

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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October 12, 2009

#3371

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TO: Internal File

THRU: Priscilla Burton, Lead *PWB by SAS*

FROM: Joe Helfrich, Ingrid Wieser, Biology, Land Use, Cultural Resources *lew*

SUBJECT: Coal Hollow Application, Alton Coal Development LLC, Coal Hollow Mine, C/025/0005 Task #~~3338~~ 3371

**SUMMARY:**

On June 14, 2007, the Division received an application for the Coal Hollow surface mine. The application was determined incomplete on August 27, 2007 and resubmitted on January 24, 2008. On March 19, 2008, the application was determined to be administratively complete. On December 22, 2008, the Division received the applicant's submittal that included responses to the deficiencies outlined in the first round of review. On June 16, 2009, the Division received a separate document from Alton Coal Development that described disagreements with the Division's technical analysis dated April 22, 2009. This document was not considered an official and complete document as noted by the Division. It was not accompanied by any copies of the application nor was it prepared in redline strike out. The Division received an individual response to the remaining deficiencies on August 27<sup>th</sup>, 2009 and on October 8, 2009 after a site visit with DOGM, ACD and Mt. Nebo Scientific representatives.

No deficiencies remain and this application is recommended for approval.

**TECHNICAL ANALYSIS:****GENERAL CONTENTS****REPORTING OF TECHNICAL DATA**

Regulatory Reference: 30 CFR 777.13; R645-301-130.

**Analysis:**

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The technical data for the review of the following sections of the application is accompanied by the names of the individuals or organizations responsible for collecting the data, dates of collection, analysis of the data and descriptions of the methodologies used to collect the data.

**Findings:**

The information is adequate to meet the requirements of this section of the regulations.

## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783. et. Al.

## VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

**Analysis:**

Plant communities within the proposed permit area and reference areas, (*vegetative communities in adjacent areas that represent vegetative communities that will be disturbed*), for these surface mining and reclamation activities are described in Volume 2, Chapter three of the application. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for:

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community
- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes "***Biomass Production of Plant Communities in the Coal Hollow Permit Area***". These figures are represented in pounds per acre for each community.

Appendices 3-2 and 3-4 include the methodologies, (*maps, sampling design and transect/quadrant placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species*), results, summary and discussion and color photographs for the referenced communities.

### **Findings:**

The information provided is considered adequate to meet the minimum regulatory requirements for this section.

## **FISH AND WILDLIFE RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 784.21; R645-301-322.

### **Analysis:**

Fish and Wildlife information for the permit and adjacent areas is included in Volume 2, Chapter 3, Section 322. Agency consultation and studies conducted are listed on page 3-32 and 3-33. Site-specific resource information as described in section **R645-301-322.200** of the regulations is included in the confidential portion of the application. Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. A brief narrative for each species describing the rationale for their absence and surveys conducted to verify such is included in table 3-35 of the application.

High Value habitats for black bear, rocky mountain elk, mule deer, and sage grouse are described on page 3-51 of the application and included in drawings 3-2 through 3-5. Each species map also includes the types of habitats they occupy. *In 2006, UDWR changed the terms utilized for habitat designations.* Site visits with representatives from DWR, (Dustin Schaible and Neal Perry), on October 1, 2008 were conducted to ground truth the habitat information for these species. *The term "high-value" habitat are now designated as "crucial", and have been changed as such throughout the document.* The information is derived from the DWR GIS database indicating that these four species occur within or adjacent to the proposed disturbed area. Additional information for the sage grouse is included in Appendices 3-1, 3-3, 3-5 and the text of chapter three.

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Chapter 1, appendix 1-7 contains the Environmental Assessment that addresses potential impacts associated with the relocation of the county road. The location of the road is depicted on drawing 5-3 contained in chapter five of the application. According to this drawing, the road does intercept a portion of the proposed adjacent area. The road will be used for the public and maintained with public funds; therefore, it is not considered an affected area under the R645 regulations. The BLM has analyzed the adjacent area affects of the county road realignment through the EA included in Appendix 1-7.

