwest) and the hydraulic conductivity of the strata.

Shallower groundwater systems in the CIA are more weathered and have hydraulic conductivities that are typically larger than deeper groundwater systems. Groundwater flow occurs in a stair-step pattern, moving laterally and downward as porosity and permeability allow. Where groundwater intersects the surface, groundwater discharges as a spring or seep, enters a stream as baseflow, or is transpired by vegetation. Some groundwater infiltrates deeper and enters slower flow-paths where it enters storage and becomes largely isolated from the surface. Deep groundwater systems in the CIA are largely in massive units, with water moving along joints and fractures in the bedrock. The lateral and vertical continuity in deep groundwater systems is greatly limited from interbedded low-permeability layers.

Numerous springs and seeps have been identified by the various studies conducted within the CIA. Fifty-three springs have been selected to be monitored as part of the SUFCO Mine groundwater monitoring program. The springs were selected as representative of the permit and surrounding area from baseline data and information provided in the PHC determinations of the SUFCO MRP (Appendices 7-17, 7-18, 7-19, 7-20, 7-24, 7-26, 7-28). The monitored springs are identified with their respective stratigraphic units on Table 3. The springs identified included both the shallow and deep groundwater systems. All springs were monitored for analytical geochemistry. Typically, shallow or meteoric groundwater systems have different chemical and isotopic signatures than deep or ancient groundwater systems. A generalized ground-water quality data summary of the CIA is presented in Table 5. More springs and seeps appear along northeastern escarpments, which is consistent with the concept of groundwater following the northwestern dip slope.

Average total dissolved solids (TDS) concentrations for springs in the CIA range from 140 to 749 mg/L. Average TDS concentration reported for mine water discharged at UPDES outfall 003 is approximately 777 mg/L. The higher TDS concentration for mine water is likely due to the longer residence time of water encountered in perched aquifers with minimal direct

communication with surface-water recharge zones. In contrast, TDS in springs of the Castlegate Sandstone, average under 200 mg/L. The waters are under saturated with respect to carbonate minerals, which along with the low TDS, indicates that recharge takes place where soil zone CO_2 is low. This is most likely the exposed, relatively barren Castlegate Sandstone surface of the Old Woman Plateau with extensive surface exposure and poor soil development. Ground water from springs that issue from the Blackhawk Formation are similar to those from the Castlegate. Most of these springs are in the upper Blackhawk. Ca^+ and HCO_3^- are the dominant ions in both the Castlegate and Blackhawk. TDS levels in ground waters flowing from the overlying North Horn, Price River, and the Star Point Formations are higher, averaging greater than 550 mg/L. Dominant ions in these formations are Na^+ and HCO_3^- in the North Horn, Na^+, HCO_3^- and SO4 in the Price River, and Ca^+ and HCO_3^- in the Star Point. Calcite and clay minerals with exchangeable sodium (cation exchange processes) probably produce sodium enriched water (Thiros and Cordy, 1991). Overall, the waters are of mixed composition, no ions dominating consistently. There is some indication of seasonal variation in the North Horn, Price River, and Castlegate Formations.

Wells WRDS-B3, WRDS-B5, WRDS-B6, WRDS-B8, and WRDS-B9 monitor water quality at the waste rock disposal site (WRDS). They are completed in the upper Price River Formation. TDS concentrations are high, averages in the different wells ranging from 1,700 mg/L to 6,200 mg/L. TDS concentrations increase down gradient beneath the WRDS, a condition that predates construction of the site.

Only a small amount of water-quality data has been collected from the other wells around the SUFCO Mine because they are primarily intended for monitoring water levels.

Surface Water

Quitchupah and Muddy Creeks, both perennial streams, are the two major drainages in the CIA. East Spring, Greens, Box, and Wash Rock Canyons, and Wileys Fork are the source of small perennial, intermittent or ephemeral streams that feed Quitchupah and Muddy Creeks (Plate 4 and Table 4). The small draws that feed these canyon streams are numerous and some originate as springs, which continue to flow perennially, but most often filter into the surrounding channel deposits. Most springs on the CIA emit low volumes.

Muddy Creek is a major drainage with flows that vary climatically, with peaks in May or June from springtime snowmelt and baseflow conditions in the late fall and winter. Discharge typically ranges > 100 cfs to < 10 cfs. Flow can exceed 500 cfs during wet years. Releases from reservoirs in the headwaters can impact discharge rates. A gain/loss study on Muddy Creek was conducted. The study found no appreciable or statistically significant change in discharge rates.

Quitchupah Creek Drainage is in the southern portions of the Greens Hollow Tract. The majority of the tract is within the North Fork of Quitchupah Drainage. The North Fork of Quitchupah flows across the Flagstaff Limestone, North Horn and Price River. The South Fork of Quitchupah flows across the Castlegate and Blackhawk Formation. The discharge is seasonally variable with peaks during spring snowmelt and in late fall.

Snowmelt is the major source of water for the perennial streams of the Quitchupah and Muddy Creek. Intermittent and ephemeral tributaries are abundant, existing primarily at lower elevations where potential evapotranspiration exceeds precipitation. Intense summer thunderstorms may cause short-term flooding, but not large volumes of runoff.

All surface monitoring sites are listed in Table 7. In addition to Table 7, monitoring includes three UPDES sites and stock pond sites. Two UPDES sites, 001 and 002, are located in East Spring Canyon and a third, 003, is located in the North Fork of Quitchupah Creek. Stock pond monitoring is located within and adjacent to the Pines, Quitchupah, and Greens Hollow Tract.

The following streams within the SUFCO permit area are considered perennial:

North Fork of Quitchupah Creek as measured at SUFCO-007 and SUFCO-042;

South Fork of the North Fork of Quitchupah Creek as measured at SUFCO-006;

Quitchupah Creek as measured at SUFCO-041 and SUFCO 046;

Box Canyon as measured at stations SUFCO-090, Pines 403, and Pines 407;

East Fork of Box Canyon as measured between stations Pines 106 and 408;

Cowboy Creek as measured at station M-STR4; and

Muddy Creek as measured at stations Pines 405 and Pines 406.

Water use in the higher elevations of the Muddy Creek drainage basin is primarily for wildlife and stock watering purposes, although they tend to be low yielding springs and streams. The upper watershed provides most of the domestic water needs for the lower valley. The lower valley area also used water for agricultural. Minimum flows in the gauged streams and rivers in the basin occasionally reach zero. During warm snow melts and heavy rain storms, erosion causes streams to become loaded with sediments, especially in the lower reaches with sparse vegetation and hillside exposures of the Blackhawk Formation and Mancos Shale.

Storage reservoirs are common at higher elevations, however, there are no major reservoirs located within the CIA. Three reservoirs are located adjacent to the CHIA boundary: 1) Julius Flat Reservoir (approximately 725 acre-feet) located northwest of the CHIA, 2) Skutumpah Reservoir (less than 500 acre-feet) located west of the CHIA; and 3) Accord Lakes (less than 500 acre-feet) located southwest of the CHIA.

Soil cover varies with slope. However, soils are generally not cultivated due to their thin nature, shortage of irrigation water, and a short growing season. Residual and colluvial soils are present at the mine surface facilities in East Spring Canyon, including soil types O, W, T, and X. There are areas on top of Pines Tract that are bare or contain only a few sparse inches of soil,

exposing the surface and fracture pattern of the Castlegate Sandstone. Overall, soils in the CIA are generally shallow, consisting of sand and silty sand loams with high percolation rates, with shallow silty soils appear on the milder slopes and shallow sand-gravel alluvium in the channel bottoms.

Groundwater/Surface Water Communication

Mayo and Associates have proposed a hydraulic disconnect between in-mine waters and near-surface ground water based on data from isotopic evaluation. Dr. Allen Mayo is considered a leading authority on isotopic dating of water resources by mining operators, and has identified the ground-water regimes of several mines on the Wasatch Plateau. Studies conducted by his firm are specialized. Analysis of the groundwater by Mayo and Associates using tritium analysis and carbon dating reveals the mine waters to be very old (greater than 7,000 to 20,000 years) as compared to meteoric waters that replenish the near surface waters (Mayo and Associates, 1999, and FEIS, 1999). "The cause of this disconnect is attributed to shale and mudstones in the Blackhawk Formation that hinder the downward migration of water" (FEIS, 1999). Dr. Mayo has concluded, "ground-water should not be diverted from the Castlegate Sandstone into the Blackhawk Formation".

Tritium analysis measures the amount of atmospheric tritium present in the groundwater, as a result of atomic weapons testing that occurred in the mid-20th century. Carbon-14 measurements estimate the number of years that have elapsed since the water was recharged. Used together, an estimate of origin (meteoric or ancient) can be learned. Compositions of spring and in-mine groundwater have different attributes. In-mine groundwater and springs emanating from faults have very low, near zero tritium concentrations and residence times of approximately 500 to 20,000 years. Meteoric springs have tritium concentrations ranging 5-15 TU.

Carbon^{14} and 3H analysis was conducted on spring samples in the CIA. Analysis of SUFCO 047, which discharges from the Starpoint Sandstone below the surface facilities in East Canyon indicated a Carbon^{14} result indicative of a 7,300 year residence time of the groundwater, and tritium of 0.1-0.2 TU. Spring 057A, discharging from the North Horn formation, yielded a high tritium result indicative of modern-aged groundwater. Isotopic analysis has been completed throughout the CIA, including sites in the Greens Hollow and Muddy Tract. Findings are summarized in the MRP (Appendix 7-28). The findings distinctively separate the isotopic concentrations of near-surface water (meteoric) and water encountered in-mine (ancient). The distinction supports the limitations of natural communication between surface and groundwater systems.

Mine Inflow

Mean residence time ("age") of groundwater in the Pines, SITLA Muddy Tracts, WLM, and Greens Hollow have been determined using Carbon^{14} (radiocarbon dating) and tritium (^{3}H). Most near-surface systems contain abundant tritium and anthropogenic radiocarbon and are recent or modern, the greatest mean residence time being 4,000 years according to radiocarbon

dating. Ground waters in the mine have a mean residence time of 7,000 to 20,000 years and contain little-to-no tritium. From these data, Mayo and Associates determined that the near-surface ground-water systems are disconnected from ground-water systems encountered in the mine, abundant shale and mudstone of the Blackhawk Formation hindering the downward migration of water.

Most water entering the mine comes through inflows from perched water in the mine roof and occasionally through mine floor seeps. As the mine-face progresses, it has been noted that in-flows decrease or cease once perched water drains. However, some leaks remain or become seeps and continue to contribute to the mine inflow. Underground mining activities in the Greens Hollow Tract area will likely intercept ancient or "in-active" groundwater systems from overlying sandstone channels and possibly intercepted fault/fracture zones. Mining activities will likely dewater these ancient perched systems as it has in other areas of the SUFCO mine. Using isotopic age dating, these systems have been demonstrated to be in poor natural hydrologic communication with the overlying active groundwater system. It is important to note that the subsurface environment will be altered by mining. Therefore, potential exists for communication pathways, between the near-surface and deep systems, that are not currently evident in the natural environment, to develop in the future when mining commences. However, using evidence from previously mined areas in the SUFCO mine, the depth of overburden, geologic structure, no-subsidence mining buffer zones, and the mineralogic composition of the overlying rock layers, this potential for surface water impacts in the Greens Hollow Tract are considered minimal.

Mine Discharge

Movement of water within the mine is managed by sumps, pumps and piping, free flow along the mine floor, and storage into gob areas for settlement. Water not used in the mine or lost to evaporation is discharged to the North Fork of Quitchupah Creek through UPDES permitted outfall 003. (Before September 1982, mine water was discharged into East Spring Canyon.) Daily average discharge rates for each month are reported to the Division and Utah Division of Water Quality (DWQ). Figure 2 shows the monthly average discharge of the SUFCO mine from 2002 through 2010. Average discharge in 1978 was about 200 gallons per minute (gpm). In September 1987, measurements above and below the discharge site revealed a mine discharge rate of 461 gpm. In 2017, the mine is reporting a discharge of approximately 3,200 gpm, or approximately 7.13 cubic feet per second (cfs). Mine discharge rates have increased along with production rates and to a lesser extent, the size of the mine (Table 4 and Figure 3). Discharge has increased the base flow to the North Fork of Quitchupah Creek. This increase is artificial and will cease with reclamation.

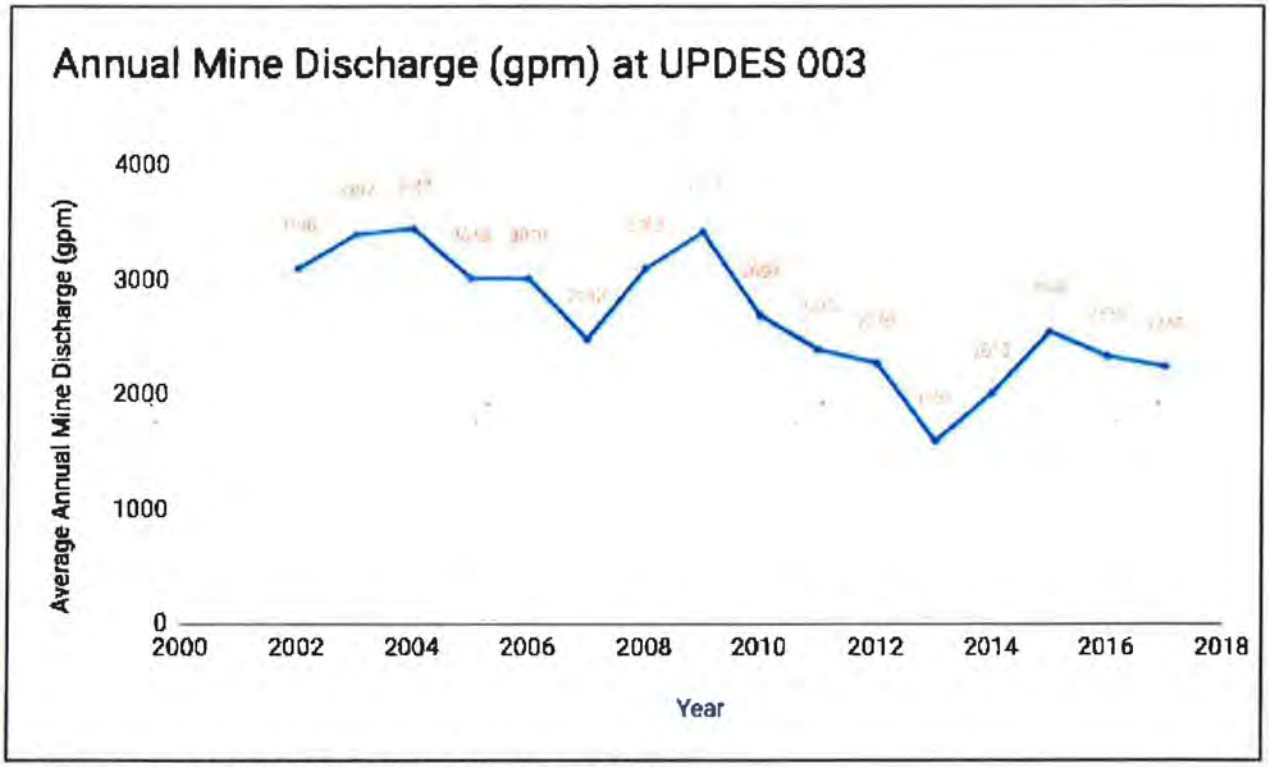


Figure 2 – SUFCO Mine Water Discharge History
Discharge data from SUFCO DMRs

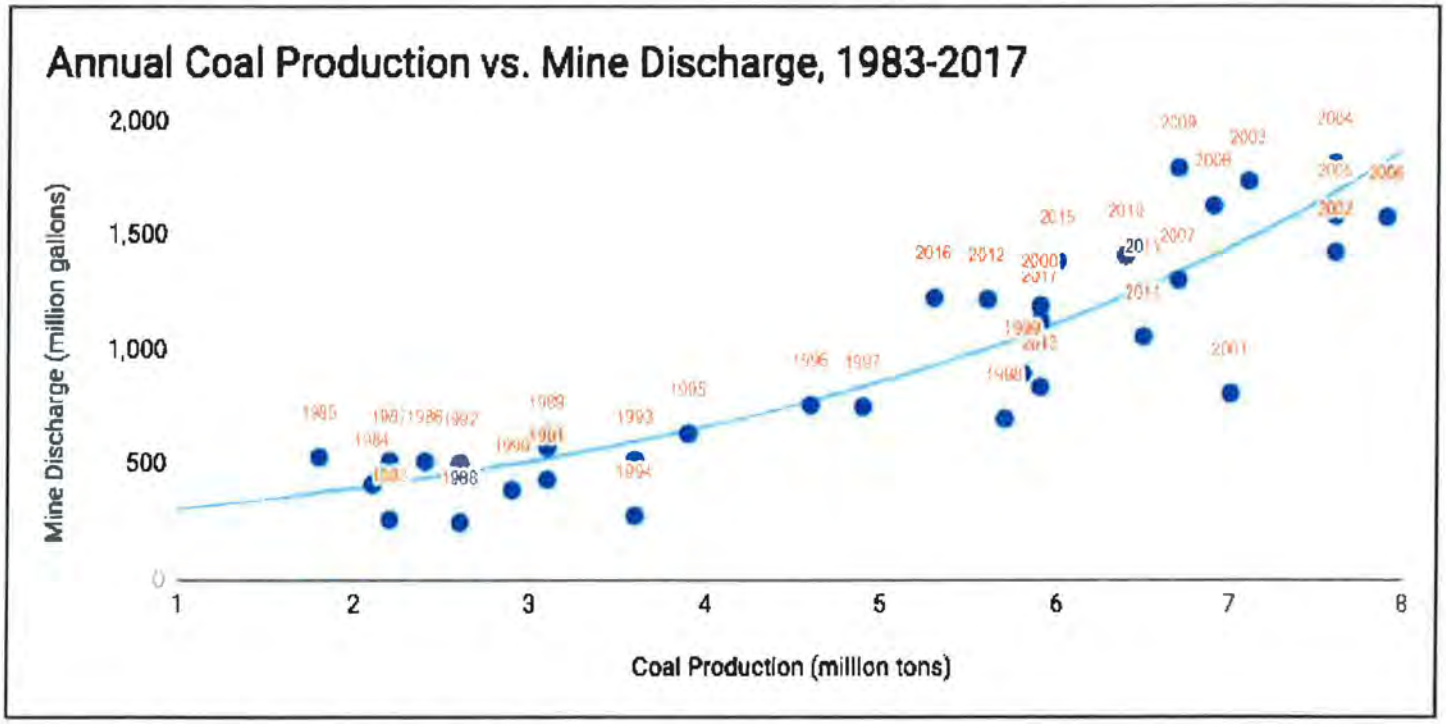


Figure 3 – SUFCO Mine Water Discharge vs Coal Production

WATERSHEDS

The subdrainage volumes for the Quitchupah Creek and Muddy Creek watersheds are listed on Table 6. Descriptions of the larger subdrainages are presented below.

