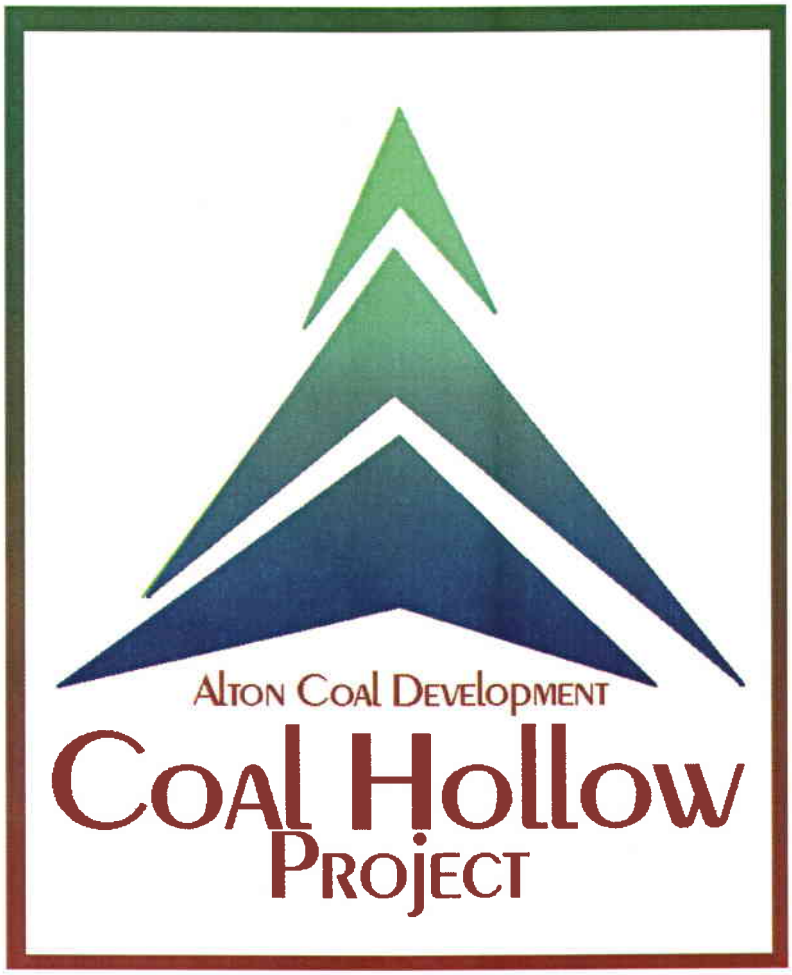
Alton Coal Development, LLC

Coal Hollow Project

Mining and Reclamation Plan
Technical Review 2 (Task ID #3100) - Revisions



Chapters 1 - 6

August 2009

C/025/0005

File in:
☐ Confidential
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☐ Expandable
Refer to Record No 0021 Date 8/27/2009
In C/025/0005, Incoming
For additional information Confidential

0021

#3371

Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720
Phone (435) 867-5331 • Fax (435) 867-1192

COPY

August 27, 2009

Daron R. Haddock
Department of Natural Resources
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114

Re: Response to Technical Review (Task ID #3100)
Coal Hollow Project, Kane County, Utah, C/025/0005

Dear Mr. Haddock:

Alton Coal Development, LLC is pleased to provide this submittal addressing the deficiencies outlined in your correspondence dated April 20, 2009 for the Coal Hollow Project application (C/025/0005) for a surface mining operation near Alton, Utah. The enclosed information, in combination with the Initial Response (enclosed) provided to the Division on June 15, 2009, directly address each item specified in the written correspondence from your office. As previously requested, confidential materials are provided separate from the main body of the submittal and are located in the inside pocket of this binder.

Please let me know if there is any other assistance that we can provide.

Sincerely,

Chris McCourt

File in:
☐ Confidential
☒ Shelf
☐ Expandable
Refer to Record No 0021 Date 08272009
In C/025/0005, 2009, Incoming
For additional information Confidential

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C/025/005 Incoming #3371 OK

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☐ New Permit ☒ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

COPY

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Mining and Reclamation Plan - Technical Review 2 (Task ID #3100) Revisions - Confidential Information
Description, Include reason for application and timing required to implement:
This confidential document is submitted to address changes in company ownership

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☒ Yes ☐ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☒ Yes ☐ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☒ Yes ☐ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☒ Yes ☐ No 15. Does the application require or include soil removal, storage or placement?
☒ Yes ☐ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☒ Yes ☐ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☒ Yes ☐ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☒ Yes ☐ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☒ Yes ☐ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☒ Yes ☐ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Chris McCourt
Print Name

Chris Hansen, Manager 8-26-09
Sign Name, Position, Date

Subscribed and sworn to before me this 26 day of August, 2009

Stephen Hyde
Notary Public

My commission Expires: 06/06, 2013
Attest: State of Utah } ss:
County of Iron

STEPHEN HYDE
Notary Public
State of Utah
Comm. No. 578719
My Comm. Expires Jun 6, 2013

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Form DOGM- C1 (Revised March 12, 2002)

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

COPY

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Mining and Reclamation Plan - Technical Review 2 (Task ID #3100) Revisions - Confidential Information

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Volume 7 Confidential, Appendix 1-1, 112.310 Members and Managers of Alton Coal page
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

COPY

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Mining and Reclamation Plan - Technical Review 2 (Task ID #3100) Revisions

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Volume 1, Chapter 1 Table of Contents (TOC) and Text Redline/Strikeout
☒ Add	☐ Replace	☐ Remove	Volume 1, Chapter 1, Appendix 1-8 Robinson Creek Road Agreement
☒ Add	☐ Replace	☐ Remove	Volume 1, Chapter 1, add K3900 Agreement Exhibits 1, 2 and 3 to Appendix 1-7
☒ Add	☐ Replace	☐ Remove	Volume 1, Chapter 1, Appendix 1-9 Kane County Conditional Use Permits
☐ Add	☒ Replace	☐ Remove	Volume 1, Chapter 2, Page 2-28
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 3 Table of Contents and Chapter 3 Text pp. 3-1 thru 3-86
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 3, Drawings 3-2, 3-3, 3-4 and 3-5
☒ Add	☐ Replace	☐ Remove	Volume 2, Chapter 3, Drawing 3-7 Reclamation Treatments, Monitoring and Sampling
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 4, Page 4-10
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 4, Appendix 4-5 Redline/Strikeout
☐ Add	☐ Replace	☒ Remove	Volume 2, Chapter 4, Appendix 4-2 UDAQ Notice of Intent
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 4, Page 4-3, Exhibit 4-1
☐ Add	☒ Replace	☐ Remove	Volume 2, Chapter 4, Table of Contents
☐ Add	☒ Replace	☐ Remove	Volume 3, Chapter 5, Table of Contents and Text Redline/Strikeout
☒ Add	☐ Replace	☐ Remove	Volume 3, Chapter 5, Appendix 5-6 Post Mining Roads Backfill Analysis
☐ Add	☒ Replace	☐ Remove	Volume 3, Chapter 5, Drawings 5-22E, 5-22F and 5-22G
☒ Add	☐ Replace	☐ Remove	Volume 3, Chapter 5, Drawing 5-22H Option A County Road Reestablishment
☐ Add	☒ Replace	☐ Remove	Volume 5, Chapter 6, Pages 6-6 thru 6-19 Redline/Strikeout
☐ Add	☒ Replace	☐ Remove	Volume 5, Chapter 6, Replace Drawing 6-9 with new 6-9a and 6-9b
☐ Add	☒ Replace	☐ Remove	Volume 6, Chapter 7, Table of Contents and Text Redline/Strikeout
☐ Add	☒ Replace	☐ Remove	Volume 6, Chapter 7, Tables 7-4 thru 7-7
☒ Add	☐ Replace	☐ Remove	Volume 6, Chapter 7, Tables 7-10, 7-11 and 7-12
☒ Add	☐ Replace	☐ Remove	Voluime 6, Chapter 7, Drawings 7-15 and 7-15B
☐ Add	☒ Replace	☐ Remove	Volume 6, Chapter 7, Drawings 7-2, 7-3 and 7-7
☐ Add	☒ Replace	☐ Remove	Volume 6, Chapter 7, Replace water rights data sheets for springs in Appendix 7-3
☒ Add	☐ Replace	☐ Remove	Volume 6, Chapter 7, Appendix 7-5, 7-9 and 7-10
☐ Add	☒ Replace	☐ Remove	Volume 6, Chapter 7, Appendix 7-7, TOC and Text; Figures 13, 14 and Plate 1
☒ Add	☐ Replace	☐ Remove	Volume 6, Chapter 7, Appendix 7-7, Figures 15, 16(A-D) and 17

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

Additional instructions and description are provided on the colored sheets seperating the individual submittals. These colored sheets also contain responses to some deficiencies that did not require revisions to the MRP to be addressed.

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Initial Response to TA (Task ID #3100)

Submitted June 15, 2009

Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720
Phone (435) 867-5331 • Fax (435) 867-1192

COPY

June 15, 2009

Daron Haddock, Permit Supervisor
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114

Re: C/025/0005 – Initial Response to UDOGM Technical Analysis (Task ID #3100), received April 22, 2009

Dear Mr. Haddock,

Based on our review of the Technical Analysis (TA) for permit application C/025/0005 provided to Alton Coal Development, LLC (ACD) on April 22, 2009 by the Division, this initial response is provided to address issues separate from the technical response and modifications to the Mine and Reclamation Plan (MRP). This is not a complete response to the TA and a technical response, which will include modifications to the MRP, will be provided at a later date.

This review of the TA has been completed by the technical team of experts who have developed the MRP, in consultation with ACD attorneys. The technical team includes: Erik Petersen, P.G. (Petersen Hydrologic), Dr. Patrick Collins (Mt. Nebo Scientific), Robert E. Long, CPSS (Long Resource Consultants), Dr. Steven Petersen (Professor, BYU), and Chris McCourt, P.E (ACD). Concerns that have developed as a result of this review, which are addressed in this initial response include: inaccurate information, misapplication of data/reference material, requirements for permit approval that are outside the Division's regulatory authority, and requirements which provide minimal to no technical basis as justification.

In this initial response, each individual item of concern is bulleted and the Division's quote (as it appears in the TA) is provided in standard font followed by the ACD response which is in italic font. This information is separated into two sections: Deficiencies and Correction of Technical Analysis Statements. In addition to each response, there are also eight exhibits provided as either legal or technical sources to provide supporting information for the ACD responses. The enclosed document addresses each item (as described above) of concern resulting from the ACD review.

Sincerely,

Chris McCourt, Manager

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APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☐ New Permit ☒ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow **Permit Number:** C/025/0005
Title: Initial Response to Division Technical Analysis - Task ID #3100

Description, Include reason for application and timing required to implement:
This document is submitted as an initial response to the Division's Technical Analysis - Task ID #3100

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
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☐ Yes ☒ No 6. Does the application require or include public notice publication?
☒ Yes ☐ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☒ Yes ☐ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
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☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☒ Yes ☐ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?
☒ Yes ☐ No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Chris McCourt	Manager	6/15/09	
Print Name	Position	Date	Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 15 day of June, 2009

Notary Public: _____, state of Utah.

My commission Expires: May 12, 2013
Commission Number: 578816
Address: 410 N. Main St
City: Cedar City State: UT Zip: 84720

} ss:

RYAN ALLEN
Notary Public
State of Utah
Comm. No. 578816
My Comm. Expires May 12, 2013

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Form DOGM- C1 (Revised December 10, 2007)

APPLICATION FOR COAL PERMIT PROCESSING

COPY

Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow
Permit Number: C/025/0005
Title: Initial Response to Division Technical Analysis - Task ID #3100

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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

This document is provided as an initial response to the Technical Analysis. This response specifically addresses inaccuracies, misapplication of data/reference material, requirements for approval that are outside the Division's regulatory authority and requirements that provide minimal to no technical basis as justification. Therefore, there are no proposed changes to the Mine and Reclamation Plan based on the enclosed document.

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Deficiencies

Chapter 1

- **R645-301-121.200:** -The survey of subirrigated lands shown on Dwg. 7-7 should be extended to include all of Section 32.

The Division provides no justification for the requirement that the survey of subirrigated lands should be extended to include all of Section 32. More than three quarters of the land area in Section 32 consists of upland, mountainous terrain that is isolated from the hydrologic regime in Sink Valley. Additionally, more than three quarters of the land in Section 32 is outside the proposed Coal Hollow Mine permit and adjacent area. The Division either needs to delete this deficiency from the TA, or provide a valid scientific basis for this requirement.

Chapter 2

- **R645-301-234.230, Refer to Stabilization of Surface Areas Findings p. 156 of the TA:** Repeated from Task 2910. The application should clearly state the timetable for final grading of the excess spoil pile. Will final grading of the spoil pile be concurrent with construction of the pile, such that the 2.7 million cubic yards of spoil from pits 1 – 3 that are placed on the unmined area will receive final grading, while overburden from pits 4 –8 is placed in the mined area? (Repeated from Task 2910). • The seeding schedule is alternately described as immediately following topsoil application (pg. 2-27 and pg 5-57) or as seasonal in nature (p. 5-58) mainly occurring in early spring and late fall (pg. 2-27). Seeding of the spoil piles is described only for piles that exist longer than a year (Sec. 528.310, p. 5-40.) The application should specify in Chapter 2 and Chapter 5 that seeding will immediately follow topsoil application, regardless of season.

R645-301-234.230 is specific to topsoil storage (234. Topsoil Storage) and does not apply to the requirement that ACD "should clearly state the timetable for final grading of the excess spoil pile." Therefore, the first part of this deficiency referring to the excess spoil pile should be deleted.

This first couple sentences in the second part of this deficiency, which refers to seeding, reflects a misunderstanding of the text referenced in the MRP. On page 2-27 of the MRP, the following text occurs "In other areas where compaction is not a problem, dozer tracking can be used to roughen the surface, and to trap seed, fertilizer, mulch, and other amendments as well as decrease erosion by wind and water. In such cases seeding will be done immediately after this treatment, whereas soil amendments, where required, would be applied over the surface during seedbed preparations. Seeding will mainly occur in the early spring and late fall." This statement is clear that seeding will occur immediately following the surface roughening treatment, not topsoil application as the Division asserts. The next sentence then clarifies that seeding will mainly occur in the early spring and fall which agrees with all the other text in the MRP and does not

constitute a contradiction in the MRP as implied by this deficiency and the Division's analysis.

In addition, on page 5-57, a general overview of reclamation is provided. Under the introduction of "Major steps in the ongoing reclamation process are:" The following text occurs:

- *"Revegetation. Following replacement of topsoil the area will be revegetated by seeding."*

Again, this reference does not declare that seeding is "immediately" following topsoil application, as stated by the Division. It only states that seeding follows topsoil replacement in the "Major Steps", which is true and consistent with other statements made in the MRP in reference to seeding. This section is only a general overview of the major steps in the process as clearly stated in the introduction to this text. Two paragraphs later in the same section, it is clarified that: "Revegetation activities will be seasonal in nature. As currently planned, initial seeding will occur at the first planting opportunity following replacement of topsoil." Alton Coal does not understand the Division's confusion related to this text. The Division should correct these misinterpretations of the MRP in the TA and this deficiency.

Seeding is only described for stockpiles that will exist for more than a year because an alternative technique of applying tackifier for soil stabilization is proposed for stockpiles that will exist less than a year (Section 244.100 on page 2-28). Depending on time of year and precipitation, it will likely be difficult to establish a sufficient vegetative cover in less than a full growing season on short term stockpiles and therefore applying tackifier will be a more effective and consistent method for providing <u>short term</u> soil stabilization.

The Division provides no technical basis for requiring seeding of reclamation regardless of the season as stated in the last sentence of this deficiency. The Division's "The Practical Guide to Reclamation in Utah" clearly acknowledges that there is appropriate planting seasons for reclamation (page 93, The Best Time to Seed). In addition, ACD's management has extensive experience in reclamation at similar operations in Utah, Idaho, and Wyoming and has found that fall and early spring planting consistently provides significantly higher revegetation success than planting during other seasons. The Division appears to be contradicting their own guidelines and general reclamation practices in the Western U.S. surface mining industry and must provide a technical basis for the requirement that "The application should specify in Chapter 2 and Chapter 5 that seeding will immediately follow topsoil application, regardless of season." If the Division can not provide a technical basis for this requirement, this deficiency should be removed from the TA.

Chapter 3

- **R645-301-321.220 and R645-301-321.200, Refer to Alluvial Valley Floor Findings, p. 48 of the TA:** Appendix 7-7 and Chapter 3 provides the consultant's estimates of land productivity. Average yield data reported for high levels of management must also be provided in the environmental analysis. Current data may be available from the USDA or an appropriate state natural resource or agricultural agency.

The above deficiency states "Chapter 3 provides the consultant's estimates of land productivity". Only a small part of that statement is correct and this deficiency should be deleted from the TA. The Coal Hollow permit application provided site-specific and other annual biomass productivity estimates for each plant community located in the permit area. These estimates were provided using the three (3) sources below.

1) *U.S. Department of Agriculture SCS (NRCS. July 1990. Soil Survey of Panguitch Area, Utah: Parts of Garfield, Iron, Kane, and Piute Counties.*

   This soil survey does not cover the Alton area specifically, but it does cover areas very close to it. The NRCS estimates annual biomass productivity based on soil types. Because this reference estimates generalized productivity values according to soil types, Patrick Collins, Ph.D. (project biologist) consulted with Robert Long, CPSS (project soil scientist) regarding the soils in the Alton area. Mr. Long has conducted an extensive soil survey at the Coal Hollow Project Area. He has 34 years of experience conducting and using the data from soil surveys. He told Dr. Collins to use the "Upland Clay" ecological site classification for the production estimates for the permit area, based on the dominant soil surface texture and existing vegetation.

   The referenced "Upland Clay" ecological site is for the Wasatch Mountains South, Major Land Resource Area (MLRA) E47B (also referenced as 47XB in some documents). This ecological site description was developed for areas within the MLRA with: 12 to 16 inches of precipitation; 6,800 to 8,500 feet elevation; ustic soil moisture regime; and freeze free period of 70 to 100 days. These environmental parameters describe the Coal Hollow permit area very well. Ecological descriptions for the "Mountain Zone" have not been written by the NRCS. The data used is the best available.

   As for the deficiency above, it states that "Current data may be available from the USDA or an appropriate state natural resource or agricultural agency". That is exactly what was used in one column of the production table that was provided to DOGM in the Coal Hollow permit application dated January 15, 2008. This table has been copied from the permit application document and is shown below (Table 3-34).

2) *Cedar Creek Associates (1986) in Mine Permit Application. 1987. Utah International, Inc., Alton Coal Project, Alton, Utah.*

Table 3-34 of the MRP also includes the results of actual quantitative measurements for production of the native plant communities in the Alton Amphitheater area. These values are much more site-specific than any other known source. Interestingly, the production estimates were very similar to the estimates provided by the NRCS above, suggesting these estimates are quite accurate.

3) *Field estimates by Mt. Nebo Scientific Research & Consulting, Springville, UT (2007).*

Annual biomass production measurements and estimates were not available for non-native and "disturbed" plant communities within the Coal Hollow Permit Area (i.e. Pasture Lands and Rabbitbrush/Sagebrush communities). However, other quantitative data were recorded in these areas by Mt. Nebo Scientific in 2006 and 2007. During these field studies productivity was also estimated using qualitative sample methods. The project biologist from Mt. Nebo Scientific has been conducting production estimates using both quantitative and qualitative methods for over 25 years.

Also, the above deficiency states: "Average yield data reported for high levels of management must also be provided in the environmental analysis". Using the term "high levels of management" would be misleading. We have provided site-specific data as well as those supplied by the USDA in our reports.

In summary, the annual biomass production for the Coal Hollow Project Area was more than adequately addressed in the January 15, 2008 and again in the December 22, 2008 permit application packages that were provided to DOGM. Nevertheless, Robert Long has also provided an additional analyses and response to the above DOGM deficiency following the table below.

Table 3-34: Biomass Production of Plant Communities in the Coal Hollow Permit Area

(1) *Estimates* (from soil and approx. vegetation types) - Source: U.S. Department of Agriculture SCS (NRCS). July 1990. Soil Survey of Panguitch area, Utah: Parts of Garfield, Iron, Kane, and Piute Counties.

(2) *Actual measurements.* - Source: Cedar Creek Associates (1986) *in* Mine Permit Application. 1987. Utah International, Inc., Alton Coal Project, Alton, Utah.

(*) *Estimates* - Source: Fieldwork during 2007 by Mt. Nebo Scientific, Inc.

MAP SYMBOL (see *Vegetation Map*, Drawing 3-1)	PLANT COMMUNITY	Pounds/Acre (1)	Pounds/Acre (2)
SB	Sagebrush/Grass	750	762
P	Pasture Land (*)	1100	1100
M	Meadow	2000	2121
P-J	Pinyon-Juniper	50	33
OB	Oak Brush [*called Mountain Brush* (2)]	1500	1471
RB/SB	Rabbitbrush/Sagebrush (*)	700	700

In addition to the information described above, the following sources of yield data were also evaluated in response to DOGM's request in the deficiency:

Utah State University Extension (www.extension.usu.edu).

This web site provided a link to Utah Rangelands (http://extension.usu.edu/rangelands/), which provides a link to the Utah ecological Site Descriptions developed by the Natural Resource Conservation Service (USDA-NRCS). The Alton Coal permit area is located within Major Land Resource Area (MLRA) 47XB-Wasatch Mountains South (http://www.ut.nrcs.usda.gov/technical/technology/range/mlra47xb.html). These ecological site descriptions are generic in nature and apply to similar vegetation communities within MLRA 47XB that includes areas within Beaver, Emery, Garfield, Grand, Iron, Kane, Millard, Piute, Sevier, and Wayne counties. The site descriptions only contain estimates of potential rangeland production.

These ecological site descriptions are normally correlated to established soil series. The area within and adjacent to the Alton Coal permit area has not been mapped by the NRCS. The Alton Coal permit soil survey was only able to correlate seven of the major soil types to established soil series. These established soil series are from Colorado (2), Idaho, New Mexico, and Wyoming (2). The other sixteen major soil types could only be correlated to the taxonomic soil family. Therefore, the use of ecological site data to estimate potential rangeland production would not be applicable in the Alton Coal permit area.

There is no production of agricultural crops within the Alton Coal permit area. Grass hay is produced on some pastures east of the permit area. The USU Extension and Utah Department of Agriculture web sites were queried for information on hay production yields, but only limited information was obtained.

The Utah Agricultural Statistics and Utah Department of Agriculture and Food 2007 Annual Report (http://www.agcensus.usda.gov/Publications/2007/Full_Report/Census by State/Utah/index.asp).

Prepared by Utah Agricultural Statistics, contained only general information on the number of acres in production and estimates of yield by crop. The information in this report is based on information obtained from farmers and ranchers via phone and mail requests. The data is not scientifically collected. The Kane County Agriculture Profile (http://extension.usu.edu/files/publications/publication/AG_Econ_county-2005-16.pdf) was reviewed, but the only hard numbers for yield were county wide average yields per acre for alfalfa hay and other hay. The level of management for these average yields was not described.

In conclusion, none of these sources provided information or data that would be reasonable to include in the MRP since reliable site-specific information is already provided.

- **R645-301-323 Refer to Fish and Wildlife Resources Findings, p. 27 of the TA:** Drawing 3-1 Vegetation Map and Dwgs. 3-2 through 3-5 (wildlife maps) need to be revised to include the proposed location of the temporary county road realignment.

This deficiency should be deleted from the TA. R645-301-323 refers specifically to "Maps and aerial photographs of the permit area and adjacent area". This reroute of a public road does not meet the definition of the permit or adjacent area as defined by R645-100-200.

- **R645-301-341.230, Refer to Vegetation Reclamation Findings, p. 154 of the TA:** According to the Application, mulch will not be applied to the reclaimed pastureland. The beneficial uses for mulch are outlined in 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. The application must include a commitment to apply mulch or soil amendments for the pastureland areas.

The statement that "mulch will not be applied to the reclaimed pastureland" is incorrect. In the TA, the Division refers to Section 341.230, page 3-53. This reference is to the 01/2008 submittal and does not take into account changes made to the application submitted in 12/2008 which is the current version under review by the Division. These

changes are clearly outlined in the redline version of the document, as requested by the Division. In the revised submittal, Section 341.230 is on page 3-59 and not 3-53 and states "mulching will follow one of the described methods for all reclaim areas".

Sage-Grouse

ACD has been proactive in addressing the sage-grouse population in the Alton area. Significant resources have already been allocated toward the preservation of this population including: juniper removal on private land, funding in support of monitoring and research, inclusion of a sage-grouse expert (Dr. Steven Petersen) on the ACD technical support team and involvement/coordination of the Division consultations with UDWR, USFWS and CoCARM.

In addition to the cooperation and work that has already been completed, ACD has also proposed an extensive mitigation plan (provided as Appendix 3-5 in the MRP) should the permit be approved. This plan includes all ***feasible*** *mitigations as recommended by Dr. Petersen and in consultations with DOGM, UDWR, USFWS and CoCARM.*

All the work completed along with the proposed mitigation plan, has been provided by ACD voluntarily and exceeds regulatory requirements. ***Utah Administrative Code R645-48-9 states: "Species of concern designations, wildlife habitat designations, or management recommendations may not be used by governmental entities as a basis to involuntarily restrict the private property rights of landowners and their lessees or permittees."*** *Also, in the Greater-Sage Grouse Interim Status Update by the U.S. Fish and Wildlife Service dated 10/31/2008, the statement is made that "****There are no special provisions for land management relevant to sage-grouse on private lands"*** *and* ***"many states have laws that influence the degree to which sage-grouse and sagebrush habitats factor into land management decisions****." This report can be viewed at the following web link: http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/GSG_II_ISU_11-5-08.pdf*

The TA includes a long list of requirements for acquiring a permit directly connected to mitigation requirements for greater sage-grouse. These requirements are well beyond what ACD has voluntarily proposed. This list, in many areas, does not provide a technical basis for the requirements nor does the Division account for private land owner rights as they exist in the State of Utah.

These additional mitigation measures are beyond the authority of the DOGM and restrict the private property rights of the landowner and the lessee contrary to the Utah Division of Wildlife Rule R645-48-9. Refer to Exhibit 2 for ACD's legal analysis of DOGM''s findings for Sage Grouse.

In addition, some of the mitigation proposed by ACD is challenged by the DOGM, on the basis of effectiveness. As the DOGM is aware, there are few peer reviewed sources of documentation on the interactions of surface coal mining with sage-grouse. ACD has volunteered these mitigations based on their feasibility in the project area, current scientific literature and recommendations from sage-grouse experts, which are the most

reliable resources available. If the DOGM requires this level of assurance, ACD will be forced to remove this mitigation from consideration.

The following responses to each sage-grouse deficiency also support removing all the deficiencies from the TA which are related specifically to sage-grouse:

- **R645-301-333, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA:** The application needs to include a predator control plan that addresses how wildlife species and human activity will be managed to protect Sage Grouse.

This deficiency should be deleted from the TA. The mine will work closely with the Division of Wildlife Resources (DWR) to control predators that impact local sage-grouse populations. Since the state regulates the take of wildlife species and predator control is outside the regulatory authority of mine official, contractors, and employees, the control of predator species will be directed by the DWR (more specifically predator biologists). Species of immediate concern include common ravens, coyotes, red fox, raccoons and other predator species common in the Alton area.

- **R645-301-322, -301-333, -301-342, -301-358, Refer to Fish and Wildlife Resources Findings, p. 101 of the TA**

  - The application needs to include a commitment not to disturb the lek during the breeding season including some buffer. The application states on page 3-43, "...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 too subjective and "lowest disturbance" needs to be defined. The application must provide specific provisions to avoid the lek during the breeding season.

The possibility for this commitment has come up in the sage-grouse meetings with the Division and other agencies before. Each time it was suggested, ACD provided a full explanation regarding its feasibility during the mining operations. This explanation is again provided below.

The only way to "include a commitment not to disturb the lek during breeding season, including some buffer" is to cease mining operations during the breeding season. Depending on how the breeding season is specifically defined, this commitment could require cessation of mining from February to July. This level of commitment is infeasible for the proposed mine.

Based on the dynamic nature of surface coal mining operations, ACD can not commit to any further restrictions than to "minimize" activity near the lek during the breeding season. ACD reserves the right to conduct necessary operations to make the Coal Hollow Mine an efficient and feasible mining project, within the regulatory guidelines. This requires continuous mining operations to maintain a steady and reliable coal supply to customers. This standard is required even during the sage-grouse breeding season. At

this time, ACD can not accurately predict the specific activities which will be required near and within the lek area during the breeding season since timing depends on numerous factors including actual contract volumes, timing of permit approval, etc. Once mining activities approach the lek area (if during breeding season), ACD proposed to make a voluntary commitment to "minimize" activities to only those necessary for continuous coal production. Since this commitment appears too vague to the Division and ACD can not further define the necessary mining activities during the breeding season, this commitment will be removed from the Mitigation plan.

- Livestock grazing is not acceptable as sage-grouse mitigation as suggest on p. 3-43. Example: During the October 1, 2 tour of Robinson creek; it was obvious that the landowner actively partakes in sage-brush removal treatments (maybe the herbicide spike?). Further, excessive soil compaction and almost complete lack of understory (other than non-native cow forage like crested wheat-grass) indicate a heavily overgrazed pasture. This pre-mining land use is in no way beneficial to sage-grouse. The applicant needs to revise this section of the application.

Justification for grazing in the lek area has been described in the MRP. Along with other methods, ACDs mitigation plan for the sage-grouse in the Alton area has included improving surrounding habitat as well as restoring the existing lek to its pre-mining condition. This is private property and grazing is conducted in the lek. It therefore seems prudent to restore current management practices on the property subsequent to the mining activities.

The current lek is located in a low-level pasture in the south end of the proposed mining area. The lek is dominated by pasture grasses such as timothy, orchardgrass, and Kentucky bluegrass. With elevated soil water conditions, these plants can potentially reach maximum height production. Timothy is a perennial species that can grow from 20-40" in height. Orchardgrass is a perennial species that has a maximum height of approximately 48". Kentucky bluegrass is a perennial species that can grow to maximum heights of 36".

Several studies describe the plant structure of greater sage-grouse leks. Leks occur in sparsely vegetated areas (surrounded by sagebrush communities) that provide escape and protection from predators (Gill 1965, Connelly et al. 1981, Connelly et al. 2000, Call and Maser 1985, Crawford et al. 2004). After mining, the Alton lek will be restored to resemble pre-disturbance conditions including plant species composition. Depending on post-mining soil water availability and the presence of dominated perennial grass species, vegetation growth may exceed the height tolerated by displaying sage-grouse during the lekking period. With excessive plant growth, sage-grouse may choose not to attend the lek for display.

If needed, the reduction of plant growth may be required to create "sparsely vegetated conditions" in the lekking area, by reducing both living and decadent plant materials. In an attempt to restore the lek to its pre-mining condition, current (or present) management

practices should be considered which includes livestock grazing. Once vegetation has become established on the lek, it will be monitored. If plant structure appears to be limiting sage-grouse mating behavior, DOGM and DWR will be contacted to identify methods acceptable for controlling plant growth on the lek (e.g. mowing or grazing). In summary, methods to control plant growth will be considered if post-mining monitoring reports indicate a reduction in the plant growth is warranted to return the lek to its pre-mining conditions.

- Page 3-46. Establishment of a Core Sage-Grouse Conservation Area. The applicant needs to initiate treatments to this area to the maximum extent feasible, as soon as possible. These treatments take time, at least a couple of years. Given the timeline to excavate the coal, these treatments need to happen as soon as possible, and the area needs to be rested from cattle grazing (standard is typically at least two years of resting) to ensure establishment of planted forbs and grasses.

Juniper removal in the Conservation Area has already been accomplished and other proposed treatments as provided in Appendix 3-5 of the MRP will only be performed once a permit is issued by the Division. The Division does not have authority to require these additional mitigation measures as conditions for permit approval.

- **R645-301-322, -301-333, -301-342, -301-358, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA:** The following deficiencies pertain to Appendix 3-1 Alton Sage-Grouse Habitat Assessment and Mitigation Plan.

  The applicant needs to describe how the Conservation Area will be enhanced for Sage-Grouse especially during the breeding season. • Areas to be cleared of young juniper trees need to be identified. • Drawing 3-5, Sage Grouse brood habitat and Conservation area map, identifies the location of the 72 acre juniper removal plot. The intact sagebrush and surrounding juniper woodland areas need to be identified. •A time line for implementation needs to be included for the removal of young junipers and the cutting back of the juniper woodlands. • Areas where "juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens" must be identified on a vegetation map and quantified in terms of acreages. •The application needs to include a clear, concise and comprehensive mitigation plan that includes the following criteria:

  - A detailed description of the project.
  - A map, 1"=500', that is consistent with the current vegetation maps in the application that clearly identifies the vegetation and the project area.
  - Right of entry from the surface owners if other than ACD.
  - A detailed description of the methodology and a time line for implementation.

- A seed mix, methodology for dispersal and rate of application.
- A description of the site restoration to prevent erosion.
- Funding for mitigation.

The application needs to include the location, acreages and a time line for removal of the junipers. • The applicant needs to include a timetable for importing Sage Grouse, the number of birds and the appropriate clearances from DWR, USFWS, BLM.

These deficiencies should be deleted from the TA. In addition to the language in the main body of the MRP regarding sensitive species, three appendices (Appendix 3-1, Appendix 3-3 and Appendix 3-5) have been included to address the sage-grouse in the Alton area. Each of these appendices was submitted in different submittals to the Division. After each submittal, they were reviewed by the Division and other agencies, which provided comments. Accordingly, the comments were addressed and the next sage-grouse appendix was written. In other words, the appendices were written in chronological order and each subsequent appendix was a result of comments from the previous one. Therefore, the last appendix written (Appendix 3-5) explains ACD's final mitigation plan for sage-grouse and deficiencies by the Division should have ***only*** *addressed this Appendix. Yet, the previous Appendices (Appendix 3-1 and 3-3) should remain in the MRP because they continue to provide valuable information regarding the natural history, previous work and process of addressing the sage-grouse issues in the Alton area. That said, these deficiencies were again addressed in one of the following deficiencies regarding Appendix 3-5 (refer to #3 in R645-301-322, -301-333, -301-342, and -301-358, Refer to Fish and Wildlife Resources Findings, p. 102 of the TA: Restated from Task 2910. The following deficiencies pertain to Appendix 3- 5 Alton Sage-Grouse Habitat Mitigation Plan).*

The DWR has clearly stated that they will not support importing sage grouse to the Alton lek and therefore this activity has not been included in the final mitigation plan provided in the MRP as Appendix 3-5. This activity should be reevaluated by the Division and DWR.

- **R645-301-322, -301-333, -301-342, -301-358, Refer to Fish and Wildlife Resources Findings, p. 102 of the TA:** The following deficiencies pertain to Appendix 3-3, Sage-Grouse Distribution and habitat improvement Alton, Utah.

  The Division requests an update on the status of the development of the alfalfa field. •The applicant needs to describe in detail the application techniques that will be used in lieu of developing an alfalfa field for brood rearing habitat. • The research on the plant insect relation ships needs to be completed and included in the application. • The applicant needs to provide an update on the status of predator control arrangements and include a complete and adequate predator control plan, see comments under Protection and Enhancement. •The applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas.

These deficiencies should be deleted from the TA. A hydrological assessment was conducted following the initial proposal to develop an alfalfa field near Sink valley as brood rearing habitat. It was determined from this assessment that insufficient water is available to maintain alfalfa crop production. Therefore, this proposed mitigation will not be possible. As a result, the proposed alfalfa field was removed from the Mitigation Plan in Appendix 3-5 of the MRP. The status of juniper removal has already been provided in Chapter 3 of the MRP.

The requirement to research plant – insect interactions as listed in this deficiency is excessive. The discussion in the MRP that describes enhancing insect diversity and availability was intended to describe some of the benefits of increasing plant species diversity and selecting plant species for restoration, enhancement and mitigation of habitat. Conducting research on insect-plant interactions is not realistic since this type of research is very difficult to conduct, expensive, and could potentially take several years to complete.

The other requirements in this deficiency (predator control and juniper removal) are addressed in other sections of this memorandum.

- **R645-301-322, -301-333, -301-342, and -301-358, Refer to Fish and Wildlife Resources Findings, p. 102 of the TA:** Restated from Task 2910. The following deficiencies pertain to Appendix 3- 5 Alton Sage-Grouse Habitat Mitigation Plan.

  1.) Minimize impacts to the birds from mining activities. The application describes relocating the Sage Grouse birds to alternative sites (p. 12, App. 3-5, and App. 3-1, p. 3-43). This technique worked in 1978, but failed in 2008, indicating that this methodology needs improvement. The application needs to detail exactly how the applicant intends to improve the technique, based upon past experience. For example, the idea to include white markings on the decoys may not work, and is based on one or two anecdotal examples. Adding white might deter the birds. The application must include a simple experimental design to test the techniques before excavating the lek. This could be conducted on alternative populations, but also needs to be attempted on site, during the 2010 breeding season. • The application needs to include a discussion of additional studies or examples where the experimental design has worked successfully or where it has been tried and failed, and a comparison of conditions between these studies and the Coal Hollow Mine. • The mitigation plan needs to include the distances from the nearby alternative lek site to the existing lek or the mining activities. The Plan should also discuss or evaluate the habitat features of the new site and whether they are conducive to sage-grouse lekking. •The plan needs to include a description of where the isolation berm is located in relation to the conservation area, leks and mining areas and a discussion of how the

proposed isolation berm may serve as a potential perch or hiding place for predators and become a threat to the Grouse.

These deficiencies should be deleted from the TA. The proposal to "relocate" sage-grouse to alternative sites has been removed from consideration based on consultation with DWR. It is currently not being considered for the management of the Alton population (see Appendix 3-5). An attempt to shift breeding behavior away from the lek to an alternative location approximately 200-300 ft away was unsuccessful in 2008, likely because no disturbance was present at the lek site that would encourage movement away from a site with displaying males already present. .

Since little is known about shifting breeding behavior to alternate lek sites and is not cited in current literature, and that current methods that were being evaluated are thought to potentially deter the birds from the alternate site (i.e. adding white paint or material), this proposed activity will not be utilized for the Alton population during mining activities.

A full discussion of alternative lek sites is provided in Appendix 3-1, pages 18 through 19 in the MRP. This discussion shows alternative lek sites in relation to the permit area and describes the habitat features and how they relate to the current lek site.