### **Maps and Aerial Photographs**

Vegetation communities and reference areas are delineated on drawing 3-1. Drawings 3-2 through 3-5 include the habitat for the high value wildlife species, black bear, rocky mountain elk, mule deer, and sage grouse. The first manila page in chapter 3 includes the following *statement* “*A new vegetation map has been prepared that shows the plant communities and wildlife habitats to be impacted by the mine including the new county road alignment*”. This was the response to the previous deficiency. Drawing 3-1 has been revised to include vegetation information adjacent to the permit area but does not include the proposed relocation of the county road. The wildlife habitats are depicted on drawings 3-2 through 3-6.

### **Findings:**

The information is adequate to meet the requirements of this section of the regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

### **Analysis:**

#### **Affected Area Boundary Maps**

Affected area boundary maps for vegetation and fish and wildlife information are located in Volume 3, Chapter 5, Plates 5-1, 2, 9, 10, 13, 14, and 5.

#### **Archeological Site Maps**

These maps are included in the Data Recovery plan in the confidential section of the application.

#### **Cultural Resource Maps**

These maps are included in the Data Recovery plan in the confidential section of the application.

### **Existing Surface Configuration Maps**

Drawing 5-1 includes the existing surface configuration.

### **Monitoring and Sampling Location Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Permit Area Boundary Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Vegetation Reference Area Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

## **OPERATION PLAN**

### **FISH AND WILDLIFE INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

### **Analysis:**

#### **Protection and Enhancement Plan**

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Procedures to minimize adverse impacts to fish and wildlife are included in Volume 2, Chapter 3, Section 333, pages 3-40 through 3-43 and appendices 3.1 and 3.3 of the submittal received in June of 2007 and Chapter 3, Section 333, pages 3-42 through 3-49 and appendix 3-5 of the submittal received in December of 2008.

Protection

The plan should discuss measures to protect the sage grouse breeding, nesting, and brood rearing areas to the extent possible and practicable. For example during the breeding season, the mine could avoid or minimize activities from 2 hours before sunrise to 2 hours after sunrise (i.e. no blasting or shift changes). Where practicable minimize disturbance within 4 miles of the lek during the nesting period. This may include a commitment to no premining road building in sagebrush areas or topsoil removal during this time and other human activity. The plan should discuss how the mine could reduce noise levels as much as possible from compressors, vehicles, and other sources during the breeding season to a noise level of 10 dBA above natural ambient noise. The protection plan may also provide a commitment to continue ACD's participation in the local sage grouse working group, Color Country Partnership. Chapter three, under the heading of Protection and Enhancement includes a commitment by ACD to consult with the Division 6 months prior to mining through the lek to determine an appropriate strategy to minimize impacts to the birds during the breeding season.

DOGM clearly recognizes the responsibilities of DWR and FWS with respect to the management of wildlife species and impacts to sage grouse, in particular. The applicant has expressed an interest in managing the predator population to offset the impacts to the sage grouse by financially supporting a predator control program. The Division of Wildlife Services is the managing agency that would be responsible for implementing the predator control program. They, (Mike Linnell, Director), can be contacted at 801 975 3315. Representatives from the Division consult with biologists from DWR to develop and implement predator control programs. The DWR has management plans by specific areas and a statewide management plan for Sage Grouse that includes methodologies for controlling predators.

Anthropomorphic disturbances and occupation such as surface mining can artificially increase the occurrence and populations of native and non-native predators such as red fox, ravens, and perching raptors. These predatory species can greatly impact sage grouse populations. The Predator Control plan includes:

- ♦ A discussion of how any fences, powerlines, berms or support structures will be designed to reduce perching raptors and
- ♦ A description of how the mining operations will be conducted to control animal attractants including: macro and micro food garbage left by mine workers and mine contractors; dogs; and road kill. Some mining companies have offered to contribute to the DWR's road kill clean up program, (personal conversation with Tony Wright, DWR sensitive species biologist).
- ♦ A commitment to contribute to DWRs predator control program; and/or

- ♦ A predator control plan developed by ACD in conjunction with The Division of Wildlife Services. The plan states that several species, including ravens, crow and coyotes, prey on sage grouse eggs chicks and adults. ACD commits to implementing a control program for these species in consultation with the appropriate agency(ies). The predator control program commitment is also located in appendix 3-5 on page 14.
- ♦ The employee awareness program included in chapter three of the application page 3-54 includes information that adequately addresses the management of mining activities to minimize predation.