Quitchupah Creek Drainage

1) East Spring Canyon

East Spring Canyon drainage consists of 5,316 acres. SUFCO's mine and surface facilities are located at the confluence of Mud Spring Hollow and East Spring Hollow. Approximately ½ mile below the facilities, East Spring Canyon connects with Convulsion Canyon. Convulsion Canyon runs southeast and connects with Water Hollow to form the main channel of Quitchupah Creek.

Construction of the mine facilities required extensive cut and fill operations. The average channel gradient of East Spring Canyon is 6.7 %, and 13 % through the facilities area, therefore the out slope of the mine pad is very steep. The sedimentation pond sits at the toe of the fill. All disturbed drainage is collected using berms, culverts, and ditches. Runoff from the disturbed area is first run to a sediment basin on the pad to allow sediment and coal fines to settle and to skim any trapped oils. Disturbed drainage overflowing the basin runs through a culvert to the containment sedimentation pond, and discharged in accordance with UPDES discharge permit requirements.

Undisturbed drainage is routed around the disturbed area using berms, ditches, and culverts. A 60-inch culvert transports streamflow from Mud Spring Hollow and East Spring Canyon downstream, under the mine pad.

2) North Fork of Quitchupah Creek

The North Fork of Quitchupah Creek drainage consists of 15,212 acres. The North Fork of Quitchupah Creek is a perennial stream that flows in a deep canyon, bisecting the Quitchupah Lease. Dry Fork enters Quitchupah Canyon from the northeast at the approximate midpoint of the canyon. The Main Fork of Quitchupah Creek enters the canyon from the upper reaches to the west. The Blackhawk Formation forms the steep canyon walls and the Castlegate Sandstone forms the canyon rim.

Thiros and Cordy (1991) conducted a seepage study that identified flow patterns in the North Fork of Quitchupah Creek canyon. During the study, upstream flow gained over a short distance in the Price River Formation. Through the Castlegate Sandstone, flow showed a gradual increase. The creek loses flow in the upper Blackhawk Formation and had minor gains in the lower part of the Blackhawk formation. Flow is substantially increased by the mine breakout discharge (UPDES 003). As flow continues downstream, the creek gains flow across the Star Point Sandstone and loses flow over the Mancos Shale. The continuous flows from the mine

discharge can be several times the normal flows during drier periods. The increased base flow can and likely has changed channel configuration. The baseline riparian information is not available to verify any changes, however potential changes include sediment and bank configuration, change (increase) in riparian zone, and more water for downstream users. Potential consequences when mining ceases include diminished channel flow and reversal of changes that have taken place.

3) Link Canyon

Link Canyon drainage is ephemeral and consists of 7,569 acres. SUFCO has constructed an electrical sub-station in the canyon to supply power for the Pines Tract operations. There are no discharges from the substation breakout and all runoff will be contained on site or treated by way of alternate sediment control measures, berms, and silt fences.

Link Canyon also contains the old Link Canyon Mine. Seepage issuing from the former mine portals has ceased upon SUFCO reopening the west portal as an emergency escape way, ventilation portal, and entry for electrical lines from the Link Canyon substation.

There are two springs in the upper end of the canyon, GW-21 and Pines 100 that are monitored by SUFCO and the Emery County Water Users. The spring flow is diverted into a trough for cattle, and then flows down the canyon. There is riparian vegetation for the first 100 yards of flow until it seeps into the channel.

Muddy Creek Drainage

8) Greens Canyon

Greens Canyon is a perennial drainage encompassing 5,878 acres. The drainage is split into the Greens Hollow and Cowboy Creek drainages north of the SITLA Muddy Tract and within the Greens Hollow Tract. Cowboy Creek is considered a perennial stream that drains the north side of Big Ridge.

Cowboy Creek flows over the Price River Formation at its headwaters and then cuts steeply into the Castlegate Sandstone and Blackhawk Formation before joining with Green Hollow. The creek flows across the northwest corner of the Pines tract. Maximum flow of Cowboy Creek was reported at 717 gpm during the spring of 2004 and baseflow during the fall ranges between 0 and 3 gpm. Average TDS concentration is reported at 364 mg/L.

Longwall mining is not anticipated beneath Cowboy Creek. The stipulations of the lease require a buffer zone of non-subsidence mining to occur under any perennial reaches of stream where the Castlegate Sandstone is < 50 feet from the surface. This includes Cowboy Creek. The creek will be undermined using non-subsidence extraction techniques such as room and pillar mining.

9) Box Canyon

The Box Canyon drainage encompasses 7,759 acres. The massive Castlegate Sandstone forms the consolidated rim of Box Canyon and Muddy Creek Canyon. The Blackhawk Formation is exposed in the bottom of the canyon below the boundary of the Quitchupah Lease. The surface rock forms near level outcrops that rim the area around to steep gorges of Box Canyon and Muddy Creek Canyon.

Ground-water chemistry analysis indicates spring recharge is likely primarily derived from flows in the Castlegate Sandstone. Therefore, spring recharge in the Box Canyon tributaries probably occurs within 1,000 feet of the canyon rims where the Castlegate Sandstone is exposed at the surface (FEIS, 1999, and Mayo and Associates, 1999).

The headwaters of the Main (west) Fork of Box Canyon are located in the Quitchupah Tract and the headwaters of the East Fork are located in the Pines Tract. Several springs are located in the forks of Box Canyon. More springs are located in the Main Fork of Box Canyon, which eventually flows into Muddy Creek. Most of the lower sections of Box Canyon Creek are perennial, but involve low baseflow volumes. The term "perennial functioning" has been used by the U.S. Forest Service to describe the upper reaches of the East Fork of Box Canyon where it is considered intermittent flow based on baseline monitoring of the PHC determination (Appendix 7-18 of the SUFCO MRP) and ongoing SUFCO water monitoring.

The perennial flows in the Main, West and East Forks of Box Canyon are allocated. Although the flows are generally low during the summer months, wildlife and cattle use the riparian and water resources. Water rights have also been issued on Muddy Creek, a receiving stream of Box Canyon. Vegetation communities are mapped on Plate 3-1 of the MRP. This map shows the riparian communities along both forks of Box Canyon Creek and Muddy Creek. In the West Fork of Box Canyon, seeps support some hanging garden communities of ferns, including one sensitive species, the Link Canyon Columbine. Muddy Creek and the lower portion of Box Canyon Creek support fish populations.

Longwall mining has been conducted in the Pines Tract Lease beneath portions of the East and West Forks of Box Canyon. Overburden above the stream channels ranges between 400 feet to a little over 900 feet. Areas where overburden is less than 400 feet were not mined by the permittee. The USDA Forest Service (USFS) initially stipulated in the Record of Decision (ROD) that areas under perennial streams would not be mined. However, due to constraints caused by a sandstone channel encountered during mining in the Pines Tract, SUFCO requested a permit to undermine perennial portions of the East Fork of Box Canyon. The permit was issued with concurrence of the Manti-La Sal Forest Service under the condition of implementing a monitoring and mitigation plan. The plan was implemented. Mitigation of surface water impacts were completed according to the North Water Spring Mitigation Plan outlined in Appendix 7-25 of the MRP. The plan is discussed in sections below in this CHIA.

10) Wileys Fork Canyon

Wileys Fork Canyon is an ephemeral drainage encompassing 1,625 acres located east of

the Pines Tract. Although part of the CIA, it has not been evaluated for hydrologic parameters. Coal mining in the Pines Tract shows the mine layout to end approximately ½ to one mile from the canyon. The mine workings are down-dip from the canyon. Hydrologic impacts to the canyon are unlikely.

11) Wash Rock Canyon

Wash Rock Canyon is an ephemeral drainage encompassing 1,390 acres and lies west and south of Wileys Canyon. Similar conditions exist as with Wileys Canyon, except the canyon is one to two miles away. No hydrologic impacts are expected to take place in the canyon because the SUFCO Mine does not extend into the canyons.

IV. IDENTIFY HYDROLOGIC CONCERNS

General hydrologic concerns include changes of flow rates and chemical composition that could physically affect the hydrologic balance. Changes to the existing hydrologic regime or balance need to be limited in order to prevent economic loss to existing agricultural and livestock enterprises, prevent significant alteration to the channel size or gradient, and maintain adequate capacity for existing fish and wildlife communities. The basis for the limiting value of a parameter may differ according to specific site conditions.

SUBSIDENCE

Subsidence impacts are largely related to extension and expansion of existing fracture systems and upward propagation of new fractures. Inasmuch as vertical and lateral migration of water appears to be partially controlled by fracture conduits, readjustment or realignment in the conduit system will inevitably produce changes in the configuration of ground-water flow. Potential changes include increased flow rates along fractures that have "opened", and diverting flow along new fractures or within permeable lithologies. Increased flow rates along fractures would reduce groundwater residence time and potentially improve water quality. Subsurface flow diversion may cause the depletion of water in localized ground water systems and potential loss of flow to springs.

Mining at the SUFCO Mine has been by both room-and-pillar and longwall methods, and both will be used in future mining. Surface cracks are common above the mine, especially in shallow overburden areas. Subsidence is probable above longwall panels, above second mining of room-and-pillar areas, and in areas within the estimated angle-of-draw. The angle-of-draw for the SUFCO Mine is 15 degrees. This estimate is based on the experience of past mining operations at SUFCO and other coal mine operations in the Wasatch Plateau.

East Fork of Box Canyon

The pre-mining conditions of the East Fork of Box Canyon were documented on video. The public can access these files via the Division Public Information Center (PIC). Effects from undermining the stream channel were observed shortly after mining. Approximately 60 percent of the surface flow was lost during the summer of 2004 from the mining of the 3LPE panel. Currently, the U.S. Forest Service owns the water rights on the springs in the Pines Area. Subsidence caused extension fractures and buckling due to compression within sandstone layers, allowing the stream to flow in the subsurface for distances of up to 200 feet before reappearing at the top of a shale outcrop at the bottom of the stream channel. Platey surface fracturing of sandstone bedrock was observed within the stream channel approximately 200 feet outside the 15-degree angle-of-draw. Subsidence-induced fracturing lowered the water table, resulting in several monitored springs, located in the canyon above the stream, to no longer discharge. Most of the subsidence damage was located within the Blackhawk Formation above the 3LPE panel. Subsidence-related damage above the 4LPE panel, within the Castlegate sandstone, was less extensive. Repairs were made to the surface fractures within the stream channel using hand tools and bentonite pellets. Loose rock was pushed aside and bentonite was used to seal fractures and channelize the stream. The repairs were successful. Monitoring of the impacted areas will continue until Phase III bond release.

The Pines 104 and Joes Mill Pond springs were undermined during the winter of 2005-2006 as SUFCO extracted coal from the 5LPE panel. In the spring of 2006, it was discovered that surface discharge from these locations had ceased. Spring discharge to the land surface from three springs in North Water Canyon also ceased (Pines 105, Pines 311, and Pines 310). Due to the effects of subsidence from longwall mining beneath the East Fork of Box Canyon, SUFCO developed a mitigation plan to compensate for the water loss. The North Water Spring mitigation area has been designated as an affected disturbed area (and included within the permit area) within the lease boundary (refer to Plate 4 – Hydrology Map). Details of the North Water Spring Mitigation Plan are discussed in Appendix 7-25 of the MRP.

The mitigation plan was implemented in part to maintain water flow to two troughs on the canyon rim and in the Joe's Mill Pond area. SUFCO installed two additional trough locations, one to the east and one on the canyon rim above the pump in the East Fork of Box Canyon. SUFCO constructed a system of water transport from Spring M-SP89 to the existing pump and piping system in the East Fork of Box Canyon. This provides the necessary water for the troughs by diverting 10-15 gpm from M-SP89, which has an average flow of 20 gpm. The system includes a solar pump, solar panels, and a coupled/fused 2" HDPE pipe waterline to deliver water to the troughs. Sufco will maintain this system for the life of the mine. Three years prior to cessation of mining, the hydrologic condition of the North Water area will be evaluated and a report will be compiled. At this time, negotiations for the long term liability of the system will be discussed. Downstream water rights have not been impacted and land use has remained unchanged after undermining, therefore, the Division concluded that no material damage has occurred. Furthermore, the United State Forest Service (USFS) requested additional mitigation activities for habitat improvement at another site. In an agreement between SUFCO and the USFS, SUFCO developed three projects in the Muddy Creek Watershed, including the

development of three additional water sources, and improvement of associated riparian vegetation. The projects, completed by end of 2017, have enhanced the conditions for wildlife, plant, and livestock communities in the Forest.

Cowboy Creek, Greens Hollow, Muddy Creek

Longwall mining is not anticipated beneath Cowboy Creek, Greens Hollow, and Muddy Creek. The stipulations of the Greens Hollow Tract lease require a buffer zone of non-subsidence mining to occur under any perennial reaches of stream where the Castlegate Sandstone is < 50 feet from the surface. This includes Cowboy Creek, Greens Hollow, and Muddy Creek. These reaches will be undermined using non-subsidence extraction techniques such as room and pillar mining. The potential for subsidence-related impacts is therefore low.

Stock Water Ponds

The Forest Service and cattlemen use and maintain several stock watering ponds located on Forest Service Land within the undisturbed area of the SUFCO permit area. The water rights to the stock watering ponds are owned by the Forest Service and used by cattlemen with leases to run cattle on the Forest Service land. Claims have been made by the Forest Service and cattlemen that surface cracking due to mining related subsidence within the Quitchupah and Pines Tracts have had impacts on some ponds. The Division investigated this issue in 2004 and 2005. Due to the lack of baseline data on the ponds and prevailing drought conditions in 1999 through 2004, it was not conclusive to the Division that the ponds had been adversely impacted. In order to mitigate the potential damage to the ponds, SUFCO has taken action by monitoring pond conditions, applying bentonitic clay seals to the pond floors, and hauling water in for livestock.

The lack of baseline to appropriately assess stock water pond impacts in the Pines and Quitchupah Tract prompted the development of a monitoring plan for future development. A monitoring plan, including the establishment of a baseline of stock water pond conditions, has been implemented for the Greens Hollow Tract. The monitoring will include twice yearly (spring and fall) collection at all ponds within and immediately adjacent to the tract. The information to be collected includes photographing each pond, observe the pond for evidence of cracking, estimate the depth and surface area of water contained in the pond, inspect the immediate drainage area for evidence of cracking, note general soil moisture conditions, note the general condition of the pond, determine the functionality of the pond, and determine the water holding capacity of each pond. The collection of this data will allow for thorough investigations of all claims citing impacts to stock water ponds.

GROUNDWATER

The greatest mining-related potential for impacting ground-water resources in the CIA comes from dewatering and subsidence. After conducting spring and seep surveys and baseline studies prior to mine permitting, representative springs and seeps are chosen for a mine's monitoring plan to aid in the determination of mining-related impacts to the hydrologic balance

and water rights.

Fifty-one springs and seeps are being monitored within and adjacent to the SUFCO Mine permit area. With the exception of several springs within the East Fork of Box Canyon, monitoring of springs for the SUFCO Mine has not identified any mining-related impacts and future diversion of spring flow is considered to be an overall low risk.

Water users have expressed concerns that water intercepted underground may be discharged into a watershed other than the one where the groundwater was originally destined. In particular, water users are concerned that water discharged by the mine into the North Fork of Quitchupah Creek originated from perched aquifers within the Muddy Creek watershed. According to the Utah Coal Mining and Reclamation Act and rules, a mine may divert water underground and discharge to the surface if material damage to the hydrologic balance outside of a permit area is prevented and disturbance to the hydrologic balance within the permit area is minimized (R645-301-731.214.1). Furthermore, any state-appropriated water affected by contamination, diminution, or interruption resulting from underground mining must be replaced (R645-301-731.530).

The Division evaluates a mine's Probable Hydrologic Consequences Determination (PHC) and updates the CHIA prior to permitting, and reviews water monitoring data during mining and following reclamation to determine if adverse hydrologic impacts, as defined by the rules, can be demonstrated. Underground mining may result in some diversions of intercepted ground water into drainages that are not topographically within (above) the area where the water was encountered. The SUFCO PHC has demonstrated that water that is projected to be intercepted is mostly ancient and therefore, hydrologically isolated from springs, seeps, and streams. Furthermore, groundwater quality is unlikely to be impacted by mining due to the depth of overburden and lack of groundwater communication. If it is subsequently demonstrated that the mining has caused or will cause a diminution, contamination, or interruption of an appropriated water right or a material impact to the hydrologic balance either within or outside of the permit area, the permittee will be required by the Division to address means of minimizing the impact and replacing any appropriated water rights.

It is not known how much water will be generated from the mine workings once mining stops. The current mine plan shows that the mine will be sealed. Ground water should back up behind the seals and fill the voids remaining from the collapsed mine. The mine is not expected to discharge after the life of the mine.

Dewatering

Using isotopic analysis, Mayo and Associates (1999) have identified that the waters from the mine workings are older than waters from springs located in the North Horn, Price River, and Castlegate Sandstone. They concluded that water in the Blackhawk Formation is disconnected from that of the overlying formations. However, substantial fracturing is taking place due to subsidence, with fractures generally extending 60 times the mining thickness. The mining thickness in the SUFCO mine area ranges from 9 to 15 feet. Surface vertical displacement above

longwall mining caused by subsidence is approximately 5 to 6 feet. Rock fracturing can propagate long distances vertically and laterally, affecting aquifers and surface-water sources. In areas where overburden is greater than 800 feet, as in the Greens Hollow Tract, impacts to groundwater-driven springs are considered minimal.

On-going water monitoring will provide the information necessary to assess potential changes in the hydrologic balance within the cumulative impact area and potential material damage to the hydrologic balance outside the permit area.

SURFACE WATER

Increased discharge, especially runoff from disturbed areas, could alter flow volumes, water quality, and runoff and flood patterns in creeks. Mining in the SUFCO lease area will increase surface water discharge in North Fork of Quitchupah Creek due to mine discharge. When mining ceases, this mine discharge will no longer artificially increase streamflow volumes. Mining is not expected to permanently increase discharge of surface or groundwater beyond current levels. Creeks and drainage areas discussed are shown on Plate 4, Hydrology Map.

The SUFCO Mine uses the best technology currently available to prevent additional contributions of sediment to streamflow. SUFCO utilizes various sediment control techniques, including disturbed and undisturbed area diversion channels, sedimentation ponds, containment berms, silt fences, and road diversions and culverts. All sediment control measures have been designed to meet the applicable effluent limitations, and minimize erosion to the extent possible.