A soil berm was initially proposed to separate the conservation area from the mining activities for both a visual and auditory barrier. Based on the Divisions concerns in the TA related specifically to this potential mitigation as a possible raptor perch, this berm will be removed from the Mitigation Plan.

2.) Enhance current sage-grouse habitat. The Plan needs to include a comparison of the Alton site to the site in the Bates, et al (2000) paper to determine if similar results be expected, or if there are substantial differences between the two sites (e.g., precipitation, climate, vegetation types) or would invasive species (e.g., cheatgrass) be of greater concern at the Alton site? • A brush bullhog rather than a tracked excavator and dump truck should be used to shred the trees leaving the shredded material on site. •The plan needs to include 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. •The Plan contemplates mechanical sagebrush treatments in addition to removal of juniper, pine and Gambel oak. There is not enough information in the Plan (e.g., location of treatments, size of treatments, need for treatments, type of treatments, or current habitat condition) to adequately evaluate the need or potential success of sagebrush removal. The Sagebrush treatments need to be specifically targeted to the needs of the local sage-grouse population and to address the limiting factors in the sagebrush habitat.

The extraction of juniper trees in the conservation area has been completed. Trees were initially stacked and then burned to prevent perching sites for raptors. During mining

operations, additional trees will be removed through the excavation process and then restored to a sagebrush community after mining is complete. The DWR will also be consulted to discuss additional areas for juniper removal.

Bullhogging is a relatively new method for controlling juniper. Therefore, limited information is available in the literature on short or long-term plant community response to juniper removal using this method. Since juniper tree removal is complete in the conservation area, additional juniper removal will result from excavation for mining activities and from recommendations provided by the DWR. Bullhogging is an effective method for reducing tree cover and perching structures and should be considered when treating sites outside of the mining area or conservation area, but the methods used by ACD for tree removal using the grapple claw and track hoe have also proven very successful for tree removal. This method offers little disturbance to the desirable grasses, forbs and shrubs present in the treatment areas. Consequently, it may prove more successful than bullhogging in some areas when preserving current understory species or when the establishment of additional herbaceous and shrub plants are important.

Literature cited on plant community responses to juniper removal (i.e. Bates et al. 2000) was not intended to be a direct comparison with the Alton area. There are no such studies. However, the citation was applicable to Alton because it provides the results of studies in other relatively similar areas in the western United States that describe these responses.

The other items listed in this deficiency are requirements considered excessive by ACD and therefore, constitute a violation of private property rights in the State of Utah.

3) Create a conservation area for the sage-grouse that will never be mined. The Plan needs to specify the location, size or current condition of the area. The application needs to include a narrative that explains why this area was selected for protection. The Plan mentions several uses within the Conservation Area including roosting, breeding and nesting. In order to evaluate the success of the Conservation Area, the plan needs to include information that answers the following questions:
Is the area large enough to support all three uses?
What is the potential for diminishing the value of the area for roosting if the trees are removed?
Do sage-grouse already use the area and what impact tree clearing will have on the grouse?
How will grouse respond to the mining activities?
What is the distance of the Conservation Area from active mining activities. is not specified in the Plan, nor its relation to the new lek?

Juniper removal has already been completed for the conservation area and the location with acreage is shown on Drawing 3-5 in the MRP. The vegetative communities within the conservation area are clearly shown on Drawing 3-1.

The purpose of this juniper removal has been to create intact sagebrush communities that provide roosting, hiding, breeding, and foraging habitat for greater sage-grouse (Crawford et al. 2004). Roosting has been identified within the conservation area from sage-grouse fecal deposits typical of roosting behavior. Birds have also been flushed from this area at different times of the year on many different occasions. According to Nicki Frey (USU wildlife biologist), sage-grouse have been known to use this area for nesting (based on a single observation). The conservation area is limited in size, but can provide adequate shrub cover (15-25%) for nesting hens and for raising brood. Furthermore, the interior habitat is distant from nearby juniper and oak trees and powerlines reducing predation potential. To improve nesting and brood rearing habitat, over 10,000 juniper trees were extracted, piled, and burned in the conservation area in 2007-8 to enhance sage-grouse habitat within this area. Birds have been found using regions further to the west for roosting during summer months. Extracting juniper trees from the intact sagebrush stand could potentially limit roost sites for shade during hotter times of the season, however, over time these trees can impair sagebrush ecosystem structure and degrade critical sage-grouse habitat. Many sites outside the conservation area or at the sagebrush-juniper fringe can provide shade-available roosting habitat. Additionally, sage-grouse can also use sagebrush or other shrub and herbaceous species for roosting and hiding cover.

The conservation area is located directly east of the lek and adjacent to proposed mining activities. This area was chosen because the proposed mining operations are not planned for this area based on the overburden depth. It is unknown how sage-grouse will respond to mining activities in the conservation area, especially since mining activities are not limited to a single area throughout the duration of the project, but will shift as coal is extracted and sites are reclaimed. There are two alternative lek sites identified in Appendix 3-1 of the MRP. Figure 14 of Appendix 3-1 shows the location of these sites in relation to the permit area.

4) Provide a corridor between north (Heut's Ranch) and south (Alton Sink Valley) populations to promote gene transfer and increase population numbers. The plan needs to include mitigation measures to protect and improve the habitat quality near Heut's Ranch.

The Division should remove this item from the deficiency list. As part of the MRP, ACD has voluntarily committed to providing funding for crews to cut and remove juniper trees from a potential corridor between the Heut's Ranch lek and Alton. This corridor (and the Heut's Ranch lek) is located on land which is privately owned and not under the control of ACD. Although much of this land has been cleared for the birds by this writing, the Division and other interested agencies will need to negotiate the details of more corridor improvements with the private land owner should they choose to proceed with this habitat improvement. ACD has never intended to improve the Heut's Ranch lek itself.

5) Restore land disturbed by mining activities to enhance sage-grouse habitat. Bareroot and containerized plants should be planted in addition to and not in place of forb seed. •The application needs to include a plan for monitoring the Sage grouse population during the reclamation liability period.

Containerized plants for two sagebrush species were included in the final revegetation seed mixtures for the Sagebrush/Grass communities in all the MRP submittals to the Division (refer to submittals dated: June 16, 2006; January 15, 2008; December 18, 2008). This deficiency should be deleted.

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. In March 2009, 15 sage-grouse (14 males, 1 female) were collared from the Heut's Ranch area and are being monitored by seasonal field technicians. The data collected from this activity will provide information regarding sage-grouse habitat use patterns and connectivity between these two neighboring populations.

Chapter 4

- **R645-301-422, Refer to Air Pollution Control Plan Findings, p. 88 of the TA:** The Notice of Intent (App. 4-2) prepared by ACD to obtain an Air Quality permit states in Item 14 that the mine open mining area shall not exceed limits established by the DOGM. This is not acceptable, because DOGM does not evaluate the size of the open pit in relation to fugitive dust and because without an indication of the size of the open pit area, the DAQ can not accurately calculate fugitive dust emissions. Therefore, the NOI should describe the dimension of the open pit areas.

Item 14 in the Appendix 4-2 states "The open or disturbed area shall not exceed limits set forth by the Division of Oil, Gas and Mining without written consent from the Executive Secretary." This statement is simply an acknowledgment of DOGM's regulatory authority related to backfilling/grading of pits and contemporaneous reclamation, which does limit the total disturbed and open pit areas. To extrapolate this statement to imply DOGM evaluates "the size of the open pit in relation to fugitive dust" is incorrect and does not accurately reflect the intent nor the actual text in the referenced statement. Also, the DAQ does not calculate the fugitive dust emissions but requires the proponent provide this information for evaluation by the DAQ. ACD has provided DAQ with an emissions inventory and air dispersion model that appropriately reflects the actual sizes of the pits. Both the emissions inventory and modeling are currently under evaluation by DAQ which has the expertise to appropriately determine if more information is required. This deficiency should be deleted from the TA because it does not provide any actionable items that apply specifically to the UDOGM mine permitting process.

Chapter 5

- **R645-301-352, -301-553, Refer to Contemporaneous Reclamation Findings, p. 152 of the TA:** 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. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan, including contemporaneous reclamation.

The Division should remove this item from the deficiency list. The reclamation plan is provided in both a year by year format and major mining step format. Both the analysis in the TA and this deficiency fails to recognize or take into account Drawing 5-38 which provides a year by year time schedule for completing reclamation throughout the life of the project. This drawing in combination with the step by step reclamation process shown in Drawings 5-17, 5-18 and 5-19 clearly establishes that the contemporaneous reclamation process is planned out thoroughly.

- **R645-301.514.120, Refer to Road Systems and Other Transportation Facilities Findings, p. 149 of the TA:** The application must state that copies of the spoil placement engineering inspection reports for the County road right-of-way and the Swapp Road will be provided to the Division. These inspection reports must document the Proctor compaction and other design requirements to be achieved for the reconstructed roads. The Division can then coordinate with Kane County and the Applicant regarding sub-grade adequacy for reconstruction of the County Road #136 and the Swapp Road in the mined out area.

The Division should remove this item from the deficiency list. The entire section of R645-301.514.100 applies specifically to Excess Spoil. Neither of the roads described are planned for construction on areas containing excess spoil and therefore the referenced regulation does not apply to the request.

- **R645-301-526.220, Refer to Mining Operations and Facilities Findings, p. 83 of the TA:** Restated from Task 2910, The application must describe the effect of lighting the 24 hour operation on the night sky as seen from Bryce Canyon National Park and the Dixie National Forest. This issue was specifically raised in comments sent to the Division of Oil Gas and Mining by the public and from the District Ranger of the Dixie National Forest (2008/Incoming/0048.doc).

The Division does not have authority to regulate night sky as part of the Utah Coal Program. Comments on the night sky set forth in Secretary Andrus' unsuitability decision relate to mining on federal lands, not to mining on private lands as proposed in the mine permit application. This federal issue has been analyzed under the National Environmental Policy Act in the Alton Coal Tract Draft EIS regarding federal coal

leasing. The comments submitted by the Dixie National Forest is a copy of their comment submitted for the draft EIS with a revised cover letter containing a blanket statement that all the comments related to federal lands also apply to this private lands proposal. Contrary to this representation, the night sky issue arises in the context of federal lands and federal actions under NEPA. The Division should remove this item from the deficiency list. Refer to Exhibit 3 for ACD's legal analysis of the Division's findings for night sky.

- **R645-301-542.100, Refer to Backfilling and Grading Findings, p. 143 of the TA:** The application will describe how the Applicant will provide progress reports detailing when the rough backfilling and grading of Pits 2 and 3 will be initiated, and the continued submittal of those progress reports addressing rough backfilling and grading for the Phases 1, 2, and 3 coal recovery areas. The application will indicate reporting **every 60 days**, the following five items:
  1. Coal recovery as it exists on a plan view map of the numbered pits.
  2. The areas (coal recovery pits) where rough backfilling and grading has been completed.
  3. The areas where coal recovery has been completed and contemporaneous rough backfilling and grading is occurring.
  4. The areas where grading has been completed, and topsoil is being placed.
  5. The areas where seeding using the Division approved reclamation seed mix has occurred.

The Division does not provide the regulatory support for requiring such detailed reporting requirements. It is common practice (on private land) to provide annual reports which contain this type of information. Alton Coal will document this information once a year and provide it to the Division in an annual report. This reporting frequency should be changed to annual reporting or the Division must provide regulatory support for requiring the stated reporting frequency.

- **R645-301-553, Refer to Backfilling and Grading Findings, p. 143 of the TA:** The Division can not support the variance from the 60 day/1,500 feet requirement for backfilling and grading based upon the supposition of acquiring the adjacent federal leases (which have not yet been made available). The variance request should be removed from the plan. The Division recommends that ACD apply for this variance ninety days before completion of coal recovery in Pit 24 and should include timely information relative to the procurement of any adjacent Federal coal leases.

The Division should remove this item from the deficiency list and grant the request for variance as allowed by R645-301-553. ACD made the commitment to meet the 60 day or 1,500 linear feet backfilling requirement in all pits until the mine plan proceeds to Pit 24 where there becomes a lack of spoil material to maintain this standard as shown in Drawing 5-19 and provided in the backfill verse spoil tables in Section 553. ACD needs to obtain the variance at the time of the mine permit approval to provide assurance that

the variance will be granted and to not inhibit the development of the adjacent federal coal reserves as explained in the MRP. ACD has made good progress in obtaining the federal coal lease by application. The Draft EIS for the coal lease completion is expected to be released for public comment in late summer to early fall 2009.

Chapter 7 and AVF

- **R645-301-731.300, Refer to Hydrologic Information Findings, p.125 of the TA:** Appendix 6-2 shows unacceptable levels of selenium in the zone below the coal and in the vicinity of CH-06-05, below 35 ft. where either insufficient sample provides no information on selenium levels or high levels of selenium were recorded. To ensure that selenium levels are adequately represented by these six core holes and that selenium levels in the surface and in the submerged water table remain low, the Division will require a selenium monitoring plan for soils and overburden during final placement. Refer to Attachment 1 of the Division's 2008 Guidelines for Topsoil and Overburden Handling when writing the Coal Hollow selenium monitoring plan. **and R645-301-121.200, Refer to Hydrology Operations Findings, p. 125 of the TA:** The Applicant states in Section 728.332 that Wyoming considers a value of 0.3 mg/kg selenium as suitable and between 0.3 and 0.8 mg/kg selenium as marginally suitable for topsoil and topsoil substitute. This statement is inaccurate and must be corrected. Refer to Acid/Toxic discussion above.

The Division's requirement for a selenium monitoring plan for soils and overburden does not appear to be based on any reasonable necessity for such a plan. A plot showing the concentrations of water soluble selenium in overburden and underburden materials from the proposed Coal Hollow Mine area is presented in Exhibit 6. Selenium concentrations were measured in both the alluvium overburden (26 samples) and Tropic Shale overburden (23 samples). In this figure, the selenium concentrations from the samples are plotted from left to right on the graph in order of ascending concentration. It is immediately apparent from the attached figure that <u>none</u> of the overburden materials exceed <u>any</u> of the selenium limits, even for the upper four feet of fill in perennial drainages. In fact, only a single overburden sample exceeds 0.05 mg/kg, or half of this most restrictive selenium limit. Assuming that run-of-mine material will be a mix of overburden from both the alluvium and the Tropic Shale and that the sample distribution is reasonably distributed, the average water soluble selenium concentration (based on the average of all overburden samples and using the conservative assumption that samples with a laboratory detection of <0.01 mg/kg concentration have a concentration of 0.01 kg/mg) would be about 0.018 mg/kg, which is only 18% of even the most restrictive selenium placement limit. Supplemental laboratory analyses for total selenium (which analyses would include any non-water-soluble forms of selenium) were also performed on the overburden and underburden samples. None of the samples analyzed for total selenium had concentrations exceeding the laboratory detection limit (5 mg/kg).

Somewhat higher concentrations were identified in the underburden (Dakota Formation) sediments underlying the coal seam, with concentrations ranging from 0.02 mg/kg, to 0.20 mg/kg. While some of the Dakota Formation underburden samples contained selenium concentrations that would not be suitable for the most restrictive placement in the upper four feet, there is no plan to extract the Dakota Formation materials from the mining areas. These materials are situated beneath the coal seam and there is no reasonable purpose for the mine to displace these materials. However, as a grossly conservative estimate, if it were assumed that fully a quarter of all the fill material from the mine were to be composed of the Dakota Formation with the highest measured selenium concentration (0.2 mg/kg), it would be calculated that the composite run-of-mine material would have a water soluble selenium concentration of only about 0.063 mg/kg, which would then, in terms of selenium concentration, be suitable for placement in even the most restrictive areas in the upper four feet of fill.

For a comparative reference, it is useful to examine the selenium requirements outlined in the adjoining state of Wyoming, which is a state that has long had an extensive surface coal mining industry, and where selenium issues are known to exist. The state of Wyoming considers materials with a soluble selenium concentration of up to 0.3 ppm (mg/kg) as being suitable for topsoil or topsoil substitute placement (see attached in Exhibit 8, Table 1-2 from page 41 of the Wyoming Department of environmental quality land quality division, Guideline No. 1 Topsoil and Overburden (11/1996 update)). Under these Wyoming criteria, any of the overburden or underburden materials sampled in the proposed mine area (including the Dakota Formation underburden) would easily qualify for topsoil use in terms of selenium criteria.

The Division indicates that one of the purposes of the required selenium monitoring plan for soils and overburden is to ensure that selenium levels in the submerged water table remain low. As the division is aware, the Coal Hollow Mine MRP has been designed to minimize the amount of water that could potentially migrate through the backfilled pit areas. Additionally, the Division in its March 2009 Technical Analysis is requiring that reclamation designs for the eastern permit boundary where the mining pits meet the undisturbed alluvium will be designed so as to minimize the drainage from the alluvium into the fill in the reclaimed pits (see R645-301-731.800 on page 125 of the TA). Additionally, it is considered improbable that large fluxes of water will migrate through the fill material, which will be composed primarily of a non-stratified mixture of clays, silts, and shales, which will accordingly likely be low in hydraulic conductivity.

The Division likewise provides no basis for the requirement that a selenium monitoring plan for soils and overburden be implemented to ensure that "selenium levels are adequately represented by these six core holes". There is absolutely no reason to question the validity of the laboratory selenium analyses, which were performed by a reputable, qualified analytical laboratory. Additionally, the acquisition of data from six drill holes spread out over the 200 acre proposed mine footprint (one hole per 33.3 acres) is considered entirely adequate. Again it is instructive to refer to regulations in the adjoining state of Wyoming which has had extensive experience in permitting surface coal mines. It is recommended by the state of Wyoming that overburden sampling should

occur at a spacing of one drill hole per 80 acres in an initial phase, followed by a second phase of developmental and exploratory drilling which would bring the combined total to 16 holes per section, or one hole per 40 acres (see pages 8 and 9 of the Wyoming Department of environmental quality land quality division, Guideline No. 1 Topsoil and Overburden (11/1996 update)). Thus, under the Wyoming standard, the overburden sampling intensity as currently completed in the proposed Coal Hollow Mine area exceeds their standard by 20 percent.

It was noted on page 125 of the Division's TA that there were zones in CH-06-05 for which there was insufficient sample for water soluble selenium analysis and that there was no information provided for these intervals. The intervals to which the Division is referring are part of the alluvial system. Apparently, the Division is making the assumption that because no information was provided for the water soluble selenium concentrations in this zone, the Division will presume that the selenium concentrations in this zone are unacceptable. This assumption lacks any valid geologic basis. There is no reason to assume that the selenium concentrations in this zone are greater than elsewhere in the alluvium. The sediments comprising the alluvial system in the valley do not constitute a laterally continuous formation with uniform layering, chemical and physical composition, or total thickness. Rather, the alluvial sediments are variable both laterally and vertically throughout the valley as a result of the localized depositional environments in which the alluvial sediments were transported and emplaced. In other words, a sample collected from 20 feet below the ground surface in one location may have little or no genetic relationship or similarity with a sample of the alluvium collected from 20 feet below the ground surface in a different part of the valley. Consequently, there is no reason to suspect that just because an individual alluvial sediment sample in one location was not able to be analyzed, then somehow this would indicate that there is a fatal gap in the understanding of the alluvial sediments as a whole. Rather, the composition of the alluvial sediments is best understood by looking at an average of the analytical results for all 26 of the alluvial samples from the well-distributed drillholes in the 200 acre mine area. None of the 26 alluvium samples showed levels of selenium exceeding even half of the most restrictive selenium limits set fourth by the Division. Taken as a composite, the average water soluble selenium concentration of the alluvium is less than 0.015 mg/kg, which is only 15% of even the most restrictive selenium placement limit. There is no reason to suspect that analyses from a few additional samples of the same alluvial material would show appreciably different results than those described here.

Together, this information overwhelmingly indicates that there is no selenium problem in the overburden materials at the proposed Coal Hollow Mine site.

It is inappropriate for the Division to require a selenium monitoring plan for soils and overburden when there is no reasonable basis for this requirement. This deficiency should be removed from the TA.

- **R645-302-321.260, Refer to Alluvial Valley Floor Findings, p. 48 of the TA:** Section 6.4 states that "the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques". Available water rights and historical irrigation indicate flood irrigation is important to agricultural use. The application needs to include a mitigation plan for restoring water to these areas.

This deficiency should be deleted from the TA. The repeated statements by the Division that flood irrigation is important to agricultural use in Sink Valley are not consistent with the observed conditions in the valley. Water is a precious resource in the Western United States, and particularly so in the arid lands of southern Utah. To imply that there is water available for a thriving, large-scale agricultural area in the valley is simply incorrect. Numerous attempts have been made over the past many decades to develop any and all available water sources to sustain agriculture and correspondingly, the livelihoods of the residents. This is readily apparent in the diligence water rights claims that have been filed on virtually every significant flowing water source in the valley. Flood irrigation of some lands in the valley has occurred sporadically in the past during wet climatic cycles ands when water was available. However, in spite of attempts to develop all available resources, it is apparent that the attempts to flood irrigate the lands were largely unsuccessful. It is evident that in today's farming economy, irrigation using limited quantities of spring water, with its unpredictable year to year reliability, does not appear to be an economically viable activity in Sink Valley. This conclusion is supported by the NRCS determination that Prime Farmlands do not exist in the valley, largely because of the lack of a reliable water source for agriculture.

An investigation into the spring water resources available for agricultural use in Sink Valley sheds light on this situation. As shown in the Exhibit 7 Water Right Availability Table, approximately 1,313 gallons per minute of spring water has been appropriated in Sink Valley for agricultural use. It should be noted that each of the spring water rights listed in Exhibit 7 are diligence claims. For all of the springs with irrigation use, at the time these diligence claims were filed, the State Engineer did not require the diligence statements to be verified. Based on baseline monitoring of these springs conducted during the period 2005-2009, on average only about 45.1 gpm has actually been available for use in the entire valley. This represents a water availability of only about 3.4 percent of the flows specified in the associated water rights listings. It is also noteworthy that the spring irrigation water rights are held by three separate families, such that no one user controls more than a portion of the scant available water.

In addition to the springs, flows from Swapp Hollow creek and the Water Canyon springs (the only other reasonably reliable water sources in the valley) provided an average about 51 gpm and 22.4 gpm, respectively during this time period. The water from these two sources discharges primarily in the early part of the year and wanes considerably during the summer growing season. It is obvious from this information that in total there is not an abundance of water in the valley available for irrigation. It should also be noted that spring and stream flow monitoring conducted during the mid and late 1980s as part of a previous coal mining application indicated similar flows from all of these

sources at that time. Additionally, there was no baseflow component of streamflow leaving the valley through Sink Valley Wash, which was noted to be an ephemeral wash by Schmidt in 1980. Additionally, Goode (1964) reported no flow in Sink Valley Wash in the summer of 1963. It is apparent from this information that during previous decades the hydrologic regime in Sink Valley was apparently not substantively dissimilar to that of recent years, although the effects of climatic variability certainly influence the amount of water available in any year.

There can be no question that if adequate water were available to support a thriving farming operation, such an operation would now exist. However, there is a fundamental difference between there being a theoretical capability to irrigate a small parcel of land using any and all efforts required, and the practical realities of actually being able to operate a viable farming operation and to produce an agricultural product from the lands that is economically viable. For the Division to suggest that the current landowners simply choose not to irrigate their lands is an inaccurate statement and appears to reflect a misunderstanding by the Division of conditions in the valley.

Correction of Technical Analysis Statements

- **Cover Page:** The Technical Analysis cover page is dated March 26, 2009.

The date of the TA should be corrected to reflect the date that it was sent to the Proponent. ACD did not receive this document until April 22, 2009.

- **Page 6, third paragraph:** The Division states "postmining land use for the land is stated as agriculture use, grazing for livestock production, recreation, hunting and wildlife habitat."

The Division should correct the TA and revise this statement. The post mining land use has been determined through agreements with the private landowners. The landowners have signed management plans provided in Appendix 4-3 and 4-4 that state the post mining land use as livestock grazing and wildlife habitat only. The TA needs to be consistent with these agreements and cannot add new uses.

- **Page 6, sixth paragraph:** The Division states "seven of these eligible sites will be adversely impacted by the proposed action".

The Division should correct the TA and revise this statement. There are actually eight sites that will be impacted and have been mitigated through this process.

- **Page 10, second paragraph:** The Division states "within this time frame, supportive comments were received.... from 6 regional residents".

The Division should correct this statement. ACD has reviewed the public comments and there were 11 comments from regional residents (as defined by the Division)in support of

the project which were received prior to May 16th, in addition to the supportive comments from the local government leadership.

- **Page 10, third paragraph:** The Division states "negative comments were received from....16 Panguitch business and homeowners".

The Division should clarify this statement by replacing "and" with "or" since 8 of the comments referred to are business owners and the other 7 are homeowners/residents of Garfield County. Also, "16" should be replaced with "15".

- **Page 28, second paragraph:** The Division states "the land includes **irrigated** pasture for cattle and some horses"

*This statement should be corrected in the TA. This contradicts the information provided to the Division in the MRP. On page 4-7 of the MRP this land is described as "mostly **unirrigated** pasture but does support some native stands of pinyon juniper and sagebrush communities". Mr. Dame does water a lawn nearby the ranch house and there is some spillover from his ponds but based on personal communications with Mr. Dame, irrigation has not occurred in recent years.*

- **Page 29, second paragraph:** The Division states "The report (Schmidt) describes a very active agricultural community in Sink Valley"

This statement should be deleted from the TA. The Schmidt report does not describe a "very active" agricultural community in Sink Valley. This report provides only vague information related specifically to agriculture activity in Sink Valley and the statements which are provided appear to describe agriculture activity similar to current conditions. The following are the main references to Sink Valley in the Schmidt report:

1) *"Springs are an important source of irrigation water in Johnson Canyon and to a **much lesser extent** in Sink Valley"*
2) *"For example, in Water Canyon, tributary to lower Robinson Creek, spring waters in Upper Cretaceous strata are divided into an irrigation canal which transports the water over two miles to pasture land in Sink Valley". Refer to Roger M. and C. Burton Pugh statements in Exhibit 1 for details related to this irrigation since this report provides no detail (acreages, production, crop types, etc..) about this activity.*
3) *"Goode (1964) reports no flow below Sink Valley in Sink Valley Wash"*
4) *"For example, Sink Valley Wash below Sink Valley has ephemeral streamflow and no diversions"*
5) *"Numerous filed spring sources used for irrigation. Sink Valley Wash has perennial flow only in the vicinity of the springs in Sink Valley. Most of the 11 springs or spring areas that were visited in the main part of Sink Valley yield about 2 to 4 gpm and two yield about 15 to 20 gpm. The total flow of the springs in Sink Valley is probably only 60 to 80 gpm but they support appreciable bog land... (Goode 1964)". This condition is similar to the current*

conditions in Sink Valley and documents well the limited water source in the valley. Their estimate states approximately 60 to 80 gpm total for all the springs in the valley which are split water rights across three different owners. Detailed data from the 1980's through today documents similar total flow of water from the springs, which makes irrigation from these springs extremely limited and in most cases infeasible. This water limitation is specifically why irrigation in the valley has mainly been limited to pasture flooding, confined to small areas, rather than crop production.

6) *"Designated on basis of flood irrigation in upper basin and potential for relocating diversions, lithology of basin, and possible role as water supply for Kanab irrigation Diversion during spring runoff period." This statement is a high level statement that neither quantifies the irrigation nor describes the actual agriculture in Sink Valley but is reasonable based on the reconnaissance level of study that was conducted by Schmidt. That is why he includes this area for its* ***potential*** *only. To put this report into perspective, Schmidt spent 14 days in the field conducting a study covering nearly 2,000 square miles. That is why it contains generalized statements such as this which should not be used out of context or outside the parameters of the report.*

There is nothing contained in these or any other statements in the Schmidt report which would constitute a significant change in agriculture activity from the 1980's to today. The agriculture activities in Sink Valley are significantly limited by water availability.

- **Page 29, third paragraph:** The Division states "In 1983, OSM mapped the Sink Valley alluvial Valley floor (AVF) and stressed the importance of agriculture and land use in making the Sink Valley AVF determination, in the absence of more typical geology associated with an alluvial valley" and "OSM stated that the initial reconnaissance conducted of the Alton Area by Jack Schmidt in 1980 was sufficient to confirm the existence of an alluvial valley floor based upon the importance of the valley land to agriculture (pg. D-4) but suggested that an Applicant for a mine permit might collect additional data to clarify the regional hydrologic pattern (page D-2)."

The Division appears to be referring to a statement from Page D-4, Appendix D of the 1983 OSM document. The statement reads:

> *"Valleys have been developed because of favorable soils and proximity to water. Agriculture in the region could not exist in its present form without the valleys; therefore, alluvial valleys do exist in the region"*

This is a statement from the "Regional Setting" subsection of the OSM report that is presented even before the beginning of the discussion of the identification process. This broad statement is clearly being applied to the entire "region" described in the report, which extends from near Bryce Canyon National Park to the Arizona state line and encompasses nearly 2,000 square miles.

No one would dispute that alluvial valley floors exist in this large region. However, the Division then goes on to conclude that:

"OSM stated that the initial reconnaissance conducted of the Alton area by Jack Schmidt in 1980 was sufficient to confirm the existence of an alluvial valley floor based on the importance of the valley land to agriculture (pg. D-4) but suggested that an applicant for a mine permit might collect additional data to clarify the regional hydrologic pattern (page D-2)".

This statement is completely unfounded and does not even approach what is stated in the complete text of the Schmidt report or the OSM summary in Appendix D of the 1983 document. As stated previously, there appears to be some confusion on the part of Division about the requirements for "confirming" the existence of an alluvial valley floor – namely that both geological and agricultural water use criteria be met.

Mr. Schmidt notes on page D-6 that geologic criteria were indeed used as evaluation criteria in his 1980 alluvial valley floor reconnaissance investigation. Mr. Schmidt indicates that, in his opinion, all of the valleys in the nearly 2,000 square mile study area, both developed and undeveloped, met the requisite geologic criteria. Thus, in accordance with the stated primary purposes of a reconnaissance investigation – namely to identify those areas that clearly are not alluvial valley floors – the application of geologic criteria to his evaluation of the valleys would not further refine his preliminary reconnaissance delineation of alluvial valley floors in the region. Quoting page D-6 (emphasis added):

> *"The geologic criteria of an alluvial valley floor was not a sufficient basis on which to make determinations, because all valleys, both developed and undeveloped, met those criteria."*

It is entirely incorrect to infer that Mr. Schmidt or OSM deemed it appropriate to confirm the presence of alluvial valley floors based on agricultural water use criteria alone in the absence of the geologic criteria.

Given the nearly 2,000 square mile size of the study area in the Schmidt report and the 14-day field investigation, it was perhaps a reasonable starting assumption for a reconnaissance-level regional study to assume that all stream valleys met the SMCRA geologic requirements. To adequately investigate the near-surface sediments in an area of that size would involve enormous expenditures of time and resources and such was beyond the scope of his investigation. Generally, it is for this reason that reconnaissance-level alluvial valley floor studies are typically performed with readily available or existing data only (see Chapter II of the 1980 OSM guidelines document). However, numerous detailed investigations of the geologic, hydrogeologic, and geomorphologic conditions in the Sink Valley area have been performed since the publication of the 1980 Schmidt report. The results of these investigations clearly indicate that the geologic conditions as described in the Utah State R645 rules and the OSM statutory definitions, are not present in the Sink Valley area.

Further, as Mr. Schmidt notes on page 43 of the complete 1980 report:

> *"Reconnaissance identification procedures are intended to distinguish between those areas clearly not alluvial valley floors and those areas where detailed study might show that areas would be formally designated as alluvial valley floors. Reconnaissance identification is thus intended to highlight those areas where detailed study is necessary" (emphasis added).*

In the legend for Figure D-3, it is noted that the areas marked on the map are "reconnaissance alluvial valley floor determinations" and that "areas generalized and not intended for use in mine permit application studies".

Again, because of the enormity of the task of evaluating hundreds to thousands of square miles of terrain, some broad generalizations were incorporated by Mr. Schmidt in delineating preliminary alluvial valley floor identification areas. Among these (in addition to the assumption that all valleys met the geologic criteria) are the following (see pages 47-50 of the 1980 Schmidt report):

- *"Where subirrigation is known, or where basin characteristics are similar to known subirrigation areas, preliminary determinations of alluvial valley floor status have been made."*

- *"Alluvial valley floors were identified in all valleys with existing stream diversion irrigation, and in all valleys whose basin lithology included the Claron or Kaiparowits Formation."*

- *"Uncertainty exists regarding designations in losing stream reaches where there are no diversions. For example, Sink Valley Wash below Sink Valley has ephemeral streamflow and diversions. Kanab Creek has no diversions from Lamb diversion to that of the Kanab Irrigation Company, a distance of 24 miles... For the purposes of preliminary determination, each of these valleys has been designated an alluvial valley floor."*

Clearly, the results of this type of high-level survey of an area were never intended to serve as an OSM confirmation of the presence of an alluvial valley floor. It should be noted that at the reconnaissance level investigation stage, such somewhat arbitrary assumptions may have been reasonable given the stated objectives of the study. However, the extrapolation of detailed, site-specific information from such an investigation, particularly when the further detailed study recommended by Mr. Schmidt has now been performed and is available, is entirely inappropriate.

For a fundamental definition of AVF refer to Exhibit 4.

- **Page 32, third paragraph:** The Division states "Neither the federal nor R645 Rules use the term "continuous channel" to define an alluvial valley floor."

The Utah Administrative Code R645-302-321.300 states that the division will make a positive alluvial valley floor finding if "Unconsolidated streamlaid deposits holding streams are present; and (321.310) ..." the other specified criteria are present in the valley as outlined. In other words, the geologic criterion (the presence of unconsolidated streamlaid sediments in a valley holding streams) is a prerequisite for a positive AVF determination. R645-302-321 goes on to indicate that upland areas...composed chiefly of debris from sheet erosion, deposits formed by unconcentrated runoff...or other mass movement accumulations are specifically excluded from the alluvial valley floor definition in the rules. As defined in R645-100, the term upland areas means "those geomorphic features located outside the floodplain and terrace complex, such as isolated higher terraces, alluvial fans..." This clearly indicates that upland valleys composed of alluvial fans cannot be alluvial valley floors, and further, that upland areas outside the flood plain and terrace complex (such as the Sink Valley area which does not contain a flood plain and terrace complex) cannot be an alluvial valley floor according the Utah State R645 rules.

This statement should be removed from the TA because a continuous channel is an obvious necessity for streamlaid deposits to "hold a stream" as set by the Utah Administrative Code.

For a clarification of geologic regulatory criteria for an AVF determination refer to Exhibit 5.

- **Page 36, first sentence:** The Division uses supreme to premium dairy quality alfalfa hay to estimate the monetary value of cattle grazing on the Pugh and Dame lands.

The Division should revise their method for determining the monetary value of grazing on the Pugh and Dame lands in the TA. On pages 35 and 36 of the TA, the Division describes the procedure they used to determine the monetary value for the cattle grazing activities occurring within the permit area. The Division utilizes a method that equates the annual vegetative productivity for lands in the project area with an equivalent weight of "supreme to premium dairy quality alfalfa." This method seems questionable given that 1) alfalfa is not produced anywhere within the proposed Coal Hollow Mine permit area, and the potential for alfalfa production in the permit area is questionable (additionally, it is not readily determinable whether the cattle consume all of the annual vegetative productivity), and 2) more reliable and widely accepted methods could have been used to calculate the value of the cattle grazing activities. Specifically, a more reliable estimate for the value of the cattle grazing could probably have been prepared by determining typical local grazing rates (Animal Unit Month rates) for similar public and private lands in the surrounding areas and then multiplying that number by the number of cattle supported on the land. Such a determination would be based on current market conditions in the region, and not on a somewhat speculative relationship between vegetative production and alfalfa hay prices. It is suspected that a calculation using

local AUM grazing rates would likely produce an appreciably lower monetary value than that provided by the Division in the TA.

- **Page 36, second paragraph:** The Division states "there may have been 750 (cattle) in Pugh's herd at one time."

This statement should be deleted from the TA. Affidavits are provided in Exhibit 1 by C. Burton Pugh and Roger M. Pugh that the maximum number of cattle their land can support is 50. The Pugh herd has generally been 35 head of cattle (personal communication with the Pugh's) and the Division states on page 101 of the TA in reference to a tour of Robinson creek (Pugh land) that "excessive soil compaction and almost a complete lack of understory (other than non-native cow forage like crested wheat-grass) indicate a heavily overgrazed pasture." If 35 cattle can produce this type of damage, 750 cattle is definitely not a reasonable estimate for cattle on the Pugh property.

- **Page 36, fifth paragraph:** The Division states "The Pugh lands were formerly quite productive: 700 bushels/acre of potatoes were raised with irrigation on the Pugh property in 1917 and in the 1950's oats and wheat crops were produced.

This statement should be clarified in the TA. This can be misleading since the Pugh property as it relates to this application is several hundred acres and the potato production occurred on only one acre for one year in 1917. It should also be clarified that the oats and wheat crops were ***dry*** *farmed with limited success. Refer to affidavits provided in Exhibit 1.*

- **Page 36, last paragraph:** The Division uses supreme to premium dairy quality alfalfa hay to estimate the value of hay production at the Sorenson Ranch.

The Division should revise their method of calculation for the monetary value of hay production on the Sorenson Ranch. The hay production at the Sorenson Ranch, is mainly "grass" hay and the monetary value calculation should reflect this specific type of hay production. This change should result in a significantly different monetary value.

- **Page 37, sixth paragraph:** The Division states that "The Dame property is subirrigated and apparently needs no supplemental irrigation."

The Division should delete this statement from the TA. This statement appears speculative and contradicts other statements made by the Division concerning historical irrigation at the Dame property. Why would the landowners attempt irrigation of 93 acres as stated on page 47 of the TA if the land "needs no supplemental irrigation"?

- **Page 37, last paragraph:** The Division states "in Section 728.334, that there has been no irrigation in the last ten years."

The Division incorrectly states that there was a recent substantial decline in agricultural activity in Sink Valley. The Division has misinterpreted the statements on page 13 of Appendix 7-7 to suggest that ACD's research would confirm a recent decline in agricultural activity in the valley. This is absolutely not the case. Based on discussions with several landowners who were present in the valley during these recent decades, ACD has found no evidence to support the Division's interpretation. To the contrary, landowners to whom ACD has spoken consistently state that, while year to year agricultural success is largely dependent on precipitation patterns, agricultural operations in the valley are not substantively different now than they were in recent decades. This is supported by the statement of the Division that water availability during the 1980s was not substantively different than it is currently. The statements in this regard by the Division are incorrect and should be removed from the TA. Refer to Exhibit 1 which documents some of the discussions with private land owners.