### Enhancement

There is a given assumption that wildlife species will be displaced during the active phase of mining operations. In the case of surface mining, ongoing reclamation measures are intended to offset the displacement or restore the habitat as an enhancement measure beneficial to certain wildlife populations. DWR has changed the "high value" habitat delineation to "crucial" and the applicant has revised the text in chapter three and the habitat maps accordingly. The text on pages 3-51 and 52 includes a description of the benefits to these wildlife species from the development of the Sage grouse Conservation Area and 1700 acre PJ removal corridor. According to DWR, (personal conversation with Dustin Schaible 10/01/2008), the deer elk and bear would habituate to the proposed mining activity and not be negatively impacted by the temporary disturbance. They would also benefit by the proposed and ongoing pinyon juniper removal projects.

The sage grouse is of special concern with this permit because crucial breeding habitat exists directly on the project area to be mined. The data obtained from comparing potential sites the existing leks and roost sites indicates that they have enough similarity that they could be used for new breeding and roosting areas. Appendix 3-5 is the most recent submittal of the sage grouse protection and enhancement plan.

The plan contains the following:

#### ***1.) Minimize impacts to the birds from mining activities***

Chapter three, under the heading of Protection and Enhancement includes a commitment by ACD to consult with the Division 6 months prior to mining through the lek to determine an appropriate strategy to minimize impacts to the birds during the breeding season.

The application includes a methodology for relocating the birds to these alternative sites as noted on page 12 of appendix 3-5, appendix 3-1 and page 3-43 of chapter 3. "During the mating season decoys and calls will be used to lure the birds to alternative lek sites". DOGM and DWR support the decoy idea, although there is limited scientific literature to assure the idea will work. Page 12 of appendix 3-5 includes a commitment by ACD to notify the division 30

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days in advance of the breeding season or other appropriate time of the implementation of the decoy strategy.

The site visit on October 1, 2009 revealed that the alternative lek sites are located adjacent to the current lek and extend approximately ½ mile away from the current lek to the east. (The current lek location is described on page 14 of Appendix 3-1 [371533 Easting 4138811 Northing UTM Nad 27]).

The second action that may minimize impacts to birds is to stockpile spoils from mining operation up to 20 feet higher on a ridgeline, which may create a more distinct visual barrier than currently exists. This barrier between the mining activities and the conservation area may benefit the birds by blocking the view of human activities and may reduce noise levels.

However, the berm may also serve as a perch and or observation corridor for predators. The Division has consulted with ACD on this proposed measure and concluded that the advantages of the 20' berm are outweighed by potential for predation at this point. Alternatives may be discussed as the mining activities approach the lek areas.

***2.) Enhance current sage-grouse habitat***

The Plan recommends complete tree removal to eliminate perches and cover for predators and to improve understory growth using a tract excavator and dump trucks to haul the trees offsite. ACD has provided a commitment to conduct tree removal activities outside of the avian nesting season to avoid the take of eggs or young of other migratory birds on page 3-46 of the M&RP.

ACD has provided a commitment to implement a mechanical treatment program of the juniper, pine and gambel oak within the sagebrush areas. Chapter three pages 3-48 and appendix 3-5 page 6 of the application include information that demonstrates how that treatment will be implemented. Shrub treatments are to occur in stands that have higher shrub cover than levels recommended by Connelly (2001) for nesting and Brood rearing. The Division supports the concept of improving the sagebrush habitat by selective thinning and or creating open patches in some of the denser stands of sagebrush.

***3) Create a conservation area for the sage grouse that will never be mined***

The third goal is to establish a core sage grouse Conservation Area that will be protected from all mining activities. According to appendix 3-1, the lek is located approximately 100 yards west from the Swapp Ranch House. The conservation area, described on Page 5 of appendix 3-5, consists of 72 acres located northeast of the lek. This area is shown on Map 3-5 (the sagebrush community located northeast of the permit area).