Subsidence could affect the character of drainages by altering the natural slope of the channel. However, large-scale impacts are unlikely because of the thick overburden (typically projected to be from 600 to 2,500 feet thick between the mine operations and the surface drainages). With the exception of the East Fork of Box Canyon, full extraction mining is not planned under any perennial reaches of streams within the CIA.

The potential for cracks to divert water underground may be limited by the self-healing characteristics of the formations, which consist of interbedded claystone, siltstone, and sandstone that are rich in montmorillonite clays. Fractures at the surface are prone to heal due to the expanding or swelling nature of these clays. However, the time for fractures to heal may vary widely. Material from the Blackhawk Formation was examined by X-ray diffraction and found to contain up to 58 percent montmorillonite clays (Crandall Canyon Mine MRP, App. 7-41). These clays absorb water and their volume can expand as much as 50 percent even when they are associated with other soil and rock materials.

Thirty-eight stream sites are being monitored within and adjacent to the SUFCO Mine permit area. With the exception of a temporary increase of flow and increase of TDS concentrations for the East Fork of Box Canyon Creek, monitoring of streams for the SUFCO Mine has not identified any mining-related impacts and future diversion of stream flow is considered to be an overall low risk.

V. IDENTIFY RELEVANT STANDARDS

RELEVANT STANDARDS

The CHIA is based on the best currently available data and is a prediction of mining related impacts to the hydrologic balance outside of the specific permitted coal mine areas. To verify that conditions remain within acceptable limits, the mine operator is required to monitor water quality and quantity as part of the permit requirements. The plans for monitoring are set forth in the Mining and Reclamation Plans (MRP) for the SUFCO Mine and have been determined adequate by the Division to meet regulatory requirements. If monitoring results show significant departures from the values established in the MRP and in this CHIA, or exceed UPDES discharge requirements, immediate remedial actions are provided for by SMCRA.

Water quality standards for surface waters in the State of Utah are found in R317-2, Utah Administrative Code (UAC). The standards are intended to protect the waters against controllable pollution. Waters, and the applicable standards, are grouped into classes based on beneficial use designations. The Utah Division of Water Quality of the Department of Environmental Quality has classified surface waters in the CIA as:

- 2B - protected for recreational uses except swimming,
- 3C - protected for nongame fish and aquatic life, and
- 4 - protected for agricultural uses.

Flow: There is no standard for flow neither in the SUFCO Mine permit nor in Utah water quality standards. At the SUFCO mine, UPDES discharge is recorded twice monthly. A flow limitation for the SUFCO Mine UPDES permit is not anticipated. Indirect standards for flow include potential changes to stream morphology, vertebrate and invertebrate populations, and water chemistry.

Oil and Grease: There is no State water quality standard for oil and grease. The UPDES permit limit for the SUFCO Mine is a daily maximum of 10 mg/L; It is required to collect one sample a month, either grab or composite, and perform weekly visual monitoring. A 10 mg/L oil and grease limit does not protect fish and benthic organisms from soluble oils, such as those used in longwall hydraulic systems. The UDWR recommends soluble oils be limited to 1 mg/L (Darrell H. Nish, Acting Director UDWR, letter dated April 17, 1989 to Dianne R. Nielsen, Director UDOGM).

Total Dissolved Solids (TDS) concentrations: Total dissolved solids is commonly used to indicate general water quality with respect to inorganic constituents. There is no state water quality standard for TDS for Classes 1, 2, and 3, but 1,200 mg/l is the limit for agricultural use (Class 4). The SUFCO Mine UPDES permit limits instantaneous TDS concentration to 1,200 mg/L, determined by two grab samples a month. The total amount of dissolved solids discharged from all SUFCO Mine operations is limited to 5 tons per day, determined by the twice monthly measurements of flow and TDS.

pH: Allowable pH ranges are 6.5 to 9.0 under the SUFCO Mine UPDES permit and State water quality standards for all Classes.

Total Suspended Solids (TSS) and Settleable Solids: There is no State water quality standard for suspended solids. Turbidity is limited to an increase of 10 NTU for Class 2A, 2B, 3A, and 3B waters and to 15 NTU for Class 3C and 3D waters. The SUFCO Mine UPDES permit allows a daily maximum 70 mg/L TSS, and 30-day average maximum of 25 mg/L. TSS is determined using two grab samples per month. Under the SUFCO Mine UPDES permit, all samples collected during storm water discharge events are to be analyzed for settleable solids. Samples collected from discharge, overflow, or bypass, during precipitation events not to exceed 10-year 24-hour storm, may comply with a settleable solid standard of 0.5 mL/L daily maximum instead, however TSS must still be determined. If precipitation event does exceed 10-year 24-hour storm, neither standard applies.

Iron and Manganese: The SUFCO Mine UPDES permit allows a daily maximum 1.0 mg/L total iron, assuming total and dissolved iron concentrations are nearly equivalent. Grab samples are taken twice monthly. The Division of Water Quality approves up to 2 mg/L total iron to be discharged under certain circumstances, including maintenance of dissolved iron concentrations at or below 1 mg/L. State water quality standards allow a maximum of 1,000 g/L dissolved iron in Class 3A, 3B, 3C, and 3D waters. No standard exists for Class 1, 2, and 4 waters.

Monitoring of total manganese is required by SMCRA and the Utah Coal Mining rules. No UPDES or water quality standard exists for total or dissolved manganese.

Macroinvertebrates: Macroinvertebrates serve as water quality indicators and can be used to evaluate the suitability of stream to support fish and other aquatic life. Baseline studies of macroinvertebrates provide standards to evaluate conditions in Box Canyon and Muddy Creek. Price and Plantz (1987) summarized macroinvertebrate data. Currently, no plans exist to monitor macroinvertebrate populations in the streams of the CIA.

Utah water quality standards exist for numerous additional parameters. At this time, no evidence exists that other parameters have reasonable potential to impact waters in the CIA. However, the parameters that have a reasonable possibility of affecting the hydrologic system are included in the routine water quality monitoring programs conducted quarterly by the mine operator. The review of monitoring results will aid in identifying concerns or impacts and if necessary, the Division will require revisions of mine operations to mitigate any issues.

Sediment is a common constituent of ephemeral stream flow in the western United States. The quantity of sediment in the flows affects stream-channel stability and use of water. Excessive sediment deposition is detrimental to existing aquatic and wildlife communities. Large concentrations of sediment in streamflow may preclude use of water for irrigation as fine sediment tends to reduce infiltration rates in irrigated fields. Also, excess sediment reduces

storage capacity at water facilities and damages pumping equipment. Mean sediment load is the indicator parameter for evaluating the sediment hazard on stream-channel stability and irrigation. Sediment load measurement error is, at a minimum, the same as the flow measurement error because sediment load is directly dependent on flow and in practice cannot be measured more accurately than the flow.

The concentration of dissolved solids is commonly used to indicate general water quality with respect to inorganic constituents. The quality of water from underground sources reflects the chemical composition of the rocks it passes through. That quality may be degraded by intrusion of poorer quality water from wells or mines, by leakage from adjoining formations, or by recharge through disturbed materials. Ground water discharging from seeps and springs is used by wildlife and livestock. The State standard for TDS for irrigation of crops and stock watering (Class 4) is 1,200 mg/L.

The Utah Department of Environmental Quality, Division of Water Quality can authorize a coal mine to discharge into surface waters under the Utah Pollutant Discharge Elimination System (UPDES). At the time this CHIA was prepared, the SUFCO Mine had applied for three UPDES permits, one to discharge from the planned sediment pond, a second to discharge from the treatment facility to East Spring Hollow, and a third to discharge from the mine to North Fork of Quitchupah Creek. No discharge emits from the Waste Rock Disposal Site sedimentation ponds as these sites have been designed for total containment.

The SUFCO Mine UPDES permit contains site-specific limitations on TDS, total suspended solids, total settleable solids (for discharges resulting from precipitation events), total iron, oil and grease, and pH. No limit exists for flow, but monthly measurements are required. Additionally, discharge must not include sanitary water, coal process water, or more than a trace amount of visible sheen, floating solids, or foam.

MATERIAL DAMAGE

Material damage to the hydrologic balance manifests as an economic loss to the current and/or potential future water users, a quantified reduction of the capability of an area to support fish and wildlife communities, or another adverse change to the hydrologic balance outside the permit area. The basis for determining material damage may differ within the CIA according to site specific conditions. Surface-water and ground-water concerns have been identified for CHIA evaluation.

Parameters for surface-water quantity and quality

The potential material-damage concerns include changes to surface flow rates and chemical composition that would physically affect off-permit stream channel systems as they presently function, aquatic and wildlife communities, and agricultural and livestock production. Water monitoring is intended to identify changes in the present discharge regime that may indicate economic loss to existing agricultural and livestock enterprises; a significant alteration to the channel size, or gradient; and a loss of capacity to support existing fish and wildlife

communities. In order to assess the potential for material-damage to these elements of the hydrologic system, the following indicator parameters were selected for monitoring at each evaluation site: low-flow discharge rate, TDS, and sediment load.

Several stock water monitoring ponds are located in the permit area. Surface cracking due to mining induced subsidence has affected a few of the ponds on the Quitchupah and Pines Tracts. SUFCO has tried to mitigate the fracturing by applying bentonite into the cracks and hauling water to livestock. SUFCO has committed to visiting the ponds to photograph them to establish any evidence of cracking, marking their depth, and noting general soil moisture conditions and pond condition. Due to the impacts observed in the Pines and Quitchupah Tracts, the surface water monitoring plan for the Greens Hollow Tract requires similar monitoring of all ponds within and immediately adjacent to the tract. The twice yearly monitoring of all stock water ponds will occur during wet (Spring) and dry (Fall) seasons. The information to be collected includes photographing each pond, observe the pond for evidence of cracking, estimate the depth and surface area of water contained in the pond, inspect the immediate drainage area for evidence of cracking, note general soil moisture conditions, note the general condition of the pond, determine the functionality of the pond, and determine the water holding capacity of each pond.

SUFCO has established a monitoring plan to collect water quality data for 41 surface water sites in the CIA. The monitoring plan meets the requirements of the state and federal regulations, and guidelines established by the Division. Flow monitoring data for the stream monitoring sites is presented in Table 7.

Low-Flow Discharge Rate

Measurements provided by mine operators include flow and long-term trends. In the Wasatch Plateau, Waddell and others (1981) correlated records of three years of low-flow volumes (September) at stream sites, with records from long-term monitoring sites. This relationship developed an estimate for future low-flow volumes at these stream sites, within a standard deviation of approximately 20%. Using ten or fifteen years of records reduced the standard deviation to 16-17 %, and 15 %, respectively. Therefore, a15-20% change in low-flow rates would likely go undetected. However, if projected and observed values of low-flow rates differ by greater than 20%, an evaluation of material damage may be needed. The Palmer Hydrological Drought Index (PHDI) should be used to determine climatological influences on low-flow rates.

Monitoring of low-flow discharge rates will also provide a means to evaluate effects of mine discharge on the receiving streams. SUFCO Mine discharge will be monitored at UPDES discharge points at the sediment pond and the direct discharge from the mine. The potential for material damage by mine discharge water on the North Fork of Quitchupah is tied to the effects of increased flow on the receiving streams.

Total Dissolved Solids (TDS)

The concentration of dissolved solids is commonly used to indicate general water quality with respect to inorganic constituents. Ground water discharging from seeps and springs is used by wildlife and livestock. Because wildlife and livestock use is the designated post-mining land use, established dissolved solids tolerance levels for wildlife and livestock have been adopted as the thresholds beyond which material damage may occur. The state standard for TDS for irrigation of crops and stock watering (Class 4) is 1,200 mg/L. If TDS concentrations persistently exceed 1,200 mg/L it will be an indication that an evaluation for material damage is needed. Historically, single samples from outfalls UPDES 003 (North Fork of Quitchupah Creek) and UPDES 001 (East Fork of Quitchupah Creek) have exceeded the 1,200 mg/L TDS threshold.

Sediment Load

TSS is the indicator parameter initially chosen for evaluating the sediment hazard to stream-channel stability and irrigation. Threshold values have initially been set as the greater of 1 standard error above the baseline mean TSS value or 120 % of the baseline mean TSS value (by analogy with the low-flow discharge rate measurement accuracy and assuming that the error in TSS will contribute equally to the error in flow when determining mean sediment load). If TSS concentrations persistently exceed these threshold values it will be an indication that evaluation for material damage from sediment load in the streams might be needed.

Parameters for groundwater quantity and quality

The potential material-damage concerns on groundwater sources include changes in the quantity and chemical composition of water to magnitudes that will:

- not cause economic loss to existing or potential agricultural and livestock enterprises;
- will not degrade domestic supplies;
- would not cause structural damage to water resources;
- will not cause impacts to the hydrologic balance

SUFCO has established a monitoring plan to collect water quality data for 53 ground water sites in the CIA. The monitoring plan meets the requirements of the state and federal regulations, and guidelines established by the Division. Flow monitoring data for the spring monitoring sites is presented in Table 3.

Seasonal flow from springs

Maintain potentiometric heads that sustain average spring discharge rates, on a seasonal basis, equal or greater than 80 % of the mean seasonal baseline discharge, in other words baseline minus 20 % probable measurement error. The 20 % measurement error is based on analogy with the accuracy of measuring low-flow surface discharge rates. A 20 % decrease in flows, determined on a seasonal basis, will indicate that decreased flows are probably persisting

and that an evaluation for material damage is needed.

TDS Concentration

The concentration of total dissolved solids is commonly used to indicate general water quality with respect to inorganic constituents. The quality of water from underground sources reflects the chemical composition of the rocks the water passes through. Ground-water quality may be degraded by intrusion of poorer quality water from wells or mines, by leakage from adjoining formations, or by recharge through disturbed materials. Wildlife and livestock use ground water discharging from seeps and springs, and those are the designated post-mining uses most likely to be impacted. There are no state-established groundwater quality standards for TDS. The state standard for TDS for irrigation of crops and stock watering (Class 4) is 1,200 mg/L. If TDS concentrations persistently exceed 1,200 mg/L, it will be an indication that evaluation for material damage is needed.

VI. ESTIMATE PROBABLE FUTURE IMPACTS OF MINING ACTIVITY

GROUNDWATER

Dewatering and subsidence related to mining have the greatest potential for impacting groundwater resources in the CIA.

Dewatering

Underground mining removes the support to overlying rock causing caving and fracturing of the overburden. In most mining areas it is unlikely that fractures will reach shallower perched groundwater because of the thickness of the overburden. However, in areas where fracturing is extensive, subsidence induced caving and fracturing can create conduits that allow groundwater to flow deeper into the subsurface or into the mine. In areas where the surface geology is thick North Horn or Price River Formation, subsidence induced dewatering is less likely. Dewatering caused by fracturing may decrease storage and ground-water flow to streams and springs (Figure 4). Water quality downstream from the mines could improve because water being discharged from coal mines in the Wasatch Plateau is often of better quality than natural spring flow or base flow.

Total ground-water storage above the Upper Hiawatha seam has not been calculated; however, the rate of current discharge with respect to the area mined indicates an extensive storage capacity. The SUFCO Mine is currently discharging approximately 3-4 million gallons per day. An average inflow calculation would not justify real hydrologic functions; however it could correlate the rate of discharge to area mined. The rate of discharge with coal production is shown on Table 4 and in Figure 3, which could provide a useable ratio; however, panel orientation and size variation within the mine may yield discrepancies. It is likely that

groundwater in the inactive Blackhawk Formation will be encountered and dewatered during mining. However, one important observed characteristic of groundwater that discharges to the mine workings from the Blackhawk formation is that there is no indication of seasonal variation, which may indicate that the source of the water is not dependent on climate. This provides a line of evidence that the groundwater in the Blackhawk formation is hydrologically isolated from modern-aged groundwater from the active system aquifer found in the upper strata.

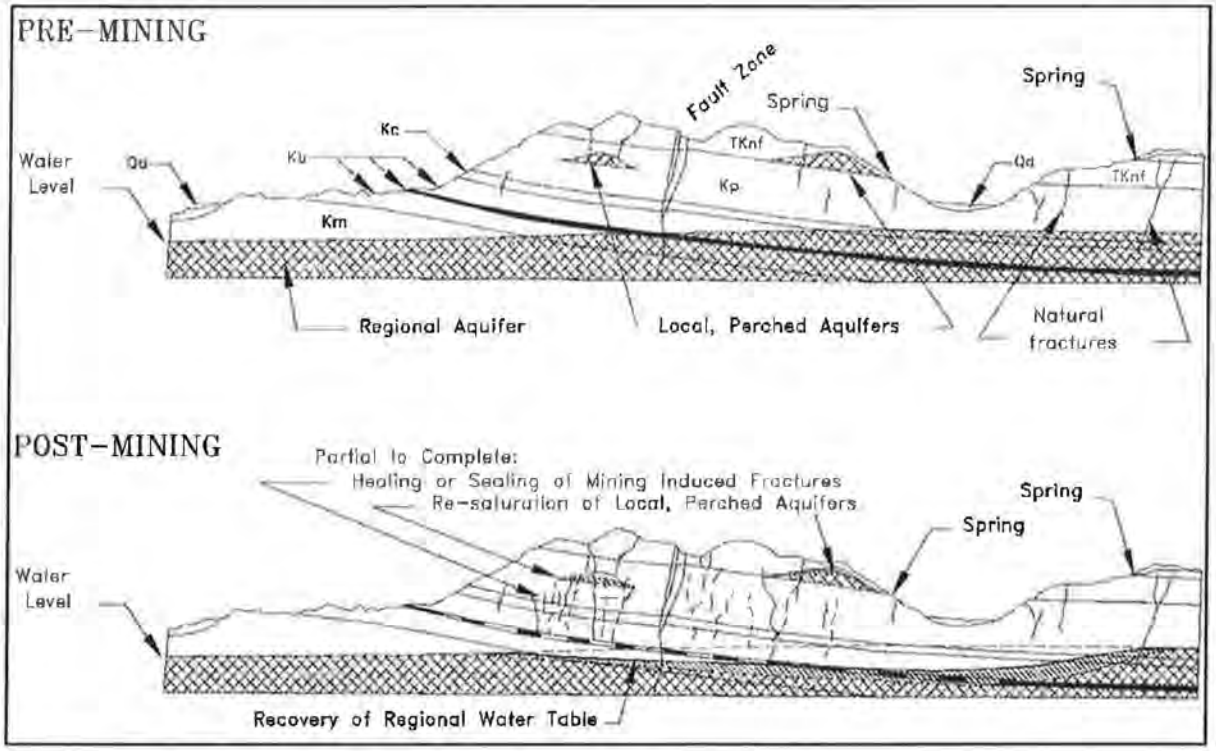
If impacts to springs and streams are identified, groundwater dewatering versus groundwater recharge will require further study.