- **Page 38, first paragraph: The Division states** "the Division concludes that the decline in irrigation in the SW ¼ Sec 20 and the SE ¼ SE ¼ Sec 19 has less to do with water availability and more to do with landowner's disinclination."

This conclusion is unsupported conjecture and should be deleted from the TA. There is a fundamental difference between there being a theoretical capability to irrigate a small parcel of land using any and all efforts required, and the practical realities of actually being able to operate a farming operation that is economically viable. For the Division to suggest that the current landowners simply choose not to irrigate their lands is an unsupported statement and appears to reflect a misunderstanding by the Division of conditions in the valley. Refer to affidavits in Exhibit 1 which includes statements by the landowners in reference to this statement made by the Division. Also, refer to Exhibit 7 which shows the actual water available compared to the water rights allocation.

- **Page 39** The Division states "West of the permit area, lands are irrigated with water taken from Kanab Creek and lower Robinson Creek (Plate 5, Appendix 7-7, Water Rights App. 7-3)."

The Division states that lands west of the permit area are irrigated with water taken from Kanab Creek and Lower Robinson Creek. This is an incorrect statement. There are no identified water rights for surface irrigation diversions from Lower Robinson Creek west of the permit area (see Appendix 7-3). As noted on page 31 of Appendix 7-7, Irrigation of the lands west of the permit area adjacent to Kanab Creek is performed exclusively using surface water diverted from Kanab Creek.

This incorrect statement should be corrected or removed from the TA.

- **Pages 40 through 41 – Water Rights:** The Divisions assessment of water rights suggests that water is available in quantities which are magnitudes higher in volume than those documented in the baseline monitoring data.

The Division's assessment of water rights seems to suggest that some very large flows are physically occurring at several springs in the permit and adjacent area. The spring flows described in the water rights discussion range from about 3 to 449 gpm. These flow values are apparently derived from values listed on the water right information sheets on file at the Division of Water Rights (see Appendix 7-3 for printouts of these sheets). These "paper" water rights are not supported by the monitoring data which reflect significantly less availability of water. It should be readily apparent to the Division from the baseline monitoring data submitted to the Division and observations made during visits to the project site that the very large spring flows (including five greater than 100 gpm) included in the "paper water" rights do not actually exist. A table summarizing the spring flows listed on the water rights sheets ("paper water" rights) and the actual discharge measurements performed during baseline monitoring at the project area from 2005 to 2008 is presented in Exhibit 7. These data are also plotted on the figure in Exhibit 7. It is apparent that of the approximately 1,313 gpm combined spring flow listed on the spring water rights, the average combined discharge from these springs during 2005-2008 was only about 45.1 gpm, for a water availability of about 3.4 percent.

The apparent discrepancies between the listed water right flow amounts and the actual measured amounts are likely due to discrepancies between actual historic flow rates for these springs, and the flow rates claimed by the applicants in the diligence water right claim applications submitted to the Division of Water Rights. The flows reported on the water rights files for most of the springs in the area were made in association with diligence claims that were filed at a time when the State Engineer did not require the statements to be verified. The applicants filing the diligence claims were required to characterize the historic beneficial uses of the spring waters occurring before 1903. These diligence claims have not yet been compiled by the State Engineer in a proposed determination for the Virgin River drainage. It is likely that the spring flows reported by the applicants at the time of the diligence filing were based on their best estimates and recollections, but it is unlikely that actual historic flow measurement data for these springs were available at the time of the filing. (A similar situation may have occurred with the declaration of the number of animals using a spring for stock watering). Based on the hydrogeologic conditions in the valley and the current measurements of spring discharge rates, it is unlikely that the large flow rates listed for some of these springs (>400 gpm) actually occurred historically.

The Division's discussion of water rights fails to clarify this situation and implies that such large flows are actually occurring, when baseline monitoring information presented in the MRP clearly indicates that this is not the case. These statements should be clarified or removed from the TA.

It is likewise incorrect to use this information to conclude that "The information provided indicates a substantial area of subirrigated meadow and potentially irrigated pastureland east of the Tropic Shale Ridge". This statement should also be removed from the TA.

- **Page 42, sixth paragraph:** The Division states "Water quality data indicate that there may be enough water to flood irrigate" and "that the quality of water from shallow alluvial groundwater is sufficient to raise alfalfa or other grasses for hay crops..".

The first statement should be clarified in the TA. Water quantity data indicates that flood irrigation can only occur in very limited acreages (generally 5 acres or less per property). This blanket statement which appears to be referring to all the land in Sink Valley can be misleading without clarification of the irrigation limitations as they actually exist. For the second statement, the Division should also provide clarification. The water "quality" of the alluvial water is sufficient for crop production but the "quantity" of water is insufficient to make crop production feasible.

- **Page 44, fifth paragraph:** The Division states "Neither has an assessment of water quality or quantity been determined for the Kanab Creek probable AVF (in accordance with R645-302-322.100 and R645-302-322.200)."

An assessment of water quality or quantity for the Kanab Creek probable AVF has not been provided because only those areas that have been determined an AVF within the ***permit or adjacent area*** *require these assessments (R645-302-322.100 and R645-302-322.200). This statement should be removed from the TA.*

- **Page 46, third paragraph:** The Division states "Many of the springs, which receive their supply through the alluvial system are likely to be impacted, because the supply will be severed."

This statement should be clarified in the TA. The Division states on page 46 of the TA that many of the springs, which receive their supply through the alluvial system are likely to be impacted, because the supply will be severed. This comment seems to imply that the mining activities will physically cut off the supply of alluvial groundwater from up-gradient source areas. While the discharge locations for a few seeps along the eastern edge of the mine area may be intercepted by the easternmost edges of the mine workings, the source of the alluvial water for these springs is clearly located to the east. No mining operations are being proposed in the up-gradient areas to the east of these spring areas. Consequently, the "severing" of the springs from their water supply will not occur.

- **Page 65, sixth paragraph:** The Division states "Flooding of pit mines by heavy precipitation is a known occurrence and a real possibility at the Coal Hollow Mine, as the applicant states in Section 728.333: "The Division then quotes a sentence out of the MRP that doesn't seem to support this statement."

These statements should be deleted from the TA. On page 65 and 66 of the TA, the Division states that flooding of pit mines by heavy precipitation is a known occurrence and a real possibility at the Coal Hollow Mine. The Division then seems to misinterpret a statement from Section 728.333 of the MRP, implying that the Applicant believes that major torrential precipitation events could flood the mine pits. The statement in 728.333 is specifically referring to the principal surface-water drainages, including lower Sink Valley Wash below the County Road 136 crossing, Lower Robinson Creek, and Kanab Creek and their ability to carry large surface flows. Large stream flows can and do occur in these streams in response to torrential thunderstorm events. However, the statement in the MRP was not describing the much smaller drainage basins that exist within the mine permit and nearby areas (that could potentially convey water to the mine pits). As described in Chapter 7 of the MRP, a full watershed analysis of the mine area watersheds has been performed. The mining and reclamation plan is designed to fully contain surface runoff occurring from the 100-year, 24-hour precipitation event with an additional capacity for a margin of safety. The potential for the actual flooding of the mine pits with storm runoff water is considered very unlikely.

- **Page 82, fourth paragraph:** The Division states "As explained to the Governor's office in 2005, the initial decision for a 2 shift work day was made to avoid night sky issues that were raised in the Cecil Andrus 1980 Suitability decision"

As set forth in the attached Exhibit 3 (Night Sky Legal Analysis), night sky issues relate to federal lands and federal agency decisions which are not raised by ACD's application to mine on private lands. This statement is irrelevant to the analysis and should be removed from the TA.

- **Page 86, first paragraph:** The Division states "The Applicant is required to obtain an Air Quality Approval Order prior to receiving a permit to mine."

There is no regulatory basis for this requirement. The Division should remove this condition from the TA. R645-301-422 states that "the application will contain a description of coordination and compliance efforts which have been undertaken by the applicant with the Utah Bureau of Air Quality." This information has been provided to the Division and future "coordination and compliance" with UDAQ will be included in subsequent submittals.

- **Page 131, third paragraph:** States "The Division can not allow a period of two years to pass between final coal recovery in the proposed permit area and initiation of reclamation."

The Division should delete this statement. The Division has authority to approve a temporary cessation of operations until permitting is complete on the federal coal reserves. Once the permitting is complete for the federal reserves, operations would then resume.

- **Page 109, third paragraph:** The Division states that "The Applicant did not include that information in the submittal. The Division **does regulate truck traffic on public roads** including those through Alton. The Applicant did not indicate that any new roads will be constructed in this application, with the exception of the road alignment."

The Division should clarify this statement. An explanation was provided in the application which stated Alton Coal is still pursuing construction of a road around the town of Alton but all reasonable routes are on privately owned land and that an agreement with the landowners has not been obtained at this time. Also, the Division should correct the unsupported statement that it regulates truck traffic on public roads.

- **Page 142, first paragraph:** States "The Division also has responsibility to the citizens of Kane County, in that the reconstruction of the County road should be completed in a timely fashion.

The Division should delete this statement. There have been two public comment periods and a public hearing for the reroute of this public road. There were no comments provided by citizens of Kane County to validate this claim. The Division does not have authority over this road system nor do they have the responsibility for timely reconstruction of this road since it is not of concern to the citizens of the County.

APPENDIX 1-9

Kane County Planning and Zoning
Conditional Use Permits

Conditional Use Permits for Land Parcels 9-5-19-1, 9-5-20-2, 9-5-29-3, 9-5-30-2 and 9-5-30-1

Conditional Use Permit Application

Fee $175.00

Property information and location

(All lines applicable to this site must be filled in)

Section 19,20,29,30 Township 39 South Range 5 West

Parcel # 9-5-19-1,9-5-20-2,9-5-29-3,9-5-30-2

You MUST include a parcel map obtained from the Kane County Recorder's Office with this application!

Property Owner(s) Information

Name(s): Sink Valley Ranch, LLC - C/O C. Burton Pugh

Address per tax rolls: 533 North 650 East

City/County: Lindon State: Utah Zip: 84042

Office/home phone: (801) 785-6220 Fax phone: ------

Mobile phone: ------ Message phone: ------

E-mail address: burtpugh@comcast.net

A copy of the deed, offer or tax notice MUST be included to demonstrate ownership

(for office use only)

CUP# 12 Fee: $175.00 Receipt #

Is this an amendment? ☐ Yes ☒ No

This application MUST be submitted no later than 14 days before the scheduled Planning Commission Meeting!

ATTACH A LOCATION MAP, SITE AND BUILDING PLAN, AND DETAILED DESCRIPTION OF PROPOSED USE

Agent for the property owner(s) information

Name(s): Alton Coal Development, LLC

Address per tax rolls: 463 North 100 West, Suite 1

City/County: Cedar City **State:** Utah **Zip:** 84721

Office/home phone: (435) 867-5331 **Fax phone:** (435) 867-1192

Mobile phone: (435) 233-0528 **Message phone:** (435) 867-5331

E-mail address: cmccourt@altoncoal.com

Notarized affidavit by owner that agent has authority to act on their behalf

There shall be no presumption of approval of any aspect of the process. Each application for a Conditional Use Permit shall have all required submittals before it is accepted as a complete application.

APPLICATION IS HEREBY MADE TO THE PLANNING COMMISSION REQUESTING THAT:

a conditional use permit be issued to allow surface coal mining, and all support activities including coal sizing, stockpiling etc.. These operations will require construction of support buildings and structures as shown on the attached drawings 5-3,5-4 and 5-5. These activities are expected to occur for approximately 5 years. See attached mine plans for details related to required operations to effectively and safely extract coal from the specified parcels.

Total acreage of parcel: 733.68 (all) Area occupied by this use: ~400 acres

Current zoning designation: Agric. Current use of land: Grazing

I (We) understand that the Planning Commission shall not authorize a Conditional Use Permit unless the evidence presented is such as to establish that such use will not, under the circumstances of the particular case, be detrimental to the health, safety or general welfare of persons residing or working in the vicinity, and the proposed use will comply with the regulations and conditions specified in the Kane County Land Use Ordinance for such use.

Date signed: Chris McCourt

Signature of owner(s) or agent(s):

Planning and Zoning Commission Action

Date: May 13, 2009

☒ Approve

☐ Deny

Planning & Zoning Chairman _____

Requiring turn-lane improvements at street intersections when:
(i) an unsafe condition would be created by the development without the improvements; or
(ii) the projected increase in traffic generated by the new or expanded use will lower the level of service.

Conditional Use Permit Application

Fee $175.00

Property information and location

(All lines applicable to this site must be filled in)

Section 30 Township 39 South Range 5 West

Parcel # 9-5-30-1

You MUST include a parcel map obtained from the Kane County Recorder's Office with this application!

Property Owner(s) Information

Name(s): Richard L. Dame

Address per tax rolls: 1620 Georgia Avenue

City/County: Boulder City State: NV Zip: 89005

Office/home phone: (702) 293-4773 Fax phone: ------

Mobile phone: (435)691-2911 Message phone: -----

E-mail address: RLDame@cox.net

A copy of the deed, offer or tax notice MUST be included to demonstrate ownership

(for office use only)

CUP# 12 Fee: $175.00 Receipt #

Is this an amendment? ☐ Yes ☒ No

This application MUST be submitted no later than 14 days before the scheduled Planning Commission Meeting!

ATTACH A LOCATION MAP, SITE AND BUILDING PLAN, AND DETAILED DESCRIPTION OF PROPOSED USE

Agent for the property owner(s) information

Name(s): Alton Coal Development, LLC

Address per tax rolls: 463 North 100 West, Suite 1

City/County: Cedar City **State:** UT **Zip:** 84721

Office/home phone: (435) 867-5331 **Fax phone:** (435) 867-1192

Mobile phone: (435) 233-0528 **Message phone:** (435) 867-5331

E-mail address: cmccourt@altoncoal.com

Notarized affidavit by owner that agent has authority to act on their behalf

There shall be no presumption of approval of any aspect of the process. Each application for a Conditional Use Permit shall have all required submittals before it is accepted as a complete application.

APPLICATION IS HEREBY MADE TO THE PLANNING COMMISSION REQUESTING THAT:

a conditional use permit be issued to allow surface coal mining and reclamation activities. This parcel will not require any structures except for one sediment control pond. See attached mine plans for details related to the proposed operations.

Total acreage of parcel: 61.96 Area occupied by this use: 61.96 acres

Current zoning designation: Agric. Current use of land: Grazing

I (We) understand that the Planning Commission shall not authorize a Conditional Use Permit unless the evidence presented is such as to establish that such use will not, under the circumstances of the particular case, be detrimental to the health, safety or general welfare of persons residing or working in the vicinity, and the proposed use will comply with the regulations and conditions specified in the Kane County Land Use Ordinance for such use.

Date signed: Chris Thelwert

Signature of owner(s) or agent(s):

Planning and Zoning Commission Action

Date: May 13, 2009

☒ Approve

☐ Deny

Planning & Zoning Chairman

Requiring turn-lane improvements at street intersections when:
(i) an unsafe condition would be created by the development without the improvements; or
(ii) the projected increase in traffic generated by the new or expanded use will lower the level of service.

Exhibit 1

Landowner Statements

AFFIDAVIT OF C. BURTON PUGH

STATE OF UTAH)
ss:
COUNTY OF Utah)

C. BURTON PUGH, being first duly sworn, deposes and states as follows:

1. I am competent and over 18 years of age and have personal knowledge of the matters set forth herein.

2. My current address is: 533 North 650 East, Lindon, Utah 84042-1567.

3. Sink Valley Ranch, LLC, is the owner of interests in the following parcels of land located in Kane County, Utah:

Parcels: 9-5-19-1, 9-5-20-2, 9-5-29-3 and 9-5-30-2

4. To the best of my knowledge:

(a) Flood irrigation techniques have not been utilized at the Sink Valley Ranch since the 1990's.

(b) Prior to 1990, limited flood irrigation did occur in a grass meadow located on the east side of the property. This irrigation was by an open ditch and had annual intermittent flow based on precipitation levels. During years with high precipitation, the water could irrigate up to 5 acres of this meadow. During these wet years, the water would cease to be available by mid June to July. The source of this water was from springs in Water Canyon. This flood irrigation of the meadow did not exceed 5 acres.

(c) During dry years, there is no water for irrigation and in some cases water has to be transported into the area to provide livestock watering.

(d) Sink Valley Ranch has not utilized flood irrigation techniques since the 1990's because the limited availability of water verses the cost to implement irrigation makes this type of development infeasible.

(e) Historically, there has been some dry farming of oats and barley which took place before the 1940's with limited success. There was also an area fenced to grow a vegetable garden that was irrigated by catching the water in a small pond and then every four or five days there would be enough of a head, to water the vegetable patch. During the first World War, the Mormon church offered a prize of $1,000.00 to the person who would raise the most potato's on one acre. My Grandfather entered and the water was used to irrigate the one acre. The prize was won by harvesting 825 bushels of potatoes.

(f) The maximum number of cattle supported by this property at one time is 50.

5. I am authorized to act on behalf of Sink Valley Ranch, LLC, concerning the above listed parcels.

DATED this 13 day of May, 2009.

C. BURTON PUGH

SUBSCRIBED AND SWORN TO this 13 day of May, 2009.

Notary Public

NOTARY PUBLIC
SPENCER PRATT
Commission No. 575632
Commission Expires
AUGUST 12, 2012
STATE OF UTAH

AFFIDAVIT OF ROGER M. PUGH

STATE OF UTAH)
ss:
COUNTY OF Kane)

ROGER M. PUGH, being first duly sworn, deposes and states as follows:

1. I am competent and over 18 years of age and have personal knowledge of the matters set forth herein.

2. I am the owner of interests in the following parcels of land located in Kane County, Utah:

Parcels: 9-5-19-1, 9-5-20-2, 9-5-29-3 and 9-5-30-2, containing 733.68 acres, more or less ("Sink Valley Ranch")

3. To the best of my knowledge:

(a) Flood irrigation techniques have not been utilized at the Sink Valley Ranch since the 1990's.

(b) Prior to 1990, limited flood irrigation did occur in a grass meadow located on the east side of the property. This irrigation was by an open ditch and had annual intermittent flow based on precipitation levels. During years with high precipitation, the water could irrigate up to 5 acres of this meadow. During these wet years, the water would cease to be available by mid June to July. The source of this water was from springs in Water Canyon. This flood irrigation of the meadow did not exceed 5 acres.

(c) An attempt was made to produce crops on a four acre parcel located on the east side of the property in the 1980's. The pond located on the east side of the property was improved with a new headgate for irrigation and the pipeline from the forest boundary to the pond was improved. The pond was also cleaned out for maximum capacity. This attempt at irrigation for crops failed due to a lack of water availability.

(d) During dry years, there is no water for irrigation and in some cases water has to be transported into the area to provide livestock watering.

(e) Sink Valley Ranch has not utilized flood irrigation techniques since the 1990's because the limited availability of water verses the cost to implement irrigation makes this type of development infeasible.

(f) Historically, there has been some dry farming of oats and barley which took place before the 1940's with limited success. There was also an area fenced to grow a vegetable garden that was irrigated by catching the water in a small pond and then every four or five days there would be enough of a head, to water the vegetable patch. During the first World War, the Mormon church offered a prize of $1,000.00 to the person who would raise the most

potato's on one acre. My Grandfather entered and the water was used to irrigate the one acre. The prize was won by harvesting 825 bushels of potatoes.

(g) The maximum number of cattle supported by this property at one time is 50.

DATED this 20 day of May, 2009.

Roger M. Pugh
ROGER M. PUGH

SUBSCRIBED AND SWORN TO this 20th day of May, 2009.

Notary Public

MARJORIE HEYBORNE
Notary Public
State Of Utah
My Commission Expires December 21, 2012
COMMISSION NO. 576894

Exhibit 2

Sage-Grouse Mitigation
Legal Analysis

Snell & Wilmer
L.L.P.

OFFICE MEMORANDUM

TO: Alton Coal Development, LLC

FROM: Denise A. Dragoo, Esq., Lane Molen, Esq.

DATE: May 18, 2009

RE: ***Sage Grouse Habitat Assessment and Mitigation Plan, Coal Hollow Mine Permit Application Package, C/025/0005***

At the request of Alton Coal Development, LLC ("**Alton**"), we have reviewed the findings of the Utah Division of Oil, Gas and Mining ("**DOGM**") regarding Alton's Sage Grouse Habitat Assessment and Mitigation Plan ("**Findings**"). These Findings are set forth in DOGM's April 20, 2009 Technical Review of Alton's Coal Hollow Mine Permit Application Package, C/025/0005 ("**PAP**"). The Coal Hollow Mine is located entirely on private lands and within private coal reserves. The Greater Sage Grouse ("**Sage Grouse**") is characterized as a "species of concern" under State law and as a "candidate species" under consideration for listing pursuant to the federal Endangered Species Act, 16 U.S.C. § 1531, et seq. ("ESA"). However, these designations do not authorize DOGM to impose wildlife mitigation requirements which restrict private property rights or exceed federal requirements for ESA candidate species. The Findings attempt to impose requirements which are not authorized under the Utah Coal Program, the ESA or the State Wildlife Code.

I. LIMITATIONS ON THE DIVISION'S AUTHORITY TO REQUIRE SAGE GROUSE HABITAT ASSESSMENT AND MITIGATION

The Sage Grouse has been designated as a "species of concern" by the Utah Division of Wildlife Resources ("**DWR**") and is a candidate for ESA listing. However, this designation does not authorize the DOGM to impose the onerous restrictions on mine development proposed in the Findings.

Utah Administrative Code § 657-48-9(2), prohibits the use of the "species of concern" designation to restrict private property rights:

> Wildlife species of concern designations, wildlife habitat designations or management recommendations may not be used by governmental entities as a basis to involuntarily restrict the private property right of landowners and their lessees of record.

Id., (emphasis added.) Under Utah law, as a general principle, where there is any ambiguity regarding a provision, such ambiguities are to be construed in favor of private property use. *Patterson v. Utah County Bd of Adjustment*, 893 P.2d 602, 606 (Utah Ap. 1995).

DOGM's wildlife protection and enhancement requirements are further limited by "practicability" under the Utah Coal Mining and Reclamation Act, which provides:

> To the extent possible, using the best technology currently available, minimize disturbances and adverse impacts of the operator on fish, wildlife and related environmental values, and achieve enhancement of these resources where practicable. . .

Utah Code Ann. § 40-10-17 (emphasis added).

Finally, DOGM is limited by Utah Code Ann. § 40-10-6.5(2) which provides that no rule which the Board adopts ". . . may be more stringent than the corresponding federal regulations which address the same circumstances." Under federal law, consideration of the Sage Grouse as an ESA candidate species does not result in the application of substantive or procedural provisions of the ESA. 50 C.F.R. § 424.15 ("[N]one of the substantive or procedural provisions of the Act apply to a species that is described as a candidate for listing."); *see also Center for Biological Diversity v. Norton,* 254 F.3d 833, 835 (9th Cir. 2001).

II. DOGM'S FINDINGS REGARDING ALTON'S SAGE GROUSE PROTECTION AND ENHANCEMENT PLAN EXCEED ITS AUTHORITY AND MUST BE REMOVED AS A CONDITION TO THE PERMIT

Alton's PAP includes a Sage Grouse Habitat Assessment and Mitigation Enhancement Plan as Appendix 3-1, an appendix regarding Sage Grouse Distribution Habitat Improvement, Alton, Utah, at Appendix 3-3 and an Alton Sage Grouse Habitat Mitigation Plan at Appendix 3-5. In the opinion of Alton's wildlife consultant, these appendices provide a practicable plan for minimizing the adverse impacts of mining to the Sage Grouse and its habitat, consistent with the Utah Coal Program. DOGM is without authority to impose additional restrictions which are not "practicable" under Utah Code Ann. § 40-10-17 and which will "involuntarily restrict" private property rights of Alton and its coal lessees contrary to R657-48-9(2).

Specifically, DOGM is without authority to impose the following restrictions proposed in its Findings:

- A Sage Grouse predator control plan, Technical Analysis ("**TA**"), p. 100 (exceeds DOGM authority under R645-301-333 to minimize, "to the extent possible" disturbances and impacts to important fish and wildlife species "where practicable" and R657-48-9(2) by involuntarily restricting private property rights).

- The operator's commitment not to disturb the lek during the breeding season, including some buffer, TA, p. 101 (exceeds DOGM authority under R645-301-322, 333, 342, 358, which is limited by practicability and violates R657-48-9(2), by restricting private property rights by disrupting or stopping entirely operations during the breeding season).

- Limitation on the right of entry of surface owners, TA, p. 100 (exceed DOGM authority under R645-301-322, 333,342, 358, which is limited by practicability and violates R657-48-9(2) by restricting private property rights of Alton's lessees).

- The following requested amendments to the Alton Sage Grouse Habitat Mitigation Plan (Finding at TA, p. 102) exceed DOGM authority under R645-301-322, 333, 342, 358 at to practicability and violate R657-48-9(2) by restricting private property rights:

    1. Development of an alfalfa field for brood rearing habitat, despite lack of available water supply; and

    2. Requirement to provide a corridor between Heut's Ranch and Alton Sink Valley Sage Grouse populations to promote gene transfer and increase population.

We recommend that Alton request that DOGM remove these and other excessive requirements under the PAP for addressing Sage Grouse management and habitat.

Please let me know if you have further questions.

Exhibit 3

Night Sky
Legal Analysis

Snell & Wilmer

L.L.P.

OFFICE MEMORANDUM

TO: Alton Coal Development, LLC

FROM: Denise A. Dragoo, Esq., Jim Allen, Esq.

DATE: May 18, 2009

RE: ***April 20, 2009 Technical Review: Night Sky, Coal Hollow Mine Permit Application Package, C/025/0005 ("PAP")***

==========

At the request of Alton Coal Development, LLC ("**Alton**"), we have reviewed the findings of the Utah Division of Oil, Gas and Mining ("**Division**") regarding the "night sky" as set forth in their April 20, 2009 Technical Analysis ("**TA**"). The Division found Alton's plan for Mining Operations and Facilities to be inadequate and required the application to describe the effect of lighting for 24 hour operation on the night sky as seen from the Bryce Canyon National Park and the Dixie National Forest. TA at 83. We have concluded that none of the provisions cited by the TA provide authority for this requirement. The Division references the federal land program regulations which are not applicable to the PAP. The Coal Hollow Mine PAP is located exclusively on private lands within private coal reserves. The TA indicates that the night sky issue was raised by the Dixie National Forest. However, the comments submitted by the Dixie National Forest were initially provided to the Bureau of Land Management ("**BLM**") regarding Alton's pending federal lease application. These federal coal leases have not been issued and are not included in the pending application. Alton should request the Division to remove this item from the deficiency list.

ANALYSIS

I. THE TA INCORRECTLY APPLIES THE FEDERAL LANDS PROGRAM TO A PAP LOCATED ON PRIVATE LANDS

As noted by the Division, the night sky issue was raised in comments submitted by the Dixie National Forest which were originally prepared in response to Alton's pending federal coal lease application. The PAP relates only to private lands and private coal leases and does not include the pending federal lease application. The night sky issue is being analyzed by the BLM in conjunction with the draft environmental impact statement ("**EIS**") for the federal coal lease application. Section 102(2)(C) of the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. ("**NEPA**") requires an environmental analysis by federal agencies undertaking "major Federal action significantly affecting the quality of the human environment" (emphasis added). 42 U.S.C. § 4332. NEPA is not applicable to issuance of a State mine permit on private lands and, as set forth below, the Division has failed to provide any authority for requiring the night sky analysis under the Utah Coal Program.

Similarly, the TA cites comments on the night sky set forth in the December 16, 1980 federal unsuitability decision which are related to impacts regarding undesignated federal lands. TA at 83; App. 1-3, Ex. 1. The TA alludes to the previous unsuitability-by-petition proceeding before the Secretary of the Interior in 1980, and quotes from the Secretary's Order that the unsuitability designation was not "the only basis for protection of the values for which [the Park] was established." Neither the Secretary's Order nor the TA identifies what these other bases might be. The Order clearly states that such future decisions would apply only to proposals to mine on federal land. It should also not be read to provide an independent basis for requiring effects analysis on night sky, but only to mention that other substantive law besides the federal unsuitability process might be applicable to future decisions.

Finally, the Division incorrectly attempts to apply federal program regulations at 30 C.F.R. Part 780 to a PAP on private lands. 30 C.F.R. § 700.5 defines the Federal Lands Program as a program implemented by the Secretary on federal lands under Section 523 of the federal Surface Mining Control and Reclamation Act ("**SMCRA**"). By contrast, the Utah Coal Program and regulations apply to a PAP located on private lands. Utah Code Ann. § 40-10-9.

II. THE TA FAILS TO CITE ANY AUTHORITY WHICH REQUIRES ALTON TO ADDRESS THE NIGHT SKY ISSUE

As set forth below, the March 26, 2009 TA provides five regulatory citations, none of which provide authority for the deficiency:

1. **30 C.F.R. § 784.2**. This regulation for the permanent federal program applies to underground operations—the correct reference for surface mining is 30 C.F.R. § 780.2, which is identical. Section 784.2 sets forth the objectives of the permanent federal program to "ensure that the regulatory authority is provided with comprehensive and reliable information on proposed surface mining activities, and to ensure that those activities are allowed to be conducted only in accordance with [applicable laws]." The federal program is not applicable because the PAP is located on private lands, not on federal lands. Even assuming that this regulation applies when neither federal lands nor federal coal is involved, the rule is still inapplicable. The rule sets forth no independent standards, but only requires providing information to assure compliance with other substantive law. In sum, this rule is inapplicable on its face to private lands, and inapplicable in the absence of a substantive provision requiring an effects analysis for night sky.

2. **30 C.F.R. § 784.11**. Again, the correct reference applicable to surface mining is 30 C.F.R. § 780.11. This rule sets forth the general descriptive requirements for a plan of operations under the Federal Lands Program and is not applicable to private lands. Even if this rule were applicable to non-federal coal on non-federal land, the Division confuses the applicant's requirement to describe the operations (which is required) with that of describing the effects of the operations (which is not required). In any event, the rule states that the descriptive burden applies to "the mining operations proposed to be conducted during the life of the mine *within the proposed permit area.*" The rule cannot be stretched to apply to *effects of* mining operations observed outside the permit area. In sum, this authority is inapplicable on its face to private lands, and even if applicable would not require the information sought by the Division related to night-sky effects outside the permit area.

3. **R645-301-231**. This rule appears in the "Soils" section of the Utah Coal Program, and sets forth "General Requirements" that each application will include four categories of information relating to removal and replacement of topsoil. This rule is inapplicable on its face to effects on the night sky.

4. **R645-301-526**. This rule requires a description of "construction, modification, use, maintenance and removal" of four categories of facilities: Existing structures, utility installation and support facilities, water pollution and control facilities and air pollution control facilities. Again, this rule is primarily concerned with describing the operations. The utilities section requires (1) commitment to operation of support facilities in accordance with the permit, (2) providing sufficient design information to show that the support/utility facilities will comply with the permit's performance standards, (3) locating, maintaining and using support and utilities to prevent erosion, water pollution, and damage to public or private property, and (4) locating, maintaining, and using support facilities to minimize (to the extent possible using best available technology) damage to "fish, wildlife, and related environmental values."

The rule only applies to support and utility facilities, not the actual mining operations themselves, and requires minimizing effects, not eliminating them. Neither "support facilities" nor "utilities" is defined in the state coal rules. The night sky is not a fish-or-wildlife-related environmental value, so the rule is inapplicable. Notably, the 1980 Secretarial decision rejected claims of unsuitability based on adverse effects on wildlife in Bryce Canyon and Dixie National Forest. PAP, App. 1-3, Ex 1.

5. **R645-301-528**. These rules relate to handling and disposal of waste, spoil, etc., and are inapplicable to night skies. The requirements are descriptive as to facilities and methods, and set forth performance standards or design criteria related to stability of the mass. No effects analysis on any environmental resources is required.

In short, none of the regulations cited in the technical analysis explicitly require analyzing the effects of mining operations on the night sky in adjacent national park or forest land. Alton should request the Division to remove this item from the deficiency list.

Exhibit 4

Fundamental AVF Definition

By

Erik Petersen, P.G.

Fundamental AVF Definition

While honest differences of opinion regarding some specific aspects of the AVF determination process are not unexpected, the fundamental definition of an alluvial valley floor, whether as defined in the Utah 645-302 Rules, or as outlined in the AVF identification guidelines provided by U. S. Office of Surface Mining (1983), is **NOT** ambiguous.

The Utah coal mining rules clearly state that **both** of the two fundamental characteristics of alluvial valley floors (geologic characteristics and agricultural water characteristics) must be present in order for the Division to make a positive determination of an alluvial valley floor. Rule R645-302-321 indicates (emphasis added):

> 321.300
> Based on the investigations conducted under R645-302-321.200, the Division will make a determination of the extent of any alluvial valley floors within the study area and whether any stream in the study area may be excluded from further consideration as lying within an alluvial valley floor.
>
> The Division will determine that an alluvial valley floor exists if it finds that:
>
> > 321.310. ***Unconsolidated streamlaid deposits holding streams*** are present; **and**,
> >
> > 321.320. ***There is sufficient water to support agricultural activities*** as evidenced by...
> >
> > | | |
> > |---|---|
> > | 321.321. | The existence of flood irrigation in the area in question or its historical use; |
> > | 321.322. | The capability of an area to be flood irrigated, based on streamflow water yield, soils, water quality, and topography; or, |
> > | 321.323. | Subirrigation of the lands in question, derived from the groundwater system of the valley floor. |

This definition clearly indicates that both the geologic and agricultural water use characteristics of a stream valley must be present in order for the Division to make a positive alluvial valley floor finding. There is no provision in the regulations to justify the arbitrary exclusion of the first requirement (321.310; geologic characteristics) under the R645-302 rules.

Any thoughtful reader of these regulations would of necessity conclude that a region not meeting the specified geologic criteria cannot be designated as an alluvial valley floor, regardless of the presence or absence of the agricultural water use criteria also outlined.

This same concept is explicitly laid out in the 1983 U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSM), Alluvial Valley Floor Identification and Study Guidelines.

The OSM guidelines reference the Flannery decision (1980) which sheds light on several aspects of the alluvial valley floor regulatory program. The court sustained the OSM interpretation that alluvial valley floors may be found along perennial, intermittent, or ephemeral stream. The court noted:

> "An alluvial valley floor must satisfy geologic criteria (unconsolidated stream-laid deposits meeting the regulation's dimensions) and hydrologic criteria (water sufficient to sustain agriculture)."

Additionally, using unambiguous language, the OSM guidelines reference the statutory definition of an alluvial valley floor as expanded and clarified through regulations, judicial review, and administrative decisions. The geologic criteria defined in the statutory definition are as follows:

> The geologic criteria of an alluvial valley floor are considered to be:
>
> (a) A topographic valley with a continuous perennial, intermittent, or ephemeral stream channel running through it; and
>
> (b) Within that valley, those surface landforms that are either flood plains or terraces if these landforms are underlain by unconsolidated deposits; and
>
> (c) Within that valley, those side-slope areas that can reasonably shown to be underlain by alluvium and which are adjacent to flood plain or terrace landform areas.

(Note the "and" language in the above presented geologic criteria definitions)

The OSM further notes that an alluvial valley floor is determined to exist only when the both of the following two criteria are met: 1. Geologic Criteria, and 2) Water Availability Criteria (see page II-11 in 1983 OSM document).

This definition clearly states that specific geologic criteria must be met, in addition to the agricultural water use criteria, in order for a region to be determined to be an alluvial valley floor (see pages II-7 to II-11 in the 1983 OSM guidelines).

It is difficult to imagine more straightforward language than that in the Utah R645 rules and the OSM AVF identification guidelines regarding the required presence of both geologic and agricultural water use criteria for a positive AVF determination to be made. It is becoming increasingly difficult to understand why there apparently remains confusion with Division personnel regarding these most fundamental aspects of the alluvial valley floor identification process.

Exhibit 5

Clarification of Geologic Criteria for AVF Determination

By

Erik Petersen, P.G.

Clarification of Geologic Regulatory Criteria for AVF Determination

The Utah Rule R645-302-321.300 indicates that the division will make a positive alluvial valley floor finding if "Unconsolidated streamlaid deposits holding streams are present; and (321.310) ..." the other specified criteria are present in the valley as outlined. In other words, the geologic criterion (the presence of unconsolidated streamlaid sediments in a valley holding streams) is a prerequisite for a positive AVF determination. R645-302-321 goes on to indicate that upland areas...composed chiefly of debris from sheet erosion, deposits formed by unconcentrated runoff...or other mass movement accumulations are specifically excluded from the alluvial valley floor definition in the rules. As defined in R645-100, the term upland areas means "those geomorphic features located outside the floodplain and terrace complex, such as isolated higher terraces, alluvial fans..." This clearly indicates that upland valleys composed of alluvial fans cannot be alluvial valley floors, and further, that upland areas outside the flood plain and terrace complex (such as the Sink Valley area which does not contain a flood plain and terrace complex) cannot be an alluvial valley floor according the Utah State R645 rules.

The 1983 OSM guidelines note that "Although 'alluvial valley floor' has a technical meaning, particularly to a geologist, in the context of the Surface Mining Control and Reclamation Act (SMCRA), the term has a regulatory meaning. Failure to understand that 'alluvial valley floor' is a regulatory term, defined in statute and clarified in legislative, court decisions, regulations, and ongoing administrative decisions, can result in incomplete or misdirected studies." (See OSM pages II-4-5).

The 1983 OSM alluvial valley floor identification guidelines present the expanded and clarified statutory definition of an alluvial valley floor. This statutory definition is based on regulations, judicial review, and administrative decisions. The statutory geologic criteria that must be present for an area to be an alluvial valley floor are listed on pages II-7 and II-8 of the 1983 OSM guidelines document. The geologic criteria are as follows:

"A. Geology. As already noted, one of the two fundamental aspects of an alluvial valley floor is its geologic character. Regulations, judicial review, and administrative decisions have expanded and clarified the statutory definition. The geologic criteria of an alluvial valley floor are understood to be [emphasis added]:

> "(a) A topographic valley with a continuous perennial, intermittent, or ephemeral stream channel running through it; **and**;
>
> "(b) within that valley, those surface landforms that are either flood plains or terraces if these landforms are underlain by unconsolidated deposits; **and**
>
> "(c) within that valley, those side-slope areas that can reasonably be shown to be underlain by alluvium and which are adjacent to flood plain or terrace areas."