The application notes several uses within the Conservation Area, (roosting, breeding and nesting). The application also notes the removal of trees from the Conservation Area. The site visit on October 1, 2009 has indicated that there is ample roosting habitat in the sagebrush within the conservation area and adjacent to the conservation area in the sagebrush and adjacent pinyon juniper areas, (personal conversation with Dr. Steven Peterson 10/01/2009). The removal of 8,000 trees that were encroaching the sagebrush community has been completed. The current and continued monitoring regimen will assist in determining how the birds are habituating to the advancement of the surface mining activities and an accurate estimate of the distance the birds are from the activities.

***4) Provide a corridor between north (Heut's Ranch) and south (Alton Sink Valley) populations to promote gene transfer and increase population numbers***

The fourth goal is to reestablish connectivity of the grouse populations between the Alton lek and Heut's Ranch lek by removing juniper trees from approximately 1,700 acres of land between these two areas. Existing studies show that there is already some movement of birds between Alton and Heut's Ranch; therefore, this action may increase future movement and hopefully genetic diversity.

One of the purposes of this action is to facilitate a more rapid recovery of the Alton grouse population after the mining is completed (i.e., through greater connectivity). It has been shown through research, (DR. Peterson's presentation on sage grouse habitat improvement), that connectivity between populations is the key to their viability. ACD will continue to offer financial and technical support to the ongoing development of the connectivity corridor. This process is dynamic and ongoing. The bird monitoring data shows that the birds are currently using the corridor, and have been seen in the steeper areas where the birds are supposedly using the areas for transportation. Karl Heaton, the property owner, verified that the habitat improvement for the birds is an ongoing process. As new mosaics of predominately sage, grass and forb communities are being developed; older 20-30 year treatment areas need additional treatment. ACD has committed to providing the Division with updates on the progress of the corridor and a summary in the annual report.

***5) Restore land disturbed by mining activities to enhance sage-grouse habitat***

The Plan calls for returning the vegetation to pre-mining conditions; however, if there is an opportunity to improve habitat conditions, that should be explored. Bareroot and containerized plants will be planted in addition to forb seed.

The applicant has indicated that, "The mine will rely on the DWR to obtain accurate lek counts each spring and to assist the mine in monitoring sage-grouse population patterns during mining activities". The application includes a commitment on page 14 of appendix 3-5 to provide the Division with the results of monitoring during the reclamation liability period in the

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annual report. In March 2009, 15 sage-grouse (14 males and 1 female) were collared from the Hoyts Ranch area and are being monitored.

**Alton Sage-Grouse Habitat Assessment and Mitigation Plan, (appendix 3-5)**

Page 3-44 of the M&RP discusses that Sage Grouse Mitigation plans and information are located in Appendices 3-1, 3-3 and 3-5. Each was submitted in a separate submittal of the permit application package. All have very useful information so all were kept in the final M& RP submittal. However, appendix 3-5 is the final mitigation plan for the sage grouse and all mitigation will occur according to this appendix.

Page 3-48 includes information on how the conservation area will be enhanced for Sage Grouse especially during the breeding season. Mechanical sagebrush treatments will be applied, in addition to juniper and oak removal, to reduce shrub cover and density in small areas if needed for sage grouse habitat requirements.

Division Biologist, Joe Helfrich, visited the proposed project site on October 1, 2009 with Dr. Patrick Collins (Mt. Nebo Scientific), Chris Mccort (ACD), and Dr. Steven Peterson (Peterson Hydrologic). During the visit, it was noted that intact sagebrush sites, located in the conservation area, have been cleared of all young juniper trees. With the concurrence of the Division, the long term plans to remove additional acres of Juniper will be considered if the additional coal leases are acquired.

The original application included this statement, "The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable." However, this practice is currently not supported by DWR although it has been successfully accomplished at Strawberry Reservoir. Therefore, the applicant deleted this proposed enhancement.

Page 23, paragraph 3, Pages 3-48 and 3-74 of the application describes the monitoring and mechanical treatment controls of invasive species.

