

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

NEPA requires the consideration and evaluation of a practical range of reasonable alternatives that meet the federal action's purpose and need while minimizing or avoiding environmental impacts. A practical range of reasonable alternatives is formulated to address issues and concerns raised by the public and agencies during scoping. The alternatives represent other means (methods, processes, locations, times, sequences, etc.), besides the Proposed Action, of satisfying the stated purpose and need for the federal action. Reasonable alternatives are defined by the Council on Environmental Quality as those that are technically, economically, and environmentally practical and feasible. NEPA also requires the evaluation of a No Action Alternative. If unreasonable alternatives or alternatives that do not meet purpose and need are suggested, a detailed analysis of these alternatives is not required. However, the rationale for eliminating them from detailed analysis must be explained.

In this EIS, three alternatives are analyzed in detail: Alternative B (Proposed Action Alternative), Alternative C (Reduced Tract Acreage and Seasonal Restrictions), and Alternative A (No Action). Several other alternatives were identified and considered but were eliminated from detailed analysis. These alternatives are described in Section 2.6 along with the rationale for eliminating them from detailed analysis.

LBA tracts are nominated for leasing by companies with an interest in acquiring a lease but, as described in Chapter 1, the LBA process is, by law and regulation, an open, public, competitive sealed-bid process. If the Alton Coal Tract LBA (hereafter referred to as the Alton Coal Tract or tract) is offered for lease, the applicant for that tract may or may not be the highest bidder when the lease sale is held and therefore may not be the successful bidder. Further, if a decision is made to hold a competitive lease sale and a lease is issued, the lessee must obtain mine plan approval and a permit to conduct coal mining operations, including a detailed mining and reclamation plan, before mining can begin on the tract. As discussed in Chapter 1, this mining and reclamation plan and overall PAP would undergo detailed review by state and federal agencies as part of the approval process. The detailed PAP of any successful bidder, the applicant or otherwise, would be required to conform to the stipulations and conditions attached to the lease through the land-use plan and to conform to the decision that would follow this EIS. The conceptual mining and reclamation plans described in this EIS, for both the Proposed Action and Alternative C, are not final plans, but represent reasonably foreseeable development for use in analyzing the potential environmental consequences of issuing a lease for the tract.

The Alton Coal Tract is located in Kane County, Utah approximately 0.10 mile south of the town of Alton and 2.9 miles east of U.S. Route 89 (US-89). A map of the tract in relation to surrounding towns, highways, existing and potential fee coal areas, and other area landmarks is presented in Map 1.1. Under both the Proposed Action and Alternative C, tract configurations contain a mix of federal surface and mineral estate and split estate (private surface and federal minerals) lands. Private surface owners with lands included in the tract under either tract configuration may meet the requirements listed under 43 CFR 3400.0-5(gg)(1), (2), and (3) to be qualified surface owners⁵ and are therefore considered to be legally

⁵ Under the regulations under 43 CFR 3400.0-5(gg)(1), (2), and (3) qualified surface owner means the natural person or persons (or corporation, the majority stock of which is held by a person or persons otherwise meeting the requirements of this section) who: 1) hold legal or equitable title to the surface of split estate lands; 2) have their principal place of residence on the land, or personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface-mining operations; or receive directly a significant portion of their income, if any, from such farming and ranching operations; and 3) have met the above conditions for a period of at least three years, except for persons who gave written consent less than three years after they met the above requirements. In computing the three year period the authorized officer shall include periods during which title was

qualified to give consent to mine federal minerals under their private estates. A final determination of surface-owner status and qualified surface-owner consultation would occur prior to issuance of the ROD and leasing if the tract is offered for leasing. In the event that one or more of the qualified surface owners would not consent to leasing, the related land (or lands) would be removed from the tract prior to holding a lease sale. However, based on patent records (available through the BLM Utah State Office), some surface owners may not have the authority, based on the congressional act⁶ under which land was transferred from federal to private ownership, to refuse access to their private surface for purposes of coal mining. A final determination of surface-owner rights to refuse access to coal resources under their private surface estates would occur prior to leasing, if the tract is offered for leasing. For purposes of the EIS analysis it is assumed that, in the event of a lease sale, all private surface estates under which coal deposits are present would be mined.

As indicated in Chapter 1, some of the coal reserves in the tract under either configuration (Proposed Action or Alternative C) are not currently considered recoverable because KFO Route 116 traverses the proposed tract. Under SMCRA, the approval of surface-mining operations on lands within 100 feet of the outside line of the ROW for a public road requires a process resulting in a final decision by DOGM or the public road authority (43 CFR 3461; Unsuitability Criterion Number 3). As discussed in Chapter 1, Section 1.8.1.1.2, the coal underlying KFO Route 116 and underlying a buffer zone extending 100 feet on either side of the outer edges of the road is currently considered unsuitable for mining. However, if the decision is to offer the tract for competitive leasing, the successful bidder, Kane County, and the BLM would work on a plan to relocate KFO Route 116, which would allow recovery of the coal underlying the road and its buffer zone. The Proposed Action and Alternative C assume that an agreement to relocate the road would be reached (KFO Route 116 relocation is discussed under each alternative in Chapter 4). Two-track roads traversing private land and routes located on BLM-administered land are also present on the tract. The EIS analysis assumes that these roads would be closed for the duration of active mining operations and that they would be replaced following completion of successful mining and reclamation activities. Temporary two-track roads and routes, which would be reclaimed following mining, may be constructed during active mining operations to allow access as necessary for private land owners and permittees (see Section 2.5.2). The estimated cost to a successful bidder for relocating KFO Route 116 and for replacing two-track roads on private land and routes on BLM-administered land would be considered by the BLM in the fair market value determination for the tract. To be successful, a bidder must pay fair market value for the tract.

The Alton Coal Tract under either configuration also includes an area where no coal is present due to erosion or past coal fires (Personal Communication, Powell 2008). This is known as the no-coal zone. Although these lands would not be mined, they are included in each tract configuration to 1) allow maximum economic recovery of all the mineable coal that lies adjacent to the no-coal zone, 2) comply with the coal leasing regulations that do not allow leasing of fewer than 10-acre aliquot parts, 3) provide additional surface acreage deemed by the BLM to be reasonably necessary to conduct mine operations, and 4) allow for habitat enhancement within the tract in close proximity to areas that would be mined.

Under either the Proposed Action or Alternative C, coal would be mined from one coal seam, referred to as the Smirl Coal Zone. The Smirl Coal Zone has an average thickness of 15.3 feet based on 25 cored drill holes over the tract. Coal quality and thickness are both variable over the tract. Some coal quality information is included in Section 3.6 of this document. The Bald Knoll Coal Zone is also present in the tract but is not proposed for mining in the lease application. According to the applicant, ACD, the quality and quantity of coal in the Bald Knoll Coal Zone within the tract is insufficient to be recoverable.

owned by a relative of such person by blood or marriage if, during such periods, he relative would have met the requirements of this section. A qualified private surface owner is legally qualified to give consent to mine federal minerals under the private surface owner's estate.

⁶ Private surface estates within the tract were originally granted to private surface owners under either 35 Stat., 844 (March 3, 1909), 36 Stat., 583 (June 22, 1910), or 39 Stat., 862 (December 29, 1916).

2.2 Alternative A: No Action

Under the No Action Alternative, ACD's application to lease the coal included in the Alton Coal Tract under the Proposed Action or Alternative C would not be approved, the LBA tract would not be offered for competitive lease sale, and the coal included in the LBA tract would not be mined.

Rejection of the application would not affect mining activities on private land adjacent to the tract (i.e., the Coal Hollow Mine). The Coal Hollow Mine consists of approximately 635 acres of land and approximately five million short tons of recoverable coal leased from private surface and mineral owners. Average annual coal production is anticipated to be approximately 2 million tons and mining activities are expected to employ approximately 160 persons (100 at the tract and 60 for coal trucking operations); though initial operations and startup would employ much less (approximately 16 employees). Rejection of the application would also not affect an anticipated permit application from ACD to mine fee coal on private lands adjacent to the tract to the north. These fee coal areas are depicted in relation to the tract under the Proposed Action in Map 1.2 and under Alternative C in Map 2.1.

To compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that the tract would not be mined in the near future if the No Action Alternative is selected. Under the No Action Alternative, the public lands within the tract would continue to be managed in accordance with the KFO RMP. The area would be managed for livestock grazing, recreation (primarily hunting and OHV use), and wildlife habitat. Vegetation treatments (wildlife habitat treatments, watershed treatments, livestock rangeland treatments, wildland fire use, fuels treatments, and stewardship contracting) would occur in support of the BLM's Healthy Lands Initiative. Private lands within the tract would continue to be used for livestock grazing, farming, and dispersed recreation (especially hunting).

Selection of the No Action Alternative would not preclude leasing and mining of this tract sometime in the future. To consider leasing and mining this tract in the future, another LBA would have to be submitted and another NEPA process would need to be conducted.

2.3 Alternative B: Proposed Action

Under the Proposed Action, the Alton Coal Tract would be offered for lease at a sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the tract. The boundaries of the tract would be reasonably consistent with the tract reconfiguration completed by the BLM after ACD's original LBA submittal (see Map 1.2).

2.3.1 Location and Overview

The tract under the Proposed Action encompasses approximately 3,576 acres, of which approximately 2,280 acres are federal surface and mineral estate and 1,296 acres are split estate; private surface estate and federal mineral estate (Map 1.2 depicts private and BLM surface within the tract under the Proposed Action). However, not all surface estates, private or federal, have coal reserves underlying them (Map 1.2 also depicts the approximate extent of the coal line within the tract). The legal description of the tract under the Proposed Action is contained in Table 2.1. The land description and acreages are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of August 21, 2002 and July 28, 2006.

Table 2.1. Alton Coal Tract Legal Description and Surface Ownership under the Proposed Action^{*}

| Legal Description [†] | Surface Owner [*] | Acres |
|---|----------------------------|--------------|
| Township 39 South, Range 5 West, Salt Lake Meridian, Utah | | |
| Section 7, SE $\frac{1}{4}$ SW $\frac{1}{4}$ and S $\frac{1}{2}$ SE $\frac{1}{4}$ | 3 | 122 |
| | 5 | 7 |
| Section 18, lots 3 and 4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$ | BLM | 357 |
| | 3 | 42 |
| | 16 | 158 |
| | 17 | 3 |
| Section 19, lots 1 through 4, NE $\frac{1}{4}$, E $\frac{1}{2}$ W $\frac{1}{2}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$ | BLM | 472 |
| | 1a | 120 |
| Section 20, lots 4 and 5, N $\frac{1}{2}$ SW $\frac{1}{4}$ | BLM | 47 |
| | 1a | 111 |
| Section 30, lots 2 through 4, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ | BLM | 338 |
| | 1a | 13 |
| Section 31, lots 1 through 3, NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ | BLM | 471 |
| Township 39 South, Range 6 West, Salt Lake Meridian, Utah | | |
| Section 12, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ | Unknown | 9 |
| | 3 | 218 |
| | 8 | 16 |
| Section 13, NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ | BLM | 160 |
| | 3 | 161 |
| Section 24, NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$ | BLM | 159 |
| | 11 | 4 |
| | 12 | 313 |
| Section 25, E $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ | BLM | 276 |
| Error [‡] | | 5 |
| Total Private | | 1,296 |
| Total BLM | | 2,280 |
| Total LBA | | 3,581 |

^{*} This table also appears in Chapter 1.

^{*} Where the BLM is the surface owner of the parcel this is explicitly noted. Private surface owners are numbered rather than identified by name due to privacy concerns.

[†] Based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of August 21, 2002 and July 28, 2006

[‡] The acreages above were calculated using ESRI ArcGIS 9.2 and NAD 1983 UTM Zone 12N coordinate system. The BLM shapefile of coal ownership is georeferenced (in NAD 1983 UTM Zone 12N), but is not survey accurate. ACD provided a hardcopy map (with surface ownership and section boundaries), which was scanned and georeferenced to section corners visible on USGS 7.5-minute topographic maps. Polygons were then digitized to encompass/represent each of the legal descriptions above using the BLM shapefile, ACD's georeferenced map, and the USGS 7.5-minute topographic map as references while digitizing. All acreages are approximate and have not been verified by ground surveys. The error is largely a result of the disparate sources for boundary data. Additionally, the ownership lines from the map provided by ACD do not align well in all locales with the BLM boundary. This suggests that one or both of these datasets are approximate and is another potential source of error.

Under the Proposed Action, recoverable portions of in-place coal reserves would be mined over approximately 25 years using 1) surface-mining methods where the depth of overburden would be approximately 200 to 300 feet, and 2) underground methods (development mining, auger mining, highwall mining, longwall mining, and/or room and pillar mining; Appendix C) where the depth of overburden would exceed approximately 200 to 300 feet. The choice of mining method, however, can vary from the 200- to 300-foot overburden threshold depending on the coal thickness, overburden type, overburden (highwall) stability, underground mining techniques available, operating and capital costs, and coal market economics. (The analysis considers surface disturbance for surface mining up to approximately 200 to 300 feet of overburden removal. These are generally referred to as overburden removal scenarios in the text.) Approximately 2 million tons of coal per year would be mined once topsoil stockpiling and initial overburden removal has occurred. Reclamation would be concurrent with mining over the course of the estimated 25-year mine life and would be followed by a potential 10-year reclamation and revegetation monitoring period.

BLM independently evaluated the coal resources included in the tract. BLM estimates that the tract under the Proposed Action consists of approximately 59.6 million tons of in-place coal and that an estimated 44.9–49.1 million tons of coal would be recoverable from the tract. The amount of recoverable coal depends on whether surface-mining methods would be discontinued at approximately 200 feet of overburden removal (44.9 million tons of recoverable coal) or approximately 300 feet of overburden removal (49.1 million tons of recoverable coal). BLM estimates that in areas where coal would be mined by surface-mining methods, approximately 90% of the estimated in-place coal reserves could be recoverable. However, in those portions of the tract that must be mined by underground mining methods, approximately 50% of the in-place coal reserves could be recoverable. These percentage recovery estimates are based on assumptions about the depth to which the use of surface-mining methods is feasible and the extent of the no-coal zone.

2.3.2 Preliminary Mine Plan

This section describes, on a conceptual level, the mining and reclamation plans that would be used to mine and reclaim lands within the tract under the Proposed Action. The conceptual mining and reclamation plans described here are not final plans but represent reasonably foreseeable development for use in analyzing the potential environmental consequences of issuing a lease for the tract.

2.3.2.1 MINING METHODS AND MINE FACILITIES⁷

It is anticipated that approximately 1,993–2,395 acres of surface disturbance would occur in the tract under the Proposed Action. Under the Proposed Action, all acres of surface disturbance are reported as a range that coincides with the application of surface-mining methods up to between 200 and 300 feet of overburden removal. Employing surface-mining methods only up to 200 feet of overburden removal would result in the smaller quantity of disturbed acres while employing surface-mining methods up to 300 feet of overburden removal would result in the greater quantity of disturbed acres.) Of this, 1,750–2,152 acres would be the result of surface-mining operations (pit disturbance). Centralized facilities associated with mining activities on the tract would be located for the life of the mine on approximately 36 acres of BLM-administered land within the tract's no-coal zone (see Map 1.2). These facilities would include an office, maintenance shop, equipment wash bay, oil and fuel storage tanks, oil and fuel storage containment, truck unloading and coal sizing area, coal stockpile area, and truck loadout area. Dispersed facilities necessary to conduct mining operations would include temporary light-use roads and haul roads,

⁷ Under the Proposed Action, an external overburden disposal area may be required, as described in Section 2.4.2.1, if a company other than ACD were the successful bidder. ACD would not require an external overburden disposal area under the Proposed Action due to fee coal leases they have already obtained adjacent to the tract that would allow them to start mining operations on the tract without creating a new pit that is not adjacent to an existing open pit.

electrical poles and lines, various temporary ponds and water-control structures, temporary topsoil and overburden stockpiles, and temporary berms and screens. These facilities would be moved on a regular basis based on the mining sequence and would result in approximately 160 acres of disturbance. Dispersed facilities would be sited to avoid disturbances to cultural resources, wetlands, floodplains, stream channels, and intact sagebrush stands wherever possible. Where it is not possible to avoid disturbances to these areas, mitigation measures would be prescribed.