Subsidence

Subsidence impacts are largely related to extension and expansion of existing fracture systems and upward propagation of new fractures. Inasmuch as vertical and lateral migration of water appears to be partially controlled by fracture conduits, readjustment or realignment in the conduit system will inevitably produce changes in the configuration of groundwater flow. Potential changes include decreased flow through existing fractures that close, increased flow rates along existing fractures that open further, and the diverting of groundwater flow along new fractures or within newly accessible permeable lithologies. Subsurface flow diversion may cause the depletion of water in locally saturated perched zones and loss of flow to springs that are undermined. Increased flow rates along fractures could potentially improve water quality by reducing groundwater residence time.

Subsidence surveys have been conducted at SUFCO Mine on an annual basis since 1988 using ground surveying supplemented with photogrammetric methods if needed. Annual subsidence reports are provided to the Division. Annual reports for 1988 through 2017 indicate extensive subsidence over the current SUFCO Mine permit area. The relatively moderate thickness of the overburden and the fracture system are major contributors to the amount of subsidence.

Mining in the Greens Hollow Tract is currently planned for the upper Hiawatha coal seam only, and overburden thickness will range 1000 to 2500 feet. The perennial reaches of Cowboy Creek, Greens Hollow, and Muddy Creek will be undermined using no-subsidence techniques. The potential for subsidence related impacts to water quantity in the Greens Hollow Tract are considered minimal.



SURFACE WATER

Changes in flow volume and in water quality have the greatest potential for impacting surface-water resources in the CIA. The monitoring plan should help identify variations in flow caused by mining. Monitoring is a benefit to both the public and the operator because it can identify and separate natural and anthropogenic variations to the environment or ecosystem. A good monitoring plan can provide the necessary data to establish mitigation or show the variations are following a natural sequence. The SUFCO surface water monitoring plan includes sufficient baseline information at high flow and low flow to detect changes to quality or quantity. Operational surface monitoring sites are sampled three times per year. Data is submitted to the Division's electronic database by the end of the quarter following the sampling. Surface-water monitoring will continue through the operational and reclamation phases until bond release.

Water Quality

The quality of the local surface waters can be affected by two basic processes. First, the runoff from the disturbed lands and waste piles could increase sediment concentrations and alter the distribution and concentration of dissolved solids in the receiving streams. This potential has been minimized using sufficient sediment controls. Also, the extent of surface disturbance is limited to the facilities in East Spring Canyon and the Waste Rock Site. The second potential cause of surface-water quality changes is related to the location and chemistry of ground-water

discharges, both from the mines and from springs and baseflow.

Water Quantity

Water not used in the SUFCO Mine or lost to evaporation is discharged to the North Fork of Quitchupah Creek through UPDES 003. Discharge rates have increased over the life of the mine, likely attributed to the increasing size of the mine. Ongoing monitoring will indicate total groundwater discharge due to mining.

Upon termination of mining operations, discharge of ground water from the SUFCO Mine will be discontinued and the mine will begin to flood. There will be a reduction in flow in the North Fork of Quitchupah Creek because of the loss of the mine discharge. The decrease in flow has potential to impact water users downstream who have relied on the artificially increased flows. The time required for mine flooding will depend not only on the rate of water inflow but also on the amount of caving and the void space remaining after caving. Complete flooding of the mine may never occur because flow out of the mine through the roof, floor, and ribs and into the surrounding rock will increase as flooding increases the hydraulic head within the abandoned workings. It is unlikely mine water will naturally discharge after the in-mine water management system ceases operation.

Stock pond monitoring will be completed for ponds within or adjacent to the Greens Hollow Tract and within the Pines/Quitchupah Tract. The development of baseline condition records will aid in the determination of potential mine-induced impacts in the event of public complaints. At this time, due to the extensive overburden, impacts to ponds are not anticipated.

ALLUVIAL VALLEY FLOORS

The Office of Surface Mining requires the following criteria to be evaluated in order to determine the presence or absence of alluvial valley floors in the western United States:

1. located in topographic valleys having an associated stream channel
2. underlain by unconsolidated deposits whose surface usually has the landform appearance of flood plains or terraces, and
3. have an agricultural importance derived from the availability of surface or groundwater.

The ultimate goal is to prevent surface disturbance to areas that have agricultural importance or to determine that regional water availability is not affected.

A negative Alluvial Valley Floors (AVF) determination has been made based on the studies conducted by Canyon Fuels Company, LLC for the approved SUFCO MRP. These studies have not confirmed the existence of unconsolidated stream laid deposits holding streams and sufficient water to support agricultural activities within the mine plan area.

VII. ASSESS PROBABLE MATERIAL DAMAGE

The probable hydrologic impacts are summarized below under the headings entitled Next Five Year Permit Term and Future Mining.

FIVE YEAR PERMIT TERM - SUFCO MINE

Planned operational monitoring will document any measurable changes in the surface- and ground-water systems. Surface disturbances and UPDES permitted discharges are not expected to degrade surface- or ground-water quality. There is no AVF to be impacted. Sediment control measures should continue to effectively prevent diminution of water quality in the receiving drainages.

Dewatering rates will likely increase due to more mine area being exposed. Previous dewatering trends have continued to increase as new mining areas have developed. Overburden thickness is 600 to 2,500 feet, and averages 800 feet in the CIA. However, surface manifestations of subsidence are still present where overburden is thin and the Castlegate Sandstone is close to the surface. Subsurface propagation of fractures may produce changes in flow that could affect local ground water systems and associated springs. Future monitoring will provide data applicable to documenting changes in the groundwater system.

Surface disturbance and the discharge of SUFCO Mine water have not significantly degraded water quality in East Spring Canyon. Sediment control measures such as those intended for use at the SUFCO Mine have served to reduce contaminants and stabilize water quality at acceptable discharge levels. The increase in discharge to the North Fork of Quitchupah increases water availability for downstream users, however, there is potential for long-term impacts to channel morphology and riparian vegetation. At the time when mining ceases, the sudden decrease in flow to baseline conditions may disrupt users downstream.

Mining in the Quitchupah Tract is ongoing and mining will begin in the Greens Hollow Tract beginning in Fall 2018. There will be no new surface disturbance for mining in either tract. A monitoring plan and mitigation for the North Water Spring impacts in East Fork of Box Canyon Creek is ongoing. The SUFCO Mine has been diligent at following their monitoring plan to date and have applied reasonable and effective mitigation efforts when needed. Stream channel repairs have returned surface flows, dry springs have likely diverted to other areas within the drainage, a water delivery system has brought water to the area of the Pines 310 and 311 seeps, and three additional water sources have been developed (along with the establishment of riparian vegetation). Monitoring of these mitigation efforts will continue through life of mining.

FUTURE MINING

Underground mining may result in some diversions of intercepted ground water into drainages that are not topographically within (above) the area where the water was encountered. If it is demonstrated that mining has caused or will cause a diminution, contamination, or

interruption of an appropriated water right or a material impact either within or outside of the permit area, the permittee will be required by the Division to address means of minimizing the impact and replacing any appropriated water rights. Evaluation of PHCs and the preparation of this CHIA do not indicate that there is any evidence that such impacts will result from the proposed mining in the Quitchupah/Muddy Creek CIA, and as a consequence, there is no reason to require operators to propose alternatives for disposing of the displaced water or other possible actions as part of the PAP.

Increased rates of dewatering may, in the future, result in depletion of groundwater storage. Depletion of storage may terminate certain spring flows and base flow recharge to streams. Upon cessation of mining, mine water discharge should cease, according to the current mine plan. As the mine workings flood, it is anticipated that ground water systems will return to pre-mining conditions. Drainage from future surface disturbance will be managed through appropriate sediment controls.

At the termination of mining, downstream potential AVFs will experience decreased flow. The duration and extent of this impact cannot be accurately assessed at this time. However, flow rates may be partially to fully restored when the groundwater system is reestablished by flooding of the abandoned mines.

The operational designs for the SUFCO Mine are determined, based on the information submitted in the mine plans and referenced literature, to be consistent with preventing damage to the hydrologic balance outside the mine plan areas.

Subsidence impacts to the Castlegate Sandstone has occurred in the Pines Tract during longwall mining activities in 2005/2006 causing springs that originate from the Castlegate Sandstone to dry up due to propagating fractures penetrating perching layers. The impacts from subsidence appears to have taken effect in areas where the Castlegate Sandstone is either exposed at the surface, or only a thin veneer of overlying Price River Formation rests on the Castlegate Sandstone. In the area of the WLM, precautions have been taken to avoid areas where similar conditions exist. For example Broad Hollow Spring, a developed spring fed by groundwater originating in the Castlegate Sandstone. The Castlegate is exposed at the surface in this area with no significant overburden cover. As a result, SUFCO plans to alter their mining plan to avoid longwall mining beneath the area where Broad Hollow Spring is located. Similarly, in the Greens Hollow Area, the lease stipulations require SUFCO to avoid longwall mining beneath the perennial reaches of Muddy Creek, Cowboy Creek, and Greens Hollow.

VIII. STATEMENT OF FINDINGS

Based on the information presented in this CHIA, the Utah Division of Oil, Gas and Mining finds that the proposed coal mining and reclamation operations of the SUFCO Mine including the Greens Hollow Tract have been designed to prevent material damage to the hydrologic balance outside the permit areas.

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VIIIII. TABLES

Table 1 Annual Production in thousand short tons SUFCO Mine	
Year	**Production**
2001	7,001
2002	7,600
2003	7,126
2004	7,568
2005	7,567
2006	7,908
2007	6,712
2008	6,946
2009	6,748
2010	6,600
2011	6,498
2012	5,650
2013	5,960
2014	6,539
2015	5,996
2016	5,375
2017	5,947
Estimated Recoverable Reserves Under Lease (2017)	59.7 million

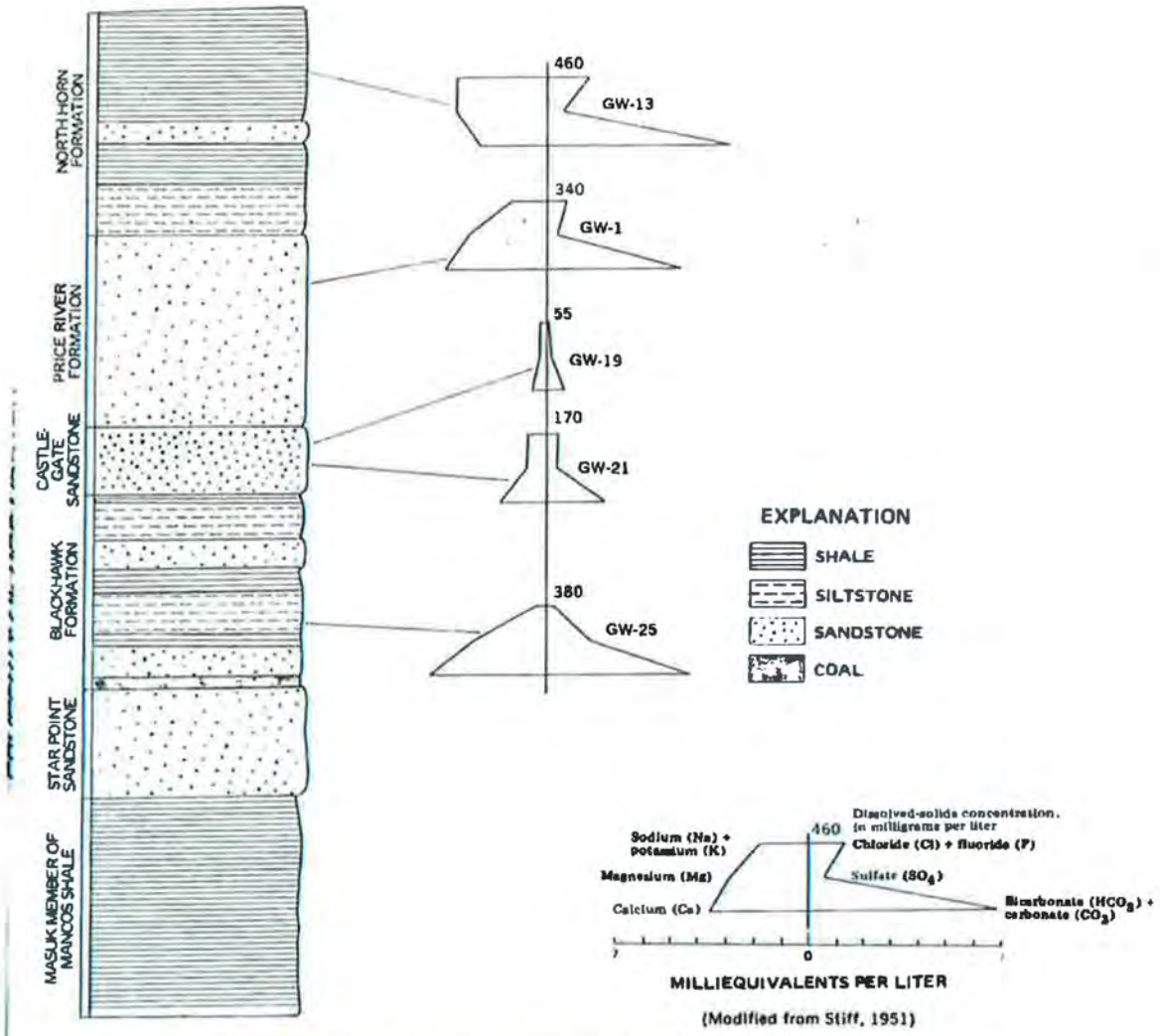


TABLE 2 -Generalized stratigraphic column for the study area and representative water-quality diagrams for selected units.

(Adopted from Thiros and Cordy, 1991)

Table 3
Spring Information – SUFCO Groundwater Monitoring Plan

Formation	Spring Name		Flow (gpm)			Monitoring Period	Notes
	SUFCO	USGS1	Average	Max	Min		
North Horn Formation	GW-13	GW-13	0.6	1.8	0.002	19861; 1989-19952; 1995-20176	
	Sufco 057A	GW-5	0.26	3.37	0	19781; 1987-19952; 1988-20176	Duncan Draw spring
	M-SP08		0.05	1.19	0	1980-20176	
	M-SP53		0.08	0.27	0.05	2006-20186	
	M-SP04		1.41	3.23	0.75	2001-2004, 2015-20177	
	M-SP05		0.14	0.26	0.08	2001-2004, 2015-20177	
	M-SP06		1.55	2.3	1.47	2001-2004, 2015-20177	
	M-SP09		0.3	1	0.25	2001-2004, 2011, 2015-20177	
	M-SP11		1.09	6.275	0	2001-2004, 2015-20177	
	M-SP12		0.65	0.94	0.26	2001-2004, 2015-20177	
	M-SP15		0.71	4.82	0.27	2001-2004, 2015-20177	
	M-SP19		2.35	3.13	1.98	2001-2004, 2015-20177	
	M-SP20		2.13	8.62	0.71	2001-2004, 2015-20177	
	M-SP40		0.24	0.66	0.18	2001-2004, 2015-20177	
	M-SP41		0.56	2.25	0.4	2001-2004, 2015-20177	
	M-SP44		2.35	13.03	0.2	2001-2004, 2015-20177	
	M-SP45		1.43	2.23	0.67	2001-2004, 2015-20177	
	M-SP60		0.56	0.69	0.6	2002-2004, 2014-20177	
	M-SP100		0.84	1.08	0.77	2002-2004, 2015-20177	
	M-SP103		1.07	1.51	0.94	2003-2004, 2015-20177	
	M-SP104		0.27	0.38	0.12	2003-2004, 2015-20177	
	M-SP105		0.66	0.95	0.62	2003-2004, 2015-20177	
	M-SP106		0.51	1.1	0.48	2003-2004, 2015-20177	
Price River Formation	M-SP01	GW-1	0.44	1.6	0.11	1976, 1979, 1986, 19871; 2006-200176	Rough Brothers spring
	M-SP02	GW-2	1.72	13.4	0	1976, 19871; 2006-200176	Estimated maximum flow
	M-SP18		0.25	0.77	0	2006-20176	
	M-SP39		1.04	2.71	0.22	2006-20176	
	Mud Spring		0	0	0	2007-20105, 2010-20176	
	M-SP87		1.55	3.08	2.19	2002-2004, 2009, 2014-20177	
	USP-2		0.38	0.43	0.35	2009, 20177	
	94-113 Seep		0	0	0	2012-20176	
	GW-8		1.32	1.98	0.61	2011-20176	
	GW-9		1.46	7.4	0.4	2011-20176	
Castlegate Sandstone	Sufco 089		10.9	17.05	5	1989-19952; 1997-20176	Pool with stage gage
	GW-20	GW-20	0.26	13.04	0	19861; 1998-20176	
	GW-21	GW-21	0.34	2.29	0	1979-19871; 1985-20176	Link Canyon spring
	Pines 100		0.23	0.96	0	1997-19993; 2000-20176	
	Pines 105		2.02	10	0	1997-19993; 2000-20176	
	Pines 218		0.01	0.1	0	1997-19994; 2000-20176	
	Pines 310		0.73	5.36	0	2006-20176	
	Pines 311		0.08	1.26	0	2006-20176	
	Wedge Spring		4	5.7	1	2012-20176	
	Amanda Spring		0.67	2.94	0	2012-20176	
Blackhawk Formation	Sufco 001	GW-12	1.31	7.32	0.16	1980, 1986, 19871; 1983-19952; 1982-20176	
	Pines 206	GW-14	1.83	3.87	0.75	19861; 1997-19993; 1999-20176	
	Pines 209	GW-15	7.24	14.6	3.78	19861; 19973; 2000-20176	
	Pines 212		4.29	8.7	2.24	1997-19994; 2000-20176	
	Pines 214		0.76	3.21	0.01	1997-19994; 2000-20176	Impacted by subsidence
	Pines 303		1.3	0.88	0	1997-19994; 2000-20176	
	Broad Hollow Spring		0.24	2.09	0	2007-20105, 2010-20176	
Star Point Sandstone	Sufco 047A		144.83	4488	0.04	1983-19952; 1982-20176	Pump House spring

Sources for monitoring periods: 1 = Thiros and Cordy, 1991; 2 = Mayo and Associates, 1997 (MRP Appendix 7-17);
3 = Mayo and Associates, 1999 (MRP Appendix 7-17, Addition);
4 = Mayo and Associates, 1999 (MRP Appendix 7-18);
5 = Cirrus, 2004 and Petersen Hydrologic, 2005, 2010 (MRP Appendix 7-20 and 7-24); and
6 = SUFCO water monitoring program (DOGM database).
7 = Cirrus, 2014 and Petersen Hydrologic 2017 (MRP Appendix 7-27 and 7-28)