**Chapter Three of the permit application Package**

Page 3-43 of the permit application package states, "...mining activities will be minimized so that the lowest disturbance will be created during the breeding season at areas adjacent to the original lek". The term "minimized" is subjective and "lowest disturbance needs to be defined. Technically all areas adjacent to the lek will be disturbed. The Division would like to clarify this perception that ACD has to shut down in order to avoid the lek during breeding season. The objective here for both the Division and presumably the applicant is to schedule the advancement of the surface mining activities through the lek when the lek is not occupied by courting sage grouse. The lek will be unoccupied for 10 months out of the year and ACD will have 2 years of mining to determine the rate of advancement. This would essentially provide ACD a 10-month window of opportunity to mine through the lek.

Chapter three, under the heading of Protection and Enhancement includes a commitment by ACD to consult with the Division 6 months prior to mining through the lek to determine an appropriate strategy to minimize impacts to the birds during the breeding season.

### **Endangered and Threatened Species**

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. As noted in Section 322.210. A narrative for each species describing the rationale for their absence and surveys conducted to verify such is included in Appendix 3-4 page 5 the application.

### **Colorado Fish Recovery Program**

According to the information in the application, the proposed mining operations are not located within the boundaries of the Upper Colorado River Basin. Therefore, the application would not need to include mine water consumption calculations in acre-feet per year for the four endangered fish species included in the Colorado Fish Recovery program.

### **Bald and Golden Eagles**

This section includes a narrative about each species including their status within ½ mile of the proposed disturbed area. The surveys show no evidence of raptor nests within ½ mile of the proposed disturbed area.

### **Wetlands and Habitats of Unusually High Value for Fish and Wildlife**

Wetland areas are described on page 3-73 of the application and chapter 7. According to the application, there are wetland areas in the permit area. Page 3-73 refers the reviewer to page 3-40 of the application for protection measures for these areas. Portions of the areas themselves will be removed during mining and replaced at reclamation. The source of the water providing flow to these areas will not be impacted as it is located to the east of the proposed disturbance. Accordingly, flow will be restored to these areas.

### **Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

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## VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

### Analysis:

Vegetation communities are described in Volume 2, Chapter three of the application. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for:

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community
- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes "***Biomass Production of Plant Communities in the Coal Hollow Permit Area***". These figures are represented in pounds per acre for each community.

Appendices 3-2 and 3-4 include the methodologies, (maps, sampling design and transect/quadrant placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species), results, summary and discussion and color photographs for the referenced communities.

Page 15, Threatened & Endangered Plant Species Survey, the application includes a description of the T&E plant species survey, and a narrative that describes the species, location, elevation, soil type, moisture requirements, and the presence or absence of each species. Threatened and Endangered Plant species are described in table 3-35, Appendix 3-4 page 5. The application, section 333, as referred to by the applicant includes the protection and enhancement measures for wet meadow areas during active mining operations. Portions of the areas themselves will be removed during mining and replaced at reclamation. The source of the water

providing flow to these areas will not be impacted as it is located to the east of the proposed disturbance. Accordingly flow will be restored to these areas.

**Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

## RECLAMATION PLAN

### GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

**Analysis:**

The reclamation plan for the Coal Hollow surface mine is included in Chapter 3, Sections 340 through 358.530, pages 44 through 74. The application includes a description of reclamation and protection measures and techniques to be implemented in order to achieve reclamation success of the areas disturbed by surface mining activities.

**Findings:**

The information in the application is adequate to meet the requirements of this section of the regulations.

### POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

**Analysis:**

The post mining land use for the areas to be mined is described in Volume 2, Chapter 4, and Pages 4-6 through 4-9. Assuming the applicant implements the reclamation plan as

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described in the MRP the post mining land use should be achieved. There are two landowners of the permit area, Richard Dame and Burton Pugh. The applicant and DOGM staff have consulted with the landowners regarding their interests in the outcome of the reclamation efforts. Management plans for each landowner are described on Pages 4-7 and 4-8 of Chapter 4.