Where the depth of overburden is approximately 200 to 300 feet or less, surface-mining methods would be used to mine in-place coal reserves. Topsoil removal with suitable heavy equipment, such as rubber-tired scrapers, would proceed ahead of overburden removal. Whenever possible, direct placement of topsoil in a reclamation area would be conducted but, due to scheduling, some topsoil would be temporarily stockpiled. Overburden removal would be conducted using equipment such as trucks and shovels. Other equipment used during overburden removal and backfilling would include dozers, scrapers, excavators, front-end loaders, graders, and water trucks. To confine disturbance to the active mine blocks, as overburden is removed, most of it would be directly placed into areas where coal has already been removed. According to DOGM rules and regulations, as part of the PAP for a permit to conduct mining operations, overburden is pre-sampled to verify that it is suitable for reclamation. Material found to be unsuitable for reclamation (i.e., material that is not suitable for use in reestablishing vegetation or that may affect groundwater quality due to high concentrations of certain constituents, such as adverse pH levels) would either be removed and treated, or adequately covered with suitable overburden material prior to grading and top-soiling. Most replaced overburden would be graded to approximate original contour (AOC), plowed, and finally top-soiled. In locations where the AOC cannot be achieved, a variation from AOC would be requested in the PAP and would require approval from DOGM and the land management agency or private landowner. Elevations consistent with an approved post-mining topography (PMT) plan would be established as soon as reasonably possible. Under certain conditions, the PMT may not be immediately achievable. This would occur if there is an excess of material that may require temporary stockpiling, if there is insufficient material available from current overburden removal operations, or if future operations could redisturb an area previously mined. Vegetation would be reestablished with a BLM or private landowner approved seed mix that is consistent with the post-mining land use. At any one time, active mining operations (open surface-mining pits from which coal is being removed, areas where topsoil and overburden are being removed, or both) would involve approximately 120 acres (one open pit). The depth of an open pit from which coal is being removed would be up to approximately 300 feet, and highwall length would be up to 600 feet. An additional 120 acres or more would be in some stage of reclamation (overburden replacement and top-soiling, grading to approved PMT, or seedbed beginning).

Where the depth of overburden is approximately 200 to 300 feet or more, underground mining methods would be used to mine in-place coal reserves. This would account for approximately 717 to 412 acres located in the northeastern section of the tract⁸. For underground mining, the use of methods such as development mining, auger mining, highwall mining, longwall mining, and/or room and pillar mining would be anticipated. For descriptions of these underground mining methods and references for further information see Appendix C.

Following coal removal, trucks would transport coal from the open pit to the centralized facilities for sizing, temporary stockpiling, and eventual placement on trucks for transport to market. This process would likely involve loading unsized coal into a hopper, which would then feed coal into a feeder breaker evening the flow of coal to the conveyor belt. The conveyor belt would lead to a crusher that would size

⁸ If surface mining operations were discontinued at approximately 200 feet of overburden removal, a greater acreage of the tract would be mined using underground mining methods (717 acres). If surface mining operations continued to approximately 300 feet of overburden removal, fewer acres of the tract would be mined using underground mining methods (412 acres). These acreage figures describe the total area within the tract where coal recovery would occur due to underground mining methods. Also see Maps 1.2 and 2.1.

coal to the appropriate dimensions for sale and delivery to market. After sizing, coal would be moved to a temporary stockpile (approximately 50,000 tons would be stockpiled at any one time) via a stacker (an inclined conveyor belt) before being placed on coal trucks via a feeder system. Each truck would carry approximately 42 tons of coal.

2.3.2.2 POST-MINE RECLAMATION

If the BLM decides to hold a competitive lease sale, the successful bidder would develop a site-specific, detailed mining and reclamation plan in consultation with DOGM. The reclamation portion of this plan would include specifications for grading the surface to an acceptable PMT, replacement of salvaged topsoil to an acceptable depth over suitable overburden, and reestablishment of vegetation for the determined post-mining land use.

The successful bidder would be required to post a reclamation performance bond with the State of Utah for all areas physically disturbed by mining operations. This would ensure that the operator complies with all the reclamation requirements of the DOGM Mining and Reclamation Plan Permit⁹ and that reclamation requirements are met. Once mining and reclamation operations have been completed, the successful bidder would follow reclamation bond-release procedures specified by DOGM. The reclamation bond would be fully released after a 10-year period (post-completion of permanent reclamation operations) on stable reclaimed land where revegetation standards have been met. DOGM would release the full reclamation performance bond after strict reclamation standards have been met and after the public has been provided an opportunity to comment.

Prior to reseeding, compacted areas would typically be plowed or chiseled to loosen compacted soils. Plowing or chiseling promotes water infiltration, soil aeration, and root penetration. This would be done when soils are at an optimum moisture content and are loose and friable, to promote shattering of compacted soils, but to avoid pulverizing the soil into powder. Seedbed preparation would be conducted immediately prior to seeding to prepare a firm seedbed conducive to proper seed placement, provide for moisture retention, break up dried and hardened surface soil, and eliminate weeds. It is anticipated that chiseling would be sufficient because it leaves a surface smooth enough to accommodate a tractor-drawn drill seeder but rough enough to catch broadcast seed and trap moisture and runoff. An alternative to the use of chiseling is to spread topsoil using a low ground pressure dozer, which would minimize compaction of the soil, leaving a suitable surface for seeding.

The seed mix used for revegetation on federal land would include a diverse mix of suitable native and non-native perennial grasses, forbs, and shrubs in accordance with a BLM-approved revegetation seed mix. On these lands, reclamation would most likely require an attempt to reestablish native and non-native vegetation communities suitable for the post-mining land use. Establishment of reclamation species would be designed to support post-mining land use by stabilizing the soil, providing livestock and wildlife forage, and providing thermal, nesting, and parturition cover for wildlife. On private land, revegetation would most likely involve the reestablishment of pre-mining agricultural vegetation in accordance with directives from private landowners and local, state, and federal regulations, as applicable¹⁰. In general, reclamation operations would use weed-free seed and equipment, methods that are appropriate for local rainfall and soil conditions, and methods that have been successfully used for revegetation at other, similar mines. On federal land, special consideration of post-mining habitat establishment for sagebrush obligate species would be performed in coordination with DOGM, Utah Department of Wildlife Resources (UDWR), and the BLM.

⁹ State of Utah coal mine permitting requirements (Coal Mining Rules - Utah Administrative Code Title R645) are available at <http://www.rules.utah.gov/publicat/code/r645/r645.htm>. They may also be viewed at the main office of the DOGM at 1594 West North Temple, Suite 1210, Salt Lake City, Utah 84114.

¹⁰ Revegetation would occur in accordance with the approved post-mining land use. Private landowners can change their minds in regard to the post-mining land use, and hence revegetation species and composition, but a DOGM process must be followed for approvals.

Fall and spring seeding would occur to take advantage of available moisture. During final reclamation and return of the site to direct federal management (as specified in the approved PAP), the successful bidder would obtain necessary authorizations from the appropriate regulatory agencies for final bond release and to properly reclaim and abandon facilities. In general, reclamation operations would follow BLM, DOGM, and OSM best management practices (BMP) for land use, including reclamation and would be described in detail in the PAP for the successful bidder.

2.3.2.3 WATER REQUIREMENTS

Assuming 2 million tons of coal production per year, approximately, 8,112,000 gallons (25 acre-feet) of water per year would be used for dust suppression and equipment washing. Water would be provided from groundwater accumulated in open coal pits, or from existing or newly drilled water wells in or near the tract. ACD currently has rights to 50 acre-feet of groundwater acquired from the Town of Alton. The successful bidder, if other than ACD, would need to negotiate for these water rights. ACD has not obtained rights to any surface waters within the watershed. If wells are used, water would most likely be transported by a pump and piping system. This system would consist of waterlines connected to a storage tank. The system would maintain the water level in the tank that would then be used to load one to three water trucks for use in dust suppression. The pipe length would be shortened, extended, and rerouted as needed to provide water to the active mining area. In addition to this system, water (groundwater) may also be used from the excavated areas when water is available at these locations. The water would be used by installing a pump attached to a stand pipe at the water retention location. The pump and stand pipe would then be used to load the water trucks from the retention area. This system would be used whenever practicable. All water sources would be permitted by the Utah Division of Water Quality and the Utah State Engineer's Office, as necessary.

2.3.2.4 BLASTING

Blasting operations (shooting operations) would be conducted in compliance with DOGM and the Bureau of Alcohol, Tobacco, and Firearms' rules and regulations. To make the general public aware of blasting operations, the blasting schedule would be published (as blasting requirements are identified) in accordance with DOGM regulations and requirements at Utah Administrative Code R645-301-524, Blasting and Explosives. The blasting schedule would be published in the local and regional newspapers. This notice would also be mailed to the residents of the Town of Alton, including any residences located within 0.5 mile of the tract. In accordance with DOGM blasting regulations, at least 30 days prior to blasting, all residents or owners of dwellings or structures within 0.5 mile of the permit area would receive instructions on how to request a pre-blasting survey. Pre-blasting surveys would be conducted as requested and seismographic recordings of blasting operations would be completed. Pre-blasting surveys would determine the condition of dwellings or structures and would document any pre-blasting or existing damage and other physical factors that could reasonably be affected by blasting operations. For surface blasting incident to underground mining and reclamation activities, local government and residents within 0.5 mile of the blasting site would receive notification as required by 30 CFR 817.64; however, pre-blasting surveys would only be required if 5 pounds of explosives (or more) are used (Utah Administrative Code R645-301-524.300).

There would be two basic types of blasts (shots): 1) overburden shots for shovels or other equipment and 2) coal shots. As a safety measure, shots would be designed to minimize flyrock, airblast (noise), ground vibration, emissions of NO_x, and PM with particulates of 10 micrometers or less (PM₁₀), 2.5 micrometers or less (PM_{2.5}), or both. The area would also be well marked and monitored prior to and immediately following a shot. Airblast and ground vibration due to blasting operations would be at or below the MSHA's maximum limits and emissions of NO_x, and PM would be controlled to maintain compliance with NAAQS.

2.3.2.5 LIGHTING FOR NIGHTTIME OPERATIONS

Lighting during nighttime operations would consist of one to three portable light towers, four to six fixed-position light poles, and equipment lighting. Portable light towers would be diesel powered with four lights (1,000 watts each) per tower. Each portable light tower would be approximately 30 feet tall and would be moved in accordance with the mining sequence. Fixed position light poles would consist of one 250-watt lamp per pole and would be permanently located near the centralized mine facilities. Lamps on portable light towers and fixed-position light poles would be oriented approximately 30 degrees from the horizontal down toward the ground. Equipment lighting would come from head lights, brake lights, and other safety lighting on the heavy equipment used for mining operations. The following is an estimate of ranges for the quantity of equipment that may be used during nighttime operations:

- Shovels or other loaders: 1–2
- Backhoes/front-end loaders: 1–3
- Bulldozers: 2–5
- Haul trucks: 3–10
- Graders: 1–2
- Light vehicles: 2–6
- Mechanic trucks: 1–4
- Fuel trucks: 1–2
- Water trucks: 1–2

In addition, miscellaneous lighting such as interior building lights and flashlights would commonly be used at the site.

2.3.2.6 POWER GENERATION

Electrical power generation for mining operations would be supplied through a combination of diesel generators. Fixed position, heavy equipment operations located at the centralized facilities (hopper, feeder breaker, conveyor belt, crusher, stacker, and truck feeder) would require 2–3 megawatts of power supplied by one generator. An additional generator would likely be required on-site as a back up in the event that prolonged generator maintenance or repair renders another generator temporarily unusable. Additional power (500 kilowatts to 1 megawatt) would be required for offices, fixed position light poles, maintenance shop, equipment wash bay, etc. One generator would be used to supply this power.

The generator configuration and precise specifications would be determined at the time of permitting and detailed mine planning if the tract is offered for lease. All generators would use ultra low sulfur diesel fuel (15 parts per million [ppm] of sulfur) and be equipped with EPA Tier 4 emissions controls. Generator mufflers would be construction grade (reducing noise emissions approximately 15 decibels), residential grade (reducing noise emissions approximately 25 decibels), or critical grade (reducing noise emissions approximately 35 decibels).

Electrical power from existing or upgraded local power systems could be an alternative power source but would be analyzed separately if determined to be pursued. Obtaining power from existing or upgraded local power systems is not considered reasonably foreseeable at this time (see Section 2.6.2.3, Power Generation Options).

2.3.2.7 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

Potentially hazardous materials anticipated to be used or produced during the implementation of the Proposed Action fall into the following categories:

- Liquid wastes
- Fuels: gasoline (potentially containing benzene, toluene, xylene, methyl tert-butyl, ether, and tetraethyl lead) and diesel fuel

- Coolants and antifreezes
- Lubricants: grease (potentially containing complex hydrocarbons and lithium compounds) and motor oil
- Paints
- Solvents
- Solid wastes

Solid waste that would be produced at the surface-support facilities and throughout the tract may include floor sweepings, shop rags, lubricant containers, welding rod ends, metal shavings, worn tires, packing material, used filters, and office and food wastes. Portable toilets would be provided for mine employees near areas of active mining and reclamation. Waste from these would typically be removed by a portable toilet service company according to a regular schedule. Permanent toilet facilities would be located at the surface support facilities. These would involve sealed containment tanks (as opposed to septic systems) pumped as necessary to remove wastes.

Maintenance and major oil changes for most moveable equipment would take place inside the maintenance shop. Used oil would be contained and disposed of or recycled in accordance with guidelines administered by the Utah Department of Environmental Quality's Division of Solid and Hazardous Waste. Mobile fuel trucks would be used to service and fuel mine equipment in the tract, as appropriate. All fuel storage facilities and equipment would be constructed and operated in accordance with all applicable state and federal regulations.

All solid and liquid wastes would be contained, stored, and disposed of in accordance with applicable local, state, and federal rules and regulations. Specific containment, storage, and disposal techniques would depend on the type and quantity of waste according to applicable rules and regulations. Typically, nonhazardous solid and liquid waste would be contained on-site in dumpsters and transported periodically to a landfill. Any hazardous solid or liquid wastes would typically be separated and stored in appropriately labeled (according to type of waste) barrels that meet the requirements in the Resource Conservation and Recovery Act. Barrels would typically be stored temporarily under cover before being hauled to a hazardous waste disposal facility. A spill prevention plan and other plans would also be required (see Table 2.3 in Section 2.5.1.7).

2.3.2.8 NORMAL OPERATING HOURS

Under the Proposed Action, it is anticipated that mining operations would occur 24 hours per day, five to seven days per week, and 52 weeks per year. The total number of operating days per year would be approximately 260–365.

2.3.2.9 SIGNAGE

To facilitate health and safety requirements to the general public, all public access would be restricted and precluded within the tract for the life of the mining operation. An entrance identification sign would be posted and maintained at all major entrances into the area. The signs would contain the name, address, and telephone number of the operator, the name of the local authorized agent, the DOGM permit number of the operation, and notification of restricted access. Safety signs for the public would be used where appropriate, though no fencing would be erected.