Table 4 Annual Coal Production and Mine Water Discharge -- SUFCO Mine				
Year	Annual Coal Production (million tons)	Annual Discharge (millions of gallons)	Discharge per Coal Production (gallons/ton)	Notes
2017	5.9	1,128	191	
2016	5.3	1,227	231	
2015	6	1,388	231	
2014	6.5	1,059	163	
2013	5.9	838	142	
2012	5.6	1,221	218	
2011	6.5	1,258	193	
2010	6.4	1,414	256	
2009	6.7	1,797	268	
2008	6.9	1,630	236	
2007	6.7	1,305	195	
2006	7.9	1,582	200	
2005	7.6	1,586	208	
2004	7.6	1,816	239	
2003	7.1	1,738	244	
2002	7.6	1,427	188	
2001	7	810	116	
2000	5.9	1,193	202	
1999	5.8	897	156	
1998	5.7	699	122	
1997	4.9	753	152	
1996	4.6	760	164	
1995	3.9	636	163	
1994	3.6	276	77	March 1994 to March 1995 - substantial flow diverted to the 3rdWest area.
1993	3.6	518	146	
1992	2.6	505	196	
1991	3.1	434	141	
1990	2.9	389	135	
1989	3.1	576	188	
1988	2.6	247	94	
1987	2.2	515	231	November 1987 to August 1989 - flow underestimated because of a change
1986	2.4	513	217	
1985	1.8	533	299	
1984	2.1	412	192	
1983	2.2	259	116	

Discharge data from SUFCO DMRs

Table 5
Summary of Ground-Water Quality Data
SUFCO Mine

Formation	Tract	# of sites	# of samples	TDSmg/L	Ca+2mg/L	Mg+mg/L	Na++ K+mg/L	HCO3-mg/L	SO42-mg/L	Cl-mg/L	* Total Anions	* Total Cations
	Greens Hollow	19	276	463	77	29.5	88	470	20	34	9.06	10.1
	West Lease	1	20	322	92	14	12	326	11	14	5.97	6.26
	Quitchupah	NA	3	722	79	24	193	431	89	107	11.9	14.3
	Pines	0	0	-	-	-	-	-	-	-	-	-
North Horn	Muddy	5	25	483	58	36	92	491	24	39	9.65	9.86
	Greens Hollow	2	21	790	90	50	94	399	229	60	13	12.7
	West Lease	7	19	749	116	35	99	359	230	56	12.2	13
	Quitchupah	0	0	-	-	-	-	-	-	-	-	-
	Pines	0	0	-	-	-	-	-	-	-	-	-
Price River	Muddy	5	25	545	77	38	68	425	82	64	10.5	9.93
	Greens Hollow	1	0	-	-	-	-	-	-	-	-	-
	West Lease	2	44	264	48	15	27	208	12	17	4.14	4.8
	Quitchupah	NA	8	140	23	6	21	94	15	8	2.08	2.55
	Pines	7	19	163	21	5	9	85	13	9	1.92	1.85
Castlegate	Muddy	0	0	-	-	-	-	-	-	-	-	-
	Greens Hollow	0	0	-	-	-	-	-	-	-	-	-
	West Lease	0	0	-	-	-	-	-	-	-	-	-
	Quitchupah	NA	17	422	80	41	41	339	90	16	7.88	9.15
	Pines	9	24	305	56	29	24	273	82	14	6.57	6.22
Blackhawk	Muddy	0	0	-	-	-	-	-	-	-	-	-
	Greens Hollow	1	NA	-	-	-	-	-	-	-	-	-
	West Lease	1	50+	479	89	40	27	392	86	18	8.72	8.91
	Quitchupah	2	78	593	100	48	68	406	123	38	10.3	11.9
	Pines	0	0	-	-	-	-	-	-	-	-	-
Star Point	Muddy	0	0	-	-	-	-	-	-	-	-	-

* Total anions and total cations might not balance closely because this table is based on average values.
- = No data available or not applicable

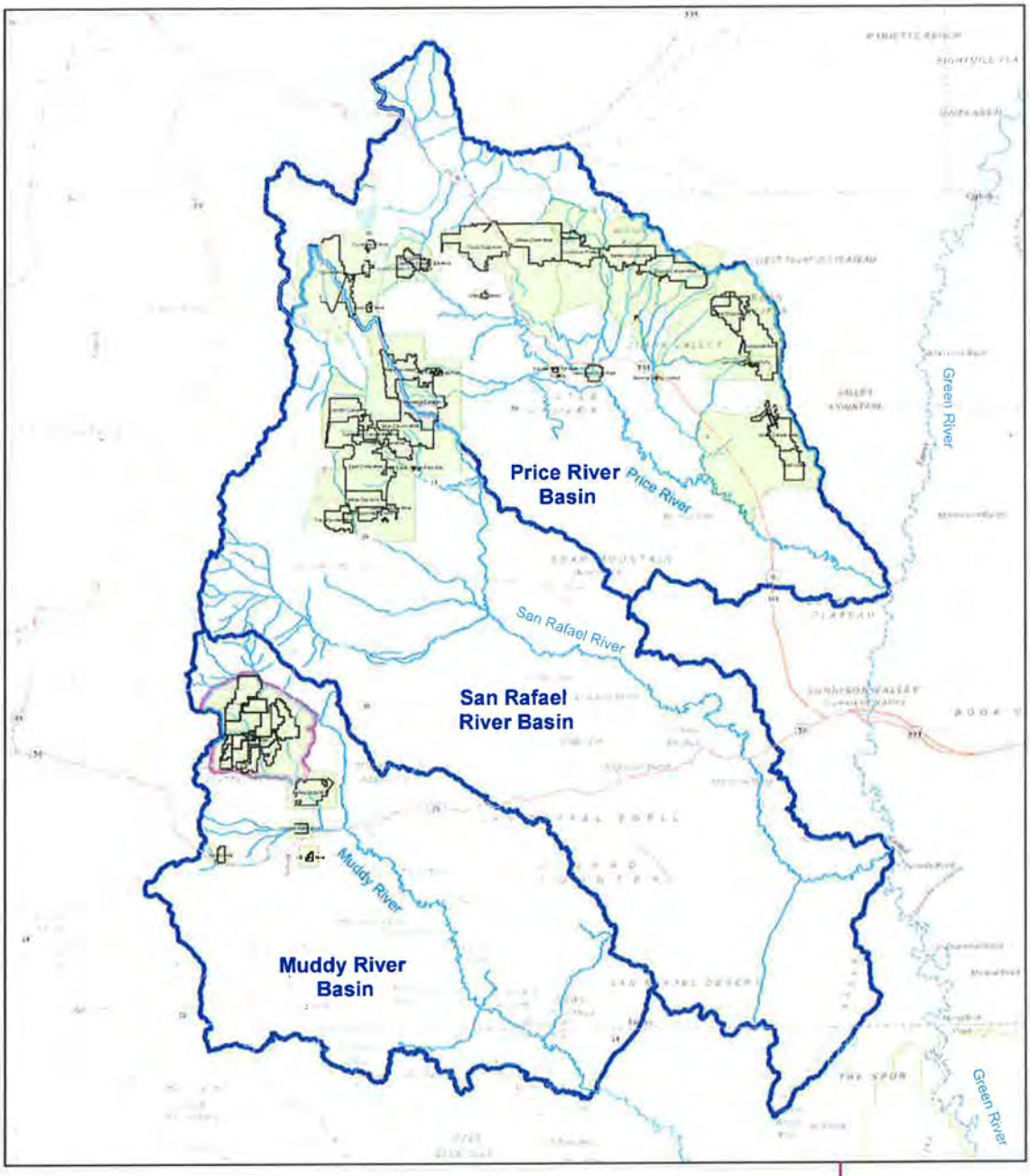
Table 6 Subdrainages of the Quitchupah/Muddy Creek CIA				
Number	Drainage	Square Meters	Acres	Square Miles
QUITCHUPAH CREEK WATERSHEDS				
1	East Spring Canyon	21,545,987	5,324	8.32
2	N. Fork Quitchupah	61,770,925	15,264	23.85
3	Link Canyon	30,921,703	7,641	11.94
4	Christiansen Wash	13,269,195	3,279	5.12
5	Quitchupah Creek Un-named Tributary	6,186,105	1,529	2.39
6	Quitchupah Creek Un-named Tributary	7,671,504	1,896	2.96
7	Quitchupah Creek Un-named Tributary	2,380,927	588	0.92
	TOTAL Quitchupah Creek Watershed	**143,746,946**	**35,521**	**55.5**
MUDDY CREEK WATERSHEDS				
8	Greens Canyon	23,540,156	5,817	9.09
9	Box Canyon	31,514,000	7,787	12.17
10	Wileys Fork	6,624,784	1,637	2.56
11	Wash Rock Canyon	5,663,696	1,400	2.19
12	Muddy Creek Un-named Tributary	15,818,553	3,909	6.11
13	Muddy Creek Un-named Tributary	8,760,269	2,165	3.38
14	Muddy Creek Un-named Tributary	1,691,910	418	0.65
15	Muddy Creek Un-named Tributary	5,362,570	1,325	2.07
16	Muddy Creek Un-named Tributary	2,135,364	528	0.82
	TOTAL Muddy Creek Watershed	**101,111,302**	**24,986**	**39.04**
	TOTAL CIA from Watersheds	**244,858,248**	**60,504**	**94.54**

Table 7
Stream Monitoring Locations
SUFCO Surface-Water Monitoring Program

SUFCO IDENTIFICATION		Elevation	UTMCoordinates		Flows in GPM			Monitoring Period	1 - SUFCO Mine monitoring data; 2 - Mayo and Associates 1993, 1995, and 1996 sampling reported in Mayo and Associates, 1997a 3 - SUFCO MRP 4 - UDOGM Database 5 - Petersen Hydrologic, 2005
			X - Coordinate	Y - Coordinate	Maximum	Minimum	No. of samples		
6	Upper South Fork Quitchupah	8560	463680	4312890	933.5	0.31	82	6/21/83 - present	1, 2, 2003
006D	Upper South Fork Quitchupah						16		
7	Upper North Fork Quitchupah	8240	464750	4315090	5772	44.9	83	6/21/83 - present	1, 2, 2003
41	Lower Quitchupah without mine water	6400	469100	4305400	3,110	0.2	87	4/20/83 - present	1, 2, 2003
42	Lower Quitchupahwith mine water	6350	468160	4305420	9,371	1.8	88	4/20/83 - present	1, 2, 2003
46	Middle Quitchupah above portal	7240	463520	4306430	358	0	83	6/22/83 - present	1, 2, 2003
047A	Lower East Spring Canyon	7160	464030	4306450	4,458	0.1	80	10/5/79 - present	3, 4
99	Box Canyon Creek at lease boundary	6320	469470	4316820	62.8	0	63	7/27/89 - present	1, 2, 2003
Pines 106	Upper East ForkBox Canyon	8200	471550	4316990	4	0.1	51	8/23/2000 - present	3, 4
Pines 303	Muddy Creek-Last Water Creek	7140	472140	4319900	33.7	0	51	1/6/2000 - present	3, 4
Pines 403	Lower Box CanyonCreek	7270	471500	4320000	248	26.6	51	1/6/2000 - present	3, 4
Pines 405	Muddy Creek- Box Canyon Confluence	7260	471480	4320110	7,854	14.1	52	8/21/2000 - present	3, 4
Pines 406b	Lower Muddy Creek	6870	474500	4318210	68,666	76	53	1/6/2000 - present	3, 4
Pines 407	Box Canyon Creek	7685	470430	4318320	162	38.4	68	1/6/2000 - present	3, 4
Pines 408	East Fork of Box Canyon Creek	7685	470530	4318330	38.4	0.1	65	1/6/2000 - present	3, 4
USFS 109	Upper Main Fork of Box Canyon Creek	8280	469680	4315590	0.2	0	52	8/12/1999 - present	3, 4
Link 001	Link Canyon Drainage	7780			0.2	0	42	06/06/2003 - present	4
Link 002	Link Canyon Drainage	7300			0	0	42	06/06/2003 - present	4
FP-1	East Fork of the Main Fork of Box Canyon Creek	8280 to 8360	470010	4315570	0.34	0	16	10/6/2000 - present	3, 4
FP-2	East Fork of the East Fork of Box Canyon Creek	8200 to 8260	471810	4316910	2	0	15	10/6/2000 - present	3, 4
M-STR01	Greens Canyon Lower	7482	469241	4320776	460	0	19	2001- 2004, 2017 - present	
M-STR04	Cowboy Creek	8164	NA	NA	717	0	33	2001 - present	3, 4, 2005
M-STR06	Top Greens Canyon	8170	467424	4319577	27.4	0	26	2001 - present	3
U-Mud	Confluence North & South Fork Muddy	7840	464739	4322438	43,960	4,057	12	2014 - present	3, 4
Cowboy Top	Top of Cowboy Creek	9175	483410	4318133	1.74	0	3	2017 - present	3
Cowboy Middle	Mid-segment of Cowboy Creek	8570	483984	4315255	12.1	2.23	3	2017 - present	3
Cowboy Bottom	Bottom of Cowboy Creek	8245	486562	4316577	1.41	0.51	3	2017 - present	3
SP60 Creek	Creek adjacent to Monitoring Point SP60	8620	462942	4316040	37.5	10.7	3	2017 - present	3
CPC Upper	Top of Tributary to North Fork Quitchupah	9010	463527	4316891	0.103	0	3	2017 - present	3
CPC Middle	Mid-segment of Tributary to North Fork Quitchupah	8500	463940	4315936	0.62	0	3	2017 - present	3
CPC Lower	Just above North Fork Confluence	8360	463978	4315204	3.6	3.05	3	2017 - present	3
North Fork Upper	Top of North Fork Quitchupah at lease edge	8990	462185	4316005	11.5	0.4	3	2017 - present	3
North Fork Middle	Mid segment of No Fork Quitchupah just above CPC confluence	8380	463973	4315256	10.3	0.4	3	2017 - present	3
ULGH	Upper Left Fork Greens Hollow Creek	8715	464277	4319327	12.8	0.8	3	2017 - present	3
URGH	Upper Right Fork Greens Hollow Creek	8660	464322	4319370	1.01	0	3	2017 - present	3
GH at Road	Greens Hollow Creek at Road Crossing	8380	465619	4319985	2.94	1.18	3	2017 - present	3
Muddy Creek below Horse	Muddy Creek below Confluence with Horse Creek	7510	487926	4322052	9620	4809	3	2017 - present	3
Muddy Creek above Horse	Muddy Creek above Confluence with Horse Creek	7500	487956	4322036	9030	3777	3	2017 - present	3
Horse Creek	Horse Creek at Confluence with Muddy Creek	7510	487938	4322054	4937	585	3	2017 - present	3

ABBREVIATIONS

AVF	Alluvial Valley Floor
BLM	Bureau of Land Management
BTCA	Best Technology Currently Available
CIA	Cumulative Impact Area
CHIA	Cumulative Hydrologic Impact Area
DWQ	Utah Division of Water Quality
DWR	Utah Division of Wildlife Resources
FEIS	Final Environmental Impact Statement
mg/L	milligrams per liter
MRP	Mining and Reclamation Plan
MSHA	Mine Safety and Health Administration
NTU	Nephelometric Turbidity Units
PAP	Permit Application Package
PHC	Probable Hydrologic Consequences
PHDI	Palmer Hydrologic Drought Index
ROD	Record of Decision
SITLA	Utah School and Institutional Trust Lands Administration
SMCRA	Surface Mining Control and Reclamation Act of 1977
SUFCO	Southern Utah Fuel Company
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UDOGM	Utah Division of Oil, Gas and Mining
UDWR	Utah Division of Water Resources
UDWQ	Utah Division of Water Quality
UPDES	Utah Pollution Discharge Elimination System
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WRDS	Waste Rock Disposal Site



Cumulative Impact Area Quitchupah - Muddy Creek

Plate 1

Location Map

April 2018

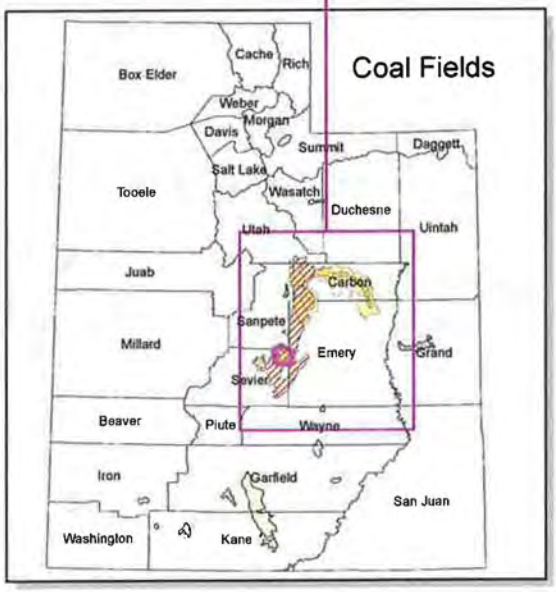
- Drainage
- Lease Area
- CIA Areas

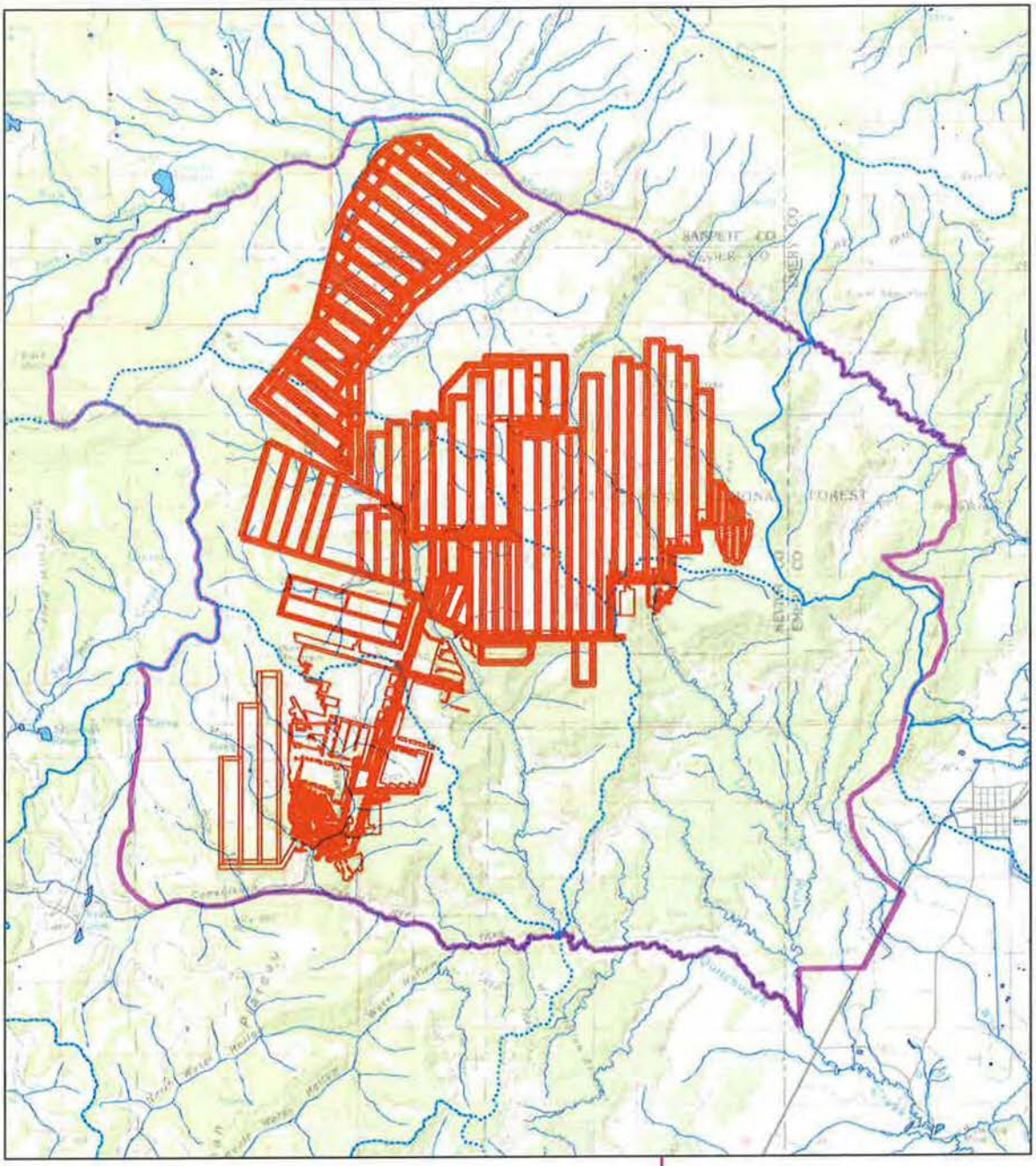
CoalBeds

- Book Cliffs
- Wasatch Plateau

- Utah Major Rivers
- Major_River_Basin
- Quitchupah - Muddy Creek
- County Boundaries