*The Management Plan for the Richard Dame Property*, the current land use of Mr. Dame's property is forage for domestic livestock and some wildlife species. The land includes irrigated pasture for cattle and some horses, native stands of pinyon juniper and sagebrush communities as noted on map 3-1, Vegetation. Mr. Dame has expressed an interest to return his property to pasture land that focuses on domestic livestock and includes some plant species for wildlife habitat. Table 3-19 includes the seed mix, native and introduced grasses and forbs, to be planted to meet the landowner's request. A copy of the signed management plan is included in appendices 4-3 and 4-4.

*The Management Plan for the Burton Pugh Property*, the land owned by Mr. Pugh in the permit area provides forage for livestock and some wildlife species as well. The land includes non-irrigated pastureland, meadows, sagebrush/grass, pinyon juniper and oak brush communities as noted on map 3-1. The livestock on the property are mostly cattle and sometimes horses. Mr. Pugh has expressed an interest in restoring his land to its original use or better condition for livestock and wildlife habitat. In order to accomplish this, pasturelands will be reclaimed with the focus on domestic livestock. The seed mix will include plant species used by wildlife species in addition to native and introduced grasses. A portion of the property will be reclaimed to sage –grouse habitat as well as mined areas that were interspersed with pinyon juniper. A copy of the signed management plan is included in appendices 4-3 and 4-4.

Appendix 1-7 includes an Amended Grant of Easement and Assignment Agreement for County Road K3900 between Sink Valley Ranch, LLC and Alton Coal Resources, LLC. This document was signed on November 26, 2008 and filed with the County Recorder on December 4, 2008. This document confirms that the landowner is aware of two restoration alignment options on his land and has given the County a 66 ft wide easement under either scenario.

**Findings:**

The information in the application meets the requirements of this section of the regulations.

**PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES**

**Analysis:**

The application includes measures to be taken to protect fish wildlife and related environmental values during reclamation operations in chapter 3, Sections 358 through 358.530, pages 72 through 74 including:

- Threatened and Endangered Species,
- Eagles,
- Removal of a Threatened & Endangered Species,
- Riparian and Wetland Areas,
- Powerline and Transmission Facilities,
- Fences and Conveyers and,
- Toxic-Forming Areas.

Chapter 5, Section 521.125, page 5-8 states, "The MRP does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments. Chapter 3, p. 3-80 indicates there will be no ponds that contain hazardous concentrations of toxic forming materials.

**Findings:**

The information in the application meets the requirements of this section of the regulations.

## CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

**Analysis:**

Chapter 3, pages 3-44 and 3-57 and Chapter 5, pages 5-59 through 5-65 include some contemporaneous reclamation information. Section 341.100 on page 3-44 states that "*A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP*". Chapter 5 includes a detailed description of each step in the surface mining process. The text on page 5-67 and 5-68 indicates that "the mined areas will be backfilled and regraded within 60 days of the removal of the coal". Drawings 5-17, 18 and 19 include a detailed description of the phases of backfilling and regrading. Drawings 3-7 and 3-38 include timetables for reclamation.

**Findings:**

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The information provided is considered adequate to meet the requirements of this section of the regulations.

## **REVEGETATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

### **Analysis:**

#### **Revegetation: General Requirements**

The revegetation portion of the reclamation plan for the Coal Hollow surface mine is included in Chapter 3, Sections 341 through 358.530, pages 44 through 74.

#### **Revegetation: Timing**

Chapter 5 of the application includes a detailed description of the completion of each major step in the mining process. Accordingly, no more than 40 acres will be disturbed at any given time. Section 341.100 on page 3-44 states that "A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP". Chapter 5 includes a detailed description of each step in the surface mining process. As noted in the section under Contemporaneous Reclamation, Chapter 5 includes a detailed description of each step in the surface mining process. The text on page 5-67 and 5-68 indicates that "the mined areas will be backfilled and regraded within 60 days of the removal of the coal". Drawings 5-17, 18 and 19 include a detailed description of the phases of backfilling and regrading. Drawings 3-7 and 3-38 include timetables for reclamation.