2.3.2.10 ESTIMATED EMPLOYMENT REQUIREMENTS

Under the Proposed Action, approximately 160 workers would be required to conduct mining operations. Approximately 100 of these workers would be employed at the tract and would be conducting mining operations. The remaining 60 workers would be engaged in transporting mined coal from the tract to market. It is assumed that mine employees would come primarily from Alton and surrounding towns located within approximately one to two hours (driving time) of the tract. These would include Kanab, Mt. Carmel, Orderville, Glendale, Hatch, Panguitch, Circleville, Kingston, Junction, Cedar City, Tropic, Enoch, Parowan, Paragonah, La Verkin, Hurricane, Henryville, and Escalante. Mine employees would be expected to commute to and from the work site using their private vehicles. No housing would be provided for mine employees at or near the tract.

2.3.2.11 TRAFFIC ESTIMATES

Under the Proposed Action, there would be an estimated 153 trucks travelling daily to and from the tract and reasonably foreseeable coal loadout location (the transportation route and loadout location are described in Section 2.5.4 Reasonably Foreseeable Coal Loadout Location and Transportation Route). Loaded trucks, specifically designed to reduce loss of coal dust and larger coal particles while traveling, would carry approximately 42 tons of coal each.

Traffic would also be generated from employee commuting and service operations. Employees would commute from their homes to the tract according to the normal operating hours detailed in Section 2.3.2.8. Service operations would include delivery of diesel fuel and machine and equipment parts (daily or weekly), servicing of portable toilets (weekly or biweekly), servicing of permanent toilet facilities (monthly or bimonthly), removal of waste oil (weekly or biweekly), and incidental service operations such as delivery of office supplies (bi-weekly or monthly) as necessary.

2.3.2.12 KANAB FIELD OFFICE ROUTE 116 RELOCATION

To comply with the rules and regulations of SMCRA, portions of KFO Route 116 within the tract would need to be relocated so that no surface disturbance occurs within 100 feet on either side of the outside line of the road. Relocation of the road would allow the successful bidder to mine in-place coal reserves currently underlying portions of the road and the 100-foot buffer zone on either side of the road. This EIS analysis assumes that an agreement to relocate the road would be reached if the BLM decides to hold a competitive lease sale for the tract. Mining would be feasible without relocating KFO Route 116; however, the total amount of recoverable coal would be reduced if KFO Route 116 were not relocated.

Under the Proposed Action, KFO Route 116 would be relocated, wherever possible, within the tract to a no-coal or recovered coal zone. While relocating the road to the no-coal zone or the recovered coal zone, the road would be sited to avoid disturbances to cultural resources, wetlands, floodplains, stream channels, and intact sagebrush stands wherever possible. Where it is not possible to avoid disturbances to these areas, mitigation measures would be prescribed. Access for and impacts to private landowners would also be considered while relocating the road. Under the Proposed Action, the northwestern portion of the tract (Block NW) would contain a 0.8-mile stretch of KFO Route 116. It is assumed that this stretch of the road would be relocated onto previously mined surface within this portion of the tract, according to the mining sequence. It is also assumed that relocation of KFO Route 116 would be temporary and that it would be replaced in the approximate original (current) roadbed following mining.

2.4 Alternative C: Reduced Tract Acreage and Seasonal Restrictions

Under Alternative C, the Alton Coal Tract would be modified to exclude Block NW (see Map 2.1). Further, certain mining activities in the southern portion of the tract (Block S) would be subject to seasonal restrictions to reduce impacts to the local Greater Sage-grouse population (hereafter generally referred to as sage-grouse). Under Alternative C, the modified tract would be offered for lease at a sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the tract. The boundaries of the modified tract would be reasonably consistent with the configuration shown in Map 2.1.

Consistent with the purpose and need for the federal action, the intent of Alternative C is to resolve, in part or in full, the following: issues related to the local sage-grouse population, noise, and visual impacts to the town of Alton, and issues related to conflicting land uses (agriculture versus surface mining). Alternative C may also reduce impacts to other resources such as springs and surface waters, wildlife, soils, public health and safety, paleontological resources, cultural resources, and vegetation.

2.4.1 Location and Overview

The modified tract would encompass approximately 3,173 acres, of which approximately 2,280 acres are federal surface and mineral estate and 893 acres are split estate; private surface estate and federal mineral estate (Map 2.1 depicts private and BLM surface within the modified tract). As under the Proposed Action, not all surface estates, private or federal, have coal reserves underlying them (Map 2.1 also depicts the approximate extent of the coal line within the tract). The legal description of the modified tract under Alternative C is in Table 2.2. The land description and acreages are based on the BLM Status of Public Domain and Mineral Titles approved Coal Plats as of August 21, 2002 and July 28, 2006.

Under Alternative C, recoverable portions of in-place coal reserves would be mined over approximately 21 years using surface-mining methods where the depth of overburden is approximately 200 to 300 feet, and using underground methods (development mining, auger mining, highwall mining, longwall mining, and/or room and pillar mining) where the depth of overburden exceeds approximately 200 to 300 feet. The choice of mining method, however, can vary from the 200- to 300-foot overburden threshold depending on the coal thickness, overburden type, overburden (highwall) stability, underground mining techniques available, operating and capital costs, and coal market economics. Approximately 2 million tons of coal per year would be mined once topsoil stockpiling and initial overburden removal has occurred. Reclamation would be concurrent with mining over the course of the estimated 21-year mine life and would be followed by a potential 10-year reclamation and revegetation monitoring period. Although reclamation would be concurrent with mining, due to seasonal timing stipulations required under Alternative C for Block S of the tract, the length of time between initiation of the mining process and concurrently occurring reclamation activities would be extended for some pits.

Table 2.2. Legal Description of the Modified Alton Coal Tract under Alternative C

| Legal Description [†] | Surface Owner [*] | Acres |
|--|----------------------------|--------------|
| Township 39 South, Range 5 West, Salt Lake Meridian, Utah | | |
| Section 7, SE ¼SW¼, S½SE¼; | 3 | 122 |
| | 5 | 7 |
| Section 18, lots 3 and 4, E½, E½W½; | BLM | 357 |
| | 3 | 42 |
| | 16 | 158 |
| | 17 | 3 |
| Section 19, lots 1 through 4, NE¼, E½W½, N½SE¼, SE¼SE¼; | BLM | 472 |
| | 1a | 120 |
| Section 20, lots 4 and 5, N½SW¼; | BLM | 47 |
| | 1a | 111 |
| Section 30, lots 2 through 4, SW¼NE¼, SE¼NW¼, E½SW¼, W½SE¼; | BLM | 338 |
| | 1a | 13 |
| Section 31, lots 1 through 3, NE¼, E½NW¼, NE¼SW¼, N½SE¼; | BLM | 471 |
| | | |
| Township 39 South, Range 6 West, Salt Lake Meridian, Utah | | |
| Section 13, SE¼; | BLM | 160 |
| Section 24, NE¼, N½NW¼, SE¼NW¼, E½SW¼, N½SE¼, SE¼SE¼; | BLM | 159 |
| | 11 | 4 |
| | 12 | 313 |
| Section 25, E½NE¼, SW¼NE¼, SE¼. | BLM | 276 |
| <i>Error[‡]</i> | | 5 |
| Total Private | | 893 |
| Total BLM | | 2,280 |
| Total LBA | | 3,178 |

[†] Based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of August 21, 2002 and July 28, 2006

^{*} Where the BLM is the surface owner of the parcel this is explicitly noted. Private surface owners are numbered rather than identified by name due to privacy concerns.

[‡] The acreages above were calculated using ESRI ArcGIS 9.2 and NAD 1983 UTM Zone 12N coordinate system. The BLM shapefile of coal ownership is georeferenced (in NAD 1983 UTM Zone 12N), but is not survey accurate. ACD provided a hardcopy map (with surface ownership and section boundaries), which was scanned and georeferenced to section corners visible on USGS 7.5-minute topographic maps. Polygons were then digitized to encompass/represent each of the legal descriptions above using the BLM shapefile, ACD's georeferenced map, and the USGS 7.5-minute topographic map as references while digitizing. All acreages are approximate and have not been verified by ground surveys. The error is largely a result of the disparate sources for boundary data. Additionally, the ownership lines from the map provided by ACD do not align well in all locales with the BLM boundary. This suggests that one or both of these datasets are approximate and is another potential source of error.

BLM independently evaluated the coal resources included in the tract. They estimate that under Alternative C, the tract includes approximately 52.1 million tons of in-place coal and that an estimated 38.1–42.3 million tons of coal would be recoverable from the tract. The amount of recoverable coal depends on whether surface-mining methods would be discontinued at 200 feet of overburden removal (38.1 million tons of recoverable coal) or 300 feet of overburden removal (42.3 million tons of recoverable coal). BLM estimates that in areas where coal would be mined by surface-mining methods, approximately 90% of the estimated in-place coal reserves would be recoverable. However, in those portions of the tract that must be mined by underground mining methods, approximately 50% of the in-

place coal reserves would be recoverable. These percentage recovery estimates are based on assumptions regarding the depth to which the use of surface-mining methods is feasible and the extent of the no-coal zone.

2.4.2 Preliminary Mine Plan

This section describes, on a conceptual level, the mining and reclamation plans that would be used to mine and reclaim lands within the tract under Alternative C. The conceptual mining and reclamation plans described here are not final plans but represent reasonably foreseeable development for use in analyzing the potential environmental consequences of issuing a lease for the tract.

Post-mine reclamation, water requirements, blasting, lighting for nighttime operations, power generation, hazardous materials and hazardous and solid waste, normal operating hours, signage, estimated employment requirements, and traffic estimates would be the same under Alternative C as under the Proposed Action. Therefore, these components of the preliminary mine plan for Alternative C are not described below (see Sections 2.3.2.1–2.3.2.12 for these descriptions).

2.4.2.1 MINING METHODS AND MINE FACILITIES

It is anticipated that approximately 1,662–2,064 acres of surface disturbance would occur in the tract under Alternative C. As under the Proposed Action, under Alternative C all acres of surface disturbance are reported as a range that coincides with the application of surface-mining methods up to between 200 and 300 feet of overburden removal. Employing surface-mining methods only up to 200 feet of overburden removal would result in the smaller quantity of disturbed acres, whereas employing surface-mining methods up to 300 feet of overburden removal would result in the greater quantity of disturbed acres. Of this, 1,454–1,856 acres would be the result of surface-mining operations (pit disturbance). Centralized facilities associated with mining activities on the tract would be located in the same area, occupy the same acreage (36 acres), and include the same items as the Proposed Action (see Section 2.3.2.1; see Maps 1.2 and 2.1). Dispersed facilities necessary to conduct mining operations would also be the same as the Proposed Action (see Section 2.3.2.1), including avoidance criteria, though acres (135 acres) of disturbance would differ due to the differing size of the tract. Underground mining would occur on approximately 717 to 412 acres in the northeastern section of the tract depending on whether surface-mining methods would be discontinued at 200 or 300 feet of overburden removal (see footnote 4 above for additional information on acreage of underground mining).

Mining methods employed under Alternative C would be the same as those under the Proposed Action (see Section 2.3.2.1). However, due to seasonal timing restrictions described in Section 2.4.2.3 (Sage-grouse Timing Restrictions), and as a result of the need for two simultaneously open pits, Alternative C would likely involve a greater quantity of heavy equipment and an external overburden disposal area (EODA) occupying approximately 40–60 acres (depending on mining sequence and depth of overburden) located on BLM-administered land. The EODA is an area where overburden, after excavation, is permanently stockpiled. It is often required when a new pit is opened that is not adjacent to an existing pit into which overburden would otherwise be placed as part of the concurrent mining and reclamation process. At any one time, active and suspended (due to seasonal timing restrictions) mining operations (open surface-mining pits from which coal is being removed, areas where topsoil and overburden are being removed, or both) would involve an estimated 240 acres (two pits). The depth of open pits from which coal is being removed would be up to approximately 300 feet, and highwall length would be up to 600 feet. An additional 240 acres or more would be in some stage of reclamation (overburden replacement and top-soiling, grading to approved PMT, or seedbed beginning).

2.4.2.2 KANAB FIELD OFFICE ROUTE 116 RELOCATION

As under the Proposed Action, to comply with the rules and regulations of SMCRA, portions of KFO Route 116 within the tract would need to be relocated so that no surface disturbance occurs within 100 feet on either side of the outside line of the road. Relocation of the road would allow the successful bidder to mine in-place coal reserves currently underlying portions of the road and the 100-foot buffer zone on either side of the road. This EIS analysis assumes that an agreement with Kane County to relocate the road would be reached if the BLM decides to hold a competitive lease sale for the tract. Mining would be feasible without relocating KFO Route 116; however, the total amount of recoverable coal would be reduced if KFO Route 116 were not rerouted.

Under Alternative C, as under the Proposed Action, KFO Route 116 would be relocated, wherever possible, within the tract in the no-coal zone or the recovered coal zone. While relocating the road to the no-coal zone or the recovered coal zone, the road would be sited to avoid disturbances to cultural resources, wetlands, floodplains, stream channels, and intact sagebrush stands wherever possible. Where it is not possible to avoid disturbances to these areas, mitigation measures would be prescribed. Access for and impacts to private landowners would also be considered while relocating the road. It is assumed that relocation of KFO Route 116 would be temporary and that it would be replaced in the approximate original (current) roadbed following mining.

Unlike the Proposed Action, under Alternative C, road relocation (0.8 mile) would not be required for the stretch of KFO Route 116 that traverses Block NW because this portion of the tract is excluded from Alternative C (see Map 2.1).

2.4.2.3 SAGE-GROUSE TIMING RESTRICTIONS

Under Alternative C, timing restrictions would be in place for Block S to reduce impacts to the local sage-grouse population. Data show that a lek site occurs on adjacent private property and that birds from this population use this portion of the tract during the nesting and brooding period. Under this alternative, no surface-disturbing activities would be allowed within 0.5 mile of the lek during the lekking period (February 15–March 15). Likewise, no surface-disturbing activities would be allowed in general under this alternative on Block S during the local sage-grouse's nesting and brooding period (March 15–July 15). As described in Section 2.4.2.1, this timing restriction would likely alter mining activities as compared to the Proposed Action.

2.5 Management and Considerations Common to Each Action Alternative

There are a number of management prescriptions and other considerations common to each action alternative. These items are common to each action alternative for one or more of the following reasons: 1) they are already required by law or regulation for purposes of leasing and/or mining; 2) they are BMPs or management techniques that could be readily applied to reduce impacts regardless of alternative; 3) they were developed to address issues specific to the tract and could be readily applied to reduce impacts regardless of alternative; 4) they pertain to actions and/or plans already occurring and/or over which BLM has no jurisdiction; and 5) they pertain to BLM decisions related to the tract that are independent of decisions with respect to the Proposed Action or Alternative C (i.e., BLM decisions regarding the Proposed Action or Alternative C would not necessitate changes to decisions related to these items and vice versa).

Management and considerations common to each action alternative that are discussed in this section consist of

- permits, approvals, regulatory compliance, mitigation, and monitoring (Section 2.5.1)
- two-tracks and routes within the tract (Section 2.5.2);
- potential short haul routes (Section 2.5.3); and
- reasonably foreseeable coal loadout location and transportation route (Section 2.5.4).