0 2.5 5 10 15 20 Miles





Cumulative Impact Area
Quitchupah - Muddy Creek

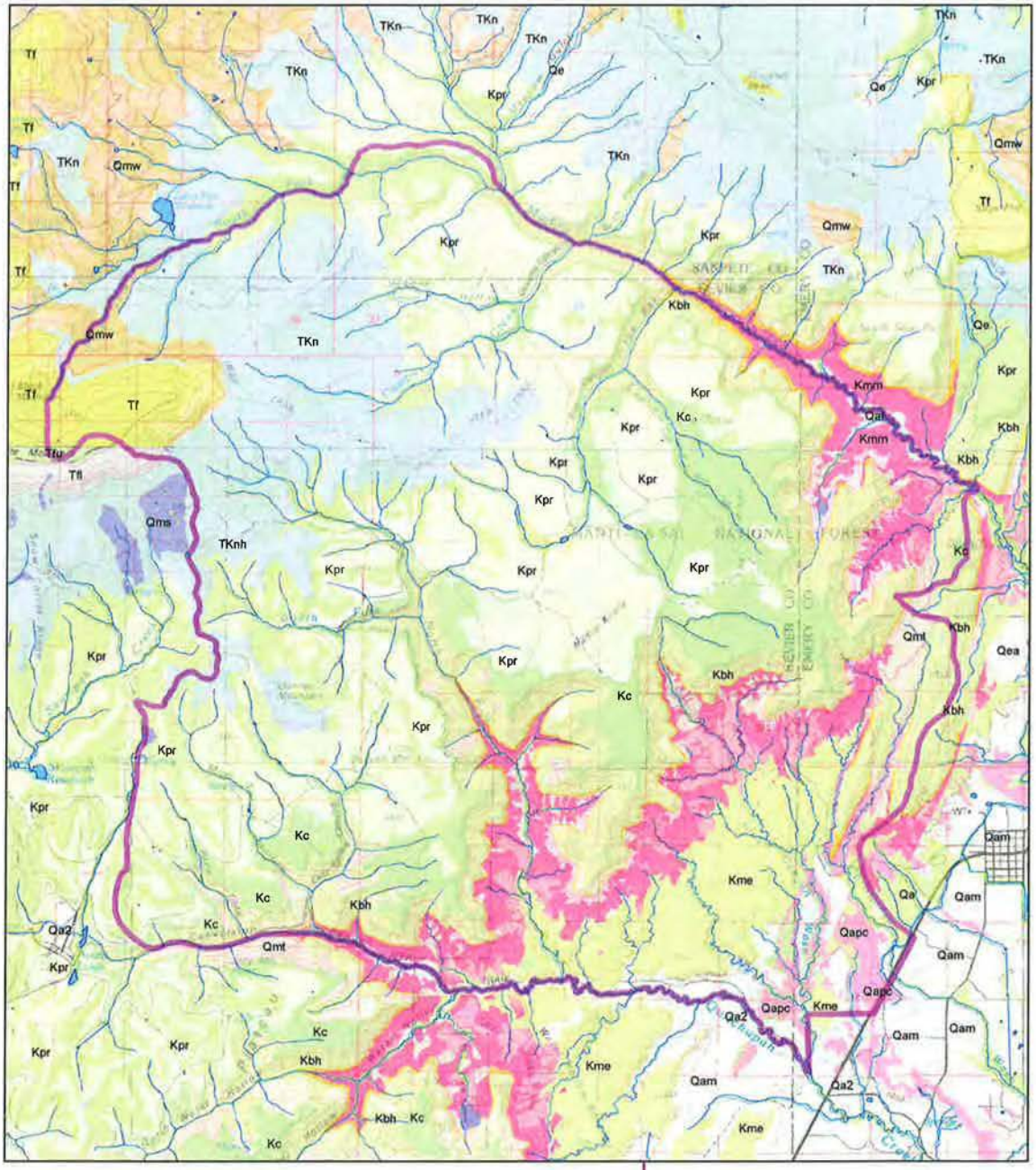
Plate 2

Workings Map

April 2018

- Drainage
- Watersheds_Area
- Waterbody
- CIA Areas
- Mine Workings

CIA Areas

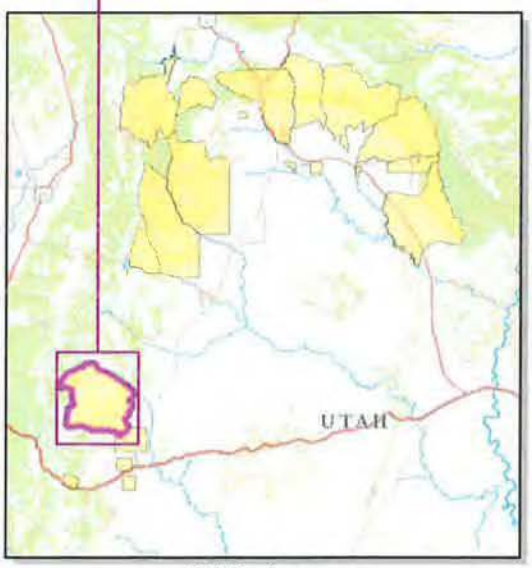


Cumulative Impact Area
Quitchupah - Muddy Creek
Plate 3
Geology Map
April 2018

Drainage
Waterbody
Quitchupah - Muddy Creek

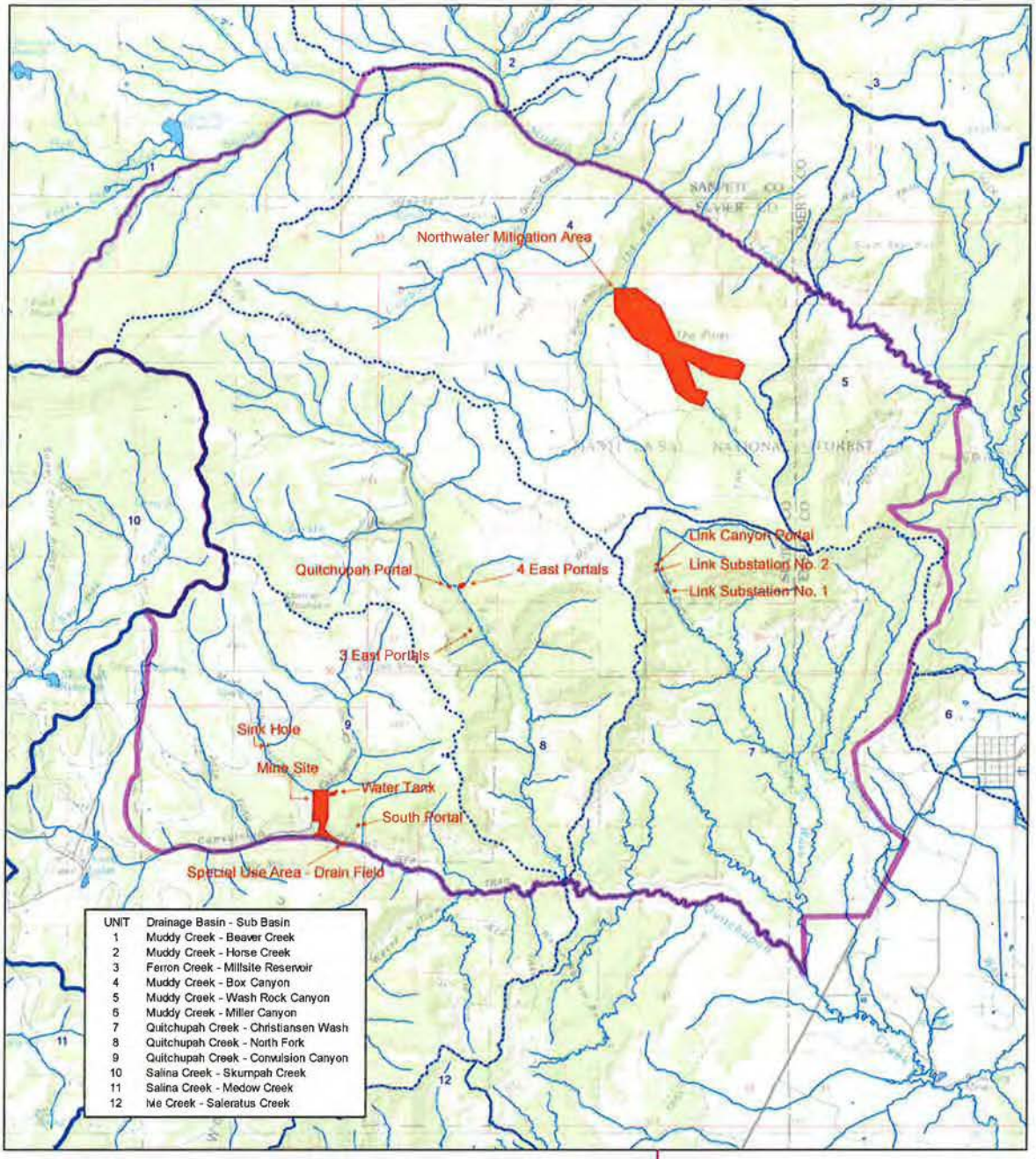
Geology

Kbh - Blackhawk Frm
Kc - Castlegate Sandstone
Kmbu - Upper Mancos Shale
Kme - Emery Sandstone Mancos Shale
Kmm - Masuk Member Mancos Shale
Kpr - Price River Formation
Ksp - Star Point Sandstone
Qa - Unconsolidated Deposit
QMS - Mass-movement landslides
Qmt - Mass-movement talus
Qmw - Mass-wasting deposits
TKnh - North Horn
Tfl - Lower Flagstaff Formation



CIA Areas

0 0.5 1 2 3 Miles



Cumulative Impact Area
Quitchupah - Muddy Creek

Plate 4

Hydrology Map

April 2018

- Drainage
- Waterbody
- CIA Areas
- Hydrologic Surface Divide (drainage basin)
- Hydrologic Surface Divide (sub-basin)
- Bonded Area

CIA Areas

0 0.5 1 2 3 Miles

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

May 11, 2017

John Byars, General Manager
Canyon Fuel Company, LLC
597 South SR24
Salina, Utah 84654

Subject: Determination of Administrative Completeness for Greens Hollow Lease Tract Addition, Canyon Fuel Company, LLC, Task ID #5445, C/041/0002

Dear Mr. Byars:

The Division has completed a review of the information you submitted on April 21, 2017. This application is considered to be administratively complete. A copy of our review worksheet is enclosed for your information and records.

A technical review of your plan has been initiated. Technical deficiencies will be forwarded to you as reviews are completed. The Division will also coordinate with other agencies and incorporate their comments into our review process. Issues raised will need to be resolved prior to permit issuance.

At this time you should publish a Notice of Complete Application for adding the Greens Hollow Lease Tract to the Sufco Mine. Per the requirements of R645-300-121, the Notice of Complete Application must be published in a local newspaper in the locality of the proposed mining for four consecutive weeks. In this instance, that would include Sevier, Sanpete and Emery County. Copies of the publication affidavits should be sent to the Division as soon as they are available. You should also insure that a copy of the application is on file at the Sevier, Sanpete and Emery County Courthouses. The Division will complete a technical analysis, which must find that your application is technically complete. We anticipate additional information may be necessary to make your application technically complete and look forward to working with you throughout the process.

Please call if you have any questions. Thank you for your help in the permitting process.

Sincerely,

Daron R. Haddock
Permit Supervisor

DRH/sqs
O:\041002.SUF\WG5445 GREENS HOLLOW\ADMINCOMPLETE.DOC

1594 West North Temple, Suite 1210, Salt Lake City, UT 84116
PO Box 145801, Salt Lake City, UT 84114-5801
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UTAH DNR
OIL, GAS & MINING

ADMINISTRATIVE COMPLETENESS REVIEW WORKSHEET
(R645-100)

DATE: 04/28/2017

REVIEWER(S): Suzanne Steab, Priscilla Burton, Justin Eatchel, Daron Haddock, Lisa Reinhart

APPLICANT: Canyon Fuel Company, LLC

MINE NAME: Sufco Mine **FILE NO.:** Task ID #5445

"Administratively Complete Application" means an application for permit approval or approval for coal exploration, where required, which the Division determines to contain information addressing each application requirement of the State Program and to contain all information necessary to initiate processing and public review.

Directions: **The categories listed below correspond to the minimum requirements for information necessary to initiate processing and public review. If a category is checked the Applicant has met the Completeness requirement for that category. If a category is not checked, the Completeness requirements have not been met. If a category is Not Applicable, enter NA in check box. The comments column will identify the deficiency and what is necessary to correct it.**

			Comments
301-112	Identification of Interests	X	
100	Applicant's Business Structure	X	
210	Applicant's Name/Address/Phone	X	
220	Resident Agent's Name/Address/Phone	X	
230	Name/Address/Phone of AML Fees Payer	X	
300	Corporate Structure & Ownership	X	
400	Identify Other Mining Operations in US	X	
500	Surface & Mineral Ownership	X	
600	Ownership Contiguous to Permit	X	
700	MSHA Numbers	X	
800	Interest in Contiguous Lands	X	

301-113	Violation Information	X	
100	AVS Violation Evaluation	X	An AVS Evaluation was completed on May 4th, 2017. No outstanding violations were identified.
200	Suspension or Revocation Information	X	
300	List of Violations - **3 Previous Years**	X	Located in General Chapter 1

301-114	Right of Entry	X	

301-115	Status of Unsuitability Claims	NA	

301-116	Permit Term	NA	

301-117	Insurance	X	The applicant has current certificate of insurance on file.
	Proof of Publication	NA	Publication following administrative completeness.
	Facilities and Structures Used in Common	NA	

301-118	Filing Fee	NA	

301-123	Notarized Signature of Responsible Official	X	

301-130	Information Collection: **Technical Data Accompanied by Names of Persons or Organizations that Collected and Analyzed the Data - Dates of Collections - and Analysis of the Data and Description of the Methodology Used to Collect and Analyze Data**	X	Appendix 3-4 Raptor and General Avifauna Studies (Confidential) 2013. Tetra Tech. Appendix 3-15 Wildlife Technical Report (Confidential) 2014. Cirrus Ecological Solutions, LC. Appendices 4-2 Muddy Creek Technical report: Heritage Resources (Confidential) 2004. Cirrus Ecological Solutions, LC. Appendix 4-5 Cultural Resource Memorandum of Agreement Manti La Sal National Forest and SHPO (Confidential). 2001 Appendix 4-6, Cultural Resource Documentation (Confidential). Appendix 6-4 Geology Technical Report Greens Hollow Tract. 2014. Paul B. Anderson, PG and Cirrus Ecological Solutions, LC. Appendix 7-27 Surface and Ground Water Report prepared for BLM & USFS. 2014. Cirrus Ecological Solutions, LC and Norwest Applied Hydrology 2015. Final Supplemental Environmental Impact Statement, Chapter 4, pages 149 - 150, and selected water data and grazing allotment map.

301-200	Soils	X	The application relinquishes acreage in federal coal lease U-63214 and UTU-76195 and in State lease ML 49,443-OBA. The application adds 6,696.41 acres in BLM Greens Hollow Lease UTU-84102 within T. 20 S., R. 4 E., Sec 36, 14, 23, 24; and T 20 S., R. 5 E. Sec. 19, 20, 21, 28, 29, 30, 31, 32, and Sec 33; and T 21 S, R 4 E Sec 1, 2, 11, 12, 13, and 1; and T 21 S, R 5 E Sec 6. The Greens Hollow lease surface is managed by Fishlake (79 acres) and Manti LaSal National Forests (the remainder). The application does not describe any surface disturbance. The application revises the total permitted disturbed area boundary (96.416 acres) and the currently disturbed acreage (48.825 acres, pg 1-15). There is no revision to Chapter 2, Soils, other than a disclaimer that the 2015 FEIS is provided as background. The potential for a ventilation and escapeway shaft facility is anticipated in Section 5.2.6.1 with a statement that permitting of the potetial shaft will follow the acquisition of the Greens Hollow Lease. Confidential Appendix 4-5 Memorandum of Agreement between USFS and SHPO outline requirements of shaft development.
211	Description of Pre-mining Soil Resources	NA	No surface disturbance described. A very general Order III survey is included as Dwg 2-3.