It is clearly evident from these definitions (both the Utah R645 rules and the OSM guidelines) that if there is no flood plain and terrace complex in a topographic valley,

there likewise is no alluvial valley floor in that valley, regardless of the presence or lack of the required agricultural water use characteristics of that valley (i.e., the geologic criteria must be met for the valley to qualify as an alluvial valley floor).

Given these considerations, and the Division's acknowledgement that there is no flood plain and terrace complex in Sink Valley (see March 30, 2009 Technical Memo, Page 10), a negative determination regarding the presence of AVF seems straightforward.

In this TA and in previous correspondences with the Division, considerable emphasis has been placed on information presented in the 1980 Jack Schmidt Earth Resources Consulting report prepared for the U.S. Office of Surface Mining (OSM) entitled *Reconnaissance Determination of alluvial Valley Floor Status and Assessment of Sediment Yield in Selected Areas of the Alton Petition Area and Adjoining Lands Garfield ands Kane Counties, Utah.* Information from this report was also summarized in an appendix to the 1983 OSM document *Alluvial Valley Floor Identification and Study Guidelines*. A discussion of these documents is presented here to clarify the information contained as it relates to the current status of the alluvial valley floor determination in the Coal Hollow Project area.

In Mr. Schmidt's cover letter to Mr. Paul Bodenberger of the Office of Surface Mining, he clearly indicates that his study is a reconnaissance determination of alluvial valley floor status. The introduction to the report indicates that Mr. Schmidt spent a total of 14 days conducting necessary field work and collecting information from local federal agency offices, and that the nature of Schmidt's work should be considered reconnaissance. The project area (the Alton petition and adjacent areas) as shown on Figure D-3 in the 1983 OSM document encompasses more than 1,000 square miles. Mr. Schmidt was commissioned not only to conduct a regional reconnaissance AVF investigation, but also to make an evaluation of the nature of agricultural use of water, make an evaluation of the erosion and sediment yield characteristics in proposed mining areas, and make an evaluation of the effect of erosion and sediment yield on downstream channels and associated stream diversions. Under these conditions, clearly Mr. Schmidt could not possibly be expected to perform all of these tasks and to perform a field investigation of the geologic and agricultural water use conditions in Sink Valley in anything approaching the kind of detail required to make a formal AVF determination. Consequently, the report is appropriately presented as a reconnaissance determination.

As indicated on page II-12 of the 1983 OSM guidelines, "The purpose of an initial identification phase is to permit identification of areas which clearly are not alluvial valley floors, so that detailed studies can be focused only on areas which might reasonably be expected to be alluvial valleys. The other purpose of initial studies is to permit a level of identification on the basis of readily available or easily collected data." Appendix D of the 1983 OSM alluvial valley floor identification and study guidelines is an appendix that uses the findings of a 1980 reconnaissance alluvial valley floor study of the Alton unsuitability petition area as an example to illustrate the procedure for performing initial alluvial valley floor identification studies in coal mining areas.

On page 29 of the Divisions Technical Analysis document (26 March 2009), the Division appears to be referring to a statement from Page D-4, Appendix D of the 1983 OSM document. The statement reads:

> "Valleys have been developed because of favorable soils and proximity to water. Agriculture in the region could not exist in its present form without the valleys; therefore, alluvial valleys do exist in the region"

This is a statement from the "*Regional Setting*" subsection of the OSM report that is presented even before the beginning of the discussion of the identification process. This broad statement is clearly being applied to the entire "region" described in the report, which extends from near Bryce Canyon National Park to the Arizona state line and encompasses nearly 2,000 square miles.

No one would dispute that alluvial valley floors exist in this large region. However, the Division then goes on to conclude that:

"OSM stated that the initial reconnaissance conducted of the Alton area by Jack Schmidt in 1980 was sufficient to confirm the existence of an alluvial valley floor based on the importance of the valley land to agriculture (pg. D-4) but suggested that an applicant for a mine permit might collect additional data to clarify the regional hydrologic pattern (page D-2)".

This statement is completely unfounded and does not even approach what is stated in the complete text of the Schmidt report or the OSM summary in Appendix D of the 1983 document. As stated previously, there appears to be some confusion on the part of Division personnel about the requirements for "confirming" the existence of an alluvial valley floor – namely that both geological and agricultural water use criteria be met.

Mr. Schmidt notes on page D-6 that geologic criteria were indeed used as evaluation criteria in his 1980 alluvial valley floor reconnaissance investigation. Mr. Schmidt indicates that, in his opinion, all of the valleys in the nearly 2,000 square mile study area, both developed and undeveloped, met the requisite geologic criteria. Thus, in accordance with the stated primary purposes of a reconnaissance investigation – namely to identify those areas that clearly are not alluvial valley floors – the application of geologic criteria to his evaluation of the valleys would not further refine his preliminary reconnaissance delineation of alluvial valley floors in the region. Quoting page D-6 (emphasis added):

> "The geologic criteria of an alluvial valley floor was not a sufficient basis on which to make determinations, because all valleys, both developed and undeveloped, met those criteria."

It is entirely incorrect to infer that Mr. Schmidt or OSM deemed it appropriate to confirm the presence of alluvial valley floors based on agricultural water use criteria alone in the absence of the geologic criteria.

Given the nearly 2,000 square mile size of the study area in the Schmidt report and the 14-day field investigation, it was perhaps a reasonable starting assumption for a reconnaissance-level regional study to assume that all stream valleys met the SMCRA geologic requirements. To adequately investigate the near-surface sediments in an area of that size would involve enormous expenditures of time and resources and such was beyond the scope of his investigation. Generally, it is for this reason that reconnaissance-level alluvial valley floor studies are typically performed with readily available or existing data only (see Chapter II of the 1980 OSM guidelines document). However, numerous detailed investigations of the geologic, hydrogeologic, and geomorphologic conditions in the Sink Valley area have been performed since the publication of the 1980 Schmidt report. The results of these investigations clearly indicate that the geologic conditions as described in the Utah State R645 rules and the OSM statutory definitions, are not present in the Sink Valley area.

Further, as Mr. Schmidt notes on page 43 of the complete 1980 report:

> "Reconnaissance identification procedures are intended to distinguish between those areas clearly not alluvial valley floors and those areas where detailed study might show that areas would be formally designated as alluvial valley floors. Reconnaissance identification is thus intended to highlight those areas where detailed study is necessary" (emphasis added).

In the legend for Figure D-3, it is noted that the areas marked on the map are "reconnaissance alluvial valley floor determinations" and that "areas generalized and not intended for use in mine permit application studies".

Again, because of the enormity of the task of evaluating hundreds to thousands of square miles of terrain, some broad generalizations were incorporated by Mr. Schmidt in delineating preliminary alluvial valley floor identification areas. Among these (in addition to the assumption that all valleys met the geologic criteria) are the following (see pages 47-50 of the 1980 Schmidt report):

- "Where subirrigation is known, or where basin characteristics are similar to known subirrigation areas, preliminary determinations of alluvial valley floor status have been made.

- "Alluvial valley floors were identified in all valleys with existing stream diversion irrigation, and in all valleys whose basin lithology included the Claron or Kaiparowits Formation.

- "Uncertainty exists regarding designations in losing stream reaches where there are no diversions. For example, Sink Valley Wash below Sink Valley has ephemeral streamflow and diversions. Kanab Creek has no diversions from Lamb diversion to that of the Kanab Irrigation Company, a distance of 24 miles... For the purposes of preliminary determination, each of these valleys has been designated an alluvial valley floor."

Clearly, the results of this type of high-level survey of an area were never intended to serve as an OSM confirmation of the presence of an alluvial valley floor. It should be noted that at the reconnaissance level investigation stage, such somewhat arbitrary assumptions may have been reasonable given the stated objectives of the study. However, the extrapolation of detailed, site-specific information from such an investigation, particularly when the further detailed study recommended by Mr. Schmidt has now been performed and is available, is entirely inappropriate.

Exhibit 6

Selenium Sampling Graph

By

Erik Petersen, P.G.

Water soluble selenium concentrations in overburden and underburden samples from the 200-acre proposed Coal Hollow Mine pit areas

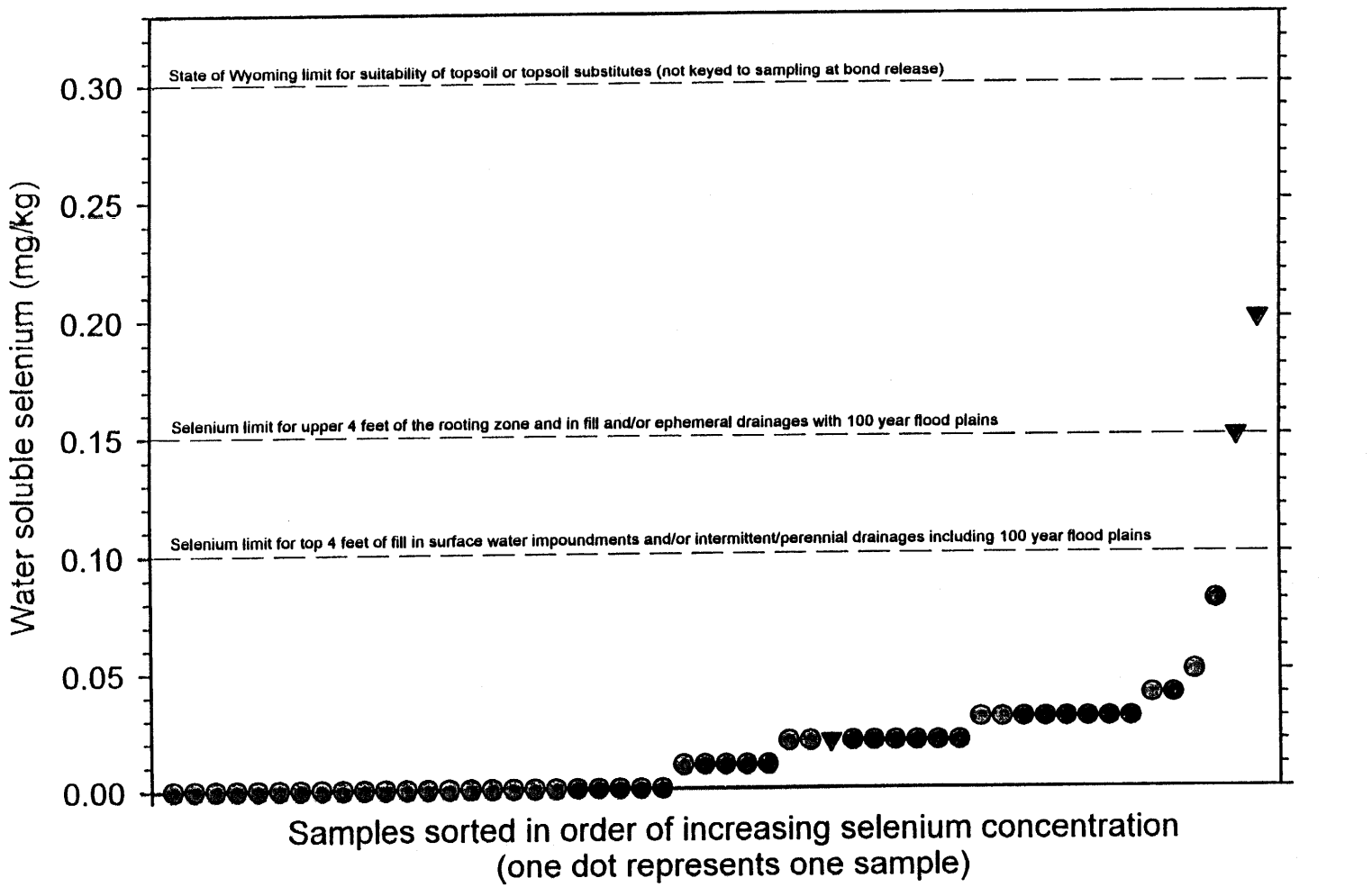


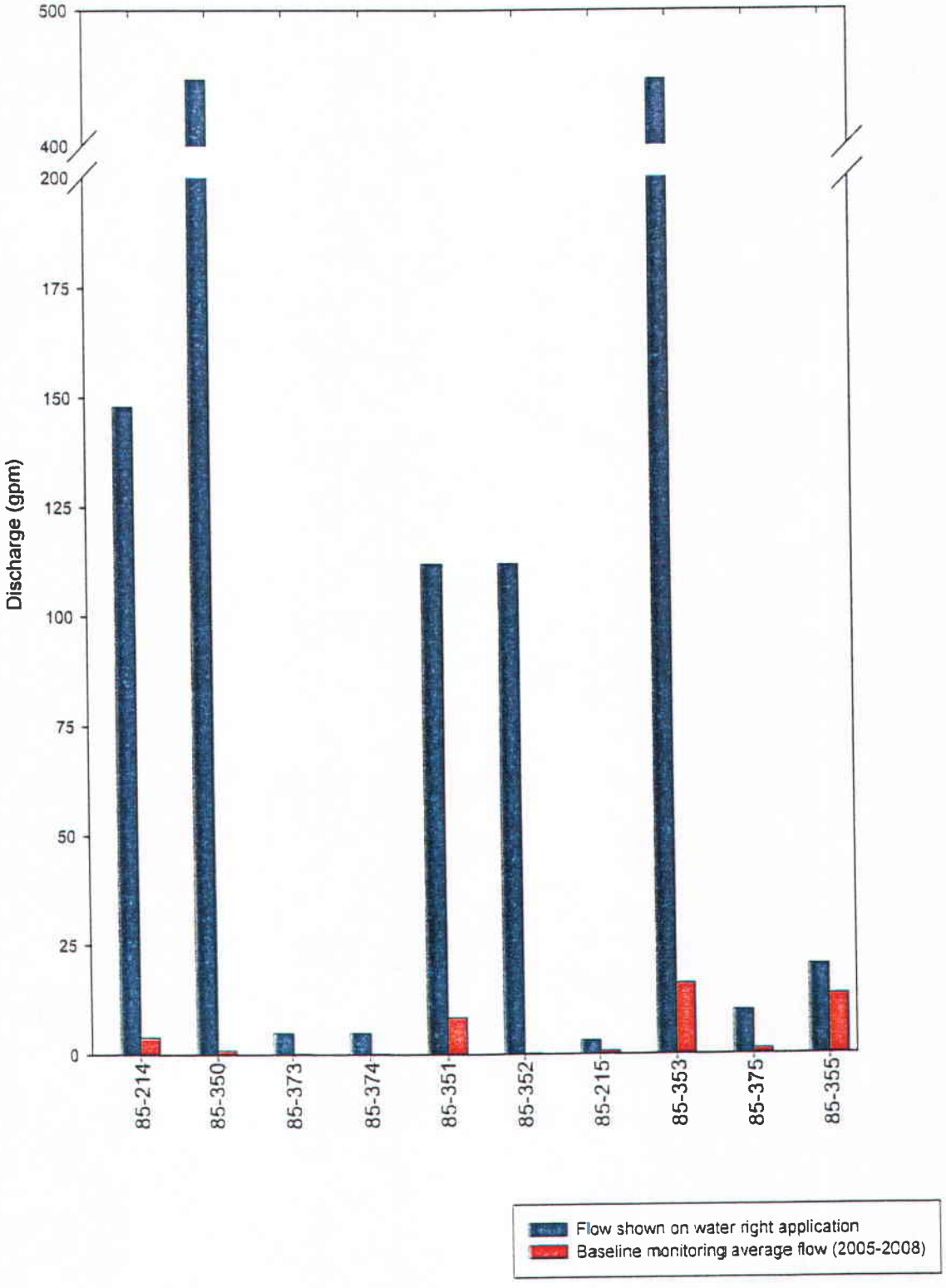
Exhibit 7

Water Rights Compared to Measured Water Availability

By

Erik Petersen, P.G.

Comparison of average measured spring flows with spring flows claimed in the water rights application



Water right availability for springs in the Coal Hollow Project area.

MRP Appendix 7-3 REF number	WR #	Coal Hollow baseline Site	Owner	Source	USE	Water rights flow listing Stated Amount in gpm	Measured average (2005-2008) in gpm	Percent of water right available
SP-1	85-214	SP-14	C. Burton Pugh	Tater Patch Spring	Irrigation, stockwatering	148	3.9	3%
SP-2	85-350	SP-16	Richard L. & Alecia S. Dame	Swapp Ranch Spring Area #1	Irrigation, stockwatering	449	0.9	0%
SP-3	85-373	SP-40 (Sorensen Spr)	Darllynn & Arlene Sorensen	Sorensen Ranch Spring #1	Stockwatering, domestic	4.9	0.2	4%
SP-4	85-374	SP-19	Darllynn & Arlene Sorensen	Sorensen Ranch Spring #2	Stockwatering	4.9	0.2	4%
SP-5	85-351	SP-20	Richard L. & Alecia S. Dame	Swapp Ranch Spring Area #2	Irrigation, stockwatering	112	8.4	8%
SP-6	85-352	SP-22	Richard L. & Alecia S. Dame	Swapp Ranch Spring Area #3	Irrigation, stockwatering	112	0.2	0%
SP-7	85-215	SP-23	C. Burton Pugh	Spring House Spring	Irrigation, stockwatering	3.1	0.7	23%
SP-8	85-353	SP-8	Richard L. & Alecia S. Dame	Swapp Ranch Spring Area #4	Stockwatering	449	16	4%
SP-9	85-375	SP-6	Darllynn & Arlene Sorensen	Sorensen Ranch Spring #3	Stockwatering	9.9	1.1	11%
SP-10A	85-355	SP-33	James, Julie & Lloyd Johnson	Pulsifer Spring	Irrigation, stockwatering	31.725 ac/ft/yr (19.7 gpm)	13.5	67%
SP-10B	85-1011	SP-33	James, Julie & Lloyd Johnson	Pulsifer Spring	Domestic	0.9 ac/ft/yr (0.6 gpm)	---	---
Combined total of springs						**1,313**	**45.1**	**3.43%**

Exhibit 8

Wyoming Topsoil Suitability Guidelines

Table I-2: Criteria to establish suitability of topsoil (or topsoil substitutes).

Parameter	Suitable	Marginal 1/	Unsuitable
pH	5.5-8.5	5.0-5.5 8.5-9.0	<5.0 >9.0
EC (Conductivity) mmhos/cm	0-8	8-12	>12
Saturation Percentage	25-80	<25 >80	
Texture		c,sic,s	
SAR 2/	0-10	10-12 3/ 10-15	>12 3/ >15
Selenium	*<0.3 ppm*	*>0.3-0.8 ppm 4/*	*5/*
Boron	<5.0 ppm		>5.0 ppm
Coarse Frag (% vol)	<25%	25-35	>35%

1/ Evaluated on an individual basis for suitability.

2/ As an alternative to SAR calculations, ESP (exchangeable sodium percentage) can be determined. ESP should be determined if suitable SAR value is exceeded.

3/ For fine textured soils (clay >40%)

4/ These marginally suitable values are keyed to sampling vegetation at bond release. Vegetation >5 ppm Se is considered unsuitable.

5/ No specific limit of extractable selenium concentration is provided because of the lack of data for spoil material > 0.8 ppm.

The following is a redline/strikeout version of Chapter 1 text and table of contents. This submittal replaces Chapter 1 in the MRP based on changes to the ACD ownership.

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R645-301-100

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CHAPTER 1

R645-301-100. GENERAL CONTENTS

110 LEGAL, FINANCIAL, COMPLIANCE, and RELATED INFORMATION

110 INTRODUCTION

Alton Coal Development, LLC is submitting a Mining and Reclamation Plan for the Coal Hollow Project to the Utah Division of Oil, Gas and Mining pursuant to rules governing coal mine permitting at R645-301-100 et seq. Permit Area Base Drawing – Drawing 1-1.

112 IDENTIFICATION OF INTERESTS

112.100 Business Entity

Applicant, Alton Coal, LLC, is a limited liability company duly organized and validly existing under the laws of the State of Nevada, and authorized to conduct business under the laws of the State of Utah.

112.200 Permit Applicant and Permittee:

Alton Coal Development, LLC
463 N. 100 W, Suite 1
Cedar City, UT 84720
Telephone (435) 867- 5331
Employer I. D. #42-1655092
Social Security numbers of Alton Coal Development, LLC's members and manager provided in "CONFIDENTIAL BINDER"

112.210 Operator:

Alton Coal Development, LLC
463 N. 100 W, Suite 1
Cedar City, UT 84720
Telephone (435) 867- 5331
Employer I. D. #42-1655092

112.220 Resident Agent:

Corporation Trust Company of Nevada
6100 Neil Road
STE 500
Reno, NV 89511

For Utah:

Chris R. McCourt
463 N. 100 W., Suite 1
Cedar City, Utah 84720
(435) 867-5331

112.230 Abandoned Mine and Reclamation Fee

Robert C. Nead, Jr. will pay the abandoned mine land reclamation fee.

112.300 Ownership and Control

Alton Coal Development, LLC, is the sole party in interest, owning and controlling this application.

112.310 Members and Managers of Alton Coal Development, LLC

Social Security numbers of Alton Coal Development, LLC's members and manager provided in "CONFIDENTIAL BINDER" Appendix 1-1

Manager - CHRIS R. MCCOURT
1461 N. 3775 W.
Cedar City, UT 845721~~0~~

Member STONIE BARKER, JR
1878 Mission Dr. ~~714 Bob White Lane~~
Naples, FL 3410~~98~~

Member ALEXANDER D. MIRROW ~~BEVERLY HOLWERDA~~
2514 Oleaster Ct. ~~960 Cape Marco Drive~~
Grand Junction, CO 81505~~Marco Island, FL 34145~~

Member ROBERT C. NEAD, JR
6602 Ilex Circle
Naples, FL 34109

Member JAMES J. WAYLAND
2841 Capistrano Way
Naples, FL 34105

Member ANTHONY P. GARGIULO
960 Cape Marco Dr. #1001
Marco Island, FL 34145

All members and managers use the employer identification number of Alton Coal Development, LLC No. 42-1655092

112.320 Relationship to the Applicant

Each of the above-listed managers and members owns and controls more than 10% of Alton Coal Development, LLC. The following is a listing of company ownership as defined by R645-100-200 "Owned or Controlled":

Stonie Barker, Jr.: 10% Ownership
~~Beverly Holwerda~~ Alexander D. Mirrow: ~~30~~15% Ownership
Robert C. Nead, Jr.: 15~~1~~% Ownership
James J. Wayland: 540% Ownership
Anthony O. Gargiulo: 10% Ownership

112.330 Title and Date of Position

The manager listed in 112.310 was appointed July 17, 2007. The members listed in 112.310 were appointed as of September 9, 2004.

112.340. Ownership or control of Other Coal Mining and Reclamation Operations

Neither Alton Coal Development, LLC nor its manager or members owns and has not in the previous five years owned another coal mining and reclamation operation.

112.350 Application Number – Other Pending Coal Mining and Reclamation Operations

Neither Alton Coal Development, LLC nor its manager or members owns any pending coal mine permits.

112.400 Coal Mining and Reclamation Operations Owned or Controlled

Neither Alton Coal Development, LLC nor its manager or members owns or controls any other coal mining and reclamation operations.

112.410 Coal Mining and Reclamation Operations Owned or Controlled by Managers or Members of Alton Coal Development, LLC

Neither Alton Coal Development, LLC nor its manager or members owns or control any other coal mining and reclamation operations.

112.420 Ownership and Control Relationship of Managers and Members of Alton Coal Development, LLC

Each of the managers and members listed at § 112.320 own or control more than 10% of Alton Coal Development, LLC

112.500 Legal or Equitable Owner of the Surface and Mineral Properties

The legal and equitable owners of the properties to be affected by this mining operation during the duration of the permit period along with legal descriptions are included in this section. Surface and coal ownership are also shown on Drawings 1-3 and 1-4. The following table is a summary of the ownership within the Permit boundary.

Permit Area Ownership (Acres)**				
	Fee	Federal	State	Total
Surface	635	0	0	635
Coal*	435	200	0	635
Total				
Note*: Federal minerals located within the Permit area are not planned for mining as part of this application. These areas have been included as part of the LBA application described in 112.800. Note**: Acreages are approximate based on legal descriptions				

The legal description for lands included within the Permit Boundary is provided below for each surface owner.

SURFACE OWNERSHIP:

Owner/Lessor:

C. Burton Pugh
533 N 650 E
Lindon, Utah 84042-1567
801-785-6220

Lessee:

Alton Coal Development, LLC

Legal Description (C. Burton Pugh Property):

TOWNSHIP 39 SOUTH-RANGE 05 WEST, SLB&M
Section 30: All of Section Lot #1 (NW¼ NW¼); NE¼ NW¼ ; N½ NE¼ ; ALSO: BEGINNING 3.50 chains West of the East Quarter corner of Said Section 30, and running South 34° 34' West 22.64 chains to the 1/16 section line; thence West 2.64 chains to the Southwest corner of NE¼ SE¼ of Said Section 30; thence North 40.00 chains; thence East 20.00 chains; thence South 14.69 chains; thence southwesterly to the point of beginning

....containing 217.64 acres, more or less.

TOWNSHIP 39 SOUTH-RANGE 05 WEST, SLB&M
Section 29: BEGINNING at the Northwest corner of Said Section 29, and running thence South 34.69 chains; thence North 33°22' East 35.50 chains; thence North 40° West 0.58 chains; thence North 37°30' East 12.30 chains; thence West 22.23 chains to the point of beginning.

....containing 36.04 acres, more or less.

TOWNSHIP 39 SOUTH-RANGE 05 WEST, SLB&M
Section 19: SW¼SE¼, E½SE¼, SE¼NE¼

....containing 160.0 acres, more or less

TOWNSHIP 39 SOUTH-RANGE 05 WEST, SLB&M
Section 20: SW¼

....containing 160.0 acres, more or less

COAL OWNERSHIP:

Owner/Lessor:

C. Burton Pugh
533 N 650 E
Lindon, Utah 84042-1567
801-785-6220

Roger M. Pugh
140 South 100 West
Kanab, UT 84741

Mark and Margaret Moyers
9397 Avanyu Drive
Pleasant Grove, UT 84062

Lessee:

Alton Coal Development, LLC

SURFACE OWNERSHIP:

Owner/Lessor:

Alecia Swapp Dame Trust
Through Richard, Trustee
1620 Georgia Ave.
Boulder City, NV 89
702-293-4773

Lessee:

Alton Coal Development, LLC

Legal Description (Alecia Dame Swapp Trust):

TOWNSHIP 39 SOUTH-RANGE 05 WEST, SLB&M
Section 30: BEGINNING at a point 5.31 chains North of the E¼ corner of Said Section 30, and running thence South 45.31 chains; thence West 20.00 chains; thence North 20.00 chains; thence East 2.64 chains; thence North 34° 34' East 22.64 chains to the 1/16 section line; thence North 33° 22' East to the point of beginning.

....containing 61.96 acres, more or less.

COAL OWNERSHIP:

Owner/Lessor:	*Lessee:*
Alecia Swapp Dame Trust Through Richard, Trustee 1620 Georgia Ave. Boulder City, NV 89 702-293-4773	Alton Coal Development, LLC

112.600 Owners of Record of Property Contiguous to Proposed Permit Area

Owners of surface properties contiguous to the proposed permit area are shown on Drawing 1-3 and the name and address of each such owner is as follows:

Department of the Interior, Bureau of Land Management
District and Regional Office
Salt Lake City, Utah

Darlynn and Arlene Sorensen
Orderville, Utah
435-648-2462

112.700 MSHA Numbers

The MSHA Mine Identification Number for the Coal Hollow Project is 42-02519.

112.800 Interest in Contiguous Lands

The applicant has interest in lands contiguous to the permit area. A Lease by Application (LBA) is currently being processed by the United States Department of the Interior, Bureau of Land Management, Salt Lake City, Utah.

Alton Coal Development, LLC, the sole party in interest, submitted the LBA application in September, 2004. The LBA is contiguous to the permit area and contains approximately 3,581 acres. See Drawing 1-2 for LBA delineation.

In addition to the LBA application, Alton Coal Development, LLC also has property leased from C. Burton Pugh located east of the permit boundary. This property which is contiguous to the permit area, is part of a land tract (9-5-20-2) owned by Mr. Pugh that is split across the permit boundary and is located in Section 20, Township 30 South, Range 5 West. This entire tract was leased prior to the final determination of the Permit Boundary (9/10/04). The area leased from Mr. Pugh outside the Permit Boundary are not planned for development except for approximately 43 acres located in the SW¼, NW¼ Section 20 which is included as part of the LBA application. The 43 acres would possibly

be developed for surface coal mining operations if the LBA mining rights are successfully acquired. Land tracts leased by Alton Coal Development, LLC within and contiguous to the permit area are identified on Drawing 1-3.

112.900 Certification of Submitted Information

After Alton Coal Development, LLC is notified that the application is approved, but before the permit is issued, Alton Coal will update, correct or indicate that no change has occurred in the information submitted under R645-301-112.100 through .800.

113 VIOLATION INFORMATION

Neither the applicant, affiliates, members or managers or persons controlled by or under common control with the applicant has: (i) had a federal or state mining permit suspended or revoked in the last five years; (ii) nor forfeited a mining bond or similar security deposited in lieu of a bond; (iii) nor received a violation during the last three year period.

114 RIGHT OF ENTRY INFORMATION

Applicant bases its right to enter and begin coal mining activities in the permit area and the consent of the surface owner to extract coal by surface mining methods upon the following documents:

Lessor:	*Lessee:*
C. Burton Pugh	Alton Coal Development, LLC

Surface and Mineral Lease, dated 9/10/04; originally recorded 5/25/06

Lessor:	*Lessee:*
Roger M. Pugh	Alton Coal Development, LLC

Mineral Lease, dated 9/11/08; recorded 9/11/08

Lessor:	*Lessee:*
Margaret and Mark Moyers	Alton Coal Development, LLC

Mineral Lease, dated 6/26/08; recorded 7/21/08

Lessor:	*Lessee:*
Alecia Swapp Dame Trust	Alton Coal Development, LLC

Surface and Mineral Lease, dated 4/29/05; recorded 5/17/06

Copies of these lease assignments are included in Appendix 1-2 located in the Volume 7, Confidential binder.

115 STATUS OF UNSUITABILITY CLAIMS

115.100 The permit area is not within an area or under study as an area designated as unsuitable for mining under R645-103-400, nor has any petitions been filed with the UDOGM under R645-103-420 that could affect the proposed permit area. The Coal Hollow Project is located on private lands

adjacent to federal lands, which after careful consideration were declared suitable for mining in 1980 by then Secretary of Interior Andrus. Secretary's Decision, Petition to Designate Certain Federal Lands In Southern Utah Unsuitable for Surface Coal Mining, OSM Ref No. 79-5-001, dated December 16, 1980, copy attached at Appendix 1-3.

This petition was filed under the provisions of section 522(c) of the federal Surface Mining Control and Reclamation Act ("SMCRA"). OSM Notice, Receipt of a Complete Petition for Designation of Lands as Unsuitable for Surface Coal Mining Operations, 45 fed. Reg. 3398, Jan. 17, 1980, attached at Appendix 1-3.

Those federal lands in the Petition area found suitable for mining include lands adjacent to the private lands which the Project has included in a federal lease by application and located in Kane County, Utah within Township 39 South, Ranges 5 and 6 West, SLM. Secretarial Decision at Paragraph 4. The Secretarial Decision was based on an extensive Administrative Record, including the Petition filed under Section 533 of SMCRA, 30 U.S.C. Section 1272, public hearings, a combined petition evaluation document and environmental impact statement published in two volumes on November 26, 1980 as, "Southern Utah Petition Evaluation Document" and the "Southern Utah Petition Evaluation Document - Comments and Responses." The Secretarial Decision was further supported by a 52 page Statement of Reasons, dated January 13, 1981, attached at Appendix 1-3.

The Secretarial Decision was upheld by the federal court in *Utah International, Inc. v. Watt*, 553 F. Supp. 872 (D. Utah 1982).

115.300 Coal mining and reclamation activities at the Coal Hollow Project are not planned within 300 feet of an occupied dwelling or 100 feet of a public road. Drawing 1-5 shows the proximity of the Swapp Ranch to the planned operations.

116 PERMIT TERM

116.100 There are 3 mining phases associated with this permit term. The first phase of mining is anticipated to start July 1, 2008. Each mining phase has a 1 year term. Phase 3 is anticipated to conclude in year 2012.

Acres of disturbance per Mining Phase

Phase 1	286 acres
Phase 2	109 acres
Phase 3	38 acres

116.200 Permit Term

The Coal Hollow Mine Project is proposed for a 5-year term under the Permanent Regulatory Program for 5 years

117 INSURANCE, PROOF OF PUBLICATION

Proof of publication pursuant to R645-303-322 is included in Appendix 1-5.

117.100 Certificate of Liability Insurance

A copy of the Certificate of Liability Insurance is found in Appendix 1-4.

118 PERMIT FILING FEE

A copy of this permit is on file with the Utah Division of Oil, Gas and Mining (UDOGM), P.O. Box 145801, Salt lake City, Utah 84114-5801. A filing fee of $5.00 accompanied permit submittal.

120 PERMIT APPLICATION FORMAT AND CONTENTS

This permit application contains information and will comply with R645-301-120. A notarized statement attesting to the accuracy of this information is set forth at Appendix 1-6.

130 REPORTING OF TECHNICAL DATA

All technical data submitted in the permit application will be accompanied by the name or organization responsible for the collection and analysis of data, dates of collection and descriptions of methodology used. Technical analyses will be planned by or under the direction of a qualified professional in the subject to be analyzed.

The following assisted or were consulted in the preparation of this permit application:

State of Utah, Department of Natural Resources
Division of Oil, Gas and Mining
Salt Lake City, Utah

Department of the Interior, Bureau of Land Management
District and Regional Office
Kanab and Salt Lake City, Utah

United States Geological Survey, Utah Region
Salt Lake City, Utah

United States Department of Agriculture
Natural Resources Conservation Service
Salt Lake City, Richfield and Cedar City, Utah

State of Utah, Department of Natural Resources
Division of Wildlife Resources (DWR)
Salt Lake City, Price and Cedar City, Utah

Dr. Patrick D. Collins
Mt. Nebo Scientific Research & Consulting
Springville, UT

Erik Petersen, P.G.
Petersen Hydrologic, LLC
Lehi, UT

John T. Boyd Company
James Boyd
Mining & Geological Consulting
Canonsburg, PA

John T. Boyd Company
Rich Bate
Mining & Geological Consulting
Denver, CO

Keith Montgomery
Montgomery Archaeological
Moab, UT

Dr. Stephen Petersen
Philomath, OR

Larry Hayden-Wing
Hayden-Wing Associates, LLC
Laramie, WY

Mark Page
Water Rights Consultant
Price, UT

D.A. Smith Drilling
Loma, CO

Kane County
76 North Main
Kanab, UT

Heaton Livestock
PO Box 100773
Alton, UT

Dr. James E. Nelson
Brigham Young University
Provo, UT

Talon Resources, Inc
Huntington, UT

C. Burton Pugh
Lindon, UT

Richard Dame
Boulder City, NV

University of Miami
Miami, FL

Geochron Laboratories
Cambridge, MA

Energy Labs
Billings, MT

Taylor Geo-Engineering
Alan O. Taylor
Lehi, UT

Long Resource Consultants
Robert E. Long
Morgan, UT

JBR Environmental, Inc.
Dawn Whaley
Sandy, UT

Bruce Chesler
Escalante, UT

A.H. Hamblin
Paleontogical Consulting
Cedar City, UT

Patricia Stavish
Montgomery Archeological
Moab, UT

Mike Shurtz, C.E.T
AGEC
Cedar City, UT

Byron Caton
SGS North America, Inc
Denver, CO

Inter-Mountain Laboratories
Karen Secor
1673 Terra Avenue
Sheridan, WY

Glenn Grossman
Will Spitzenberg, P.E.
Boss Engineering
Pleasant Grove, UT

Tom Campbell
TerraTek
Salt Lake City, UT

140 DRAWING AND PLANS

The Drawing and plans in the Mining and Reclamation Plan are submitted consistent with the requirement of R645-301-140.

150 COMPLETENESS

Alton Coal Development, LLC represents that the information contained in the Coal Hollow Mining and Reclamation Plan permit application to be complete and correct.

R645-103-234.100, Refer to Legal Description and Status of Unsuitability Claims Findings, p. 9 of the TA. The Applicant must provide documentation that the mine has approval from the road authority to temporary close K3993. [SW]

The following Appendix 1-8 is added to the MRP to address this deficiency. This appendix contains the agreement between Alton Coal Development and Kane County for temporary closure and restoration of County Road K3993.

APPENDIX 1-8

County Road K3993, Robinson Creek Road Agreement

Alton Coal Development, LLC and Kane County Agreement
(Kane County Road K3993 Restricted Access and Mine Escort)

RESOLUTION 2009-17

AGREEMENT

AN AGREEMENT PROVIDING FOR A PUBLIC SAFETY ESCORT ALONG THE ROBINSON CREEK ROAD WITHIN THE COAL HOLLOW MINE

THIS AGREEMENT ("**Agreement**") is made and entered into this 7-13 day of 2009 ("**Effective Date**"), by and between Kane County, a body corporate and politic, having an address of 76 North Main Street, Kanab, Utah 84741 ("**County**"), and Alton Coal Development, LLC ("**Alton Coal**"), having an address of 463 North 100 West, Suite 1, Cedar City, Utah 84720 (collectively referred to herein as the "**Parties**").

RECITALS

WHEREAS, Alton Coal has applied with the Utah Division of Oil, Gas & Mining ("**Division**") for a permit to conduct coal mining operations at the Coal Hollow Mine under application number C/025/0005. The Mine will be developed on private lands located in Kane County, Utah, approximately 4 miles south of the Town of Alton within Sections 20, 29 and 30, Township 39 South, Range 5 West, SLB&M ("**Mine Permit Area**"); and

WHEREAS, a portion of Kane County Road K3993 ("**Robinson Creek Road**"), is located within the Mine Permit Area; and

WHEREAS, Robinson Creek Road is part of the county road system within the sole jurisdiction, maintenance and control of Kane County pursuant to Utah Code Ann. § 72-3-105; and

WHEREAS, the public's health, safety and welfare must be assured regarding public travel along the portion of Robinson Creek Road located within the Mine Permit Area; and

WHEREAS, on March 25, 2009, the Division published a public notice regarding Robinson Creek Road in the *Southern Utah News* pursuant to Utah Administrative Code R645-103-234; and

WHEREAS, this Agreement confirms the responsibilities of Kane County and Alton Coal with respect to the conditions of restricted public access to the Robinson Creek Road.