2.5.1 Permits, Approvals, Regulatory Compliance, Mitigation, and Monitoring

There are certain permits, approvals, and regulatory compliance, mitigation, and monitoring measures that would be required under either action alternative. These are related to 1) compliance with existing local, state, and federal rules and regulations with respect to surface coal mining and 2) special mitigation and monitoring requirements (i.e., special lease stipulations) developed for the tract. See Table 1.2 in Chapter 1 and Table 2.3 below for a summary of permits, approvals, and regulatory compliance requirements for the successful bidder.

2.5.1.1 LEASES

A federal coal lease would be required of the lessee to access and remove coal from the tract. Under either action alternative, the surface ownership of the tract is mixed (federal and private). The successful bidder would need to obtain private surface lease agreements from private surface owners to access leased federal coal reserves underlying private surface owners' lands. Tables 2.1 and 2.2 (see Sections 2.3.1 and 2.4.1) identify the number of private landowners and the acreage of private surface by legal description for the Proposed Action and Alternative C, respectively.

2.5.1.2 MINE PERMIT

The successful bidder would need to submit a PAP to DOGM to obtain a permit to mine federal coal from the tract. The PAP would provide a comprehensive and detailed description of proposed mining activities, including resource protection and mitigation measures developed in coordination with DOGM and other state and federal agencies. Some of these resource protection and mitigation measures are identified in this EIS analysis, though others may be identified in the permitting process. The PAP serves as a platform for the development of air quality, water quality and appropriation, and wetland and stream alteration permits potentially required from state and federal agencies.

2.5.1.3 RESOURCE RECOVERY AND PROTECTION PLAN

The MLA requires that before conducting any federal coal development or mining operations on a federal coal lease, the operator must submit to, and have approved by the BLM, a R2P2. The R2P2 would describe how the proposed operation would meet the MLA requirements for due diligent development, production, resource recovery and protection (i.e., effective recovery of the federal coal reserves), continued operation, maximum economic recovery, and compliance with the rules detailed in 43 CFR 3480 for the life of the mine. The successful bidder would mine the leased tract according to the approved plan, respective lease terms, and appropriate rules and regulations.

The initial R2P2 would be approved by the Assistant Secretary of the DOI, Lands and Minerals Management following recommendations from OSM and following R2P2 and MLA determinations (i.e., approvals) by the BLM. Subsequent approvals of R2P2 modifications would be issued by BLM unless the OSM determines that the modification requires further approval by the Assistant Secretary (30 CFR 746.18).

2.5.1.4 AIR QUALITY

An air quality permit would be required from the Utah Division of Air Quality (UDAQ). The permit would address allowable particulate and other emission levels and would stipulate mechanisms to be used to control emissions. As part of the air quality permit a dust control plan would be developed and implemented.

2.5.1.5 WATER QUALITY AND APPROPRIATION

The Utah Division of Water Quality would review the storm discharge permit application (Utah Pollution Discharge Elimination System (UPDES) section of the PAP), and if the plan conforms and complies with applicable rules and regulations, specific environmental permits would be issued. The Utah State Engineer's Office would review specific applications to install monitoring and production wells, and would issue permits and appropriations in accordance with the successful bidder's needs and available water resources. Installation, use, and maintenance of monitoring and production wells would be at the mine operator's expense.

2.5.1.6 WETLAND AND STREAM CHANNEL ALTERATION

Approximately 62.8 acres of wetlands are assumed to be present in Block NW of the tract. Preliminary field assessments in the fall of 2007 and summer of 2008 (SWCA 2007a; Collins 2008b: Appendix F) (Collins 2008b: Appendix F; SWCA 2007b: Appendix F) resulted in an estimate of approximately 37.5 acres of wetland with wet meadow characteristics (Map 2.2 and Appendix F); however, the larger figure is used in the analysis because a complete wetland delineation on the tract has not been performed. For purposes of analysis, these wetlands are assumed to be jurisdictional. In the event of a lease sale, a wetlands delineation conducted by a certified wetlands delineator would need to be performed as part of the mine permitting process, including Clean Water Act (CWA), Section 404 permit approval by the U.S. Army Corps of Engineers (USACE). Modifications to Lower Robinson Creek (for placement of facilities), one or two road crossings of Lower Robinson Creek, and one or two road crossings of Kanab Creek (the number of crossings would depend on specific mining sequence and specific alignment of the rerouted KFO Route 116) would require stream alteration permits from the Utah State Engineer's Office. The permit applications would be reviewed by USACE for compliance with applicable rules and regulations. Permits would be issued by the State of Utah if the application meets the criteria.

2.5.1.7 REGULATORY COMPLIANCE, MITIGATION, AND MONITORING

SMCRA and Utah State law require surface coal mines to collect extensive baseline information and to implement extensive monitoring programs and mitigation measures. Monitoring programs and mitigation measures that are required by regulation are considered to be part of any action alternative for the tract. If BLM issues a lease, an approved PAP for mining operations on the tract would be required before mining operations could be conducted. The major mitigation and monitoring measures that are required by state or federal regulation are summarized in Table 2.3. Those measures that are applicable to the mining operation under any action alternative would be implemented, as necessary, and they have been incorporated into the analysis. Standard and special lease stipulations that have been identified at this time have also been incorporated into the action alternatives. They are also summarized in Table 2.3.

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

AIR RESOURCES

| | |
|---|---|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Monitor on-site air quality for PM₁₀. • Monitor off-site ambient PM₁₀ • Conduct on-site compliance inspections. • Periodically monitor airblast frequency levels (conducted by operator), establish ground vibration limits before blasting plan is approved and is monitored by seismograph or scaled-distance equation; and keep records of on-site blasting for three years. • Conduct dispersion modeling of mining plans for annual average particulate pollution impacts on ambient air. • Employ particulate pollution control technologies. • Employ work practices designed to minimize fugitive particulate emissions. • Use EPA-mandated or state-mandated Best Available Control Technology, which may include the following: <ul style="list-style-type: none"> ○ Watering or using chemical dust suppression on haul roads and exposed soils ○ Promptly mulching and revegetating exposed soils ○ Using high efficiency baghouse dust collection systems or passive enclosure containment systems, or atomizers/foggers on the crusher, conveyor transfer, storage bin and train loadout, meeting a standard of 0.01 grain per dry standard cubic foot of exit volume ○ Watering of active work areas ○ Putting in place a reclamation plan to minimize surface disturbances subject to wind erosion; ○ Graveling of access roads with subsequent watering or chemical treatment for dust abatement to meet air quality standards ○ Limiting haul truck speeds ○ Limiting material drop heights for shovels • Implement voluntary and required measures to avoid exposing the public to NO₂ from blasting clouds, including the following: <ul style="list-style-type: none"> ○ Notifying neighbors and employees at least 24 hours prior to initial blasting according to an approved blasting schedule ○ Publishing the blasting schedule in a newspaper at least 10 days prior to initial blasting, and distributing copies of the blasting schedule to local governments and public utilities and residents within 0.5 mile of the permit area (republishing every 12 months or more frequently if the schedule changes) ○ Notifying each person within the permit area who resides or works within a 0.5-mile radius of the permit area of the blasting schedule and the meaning of the signals used in the blasting ○ Timing blasts to avoid temperature inversions and to minimize inconvenience to neighbors ○ Closing public roads, when appropriate, to protect the public ○ Minimizing blast sizes ○ Posting signs on all entrances to the permit area from public roads or highways |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • Ultra low sulfur diesel fuel (15 ppm of sulfur) in generators • U.S. EPA Tier 4 emissions controls on generators |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| ALLUVIAL VALLEY FLOORS | |
|--|---|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Identify all AVFs within or adjacent to the permit area (DOGM). • Determine significance to agriculture of all identified AVFs affected by mining (DOGM). • Protect downstream AVFs during mining. • Restore essential hydrologic function of all AVFs affected by mining. • Monitor to determine restoration of essential hydrologic functions of any declared AVFs. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| COAL | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Achieve maximum economic recovery of the coal resources within the tract (MLA and BLM coal leasing regulations). • Successful bidder inspections and reporting to the BLM |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| CULTURAL RESOURCES AND NATIVE AMERICAN CONCERNS | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Conduct Class I and III surveys to identify cultural properties on all state and federal lands and on private lands affected by federal undertakings. • Consult with the state historic preservation office to evaluate eligibility of cultural properties for the National Register of Historic Places (NRHP). • Consult with state historic preservation office to evaluate effects of the federal action on historic properties. • Avoid or recover data from significant cultural properties identified by surveys, according to the approved cultural resources mitigation plan. • Notify appropriate federal personnel if historic or prehistoric materials are uncovered during mining operations. • Instruct employees of the importance of and regulatory obligations to protect cultural resources. • Consult Native American tribes with known interest in this area of leasing action and request for help in identifying potentially significant religious or cultural sites. • Comply with Native American Graves Protection and Repatriation Act. • Monitor and mitigate according to the approved cultural resources mitigation plan. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| GEOLOGY AND MINERALS | |
|---|---|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Identify and selectively place or mix chemically or physically unsuitable overburden materials to minimize adverse effects to vegetation or groundwater. DOGM requires analysis in advance of mining to detect unsuitable overburden. Restore topography to AOC. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |
| GROUNDWATER QUALITY | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Evaluate cumulative impacts to water quality associated with proposed mining. Replace existing water rights that are interrupted, discontinued, or diminished by mining with water of equivalent quality. Monitoring wells serve to track water quality in overburden, coal, interburden, underburden, and backfill. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |
| GROUNDWATER QUANTITY | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Evaluate cumulative impacts to water quantity associated with proposed mining. Replace existing water rights that are interrupted, discontinued, or diminished by mining with water of equivalent quantity. Monitoring wells serve to track water levels in overburden, coal, interburden, underburden, and backfill. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |
| HAZARDOUS AND SOLID WASTE | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Dispose of solid waste and sewage according to approved plans. Store and recycle waste oil. Maintain files containing Material Safety Data Sheets for all chemicals, compounds, and/or substances used during the course of mining and reclamation. Ensure that all production, use, storage, transport, and disposal of hazardous materials is in accordance with applicable existing or hereafter promulgated federal and state government requirements. Comply with emergency reporting requirements for releases of hazardous materials as established in the Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund) of 1980, as amended. Prepare and implement spill prevention control and countermeasure plans, spill response plans, inventories of hazardous chemical categories pursuant to Section 312 of the Superfund Amendments and Reauthorization Act of 1986, as amended. Prepare emergency response plans. Conduct no specific monitoring other than that required by regulations and response plans as described. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| LAND USE | |
|---|--|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Suitably restore reclaimed areas for historic uses (grazing and wildlife). • Monitor controlled grazing prior to bond release evaluation (also see vegetation monitoring requirements). • Obtain a special use permit from Kane County to mine lands currently zoned as agricultural. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| NOISE | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Protect employees and local members of the community from hearing loss. • Conduct MSHA inspections. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| PALEONTOLOGICAL RESOURCES | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Notify appropriate federal personnel if potentially significant paleontological sites (significant large vertebrate specimens) are discovered during mining, and halting mining in that portion of the mine until the specimen(s) can be collected with accepted scientific techniques. |
| Special Lease Stipulations | <ul style="list-style-type: none"> • Monitor spoils heaps in the active portion of the mine twice a week during operations to locate and collect significant fossils as they appear. • Establish a fund (available through a competitive granting process to academic institutions, museums, federal, state, local, or other qualified parties) in the amount of \$100,000 for research on the same types of resources on adjacent public lands. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| SAGE-GROUSE | |
|---|---|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • See section 1.8.1.1.2; for purposes of analysis in this EIS it is assumed that an exception, modification, or waiver would be granted in the event of a lease. Lease stipulations detailed below would apply. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • Create or enhance nesting and brooding habitat on BLM-administered land within the tract in the no-coal zone (habitat creation/enhancement area identified as Block Sa in maps). • Following short- and medium-term mitigation and habitat reclamation measures, including the following: <ul style="list-style-type: none"> ○ Reclaiming to AOC and seeding with sagebrush and grasses based on approved ecological site descriptions ○ Using livestock in the post-mining stage in the same areas as pre-mining to maintain approximate pre-mining vegetation conditions ○ Where practicable, avoiding intact sagebrush stands for storing mining generated spoil and topsoil stockpiles ○ Locating operations to create the least possible disturbance to sage-grouse and sage-grouse habitat ○ Clearing young juniper from intact sagebrush stands ○ Cutting back juniper woodlands surrounding intact sagebrush stands • On Block S of the tract, following long-term mitigation and habitat reclamation measures, including the following: <ul style="list-style-type: none"> ○ Creating range sites based on approved ecological site descriptions (conditions for the growth of grasses, forbs, and sagebrush) for reclamation purposes ○ Planting bare root or potted sagebrush and bitterbrush transplants in identified sites to accelerate shrub reestablishment ○ Seeding/planting in the fall • Remove juniper and pinyon seedlings found in reclaimed areas until full release of the reclamation bond. • Conduct post-reclamation surveys for undesirable/ invasive plant species on an annual basis. • Begin monitoring in the next growing season after fall seeding/planting and monitor until reclamation goals are achieved. • Monitor reclamation sites to assess habitat reclamation success. • Radio-collar and monitor bird population (currently within the Alton area) throughout the year to assess bird survival, nest site and nest success, brood-rearing sites, and key winter habitat areas. |
| SOCIOECONOMICS | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Pay royalties and taxes as required by federal, state, and local regulations. • Survey and report to document volume of coal removed. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| SOIL | |
|--|--|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Salvage soil suitable to support plant growth for use in reclamation. • Protect soil stockpiles from disturbance and erosional influences. • Selectively place suitable topsoil on the graded backfill overburden surface to meet guidelines for vegetation root zones. • Order one soil survey to establish baseline conditions of fertility and soil type and to establish topsoil depth. • Sample regraded overburden for compliance with root zone criteria. Soil sampling of replaced topsoil would be used to determine amendments to be added prior to seeding. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| SURFACE WATER | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Build and maintain sediment control ponds or other devices during mining. • Restore approximate original drainage patterns during reclamation. • Restore stock ponds and playas during reclamation. • Conduct necessary UPDES storm water discharge permitting. • Monitor storage capacity in sediment ponds. • Monitor quality of discharges through the UPDES permit. • Monitor streamflow and water quality in selected springs within and adjacent to the tract. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Survey for threatened, endangered, proposed, and candidate species and their habitat. • Avoid disturbance of identified habitat for threatened, endangered, proposed, and candidate species (see above for sage-grouse). • Restore habitat for threatened, endangered, proposed, and candidate species in areas disturbed by mining. • See Wildlife Resource section below. • Conduct baseline and annual wildlife monitoring surveys. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| TOPOGRAPHY AND PHYSIOGRAPHY | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Restore to approved AOC. (Any variances to AOC would be provided in a plan to DOGM and must be approved.) • Check as-built versus approved topography with each annual report (DOGM). |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| TRANSPORTATION FACILITIES | |
|---|--|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Relocate existing public roads, if necessary, in accordance with specific agreement between road authority, surface management agency, and coal lessee. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |
| VEGETATION | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Permanently revegetate reclaimed areas according to a comprehensive revegetation plan using approved reclamation seed mixtures consisting of suitable native and non-native species. Reclaim 20% of reclaimed area with native shrubs at a density of one per square meter. Control erosion on reclaimed lands prior to seeding with final seed mixture using mulching, cover crops, or other approved measures. Chemically and mechanically control weed infestation. Directly haul topsoil wherever possible. Selectively plant shrubs in riparian areas. Plant sagebrush. Create depressions and rock piles. Use special planting procedures around rock piles. Post reclamation bond covering the cost of reclamation. Monitor revegetation growth and diversity until release of final reclamation bond (minimum 10 years). Monitor erosion to determine need for corrective action during establishment of vegetation. Use grazing exclosures and vegetation monitoring during revegetation evaluation to determine suitability for post-mining land uses. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> None identified at this time. |
| VISUAL RESOURCES AND NIGHT SKY | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> Restore landscape character during reclamation through returning to AOC and revegetation with suitable native and non-native species. |
| Special Lease Stipulations | <ul style="list-style-type: none"> Employ minimization measures to reduce impacts to night sky, such as directing lighting toward the ground to reduce skyglow during nighttime mining operations. |