221	Prime Farmland Investigation	NA	
222	Soil Survey	NA	
224	Substitute Topsoil Info (When Proposed)	NA	
230	Operation Plan **Topsoil Handling/Removal/Storage**	NA	
240	Reclamation Plan **Soil Redistribution/Stabilization**	NA	

301-300	Biology	X	
320	Vegetation Information	X	Ch. 3 has been updated to include vegetation in the Greens Hollow tract on page 3-5 and in the EIS.
322	Fish and Wildlife Information	X	Section 3.3.3.3 appendix 3-4, and appendix 3-15 include Raptor survey information.Table 3-1 has been updated to include listed species. TES were analyzed in the FSEIS, appendix 3-15.
323	Maps/Photos **Vegetation-Fish-Wildlife Areas**	X	Plate 3-1 (plant communities and reference), 3-2 (elk range), and 3-3 (Deer range and raptor nests) have been updated to include the Greens Hollow tract.
330	Operation Plan **Vegetation-Fish-Wildlife Protection**	X	Potential impact to vegetative, fish and wildlife resources and the associated mitigation plan are presented in Sections 3.30 and 3.40 of the approved MRP. In addition, Appendix 3-15 contains a sound monitoring report. Additional monitoring information for the upper reaches of Quitchupah Creek are provided on page 3-46.
341	Reclamation Plan for Revegetation	X	Nothing has been added to the existing reclamation plan. Assuming the Greens Hollow tract has no additional surface disturbance, this is okay.The reclamation plan used to restore the vegetative, fish and wildlife resources to a condition suitable for the postmining land use is presented in Section 3.40.

342	Fish & Wildlife Plan for Reclamation Phase	X	Nothing has been added to the existing reclamation plan. Assuming the Greens Hollow tract has no additional surface disturbance, this is okay.The reclamation plan used to restore the vegetative, fish and wildlife resources to a condition suitable for the postmining land use is presented in Section 3.40.

301-400	Land Use and Air Quality	X	Appendix 4-46 is a map showing Greens Hollow range allotments for livestock use. The amendment provides information regarding the DAQ Air Quality Permit but it is not updated with the Greens Hollow Lease.
411	Pre-Mining Land Use Information **(Includes Cultural Resources)**	X	A description of the land use of the Greens Hollow tract is provided on pages 4-7. Land use is consistent with adjenct permitted tracts. The Paiute Indian Tribe, Navajo Nation and Ute Indian Tribe were consulted, no sacred sites were identified in the course of the tribal consultation (FESEIS). Pg. 4-14 contains a description of the cultural resources. Appendix 4-2 Appendix 4-5 containes the cultural resource MOA. The MLS NF and USHPO agreed that the undertaking may have an adverse effect on several archaeological sites eligible for listing. Therefore, several stipulations are requried. There is no additional evidence of consultation with DEQ AQ regarding air quality.
412	Post-Mining Land Use Information	X	There are no changes to section 4.1.3.1 on page 4-19. PMLU is consistent with premining land use.

301-500	Engineering	X	Chapter 5 narrative includes additional information regarding conceptual mine plans based off of full extraction mining. Narrative regarding sections 522, 523, and 525 regarding the Green's Hollow lease has been added.
510 520	General Description of Operation Plan **(Maps, Locations, Cross-Sections, Narrative, Descriptions & Calculations)**	X	520 A description of the sequencing of operations within the Greens Hollow Lease over the next five years is included.
522	Coal Recovery Description	X	Maximum utilization and conservation of coal within Greens Hollow Lease addressed in appendix 1-1 as well as 5.2.3.

523	Mining Methods	X	Coal recovery details anticipating annual and total production of coal by tonnage for the next five years is included.
524	Blasting and Explosives Plan	X	No blasting over five pounds is expected at the surface. No changes were made the MRP chapter 5.
525	Subsidence Control Plan	X	Plate 10-A and 10-C potential subsidence plate was updated to include the proposed lease. Narrative was added to the MRP Chapter 5 Section 5.2.5.1. Narrative specific to subsidence controls related to the Green's hollow lease was added on page 5-45.
526	Mine Facilities Description **(Narrative, Plans, Maps)** **Including Existing Structures & Support Facilities**	X	Narrative was added to Chapter 5 Section 5.2.6.1 regarding the Green's Hollow Lease.
527	Transportation Facilities **(Including Plans & Maps)**	X	No surface operations are considered at the time of this review; therefore no roads are proposed within the Green's Hollow lease.
528	Coal Mine Waste Plans **(Description & Designs)**	X	Plate 5-11 was update to show the overburden isopach within the proposed lease.
529	Management of Mine Openings **(Design)**	X	No surface operations are considered at the time of this review; therefore no mine seals are proposed within the Green's Hollow lease
531	General Plans for Structures	X	No surface operations are considered at the time of this review; therefore no sediment control measures are proposed within the Green's Hollow lease.
532	Sediment Control	X	No surface operations are considered at the time of this review; therefore no sediment control measures are proposed within the Green's Hollow lease.
533	Impoundments	X	No surface operations are considered at the time of this review; therefore no sediment control measures are proposed within the Green's Hollow lease.

301-534	Roads **(Plans, Drawings, Designs, & Specifications)**	X	No surface operations are considered at the time of this review; therefore no roads are proposed within the Green's Hollow lease
535	Spoil	X	No surface operations are considered at the time of this review; therefore no spoil plans are proposed within the Green's Hollow lease.
536	Coal Mine Waste	X	536 A detail of the Refuse pile associated with the Sufco mine remains unchanged in Volume 3 of the MRP.

537	Regraded Slopes	X	No mining or reclamation activities are conducted in the permit area that require approval for regarding steep slopes.
540 541-542	Reclamation Narrative, Maps and Plans	X	No changes were made to the reclamation plan of the Sufco mine within the proposed amendment.
551	Casing and Sealing **Underground Openings**	X	No changes were made to the reclamation plan of the Sufco mine within the proposed amendment due to no proposed mine openings at this time.
553	Backfilling and Grading Description	X	No changes were made to the reclamation plan of the Sufco mine within the proposed amendment due to no proposed surface support facilities at this time.

301-600	Geology	X	Chapter 6 of the MRP has been updated to include the Greens Hollow Lease tract. A specific geologic report has been added to the MRP to discuss the geology of the tract (Appendix 6-4)
621	Description of Geology **(Permit & Adjacent Area)**	X	The geology of the Greens Hollow Lease tract has been described. Since this is an extension of an existing mine a lot of the geologic information carries over from the existing mine plan. The formations are essentially the same, although most of the Greens Hollow is a little deeper in the geologic column and is covered by the North Horn formation. A report has been prepared by Paul Anderson specifically for the Greens Hollow tract and is found in Appendix 6-4.
622	Geologic Cross-Sections, Maps, and Plans	X	The Geology Technical Report (Appendix 6-4) contains a General Stratigraphic column (Figure 1)of the Greens Hollow Coal lease tract. It is accompanied by Plated 2 which is a Geologic Fence Diagram of the tract. These adequately describe the stratigraphy of the area. Plate 6-1 of the MRP is the Geology and drill hole location map and has been updated to include the Greens Hollow lease tract.
630	Plans for Casing and Sealing Holes	X	The plan for casing and sealing of wells is found in section 7.6.5 of the MRP. When no longer needed for monitoring or approved for transfer as a sater well, each well will be sealed and backfilled by placing a concrete plug from TD to the surface.

301-700	Hydrology	x	

721	Description of Hydrologic Resources **(Permit and Adjacent Area)**	X	Surface and groundwater information is included. A loss/gain study for various streams in the area of the lease have been performed. Stock watering ponds have been identified and monitored. Water rights information is included in appendix 7-1.
722	Cross-Sections and Maps **Subsurface Water - Surface Water - Monitoring Stations - Wells**	X	Plates 7-2 and 7-3 have been updated.
723	Sampling and Analysis	x	Sampleing has occurred as part of the baseline monitoring by the mine and as part of the EIS preparation.
724	Baseline Information **Ground Water - Surface Water - Geology - Climatological & Supplemental; If Needed**	X	Groundwater information is presented in 7.2.4.1 of the MRP. Pages 7-16 and 7-20 are specific groundwater information for the Greens Hollow lease.
728	PHC Determination	X	A PHC report has been provided for the addition of the Greens Hollow Lease.
730	General Operation Plan **Minimize Disturbance to Hydrologic Balance & Compliance with Clean Water Act**	X	Sections of Chapter 7 discuss possible subsidence impacts to water resources.
731	Ground and Surface Water Protection	X	Table 7-2, the water monitoring table, has been revised to include monitoring locations withing the Greens Hollow lease.
732	Sediment Control Measures	NA	There is no proposed surface disturbance associated with the Greens Hollow Lease.

301-740	Plans and Designs **Operation and Reclamation Plan Sediment Control Measures**	NA	
	Siltation Structures	NA	
	Sediment Ponds	NA	
	Other Treatment Facilities	NA	
	Diversions	NA	
	Road Drainage	NA	
	Impoundments	NA	

	Discharge Structures	NA	
	Disposal of Excess Spoil	NA	
	Coal Mine Waste	X	
	Disposal of Non-Coal Mine Waste	NA	
	Casing and Sealing of Wells	X	

301-800	Bonding and Insurance	X	Chapter 8 edits were included within the application
820	Applicant **Have Adequate Bond at Permit Issuance**	X	Plate 5-2C detailing surface portals was updated to show the proposed lease.
830	Bond Estimate and Calculations Provided	X	Appendix 5-9 in Volume 6 contains the detail reclamation cost estimate. The bond remains unchanged at this point due to no surface disturbances currently planned within the Green's Hollow lease.
890	Certificate of Insurance Provided	X	Narrative was added to Section 8.60 of Chapter 8 detailing the base assumptions of no surface support facilities at the time of this review. The terms and conditions of the liability insurance for the Sufco Mine remain unchanged.

302-200	Special Categories of Mining	NA	
210	Experimental Practices Mining	NA	
220	Mountaintop Removal Mining	NA	
230	Steep Slope Mining	NA	
240	Auger Mining	NA	
250	In Situ Processing Activities	NA	

302-260	Coal Processing Plants NA **(Not Located Within Permit Area of Mine)**	
270	Variances From Approximate Original Contour Restoration Requirements NA	
280	Variances for Delay in Contemporaneous Reclamation Requirement in Combined Surface and Underground Coal Mining Activities NA	
290	Small Operator Assistance Program NA **(SOAP)**	

302-300	Special Areas of Mining NA	
301	Prime Farmland NA	
302	Alluvial Valley Floors NA	

O:\FORMS\ACR_FRM1.DOC

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Emery,)

I, Jenni Fasselin, on oath, say that I am the Publisher of the Emery County Progress, a weekly newspaper of general circulation, published at Castle Dale, State of Utah and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and on the Utah legals.com webwsite; the first publication was on the 16th day of May, 2017, and that the last publication of such notice was in the issue of such newspaper dated the 6th day of June, 2017.

Jenni Fasselin

Jenni Fasselin – Publisher

Subscribed and sworn to before me this 6th day of June 2017.

Linda Thayn

Notary Public My commission expires January 10, 2019 Residing at Price, Utah

Publication fee, $ 384.00

LINDA THAYN
NOTARY PUBLIC-STATE OF UTAH
COMMISSION# 680835
COMM. EXP. 01-10-2019

LEGAL NOTICE

Canyon Fuel Company LLC, 225 North 5th Street, 9th Floor, Grand Junction, CO 81501 has filed an application for the addition of the Greens Hollow Lease under the laws of the State of Utah and the U.S. Office of Surface Mining.

Approval of this application will allow coal mining operations at the Sufco Mine to continue within the additional lands of the Greens Hollow Lease. The lands on which mining is to continue are located in Sevier and Sanpete Counties and include parts of the Fishlake National Forest and Manti-LaSal National Forest. The mine portals are located 30 miles east of Salina, Utah, within Section 12, NW1\4, Township 22 S., Range 4 E. The approximately leasehold involves all or part of the following Sections which have been assigned to Canyon Fuel Company, LLC.

Federal Coal Lease UTU-84102 - (6,175.39 acres) - Effective April 1, 2017

T. 20 S., R. 4 E., SLM
- Sec. 36, lot 4, E1/2NE1/4, NE1/4SE1/4

T. 20 S., R. 5 E., SLM
- Sec. 19, lots 5-8, E1/2SW1/4, SE1/4
- Sec. 20, S1/2
- Sec. 21, W1/2SW1/4
- Sec. 28, W1/2
- Sec. 29, all
- Sec. 30, all
- Sec. 31, all
- Sec. 32, N1/2, N1/2S1/2
- Sec. 33, NW1/4NW1/4

T. 21 S., R. 4 E., SLM
- Sec. 1, all
- Sec. 2, SE1/4
- Sec. 11, E1/2, E1/2W1/2
- Sec. 12, NE1/4, W1/2, W1/2SE1/4
- Sec. 13, W1/2NE1/4, NW1/4
- Sec. 14, NE1/4, E1/2NW1/4

T. 21 S., R. 5 E., SLM
- Sec. 6, all

After filing, copies of the permit application will be available for inspection at the: Utah Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Salt Lake City, Utah; Sanpete County Offices, 160 North Main, Suite 204, Manti, Utah, Emery County Courthouse, Castle Dale, Utah and Sevier County Offices, 250 North Main Street, Richfield, Utah.

Written comments or requests for an informal conference regarding this application may be addressed within 30 days of the last publication date of this notice, to the Utah Division of Oil, Gas and Mining, Box 145801, Salt Lake City, Utah 84114-5801.

Published in the Emery County Progress May 16, 23, 30 and June 6, 2017.

AFFIDAVIT OF PUBLICATION

County of Sevier, State of Utah, ss.

I, SHALON PETERSEN, being first duly sworn, depose and say I am the Legal Secretary of THE RICHFIELD REAPER, a weekly paper having a bona fide circulation of more than 200 subscribers in the State of Utah, published every Wednesday at Richfield, Sevier County, Utah, and that said notice was published on Utahlegals.com, a website established by the Utah Press Association through the collective efforts of Utah's newspapers, on the same day as the first newspaper publication and the notice remained on Utahlegals.com until the last day of publication.

That the notice GREENS HOLLOW LEASE a copy of which is attached hereto, was published in said paper for 4 consecutive issues, the first publication having been made in the issue of the 18 day of MAY 2017, and the last publication in the issue of the 8 day of JUNE 2017 that the said notice was published in the regular and entire issue of every number of said paper during the period of times and publication, and that the same was published in the newspaper proper and not in a supplement.

Shalon Petersen

Subscribed and sworn to before me this 8 day of JUNE, 2017

Sheena Thompson

Notary Public

NOTARY PUBLIC
SHEENA THOMPSON
Commission No 673729
Commission Expires
JANUARY 15, 2018
STATE OF UTAH

PUBLIC NOTICE
LEGAL NOTICE

Canyon Fuel Company LLC, 225 North 5th Street, 9th Floor, Grand Junction, CO 81501, has filed an application for the addition of the Greens Hollow Lease under the laws of the State of Utah and the U.S. Office of Surface Mining.

Approval of this application will allow coal mining operations at the Sufco Mine to continue within the additional lands of the Greens Hollow Lease. The lands on which mining is to continue are located in Sevier and Sanpete Counties and include parts of the Fishlake National Forest and Manti-LaSal National Forest. The mine portals are located 30 miles east of Salina, Utah, within Section 12, NW1\4, Township 22 S., Range 4 E. The approximately leasehold involves all or part of the following Sections which have been assigned to Canyon Fuel Company, LLC.

Federal Coal Lease UTU-84102 - (6,175.39 acres) - Effective April 1, 2017

- T. 20 S., R. 4 E., SLM

Sec. 36, lot 4, E1/2NE1/4, NE1/4SE1/4

- T. 20 S., R. 5 E., SLM

Sec. 19, lots 5-8, E1/2SW1/4, SE1/4
Sec. 20, S1/2
Sec. 21, W1/2SW1/4
Sec. 28, W1/2
Sec. 29, all
Sec. 30, all
Sec. 31, all
Sec. 32, N1/2, N1/2S1/2
Sec. 33, NW1/4NW1/4

- T. 21 S., R. 4 E., SLM

Sec. 1, all
Sec. 2, SE1/4
Sec. 11, E1/2, E1/2W1/2
Sec. 12, NE1/4, W1/2, W1/2SE1/4
Sec. 13, W1/2NE1/4, NW1/4
Sec. 14, NE1/4, E1/2NW1/4

- T. 21 S., R. 5 E., SLM

Sec. 6, all

After filing, copies of the permit application will be available for inspection at the: Utah Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Salt Lake City, Utah; Sanpete County Offices, 160 North Main, Suite 204, Manti, Utah; Emery County Courthouse, Castle Dale, Utah; and Sevier County Offices, 250 North Main Street, Richfield, Utah.

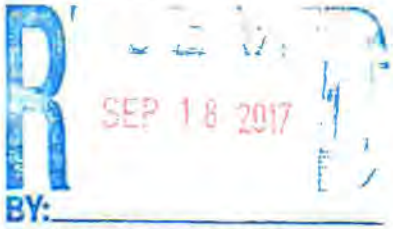
Written comments or requests for an informal conference regarding this application may be addressed within 30 days of the last publication date of this notice, to the Utah Division of Oil, Gas and Mining, Box 145801, Salt Lake City, Utah 84114-5801.

Published in The Richfield Reaper May 18, 25, June 1 and 8, 2017. UPAXLP

AFFIDAVIT OF PUBLICATION

COUNTY OF SANPETE } ss:

STATE OF UTAH



I, Karen Christensen, employee of Sanpete News Company, Inc., publisher of the Sanpete Messenger, a newspaper of general circulation published weekly at Manti, Sanpete County, Utah, do solemnly swear that the

Legal Notice: Canyon Fuel Company – Greens Hollow Lease

As per clipping attached, was published once a week for **four** successive week(s) in the regular and entire issue of said newspaper and not in a supplement thereof, commencing with the issue dated **May 18, 2017** and ending with the issue dated **June 8, 2017.**

Karen L Christensen

Subscribed and sworn to before me this 9th *day of June 2017*

Ellen Howe

Notary Public signature

Notary public residing at Manti, Utah

[SEAL] My Commission will expire 5-6-2021

LEGAL NOTICES

LEGAL NOTICE

Canyon Fuel Company LLC, 225 North 5th Street, 9th Floor, Grand Junction, CO 81501 has filed an application for the addition of the Greens Hollow Lease under the laws of the State of Utah and the U.S. Office of Surface Mining.

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Federal Coal Lease UTU-84102 - (6,175.39 acres) - Effective April 1, 2017 T. 20 S., R. 4 E., SLM Sec. 36, lot 4, E1/2NE1/4, NE1/4SE1/4 T. 20 S., R. 5 E., SLM, Sec. 19, lots 5-8, E1/2SW1/4, SE1/4, Sec. 20, S1/2, Sec. 21, W1/2SW1/4, Sec. 28, W1/2, Sec. 29, all, Sec. 30, all, Sec. 31, all, Sec. 32, N1/2, N1/2S1/2, Sec. 33, NW1/4NW1/4, T. 21 S., R. 4 E., SLM, Sec. 1, all, Sec. 2, SE1/4, Sec. 11, E1/2, E1/2W1/2, Sec. 12, NE1/4, W1/2, W1/2SE1/4, Sec. 13, W1/2NE1/4, NW1/4, Sec. 14, NE1/4, E1/2NW1/4, T. 21 S., R. 5 E., SLM, Sec. 6, all

After filing, copies of the permit application will be available for inspection at the: Utah Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Salt Lake City, Utah; Sanpete County Offices, 160 North Main, Suite 204, Manti, Utah, Emery County Courthouse, Castle Dale, Utah and Sevier County Offices, 250 North Main Street, Richfield, Utah.