AGREEMENT

NOW, THEREFORE, for and in consideration of the premises, the mutual covenants and agreements of the Parties hereto, the Parties hereto agree as follows:

I. PUBLIC ROAD CLASSIFICATION

Robinson Creek Road is a Class D public road and is part of the County road system within the sole jurisdiction, maintenance and control of Kane County pursuant to Utah Code Ann. § 72-3-105.

II. PUBLIC SAFETY ESCORT TO BE PROVIDED ALONG THE PORTION OF THE ROBINSON CREEK ROAD WITHIN THE COAL HOLLOW MINING BOUNDARY

A. In the interest of public health and safety, upon approval of Mine Permit C/025/0005, Alton Coal agrees to provide an escort for the public travelling the portion of the Robinson Creek Road located within the Mine Permit Area as follows:

1. Alton Coal is authorized by the County to place and maintain gates at each end of the Robinson Creek Road where the road enters the Coal Hollow Mine boundary. See Utah Code Ann. § 72-7-106. Alton Coal agrees to place and maintain the gates for the duration of this agreement.

2. Alton Coal agrees to provide and maintain communication devises, i.e., a landline or a radio, at each gate for the purpose of providing public communication with mine personnel.

3. Alton Coal agrees to place and maintain signage at each gate advising public travelers along the Robinson Creek Road, where it enters the Coal Hollow Mine, to contact mine personnel through the provided communication devises for a safety escort through the Coal Hollow Mine.

4. Alton Coal agrees to provide safety orientation information at each gate related to public travel through the Coal Hollow Mine.

5. Alton Coal will provide a public safety escort along the Robinson Creek Road through the Coal Hollow Mine as expeditiously as possible. Except as provided in paragraph number nine (9) below, an escort will be provided within thirty (30) minutes of a request for a safety escort.

6. The County authorizes the gates to be secured to the extent necessary to facilitate a timely public safety escort. The gates shall not make travel along Robinson Creek Road restrictive beyond the stipulated response time to provide a safety escort. See Utah Code Ann. § 72-7-106, 5(b).

7. Alton Coal agrees to provide escort personnel twenty-four (24) hours a day, seven (7) days a week during the entire period mining operations affect the safety of public travel along the Robinson Creek Road, otherwise public travel along the Robinson Creek Road shall not be restricted.

8. Alton Coal agrees to provide the public with additional contact information facilitating a pre-arranged escort further reducing travel delays.

9. Access along Robinson Creek Roads through the Coal Hollow Mine may occasionally be delayed beyond thirty (30) minutes, but only when necessary to ensure health and safety of the public when activities such as blasting or road construction immediately and directly affect safe travel along the road.

10. The County authorizes Alton Coal to make minor realignments and surface changes to the Robinson Creek Road as necessary to facilitate mine operations without the need for additional county permitting so long as the public's use of the road is not restricted by the realignment or surface changes.

11. At the end of the mining operation, Alton Coal will return the Robinson Creek Road to its original alignment and condition or to an alignment and condition acceptable to the County.

III. MISCELLANEOUS PROVISIONS

A. The Parties understand and agree that the Robinson Creek Road is a county road and that the public escort provisions set forth herein shall not be deemed to abandon or vacate the county road, user rights-of-way, or the R.S. 2477 right-of-way under Utah Code Ann. § 72-5-105.

B. The Parties agree that the public safety escort provisions set forth herein do not convey jurisdiction, authority or responsibility to Alton Coal regarding the construction, maintenance or operation of Robinson Creek Road beyond the terms of this Agreement. Said

road will remain a Class D road within the county network under the sole authority of Kane County pursuant to Utah Code Ann. § 72-3-105.

C. This Agreement, together with its attached exhibits, constitutes the entire Agreement between the Parties and supersedes and replaces any and all prior negotiations, representations, warranties, understandings or contracts between the Parties. This Agreement may be modified by written, mutual agreement of the parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date first above written.

ALTON COAL, LLC

BY: _____

ITS Manager

RYAN ALLEN
Notary Public
State of Utah
Comm. No. 576816
My Comm. Expires May 12, 2013

KANE COUNTY

_____
Commissioner Daniel W. Hulet

_____
Commissioner Mark W. Habbeshaw

_____
Commissioner Doug Heaton

R645-103-234.100, Refer to Legal Description and Status of Unsuitability Claims Findings, p. 9 of the TA. Appendix 1-7 County Road Agreement for relocation of K3900 must include all exhibits that constitute the entire agreement as stated on the signature page of the agreement. [PB]

The following Exhibits are added to Appendix 1-7 as part of the Kane County Road 136 (K3900) Closure, Relocation and Replacement agreement. These exhibits should be added immediately following the signature page..

EXHIBIT 1

STANDARD FORM 299 (1/2006)
Prescribed by DOI/USDA/DOT
P.L. 96487 and Federal
Register Notice 5-22-95

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

FORM APPROVED
OMB NO. 1004-0189
Expires: November 30, 2008

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

FOR AGENCY USE ONLY
Application Number
Date filed

1. Name and address of applicant *(include zip code)*

Alton Coal Development, LLC
463 N 100 W, Suite 1
Cedar City, UT 84720

2. Name, title, and address of authorized agent if different from Item 1 *(include zip code)*

3. TELEPHONE *(area code)*
Applicant **435-867-5331**
Authorized Agent

4. As applicant are you? *(check one)*

a. ☐ Individual
b. ☑ Corporation*
c. ☐ Partnership/Association*
d. ☐ State Government/State Agency
e. ☐ Local Government
f. ☐ Federal Agency

* *If checked, complete supplemental page*

5. Specify what application is for: *(check one)*

a. ☑ New authorization
b. ☐ Renewing existing authorization No.
c. ☐ Amend existing authorization No.
d. ☐ Assign existing authorization No.
e. ☐ Existing use for which no authorization has been received*
f. ☐ Other*

* *If checked provide details under Item 7*

6. If an individual, or partnership are you a citizen(s) of the United States? ☐ Yes ☐ No

7. Project description *(describe in detail)*: (a) Type of system or facility, *(e.g., canal, pipeline, road)*; (b) related structures and facilities; (c) physical specifications *(length, width, grading, etc.)*; (d) term of years needed, (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction *(Attach additional sheets, if additional space is needed.)*

(a) Relocation of County Road 136.
(b) No permanent structures or facilities are anticipated as part of the road relocation.
(c) 3.1 miles long, 24 foot gravel road in a 66 foot ROW, grading varies from 0.5% to 8%, clearing width varies from 30 ft to 100 ft, with cut/fill slope ratios of 2:1 and 3:1, respectively.
(d) Approximately 5-10 years.
(e) Depending on site and weather conditions and time of year once the ROW is issued, construction would take approximately 3-4 months.
(f) Approximately 9,000 cubic yards of gravel.
(g) Approximately 3-4 months.
(h) Approximately 2 acres would be needed for temporary use areas.

Please see the attached Plan of Development for further details.

8. Attach a map covering area and show location of project proposal

9. State or local government approval: ☐ Attached ☑ Applied for ☐ Not required

10. Nonreturnable application fee. ☑ Attached ☐ Not required

11. Does project cross international boundary or affect international waterways? ☐ Yes ☑ No *(If "yes," indicate on map)*

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

Alton Coal Development, LLC is privately owned company licensed to operate in the State of Utah. The company has successfully operated since 2004 without any defaults as to technical or financial capability to construct, operate, maintain and to terminate said rights-of-way.

(Continued on page 2)

This form is authorized for local reproduction.

13a. Describe other reasonable alternative routes and modes considered.

Alton Coal considered additional routes and locations of the ROW. An Environmental Assessment will be prepared discussing the other routes that were considered.

b. Why were these alternatives not selected?

Other routes considered were eliminated for various constraints including, but not limited to, environmentally sensitive areas, cultural resources, public safety, and topography.

c. Give explanation as to why it is necessary to cross Federal Lands

The route proposed on federal land is a result of the various reviewed Alternatives, and the constraints identified during the route selection process. Crossing federal land is necessary to comply with state and federal coal permitting/mining regulations with respect to the proposed Coal Hollow mine (permit number C/025/005) currently in review at Utah Division of Oil, Gas and Mining.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. *(Specify number, date, code, or name)*

Alton Coal Development Lease By Application (UTU081895).

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal *(construction, operation, and maintenance);* (b) estimated cost of next best alternative; and (c) expected public benefits.

See attached Plan of Development.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

An Environmental Assessment will be prepared discussing the impacts of the project based on the BLM ID checklist.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

An Environmental Assessment will be prepared discussing the impacts of the project based on the BLM ID checklist.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

An Environmental Assessment will be prepared discussing the impacts of the project based on the BLM ID checklist.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

It is not anticipated that hazardous materials will be used, produced, transported, or stored within the ROW, or any of the ROW facilities.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

Bureau of Land Management
Kanab Field Office
318 North 100 East
Kanab, UT 84741

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant	Date
	4-24-08

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

GENERAL INFORMATION
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved rights-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture
Regional Forester, Forest Service (USFS)
Federal Office Building, P.O. Box 21628
Juneau, Alaska 99802-1628
Telephone: (907) 586-7847 *(or a local Forest Service Office)*

Department of the Interior
Bureau of Indian Affairs (BIA)
Juneau Area Office
9109 Mendenhall Mall Road, Suite 5, Federal Building Annex
Juneau, Alaska 99802
Telephone: (907) 586-7177

Bureau of Land Management (BLM)
222 West 7th Ave., Box 13
Anchorage, Alaska 99513-7599
Telephone: (907) 271-5477 *(or a local BLM Office)*

National Park Service (NPS)
Alaska Regional Office, 2525 Gambell St., Rm. 107
Anchorage, Alaska 99503-2892
Telephone: (907) 257-2585

U.S. Fish & Wildlife Service (FWS)
Office of the Regional Director
1011 East Tudor Road
Anchorage, Alaska 99503
Telephone: (907) 786-3440

Note-Filings with any Interior agency may be filed with any office noted above or with the: Office of the Secretary of the Interior, Regional Environmental Officer, Box 120, 1675 C Street, Anchorage, Alaska 99513.

Department of Transportation
Federal Aviation Administration
Alaska Region AAL-4, 222 West 7th Ave., Box 14
Anchorage, Alaska 99513-7587
Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual departments/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS
(Items not listed are self-explanatory)

Item

7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.

8 Generally, the map must show the section(s), township(s), and ranges within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.

9, 10, and 12 - The responsible agency will provide additional instructions.

13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.

14 The responsible agency will provide instructions.

15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.

16 through 19 - Providing this information in as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

If additional space is needed to complete any item, please put the information on a separate sheet of paper and identify it as "Continuation of Item".

(For supplemental, see page 4)

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide additional instructions	CHECK APPROPRIATE BLOCK	
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation	☐	☐
b. Corporation Bylaws	☐	☐
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State.	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	☐	☐
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications	☐	☐
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	☐	☐
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	☐	☐
b. Proof of organization	☐	☐
c. Copy of Bylaws	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	☐	☐
b. If one partner is authorized to sign, resolution authorizing action is	☐	☐
c. Name and address of each participant, partner, association, or other	☐	☐
d. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐

* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

(Continued on page 5)

NOTICES

NOTE: This applies to the Department of the Interior/Bureau of Land Management (BLM).

The Privacy Act of 1974 provides that you be furnished with the following information in connection with the information provided by this application for an authorization.
AUTHORITY: 16 U.S.C. 310 and 5 U.S.C. 301.
PRINCIPAL PURPOSE: The primary uses of the records are to facilitate the (1) processing of claims or applications; (2) recordation of adjudicative actions; and (3) indexing of documentation in case files supporting administrative actions.
ROUTINE USES: BLM and the Department of the Interior (DOI) may disclose your information on this form: (1) to appropriate Federal agencies when concurrence or supporting information is required prior to granting or acquiring a right or interest in lands or resources; (2) to members or the public who have a need for the information that is maintained by BLM for public record; (3) to the U.S. Department of Justice, court, or other adjudicative body when DOI determines the information is necessary and relevant to litigation; (4) to appropriate Federal, State, local, or foreign agencies responsible for investigating, prosecuting violation, enforcing, or implementing this statute, regulation, or order; and (5) to a congressional office when you request the assistance of the Member of Congress in writing.
EFFECT OF NOT PROVIDING THE INFORMATION: Disclosing this information is necessary to receive or maintain a benefit. Not disclosing it may result in rejecting the application.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certifications for the use of Federal Lands.
Federal agencies use this information to evaluate your proposal.
No Federal agency may request or sponsor and you are not required to respond to a request for information which does not contain a currently valid OMB Control Number.

BURDEN HOURS STATEMENT: The public burden for this form is estimated at 25 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to: U.S. Department of the Interior, Bureau of Land Management (1004-0189), Bureau Information Collection Clearance Officer (WO-630) 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

A reproducible copy of this form may be obtained from the Bureau of Land Management, Land and Realty Group, 1620 L Street, N.W., Rm. 1000 LS, Washington, D.C. 20036.

COUNTY ROAD 136 REROUTE

ALTON, UTAH

PLAN OF DEVELOPMENT

Location:

County Road 136
Alton, Utah

For:

Alton Coal Development, LLC
463 N 100 W, Suite 1
Cedar City, UT 84720

By:

Boss Engineering & Surveying, LLC
1909 W. State Road, Suite 200
Pleasant Grove, UT 84062

April 09, 2008

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Plan & Profile Sheets
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ROW PLAN OF DEVELOPMENT

1. INTRODUCTION

This ROW Plan of Development proposes to relocate the existing County Road 136 to accommodate active mining in the Private Land areas. County Road 136 is a public roadway used by both travelers and local residence in the area. (See Figure 1)

Measures identified in this Plan apply to work within the project area defined as the right-of-way (ROW), access roads, all work and storage areas, and other areas used during construction of the project. This Plan was developed in consideration of the U.S. Bureau of Land Management (BLM) ROW Plans of Development and Grants.

The ROW Plan (Plan) identifies measures to be taken by Alton Coal Development, LLC (Alton Coal) and its contractors (Contractor) to ensure strict conformance to BLM regulations and sound engineering design.

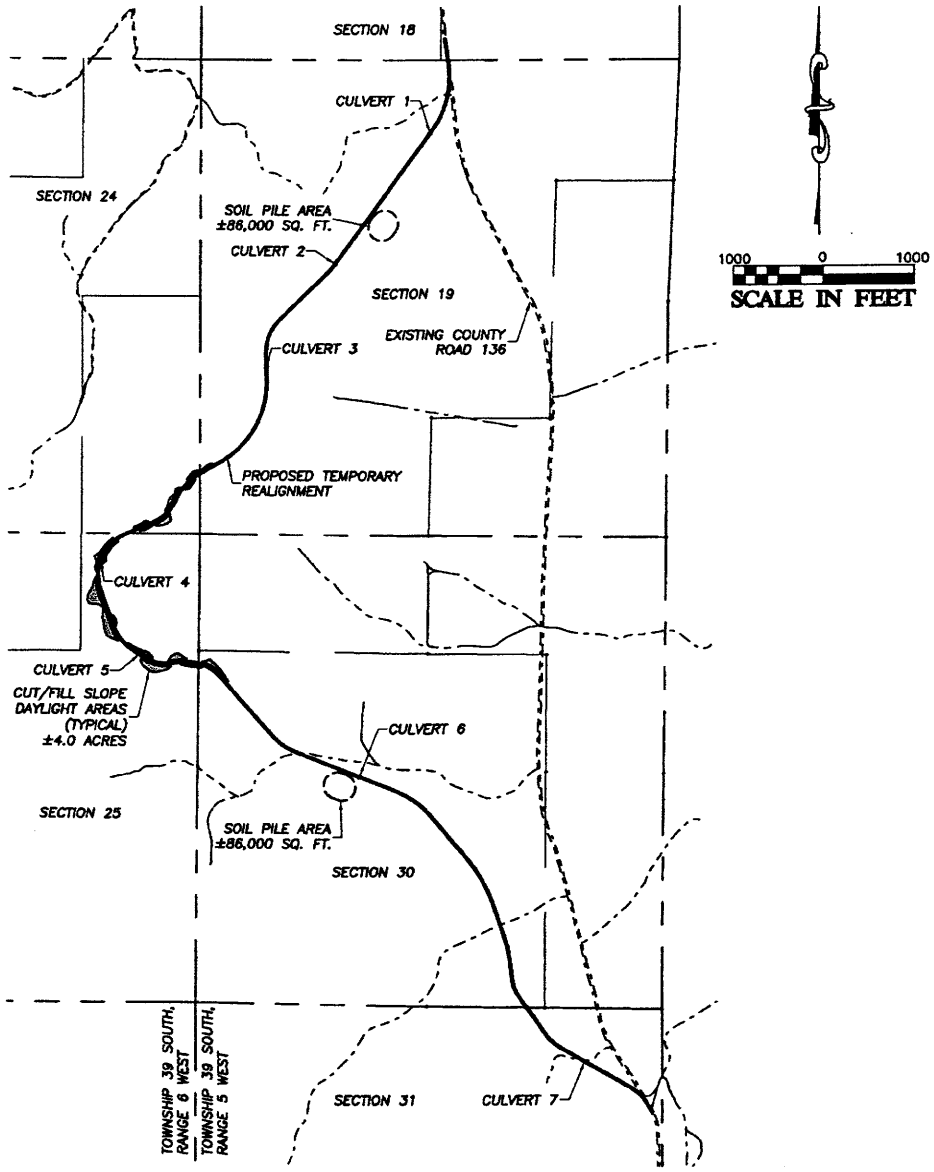
2. PURPOSE

Alton Coal Development, LLC proposes to mine coal in the area. The Private land that is leased by Alton Coal Development, LLC will be the active mining area. This road relocation moves County Road 136 outside of the active mining area to the west onto Public land that will not be immediately permitted for mining. This relocation provides for the health and safety of the public by preventing the interaction of large mining equipment with public traffic. It also provides for maximum recovery of the coal resource by eliminating the need for a public road within the boundary of the proposed mining area. Relocation of this road within the mining boundary would result in a coal loss of approximately 600,000 tons and it would be necessary to have a crossing of public traffic with the mine equipment. Based on the size of the mine equipment, there is a limited observation range for the operators and interaction between the public and this equipment would result in unsafe conditions.

3. DESIGN CRITERIA

The 3.1 mile long roadway is designed to have a 24ft gravel road surface within a 66ft ROW. (See Figure 2) Due to some steep areas, the cut and fill slopes will daylight outside of the 66ft ROW in some areas of the project. These areas are shown in Figure 3.

The road grades vary from 0.5% to 8% max. The clearing width for the roadway varies from 30ft to 100ft, with cut/fill slope ratios of 2:1 and 3:1, respectively.



PLAN VIEW
SCALE: 1"=2000'

CULVERT DATA	
1	40 L.F. 18"ø CORRUGATED METAL PIPE
2	40 L.F. 18"ø CORRUGATED METAL PIPE
3	40 L.F. 18"ø CORRUGATED METAL PIPE
4	60 L.F. 8"ø CORRUGATED METAL PIPE
5	40 L.F. 24"ø CORRUGATED METAL PIPE
6	40 L.F. 18"ø CORRUGATED METAL PIPE
7	40 L.F. 18"ø CORRUGATED METAL PIPE

NO: 071011	DRAWN BY: SLB
DATE: 04/04/08	DESIGNED BY: WES
SHEET NO.:	CHECKED BY: WES

FIGURE 1
FOR
ALTON COAL DEVELOPMENT
COUNTY ROAD REALIGNMENT
ALTON, UT

BOSS ENGINEERING & SURVEYING
1909 W. STATE ST., SUITE 209, PLEASANT GROVE, UT 84062, (801) 763-8467 FAX (801) 763-8472

REVISIONS

NO	DESCRIPTION	DATE	BY

Corrugated Metal Pipe (CMP) will be used for drainage structures at all wash areas and low spots within the project limits as shown in Figure 3.

The proposed roadway surface consists of 1-inch Type II Road Base gravel as recommended by the Kane County Standards. Approximately 9,000 cubic yards of gravel will be needed to meet the 6 inch minimum thickness required by the county. The top 3 inches of the road surface will be treated with calcium chloride to control dust.

Detailed drawings, including plan and profile sheets, along with construction and materials specifications are included in Appendix A.

4. CONSTRUCTION OF ROW FACILITY

The construction of this roadway will commence immediately after approval is granted by the Utah Division of Oil, Gas & Mining to begin mining. Construction of the roadway would disturb approximately 27 acres of land, including approximately 25 acres for the roadway construction right-of-way, 2 acres of temporary use areas (TUA), equipment storage site, and topsoil stockpile areas.

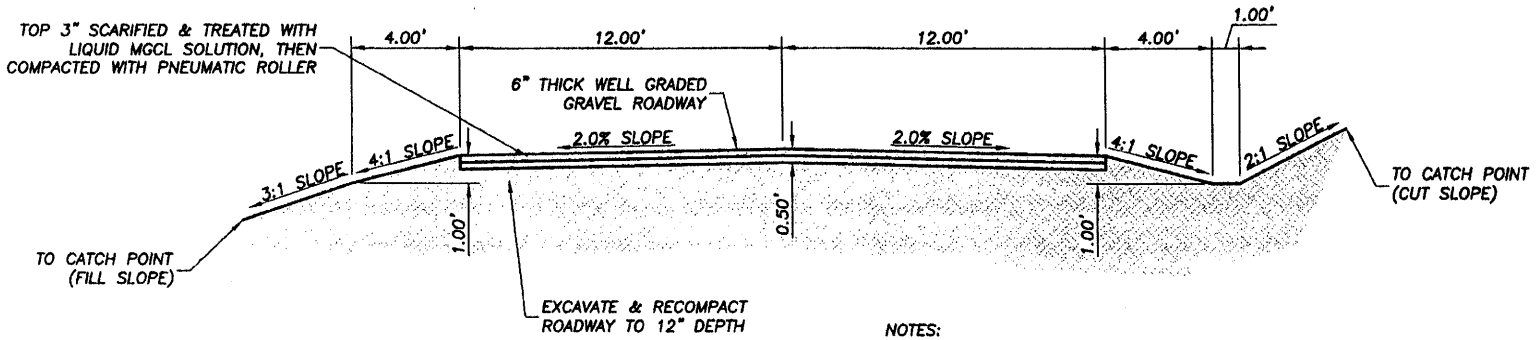
Construction duration for the roadway is estimated to take place within 3-4 months. The approval for the mine is expected to be provided within the next seven months. The BLM land authorization is requested for 10 years or longer.

The roadway will be constructed in conformance with the Kane County Standards and Specifications, FHWA requirements and in accordance with the ASHHTO guidelines on constructing and maintaining gravel roadways.

4.1 Flagging & Staking of ROW

Prior to construction of the roadway, a licensed surveyor will stake the centerline and ROW limits. Construction staking will include the staking of the cut and fill areas as well as the clearing limits. Contractor will be responsible for verifying that the limits of authorized construction work areas are staked prior to construction.

Pre-construction surveys and literature review were conducted to identify sensitive resources along the project route. Resources identified include: archeological sites and areas of potential geologic instability. All efforts have been made to avoid archeological areas as much as possible. Mitigation for sensitive areas that cannot be avoided is addressed in the environmental compliance plans.



NOTES:

1. MOISTEN SCARIFIED SURFACE @ 0.75 GAL/SY PRIOR TO APPLYING LIQUID MAGNESIUM CHLORIDE SOLUTION.
2. MAGNESIUM CHLORIDE SOLUTION TO BE APPLIED SUCH THAT APPROXIMATELY 1.5 POUNDS OF DRY SOLIDS APPLIED PER SQUARE YARD.

TYPICAL ROADWAY SECTION

NOT TO SCALE

REVISIONS

NO	DESCRIPTION	DATE	BY

BOSS ENGINEERING & SURVEYING
1909 W. STATE ST., SUITE 200, PLEASANT GROVE, UT 84062, (801) 763-8467 FAX (801) 763-8472

FIGURE 2
FOR
ALTON COAL DEVELOPMENT
COUNTY ROAD REALIGNMENT
ALTON, UT

JOB NO: 0071011	DRAWN BY: SLB	DESIGNED BY: WES	CHECKED BY: WES
DATE: 04/04/08	SHEET NO:		

4.2 Clearing and Grading of the ROW

Construction equipment will include trucks, loaders, various sized dozers, shovels and backhoes, graders, generators, and compaction machines. Most of the equipment to be used during ROW restoration will consist of dozers, blades, and backhoes.

The existing topsoil in the proposed roadway area is approximately 8 inches deep. The total volume of topsoil that will be removed is approximately 10,000 cubic yards. This topsoil will be removed and stockpiled within the limits of the proposed 66ft ROW. (See Figure 3)

The topsoil will later be used for reclamation when the roadway is abandoned.

Woody vegetation (trees, stumps, and brush) will be disposed of by hauling the material to a nearby landfill and/or making it available to the public for use as fire wood.

4.3 Earthwork

The roadway base will be made of suitable native material re-compacted to 95% maximum dry density. The roadway surface will be made of 6 inch gravel that will be obtained from an authorized mineral material site or pit. The contractor will obtain necessary permits and certification for the mineral material source if needed.

The unsuitable materials (i.e. oversize rocks, weak soils) will be spread alongside the roadway within the undisturbed areas of the 66ft ROW as shown in Figure 3.

Silt fences will be built to alleviate and/or control erosion and water pollution from disturbed soils.

4.4 Stabilization, Rehabilitation & Revegetation

Cleanup and restoration of the surface along the right-of-way and any TUAs will be performed by removing any construction debris and by performing final grading to the finished contour. Steps will be taken to minimize erosion, restore the natural ground contour, and account for road settling. Restoration seeding will be performed in accordance with BLM requirements.

5. OPERATION AND MAINTENANCE OF THE FACILITY

Due to the fact that this is a county roadway, the county is responsible for operation and maintenance of the roadway post construction. Alton Coal will assist the county in maintaining the roadway if needed.

Hauling equipment and materials will be done in accordance with Utah state requirements. Existing road and the ROW will be used for access. Existing road that will be used in

conjunction with the ROW will be periodically maintained during construction. Maintenance will include blading throughout the construction period to keep road level and not rutted. Roadways will be maintained and kept open for public access throughout construction as prescribed by the respective authorizing agencies.

Alton Coal will be responsible for noxious weed control on project disturbed areas, temporary use right-of-way, and temporary use areas. Alton Coal will consult with the BLM Authorized Officer or field representative and local weed districts for acceptable weed control management techniques within the limits imposed in the grant stipulations.

6. TERMINATION AND ABANDONMENT

Prior to termination of the BLM Right-of-Way Grant, or any portion thereof, Alton Coal will contact the Authorized Officer to arrange for a pre-termination meeting and joint inspection of the right-of-way. This meeting and inspection will take place a minimum of 30 days prior to termination. The meeting and inspection will be held so that an agreement on an acceptable termination and rehabilitation plan can be reached. This plan will include, but not be limited to, abandonment and/or removal of facilities, drainage structures and/or surface material, re-contouring, replacing of topsoil, seeding, and monitoring. The Authorized Officer must approve the plan in writing. Alton Coal will relinquish all, or those specified portions, of the right-of-way in accordance with the termination plan.

7. MISCELANIOUS INFORMATION

7.1 Waste Disposal

Alton Coals Construction Inspectors will ensure that the Contractor implements the following waste disposal measures:

- No littering will be allowed on the right-of-way. Construction and operations sites will be maintained in a sanitary condition at all times and waste materials at these sites will be disposed of promptly at an appropriate waste disposal site. Waste is defined as all discarded matter including, but not limited to, human waste, discarded food, trash, garbage, refuse, oil drums, petroleum products, and equipment.

- The Contractor will dispose of excess or unsuitable materials at commercial disposal sites, commercial recycling centers, and disposal sites approved by BLM.

- The Contractor will comply with the hazardous waste disposal requirements of BLM.

- Human wastes, temporarily located within self contained facilities (portable toilets), will be removed from the right-of-way and disposed of in accordance with applicable laws and regulations.

7.2 Safety Plan

Alton Coal and the Contractor will develop an Emergency Plan that will be followed by Alton Coal employees and the contractor in the event of an emergency at any roadway facility associated with this project. A Construction & Operations Emergency Plan will be written to be used during and after construction.

The Emergency Plan will address topics such as administrative issues, emergency planning, assignment of responsibilities, handling and evaluating emergency calls, responding to and controlling emergency situations, news media communications, restoration of service, obtaining and reporting emergency information, employee training, liaison with public officials, general public information program, location/inventory of roadway repair materials and equipment, and lists of emergency telephone numbers and key personnel.

This Emergency Plan will be updated and maintained in conformance with applicable DOT and State of Utah requirements.

7.3 Fire Prevention Plan

Construction Inspectors will ensure that the Contractor implements the following fire preventive measures:

- A closure order will be in effect for all areas under construction. All recreation activities, including hiking, camping, hunting, birding, horseback riding, etc, will be prohibited within the construction right-of-way. Alton Coal or the Contractor will post and sign the boundaries of the areas under construction in accordance with BLM specifications.

- No burning of brush or debris, and no campfires, lunch fires, or warming fires will be allowed on the right-of-way in accordance with the BLM fire restrictions.

- The Contractor will comply with any agency fire restrictions (e.g., welding, torch cutting, blasting).

- The Contractor will control fugitive dust in accordance with any applicable county, state, or federal permit requirements.

7.4 Temporary Use Permit (TUP)

In addition to the construction of the roadway and the 66 foot wide right-of-way, Alton Coal has identified temporary workspace areas where additional construction area width would be required for safe and efficient construction at road crossings, water body crossings, timber and boulder storage areas, steep sideslopes, at the bases or tops of steep ascent/descent areas, and at truck turnaround areas. The locations and sizes of the temporary workspaces identified by Alton Coal are depicted in the alignment sheets. Additional TUA will disturb approximately 4 acres.

Appendix A

Plan & Profile Sheets
Detail Sheets

EXHIBIT 2

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

July 3, 1995

Rick Seibel, Regional Director
Jim Fulton, Denver Field Office Division Chief
U. S. Department of the Interior
Office of Surface Mining, Western Support Center
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733

Re: Utah Section 733 Letter; Permitting of Roads

Gentlemen:

In light of the discussions and correspondence between the Division of Oil, Gas and Mining and the Office of Surface Mining ("OSM") since the informal conference in this matter, I am writing to clarify Utah's policy with regard to the permitting of public roads which may be used for, or related in some way to, coal mining and reclamation activities. Aside from the present disagreement regarding permitting road policy, the Utah Act and implementing regulations are approved by OSM and have been determined to be no less stringent than those of SMCRA. 30 U.S.C. § 1255.

Utah acknowledges that, under its approved definition of "affected area," there exists no blanket exemption from regulation for public roads. Utah recognizes, therefore, that some public roads may be subject to the permitting requirements of the Utah Act. Utah believes, however, that it is best suited to interpret its program, and to decide whether a particular road falls within the definition of "affected area." Since there is little substantive guidance in this area, the State will interpret its program by reference to such authorities as the court's decision **In Re Permanent (Flannery)** as well as conflicting IBLA decisions, such as **Harman Mining** and **W. E. Carter.**

Coal mining permits are required for all roads (public or private) that are constructed, reconstructed or used exclusively for coal mining and reclamation activities. Utah fully recognizes that the quantity of public use of a road is not the exclusive consideration to determine whether it is exempt from regulation. As a result, upon a finding by the State that a road is a bona-fide public road as defined by the approved regulations, Utah will rely on the definition of "surface coal mining operations" under U.C.A. § 40-10-3(18), 30 U.S.C. § 1291(28) and "affected area," U.A.C. Rule R645-100-

200 and 30 C.F.R. §701.5, to determine whether an exemption from regulation is in order. If the operator can demonstrate to the satisfaction of the Utah regulatory authority that a particular road is not included in the definition of "surface coal mining operations," as explained in the pertinent preambles to the publication of the implementing federal rules and as interpreted by the courts, then Utah will not regulate the road.

Thus, a public road which was not constructed, reconstructed or used exclusively for coal mining and reclamation activities; i.e., a multiple use, open access public road, may not be required to be permitted if a) it was properly acquired by the governmental entity (not deeded to avoid regulation), b) it is maintained with public funds or in exchange for taxes or fees, c) it was constructed in a manner similar to other public roads of the same classification, and d) impacts from mining are not significant under the definition of "affected area" and "surface coal mining operations."

Utah recognizes that arrangements sometimes exist between coal companies and the entities which govern public roads used by such companies, whereby maintenance of the road is done in part by the coal companies. Utah believes that such arrangements are not the most important focus of inquiry; rather, coal mining usage and the associated impacts of such usage are the critical area of focus. A public road maintained by a coal operator or permittee should be examined as to:

1. whether the maintenance is occasioned primarily by the environmental impacts of coal mining operations on the road;

2. whether the maintenance is routine and similar to that which would be performed by the county or land management authority absent the agreement of the permittee or operator to do it; and

3. whether the maintenance agreement with the public entity is an arms-length arrangement, such that the essence of the requirement that maintenance be carried out with public funds is met.

For example, if a public land management agency stipulates that, as a condition of a special use permit, the permittee is responsible for maintenance of certain existing roads used by the operator, the fact that such roads are not maintained with public funds for the duration of the operation would not automatically subject those roads to regulation if the effect of mining use on them is relatively slight. Similarly, if state or local governments or public land management agencies require mine operators to construct road improvements or contribute road maintenance funds or services as a

prerequisite for granting the permits and approvals necessary for the mining operation, the stipulation does not, by itself, render all such existing roads subject to regulation under SMCRA.

Utah believes that it, as the regulatory authority, is in the best position to make such determinations, and will decide, based upon these factors, whether such roads are public and whether the coal mining usage and impacts fall within the Utah program definitions of "surface coal mining operations" and "affected area."

We believe that this clarification addresses all of OSM's concerns while allowing the state of Utah to exercise its discretion in interpreting and administering its approved regulatory program. I trust this clarification will provide the basis for OSM to determine that Utah's implementation of its regulatory program is no less effective than the federal program, and that OSM may find the inquiry of the Section 733 letter satisfactorily answered.

We look forward to resolution of this issue and a continuing productive partnership with OSM in implementing Utah's coal regulatory program

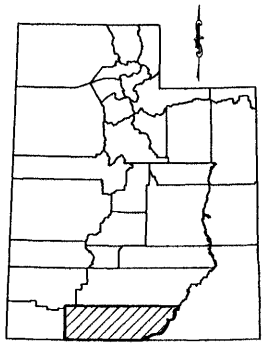
Very truly yours,

James W. Carter
Director

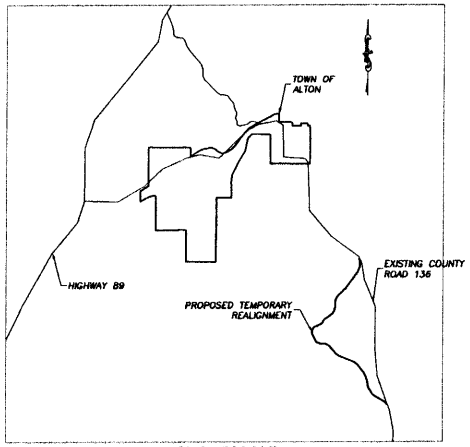
jbe
cc: R. Uram, Director
Office of Surface Mining
H:733RESOL.LTR

EXHIBIT 3

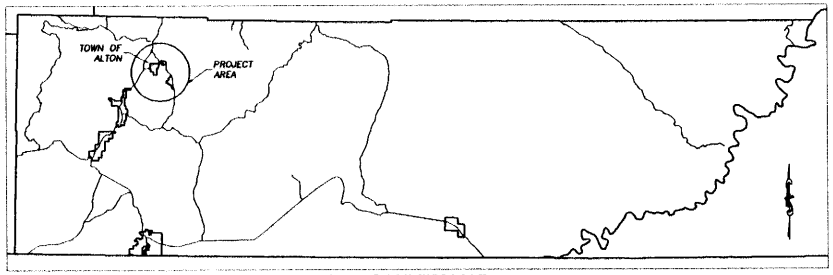
COUNTY ROAD 136 TEMPORARY REALIGNMENT
FOR
ALTON COAL DEVELOPMENT



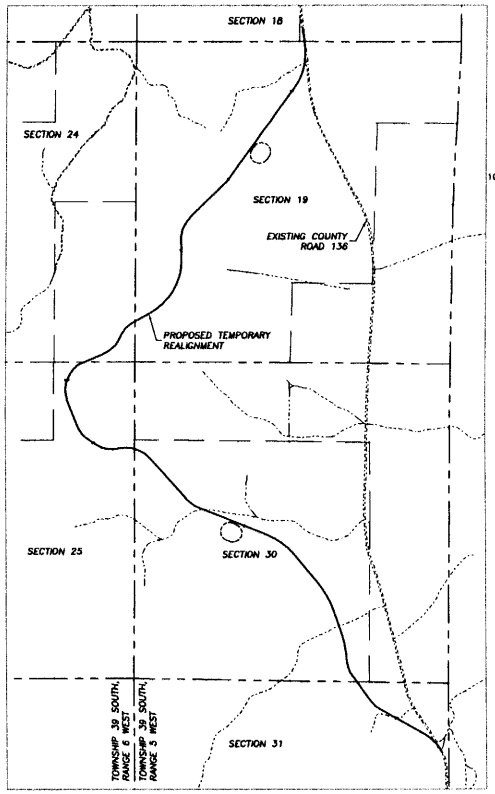
KEY MAP
NOT TO SCALE



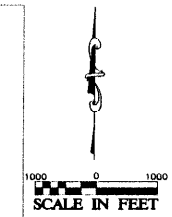
VICINITY MAP
NOT TO SCALE



KANE COUNTY MAP
NOT TO SCALE



PLAN VIEW
SCALE: 1"=1000'



ENGINEER

COMPANY: BOSS ENGINEERING & SURVEYING, LLC
ADDRESS: 1909 W. STATE ST., SUITE 200
PLEASANT GROVE, UT 84062

CONTACT: WILL SPITZENBERG
TELEPHONE: (801) 763-8467

DEVELOPER

COMPANY: ALTON COAL DEVELOPMENT, LLC
ADDRESS: 436 N. 100 W., SUITE 1
CEDAR CITY, UT 84720

CONTACT: CHRIS MCCOURT
TELEPHONE: (435) 867-5331

SHEET INDEX

CVR	COVER SHEET
IDX	PLAN AND PROFILE INDEX
PP1	PLAN AND PROFILE STA 8+00 THRU 35+50
PP2	PLAN AND PROFILE STA 35+50 THRU 63+50
PP3	PLAN AND PROFILE STA 63+50 THRU 91+50
PP4	PLAN AND PROFILE STA 91+50 THRU 119+50
PP5	PLAN AND PROFILE STA 119+50 THRU 147+50
PP6	PLAN AND PROFILE STA 147+00 THRU END
D1	DETAILS

REVISIONS

NO	DESCRIPTION	DATE	BY

BOSS ENGINEERING & SURVEYING
1909 W. STATE ST., SUITE 200, PLEASANT GROVE, UT 84062, (801) 763-8467 FAX (801) 763-8472

COVER SHEET
FOR
ALTON COAL DEVELOPMENT
COUNTY ROAD REALIGNMENT
ALTON, UT

PROJECT NO: 8071011
DATE: 2/29/08
SHEET NO: CVR
DRAWN BY: SLB
DESIGNED BY: TWO
CHECKED BY: WES

R645-103-234.200 and R645-300-123.400, Refer to Legal Description and Status of Unsuitability Claims Findings, p. 9 of the TA. Ownership or public easement for the unimproved road running east/west along Robinson Creek (K3993) should be described in the MRP (or public easement, if any).