Table 2.3. Regulatory Compliance or Mitigation Required by Federal, State, or Local Law and Stipulations

| WETLANDS | |
|---|---|
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Identify all wetlands that would be affected by mining. • Identify jurisdictional wetlands (USACE). • Replace all jurisdictional wetlands that would be disturbed by mining. • Replace functional wetlands as required by surface managing agency, surface landowner, and/or DOGM. • Monitor reclaimed wetlands using the same procedures used to identify pre-mining jurisdictional wetlands. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |
| WILDLIFE | |
| Federal, State, and Local Requirements | <ul style="list-style-type: none"> • Restore pre-mining topography to the maximum extent possible. • Plant a diverse mixture of grasses, forbs, and shrubs in configurations beneficial to wildlife. • Design fences to permit wildlife passage. • Follow power transmission pole guidance from Avian Power Line Interaction Committee (2005). • Increase habitat diversity by creating rock clusters and shallow depressions on reclaimed land. • Use appropriate plantings along reclaimed drainages. • Replace drainages, wetlands, and AVFs disturbed by mining. • Enforce appropriate vehicle speed limits to minimize mortality. • Instruct employees not to harass or disturb wildlife. • Follow approved raptor mitigation plans such as USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land-use Disturbances (USFWS 1999). • Conduct baseline and annual wildlife monitoring surveys. • Monitor for migratory bird species of management concern in Utah. |
| Standard and Special Lease Stipulations | <ul style="list-style-type: none"> • None identified at this time. |

If impacts that are not addressed by the existing required mitigation measures (see Table 2.3) are identified during the NEPA process, the BLM can require potential mitigation measures, in the form of stipulations on the lease, within the limits of its regulatory authority. In general, the levels of mitigation and monitoring required for surface coal mining by SMCRA and Utah State law are more extensive than those required for other surface-disturbing activities; however, concerns may periodically be identified that are not normally monitored or mitigated under existing procedures. These concerns would be addressed by DOGM under the requirements of the ongoing five-year permit review process.

2.5.2 Two-tracks and Routes within the Alton Coal Tract

Besides KFO Route 116, other roads exist within the tract, including routes on BLM-administered land and two-track roads located on private land (see Maps 1.2 and 2.1). Routes located on BLM-administered land and overlying coal reserves would either be temporarily closed or relocated (following avoidance criteria previously detailed) during active mining operations to allow for full recovery of coal resources in these areas. Following mining, these routes would be replaced in accordance with the travel plan in the land-use plan, and any temporary routes created would be reclaimed. Two-track roads located on private land and overlying coal reserves would be closed during active mining operations. Permanent or temporary relocation of these roads would be determined in consultation with the private land owner. This EIS analysis assumes that two-track roads located on private land would be closed during active mining operations and replaced in their preexisting locations and conditions following completion of mining and reclamation.

2.5.3 Reasonably Foreseeable Potential Short Haul Route (tract to Kanab Field Office Route 116 North of Alton)

One reasonably foreseeable potential short haul route exists for transporting coal from the tract to KFO Route 116 north of the town of Alton (Map 2.3). This route would traverse private surface on Block NW south of Alton, and would then head north across private surface and connect with KFO Route 116 west of Alton. This short haul route is described as reasonably foreseeable because it is already planned for potential use by the applicant (ACD) for moving mined coal from the Coal Hollow Mine, adjacent to the tract, to KFO Route 116 west of Alton. If the BLM decides to hold a competitive lease sale for the tract and a lease is issued to ACD, it is reasonably foreseeable that ACD would continue to use this short haul route while mining coal reserves contained in the tract. A successful bidder other than ACD may use a different short haul route between the tract and KFO Route 116 west of Alton. Given that BLM lacks the ability to predict the plans of a successful bidder other than ACD, attempting to guess at other potential short haul routes that may be used by a successful bidder other than ACD would be speculative and, therefore, in this EIS, no consideration is given to these routes. In the event of a competitive lease sale, if the final short haul route differs such that impacts are created that are not addressed here, additional NEPA analysis would be required.

2.5.4 Reasonably Foreseeable Coal Loadout Location and Transportation Route

Transportation of mined coal reserves from the tract to market would be dictated by existing roads and market conditions at the time of sale of mined coal. Construction and use of a rail loadout at Iron Springs, approximately 11 miles west of Cedar City, Utah, is currently the reasonably foreseeable loadout location. The transportation of coal to the rail loadout location would occur via KFO Route 116 continuing north through the town of Alton, north on US-89, west on SR-20, and finally south on I-15 exiting at exit number 59 in Cedar City. This approximately 110-mile route is currently the reasonably foreseeable

transportation route linking the tract and the loadout. Map 2.4 shows the rail loadout location and the transportation route. The loadout location and transportation route, as described, are reasonably foreseeable because they are already planned for use by the applicant (ACD) for moving mined coal from the Coal Hollow Mine, adjacent to the tract, to market. If BLM decides to hold a competitive lease sale and a lease is issued to ACD, it is reasonably foreseeable that they would continue to use this rail loadout and transportation route while mining coal reserves contained in the tract. A successful bidder other than ACD may use a different loadout location, transportation route, or both, to move mined coal from the tract to market. Given that BLM cannot predict the plans of a successful bidder other than ACD, the following would be speculative: attempting to guess at loadout location (or locations), transportation route (or routes), or both, that may be used by a successful bidder other than ACD. Therefore this EIS gives no consideration to other potential loadout locations and transportation routes.

In the event of a competitive lease sale, if the final loadout location and transportation route differ such that impacts are created that are not addressed here, additional NEPA analysis would be required.

2.6 Alternatives and Options Considered but Eliminated From Detailed Analysis

The BLM reviewed several potential alternatives and options during the course of alternatives development. Based on technical, economic, and environmental factors, as well as legal and regulatory constraints, and in light of past, present, and reasonably foreseeable future actions, none of these alternatives or options was carried forward for detailed analysis in this EIS. The rationale for eliminating each alternative (Section 2.6.1) and option (Section 2.6.2) from further analysis is discussed below.

2.6.1 Alternatives Considered but Eliminated from Detailed Analysis

Aside from the Proposed Action and Alternative C, 12 alternatives (Alternatives D through O below) were considered during the course of alternatives development. Each of these was eliminated from detailed analysis in the EIS. Sections 2.6.1.1 through 2.6.1.12 provide descriptions of these alternatives along with the rationale for eliminating each of them from detailed analysis.

2.6.1.1 ALTERNATIVE D: ALTON COAL DEVELOPMENT'S ORIGINAL LEASE BY APPLICATION SUBMITTAL

As indicated in Chapter 1, in November 2004 ACD submitted an LBA (Case Number UTU 081895) to mine federal coal, using primarily surface-mining methods, near the town of Alton, Utah. This LBA submittal contained nearly 2,683 surface acres and approximately 38 million tons of recoverable coal (Map 2.5 shows the original LBA submittal). Due to 1) the identification of additional recoverable coal reserves not included in the LBA, as submitted; 2) additional surface acreage BLM deemed necessary for mine operations; and 3) the need to exclude the Alton cemetery (to comply with regulations under 43 CFR 3461), the BLM reconfigured the tract to include approximately 898 additional surface acres and approximately 11 million additional tons of recoverable coal. The tract as reconfigured is the Proposed Action. Due to reasons as described, ACD's LBA as submitted was not carried forward for detailed analysis. Other tract configurations based on ACD's original LBA submittal were considered to address issues. Each of these was also eliminated from detailed analysis. Descriptions of these alternatives along with the rationale for eliminating each of them from detailed analysis are contained in Sections 2.6.1.8 (Alternative K) and 2.6.1.9 (Alternative L).

2.6.1.2 ALTERNATIVE E: NO SURFACE MINING

An alternative suggested during public scoping identified mining of coal reserves in the tract by use of underground recovery methods. BLM reviewed the feasibility of this alternative and determined that anticipated surface cover (shallow overburden over much of the tract composed largely of unconsolidated material) within the tract would not facilitate this mining method over most of the tract. Furthermore, underground mining methods would significantly reduce the recovery rate of coal in the tract (from 90% to 50%) where shallow overburden facilitates surface-mining methods.

Where overburden exceeds approximately 200 to 300 feet, it is anticipated that underground mining methods would be employed to recover in-place coal reserves. Overburden exceeds 200 to 300 feet over approximately 717 to 412 acres of the tract. This is the point at which underground mining methods would become more feasible than surface-mining methods, depending on economic conditions. The technical feasibility of underground mining would need to be evaluated at the time that surface mining may no longer be an economic option.

2.6.1.3 ALTERNATIVE F: POSTPONE LEASING DECISION UNTIL COMPLETION OF THE KANAB FIELD OFFICE RESOURCE MANAGEMENT PLAN REVISION

This alternative would postpone a competitive lease sale until completion of the KFO RMP. Postponing a competitive lease sale would allow the BLM to carry forward any alternatives in their RMP revision process that would result in designation of some or all of the tract and surrounding lands as unsuitable for surface mining or surface effects from underground mining.

This alternative is not necessary to preserve options for decisions in the RMP process because the RMP process is now complete and the area in and near the tract as defined in this EIS is considered suitable for surface mining and surface effects from underground mining under the KFO RMP. The *Final Coal Unsuitability Report* contained in the KFO RMP (2008b) determined that the lands in question are suitable for surface mining and surface effects from underground mining based on most of the coal unsuitability criteria under 43 CFR 3461. Some coal unsuitability criteria (Criteria 2, 3, 9, 15, 16, 18, and 19) were left undetermined in the *Final Coal Unsuitability Report* (2008b). These criteria are addressed in this EIS. Further, other coal unsuitability analyses have been performed on this area and have determined that the area is suitable for surface mining and surface effects from underground mining. See the DOI's secretarial decision document entitled, *Petition to Designate Certain Federal Lands in Southern Utah Unsuitable for Surface Coal Mining* (DOI 1980b).

2.6.1.4 ALTERNATIVE G: POSTPONE LEASING DECISION UNTIL MORE ENVIRONMENTALLY FRIENDLY COAL MINING PRACTICES ARE AVAILABLE

This alternative is based on the speculative assumption that more environmentally friendly coal mining practices will be developed in the foreseeable future, and that the use of these methods for mining in-place coal reserves contained in the tract would significantly reduce the impacts of mining.

Although more environmentally friendly coal mining techniques and practices may be developed, the timeline for the development of these potential techniques is unknown at this time. To establish a date for postponement of a competitive lease sale would therefore be speculative and the chosen date would be arbitrary. Furthermore, the degree to which potentially more environmentally friendly mining techniques would reduce impacts is not known because these mining methods have not been developed, or even

proposed. To assume that more environmentally friendly mining methods would significantly reduce the impacts of mining coal from the tract would also be speculative.

2.6.1.5 ALTERNATIVE H: CONSTRUCT A COAL-FIRED POWER PLANT NEXT TO THE TRACT

An alternative suggested during the public scoping period identified the construction of a coal-fired power plant next to the tract as a way to eliminate impacts due to the transportation of coal resources from the tract to market. This alternative would not meet the purpose and need (see Section 1.2) for the Proposed Action and alternatives and was therefore eliminated from detailed analysis in this EIS. A coal lease obtained from the BLM makes coal available for leasing but does not place constraints on its ultimate use or the location of that use. Further, considering approval of the construction and operation of a coal-fired power plant next to the tract would be outside of the framework established for this EIS when ACD submitted the Alton Coal Tract LBA to lease and mine federal coal reserves. ACD's application does not include a proposal to construct or operate a coal-fired power plant as a part of their proposal to lease and mine federal coal reserves.

Also, the total environmental impacts of Alternative H would be greater than the impacts of transportation of coal from the tract to the reasonably foreseeable rail loadout facility. This is particularly true because coal-fired power plants generally require more coal on a yearly basis than would be produced from the tract, which would likely mean that additional coal would need to be transported to the area.

2.6.1.6 ALTERNATIVE I: PROMOTE THE DEVELOPMENT OF ALTERNATIVE SOURCES OF ENERGY

Under this proposed alternative, the BLM would choose not to offer the tract for competitive leasing. Instead, the BLM would promote the development of alternative sources of energy, such as wind and solar, on lands contained within the tract as well as elsewhere within the KFO. This alternative does not meet the purpose and need (see Section 1.2) for the Proposed Action and alternatives and was therefore eliminated from detailed analysis in this EIS. In a similar manner as considering the construction of a coal-fired power plant next to the tract, foregoing coal leasing in favor of the development of alternative sources of energy would be outside the framework established for this EIS when ACD submitted their LBA to lease and mine federal coal reserves in the tract. ACD's application did not include a proposal to develop alternative sources of energy on the LBA tract or elsewhere in the KFO. A primary goal of the Energy Policy Act is to add energy supplies from diverse sources. If an alternative energy proposal were received, a separate NEPA analysis would be conducted.

2.6.1.7 ALTERNATIVE J: COAL TRANSPORTATION ALTERNATIVES

During the public scoping period, one reasonably foreseeable transportation route was presented to the public (Iron Springs' rail loadout via US-89, SR-20, and I-15; see Map 2.4 and Section 2.5.4 for a map and description, respectively). Due to concerns regarding transportation impacts along this route, several transportation alternatives were suggested. The BLM considered these alternatives and eliminated them from detailed analysis for the reasons outlined in the bulleted list below.

- Due to operations at the Coal Hollow Mine adjacent to the tract, approximately 153 coal truck round-trips would already be taking place on existing area roads and highways. Approval of the lease and mining on the tract would not result in new traffic impacts but would extend the life over which these impacts occur.

- Decisions regarding the transportation of coal from the tract to market are dictated by market conditions and the intended use of the coal resource at the time of mining and sale of coal. Limiting the ability of the successful bidder to efficiently deliver coal resources to market would not fully meet the purpose and need for the Proposed Action and alternatives because leasing and mining the coal is intended to meet market needs wherever they occur.
- Coal trucks and loads used by the successful bidder would be required to meet state and federal guidelines and regulations. Coal trucks would be legally permitted to use any road or highway not already restricted from truck traffic. Any decision to limit or curtail the use of these roads by trucks (coal trucks or otherwise) is regulated by Kane, Garfield, and Iron counties and UDOT, and it is outside the scope of this EIS and the BLM's jurisdiction.

A decision to lease on the part of the BLM would not approve any particular transportation route. This EIS presents an analysis of reasonably foreseeable impacts from reasonably foreseeable activities to meet NEPA hard-look disclosure requirements. The elimination of transportation alternatives from detailed analysis in this EIS does not mean that transportation impacts are not addressed. These impacts are addressed in detail in Chapter 4, Environmental Consequences.

During the public scoping period, transportation of coal by slurry or conveyor was also suggested. The BLM eliminated each of these alternatives from detailed analysis because they are not reasonable for the following reasons: 1) the volume of coal to be recovered from this LBA tract would not justify the large expenditures to implement either of these alternatives; 2) construction and operation of slurry lines or a large conveyor system would disturb more acreage, create more visual intrusion, and result in an overall increase in environmental consequences as compared to trucking of coal; and 3) slurry lines and conveyor systems are difficult to move once constructed, their construction as an alternative to any potential trucking routes would require that customers for the mined coal be identified prior to the conclusion of the EIS process, including putting agreements in place to ensure that markets identified now would continue to be viable at the completion of the EIS process.