Written comments or requests for an informal conference regarding this application may be addressed within 30 days of the last publication date of this notice, to the Utah Division of Oil, Gas and Mining, Box 145801, Salt Lake City, Utah 84114-5801.

Publish Sanpete Messenger May 18, 25, June 1, 8, 2017.

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

April 19, 2018

To: Internal File

From: Daron R. Haddock, Coal Program Manager DRH

Subject: 510 (c) Recommendation for Canyon Fuel Company, LLC, Sufco Mine, C/041/0002, Task ID #5445

As of writing of this memo, there are no NOVs or COs which are not corrected or in the process of being corrected for the Sufco Mine. There are no finalized civil penalties, which are outstanding and overdue in the name of Canyon Fuel Company, LLC. Canyon Fuel Company, LLC does not have a demonstrated pattern of willful violations, nor have they been subject to any bond forfeitures for any operation in the state of Utah.

Attached is a recommendation from the OSM Applicant Violator System for the Sufco Mine that states there are no outstanding violations.

O:\041002.SUF\PERMIT\2018 GH\510c.doc

1594 West North Temple, Suite 1210, Salt Lake City, UT 84116
PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • *www.ogm.utah.gov*

UTAH DNR OIL, GAS & MINING

Permit Evaluation

Permit Number	C0410002 SEQ:6
Permitee Name	142816 Canyon Fuel Company LLC
Date Of Narrative	4/17/2018 11:58:02 AM
Requestor	suzanne.steab

CAUTION: The Applicant/Violator System (AVS) is an informational database. Permit eligibility determinations are made by the regulatory authority with jurisdiction over the permit application not by the AVS. Results which display outstanding violations may not include critical information about settlements or other conditions that affect permit eligibility. Consult the AVS Office at 800-643-9748 for verification of information prior to making decisions on these results.

12 Violations Found.

1: Revoked Permit	11	IL	**Permit:11**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
2: Revoked Permit	128	IL	**Permit:128**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
3: Revoked Permit	167	IL	**Permit:167**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
4: Revoked Permit	172	IL	**Permit:172**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
5: Revoked Permit	192	IL	**Permit:192**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
6: Revoked Permit	228	IL	**Permit:228**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
7: Revoked Permit	252	IL	**Permit:252**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
8: Revoked Permit	267	IL	**Permit:267**	**Conditional**	**1/9/2004**
Violator 1:	146616 Jader Coal Company LLC				
9: Revoked Permit	8	IL	**Permit:8**	**Conditional**	**1/9/2004**
Violator 1	146616 Jader Coal Company LLC				
10: Bond Forfeiture	8970262	KY	**Permit:8970262**	**Conditional**	**8/13/1993**
Violator 1	107269 Malachi Coal Company Incorporated				
11: Bond Forfeiture	8970302	KY	**Permit:8970302**	**Conditional**	**1/8/2001**
Violator 1:	101447 Flaget Fuels Inc				
12: Bond Forfeiture	8970302	KY	**Permit:8970302**	**Conditional**	**1/8/2001**
Violator 1:	101447 Flaget Fuels Inc				

Evaluation OFT

Entities: 14

249039 Halas Energy LLC - ()
---101448 John Joseph Siegel Jr - (Manager)
---101448 John Joseph Siegel Jr - (Member)
---249034 Cedars Energy LLC - (Subsidiary Company)
------101448 John Joseph Siegel Jr - (Manager)
-----260539 Bowie Holdings LLC - (Subsidiary Company)
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---260572 Corey Prologo - (Director)
---260572 Corey Prologo - (President)

Narrative

4/17/2018 - All violations are coded "conditional," indicating a settlement, payment plan, or pending challenge. Linking entity is John Joseph Siegel Jr. Please use the contact information below to confirm the conditional status of the violations. DB

Illinois:	Jim Schafer -- 217.785.5191 -- james.schafer@illinois.gov
Kentucky:	Kay Thompson -- 502.782.6787 -- kay.thompson@ky.gov
	Pam Spaulding -- 502.782.6779 -- Pam.spaulding@ky.gov

U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement Applicant/Violator System

Click for the Office of Surface Mining and Reclamation Website

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HOME > ENTITY EVALUATE

Evaluation on Application Number: C0410002 SEQ:7

9 Violations

Print Report

Application Evaluation

Application Number	C0410002 SEQ:7
Applicant Name	142816 Canyon Fuel Company LLC
Date of Request	4/24/2018 4:39:31 PM
Requestor	suzanne.steab

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260858 Trafigura Beheer B. V. - ()
--- - (Chief Executive Officer)
--- - (Director)
---260859 Michael Stuart Wainwright - (Chief Operations Officer)
---260859 Michael Stuart Wainwright - (Director)
---260860 Mark Joseph Irwin - (Director)
---260861 Jose Maria Larocca - (Director)
---260862 Sipko Nanne Schat - (Director)
---260863 Andrew Vickerman - (Director)
---260864 Mariano Marcondes Ferraz - (Director)
---260865 Trafigura Group PTE. LTD. - (Subsidiary Company)
------ - (Director)
------260859 Michael Stuart Wainwright - (Director)
------260860 Mark Joseph Irwin - (Director)
------260861 Jose Maria Larocca - (Director)
------260862 Sipko Nanne Schat - (Director)
------260863 Andrew Vickerman - (Director)
------ - (Secretary)
------260870 Pierre Andre Jacques Lorinet - (Director)
------260871 Trafigura Holdings PTE. LTD - (Subsidiary Company)
--------- - (Secretary)
---------260870 Pierre Andre Jacques Lorinet - (Director)
---------260872 Matthus Pieter Spaans - (Director)
---------260873 Chin Hwee Tan - (Director)
---------260874 Martin Urdapilleta - (Director)
---------260875 Antonio Gerald Vieira Araujo - (Director)
---------260876 Trafigura Holdings Limited - (Subsidiary Company)
-----------260860 Mark Joseph Irwin - (Director)
----------- - (Director)
----------- - (Secretary)
-----------260878 Maryanne Inguanez - (Director)
-----------260879 Robbert Alexander Maas - (Director)
-----------260880 Galena Private Equity Investment LLC - (Subsidiary Company)
--------------254576 Jesus Fernandez Lopez - (Director)
-------------- - (Director)
--------------260859 Michael Stuart Wainwright - (Director)
--------------260881 Gerard Sean Lynch - (Secretary)
--------------260882 Galena Private Equity Resources Fund LP - (Subsidiary Company)
----------------260900 Galena Private Equity Resources Investment LP - (Subsidiary Company)
------------------260901 Galena Investments Limited - (Subsidiary Company)
--------------------254568 Galena US Holdings, Inc. - (Subsidiary Company)
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---------- - (Director)
---------- - (Secretary)
----------260878 Maryanne Inguanez - (Director)
----------260879 Robbert Alexander Maas - (Director)
----------260899 Galena Private Equity Resources Co-Investment LP - (Subsidiary Company)
----------260900 Galena Private Equity Resources Investment LP - (Subsidiary Company)
----------260901 Galena Investments Limited - (Subsidiary Company)
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---260912 Christophe Salmon - (Chief Financial Officer)

---260913 Christopher Cox - (Director)
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---260886 Ileana Bolcato - (Director)
---260887 Fabrizio Riccardi - (Director)
---260888 Andrea Bonomi - (Director)
---260889 Francesco Cignolo - (Director)
---260890 Marius Van Heesch - (Director)
260891 University Of Texas System (UTIMCO) (Fund) - ()
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---260892 T Britton Harris IV - (Chief Executive Officer)
---260892 T Britton Harris IV - (Corporate Officer)
---260892 T Britton Harris IV - (President)
---260893 Jeffery D Hildebrand - (Chairman of the Board)
---260894 Ray Rothrock - (Chairman of the Board)
---260895 Robert Gauntt - (Director)
---260896 Janet Handley - (Director)
---260897 Ray Nixon - (Director)
---260898 James C Weaver - (Director)
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---260909 Phil Adams - (Director)
---260910 Robert Steven Hicks - (Director)
260904 Galena Private Equity Resources Limited - ()
---260881 Gerard Sean Lynch - (Director)
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---260906 Sarah Ann Kelly - (Director)
---260907 Duncan Neil Letchford - (Director)
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---260917 Charles Heilbronn - (Director)
---260917 Charles Heilbronn - (President)
---260917 Charles Heilbronn - (Shareholder)
---260918 Ed Zysik - (Vice President)

Narrative

Request Narrative

USDA United States Department of Agriculture | Forest Service

Manti-La Sal N.F. Supervisor's Office
599 West Price River Drive
Price, UT 84501
435-637-2817
Fax: 435-637-4940

Fishlake N.F. Supervisor's Office
115 E. 900 N.
Richfield, UT 84701
435-896-1600
Fax: 435-896 9347

File Code: 2820
Date: April 9, 2018

Daron Haddock
Coal Program Manager
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

Dear Mr. Haddock,

The Manti-La Sal and Fishlake National Forests (FS) have completed review of the mine plan Modification, Task #5445 for permit C/041/0002 for Bowie Resources, LLC's Sufco Mine. The modification addresses mining the Greens Hollow Federal Coal Lease, UTU-084102. The FS is responding as the federal land management agency (FLMA) according to 30 CFR 994.30, Article VI (C)(2).

The FS consented to the Bureau of Land Management (BLM) leasing these lands in October 2015. The BLM issued the lease on April 1, 2017.

FS review has shown that the proposed mine plan modification is consistent with special coal lease stipulations for use and protection of non-mineral resources on NFS lands within the lease.

With respect to the post-mining land use, according to the Manti-La Sal Forest Plan (1986) and the Fishlake Forest Plan, the surface lands are managed principally for timber, rangeland and riparian area management. Any surface disturbance and subsequent reclamation must be designed to support these post-mining land uses.

With respect to protection of non-mineral resources, the FS finds the proposed resource monitoring plan adequate. According to lease stipulation 19, the Lessee is responsible to replace any surface or developed groundwater resources identified for protection that may be lost or adversely affected by mining operations. This is to maintain existing riparian habitat, fishery habitat, livestock and wildlife use or other land uses. All water resources identified for monitoring by the FS are subject to this stipulation.

The lands in the permit modification/revision area contain 3,847 acres of priority sage grouse habitat as shown on the map in Attachment A. The FS September 2015 Greater Sage-grouse Record of Decision for Idaho and Southwest Montana, Nevada and Utah, amended FS land management plans for sage-grouse management, including the Manti-La Sal Forest Plan. The amendment includes the following standard for leased coal mines (GRSG-M-CML-ST-093):

"In priority habitat management areas and sagebrush focal areas do not authorize new appurtenant surface facilities related to existing underground mines unless no technically feasible

alternative exists. If new appurtenant surface facilities associated with existing mine leases cannot be located outside of priority habitat management areas and sagebrush focal areas, locate them within any existing disturbed areas, if possible. If location within an existing disturbed area is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements as identified by the Mine Safety and Health Administration mine-plan approval process and locate the facilities in an area least harmful to greater sage-grouse habitat based on vegetation, topography, or other habitat features.."

To implement this standard, the FS requires that the following condition be included in the permit modification/revision approval: To protect sage-grouse habitat, locate new appurtenant surface facilities outside priority habitat management areas, unless no technically feasible alternative exists. If new appurtenant surface facilities cannot be located outside of priority habitat management areas, locate them within any existing disturbed areas, if possible. If location within an existing disturbed area is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements in the established mine-plan approval process and locate the facilities in an area least harmful to greater sage-grouse habitat based on vegetation, topography, or other habitat features.

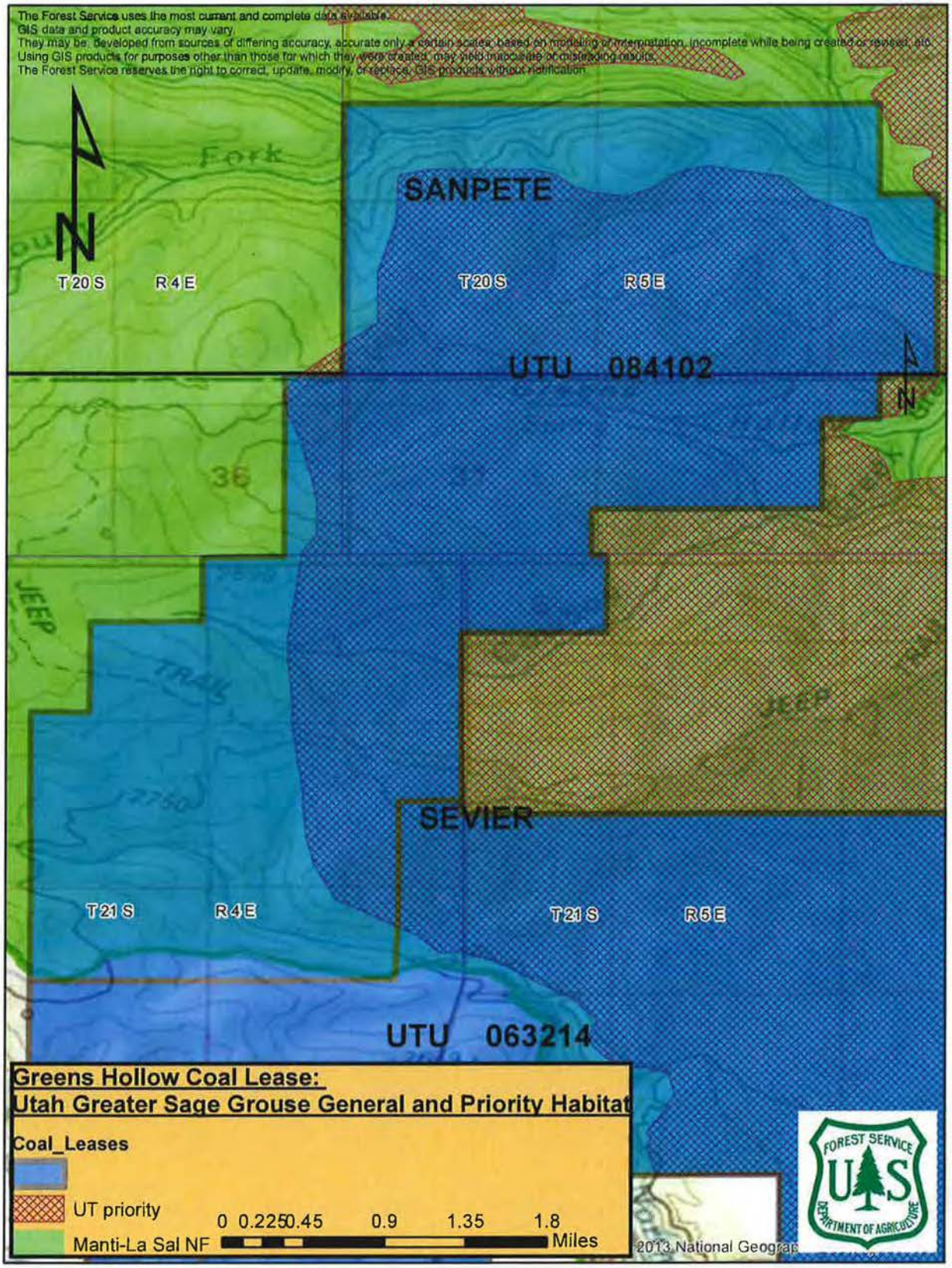
If you have any questions or concerns, please contact Jeff Salow at 435-636-3596 or jsalow@fs.fed.us.

Sincerely,

BRIAN M. PENTECOST
Forest Supervisor
Manti-La Sal National Forest

MEL BOLLING
Forest Supervisor
Fishlake National Forest

cc: Nicole Caveny, OSMRE; Becky Hammond, FS – Intermountain Regional Office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Greens Hollow Coal Lease:
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DEPARTMENT OF AGRICULTURE

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATING OFFICE

KATHLEEN CLARKE
Director

December 22, 2016

Sent via electronic mail: johnbaza@utah.gov

John Baza
Director
Division of Oil Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

Subject: SUFCO Mine – Greens Hollow Amendment
C/041/0002, Task 5259

Dear Mr. Baza:

The Public Lands Policy Coordinating Office received the attached technical comments from the Utah Division of Wildlife Resources (UDWR) in regard to the Greens Hollow lease within the Parker Mountain-Emery Sage-grouse Management Area (SGMA), which DOGM requested consultation with UDWR in relation to the sage-grouse.

Thank you for the opportunity to review and provide comments on the proposed action to help mitigate impacts to greater sage-grouse habitat. Please call if you have any questions to discuss your concerns.

Sincerely,

Kathleen Clarke
Director

cc: Lisa Reinhart, Environmental Scientist
Sent via electronic mail: lreinhart@utah.gov
Dana Dean, Associate Director
Sent via electronic mail: danadean@utah.gov

Technical Comments

The Greens Hollow lease contains both winter habitat and opportunity habitat for the greater sage-grouse. Habitat for greater sage-grouse is defined in the *Conservation Plan for Greater Sage-grouse in Utah* (Plan) as:

> *"the aggregation of seasonal habitats used by sage-grouse at some point during the yearly life-cycle of the birds. Habitat includes the geographical extent of leks, nesting, brood-rearing, late-brood rearing, transitional and winter areas."*

Opportunity areas are defined in the Plan as:

> *"those portions of a SGMA that currently do not contribute to the life cycle of sage-grouse but are areas where restoration or rehabilitation efforts can provide additional habitat when linked to existing sage-grouse populations."*

As UDWR understands, the permit amendment would only be to expand underground coal mining, which includes the potential for ventilation shafts. In Section 5.5 of the Plan, extractive mineral development is addressed to discuss surface disturbing activities required for mining, such as surface vents, which are considered essential for human safety and must be permitted.

In order to limit impacts from surface development such as vents, a management protocol for development within an SGMA is outlined in Section 6.0. Overall, surface disturbance should be avoided to the greatest degree possible. Management protocol for winter habitat (Section 6.5.1.3) describes avoidance if possible, followed by minimization by locating development in the least important habitats or by taking advantage of topographic screening. If minimization is insufficient, then mitigation is required, calculated at a 4:1 ratio.

Activities should be avoided from November 15 - March 15 to reduce disturbances to wintering sage-grouse. Opportunity areas (Section 6.5.3) may be employed to meet restoration or rehabilitation goals, or as mitigation for disturbance within habitat. Opportunity areas may also be employed as the site for disturbances which are diverted from sage-grouse habitat.

UDWR appreciates the opportunity to characterize the values of the sage-grouse habitats influenced by this proposal. Following the issuance of the permit, please consult with Makeda Hanson (435-630-0805) at UDWR's Price office, for further evaluation and guidance on site-specific developments.