Alton Coal has reached an agreement (provided as Appendix 1-8 in Chapter 1) with Kane County to install secured gates at each location where this road enters the permit area. The public can cross the permit area by mine escort only to access the road where it enters the Forest boundary. The road will be reestablished as shown in Drawing 5-22C once mining of the permit area is complete. Text describing ownership of this road is added in Chapter 5 Sections 521.123, 521.170, 526.116.1, 527.100 and 527.200.

R645-301-115.100, Refer to Legal Description and Status of Unsuitability Claims Findings, p. 9 of the TA. The Applicant must acquire a zone modification or conditional use permit for mining in an Agricultural Zone from the Kane County Planning Commission. [SW]

The following Appendix 1-9 is added to the MRP to address this deficiency. This appendix contains Conditional Use Permits (CUP) acquired through the Kane County Planning and Zoning department for all the land parcels located within the permit area. The application package for the CUPs included parcel maps, and Drawings 1-1, 1-3, 5-3, 5-4, 5-5, 5-9, 5-10, 5-11, 5-12, 5-35 and 5-37 from the MRP.

R645-301-234.230, Refer to Stabilization of Surface Areas Findings p. 156 of the TA: Repeated from Task 2910. The application should clearly state the timetable for final grading of the excess spoil pile. Will final grading of the spoil pile be concurrent with construction of the pile, such that the 2.7 million cubic yards of spoil from pits 1 – 3 that are placed on the unmined area will receive final grading, while overburden from pits 4 –8 is placed in the mined area? (Repeated from Task 2910).

R645-301-234.230 is specific to Topsoil storage (234. Topsoil Storage) and does not apply to this deficiency. The excess spoil pile will be initially constructed in lifts with outslopes at the angle of repose. Rough grading of these outslopes to the final design (as shown on Drawings 5-35 and 5-36) will follow by not more than 60 days of the completed construction of the pile. This text is added to Chapter 5, Section 553.

R645-301-244.100, Refer to Topsoil and Subsoil Findings, p. 105 of the TA: The Applicant states in Section 234.230 that other measures approved by UDOGM may be implemented to provide stockpiles protection from wind and water erosion. The Division has established that surface roughening is an effective way to prevent water erosion from occurring on steep slopes (see https://fs.ogm.utah.gov/PUB/MINES/Coal_Related/RecMan/Reclamation_Manual.pdf). The Applicant must describe the use of surface roughening on all temporary and long term stockpiles (spoil, topsoil and subsoil piles). This request repeated from Task 2910 review.

The following page replaces 2-28 of Chapter 2, Volume 1 of the MRP. This page has additional text to clarify that stockpiles will be surface roughened as per the Divisions requirement in this deficiency.

243. Soil Nutrients & Amendments

Nutrients and soil amendments will be applied to the redistributed material when necessary to establish the vegetative cover. The final seedbed of the reclaimed areas will be prepared by first replacing the subsoil and topsoil. Next, a basic topsoil (top 8 inches of reclamation profile) sampling regime will be implemented prior to seeding that should identify fertility problems and will provide a basis for determining necessary soil amendments. The parameters analyzed will be:

Available phosphorus (P)
Soluble Potassium (K)
Nitrate-Nitrogen

One composite sample will be collected from approximately every 2 to 5 acres based on soil types and variability. Each composite will be comprised of at least 4 su-samples.

Pre-testing of the soils has been conducted as part of the soils survey. Results from the pre-testing of topsoil and subsoil can be viewed in Table C-1 of Appendix 2-1 (native topsoil and subsoil) and Table C-2 (samples from core hole/overburden pits) of Appendix 2-1.

244. Soil Stabilization

244.100. Erosion Protection from Wind & Water

All exposed surface areas will be protected and stabilized to effectively control erosion and air pollution attendant to erosion. Reclamation will be regraded to the planned slope angles, not to exceed 3h:1v. Soil layers will be sloped as the material is relocated to the reclaim areas. Once soil is placed, seeding will occur at the earliest appropriate season suitable to planting conditions. Grass matting, mulching and/or cross ditches will be implemented as necessary to control erosion. Surfaces of stockpiles will be roughened by pocking, gouging or ripping. Temporary stockpiles that will be in place for more than 1 year will be seeded with the temporary seed mix provided in Section 234.230 and mulched by one of the methods described in Section 244.200. Temporary stockpiles that will be in place for less than one year will be coated with a tackifier at the manufacturer's suggested rate for dust control applications.

244.200. Mulch

Suitable mulch and other soil stabilizing practices will be used on all areas that have been regraded and covered by topsoil or topsoil substitutes. DOGM may waive this requirement if seasonal, soil, or slope factors result in a condition where mulch and other soil stabilizing practices are not necessary to control erosion and to promptly establish an effective vegetative cover.

Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished. Mulching will occur by one of the

CHAPTER 3 PREFACE NOTE

August 27, 2009

BELOW PLEASE FIND BELOW:

- THE DOGM DEFICIENCY
- ACD'S RESPONSE TO THE DEFICIENCY
- CHANGES MADE TO ACDs EXISTING MRP
- THE REDLINE/STRIKE-OUT VERSION SHOWING ALL CHANGES

- **R645-301-322.200, Refer to Wildlife Resources Findings, p. 27 of the TA:** *In 2006 UDWR changed the terms utilized for habitat designations. The term "high-value" habitats are now designated as "crucial", the new designation needs to be noted in the appropriate section(s) of the application.* [JH]

- A new DWR database search was conducted for the Coal Hollow Project area on August 11, 2009. Consequently, habitat designations have been updated for this submittal.

- Additionally, new habitat map information was also available for the area through DWR. The habitat maps of the MRP have therefore also been updated for this submittal.

- Chapter 3, pp. 3-38 *thru* 3-40, 8/27/09 of this submittal has replaced
  Chapter 3, pp. 3-37 *and* 3-38, 12/18/08 of the MRP.

- Drawing 3-2 of this submittal (dated 08/14/09) replaces
  Drawing 3-2 of the MRP.

- Drawing 3-3 of this submittal (dated 08/14/09) replaces
  Drawing 3-3 of the MRP.

- Drawing 3-4 of this submittal (dated 08/14/09) replaces
  Drawing 3-4 of the MRP.

- Drawing 3-5 of this submittal (dated 08/14/09) replaces
  Drawing 3-5 of the MRP.

- **R645-301-322.210, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA: Bald and Golden Eagles.** *This section needs to include a narrative about each species including their status within ½ mile of the proposed disturbed area.*

- This narrative has been added to the text in Section 322.230 with a previous deficiency response.

- No insertion information necessary. This narrative has been added to the text in Section 322.230 above.

- **R645-301-323, Refer to Maps Plans and Cross Sections of Reclamation Operations Findings, p. 160 of the TA**: *The application needs to include Reclamation Monitoring and Sampling Location Maps and Reclamation Treatments Maps. Drawing 3-1 includes the location of the reference areas where vegetation was sampled prior to disturbance and will be sampled post reclamation. Drawing 3-1 needs to include the post reclamation sampling locations of the reclaimed area. •The applicant should also address the remaining portions of R645-301-323 in consultation with the Division. The portions include 323.200, 300, and 400. •For 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 adequate to show the reclamation treatments for Robinson Creek, but the application needs to include the reclamation treatment maps for the other reclaimed areas, showing topography and delineation of areas where a different seed mixes or rate of application is proposed, such as sage grouse habitat and pasture restoration.* [JH]

- A new map called "RECLAMATION, TREATMENTS, MONITORING & SAMPLE LOCATIONS" has been prepared for the MRP in this submittal.

- Personal communications with J. Helfrich (DOGM; August 19-20, 2009) indicated that *the applicant has addressed the remaining portions of R645-301-323 in consultation with the Division (the portions included 323.200, 300, and 400).*

- Drawing 3-7 of this submittal should be <u>added</u> to the MRP document.

- **R645-301-330, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA: Wetlands and Habitats of Unusually High Value for Fish and Wildlife.** *Page 3-73 refers the reviewer to page 3-40 of the application for protection measures for wetland areas. The information on page 3-40 does not describe protection and enhancement measures for the wetland areas. Section 333, as noted by the Applicant, needs to include the protection and enhancement measures for wet meadow areas during active mining operations.* [JH]

- This information has been added to: **Other Wildlife Enhancement Information**, Wet Meadow Habitat in Chapter 3.

- Chapter 3, pp. 3-50 *thru* 3-52, 8/27/09 of this submittal replaces Chapter 3, pp. 3-48 *and* 3-49, 12/15/08 of the MRP.

- **R645-301-333, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA: Protection and Enhancement Plan**. *Protection. The application needs to include a wildlife awareness program for the employees that include avoidance, harassment situations in transportation corridors and speed limits. For the affected areas within the Division's scope of responsibility, the awareness program needs to include measures to efficiently monitor, (truck drivers could maintain a log of animals hit and/or killed), and remove road kill by haul trucks, including but not necessarily limited to: mule deer, elk, sage grouse, other birds and smaller animals. For example, some mining companies have offered to contribute to the DWR's road kill clean up program.*

- This narrative has been added to the text in Section 333.

- Add the "Wildlife Awareness Program", Chapter 3, pp 3-53 *and* p. 3-54, 8/27/09 has been added to Section 333 of the MRP.

- **R645-301-341.230, Refer to Vegetation Reclamation Findings, p. 154 of the TA** •*The applicant also needs to explain how water will initially get to the reclaimed pasture areas, as there are no commitments in the plan to irrigate these reclaimed areas.* [JH]

- There is currently no irrigation to the pasture lands located in the permit area, nor has there been irrigation in these areas in the recent past. Furthermore, no supplemental irrigation has been planned for the revegetation treatments (see MRP section 341.240).

- No information will be added to the MRP for this deficiency.

- **R645-301-342, Refer to Fish and Wildlife Resources Findings, p. 100 of the TA: Protection and Enhancement Plan.** ***Enhancement.*** *Chapter 3, p. 3-48, "Sagebrush and Other Habitats", includes some information about wildlife species during reclamation but does not include a narrative that describes how impacts to the habitat for the high value (crucial) wildlife species, black bear, rocky mountain elk, and mule deer will be mitigate during the active phase of mining operations. The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages of the disturbed area footprint versus habitat enhancement should be included in the application.* [JH]

- Information has been added to include a narrative that describes how impacts to the habitat for the high value (crucial) wildlife species, black bear, rocky mountain elk, and mule deer will be mitigate during the active phase of mining operations.

- No additional insertions need to be made here because:

  Chapter 3, pp. 3-50 *thru* 3-52, 08/31/09 of this submittal (above) has replaced Chapter 3, pp. 3-48 and 3-49, 12/15/08 of the MRP in a deficiency above.

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■ R645-301-300. BIOLOGY

310. INTRODUCTION

The following section has been created to be submitted to the State of Utah, Division of Oil, Gas & Mining (DOGM). It describes specific biological resources of the Coal Hollow Project near the town of Alton, Utah. Updates to the data sets herein will be a continuous undertaking. This chapter contains information including the following:

311. Vegetative, fish, and wildlife resources of the permit area and adjacent areas as described under R645-301-320.

312. Potential impacts to vegetative, fish and wildlife resources and methods proposed to minimize these impacts during coal mining and reclamation operations as described under R645-301-330 and R645-301-340.

313. Proposed reclamation designed to restore or enhance vegetative, fish, and wildlife resources to a condition suitable for the designated postmining land use as described under R645-301-340.

320. ENVIRONMENTAL DESCRIPTION

321. VEGETATION INFORMATION

321.100. Vegetation Mapping and Plant Community Data in the Permit Area

The first vegetation map prepared for the Coal Hollow Project delineated the plant communities that existed within the permit area. The plant communities for the permit area on this early map were drafted on a USGS quadrangle map using information from an existing vegetation map that was prepared from previous work in the area. The earlier work was accomplished in the late-1980s.

A new flight was conducted for the Coal Hollow Project in 2006 that provided aerial photography and more detailed information than had previously been available. This aerial photography and photogrammetric mapping has been used in preparation of many updated maps of the project area, including a revised vegetation map where the plant communities were delineated on the new aerial photographs. Also, new quantitative data were recorded in 2006 in some of the first plant communities proposed for disturbance along with reference areas that would *not* be disturbed. This next version of the vegetation map for the Coal Hollow project also provided sample locations of these recently studied areas. This map was submitted to DOGM in the last MRP submittal (*dated May 25, 2007*) along with the first vegetation quadrangle map, because it continued to provide support for some of the older vegetation data also submitted in the MRP at that time.

Like the earlier vegetation mapping information, and because the area has been studied previously, existing quantitative data sets were also available for the plant communities of the Coal Hollow Project area. These data were recorded in the late-1980s. The aforementioned earlier quadrangle vegetation map corresponded to this early vegetation information. The early datasets were included in the MRP provided to DOGM (*submittal date: May 25, 2007*). Although this information was valuable at that time because it provided initial baseline data for that time period, plans to re-sample the same plant communities to update the existing data were made. Consequently, new quantitative sampling was accomplished later in 2007 to provide updated information about the plant communities within the permit area. The updated data have been summarized and included in this MRP. Therefore, with the 2006 and 2007 quantitative data for the plant communities submitted in the MRP, the dataset for those plant communities proposed for disturbance in the current mine plan for the entire permit area is complete. **Therefore, the older vegetation datasets and maps created using information from the late-1980s were replaced by the updated datasets and maps in the MRP.**

Reference areas chosen to represent future revegetation success standards were also chosen and sampled during the same sample periods in 2006 and 2007 as those proposed for disturbance by the mining operations.

Acreage of each plant community and map symbols shown on the revised Vegetation Map *(Drawing 3-1, dated 12/26/07)* for the Coal Hollow Project permit and adjacent areas are shown below.

Vegetation Communities of the Coal Hollow Permit Area			
MAP SYMBOL (see *Vegetation Map*, Drawing 3-1)	PLANT COMMUNITY	TOTAL ACREAGE	PERCENT OF TOTAL
S/G	Sagebrush/Grass	212.00	33.64
P	Pasture Land	192.00	30.48
P-J	Pinyon-Juniper	114.00	18.10
M	Meadow	69.00	10.95
OB	Oak Brush	40.00	6.35
RB/SB	Rabbitbrush/Sagebrush (Disturbed; previously Sagebrush/Grass)	3.00	0.48
	Total*	**630.00**	100.00

Color photographs of the plant communities within the Coal Hollow Project permit area are shown in **PHOTOGRAPHS** section near the end of this chapter.

The above plant communities exist within the boundaries of the Coal Hollow Project permit area and will be disturbed by the coal mining and related activities. Consequently, quantitative and qualitative data were recorded by sampling the plant communities in 2006 and 2007. For general, wide-angle views of the plant communities in the permit area, refer to Photographs 3-1, 3-2, 3-3 and 3-4.

[**NOTE**: The rabbitbrush/sagebrush community was not sampled for baseline data information. This small area represented less that one-half of one percent of the permit area. Moreover, it was a *previously disturbed* sagebrush/grass community. Therefore, standards of revegetation success at final reclamation will be the same as those outlined for the *undisturbed* sagebrush/grass plant communities described in this document].

As mentioned other areas with similar plant communities were sampled within or near the permit area that will *not* be disturbed by mine-related activities. These native plant communities were chosen to be used as future revegetation success standards at the time of final reclamation of the mine site. Therefore, the same methods and parameters were employed in the reference areas that were used to sample the areas proposed for disturbance. The areas with like-communities sampled (the proposed disturbed area and reference area) for each community type, were compared statistically for their appropriateness as reference areas at this time. Similar comparisons (and additional comparisons) will also be conducted between the communities once the land is reclaimed. Complete results and methodologies used are shown in the final reports prepared from sampling these communities. These reports have been included in the appendices at the end of this chapter. The reports titles are: *Vegetation of the Sagebrush/Grass & Meadow Areas: 2006* (**Appendix 3-2**) and *Vegetation Sampling in the Coal Hollow Project Area: 2007* (**Appendix 3-4**). Following is a summary of the results from sampling these communities.

Proposed Disturbed Sagebrush/Grass Community

One of the most common plant communities of the Coal Hollow permit area was sagebrush/grass (see *Vegetation Map, Drawing 3-1* and Photograph 3-5).

Sagebrush community types in the permit area can be dominated by either big sagebrush (*Artemisia tridentata*) or black sagebrush (*A. nova*). In the sagebrush/grass community that has been proposed for disturbance and sampled, both of these species were nearly equally represented. The dominant plant species as shown in the species cover table (Table 3-1) were big sagebrush, black sagebrush, jungrass (*Koeleria macrantha*), and Sandberg's bluegrass (*Poa secunda*).

The total living cover of this sagebrush/grass community was estimated at 54.73%, of which 52.40% of it was from understory cover and only 2.33% was from overstory [Table 3-2 (A)]. Shrubs dominated the composition here representing 64.09% of the total living understory cover, followed by grasses at 34.64%, and forbs at 1.28% [Table 3-2 (B)]. Woody species density was also measured; the total number of individuals per acre was estimated at 8,339 (Table 3-3).

Sagebrush/Grass Reference Area

The sagebrush/grass community chosen as a reference area to be used for future revegetation success standards was located northwest of the sagebrush/grass community that was proposed for disturbance, and just outside the permit area (see *Vegetation Map, Drawing 3-1* and Photograph 3-6).

This plant community will remain undisturbed and is similar to the proposed disturbed area. It had been chosen to be used for future revegetation success standards and had similar cover, composition, and woody species density. Cover and frequency by species of the sagebrush/grass reference area are shown on Table 3-4. The dominant shrub plant species here were big sagebrush and black sagebrush. The most common grass species were slender wheatgrass (*Elymus trachycaulus*), cheatgrass *(Bromus tectorum*), Kentucky bluegrass, and Sandberg's bluegrass.

The total living cover in the area was estimated at 60.50%, all of which was from understory cover [Table 3-5(A)]. Woody species dominated the composition at 61.48%, whereas grasses comprised 29.86%, and forbs 8.65% [Table 3-5(B)].

The total number of plants per acre in the woody species density measurements was 8,331 (Table 3-6). Big sagebrush and black sagebrush dominated the woody species in the density measurements.

Proposed Disturbed Meadow (Dry) Community

There are different meadow lands located within the permit area. These meadows have somewhat been differentiated on the *Vegetation Map (Drawing: 3-1)* which show them as "M (Dry)" compared to those that retain more soil moisture, or shown as merely as "M" on the map. The year 1 mining operations would disturb a dry meadow community on the west side of the permit area (see Photograph 3-7).

Quantitative sampling was conducted in this meadow. As shown on Table 3-7, the dominant species in the proposed disturbed meadow were grass and grass-like species including sedge (*Carex* sp.), wiregrass (*Juncus arcticus*) and junegrass. Broom snakeweed (*Gutierrezia sarothrae*) was the dominant shrub, whereas the dominant forbs were yarrow (*Achillea millefolium*) and Pacific aster (*Aster ascendens*).

The total living cover was estimated at 73.00% [Table 3-8 (A)]. The composition of the understory was 75.70% grasses (and grass-likes), 13.28% forbs, and 11.01% shrubs [Table 3-8 (B)]. The total number of plants per acre in the woody species density measurements was 817 (Table 3-9). Black sagebrush was the only woody species present in the density measurements.

Meadow (Dry) Reference Area

The dry meadow reference area was chosen outside the permit area, but in close proximity to the dry meadow proposed to be disturbed by the mine (see *Vegetation Map, Drawing 3-1* and Photograph 3-8). The dominate grass and grass-like species in the dry meadow reference area were wiregrass, sedge, and junegrass (Table 3-10). The dominant forbs were yarrow, Pacific aster, and cinquefoil (*Potentilla anserina*). The only shrubs present in the sample quadrats were black sagebrush and broom snakeweed.

The total living cover of this reference area was 72.00% [Table 3-11(A)]. The understory cover composition was comprised of 71.05% grasses (and grass-likes), 22.31% forbs and 6.64% shrubs [Table 3-11 (B)]. The total woody species density of the community was 1,481 plants per acre and was comprised exclusively of black sagebrush (Table 3-12).

Proposed Disturbed Pinyon-Juniper Community

Several areas proposed for disturbance by mining activities currently support pinyon-juniper plant communities. For a representative picture of these sample areas see Photograph 3-9. Pinyon-juniper communities were sampled in two areas. One such area, shown as the "Prop. Dist. Pinyon-Juniper Sample Area (North)" on the *Vegetation Map, Drawing 3-1*, is located on the east side of the permit area and *north* of another pinyon-juniper sample area. This is a site where mining activities have been planned during the first year of mining activities. Another pinyon-juniper sample area or the "Prop. Dist. Pinyon-Juniper Sample Area (South)" on the map, is located near the south boundary of the permit area and also *south* of the other pinyon-juniper sample area. Disturbance from mining-related activities of the south sample area have been planned during the third year of mining. These two datasets have been combined to show the final results of the sample data for the proposed disturbed pinyon-juniper community as a whole, but the data could easily be separated at a later time if for some reason it is desired.

Overstory cover of the pinyon-juniper community was represented by only two species in the sample quadrats, but was dominated by Utah juniper (*Juniperus osteosperma*) and followed distantly by pinyon pine (*Pinus edulis*). Understory cover was dominated by black sagebrush, followed by Utah juniper and pinyon pine (Table 3-13). Grasses were few and forbs were absent in the sample quadrats.

The total living cover of the pinyon-juniper community was 43.00%, of which 25.00% was from understory and 18.00% was from overstory species [Table 3-14 (A)]. The understory composition by lifeform in this community was comprised of 95.88 % woody species [Table 3-14 (B)]. Woody species density was measured at 2,657 individuals per acre (Table 3-15).

Pinyon-Juniper Reference Area

A reference area, or an area chosen to represent future revegetation success standards, was chosen and sampled in another pinyon-juniper plant community (see Photograph 3-10). This reference area will *not* be disturbed by the mining operations so it could be used for data comparisons following final reclamation at the mine site. The pinyon-juniper reference area was located near the *north* proposed disturbed pinyon-juniper community (see *Vegetation Map, Drawing 3-1*).

Like the above proposed disturbed community, the overstory cover of the reference area was dominated by Utah juniper followed by pinyon pine. Understory was also dominated by black sagebrush, Utah juniper and pinyon pine (Table 3-16). Again forbs were not present in the quadrats; grasses present were slender wheatgrass and squirreltail (*Elymus elymoides*).

The total living cover of the pinyon-juniper reference area was estimated at 39.00%, 11.50% of it was composed of overstory and 27.50% was understory cover [Table 3-17 (A)]. The composition of the understory in the pinyon-juniper reference area was calculated as 89.56% trees and shrubs and 10.44% grasses [Table 3-17 (B)]. Woody species density was dominated by black sagebrush and Utah juniper, but the total of all species was 4,215 individuals per acre (Table 3-18).

Proposed Disturbed Pasture Land Community

The areas called "pasture lands" in the text and maps of this document were plant communities that have been disturbed previously to artificially increase herbaceous cover and productivity for domestic livestock. Prior to pasture lands, these communities were probably native sagebrush/grass plant communities similar to those sampled and described in the 2006 report (*Vegetation of the Sagebrush/Grass & Meadow Areas: 2006*). Although differences occur between pastures due to grazing practices and species planted, representative pastures were sampled for this report (see Photographs 3-11 and 3-12). The sample areas were located near the center of the permit area (see *Vegetation Map, Drawing 3-1*). Again, different locations within this community were sampled, a *north* and a *south* area; and the data were combined for the summary tables in this report. The proposed disturbed pasture land (*north*) was an area proposed for disturbance by operations during the first year of mining activities. The proposed disturbed pasture land (*south*) was an area proposed for disturbance by operations in the second year of mining activities.

The sampling results for the north and south pasture lands indicate that the most common plant species by cover and frequency for the combined data were intermediate wheatgrass (*Elymus hispidus*), Kentucky bluegrass (*Poa pratensis*), black sagebrush (Table 3-19). The annual plant called poverty weed (*Iva axillaris*) was also common in the sample areas.

The total living cover, all of it from understory species, was 44.50% [Table 3-20 (A)]. The composition of the pasture lands consisted of 52.16% grasses, 30.19% shrubs and 17.64% forbs [Table 3-20 (B)]. Woody species density measurements show the woody species density to be 1,349 individuals per acre with the most common species being big sagebrush *(Artemisia tridentata*), rubber rabbitbrush (*Chrysothamnus nauseosus*) and black sagebrush (Table 3-21).

Pasture Land Reference Area

Because the pasture lands were unnatural or comprised of non-native conditions, a native reference area to represent future revegetation success standards was not chosen. Appropriate standards of revegetation success will be developed using the site-specific knowledge gained by the landowners, regulatory agencies, as well as qualified botanists and wildlife biologists representing the coal company.

Proposed Disturbed Oak Brush Community

An oak brush community has been proposed for disturbance by future mining operations (see Photograph 3-13). This community was located in the northeast region of the permit area (*see Vegetation Map, Drawing 3-1*).

Overstory of this community was greater than the understory cover. The dominant overstory species by a wide margin was Gambel's oak (*Quercus gambelii*) with a 41.25% cover and was present in 85.00% of the samples. The dominant understory species were big sagebrush, snowberry (*Symphoricarpos oreophilus*) and Gambel's oak (Table 3-22).

The total living cover in the proposed disturbed oak brush community was estimated at 66.75%, 43.00% coming from overstory and 23.75% from understory plants [Table 3-23 (A)]. Woody species comprised 97.75% of the understory composition with the remaining 2.25% coming from grass species [Table 3-23 (B)]. Forbs were not present in the sample quadrats. Woody species density was estimated at 3,743 plants per acre and, like the cover results, the most common species consisted of snowberry, Gambel's oak and big sagebrush (Table 3-24).

Oak Brush Reference Area

A oak brush reference area was chosen to represent future success standards for revegetation (see Photograph 3-14). This reference area was located on the east side of the permit area *(see Vegetation Map, Drawing 3-1)*. Like the proposed disturbed area it was chosen to represent, the reference area's cover was greater for overstory than that of the understory. The dominant overstory species by far was Gambel's oak. Dominant understory species were Gambel's oak, Kentucky bluegrass, Utah juniper, big sagebrush and snowberry (Table 3-25).

Overstory cover was estimated at 53.25%, whereas understory cover was 20.00%. The total living cover of those combined was 73.25% [Table 3-26 (A)]. Understory lifeform composition was comprised of 66.92% trees and shrubs and 33.08% grasses – no forbs were present [Table 3-26 (B)]. Woody species density was estimated at 2,092 plants per acre with the most common by a wide margin being Gambel's oak, but also consisted of snowberry, big sagebrush, Rocky Mountain juniper (*Juniperus scopulorum*), pinyon pine and Utah juniper (Table 3-27).

Proposed Disturbed Meadow Community

Meadow areas in and adjacent to the project permit area have been studied (see *Vegetation Map, Drawing 3-1*). A dry meadow was mentioned above and reported in the 2006 document included in the MPR [*Vegetation of the Sagebrush/Grass & Meadow Areas: 2006* (**Appendix 3-2**)]. However, another meadow community that retains more soil moisture has also been proposed for disturbance due to the mining (see Photograph 3-15). The complete report for this study has been include in the appendix section of Chapter 3 [*Vegetation Sampling in the Coal Hollow Project Area: 2007* (**Appendix 3-4**)].

The dominant plant species by cover and frequency in this community were wiregrass, Missouri iris (*Iris missouriensis*) and Wood's rose (*Rosa woodsii*). For a list of all species present in the sample quadrats refer to Table 3-28. This meadow community had a total living cover of 86.00% [Table 3-29 (A)]. Of this living cover 51.58% of it were comprised grasses or grass-like species, 32.54% were forbs and 15.88% were shrubs [Table 3-29 (B)]. Woody species density of the community was 384 individuals per acre, all of which was Wood's rose (Table 3-30).

Meadow Reference Area

The reference area, or area chosen to represent future revegetation success standards, was located just outside the permit area (*Vegetation Map, Drawing 3-1;* Photograph 3-16). Similar species dominated this community as were represented in the proposed disturbed area, namely wiregrass, Missouri iris, Kentucky bluegrass (*Poa pratensis*) and Wood's rose (Table 3-31). The total living cover in the reference area was estimated at 88.50% [Table 3-32 (A)]. Composition here was calculated to be comprised of 51.57% grass and grasslike species, 37.38% forbs and 11.04% shrubs [Table 3-32 (B)]. Woody species density in this area was estimated at 2,226 plants per acre (Table 3-33).

Other Meadow Communities

Other meadow communities were studies outside the permit area (see *Vegetation Map, Drawing 3-1*). These areas will not be disturbed by mining activities – they were studied to provide more information about the meadows in the area to provide companion studies for other studies such as alluvial valley floor determinations. Results from these studies can be found in the Chapter 3 appendices [*Vegetation Sampling in the Coal Hollow Project Area: 2007* (**Appendix 3-4)**].

Table 3-1: Alton Coal Project. Living Cover and Frequency by Plant Species (2006).

Sagebrush/Grass (S/G) Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY COVER			
Juniperus osteosperma	2.33	9.55	6.67
UNDERSTORY COVER			
TREES & SHRUBS			
Artemisia nova	14.93	17.10	50.00
Artemisia tridentata var. tridentata	15.23	20.48	26.67
Chrysothamnus depressus	2.07	5.90	16.67
Gutierrezia sarothrae	1.23	2.79	20.00
FORBS			
Eriogonum racemosa	0.33	1.25	6.67
Gilia aggregata	0.33	1.25	6.67
Linum perenne	0.10	0.54	3.33
GRASSES			
Bouteloua gracilis	2.33	8.54	10.00
Bromus tectorum	0.83	3.18	6.67
Elymus smithii	0.50	1.98	6.67
Elymus trachycaulus	0.50	1.98	6.67
Hordeum jubatum	0.83	1.86	16.67
Koeleria macrantha	4.17	10.25	23.33
Poa pratensis	3.17	7.69	16.67
Poa secunda	4.00	7.00	30.00
Stipa hymenoides	1.83	3.53	23.33

Table 3-2: Coal Hollow Project. Total Cover and Composition (2006).		
Sagebrush/Grass (S/G) Proposed Disturbed		
A. TOTAL COVER	Mean Percent	Standard Deviation
Overstory Cover (o)	2.33	9.55
Understory Cover (u)	52.40	13.67
Litter	16.17	10.90
Bareground	26.87	11.83
Rock	4.57	6.15
TOTAL LIVING (o + u)	54.73	13.52
B. % COMPOSITION (u)		
Shrubs	64.09	22.93
Forbs	1.28	3.55
Grasses	34.64	22.43

Table 3-3: Coal Hollow Project. Woody Species Density (2006).

Sagebrush/Grass (S/G)
Proposed Disturbed

SPECIES	Individuals Per Acre
Artemisia tridentata	2779.73
Artemisia nova	4100.11
Chrysothamnus depressus	833.92
Chrysothamnus nauseosus	69.49
Chrysothamnus viscidiflorus	138.99
Gutierrezia sarothrae	277.96
Juniperus osteosperma	138.99
TOTAL	8339.20

Table 3-4: Alton Coal Project. Living Cover and Frequency by Plant Species (2006).

Sagebrush/Grass (S/G) Reference Area	Mean Percent	Standard Deviation	Percent Frequency
TREES & SHRUBS			
Artemisia nova	23.85	18.18	75.00
Artemisia tridentata	10.90	13.39	55.00
Chrysothamnus nauseosus	2.10	3.78	25.00
Gutierrezia sarothrae	0.90	2.72	10.00
Juniperus osteosperma	0.25	1.09	5.00
FORBS			
Achillea millefolium	0.25	1.09	5.00
Aster ascendens	3.00	4.58	35.00
Erigeron religiosus	0.25	1.09	5.00
Iva axillaris	1.00	2.00	20.00
Sphraelcea coccinea	0.25	1.09	5.00
GRASSES			
Bromus tectorum	4.75	6.61	45.00
Elymus smithii	0.50	2.18	5.00
Elymus trachycaulus	5.25	9.93	30.00
Juncus arcticus	0.75	3.27	5.00
Poa pratensis	3.00	7.65	15.00
Poa secunda	2.75	5.36	25.00
Stipa hymenoides	0.75	2.38	10.00

Table 3-5: Coal Hollow Project. Total Cover and Composition (2006).		
Sagebrush/Grass (S/G) Reference Area		
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory Cover (u)	60.50	13.03
Litter	13.05	4.81
Bareground	25.05	13.58
Rock	1.40	1.20
B. % COMPOSITION (u)		
Trees/Shrubs	61.48	17.01
Forbs	8.65	8.73
Grasses	29.86	14.18

Table 3-6: Coal Hollow Project. Woody Species Density (2006).

Sagebrush/Grass (S/G) Reference Area	
SPECIES	**Individuals Per Acre**
Artemisia tridentata	3644.87
Artemisia nova	3957.29
Chrysothamnus nauseosus	624.83
Gutierrezia sarothrae	208.28
TOTAL	8331.13

Table 3-7: Alton Coal Project. Living Cover and Frequency by Plant Species (2006).

Meadow (M) Dry Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
TREES & SHRUBS			
Artemisia nova	1.00	2.00	20.00
Gutierrezia sarothrae	7.20	4.80	85.00
FORBS			
Achillea millefolium	6.40	6.42	55.00
Aster ascendens	2.00	4.00	25.00
Eriogonum racemosa	0.25	1.09	5.00
Linum lewisii	1.00	3.39	10.00
Potentilla anserina	0.25	1.09	5.00
GRASSES			
Bouteloua gracilis	2.25	6.80	10.00
Carex sp.	27.50	19.46	75.00
Elymus elymoides	0.50	1.50	10.00
Elymus smithii	0.75	2.38	10.00
Hordeum jubatum	0.50	2.18	5.00
Juncus arcticus	10.25	13.27	70.00
Koeleria macrantha	8.00	10.17	55.00
Muhlenbergia asperifolia	0.50	2.18	5.00
Poa pratensis	4.65	10.62	25.00

Table 3-8: Coal Hollow Project. Total Cover and Composition (2006).		
Meadow (M) Dry Proposed Disturbed		
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory Cover (u)	73.00	9.67
Litter	9.40	3.28
Bareground	16.50	9.67
Rock	1.10	0.30
B. % COMPOSITION (u)		
Shrubs	11.01	8.10
Forbs	13.28	8.74
Grasses	75.70	13.81

Table 3-9: Coal Hollow Project. Woody Species Density (2006).

Meadow (M) Dry (Proposed Disturbed)	
SPECIES	**Individuals Per Acre**
Artemisia nova	816.75
TOTAL	816.75

Table 3-10: Alton Coal Project. Living Cover and Frequency by Plant Species (2006).

Meadow (M) Dry Reference Area	Mean Percent	Standard Deviation	Percent Frequency
TREES & SHRUBS			
Artemisia nova	3.25	6.76	25.00
Gutierrezia sarothrae	1.50	3.91	15.00
FORBS			
Achillea millefolium	5.50	5.45	60.00
Artemisia campestris	1.25	3.83	10.00
Aster ascendens	5.00	6.12	50.00
Eriogonum racemosa	0.25	1.09	5.00
Linum lewsii	0.25	1.09	5.00
Potentilla anserina	3.25	7.12	20.00
GRASSES			
Bouteloua gracilis	1.75	5.76	10.00
Carex sp.	16.50	12.05	80.00
Elymus elymoides	0.75	3.27	5.00
Elymus smithii	0.50	2.18	5.00
Elymus spicatus	1.50	6.54	5.00
Elymus trachycaulus	4.00	9.82	15.00
Juncus arcticus	15.25	16.84	70.00
Koeleria macrantha	9.50	11.06	45.00
Muhlenbergia asperifolia	0.25	1.09	5.00
Poa pratensis	1.75	4.26	15.00

Table 3-11: Coal Hollow Project. Total Cover and Composition (2006).		
Meadow (M) Dry Reference Area		
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory Cover (u)	72.00	8.86
Litter	11.70	5.16
Bareground	14.70	6.65
Rock	1.60	2.18
B. % COMPOSITION (u)		
Shrubs	6.64	10.29
Forbs	22.31	12.24
Grasses	71.05	12.91

Table 3-12: Coal Hollow Project. Woody Species Density (2006).

Meadow (M) Dry Reference Area	
SPECIES	**Individuals Per Acre**
Artemisia nova	1481.04
TOTAL	1481.04

Table 3-13: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Pinyon-Juniper (P-J) Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY			
SHRUBS			
Juniperus osteosperma	16.75	18.66	55.00
Pinus edulis	1.25	5.45	5.00
UNDERSTORY			
SHRUBS			
Artemisia nova	17.50	14.87	70.00
Juniperus osteosperma	5.75	8.98	35.00
Pinus edulis	0.50	2.18	5.00
FORBS			
GRASSES			
Elymus elymoides	0.75	3.27	5.00
Elymus trachycaulus	0.50	1.50	10.00

Table 3-14: Coal Hollow Project. Total Cover and Composition (2007)		
Pinyon-Juniper (P-J) **Proposed Disturbed**		
A. TOTAL COVER	Mean Percent	Standard Deviation
OVERSTORY (o)	18.00	18.33
UNDERSTORY (u)	25.00	11.40
Litter	22.55	19.66
Bareground	48.40	17.18
Rock	4.05	2.27
TOTAL LIVING (o + u)	43.00	15.20
B. % COMPOSITION (u)		
Trees & Shrubs	95.88	13.26
Forbs	0.00	0.00
Grasses	4.13	13.26

Table 3-15: Coal Hollow Project. Woody Species Density (2007).