2.6.1.8 ALTERNATIVE K: TRACT MODIFICATIONS TO ADDRESS CONCERNS RELATED TO GREATER SAGE-GROUSE AND BIG GAME

During the public scoping period, impacts to sage-grouse and big game were expressed as concerns. To address these concerns, BLM considered alternatives to the Proposed Action that removed portions of the tract known to be used by the local sage-grouse population according to recently collected radio collar data. Under one alternative (Alternative K1), Block NW and Block S were removed from the tract (Map 2.6). Another alternative (Alternative K2), based in part on the LBA as submitted by ACD, would remove a small portion of Block NW and another small portion of Block S from the tract (Map 2.7). Both of the blocks eliminated under Alternative K2 are within the no-coal zone. This alternative would also place timing restrictions on mining operations conducted by the successful bidder (no surface disturbance in Block NW and Block S from March 15 to July 15 and no surface disturbance within 0.5 mile of the existing, nearby lek during the lekking period, February 15 to March 15). To address big game concerns, the BLM considered requiring the successful bidder to leave buffers between forage and cover wherever possible.

Alternative K1 was eliminated from detailed analysis in the EIS due primarily to the fact that removal of Block NW and Block S from the tract would create a situation in which the remaining portion of the tract (Block C) would be sandwiched between two fee coal areas to which ACD already has access. This would effectively make an otherwise competitive bidding process noncompetitive; this tract configuration would essentially create an alternative 'tailor made' for ACD. Further, assuming that ACD would be the successful bidder, this alternative would eliminate approximately 19,000,000 tons (approximately 40%) of the coal reserves from the tract. For any other successful bidder, this alternative would eliminate

approximately 26,000,000 tons (approximately 57%) of coal from the tract. More coal would be eliminated from the tract for any successful bidder other than ACD because ACD would be able to mine coal through the boundaries of the tract adjacent to the fee coal areas (due to the existing access they would have from adjacent fee coal areas). Any other bidder would be required to keep mining operations within the tract boundaries (i.e., highwalls created for surface-mining operations would be able to abut but not cross fee coal area boundaries), translating into lower recovery rates of coal reserves within the tract for any other bidder. Eliminating these two blocks would also create a potential coal bypass issue whereby coal reserves in these blocks would not be economically recoverable in the future as stand-alone, separate lease tracts. Maximum economic recovery of the coal resource is a BLM directive that must be balanced against the need to address other issues, concerns, and regulatory requirements. However, given that any successful bidder must comply with special lease stipulations developed for the tract, in addition to already existing and hereafter promulgated regulations to reduce impacts on the environment, the complete elimination of these two blocks from the tract to address potential resource impacts is not justified at this time. A variation on Alternative K1 is considered in detail as part of Alternative C (see Section 2.4).

The tract configuration as described under Alternative K2 was not carried forward for detailed analysis in the EIS primarily because it does not represent a meaningful change from the tract configuration under the Proposed Action. The tract configuration under Alternative K2 would only be reduced by approximately 241 acres (7%) compared to the Proposed Action. Also, projected total surface disturbance under Alternative K2 would be approximately 17 acres (0.7%) less than that projected under the Proposed Action. Further, Block S is a good candidate for proposed on-site mitigation measures for sage-grouse and other sagebrush-dependent species, and it makes more sense to retain this block under all alternatives for this purpose than to eliminate it. Except for those restrictions that would also apply to Block NW, surface disturbance timing restrictions described under this alternative were carried forward for detailed analysis as part of Alternative C (see Section 2.4).

To address concerns related to impacts to big game and big game habitat, BLM considered a requirement that the successful bidder leave buffers between big game forage and cover wherever possible. This alternative was eliminated from detailed analysis because it would have limited utility given the large range used by big game, because similar habitat exists in substantial acreages adjacent to the tract, and because of the likelihood that these buffers would not be used by big game in such close proximity to mining operations.

2.6.1.9 ALTERNATIVE L: TRACT MODIFICATIONS TO ADDRESS CONCERNS RELATED TO KANAB CREEK AND POSSIBLE ALLUVIAL VALLEY FLOORS

During the alternatives development process, alternatives intended to reduce potential impacts to Kanab Creek and possible AVFs were considered. One alternative (Alternative L1) would require the successful bidder to mine the central-western portion of the tract (Block Central Western North [CWN] and Block Central Western South [CWS]) from west to east and to remove from the tract that portion of the tract in the no-coal zone to the east of these two blocks (Map 2.8). Another alternative (Alternative L2) would remove the central-western portion (Blocks CWN and CWS, including the no-coal zone) from the tract altogether (Map 2.9). Neither of these alternatives was carried forward for detailed analysis in the EIS.

First, neither alternative would provide a benefit to water quality that would be substantially greater than the water quality protection measures already required by law and regulation. Further, Alternative L1 would create more impact than the Proposed Action or Alternative C by requiring that light-use roads be routed within the LBA around the central portion (no-coal zone) of the tract rather than across this area, therefore increasing the length of the road and not eliminating road stream crossings (either way one to

two road stream crossings would be required). Additionally, Alternative L2 would likely result in the bypass of the coal contained in Block CWS (and perhaps CWN as well) because this coal would become isolated and is not present in quantities great enough (approximately 1,900,000 tons and 1,200,000 tons for Block CWS and CWN, respectively) to be economically recoverable as a separate, stand-alone lease tract.

2.6.1.10 ALTERNATIVE M: MAXIMIZE FLEXIBILITY OF MINING OPERATIONS

Under this proposed alternative, the tract configuration and preliminary mine plan would be the same as under the Proposed Action. However, no avoidance criteria (outside of that required by existing law and regulations) would be in place for siting of centralized or dispersed facilities, and the successful bidder would be allowed to disturb (pit disturbance) up to 360 acres of land prior to beginning reclamation activities. The purpose of this alternative was to maximize flexibility in mining operations for the successful bidder and, therefore, to increase maximum economic recovery of the coal resource. This alternative was eliminated from detailed analysis in the EIS because it did not provide a more comprehensive benefit than the Proposed Action in terms of meeting purpose and need. In other words, this alternative would result in more adverse impacts than the Proposed Action without resulting in a substantial increase in maximum economic recovery of the coal resource.

2.6.1.11 ALTERNATIVE N: NITROGEN DIOXIDE EMISSIONS CONTROL MEASURES

Comments provided during the scoping period suggested that BLM should consider measures to ensure that unsafe levels of NO₂, which may be emitted as a result of blasting and engine exhaust, are not released to the environment. During the alternatives development process, BLM considered including NO₂ control measures in one or more alternatives. However, due to measures already required by existing laws and regulations (see Table 2.3) to control NO₂ emissions, BLM did not carry any of these alternatives forward for detailed analysis. Emission control measures for NO₂ provided under any alternative would not provide a substantially greater benefit in terms of preventing NO₂ emissions than preventative measures already required.

2.6.1.12 ALTERNATIVE O: RESTRICT MINING OPERATIONS TO DAYLIGHT HOURS

To eliminate the potential for skyglow and impacts to the quality of night skies near the tract, BLM considered an alternative that would restrict mining activities to daylight hours only. This alternative was not carried forward for detailed analysis because mining and transporting 2 million tons of coal annually, during daylight hours only, would result in greater impacts than allowing nighttime operations. This is because the successful bidder would need to increase equipment use, increase the number of pits open at one time, and increase the volume of trucks required to deliver coal to market. Further, in terms of reduced skyglow and quality of night skies near the tract, the benefits of this alternative as compared to allowing nighttime operations would be limited because lighting requirements for nighttime mining operations would already be limited in nature, and minimization measures would be required, as described in Table 2.3. The gain in reduced skyglow by restricting mining operations to daylight hours would not compensate for increased adverse impacts as described.

2.6.2 Options Considered but Eliminated from Detailed Analysis

Certain components of the federal action would be independent of the elements of any alternative. In the EIS, these were considered options, any one of which could be chosen in combination with any alternative and would not necessitate changes in the alternative, or vice versa. Those options that were considered but not carried forward for detailed analysis are described below.

2.6.2.1 KANAB FIELD OFFICE ROUTE 116 RELOCATION OPTIONS

Under SMCRA the approval of surface-mining operations on lands within 100 feet of the outside line of the ROW for a public road requires a process resulting in a final decision by DOGM or the public road authority. At this juncture the coal underlying KFO Route 116, and underlying a buffer zone extending 100 feet on either side of the outer edges of the road, is currently considered unsuitable for mining. However, this EIS analysis assumes that an agreement to relocate the road would be reached. During the alternatives development process, several options for addressing SMCRA requirements with respect to KFO Route 116 were considered. These included the following:

- Option A: Permanently rerouting KFO Route 116 around (outside) the tract on adjacent lands
- Option B: Permanently closing KFO Route 116 without establishing an alternate, replacement route
- Option C: Closing KFO Route 116 for the duration of mining activity and reestablishing the road in its original (current) roadbed following mining activity

These options were eliminated from detailed analysis in the EIS for one or more of the following reasons: 1) Kane County would not agree to the proposed option; 2) the proposed option would result in more impacts than KFO Route 116 relocation options being considered for detailed analysis within the alternatives, without providing substantially greater benefit; 3) the proposed option would permanently or for a substantial period of time (the life of the mine) cut off access to private lands, public rangelands, or both; and 4) SMCRA would not allow the option if it were chosen.

2.6.2.2 TWO-TRACKS AND ROUTES WITHIN THE TRACT

In addition to KFO Route 116, two-tracks on private land and routes on BLM-administered land exist within the tract. The BLM considered permanently closing routes on BLM-administered land. However, such closures would permanently restrict access to these lands by permittees and would eliminate routes used for recreation. Given the current frequent use of these routes by these users (especially permittees), BLM could not justify permanent closure. Further, some of the routes that would be closed under this option would restrict access of private landowners to their private surface estates.

2.6.2.3 POWER GENERATION OPTIONS

Approximately 2–3 megawatts of electrical energy output would be required at any one time for mining operations on the tract under either the Proposed Action or Alternative C (see Section 2.3.2.6). In addition to the use of diesel-powered generators to supply this energy, which is considered in detail, supplying power via a transmission line (three possible points of origin) or a combination of diesel-powered generators and a transmission line was considered. Transmission line options considered were as follows:

- Option A: Creating a transmission line extension from US-89 at the junction with KFO Route 116 near the town of Alton to the tract
- Option B: Creating a transmission line extension from Kanab to the tract
- Option C: Creating a transmission line extension from Todd's Junction in Garfield County to the tract

Option A was not carried forward for further analysis because this transmission line extension would only be able to supply the mine operation with approximately 500 kilowatts of energy, approximately 17%–25% of the power needed to operate the mine. Under this scenario, the successful bidder would need to use generators to meet the remaining energy needs (75%–83%) of the mine. The quantity of electrical energy that could be supplied under this option would not justify the cost of investing in construction of the transmission line given the need to continually use diesel-powered generators to supply most of the energy.

Option B was not carried forward for further analysis due to the high cost of transmission line construction (\$15,000,000–\$20,000,000, according to estimates provided by Garkane Energy), and the fact that this option would only provide approximately 1 megawatt of energy for mining operations (approximately 33%–50% of the power needed to operate the mine). According to estimates provided by ACD, the cost of transmission line construction would never be paid back over the life of the mine; conducting mining operations solely with the use of diesel-powered generators is estimated to be cheaper over the life of the mine than transmission line construction. Also, under this option, the successful bidder would still need to use diesel-powered generators to supply 50%–67% of the energy required for mining operations.

The reasonably foreseeable Garkane Energy 138-kilovolt transmission line between Tropic and Hatch would create an opportunity to supply power to the mining operation via a transmission line originating at Todd's Junction (Option C). According to estimates provided by Garkane Energy, this transmission line would be able to supply 2–3 megawatts of energy to the tract, and the cost of transmission line construction would be a fraction of that under Option B. This option would be viable assuming that 1) the ongoing NEPA process related to the construction of the Garkane Energy 138-kilovolt transmission line between Tropic and Hatch results in construction of a line; 2) the successful bidder, in coordination with Garkane Energy, could obtain ROWs across all private land, as necessary, between Todd's Junction and the tract in a timely fashion (or at all); 3) Garkane Energy could guarantee that 2–3 megawatts of energy would be supplied to the tract for the projected life of the mine; and 4) there would be limited time lag (no more than one year) between the beginning of mine operations and the completion of transmission line construction. If any one of the aforementioned assumptions were violated, this option would no longer be viable. For this reason, it would be speculative to consider this as an option in this EIS, and it was therefore eliminated from detailed analysis.

2.7 Comparison of Alternatives

The following tables (Table 2.4 and Table 2.5) compare the No Action Alternative, Proposed Action, and Alternative C. Table 2.4 contains a summary comparison of the alternatives and Table 2.5 contains a summary comparison of direct and indirect impacts. The tables are presented to give a concise summary of the alternatives in a comparative form. The environmental consequences are fully analyzed in Chapter 4, Environmental Consequences. Under NEPA, all federal agencies are required to provide a detailed statement on:

- the direct and indirect environmental impacts of the Proposed Action and alternatives to the Proposed Action, including the No Action Alternative;
- any adverse environmental impacts that cannot be avoided;
- the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity;
- any irreversible and irretrievable commitments of resources; and
- the cumulative impacts of the action, when added to other past, present, and reasonably foreseeable future actions.

Table 2.4. Summary Comparison of Alternatives

| Item | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---|------------------------------|---|--|
| Recoverable Coal Reserves (short tons) [†] | 0 | 44,900,000–49,100,000 [#] | 38,100,000–42,300,000 |
| Federal Mineral Lease (acres) [†] | 3,581 | 3,581 | 3,178 |
| Private Surface Lease (acres) [‡] | 1,296 | 1,296 | 893 |
| Federal Surface Lease (acres) | 2,280 | 2,280 | 2,280 |
| Projected Annual Coal Production (short tons) | 0 | 2,000,000 | 2,000,000 |
| Projected Mine Life (years) | 0 | 25 | 21 |
| Projected Surface Disturbance from Pits (acres) | 0 | 1,750–2,152 | 1,454–1,856 |
| Projected Surface Disturbance from Centralized Facilities (acres) | 0 | 36 | 36 |
| Projected Surface Disturbance from Dispersed Facilities (acres) | 0 | 160 | 135 |
| Projected Surface Disturbance from KFO Route 116 Relocation | 0 | 47 (17 actual road + 30 ROW) | 37 (13 actual road + 24 ROW) |
| Total Projected Surface Disturbance (acres) | 0 | 1,993–2,395 | 1,662–2,064 |
| Projected Surface Disturbance During Active Mining (acres/number of pits) [§] | 0 | 120/1 | 240/2 |
| Projected Permanent Disturbance from EODA (acres/number of EODAs) | 0 | 0/0 [¶] | 40–60/1 |
| Projected Area of Underground Mining Operations ^x | 0 | 717–412 | 717–412 |
| Projected Area of Surface Impacts Due to Subsidence (acres) ^{**} | 0 | 513–211 (+166-109 outside the tract) | 513–211 (+166-109 outside the tract) |
| Projected Annual Water Use (Gallons) | 0 | 8,112,000 | 8,112,000 |
| Projected Power Needs (megawatts) and Method of Delivery | 0 | 2–3 diesel-powered generators | 2–3 diesel-powered generators |
| Normal Operating Hours (hours/days per week/days per year) | 0/0/0 | 24/6/312 | 24/6/312 |
| Projected Number of Employees | 0 | 160 | 160 |
| Projected Truck Traffic (truck roundtrips per day between the tract and the loadout location) | 0 | 153 | 153 |
| Special Timing Restrictions in Place for Block S | n/a | None | February 15–March 15 (lekking); March 15–July 15 (nesting/brooding) |

[†] Under the No Action Alternative, coal present (approximately 59,600,000 tons) would not be mined, and therefore these coal resources would not represent coal reserves.