#### **Revegetation: Mulching and Other Soil Stabilizing Practices**

Mulching techniques are described in Section 341.230, page 3-59 of the application. According to this information, straw or wood mulch will be applied to the reclaimed pastureland. There are additional beneficial uses for hay mulch that the applicant may wish to consider at reclamation. According to the United States Department of Agriculture research paper, Reclamation on Utah's Emery and Alton coal fields: Techniques and Plant Materials, INT-335, June 1985, page 24, "At the end of the first growing season, frequency of grass plants averaged 92 percent on the ripped area where hay had been rotovated into the soil surface compared to 52 percent on ripped areas receiving no hay amendment". According to the information in the application, subirrigated water for the pastures will be intercepted by the mining operations. The areas themselves will be removed during mining and replaced at reclamation. The source of the water providing flow to these areas will not be impacted as it is located to the east of the

proposed disturbance. Accordingly, flow will be restored to these areas once they have been reclaimed.

### **Revegetation: Standards for Success**

Standards for success are described in Section 356, pages 3-62 through 3-65 of the application. They will follow the requirements of R645-301-353 and "Appendix A, Vegetation Information Guidelines". Criteria for determining success include: Cover, Shrub Density, Frequency, Production and Diversity.

### **Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

### **Analysis:**

#### **Affected Area Boundary Maps**

Affected area boundary maps are located in Volume 3, Chapter 5, Plates 5-1, 2, 9, 10, 13, 14, and 5.

#### **Reclamation Monitoring and Sampling Location Maps**

Drawing 3-1 includes the location of the reference areas where vegetation was sampled prior to disturbance. It also includes the monitoring locations for post-disturbance monitoring.

#### **Reclamation Treatments Maps**

The reviewer is referred to Drawing 5-20 and 5-20A. 5-20 shows the location of the temporary diversion in Robinson Creek and is not at this point considered a reclamation treatment map. Drawing 5-20A is adequate to show the reclamation treatments for Robinson Creek. The application also includes the reclamation treatment maps, (Drawing 3-7) for the reclaimed areas

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including a delineation of any areas where a different seed mix or rate of application is proposed such as sage grouse habitat and pasture restoration.

**Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

**ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

**Analysis:**

Volume 6, Chapter 7, Appendix 7-7 has been added to the application to address *Alluvial Valley Floors*. This portion of the technical analysis will include a review of the requirements described in sections 302-321.240 and 321.250 and 321,260 of the R645 regulations. Section 5.4.4 refers to table 7 that identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that "*the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques*". Portions of the areas themselves will be removed during mining and replaced at reclamation. The source of the water providing flow to these areas will not be impacted as it is located to the east of the proposed disturbance. Accordingly, flow will be restored to these areas.

Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. On October 1,2, 2009 representatives from DWR, DOGM, Petersen Hydrologic, Mt. Nebo Scientific and Alton Coal Development Co. met at the proposed Coal Hollow mine location. The purpose of the field visit was multi fold and included gathering information for AVF determinations in adjacent areas, describing high value habitat for wildlife and proposed mitigation plans to off set potential impacts to sage grouse and their respective habitat. During the field evaluation, Dr. Collins discussed the interpretation of R645-302-321.260. It was concluded, personal conversation with Patrick Collins, that "an analysis of a series of aerial photographs including infrared imagery flown at a time of year to show any summer and fall differences between upland and valley floor vegetation" had been completed by the applicant. Although it was not specifically stated during the discussion in the field the Division came away with the understanding that the results and conclusions of the analysis were readily available in the application and therefore the information in the application met the requirements of this section of the regulations. The results and conclusions from the analysis of the color infrared aerial imagery, plates 3 and 4 are included in section 7.1 page 31 of Appendix 7-7.

It is clear that both plates 3 and 4 show differences between upland and valley floor vegetation. A comparison of the two plates is somewhat of a mystery as they were developed at

different exposures. The differences between the upland and valley floor vegetation should be delineated.

Appendix 7-7 includes a description of the AVF in the adjacent area, page 31 section 8.0. According to the analysis of the information in the appendix, an AVF is present to the south and west and possibly east of the proposed disturbed area. Appendix 7-7 has been revised to include information for these areas including at a minimum agricultural production as noted in section 8:1.2.

**Findings:**

The information provided is considered adequate to meet the requirements of this section of the regulations.

**RECOMMENDATIONS:**

The application is recommended for approval.