Pinyon-Juniper (P-J)
Proposed Disturbed

SPECIES	Individuals Per Acre
Artemisia tridentata	166.03
Artemisia nova	1627.12
Juniperus osteosperma	730.55
Pinus edulis	132.83
TOTAL	2656.53

Table 3-16: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Pinyon-Juniper (P-J) Reference Area	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY			
SHRUBS			
Juniperus osteosperma	9.00	13.56	40.00
Pinus edulis	2.50	10.90	5.00
UNDERSTORY			
SHRUBS			
Artemisia nova	17.75	12.70	80.00
Juniperus osteosperma	3.75	6.68	30.00
Pinus edulis	2.25	5.58	15.00
FORBS			
GRASSES			
Elymus elymoides	2.00	4.00	20.00
Elymus trachycaulus	1.75	4.26	15.00

Table 3-17: Coal Hollow Project. Total Cover and Composition (2007)		
Pinyon-Juniper (P-J) Reference Area		
A. TOTAL COVER	Mean Percent	Standard Deviation
OVERSTORY (o)	11.50	16.05
UNDERSTORY (u)	27.50	11.35
Litter	19.00	14.20
Bareground	46.50	19.69
Rock	7.00	2.45
TOTAL LIVING (o + u)	39.00	11.36
B. % COMPOSITION (u)		
Trees & Shrubs	89.56	14.77
Forbs	0.00	0.00
Grasses	10.44	14.77

Table 3-18: Coal Hollow Project. Woody Species Density (2007).

Pinyon-Juniper (P-J)
Reference Area

SPECIES	Individuals Per Acre
Artemisia tridentata	158.05
Artemisia nova	3213.71
Juniperus osteosperma	632.20
Pinus edulis	210.73
TOTAL	4214.70

Table 3-19: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Pasture Land (P) Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
SHRUBS			
Artemisia tridentata	3.67	9.74	20.00
Artemisia nova	5.67	9.37	33.33
Chrysothamnus nauseosus	3.17	6.77	20.00
Rosa woodsii	0.50	1.50	10.00
FORBS			
Achillea millefolium	1.00	3.27	10.00
Aster sp.	0.83	2.61	10.00
Iris missouriensis	0.83	3.67	6.67
Iva axillaris	4.50	8.69	26.67
GRASSES (and grass-likes)			
Agropyron cristatum	3.83	6.28	30.00
Bromus inermis	1.50	7.21	6.67
Bromus tectorum	2.83	6.67	16.67
Elymus hispidus	6.50	12.12	30.00
Elymus smithii	3.00	8.23	20.00
Elymus trachycaulus	0.33	1.80	3.33
Juncus arcticus	0.50	1.98	6.67
Poa pratensis	5.83	13.85	16.67

Table 3-20: Coal Hollow Project. Total Cover and Composition (2007)		
Pasture Land (P) **Proposed Disturbed**		
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory Cover (u)	44.50	10.59
Litter	24.10	11.67
Bareground	29.63	10.53
Rock	1.77	1.48
B. % COMPOSITION (u)		
Shrubs	30.19	26.65
Forbs	17.64	22.73
Grasses	52.16	25.41

Table 3-21: Coal Hollow Project. Woody Species Density (2007).

Pasture Land (P)
Proposed Disturbed

SPECIES	Individuals Per Acre
Artemisia tridentata	618.30
Artemisia nova	348.50
Chrysothamnus nauseosus	303.53
Gutierrezia sarothrae	22.48
Rosa woodsii	56.21
TOTAL	1349.02

Table 3-22: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Oak Brush (OB) Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY			
SHRUBS			
Juniperus scopulorum	1.75	7.63	5.00
Quercus gambelii	41.25	24.33	85.00
UNDERSTORY			
SHRUBS			
Artemisia tridentata	11.10	15.91	45.00
Juniperus osteosperma	0.50	2.18	5.00
Juniperus scopulorum	2.75	7.33	15.00
Quercus gambelii	3.40	4.91	35.00
Symphoricarpos oreophilus	5.50	9.99	35.00
FORBS			
GRASSES			
Bromus carinatus	0.25	1.09	5.00
Poa pratensis	0.25	1.09	5.00

Table 3-23: Coal Hollow Project. Total Cover and Composition (2007)		
Oak Brush (OB) **Proposed Disturbed**		
A. TOTAL COVER	Mean Percent	Standard Deviation
OVERSTORY (o)	43.00	22.49
UNDERSTORY (u)	23.75	12.23
Litter	61.25	15.24
Bareground	13.25	9.51
Rock	1.75	1.41
TOTAL LIVING (o + u)	66.75	14.86
B. % COMPOSITION (u)		
Trees & Shrubs	97.75	6.80
Forbs	0.00	0.00
Grasses	2.25	6.80

Table 3-24: Coal Hollow Project. Woody Species Density (2007).

Oak Brush (OB)
Proposed Disturbed

SPECIES	Individuals Per Acre
Artemisia tridentata	888.89
Symphoricarpos oreophilus	1169.59
Gutierrezia sarothrae	46.78
Juniperus osteosperma	233.92
Juniperus scopulorum	374.27
Quercus gambelii	1029.24
TOTAL	3742.70

Table 3-25: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Oak Brush (OB) Reference Area	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY			
SHRUBS			
Juniperus osteosperma	3.75	11.28	10.00
Juniperus scopulorum	1.75	7.63	5.00
Quercus gambelii	47.75	23.21	85.00
UNDERSTORY			
SHRUBS			
Artemisia tridentata	2.40	6.32	15.00
Juniperus osteosperma	3.00	9.14	10.00
Juniperus scopulorum	1.75	7.63	5.00
Pinus edulis	0.50	2.18	5.00
Quercus gambelii	5.85	8.56	40.00
Symphoricarpos oreophilus	1.75	3.96	20.00
FORBS			
GRASSES			
Poa pratensis	0.75	2.38	10.00
Poa secunda	4.00	7.00	30.00

Table 3-26: Coal Hollow Project. Total Cover and Composition (2007)		
Oak Brush (OB) Reference Area		
A. TOTAL COVER	Mean Percent	Standard Deviation
OVERSTORY (o)	53.25	13.63
UNDERSTORY (u)	20.00	8.37
Litter	66.70	21.24
Bareground	8.30	13.49
Rock	5.00	16.07
TOTAL LIVING (o + u)	73.25	12.68
B. % COMPOSITION (u)		
Trees & Shrubs	66.92	43.92
Forbs	0.00	0.00
Grasses	33.08	43.92

Table 3-27: Coal Hollow Project. Woody Species Density (2007).

Oak Brush (OB) Reference Area	
SPECIES	**Individuals Per Acre**
Artemisia tridentata	209.16
Juniperus osteosperma	26.14
Juniperus scopulorum	130.72
Pinus edulis	52.29
Quercus gambelii	1333.37
Symphoricarpos oreophilus	339.88
TOTAL	2091.57

Table 3-28: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Meadow (M) Proposed Disturbed	Mean Percent	Standard Deviation	Percent Frequency
SHRUBS			
Artemisia nova	1.50	6.54	5.00
Rosa woodsii	11.75	12.07	60.00
FORBS			
Achillea millefolium	3.50	6.73	40.00
Equisetum arvensis	0.75	2.38	10.00
Iris missouriensis	24.00	13.19	95.00
GRASSES (and grass-likes)			
Carex microptera	7.75	10.43	30.00
Elymus lanceolatus	1.25	3.11	15.00
Elymus smithii	0.25	1.09	5.00
Elymus trachycaulus	0.50	2.18	5.00
Juncus arcticus	24.00	9.95	100.00
Koeleria nitida	1.50	4.77	10.00
Phleum pratensis	0.50	2.18	5.00
Poa pratensis	7.50	7.66	60.00
Poa secunda	1.25	3.11	15.00

Table 3-29: Coal Hollow Project. Total Cover and Composition (2007)		
Meadow (M) **Proposed Disturbed**		
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory Cover (u)	86.00	7.18
Litter	8.25	4.69
Bareground	4.05	1.96
Rock	1.70	3.05
B. % COMPOSITION (u)		
Shrubs	15.88	15.08
Forbs	32.54	16.94
Grasses	51.58	13.82

Table 3-30: Coal Hollow Project. Woody Species Density (2007).

Meadow
Proposed Disturbed

SPECIES	Individuals Per Acre
Rosa woodsii	384.06
TOTAL	**384.06**

Table 3-31: Coal Hollow Project. Living Cover and Frequency by Plant Species (2007).

Meadow (M) Reference Area	Mean Percent	Standard Deviation	Percent Frequency
SHRUBS			
Rosa woodsii	9.75	9.68	65.00
FORBS			
Achillea millefolium	0.25	1.09	5.00
Iris missouriensis	32.37	12.50	100.00
GRASSES (and grass-likes)			
Elymus lanceolatus	0.50	1.50	10.00
Juncus arcticus	33.00	13.55	100.00
Poa pratensis	11.00	14.20	60.00
Poa secunda	1.25	3.83	10.00

Table 3-32: Coal Hollow Project. Total Cover and Composition (2007)

Meadow (M) Reference Area		
A. TOTAL COVER	Mean Percent	Standard Deviation
Total Living Cover (u)	88.50	5.94
Litter	7.85	4.98
Bareground	2.65	2.03
Rock	1.00	0.00
B. % COMPOSITION (u)		
Shrubs	11.04	11.01
Forbs	37.38	13.75
Grasses	51.57	13.78

Table 3-33: Coal Hollow Project. Woody Species Density (2007).

Meadow (M) Reference Area SPECIES	Individuals Per Acre
Rosa woodsii	2225.69
TOTAL	2225.69

321.200. Productivity

Productivity measurements were recorded for the plant communities of the permit area during the same sample period as described in section 321.100 above. Production estimates for the communities at that time are shown in Table 3-34.

Table 3-34: Biomass Production of Plant Communities in the Coal Hollow Permit Area

(1) *Estimates* (from soil and approx. vegetation types) - Source: U.S. Department of Agriculture SCS (NRCS). July 1990. Soil Survey of Panguitch area, Utah: Parts of Garfield, Iron, Kane, and Piute Counties.

(2) *Actual measurements.* - Source: Cedar Creek Associates (1986) *in* Mine Permit Application. 1987. Utah International, Inc., Alton Coal Project, Alton, Utah.

(*) *Estimates* - Source: Fieldwork during 2007 by Mt. Nebo Scientific, Inc.

MAP SYMBOL (see *Vegetation Map*, Drawing 3-1)	PLANT COMMUNITY	Pounds/Acre (1)	Pounds/Acre (2)
SB	Sagebrush/Grass	750	762
P	Pasture Land (*)	1100	1100
M	Meadow	2000	2121
P-J	Pinyon-Juniper	50	33
OB	Oak Brush [*called Mountain Brush* (2)]	1500	1471
RB/SB	Rabbitbrush/Sagebrush (*)	700	700

322. FISH AND WILDLIFE INFORMATION

322.100. Agency Consultation and Studies Conducted

Initial consultations have been made to appropriate state and federal agencies regarding threatened, endangered, and sensitive plant and animal species and their habitats in and adjacent to the Coal Hollow permit area. A summary of this work follows.

- In 2005, a review of the Utah Heritage Program database for sensitive species in the proposed project and adjacent areas was accomplished.

- A spreadsheet has been prepared that shows applicable notes from previous biological surveys of the area.

- Biologists from the USDA Dixie National Forest have been contacted. Life histories and analyses of the species in their forest and in close proximity to the Coal Hollow Project area that have been listed as endangered, threatened, candidate, and management indicator species has been prepared to be used for project planning and agency consultations.

- Files from the offices of *Mt. Nebo Scientific, Inc.* regarding sensitive species have been consulted for the project area.

- A sage-grouse lek had been located in the area by biologists from the Bureau of Land Management (BLM) and the State of Utah, Division of Wildlife Resources (DWR). In the Spring of 2005 biologists from the BLM captured, collared and began monitoring 4 sage-grouse birds to study the lifecycle and migrating patterns of the local birds.

- In June 2005, a field survey for potential habitat of sensitive species within the project and adjacent areas was conducted by N. Duane Atwood, Ph.D. and Patrick D. Collins, Ph.D.

- In April 2006, a biologist, Steven L. Petersen, Ph.D., representing the Coal Hollow Project began independent studies and also began participating with the BLM and DWR in sage-grouse studies in the project area.

- In May 2006, a raptor survey by helicopter was conducted by Talon Resources, Mt. Nebo Scientific, Inc., and DWR of the permit area and adjacent areas.

- In August 2006 sensitive plant species surveys were conducted during quantitative sampling of specific areas proposed disturbed and reference areas for mining year one of the project.

- In 2007 the team has continued studies of the sage-grouse with biologists from DWR, the BLM, Southern Utah University (SUU), and the Coal Hollow Project by capturing, taking blood samples, and placing radio transmitters on several birds from March through May.

- In April 2007, two helicopter flights, arranged by Coal Hollow Project, were conducted to search for satellite leks of the sage-grouse.

- In May 2007, another raptor survey by helicopter was conducted by DWR that included the permit area and adjacent areas.

- In September 2007, sensitive plant species surveys were conducted during quantitative sampling of additional proposed disturbed and reference areas for mining years one through three of the project.

- In September 2007, additional quantitative sampling was conducted in meadow areas outside the permit area to be used as a companion study with other areas.

322.200. Site-Specific Resource Information

A review of the Utah Heritage Program database for sensitive species in the proposed mine site and adjacent areas has been accomplished. Field maps with locations of these species have been prepared and have been used for additional surveys and will continue to be used for future biological studies.

Due to the sensitivity of these species, specific location information is considered confidential and has not been submitted in this application. However, review of this information by the regulatory authorities can be arranged .

322.210. Threatened, Endangered, and Candidate Plant and Animal Species

Table 3-35 shows a list of the plant and animal species that are federally listed as threatened, endangered, or candidates for this designation for Kane County, Utah.

Table 3-35: List of Threatened, Endangered, and Candidate Plant & Animal Species in Kane County, Utah			
SCIENTIFIC NAME	**COMMON NAME**	**STATUS***	**NOTES SPECIFIC TO PROJECT AREA**
PLANTS			
Asclepias welshii	Welsh's Milkweed	T	Welsh's milkweed, occurs in Kane County, Utah, as well as in immediately adjacent Coconino County, Arizona. This plant grows on dunes derived from Navajo Sandstone. This formation and habitat is not found within the permit area or adjacent areas. There should be no impacts to this species as a result of Alton Coal Mine.
Cycladenia humilis var. jonesii	Jones Cycladenia	T	Jones' cycladenia,is a Federally listed threatened plant found only in the canyonlands of the Colorado Plateau in Emery County, Garfield County, Grand County, and Kane County, Utah (also found in adjacent Coconino County, Arizona). This plant occurs in gypsiferous soils that are derived from the Summerville, Cutler, and Chinle formations; they are shallow, fine textured, and intermixed with rock fragments. These formations and habitats are not found within the permit area or adjacent areas. There should be no impacts to this species as a result of Alton Coal Mine.
Lesquerella tumulosa	Kodachrome Bladderpod	E	Kodachrome bladderpod, is a federally listed endangered plant that is an endemic found only in Kane County, Utah. This species is found on shallow soils that are fine textured, intermixed with shale fragments, and derived from the Winsor Member of the Carmel Formation, where it grows on bare shale knolls and slopes in scattered pinyon-juniper communities. These formations and habitats are not found within the permit area or adjacent areas. There should be no impacts to this species as a result of Alton Coal Mine.
Pediocactus sileri	Siler Pincushion Cactus	T	This plant is federally listed as threatened. It occurs in Kane and Washington counties in Utah, plus adjacent Coconino and Mohave counties in Arizona The cactus is usually found on the white, occasionally red, gypsiferous and calcareous sandy or clay soils derived from the various members of the Moenkopi Formation, but it is sometimes found on the Kaibab Formation. Siler pincushion cactus occurs in warm desert shrub, sagebrush-grass, and at its upper limits, in pinyon-juniper communities, at lower elevations that area present in the Alton area. Additionally, these formations and habitats are not found within the permit area or adjacent areas. There should be no impacts to this species as a result of Alton Coal Mine.
ANIMALS			
Cicindela limbata albissima	Coral Pink Sand Dunes Tiger Beetle	C	The only known populations in the world for this species are located at the Coral Pink Sand Dunes in the extreme southwest corner of Kane County, Utah. The species occupies dune habitat, which is not found in the Alton area. There should be no impacts to this species as a result of Alton Coal Mine.

Table 3-35: List of Threatened, Endangered, and Candidate Plant & Animal Species in Kane County, Utah			
Coccyzus americanus	Yellow-billed Cuckoo (possible)	C	DWR database information states that historically, cuckoos were probably common to uncommon summer residents in Utah and across the Great Basin. The current distribution of yellow-billed cuckoos in Utah is poorly understood, though they appear to be an extremely rare breeder in lowland riparian habitats statewide. DWR information also states that currently, the range of the cuckoo is limited to disjunct fragments of riparian habitats from northern Utah, western Colorado, southwestern Wyoming, and southeastern Idaho southward into northwestern Mexico and westward into southern Nevada and California. Although the possibility exists that historically this species could be seen in Kane County, it is highly extremely unlikely that it occurs within the Alton Mine permit area due to the lack of habitat for this species. There should be no impacts to this species as a result of Alton Coal Mine.
Cynomys parvidens	Utah Prairie-dog	T	Like other prairie dog species, the Utah prairie dog form colonies in burrows for underground activities. DWR distribution maps do not show the habitat for this species to occur in Kane County, but "high-value" habitat does occur in adjacent counties. No prairie dog burrows have been located within the permit or adjacent areas. There should be no impacts to this species as a result of Alton Coal Mine.
Empidonax traillii extimus	Southwestern Willow Flycatcher	E	This species breeds in southwestern U.S. and winters in southern Mexico and Central America. It is a rare visitor of southern Utah. Its habitat is primarily riparian and the bird most frequently occurs in dense willow stands. This habitat does not occur in the project area; the adjacent areas have also been surveyed where suitable habitat for this species was not found.
Gila cypha	Humpback Chub (historical)	E	Humpback chub in Utah are now confined to a few white-water areas in the Colorado, Green, and White Rivers. These rivers do not occur in the study area. The project area is not within the Upper Colorado River Basin, a specific area delineated and directed to comply to the Recovery Program for this species. There should be no impacts to this species as a result of Alton Coal Mine.
Gilia elegans	Bonytail (historical)	E	The bonytail is a very rare minnow originally native to the Colorado River system. The project area is not within the Upper Colorado River Basin, a specific area delineated and directed to comply to the Recovery Program for this species. There should be no impacts to this species as a result of Alton Coal Mine.
Oxyloma kanabense	Kanab Ambersnail	E	The only known locations for this species are in wetlands, springs and seeps approximately 6 mi. from Kanab, UT. This habitat in not found on or adjacent to the permit area for the proposed mine. There should be no impacts to this species as a result of Alton Coal Mine.

Table 3-35: List of Threatened, Endangered, and Candidate Plant & Animal Species in Kane County, Utah			
Strix occidentalis lucida	Mexican Spotted Owl	T	In Utah the Mexican spotted owl is rare, but when it does occur it is sometimes in various forest types, but more commonly in steep rocky canyons, nesting in caves or cliffs of steep walled canyons. This habitat does not occur in the permit area, but does occur in the Dixie National Forest to the east and west of the Alton area. DWR has conducted raptor surveys for all potential raptor species in the project area and did not find habitat for the Mexican spotted owl. There should be no impacts to this species as a result of Alton Coal Mine.
* T=Threatened, E=Endangered C=Candidate, Exp=Experimental			

In summary, based on the information provided above and studies conducted to-date, no threatened or endangered species have been located in the permit area.

322.220. High Value Habitats

The State of Utah, Division of Wildlife Resources (DWR) geographic information system (GIS) database was consulted for high-value habitats. In 2006 DWR updated the habitat value definitions.

Crucial Value was defined as "habitat on which the local population of wildlife species depends for survival because there are not alternative ranges of habitats available. Crucial Value habitat is essential for the life history requirements of a wildlife species".

Substantial Value was defined as "habitat that is used by a wildlife species but is not crucial for population survival. Degradation or unavailability of substantial value habitat will not lead to significant declines in carrying capacity and/or numbers of the wildlife species in question".

The DWR database was revisited by project biologists on August 11, 2009. Of the species maintained on the database, important habitat of four species have been mapped by DWR within or adjacent to the Coal Hollow Project area. These habitats are described below.

First, areas adjacent to the permit area and a portion of it have been designated as black bear (*Ursus americanus*) habitat ~~was located on the east side of the permit area and continues east for some distance (Drawing 3-2)~~. This habitat has been listed as ~~"year-long" and classified as having "substantial"~~having year-long, Substantial Value habitat by DWR (Drawing 3-2).

Next, Rocky Mountain elk (*Cervus canadensis*) habitat was located in the area. ~~"High-value"~~Crucial Value summer ~~range~~and calving habitat was mapped throughout the entire area from the town of Alton south into Sink Valley, including the permit area. Additionally, year-long ~~"substantial"~~Substantial Value habitat was located in areas southeast of the permit area (Drawing 3-3).

Mule deer (*Odocoileus hemionus*) habitat has also been mapped in the area by DWR biologists. The habitat has been classified as ~~"high-value"~~"Crucial" summer ~~range and was located throughout the permit and adjacent areas~~and fawning habitat. This designation included the entire permit area as well as those areas adjacent to it (Drawing 3-4).

Finally, sage-grouse (*Centrocercus urophasianus*) habitat has been documented in the project area. DWR biologists has~~ve~~ mapped much of the area to be Crucial Value brood habitat (Drawing 3-5). Sage-grouse populations continue to be monitored in the area by biologists from DWR, Bureau of Land Management (BLM), Southern Utah University (SUU), and the Coal Hollow Project. The only lek in the vicinity including those areas around Alton and Sink Valley was located west of the Swapp Ranch. This lek was within the permit area boundary. A site-specific study called reported in "*Alton Sage-Grouse Habitat Assessment and Mitigation Plan*" has been conducted for the Coal Hollow Project and has been included in this document (see **Appendix 3-1**). Follow-up studies of the sage-grouse in the area are described in a report called *"Sage-grouse Distribution and Habitat Improvement in Alton, Utah*" (see **Appendix 3-3**).

~~In 2006 to the present~~ Finally, a document called *"Alton Sage-Grouse Habitat Mitigation Plan"* has also been included in the MRP (see **Appendix 3-5**).

From 2006 to date, biologists representing the Coal Hollow Project have been involved with a previously assembled team of biologists that have been studying the populations in the area. In 2007, the team captured, ~~took~~drew blood samples for DNA analyses, and placed radio collars on several birds. For more details refer to **Appendix 3-3**.

In addition to studying the sage-grouse birds as described above, techniques to improve habitat for the birds ~~is~~are currently being conducted. ~~An effort~~A project conducted by the U.S. Department of Interior, Bureau of Land Management (BLM) and the State of Utah, Division of Wildlife Resources (DWR) was completed that removed many of the juniper trees that have encroached the valley by grinding them up by chipping (also called bull-hogging) equipment. These areas can be easily seen on the new *Vegetation Map, Drawing: 3-1.* ~~-~~These areas are delineated as "SB (chipped)" on the map.

Because they provide perching structure for predatory species, single juniper trees scattered throughout sagebrush communities are known to discourage nesting by sage-grouse. To enhance sage-grouse nesting habitat within the permit area, juniper trees that have encroached some of the sagebrush communities in the valleys of the permit area have been removed by a track hoe using a large grapple claw. This equipment can pull the trees out of the ground, including the roots. To date, it has been estimated that over 8,000 juniper trees have been removed by this technique. In doing so, the technique causes~~d~~ relatively minor impacts to the sagebrush component of the community.

There is a substantially larger sage-grouse lek located north or the project area. The lek, known as the Heut's Ranch Lek, has also been studied by state, federal and private biologists. It has been hypothesized that connectivity between the two leks, the Alton lek and the Heut's Ranch Lek, could greatly increase the chances of survival for the Alton birds. Therefore, intensive efforts have been made to open a corridor of these two leks by removing juniper and oak stands (see **Appendix 3-5**).

In addition to the habitat improvements mentioned above for sage-grouse, seed mixtures formulated to restore pasture lands disturbed by mining ~~will~~ include plant species that are used by the birds for food, cover and breeding. Moreover, ~~one~~some areas that ~~is presently~~are currently dominated by grass species for domestic livestock use, will be seeded with plants that include species known to provide nesting habitat for sage-grouse such as big sagebrush and black sagebrush ~~(see Postmining Land Use, Chapter 4, [~~for more detailed information~~).~~

see "Habitat Reclamation Plan" (Chapter 3); "Other Wildlife Enhancement Information" (Chapter 3); "Seed Mixtures" (Chapter 3); Drawing 3-7 (Chapter 3); "Postmining Land Use"(Chapter 4)].

322.230. Other Species or Habitats

As mentioned previously, raptor surveys have been conducted in the area by Coal Hollow project and DWR biologists. The 2006 through 2008 surveys show no golden eagle (*Aquila chrysaetos*) or bald eagle (*Haliaeetus leucocephalus*) nests within ½ mine of the permit area. In fact, the most recent survey indicated that there were *no* raptor nests located within ½ of the permit area (see Confidential File, Drawing 3-6). There was, however, one inactive red-tailed hawk (*Buteo jamaicensis*) nest located over one mile from the permit area, three inactive golden eagle nests, one active peregrine falcon (*Falco peregrinus*) nest and another inactive falcon nest located approximately two miles from the permit area.

To date, no other species or habitats have been identified through agency consultation or field studies that require special protection under state or federal law, however, if they are found through the permitting process, they will be appropriately addressed and monitored.

A vegetation map has been prepared that delineates the plant communities in the permit area. The map also shows adjacent areas including those plant communities that will be impacted by the proposed county road realignment (Drawing: 3-1).

322.300. Fish and Wildlife Service Review

Upon request, the State of Utah, Division of Oil, Gas & Mining (DOGM) will provide the resource information required under R645-301-322 and the protection and enhancement plan required under R645-301-333 to the U.S. Fish and Wildlife Service Regional or Field Office for their review. This information will be provided within 10 days of receipt of the request from the Service.

~~322.230. Other Species or Habitats~~

~~To date, no other species or habitats have been identified through agency consultation or field studies that require special protection under state or federal law, however, if they are found through the permitting process, they will be appropriately addressed and monitored.~~

~~A vegetation map has been prepared that delineates the plant communities in the permit area. The map also shows adjacent areas including those plant communities that will be impacted by the proposed county road realignment (Drawing: 3-1).~~

~~322.300. Fish and Wildlife Service Review~~

~~Upon request, the State of Utah, Division of Oil, Gas & Mining (DOGM) will provide the resource information required under R645-301-322 and the protection and enhancement plan required under R645-301-333 to the U.S. Fish and Wildlife Service Regional or Field Office for their review. This information will be provided within 10 days of receipt of the request from the Service.~~

323. MAPS AND AERIAL PHOTOGRAPHS

323.100. Reference Area Maps

Several vegetation maps have been prepared for the Coal Hollow Project. A revised vegetation map has been prepared that includes all vegetation sample areas, plus other updated map information [Vegetation Map, Drawing 3-1, (12/26/07)]. The new map replaces the previous vegetation maps. This new map includes reference areas, or plant communities sampled that are similar to those that have been proposed for disturbance by mining activities. These reference areas will be compared to those areas proposed for disturbance during the initial studies for the mine site and will consequently be used as revegetation success standards at the time of final reclamation of mined areas. Reclamation is planned immediately after portions of the land are mined (see Chapter 5).

323.200. Sample Area Maps

Elevations, locations of monitoring stations, proposed disturbed areas, reference areas, and other areas used to gather data for fish and wildlife, and any special habitat features, have been delineated on the aforementioned new vegetation map.

323.300. Protection and Enhancement of Fish & Wildlife Maps

Each facility to be used to protect and enhance fish and wildlife and related environmental values have been represented on the new maps.

323.400. Plant Communities Map

An initial vegetation map was prepared that delineated the plant communities that existed within the Coal Hollow Project permit area. This **first** map was prepared by delineating the plant communities from an existing vegetation map to a permit quadrangle map (see Section 321.100 for more details). However, a new flight was conducted in 2006 that provided aerial photography with more detailed information to be used to update many maps of the project area. Consequently, a **second** vegetation map was prepared using the new aerial photography (along with ground-truthing), and submitted along with the first map to DOGM (MRP submittal dated May 25, 2007). Finally, a **third** vegetation map was prepared to reflect information and to show new sample areas within the plant communities of the permit and adjacent areas [see *Vegetation Map, Drawing 3-1, (12/26/07)*]. This map **replaced** the first and second maps and was submitted to DOGM (MRP submittal dated January 15, 2008.

330. OPERATION PLAN

331. MINE PLAN & RECLAMATION TIMING

In each mined segment, the mine plan includes redistributing subsoil and topsoil followed by seeding this segment with the final seed mix contemporaneously, or at the same time the mining begins in the next segment. The mine plan has been engineered to disturb the smallest practicable area at any one time. With prompt establishment and maintenance of vegetation, immediate stabilization of disturbed areas will minimize surface erosion. Details of the plan have been provide in Chapter 5 of this document.

332. SUBSIDENCE

Because mining in the Coal Hollow Project area will be a surface operation, and subsidence is usually associated more with underground mining, it is not considered a factor for the Coal Hollow Project. However, current elevation of the existing topography may be slightly altered in the mining and reclamation operations. Reclamation has been planned to minimize the impact to the renewable resources identified in this section by promptly reclaiming each mine segment contemporaneously by controlling erosion and re-seeding with a mixture of native plant species that will re-establish the plant communities to vegetative cover that will be diverse, effective, permanent, and consistent with the postmining land use. More details regarding postmining land and topography have been provided in Chapter 4 and Chapter 5 of this document, respectively.

The mine plan is not expected to negatively impact the plants and wildlife in the Coal Hollow Project area. Onsite revegetation research and sage-grouse mitigation plans have been designed. Details of this work have been made available to DOGM specialists for their comments and participation in the process.

333. PROCEDURES TO MINIMIZE ADVERSE IMPACTS TO FISH & WILDLIFE

The Coal Hollow Project will minimize disturbances and adverse impacts to fish and wildlife and related environmental values during coal mining and reclamation operations. The project will comply with the Endangered Species Act of 1973 during coal mining and reclamation operations. The location and operation of haul and access roads and support facilities will be placed to avoid or minimize impacts on important fish and wildlife species or other species protected by state or federal law. Enhancement of such resources will be achieved, where practicable. An example is provided below for sage-grouse habitat.

After consultation with appropriate agencies and biologists regarding habitats and sensitive species, the sage-grouse and its habitat were of greatest concern in the area. There has been a decreasing trend in the populations of this species since 1964 (see **Appendix 3.1** and **Appendix 3-3** for more details). There was a general consensus among the biologists and agencies consulted that due to the marginal habitat in the Alton Amphitheater area, the loss of habitat in recent years for nesting and brood-rearing and the relatively low population numbers in the area, that the local population of sage-grouse is vulnerable to elimination, regardless of mining activities proposed by the Coal Hollow Project. Accordingly, the following measures to minimize impacts and enhance habitat for this species have been proposed and are subject to further consideration by the operator and regulatory agencies.

Biologists representing the regulatory agencies, land managers, academia and the coal mine operator, the primary goals for the Alton sage-grouse population includes:

- Minimize impacts to the birds from the mining activities.
- Enhance current sage-grouse habitat.
- Create a conservation area for the sage-grouse that will never be mined.
- Provide a corridor between north (Hoyt's Ranch) and south (Alton Sink Valley) populations to promote gene transfer and increase population numbers.
- Restore land disturbed by mining activities to enhance sage-grouse habitat.

Sage-Grouse Short-Term Mitigation Plan

The following information was taken directly from the "*Alton Sage-Grouse Habitat Assessment and Mitigation Plan*" (**Appendix 3-1**) and the followup document called "*Alton Sage-Grouse Habitat and Mitigation Plan*" (**Appendix 3-5**).

In addition to ensuring the protection of nearby grassland and shrubland for alternate breeding and nesting areas, mining activities will be minimized so that the lowest disturbance will be created during the breeding season at areas adjacent to the original lek. A lek area will be disturbed during mining activities that could potentially displace birds from typical mating activities. To encourage mating behavior during the breeding season, decoys and mating calls will be used to lure birds to nearby alternative sites positioned away from the disturbed area. Research has shown that birds will shift mating activities toward decoys and recorded bird calls. Both silhouette and 3-dimensional decoys (with bright white coloration) will be used to encourage sage-grouse mating activity (see **Appendix 3-5**)

After mining has been completed, reclamation specialists will return the original grade and valley form to pre-disturbance conditions. Reclamation will include seeding similar plant species with comparable plant composition, structure and function as those of the original plant community. In sites used by sage-grouse for breeding and roosting that had previous livestock grazing, livestock will be used post-reclamation to maintain similar vegetation characteristics as pre-mining conditions.

Intact sagebrush stands will be avoided for storing mined subsoil and topsoil piles when possible. Intact sagebrush sites will be cleared of all young juniper trees with the use of a compact excavator with a grappling claw or hand tools such as chainsaws. Trees will be removed from these stands. Juniper woodlands surrounding intact stands can be cut back to increase patch size and increase the amount of area that has the potential for nest site selection by hens.

Sage-Grouse Long-Term Mitigation Plan

The following information was taken directly from the "*Alton Sage-Grouse Habitat Assessment and Mitigation Plan*" (**Appendix 3-1**), *"Sage-grouse Distribution and Habitat Improvement in Alton, Utah*" (**Appendix 3-3**) and *"Alton Sage-Grouse Habitat and Mitigation Plan*" (**Appendix 3-5**).

Juniper Removal

A significant contribution that mining can provide for enhanced sage-grouse habitat is the removal of juniper from the Alton valley. The removal of trees during mining operations with subsequent reclamation activities will create conditions that promote grass, forb and eventually sagebrush establishment. Two years after juniper was removed from plots located in eastern Oregon, Bates et al. (2000) recorded a 200-300% increase in percent cover and production of herbaceous vegetation. Increased plant community vigor results from decreased competition with juniper for subsurface resources (water, nutrients) and space. As a result, transpiration rates and soil surface evaporation rates will decrease and higher soil moisture will be available for plant growth and survival. Based on anecdotal, evidence, it is also possible that spring discharge will increase and seeps and spring may emerge that were lost with initial encroachment. This would provide more sites where birds would be able to obtain water during the summer and fall months.

Removing trees from extensive areas creates greater connectivity of suitable habitat. In 2005, the BLM cleared portions of the land to increase sagebrush habitat. This improvement was beneficial for improving relatively small site conditions, however, the amount of land treated was minimal compared to the level needed to sustain the sage-grouse population in the Alton area. In 2007, the Coal Hollow Project removed over 8,000 juniper trees that had encroached the sagebrush open areas. Long-term plans could include remove of hundreds of acres of juniper woodlands in a specific area adjacent to the Coal Hollow Project which would significantly increase conditions that are more suitable to sage-grouse nesting and post-nesting requirements. Current plans have been designed to provide a corridor for the sage-grouse in the Alton to intermix with the larger population located to the north, called the Heut's Ranch Lek (see below). This landscape-level operation could greatly enhance sagebrush restoration objectives by the BLM that is currently limited by constrained budgets and manpower.

Reestablishing Connectivity Between Alton and Heut's Ranch

Over time, juniper encroachment has likely been the primary factor in isolating the Alton sage-grouse population from nearby populations. There is a larger sage-grouse population located approximately 6 miles north of Alton. It is likely that migration once occurred between these populations allowing an exchange of individuals and genes between the two populations. Fragmentation of the landscape by juniper has likely resulted in minimal or no movement of birds between the two populations. Similarly, two populations that once occurred further south (near Kanab) have become locally extinct, likely due to the lack of connectivity with more northern populations. According to Fuhlendorf (2001), small populations of prairie chickens became disconnected from other larger populations with increased croplands and juniper invasion. These small populations became locally extinct due to the lack of migration and gene flow potential. Therefore, by reducing the degree of fragmentation caused by expanding juniper, the potential for migration and population sustainability is increased.

A plan has been made to restoring connectivity can be accomplished by removing juniper trees between these two populations on both private and public land. An area that is approximately 1,700 acres has been delineated that, with treatment, could provide connectivity between the two populations (**Appendix 3-5**). Funds will be provided by ACD to work with DWR to hire crews to cut and remove trees for a corridor through the 1,700 acres. It is anticipated that this habitat improvement will create access for birds to migrate between the two populations.