[#] Where a range of tons, acres, or other units is provided this reflects the range between approximately an average of 200 and 300 feet of overburden removal where surface mining would occur under the Proposed Action and Alternative C. Deeper coals would be removed using underground mining methods.

[†] Federal mineral lease acres represent the total acres present in the tract whether or not they are leased. Private surface and federal surface acres do not add to total federal mineral lease acres due to errors explained in Table 2.1.

[‡] Private surface lease acres represent the total private surface acres present in the tract whether or not they would be leased.

[§] This refers to areas with open surface-mining pits from which coal is being removed and/or areas where topsoil and/or overburden is being removed.

[¶] If BLM decides to hold a competitive lease sale for the tract under the Proposed Action, and there is a successful bidder other than ACD, one EODA would be required under this alternative.

^x The projected area of underground mining operations is calculated as the approximate location where underground coal recovery would begin to the tract boundary. The range of acres provided corresponds to the range of potential overburden removal from 200 feet (with 717 acres underground mined) to 300 feet (with 412 acres underground mined).

^{**} See Chapter 4 Section 4.6 Geology and Minerals for a further explanation of surface impacts due to subsidence.

Impacts can be beneficial or adverse, and can be a primary result of an action (direct) or a secondary result (indirect). They can be permanent (irreversible), long term (occurring or remaining after the cessation of coal mining and during, or continuing, into the period following the reclamation and monitoring period), or short term (the period when the development of the mine and the mining of coal would occur). The level of impacts may also vary. The basis for conclusions regarding significance are the criteria set forth by the Council on Environmental Quality (40 CFR 1508.27) and the professional judgment of the specialists doing the analyses. Impacts can be significant during mining but be reduced to less-than-significant levels following completion of reclamation or mitigation. Definitions of the magnitude of impacts associated with the No Action Alternative, the Proposed Action, and Alternative C are presented, as appropriate, in Chapter 4, Environmental Consequences. A summary of impacts is provided in Table 2.5.

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|---|--|--|---|
| 4.2 | Aesthetic Resources–Noise | No impacts to aesthetic resources (noise) would occur under the No Action Alternative. | Increased ambient noise levels within and near the tract and along the coal haul transportation route would occur for the life of the mine (25 years) under the Proposed Action. | Increased ambient noise levels within and near the tract and along the coal haul transportation route would occur for the life of the mine, except that under Alternative C, the noise associated with mining would be located further from the town of Alton and the life of the mine would be 21 years. |
| | Aesthetic Resources–Visual Resources | No impacts to aesthetic resources (visual) would occur under the No Action Alternative. | Under the Proposed Action, short-term modifications would occur to the basic elements of form, line, color, and texture from surface-mining disturbances and presence of facilities. If the 120-acre tracks of coal are removed and rehabilitated, the existing character of the landscape would be gradually restored. The level of change to the landscape would be consistent with visual resource management (VRM) Class IV objectives. | Impacts would be the same as those described under the Proposed Action, except that a greater acreage of visual contrasts at any one time would result during mining operations and fewer total acres would be disturbed. |
| | Aesthetic Resources–Night Sky | No impacts to aesthetic resources (night sky) would occur under the No Action Alternative. | There would be a perceptible increase in nighttime skyglow from artificial lighting used during mining operations under the Proposed Action. This effect would persist for 25 years. Potential skyglow visible from Yovimpa Point within Bryce Canyon National Park would be less than that produced by several small towns in the general area. Additionally, potential skyglow visible from Brian Head Peak outside of Cedar Breaks National Monument would be much less than skyglow produced by St. George and Cedar City, Utah. | Impacts would be the same as those described under the Proposed Action, except that the effect would persist for 21 years. |
| 4.3 | Air Resources–PM₁₀ | Under the No Action Alternative, no impacts with respect to PM ₁₀ would occur as a function of mining. Existing and future emissions sources would result in concentrations of PM ₁₀ within the NAAQS. | Under the Proposed Action, existing and future emissions sources would result in concentrations of PM ₁₀ within the NAAQS for the 200-foot overburden removal scenario; however, concentrations may exceed the NAAQS for the 300-foot overburden removal scenario. | Under Alternative C, existing and future emissions sources may result in concentrations of PM ₁₀ exceeding the NAAQS for both overburden removal scenarios. |
| | Air Resources–PM_{2.5} | Under the No Action Alternative, no impacts with respect to PM _{2.5} would occur as a function of mining. Existing and future emissions sources would result in concentrations of PM _{2.5} within the NAAQS. | Under the Proposed Action, existing and future emissions sources would result in concentrations of PM _{2.5} within the NAAQS. | Under Alternative C, existing and future emissions sources would result in concentrations of PM _{2.5} within the NAAQS. |

Table 2.5. Summary of Impacts

| Section Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|--|--|---|---|
| Air Resources--NO_x | Under the No Action Alternative, no impacts with respect to NO _x would occur as a function of mining. Existing and future emissions sources would result in concentrations of NO _x within the NAAQS. | Under the Proposed Action, existing and future emissions sources would result in concentrations of NO _x within the NAAQS for the 200-foot overburden removal scenario; however, concentrations may exceed the NAAQS for the 300-foot overburden removal scenario. | Under Alternative C, existing and future emissions sources would result in concentrations of NO _x within the NAAQS for the 200-foot overburden removal scenario; however, concentrations may exceed the NAAQS for the 300-foot overburden removal scenario. |
| Air Resources--Volatile Organic Carbons (VOC) | Under the No Action Alternative, no impacts with respect to VOC would occur as a function of mining. Existing and future emissions sources would continue to have impacts. | Under the Proposed Action, VOC emissions would be small compared to regional sources. Impacts with respect to VOC would be well within regulatory limits. | Under Alternative C, VOC emissions would be small compared to regional sources. Impacts with respect to VOC would be well within regulatory limits. |
| Air Resources--CO | Under the No Action Alternative no impacts with respect to CO would occur as a function of mining. Existing and future emissions sources would result in concentrations of CO within the NAAQS. | Under the Proposed Action, existing and future emissions sources would result in concentrations of CO within the NAAQS. | Under Alternative C, existing and future emissions sources would result in concentrations of CO within the NAAQS. |
| Air Resources--SO₂ | Under the No Action Alternative no impacts with respect to SO ₂ would occur as a function of mining. Existing and future emissions sources would result in concentrations of SO ₂ within the NAAQS. | Under the Proposed Action, existing and future emissions sources would result in concentrations of SO ₂ within the NAAQS. | Under Alternative C, existing and future emissions sources would result in concentrations of SO ₂ within the NAAQS. |
| Air Resources--CO₂ | Under the No Action Alternative no impacts with respect to CO ₂ would occur as a function of mining. Existing and future emissions sources would continue to have impacts with respect to CO ₂ . | Under the Proposed Action impacts with respect to CO ₂ would occur as a function of mining. There currently is no measure as to the acceptability of these impacts. Existing and future emissions sources would continue to have impacts with respect to CO ₂ . | Under the Alternative C impacts with respect to CO ₂ would occur as a function of mining. There currently is no measure as to the acceptability of these impacts. Existing and future emissions sources would continue to have impacts with respect to CO ₂ . |
| Air Resources--Hazardous Air Pollutants (Benzene, Toluene, Xylenes, Formaldehyde, Acetaldehyde, and Acrolein) | Under the No Action Alternative no impacts with respect to HAPs would occur as a function of mining. Existing and future emissions sources would continue to have impacts. | Under the Proposed Action the potential emissions of HAPs would be well below threshold exposure levels. No adverse impacts are anticipated. | Under Alternative C the potential emissions of HAPs would be well below threshold exposure levels. No adverse impacts are anticipated. |

Table 2.5. Summary of Impacts

| Section Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|--|--|--|--|
| Air Resources-- Near-field Visibility | Under the No Action Alternative no impacts with respect to visibility would occur as a function of mining. Existing and future emissions sources would continue to have impacts with respect to visibility. | Under the Proposed Action the maximum impacts inside of Bryce Canyon National Park from a potential mine plume would be less than the VISCREEN acceptance criteria for both color change (Delta E) and contrast. | Under Alternative C the maximum impacts inside of Bryce Canyon National Park from a potential mine plume would be less than the VISCREEN acceptance criteria for both color change (Delta E) and contrast. |
| Air Resources-- Far-field Visibility | Under the No Action Alternative no impacts with respect to visibility would occur as a function of mining. Existing and future emissions sources would continue to have impacts with respect to visibility. | Under the Proposed Action the extinction changes are within the acceptable range. | Under Alternative C the extinction changes are within the acceptable range. |
| Air Resources-- Deposition | Under the No Action Alternative no impacts with respect to deposition would occur as a function of mining. Existing and future emissions sources would continue to have impacts with respect to deposition. | Under the Proposed Action impacts for sulfur and nitrogen deposition are below the minimum green line value in all cases. | Under Alternative C impacts for sulfur and nitrogen deposition are below the minimum green line value in all cases. |
| Air Resources-- Greenhouse Gases | Under the No Action Alternative no impacts with respect to greenhouse gases (GHG) would occur as a function of mining. Existing and future emissions sources would continue to have impacts with respect to GHG. | Under the Proposed Action, annual GHG emissions (CO ₂) would be approximately 0.015% of estimated 2008 global GHG emissions. | Under Alternative C, annual GHG emissions (CO ₂) would be approximately 0.015% of estimated 2008 global GHG emissions. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|---------------------------|--|--|---|
| 4.4 | Cultural Resources | <p>No impacts to cultural resources, beyond those that occur due to existing uses of the area, would occur under the No Action Alternative. In addition, management of cultural resources on BLM-managed lands within the tract would continue at the discretion of the BLM under the KFO RMP.</p> | <p>Under the Proposed Action, 69 or 70 archaeological sites eligible for the NRHP would be completely or partially removed by pit disturbance. In addition, the following would occur under this alternative:</p> <ul style="list-style-type: none"> • Four NRHP-eligible archaeological sites would be completely or partially destroyed by construction of centralized facilities. • As many as two NRHP-eligible archaeological sites would be completely or partially destroyed by the relocation of KFO Route 116. • Approximately five NRHP-eligible archaeological sites would be completely or partially destroyed by the construction of dispersed facilities. • Underground mining could impact previously unidentified archaeological sites through subsidence. • An unknown number of previously unidentified archaeological sites could be impacted by pit disturbance, construction of centralized or dispersed facilities, or KFO Route 116 relocation. • Sites not directly impacted by surface mining or facilities construction would be subject to indirect effects from vandalism, looting, or unintentional destruction for the 25-year mine life. • Native American TCPs would be subject to adverse effects to their integrity of setting, feeling, and association due to visual, auditory, and other atmospheric impacts from mining activity for the 25-year mine life. • Panguitch Historic District and Utah Heritage Highway 89/Mormon Pioneer Heritage Area would be subject to adverse effects to their integrity of setting, feeling, and association due to an incremental increase in coal truck traffic for the 25-year mine life | <p>Under Alternative C, 63 NRHP-eligible archaeological sites would be completely or partially destroyed by pit disturbance. In addition, the following would occur under this alternative:</p> <ul style="list-style-type: none"> • Four NRHP-eligible archaeological sites would be completely or partially destroyed by construction of centralized facilities. • As many as two NRHP-eligible archaeological sites would be completely or partially destroyed by the relocation of KFO Route 116. • Approximately five NRHP-eligible archaeological sites would be completely or partially destroyed by the construction of dispersed facilities. • Underground mining could impact previously unidentified archaeological sites through subsidence. • An unknown number of previously unidentified archaeological sites could be impacted by pit disturbance, construction of centralized or dispersed facilities, or KFO Route 116 relocation. • Sites not directly impacted by surface mining or facilities construction would be subject to indirect effects from vandalism, looting, or unintentional destruction for the 21-year mine life. • Native American TCPs would be subject to adverse effects to their integrity of setting, feeling, and association due to visual, auditory, and other atmospheric impacts from mining activity for the 21-year mine life. • Panguitch Historic District and Utah Heritage Highway 89/Mormon Pioneer Heritage Area would be subject to adverse effects to their integrity of setting, feeling, and association due to an incremental increase in coal truck traffic for the 21-year mine life. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|-----------------------------|--|--|--|
| 4.5 | Fire Management | No impacts to fire management would occur under the No Action Alternative. | <p>Under the Proposed Action, approximately 1,815–2,217 acres of vegetation would be removed during mining and construction activities, which would result in the greatest risk of human-caused wildfires of all the alternatives. The revegetation of this entire acreage with suitable native and non-native species and the suppression of cheatgrass (<i>Bromus tectorum</i>) would lead to reduced FRCC ratings in these areas.</p> <p>6.5 miles of new roads would be constructed due to the relocation of KFO Route 116. This increase in new road would result in an increased risk of human-caused wildfires from construction activities.</p> <p>The construction of centralized and dispersed facilities on 196 acres under the Proposed Action could lead to an increased risk of human-caused wildfires from construction activities in undisturbed vegetation.</p> <p>In addition, increased movement to and from the tract by construction equipment and coal-haul trucks would increase the risk of fuel leakage and/or sparking that could lead to wildfires in the tract and adjacent transportation corridors. An estimated 153 coal-haul vehicle round-trips per day are expected.</p> | <p>Impacts would be similar to those described under the Proposed Action, except that approximately 1,515–1,917 acres of vegetation would be removed during mining and construction activities and 4.6 miles of new roads would be constructed due to the relocation of KFO Route 116. This is more than the No Action but fewer than the Proposed Action. There would be an overall greater risk of human-caused wildfires compared to the No Action but a lesser risk compared to the Proposed Action due to fewer acres disturbed and a shorter time period when activities would take place (21 years instead of 25 years).</p> <p>The construction of centralized and dispersed facilities on 171 acres under Alternative C could lead to an increased risk of human-caused wildfires from construction activities in undisturbed vegetation.</p> <p>In addition, increased movement to and from the tract by construction equipment and coal-haul trucks would increase the risk of fuel leakage and/or sparking that could lead to wildfires in the tract and adjacent transportation corridors. An estimated 153 coal-haul vehicle round-trips per day are expected.</p> |
| 4.6 | Geology and Minerals | No impacts to geological or mineral resources would occur from surface mining under the No Action Alternative. | Under the Proposed Action, changes in topography, physiography, and stratigraphy would result from 1,750–2,152 acres of surface mining. | Under Alternative C, changes in topography, physiography, and stratigraphy would result from 1,454–1,856 acres of surface mining. |

Table 2.5. Summary of Impacts

| Section Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|------------------|--|---|--|
| | No impacts to geological or mineral resources would occur from underground mining under the No Action Alternative. | Under the Proposed Action, subsidence and changes to stratigraphy would result from 513 to 211 acres of underground mining. | Impacts would be the same as those described under the Proposed Action. |
| | No impacts to geological or mineral resources would occur from subsidence under the No Action Alternative. | Under the Proposed Action, subsidence would occur within 513 to 211 acres within the tract. Approximately 166–109 acres of subsidence would occur within the angle of influence outside the tract. | Impacts would be the same as those described under the Proposed Action. |
| | No fault hazards from underground mining would occur under the No Action Alternative. | Slight fault hazard would occur from underground mining under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | No impacts to geological or mineral resources would occur from landslides under the No Action Alternative. | A risk to structures would occur on or near landslide deposits under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | No coal would be removed under the No Action Alternative. | Removal of 44.9–49.1 million tons of coal would occur under the Proposed Action. | Removal of 38.1–42.3 million tons of coal would occur under Alternative C. |
| | Under the No Action Alternative, no impacts to geological or mineral resources would occur from fluid mineral removal due to high fluid mineral potential. | Decreased likelihood of fluid mineral removal due to mining activities would occur under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | No impact to burnt shale would occur under the No Action Alternative. | Possible burial of burnt shale resources would occur under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | No impact to gravel would occur under the No Action Alternative. | Possible burial of gravel resources would occur under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | No impact to septarian nodules would occur under the No Action Alternative. | Possible damage of burial of septarian nodules would occur under the Proposed Action. | Impacts would be the same as those described under the Proposed Action. |
| | Underground coal fires have the potential to occur through spontaneous combustion. Historical reviews and site visits have not shown any indication of past coal mine fires near the Alton Coal Tract. | Underground coal fires have the potential to occur through spontaneous combustion. Historical reviews and site visits have not shown any indication of past coal mine fires near the Alton Coal Tract. There is an increased risk of coal fires under the Proposed Action due to more coal being exposed to oxygen. Surface mining has occurred in the Alton Coal Tract in the past, and there is no evidence of fires during mining. | Impacts would be the same as those described under the Proposed Action. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|----------------------------------|--|---|--|
| 4.7 | Hazardous and Solid Waste | No Impacts to hazardous and solid waste would occur under the No Action Alternative. | Under the Proposed Action, movement to and from the tract by service vehicles and coal-haul trucks would have the potential to increase the risk of fuel leakage or solid waste spills in the tract and adjacent transportation corridors. Accidental or inadvertent leakages from storage tanks would also be possible. Spills would have adverse effects on soil, water, vegetation, and wildlife resources. Potential impacts would be mitigated through SOPs and through the creation of other plans and policies that relate to hazardous materials disposal, transport, and emergency response. | Impacts would be the same as those described under the Proposed Action with the following exceptions. The acreage of dispersed facilities constructed would be fewer than under the Proposed Action, and therefore the associated risks, such as fuel leakage and storage tank leakage, would be smaller under this alternative. Mining activities under this alternative would take place over the course of 21 years, which is four years shorter than under the Proposed Action. |
| 4.8 | Land Use and Access | Land uses would continue in their current condition under the No Action Alternative. | Under the Proposed Action, 2,280 acres of federal land and 1,296 acres of private land would be unavailable for grazing and recreation access during mining activities (life of mine). Agriculture, tourism, and recreation activities would also be prohibited or restricted during the 25-year mine life. | Under Alternative C, 2,280 acres of federal land and 893 acres of private land would be unavailable for grazing and recreation access while mining activities were occurring. Impacts would be slightly fewer than the Proposed Action with 403 fewer acres available for mining. Agriculture, tourism, and recreation activities would also be prohibited or restricted during the 21-year mine life. |
| 4.9 | Livestock Grazing | No impacts would occur to grazing from the No Action Alternative. Grazing would continue in its current condition. | Impacts under the Proposed Action would consist of the temporary loss of forage as a result of restricted access, spread of noxious weeds, and/or decreased palatability from construction dust on 1,733–2,135 acres; the temporary loss of water sources and range improvements, such as fences and cattle guards; the loss of 3,220 AUMs within seven allotments over the life of the mine and reclamation period; and livestock mortality from vehicle collisions. | Impacts under Alternative C would be the same as the Proposed Action, except that there would be restricted access for 31 years, resulting in impacts to 290 fewer vegetation acres and 368 fewer AUMs. |
| 4.10 | Paleontology | No impacts to paleontological resources would occur under the No Action Alternative. | Impacts to paleontological resources under the Proposed Action could occur on approximately 1,750–2,152 acres of land that would be disturbed for pits, 196 acres of disturbance for centralized and dispersed facilities, and 17 acres of disturbance to relocate KFO Route 116. Impacts would include destruction/loss of paleontological resources in situ as well as educational opportunities arising from discovery. | Impacts to paleontological resources under Alternative C could occur on approximately 1,454–1,856 acres of land that would be disturbed for pits, 171 acres of disturbance for centralized and dispersed facilities, and 13 acres of disturbance to relocate KFO Route 116. Adverse impacts would include destruction/loss of paleontological resources in situ. Beneficial impacts would include educational opportunities arising from discovery. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|----------------|--|---|--|
| 4.11 | Recreation | Recreation would not be impacted as a function of mining under the No Action Alternative. Presently occurring land uses would continue to interact with recreation trends in the analysis area under this alternative. | <p>The Proposed Action would result in a loss of 3,581 acres of lands available for dispersed recreation from mining over the 25-year mine life. This represents 0.4% of all lands available for big game hunting in the Paunsaugunt Plateau Management Area (PPMA). Approximately 13 miles of designated OHV routes would be temporarily removed over the life of the mine, representing a 0.7% decrease in OHV routes within the BLM KFO.</p> <p>In addition, displacement of recreational users onto 92,573 acres of adjacent public lands would affect recreational experiences of users on those lands. Approximately 3.9% of the recreation analysis area would be directly or indirectly affected by mine-related actions.</p> | <p>Alternative C would result in a loss of 3,178 acres of lands available for dispersed recreation from mining over the 21-year mine life. This represents 0.3% of all lands available for big game hunting in the PPMA. Impacts to OHV routes would be the same as the Proposed Action.</p> <p>In addition, displacement of recreational users onto 92,573 acres of adjacent public lands would affect recreational experiences of users on those lands. Approximately 3.4% of the recreation analysis area would be directly or indirectly affected by mine-related actions.</p> |
| 4.12 | Socioeconomics | Socioeconomic conditions would be similar to current conditions under the No Action Alternative. | <p>The Proposed Action would result in 160 direct jobs, 320 indirect jobs, \$6.5 million in annual wages, \$1.49 to \$1.57 billion total recovery value, \$186.62 to \$197.30 million total royalty revenue; and \$93.31 to \$98.64 million royalty revenue disbursed to the State of Utah.</p> <p>Additional taxes, fees, and payments would result, based on production amount.</p> <p>The Proposed Action would result in adverse impacts to: known recreation uses in the area (hunting and OHV use); current sense of community, social well-being, and tourism-related businesses; population, housing, and public health and safety; and environmental justice populations.</p> | <p>Socioeconomic impacts would be similar to the Proposed Action. However, shortening the life of the mine by four years would result in an approximately 17% decrease in revenues, taxes, fees and payments.</p> <p>Alternative C would result in \$1.25 to \$1.32 billion total recovery value, \$103.44 to \$111.43 million total royalty revenue, and \$78.38 to \$82.11 million total revenue disbursed to the State of Utah.</p> |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|----------------|---|--|---|
| 4.13 | Soils | No impacts to soils would occur under the No Action Alternative. | <p>Under the Proposed Action, 1,993–2,395 acres of soils would be disturbed by surface mining and by the construction of related facilities and roads. Of this total, 1,750–2,152 acres of soil resources would be disturbed by surface mining, and 243 acres would be disturbed by related activities, including the construction of centralized and dispersed facilities, the relocation and construction of roads, and the grading of road ROWs. Impacts under the Proposed Action would be considerably greater than would occur under the No Action Alternative due to the large-scale removal and replacement of soils that would occur during proposed surface-mining operations (which would not occur under the No Action Alternative).</p> <p>Surface-mining activities under the Proposed Action would drastically disturb soil resources through the large-scale removal, stockpiling, and replacement of soils during surface mining. A total of 1,750–2,152 acres of soils would be removed to its full depth where surface mining takes place, and topsoil and suitable subsoil would be stockpiled for reclamation. The disturbance (impact) caused by removing and replacing soils, as described above, would be long term. Most of the impacts (caused by facilities, some roads, etc.) would be long-term impacts, persisting for the life of the mine.</p> | Under Alternative C, 1,662–2,064 acres of soils would be disturbed by surface mining and the construction of related facilities and roads. Of this total, 1,454–2,484 acres of soil resources would be disturbed by surface mining, and 208 acres would be disturbed by other related activities, including the construction of centralized and dispersed facilities, the relocation and construction of roads, and the grading of road ROWs. Impacts under Alternative C would be of the same nature as under Proposed Action, but to a lesser degree. |
| 4.14 | Transportation | No impacts to transportation would occur under the No Action Alternative. | There would be a 2% increase in commuter traffic and coal truck traffic through Cedar City. Additional coal truck traffic would cause a 4% increase in traffic through Hatch and Panguitch. | Impacts would be the same as those described under the Proposed Action, except that the life of the mine would be 21 years instead of 25 years. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|--|---|---|---|
| 4.15 | Vegetation | No impacts to vegetation would occur under the No Action Alternative. | <p>Under the Proposed Action, 1,733–2,135 acres would be removed by surface mining (of the 3,555 acres of vegetation in the tract).</p> <p>In addition, approximately 47 acres of vegetation would be removed for the relocation of KFO Route 116, approximately 36 acres of vegetation would be removed for centralized facilities, and approximately 160 acres of vegetation would be removed for dispersed facilities.</p> <p>Under the Proposed Action, the acres of land susceptible to weed invasion would be increased by a range of 1,563–2,640 acres, and all disturbed acres would be reclaimed and revegetated during the 25-year mine life and a 10-year restoration period.</p> | <p>Impacts under Alternative C would be the same as those described under the Proposed Action, but to a lesser degree.</p> <p>Under Alternative C, 1,454–1,856 acres would be removed by surface mining (of the 3,161 acres of vegetation in the tract).</p> <p>In addition, approximately 36 acres of vegetation would be removed for the relocation of KFO Route 116, approximately 36 acres of vegetation would be removed for centralized facilities, and approximately 135 acres of vegetation would be removed for dispersed facilities.</p> <p>Under Alternative C, the acres of land susceptible to weed invasion would be increased by a range of 1,875–2,615 acres, and all disturbed acres would be reclaimed and revegetated during the 21-year mine life and a 10-year restoration period.</p> |
| 4.16 | Water Resources– Stream channel | No stream relocation would occur under the No Action Alternative. | Under the Proposed Action, 0.49–0.81 mile of Robinson Creek would be relocated, potentially affecting stream function, associated riparian corridor, and water quality. | Impacts would be the same as those described under the Proposed Action. |
| | Water Resources– Surface water | No change in surface water quality or quantity would occur under the No Action Alternative. | <p>Under the Proposed Action, runoff from 1,750 to 2,152 acres would be diverted to retention ponds. Associated loss from evaporation and infiltration would range from 29 to 35 acre-feet per year.</p> <p>In addition, small sediment load to streams would occur from dispersed facilities and road ROW, and a loss of in-stream dilution could increase concentration of TDSs over state water quality standard of 1,200 mg/L.</p> <p>Under the Proposed Action, reduced in-stream flows could result in less water available for irrigation downstream.</p> <p>In addition, a small risk of surface water contamination from accidental spills to 48–49 miles of stream that are within 100 m of the transportation route could occur, as well as a small increase in fine particles in streams associated with deposition of fugitive dust and coal dust.</p> | <p>Under Alternative C, runoff from 1,454 to 1,892 acres would be diverted to retention ponds. Associated loss from evaporation and infiltration would range from 24 to 30 acre-feet per year.</p> <p>All other impacts would be the same as those described under the Proposed Action, except for a shorter period of time.</p> |

Table 2.5. Summary of Impacts

| Section Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|--|---|---|--|
| Water Resources—Groundwater | No change in groundwater quality or quantity would occur under the No Action Alternative. | Under the Proposed Action, there would be a loss of 25 acre-feet of groundwater per year used for dust suppression for 25 years (625 acre-feet total), a loss of 200–300 acre-feet per year of water as coal moisture for 25 years (4,600–6,900 acre-feet), and a groundwater loss of 116 acre-feet per year due to evaporation in pits for 25 years (2,668 acre-feet). Groundwater losses would be up to approximately 6% of the total estimated groundwater available in the zone from which groundwater would be extracted for use in mining operations. | Under Alternative C, there would be a loss of 25 acre-feet of groundwater per year used for dust suppression for 21 years (525 acre-feet), a loss of 200–300 acre-feet of water as coal moisture for 21 years (3,800–5,700 acre-feet), and a groundwater loss of 233 acre-feet per year due to evaporation in pits for 21 years (4,427 acre-feet). Groundwater losses would be up to approximately 6% of the total estimated groundwater available in the zone from which groundwater would be extracted for use in mining operations. |
| Water Resources—Wetlands, Riparian Areas, Floodplains, and Alluvial Valley Floors | No impacts to wetlands, riparian areas, floodplains, or AVFs would occur under the No Action Alternative. | There would be a direct removal and loss of function to 55.5 acres of wetlands under the Proposed Action. In addition, impacts would occur to 6.7–10 acres of riparian area and 8.0 acres of floodplain/AVFs due to construction of dispersed facilities; impacts to these areas would include loss of habitat, destabilization of streambanks, flood plain storage and attenuation, water filtration, and groundwater recharge. | There would be no impact on wetlands under Alternative C. Under Alternative C, impacts would occur to 6.3–9.6 acres of riparian area and 7.2 acres of floodplain/AVFs due to construction of dispersed facilities; impacts to these areas would include loss of habitat, destabilization of streambanks, flood plain storage and attenuation, water filtration, and groundwater recharge. |
| Water Resources—Subsidence | No impacts to water resources would occur from subsidence under the No Action Alternative. | Under the Proposed Action, subsidence would occur on 513 to 211 acres within the tract. Approximately 166–109 acres of subsidence would occur within the angle of influence outside the tract. Potential subsidence-related water resources impacts include potential changes to surface drainage and deterioration of surface-water quality as well as changes to groundwater levels, flow, and quality | Impacts would be the same as those described under the Proposed Action. |

Table 2.5. Summary of Impacts

| Section | Resource | Alternative A (No Action) | Alternative B (Proposed Action) | Alternative C |
|---------|----------|---|---|--|
| 4.17 | Wildlife | No Impacts to wildlife, as a function of mining the tract, would occur under the No Action Alternative. | <p>Direct and indirect impacts under the Proposed Action would occur to wildlife and special status species from habitat fragmentation, alteration, loss, and displacement due to surface disturbance, noise, ground vibration, night lighting, and increased risk of vehicle mortality associated with approximately 153 coal-haul truck round-trips per day.</p> <p>In addition, surface mining, infrastructure, and road development would remove 1,975–2,377 acres (56%–67%) of wildlife and special status species habitats within the 3,555-acre tract. Approximately 36 acres of habitats would be disturbed for the relocation of KFO Route 116.</p> <p>Mining activities under the Proposed Action would occur 24 hours a day and six days a week over the 25-year mine life. All disturbed acres would be reclaimed and revegetated concurrently with mining and over the 10-year restoration period.</p> | <p>The nature of impacts under Alternative C would be the same as under the Proposed Action but would differ in acreages and timing. Direct impacts under this alternative would occur from the removal of 1,650–2,052 acres (52%–65%) of wildlife and special status species habitats within the 3,161-acre tract. Approximately 44 acres would be disturbed for the relocation of KFO Route 116.</p> <p>In addition, mining activities would occur 24 hours a day and six days a week over the 21-year mine life.</p> <p>All disturbed acres under this alternative would be reclaimed and revegetated concurrently with mining and over the 10-year restoration period.</p> |