Establishment of a Core Sage-Grouse Conservation Area

The east end of the valley maintains one of the few remaining intact sagebrush stands in the valley. This area is located northeast of the lek and provides sites for roosting during the mating season (~~see Drawings 3-1 and~~Drawing 3-1 and Drawing 3-5). This area will not be mined, rather, it will be preserved to create a harbor area for bird breeding, nesting, and brood rearing (Figure 3-1). Within this "Conservation Area", habitat will be protected ~~and enhanced~~ for sheltering displaced sage-grouse, especially during the breeding and brood-rearing seasons ~~(see also Appendix 3-1)~~. ~~All~~ Most of the juniper trees that encroached into sagebrush communities within the permit area ~~will~~have been removed. This ~~will~~has been accomplished by felling and removing individual juniper trees while minimizing the impacts to the sagebrush community (see "Juniper Removal" above). In addition to juniper, some Gambel oak (*Quercus gambelii*) ~~may~~trees have also been removed ~~(in particular along the eastern foothills)~~ to expand the sagebrush community and provide greater suitable habitat for sage-grouse. ~~In addition to juniper and oak removal, sagebrush treatments (mechanical) can be applied to reduce shrub density in small areas (patches). Within these areas, forb species that are known to be important sage-grouse food will be seeded and established to provide an additional food source for hens and chicks, primarily during the brood rearing period. Grasses will also be seeded to provide additional hiding cover and a potential source of insects for chick foraging. These treatments will initially be done in a few, relatively small areas to determine whether forb and grass densities actually do increase and if birds are observed using these areas for foraging. If successful, these treatments can then be used in other areas where benefits are expected. Maintaining optimal shrub cover for nesting, brood rearing, predator avoidance, roosting, and as a source of shelter will remain the highest priority for these sites.~~

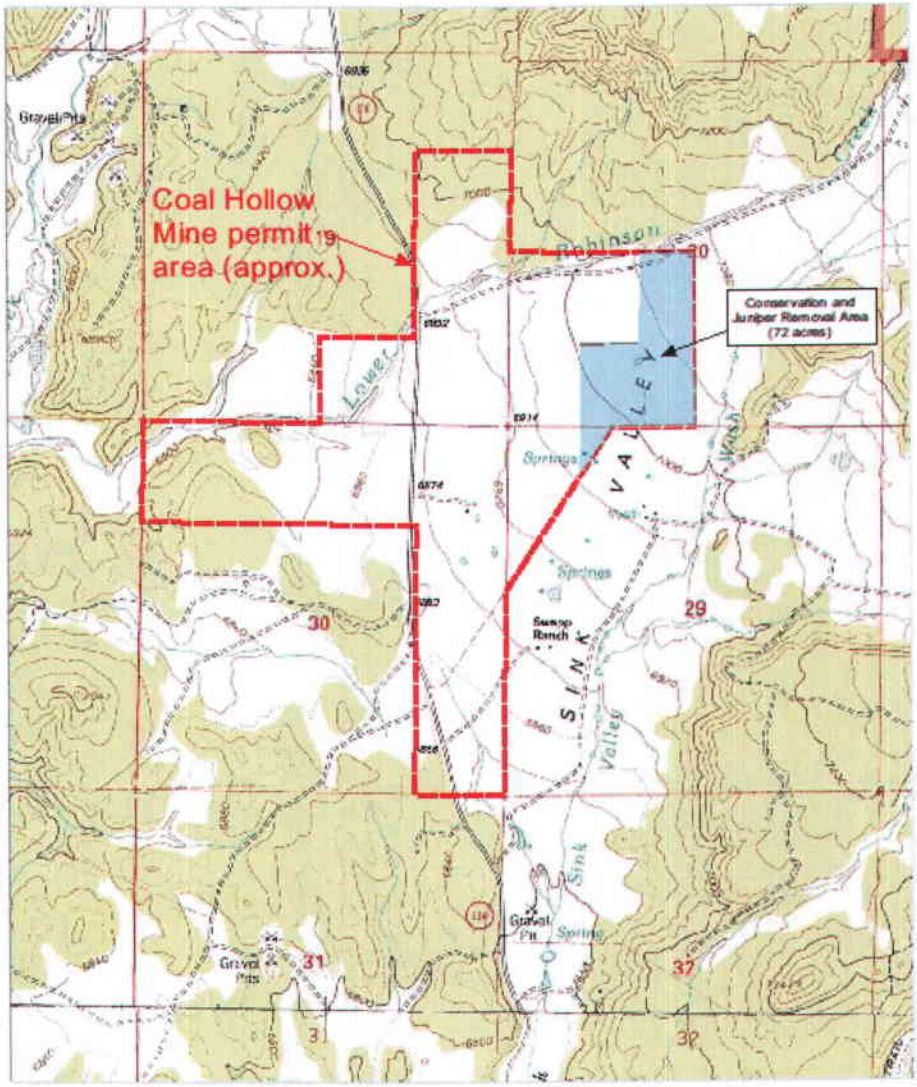

Figure 3-1: Coal Hollow Project Conservation Area

Habitat Reclamation Plan

Seed mixes that are used for reclamation will consist of native shrub, grass and forb species that provide cover and food. In order to accelerate shrub re-establishment, bareroot or containerize sagebrush and bitterbrush transplants will be planted. To ensure the integrity of the planting materials, indigenous seed and cuttings could be collected for reclamation. At Bryce Canyon National Park, seed and transplants obtained from indigenous materials had greater long-term survival and higher cover and production than commercial varieties of the same species (**Appendix 3-1**).

Cursory surveys conducted on April 30, 2006 found that there is a low probability that a dominant invasive species (i.e. cheatgrass, medusahead) could establish on reclaimed sites. However, post-reclamation surveys will be conducted for undesirable invasive plants. If a breakout does occur, mechanical and/or chemical treatments will be applied.

Primary brood-rearing habitat in the Alton valley is associated with alfalfa fields near the town of Alton. Birds likely utilize these areas due to the availability of forbs, insects, and water. To reduce the dependency of the birds on these areas, areas that are currently pasture lands will be returned to sagebrush/grass/forb communities. Seed mixtures for final reclamation have been created with this goal in mind.

Seeding and planting will occur in the fall season following the growing season and into dormancy, or in the spring if timing and conditions appear more favorable. During the following growing season, vegetation sampling will be conducted to monitor reclamation success. Measurements will be continued each year until the reclamation goals have been achieved. Additional seeding can be applied during subsequent years if the minimum standards of acceptance have not been achieved. Juniper seedlings found in reclaimed areas will be removed.

Monitoring Plan

Reclaimed sites will be monitored to assess restoration success and plant establishment to determine if problem areas exist. Qualitative and quantitative data will be recorded at regular intervals. The qualitative data will include: site locations, sample dates, observers, slopes, exposures, acreage, animal disturbances, erosion damage, dominant plant species observed, and other pertinent notes. Quantitative data recorded will include: total cover (living cover, rock, litter, bare ground), cover by species, composition, frequency, and woody species density.

Methods for quantitative monitoring will be as follows. Transect lines will be placed randomly on each of the revegetation sites (see Drawing 3-7). Random sample locations will then be placed from these transect lines and the aforementioned data will be recorded. Ocular methods with square meter quadrat will be used to provide cover and frequency data, whereas, point quarter and/or belt transects will be used to estimate woody species densities.

Weed surveys will also be conducted on the reclaimed areas on a yearly basis or during the revegetation monitoring studies. If undesirable, exotic or "weedy" plant species are present at a density that they could impede revegetation or out-compete desirable plant species, a certified or trained specialist will spray herbacide, kill or remove the weeds mechanically (by shovel or other means).

Other Wildlife Enhancement Information

The active mine areas will usually be less than 120 acres. Once an active area is mined, reclamation will begin immediately by replacing overburden and topsoil. Seeding will then be implemented in the late-fall (or early spring if conditions are deemed favorable). In other words, reclaimed pits will be seeded with the final seed mixture less than one year following redistribution of overburden topsoil, and in many cases these activities will occur within months. If the seeding window is not appropriate following re-distribution of the soils, the area will be treated with a tackifier to control erosion by wind and water.

Sagebrush and Other Habitats

High value habitats were described in Section 322.220. A portion of the permit area is Substantial Value, year-long habitat for black bear (Drawing 3-2), crucial summer habitat for Rocky Mountain Elk (Drawing 3-3), Crucial Value summer habitat for mule deer (Drawing 3-4) and Crucial Value brooding habitat for sage-grouse (Drawing 3-5).

Mitigation efforts have conducted **prior to mining** have emphasized the sensitive species, sage-grouse, but will also benefit the above species by increasing understory forage for deer and elk as well as prey species for black bears. With the establishment of desirable plant species for sage-grouse in the sagebrush communities, sagebrush obligate species habitat will also be improved. Birds that depend on these communities include sage sparrows (*Oreoscoptes montanus*), sage thrasher (*Amphispiza belli*), and Brewer's sparrow (*Spizelis breweri*). Also, mule deer habitat will increase, especially with the establishment of antelope bitterbrush (*Purshia tridentata*) and other palatable browse species that have been added to the seed mixtures. Grassland development will also increase forage for elk (*Cervus canadensis*). Other species such as snowberry (*Symphoricarpos oreophilus)* and serviceberry (*Amelanchier utahensis*) have been included in final revegetation seed mixtures at the mine site and should prove beneficial for black bear (*Ursus americanus*). As described above in the "Sage-Grouse Long-Term Mitigation Plan" and the "Alton Sage-Grouse Mitigation Plan" (Appendix 3-5), mitigation during within and outside the permit area include establishment of a conservation area and removal of juniper and scrub oak trees. Mitigation during the **active phases of mining** include rehabilitation, revegetation and wildlife enhancement of the mined areas contemporaneously. These plans have been described in "Procedures to Minimize Adverse Impacts to Fish & Wildlife" (Section 333), "Revegetation" (Section 341) and "Habitat Enhancement & Plant Species" (Section 342.230).

The total number of acres of the sagebrush community that will be disturbed by the Coal Hollow Project in 139 acres. As mentioned, this acreage will be restored to sagebrush communities. Moreover, there will be 157 acres of pasture lands that were once sagebrush communities, but have been altered by past land management practices, will be returned to sagebrush. In summary, the Coal Hollow Project area **currently has 139 acres of sagebrush** communities, plus approximately 35 acres that will remain undisturbed by mining that are located in the Conservation Area. Following final reclamation, there will be nearly **300 acres that are returned to sagebrush**, the community so important of the sage-grouse and other wildlife species.

Wet Meadow Habitat

There are a variety of wildlife species that utilize the wet meadow habitat of the area. There is a total of 56 acres of this habitat in the permit area. About half, or 28 acres, of this habitat will be disturbed by mining operations. Additionally, 6 acres of this habitat will be left undisturbed and is located in the Conservation Area described above.

Because the water source and recharge area for the wet meadows will not be impacted by mining, and the same soils and overburden that was removed by mining activities will be replaced for the root zone (or approximately the top 4 ft) at the time of final reclamation, it is expected that the soil moisture necessary to restore and maintain this habitat will soon return to its present conditions. Additionally, the reclaimed areas will be seeded with the same species currently ~~found in these meadows, some of which could be collected onsite. Also, these plant species are known to easily disperse and reestablish naturally if similar soils and hydrology have been restored.~~

found in these meadows, some of which could be collected onsite. Also, these plant species are known to easily disperse and reestablish naturally if similar soils and hydrology have been restored.

The mine plan for the proposed Coal Hollow Mine has been designed to minimize disturbance to the wet meadow habitat areas. Where practical, planned mining activities in these areas have been avoided. During active mining operations, should there be other opportunities to further minimize disturbance to the wet meadow habitat, Alton Coal Development would implement them where possible.

The highwall slope angles for the proposed Coal Hollow Mine has been designed based on geotechnical information obtained from a variety of sources. Because of the inherent uncertainties associated with geotechnical stability determinations in a new mining area and the importance of mine stability to human safety, the steepness of the mine highwalls has been designed using conservative assumptions. As mining progresses, additional mining experience will be gained and geotechnical studies in the Tropic Shale formation and the alluvium will be performed. These studies will be conducted prior to the mining of pit 15. Based on the findings of these investigations, it may be determined that a steeper slope angle for the mine highwalls could safely be implemented. A direct result of a steeper highwall slope angle would be that an appreciably smaller area of the wet meadow habitat would be disturbed by the mining operations while still recovering all the economic coal.

The water supply for the wet meadow habitat originates from higher-elevation areas up-gradient of proposed mining areas. These recharge areas will not be disturbed by the proposed mine workings. The flow rates of shallow groundwaters and interflow waters through the subsurface in the wet meadow areas are controlled by the hydraulic gradient and by the hydraulic conductivity of the alluvial sediments through which the water flows. As observed in shallow excavations, fine-grained sediments dominate the shallow subsurface in the wet meadow habitat areas. Consequently, it is anticipated that the flow rate is largely limited by the hydraulic conductivity of the alluvial sediments (i.e., as opposed to a condition analogous to open conduit flow through a pipe with the end removed). Accordingly, if the shallow alluvial sediments are removed from the lower portions of the wet meadow habitat, a large increase in the flow rates through the low-permeability alluvial sediments in the undisturbed portions of the wet meadow habitat is not anticipated. Based on these considerations, it is considered likely that the seasonal wet soil conditions that currently support the wet meadow habitat will continue to exist during active mining operations.

Wildlife Awareness Program

A Wildlife Awareness Program will be implemented during the active phases of mining for the Coal Hollow Project. The objectives of the program will be to provide protection of the resident wildlife, decrease collisions by heavy equipment and other vehicles, as well as minimize impact to the wildlife during the mining operations.

The coal operations will, to the extent possible using the best technology currently available, minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and will achieve enhancement of such resources where practicable. In doing so, the following procedures will be implemented.

- Speed limits of all vehicles will be posted at 25 mph inside the permit area.
- The safety meetings conducted on the mine site to all employees will include information regarding awareness of important wildlife species in the area.
- No coal mining and reclamation operations will be conducted that would likely jeopardize the continued existence of federally listed endangered or threatened or which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973.
- As mentioned above and in following sections, extensive measures for protecting, enhancing and mitigating habitat for the sensitive bird species, sage-grouse, have been conducted. Mitigation plans for this species have also begun (see Appendix 3-5).
- The mining operator will promptly report to the State of Utah, Division of Oil, Gas & Mining any state- or federally-listed endangered or threatened species within the permit area of which the operator becomes aware. Upon notification, the Division will consult with appropriate state and federal fish and wildlife agencies and, after consultation, will identify whether, and under what conditions, the operator may proceed.
- The mining operator keep log records of any road kill of deer, elk, sage-grouse and domestic livestock from coal haul and associated vehicles from the mine site to highway 89.

- The operator will ensure that electric powerlines and other transmission facilities used for, or incidental to, coal mining and reclamation operations on the permit area are designed and constructed to minimize electrocution hazards to raptors, except where the Division determines that such requirements are unnecessary.

- The operator will design fences, overland conveyers, and other potential barriers to permit passage for large mammals, except where the Division determines that such requirements are unnecessary.

340. RECLAMATION PLAN

341. REVEGETATION

This document contains the revegetation plan for final reclamation of all lands disturbed by coal mining and reclamation operations, except water areas and the surface of roads approved as part of the postmining land use, as required in R645-301-353 *through* R645-301-357. It also shows how the Coal Hollow Project will comply with the biological protection performance standards of the State Program.

341.100. Reclamation Timetable

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. Briefly, the mine will conduct operations in one area (segment) at a time. No more than 40 acres will be disturbed at one time for mining. Once mined, the plan includes redistributing subsoil and topsoil followed by seeding this segment with the final seed mix contemporaneously, or at the same time the mining of the next segment begins. However, seeding will be accomplished only in appropriate periods (usually late-fall, but early-spring could also be an option). The mine plan has been engineered to disturb the smallest practicable area at any one time. With prompt establishment and maintenance of vegetation, immediate stabilization of disturbed areas will minimize surface erosion. Details of the plan has been included in Chapter 5 of this document.

341.200. Reclamation Description

The Coal Hollow Project will be reclaimed and revegetated to meet the appropriate postmining land use. Most areas will be reclaimed to the native plant communities that existed prior to mining conditions. Other areas will be reclaimed to enhance habitat for sage-grouse or other wildlife species. Finally, in those areas where the landowner requests a change in the plant community to increase productivity for domestic livestock, they will be reclaimed accordingly.

341.210. Seed Mixtures

Revegetation seed mixtures for each plant community disturbed by mining activities in the Coal Hollow Project area are given in this section. Table 3-36 shows the plant communities that may eventually be disturbed by mining operations at the Coal Hollow Project area.

Table 3-36: Vegetation Communities of the Coal Hollow Permit Area Proposed for Disturbance	
MAP SYMBOL (see *Vegetation Map, Drawing 3-1*)	PLANT COMMUNITY
S/G	Sagebrush/Grass
P	Pasture Land
P-J	Pinyon-Juniper
M	Meadow
OB	Oak brush
RB/SB	Rabbitbrush/Sagebrush

Seed mixtures for each disturbance type are shown on Tables 3-37 *through* 3-42. These rates have been based on drill seeding methods described in this document. When broadcast seeding is employed these rates will be doubled.

Table 3-37: Revegetation Seed Mixture for the Sagebrush/Grass Community at the Coal Hollow Project

	Rate** (# PLS/Ac)	Seeds/ft^2
SHRUBS		
*Artemisia nova**	0.20	4.16
*Artemisia tridentata**	0.10	5.74
Ceratoides lanata	3.00	3.79
Purshia tridentata	15.00	5.17
Symphoricarpos oreophilus	3.00	5.17
FORBS* **		
Achillea millefolium	0.03	1.91
Hedysarum boreale	5.00	3.86
Linum lewisii	0.70	4.47
Lupinus argenteus	15.00	4.30
Penstemon palmeri	0.30	4.20
Sphaeralcea grossulariifolia	0.40	4.59
Viguiera multiflora	0.20	4.84
GRASSES		
Elymus smithii	1.50	4.34
Elymus trachycaulus	1.50	5.51
Poa pratensis	0.10	5.00
Poa secunda	0.20	4.25
Stipa hymenoides	1.00	4.32
TOTALS	**47.23**	**75.60**

* This species could also to be planted by containerized seedlings at a rate of 200 plants per acre to enhance sage-grouse habitat.

** Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

*** Seeds used may be based on commercial availability. Other forb species that would be beneficial for sage-grouse enhancement include: *Achillea millefolium, Agoseris glauca, Crepis acuminata, Gayophytum spp., Lomatium spp., Tragopogon dubius, Trifolium spp.*

Table 3-38: Revegetation Seed Mixture for the Pasture Lands at the Coal Hollow Project

(Final determination to be made by landowners)	Rate* (# PLS/Ac)	Seeds/ft^2
SHRUBS		
FORBS**		
Achillea millefolium	0.04	2.54
Astragalus cicer	1.50	4.99
Hedysarum boreale	6.00	4.63
Linum lewisii	1.00	6.38
Medicago sativa	1.00	4.82
GRASSES		
Bromus inermis	1.00	2.87
Dactylis glomeratus	0.20	3.00
Elymus smithii	1.50	4.34
Elymus lanceolatus	1.50	5.30
Elymus junceus	1.00	4.02
Elymus hispidus	2.00	4.27
Phleum pratensis	0.20	5.97
Poa pratensis	0.10	5.00
TOTALS	**17.04**	**58.14**

* Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

** Seeds used may be based on commercial availability. Other forb species that would be beneficial for sage-grouse enhancement include: *Achillea millefolium, Agoseris glauca, Crepis acuminata, Gayophytum spp., Lomatium spp., Tragopogon dubius, Trifolium spp.*

Table 3-39: Revegetation Seed Mixture for the Pinyon-Juniper Community at the Coal Hollow Project

	Rate* (# PLS/Ac)	Seeds/ft^2
SHRUBS		
Amelanchier utahensis	5.00	2.96
Artemisia nova	0.20	4.16
Artemisia tridentata vaseyana	0.07	4.02
Ceratoides lanata	3.00	3.79
Purshia tridentata	12.00	4.13
Symphoricarpos oreophilus	2.50	4.30
FORBS		
Artemisia ludoviciana	0.04	4.13
Eriogonum umbellatum	1.00	4.80
Hedysarum boreale	5.00	3.86
Lupinus argenteus	15.00	4.30
Sphaeralcea coccinea	0.50	5.74
Viguiera multiflora	0.20	4.84
GRASSES		
Elymus spicatus	1.00	3.21
Elymus smithii	1.50	4.34
Elymus trachycaulus	1.50	5.51
Poa pratensis	0.10	5.00
Poa secunda	0.20	4.25
Stipa hymenoides	1.00	4.32
TOTALS	**49.81**	**77.67**

* Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

Table 3-40: Revegetation Seed Mixture for the Meadow Community at the Coal Hollow Project

	Rate* (# PLS/Ac)	Seeds/ft^2
SHRUBS		
FORBS**		
Iris missouriensis	15.00	7.23
Achillea millefolium	0.10	6.36
GRASSES (or Grass-likes)		
Carex microptera	0.40	7.78
Carex nebrascensis	0.50	6.13
Elymus trachycaulus	2.00	7.35
Phleum pratensis	0.20	5.97
Poa pratensis	0.10	5.00
Poa secunda	0.30	6.37
Scirpus americanus.	2.00	8.26
Sporobolus airoides	0.20	8.03
TOTALS	**20.80**	**68.47**

* Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

** Seeds used may be based on commercial availability. Other forb species that would be beneficial for sage-grouse enhancement include: *Achillea millefolium, Agoseris glauca, Crepis acuminata, Gayophytum spp., Lomatium spp., Tragopogon dubius, Trifolium spp.*

Table 3-41: Revegetation Seed Mixture for the Oak Brush Community at the Coal Hollow Project

	Rate* (# PLS/Ac)	Seeds/ft^2
SHRUBS		
Amelanchier utahensis	10.00	5.92
Artemisia nova	0.20	4.16
Artemisia tridentata var. vaseyana	0.07	4.02
Cercocarpus montanus	3.00	4.06
Purshia tridentata	12.00	4.13
Symphoricarpos oreophilus	3.00	5.17
Ephedra viridis	8.00	4.59
FORBS		
Artemisia ludoviciana	0.04	4.13
Sphaeralcea coccinea	0.40	4.59
Vicia americana	12.00	5.51
Viguiera multiflora	0.20	4.84
GRASSES		
Bromus carinatus	2.00	4.59
Elymus spicatus	1.50	4.82
Elymus trachycaulus	1.50	5.51
Poa pratensis	0.10	5.00
Poa secunda	0.20	4.25
Stipa hymenoides	1.00	4.32
TOTALS	**55.21**	**79.62**

* Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

Table 3-42: Revegetation Seed Mixture for the Rabbitbrush/Sagebrush Community (*disturbed Sagebrush/Grass Community*) at the Coal Hollow Project

	Rate** (# PLS/Ac)	Seeds/ft^2
SHRUBS		
*Artemisia nova**	0.20	4.16
*Artemisia tridentata**	0.10	5.74
Ceratoides lanata	3.00	3.79
Purshia tridentata	15.00	5.17
Symphoricarpos oreophilus	3.00	5.17
FORBS* **		
Achillea millefolium	0.03	1.91
Hedysarum boreale	5.00	3.86
Linum lewisii	0.70	4.47
Lupinus argenteus	15.00	4.30
Penstemon palmeri	0.30	4.20
Sphaeralcea grossulariifolia	0.40	4.59
Viguiera multiflora	0.20	4.84
GRASSES		
Elymus smithii	1.50	4.34
Elymus trachycaulus	1.50	5.51
Poa pratensis	0.10	5.00
Poa secunda	0.20	4.25
Stipa hymenoides	1.00	4.32
TOTALS	**47.23**	**75.60**

* This species could also to be planted by containerized seedlings at a rate of 200 plants per acre to enhance sage-grouse habitat.

** Based on drill seeding methods. The number reflects the pounds of pure live seed (PLS) per acre.

*** Seeds used may be based on commercial availability. Other forb species that would be beneficial for sage-grouse enhancement include: *Achillea millefolium, Agoseris glauca, Crepis acuminata, Gayophytum spp., Lomatium spp., Tragopogon dubius, Trifolium spp.*

341.220. Planting & Seeding Methods

Seedbed Preparation & Analyses

The final seedbed of the reclaimed areas will be prepared by first replacing the subsoil and topsoil in the same order it existed prior to removal by the mining activities. Next, a basic topsoil (top 8 inches of reclamation profile) sampling regime will be implemented prior to seeding that should identify fertility problems and will provide a basis for determining necessary soil amendments. The parameters analyzed will be:

- Available phosphorus (P)
- Soluble Potassium (K)
- Nitrate-Nitrogen

One composite sample will be collected from approximately every 2 to 5 acres based on soil types and variability. Each composite will be comprised of at least 4 samples.

Pre-testing of the soils has been conducted as part of the soils survey. Results from the pre-testing of topsoil and subsoil can be viewed in Table C-1 of Appendix 2-1 (native topsoil and subsoil) and Table C-2 (samples from core hole/overburden pits) of Appendix 2-1.

If heavy equipment operation results in excessive soil compaction at the surface of the reclaimed areas, they will then be ripped, disked, and harrowed to loosen the seedbed prior to seeding. Excessive compaction that could impact seeding success will be determined by observation and judgment of an environmental professional. In other areas where less compaction has occurred, the areas will be disked and harrowed. The disking and harrowing of all areas will be done parallel with the contour wherever possible to decrease the potential for water erosion downslope. In other areas where compaction is not a problem, dozer tracking can be used to roughen the surface, and to trap seed, fertilizer, mulch, and other amendments as well as decrease erosion by wind and water. In such cases, seeding will be done immediately after this treatment, whereas soil amendments, where required, would be applied over the surface during seedbed preparations. Seeding will mainly occur in the early spring and late fall.

Seeding & Transplanting

Seeding will be accomplished using different methods depending on the area to be seeded. In the more flat areas such as the meadows and existing pasture lands, a typical farmland drill will be used for seeding. In other areas where the surface may be more rough, a modified rangeland drill or "rough terrain seeder" will be used. Finally, in the areas where access is more difficult to reach by heavy equipment due to slope steepness or other limiting factors, broadcast seeding or hydro-seeding will be employed. For a list of plant species to be seeded refer to Tables 3-37 *through* 3-42.

Containerized plants will be planted in those areas proposed for sage-grouse habitat enhancement. These plants will be planted from containers at least 10 cubic inches in size and inoculated with appropriate site-specific or commercial mycorrhizal inocula at specified infection rates. The containerized plants will be planted at a rate that totals at least 400 individuals per acre. For a list of the species to be planted, refer to Table 3-37.

Containerized plants should be dormant when they arrive at the site in the spring or fall and will be planted as soon after delivery as possible. Plants will be planted in a fashion to simulate a natural habitat. If competing vegetation is present at the time of planting, this vegetation will be removed by scalping the area or herbicide application beforehand that provide a time period ample as to not affect the containerized seedling. A small depression will be created in the seedbed around the seedling at the time of planting to increase survivability by harvesting and holding water. The plants will be "watered-in" when they are planted by adding water to the depression. If possible, the plants will be watered during dry periods for the first growing season.

341.230. Mulching Techniques

Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished. Mulching will occur by one of the following methods:

- Certified noxious weed free straw applied at a rate of 1 ton/acre anchored by crimping or a chemical binder.
- Wood fiber hydromulch at a rate of ¾ ton per acre for slopes flatter than 3:1 and 1 ton per acre for slopes at 3:1 which is the steepest slope planned at the project. This hydromulch would be anchored with a chemical binder at the manufacturer's suggested rate.

The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Since there is only one post mining land use, mulching will follow one of the above described methods for all reclaim areas.

341.240. Irrigation

Irrigation has not been planned for the reclaimed area with the exception of watering the containerized plants as mentioned above.

341.250. Revegetation Monitoring

Vegetation of the reclaimed areas will be monitored regularly to measure the success of plant establishment and to determine if problem areas exist. Qualitative and quantitative data will be recorded at regular intervals. The qualitative data will include: site location, sample date, observers, slope, exposure, acreage, animal disturbance, erosion damage, dominant plant species observed, and other pertinent notes. Quantitative data recorded will include: total cover (living cover, rock, litter, bare ground), cover by species, composition, frequency, and woody species density.

Methods for quantitative monitoring will be as follows. Transect lines will be placed randomly on each of the revegetation sites. Random sample locations will then be placed from these transect lines and the aforementioned data will be recorded. Ocular methods with square meter quadrat will be used to provide cover and frequency data, whereas, point quarter and/or belt transects will be used to estimate woody species densities.

Weed control through chemical means will follow the current Weed Control Handbook (published annually or biannually by the Utah State University Cooperative Extension Service) and herbicide labels.

Weed surveys will also be conducted on the reclaimed areas on a yearly basis or during the revegetation monitoring studies. If undesirable, exotic or "weedy" plant species are present at a density that they could impede revegetation or out-compete desirable plant species, a certified or trained specialist will spray herbacide, kill or remove the weeds mechanically (roguing, grubbing and mowing).

341.300. Mining, Reclamation & Revegetation Research

Mining, reclamation & revegetation research has been planned and is in the process of being submitted to DOGM. Additionally, DOGM may require greenhouse studies, field trials, or equivalent methods of testing proposed or potential revegetation materials and methods to demonstrate that revegetation is feasible pursuant to R645-300-133.710.

342. FISH AND WILDLIFE ENHANCEMENT

This application includes a fish and wildlife plan for the reclamation and postmining phase of the operation consistent with R645-301-330, the performance standards of R645-301-358 and include the following (for details see section 330, OPERATION PLAN).

342.100. Measures for Enhancement of Habitat

Enhancement measures that will be used during the reclamation and postmining phase of the operation to develop aquatic and terrestrial habitat. Such measures may include restoration of streams and other wetlands, retention of ponds and impoundments, establishment of vegetation for wildlife food and cover, and the replacement of perches and nest boxes (see also section 330, **OPERATION PLAN**).

342.200. Reclamation Plants for Enhancement

Where fish and wildlife habitat is to be a postmining land use, the plant species to be used on reclaimed areas have been selected on the basis of the criteria described below.

342.210. Nutritional Values of Plant Species

Among other qualities (e.g. erosion control qualities, establishment capabilities, and seed availability), plant species for revegetation of the Coal Hollow Project have been chosen for their proven nutritional value for wildlife (see Table 3-37 *through* 3-42).

342.220. Cover Quality of Plant Species

Among other qualities (e.g. erosion control qualities, establishment capabilities, and seed availability), plant species for revegetation of the Coal Hollow Project have been chosen for their cover qualities for wildlife (see Table 3-37 *through* 3-42).

342.230. Habitat Enhancement & Plant Species

Among other qualities, plant species for revegetation of the Coal Hollow Project have been chosen for their proven habitat enhancement qualities for wildlife (see Table 3-37 *through* 3-42). The plants have also been chosen for their ability to support and enhance fish or wildlife habitat after the release of performance bonds. At final revegetation, the selected plants will be grouped and distributed in a manner which optimizes edge effect, cover, and other benefits to fish and wildlife.

After consultation with appropriate agencies and biologists regarding habitats and sensitive species, the sage-grouse and its habitat were of greatest concern in the area. There has been a decreasing trend in the populations of this species since 1964 (see **Appendix 3-1** and **Appendix 3-3** for more details). There was a general consensus among the biologists and agencies consulted that due to the: 1) marginal habitat in the Alton Amphitheater area, 2) loss of habitat in recent years for nesting and brood-rearing and 3) relatively low population numbers in the area, that the local population of sage-grouse is vulnerable to elimination, regardless of mining activities proposed by the Coal Hollow Project. Accordingly, the several measures to minimize impacts and enhance habitat for this species have been proposed and are subject to further consideration by the operator and regulatory agencies (see Section 333 above).

342.300. Cropland & Revegetation

Where cropland is to be the postmining land use, where appropriate for wildlife- and crop-management practices, and with approval from the private landowners, the Coal Hollow Project will intersperse the fields with trees, hedges, or fence rows throughout the harvested area to break up large blocks of monoculture and to diversify habitat types for birds and other animals.

342.400. Residential & Industrial Reclamation

Where residential, public service, or industrial uses are to be the postmining land use, and where consistent with the approved postmining land use, the Coal Hollow Project will intersperse reclaimed lands with greenbelts utilizing species of grass, shrubs, and trees useful as food and cover for wildlife. No residential or industrial areas have been planned at this time.

350. PERFORMANCE STANDARDS

351. GENERAL REQUIREMENTS

All coal mining and reclamation operations will be carried out according to plans provided under R645-301-330 *through* R645-301-340.

352. CONTEMPORANEOUS RECLAMATION

Revegetation on all land that is disturbed by coal mining and reclamation operations, will occur as contemporaneously as practicable with mining operations, except when such mining operations are conducted in accordance with a variance for combined Surface and Underground Coal Mining and Reclamation Activities issued under R645-302-280. DOGM may establish schedules that define contemporaneous reclamation.

353. REVEGETATION: GENERAL REQUIREMENTS

Operators of the Coal Hollow Project will establish on re-graded areas and on all other disturbed areas, except water areas and surface areas of roads that are approved as part of the postmining land use, a vegetative cover that is in accordance with the mine permit and reclamation plan.

353.100. Vegetative Plant Cover Qualities

353.110. Diverse, Effective, & Permanent

The vegetation cover established at final reclamation will be diverse, effective and permanent.

353.120. Native Plant Species

The cover will be comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the DOGM (see Table 3-37 *through* 3-42).

353.130. Final Vegetation Cover & Quantities

The final cover will be at least equal in extent of cover to the natural vegetation of the area, or those standards set for final revegetation success.

353.140. Vegetation Cover and Soil Stabilization

The cover will be capable of stabilizing the soil surface from erosion.

353.200. The reestablished plant species will also contain the qualities listed below.

353.210. (a) Be compatible with the approved postmining land use.

353.220. (b) Have the same seasonal characteristics of growth as the original vegetation.

353.230. (c) Be capable of self-regeneration and plant succession.

353.240. (d) Be compatible with the plant and animal species of the area.

353.250. (e) Meet the requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations.

353.300. Vegetative Cover Exceptions

DOGM may grant exception to the requirements of R645-301-353.220 and R645-301-353.230 when the species are necessary to achieve a quick-growing, temporary, stabilizing cover, and measures to establish permanent vegetation are included in the approved permit and reclamation plan.

353.400. Cropland Exceptions

When the approved postmining land use is cropland, DOGM may grant exceptions to the requirements of R645-301-353.110, R645-301-353.130, R645-301-353.220 and R645-301-353.230.

354. TIMING OF REVEGETATION

Disturbed areas will be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting is that planting time generally accepted locally for the type of plant materials selected (see section 341.100, Reclamation Timetable).

355. MULCHING & OTHER SOIL STABILIZING PRACTICES FOR REVEGETATION

Suitable mulch and other soil stabilizing practices will be used on all areas that have been re-graded and covered by topsoil or topsoil substitutes (see section 340, RECLAMATION PLAN).

356. STANDARDS FOR REVEGETATION SUCCESS

356.100. Success Criteria

Success of revegetation will be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the extent of cover of the reference area or other approved success standard, and the general requirements of R645-301-353.

356.110. Vegetation Information Guidelines

Standards for success, statistically valid sampling techniques for measuring success, and approved methods are identified in the DOGM's "Vegetation Information Guidelines, Appendix A." The approved techniques in that document will be used for the Coal Hollow Project.

As stated above, the reclaimed plant communities at the site will be diverse, permanent, capable of stabilizing the soil surface for erosion, and will be compatible with the postmining land use. The reclaimed areas will be compared to the reference areas. Methods to be employed to determine that the standards have been met follow:

Cover	Ocular methods by meter square quadrats.
Shrub Density	Point quarter method and/or belt transects
Frequency	Relative number of times that it occurred in the square meter quadrats.
Production	Total annual biomass production will be estimated by clipping, drying and weighing current annual growth. Herbaceous and woody species will be summarized separately. "Double sampling" using four quadrats will be estimated around the clipped plots.
Diversity	Diversity will be measured by several methods. The average number of vascular species per meter square quadrat will be obtained by summing the frequency of all species in an area and dividing by 100. Another diversity measurement will be species richness or simply the total number of species encountered in the quadrats for each area. Finally, total diversity will be measured by using the MacArthur and Wilson's (1967) formula where the proportion of the sum frequency of each species of an area was calculated. The proportion of each species will be squared and the values for all species in the area are to be summed. This index integrates the number of species encountered and the degree to which frequency of occurrence is equitably distributed among those species. The formula is given below:

$$Total\ Diversity = \frac{1}{\sum P_i^2}$$

where,

P_i = the proportion of the sum frequency for a community contributed by the ith species.

356.120. Revegetation Success Standards

Standards for revegetation success will include comparisons of unmined lands (reference areas) with the areas being reclaimed to evaluate the appropriate vegetation parameters of ground cover, production, or stocking. Ground cover, production, or stocking will be considered equal to the approved success standard when they are not less than 90 percent of the success standard. The sampling techniques for measuring success will use a 90-percent statistical confidence interval (i.e., one-sided test with a 0.10 alpha error).

356.200. Postmining Land Use

Standards for success will be applied in accordance with the approved postmining land uses (see Chapter 4).

356.210. Grazing or Pasture Land

Some areas will be reclaimed as pasture and grazing land (see *Vegetation Map, Drawing 3-1*). For these and other areas determined by the landowners, the ground cover and production of living plants on the revegetated area will be at least equal to that of a reference area or other success standards approved by DOGM.

356.220. Cropland

For areas developed for use as cropland, crop production on the revegetated area will be at least equal to that of a reference area or such other success standards approved by DOGM. The requirements of R645-302-310 through R645-302-317 apply to areas identified as prime farmland (*no areas have been identified as prime farmland in the Coal Hollow Project Area*).

356.230. Wildlife Habitat

Several areas will be returned to wildlife habitat. For these areas success of vegetation will be determined on the basis of tree and shrub stocking and vegetative ground cover (see also section 356.100, Success Criteria).

356.231. Consultation & Approval

Minimum stocking and planting arrangements will be specified by DOGM on the basis of local and regional conditions and after consultation with and approval by Utah agencies responsible for the administration of forestry and wildlife programs. Consultation and approval will be on a permit specific basis.

356.232. Woody Species Success Criteria

Trees and shrubs that will be used in determining the success of stocking and the adequacy of plant arrangement will have utility for the approved postmining land use. At the time of bond release, such trees and shrubs will be healthy, and at least 80 percent will have been in place for at least 60 percent of the applicable minimum period of responsibility. No trees and shrubs in place for less than two growing seasons will be counted in determining stocking adequacy.

356.233. General Vegetative Cover

Vegetative ground cover will not be less than that required to achieve the approved postmining land use.

356.240. Industrial, Commercial or Residential Success Criteria

For areas to be developed for industrial, commercial, or residential use less than two years after regrading is completed, the vegetative ground cover will not be less than that required to control erosion. At this time, no areas have been proposed to be reclaimed as industrial, commercial or residential for the Coal Hollow Project.

356.250. Previous Disturbed Areas Success Criteria

For areas previously disturbed by mining that were not reclaimed to the requirements of R645-200 through R645-203 and R645-301 through R645-302 and that are re-mined or otherwise redisturbed by coal mining and reclamation operations, at a minimum, the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion. Other than those lands where the native plant communities have been disturbed for rangeland improvements or pasture lands, no areas would be considered "previously disturbed" in the project area.

356.300. Sediment Control Structures

Siltation structures will be maintained until removal is authorized by the DOGM and the disturbed area has been stabilized and revegetated. In no case will the structure be removed sooner than two years after the last augmented seeding.

356.400. Removal of Sediment Control Structures

When a siltation structure is removed, the land on which the siltation structure was located will be revegetated in accordance with the reclamation plan and R645-301-353 *through* R645-301-357.

357. REVEGETATION RESPONSIBILITY PERIODS

357.100. Beginning Date

The period of extended responsibility for successful vegetation will begin after the last year of augmented seeding, fertilization, irrigation, or other work, excluding husbandry practices that are approved by DOGM in accordance with paragraph R645-301-357.300.

357.200. Duration

Vegetation parameters identified in R645-301-356.200 will equal or exceed the approved success standard during the growing seasons for the last two years of the responsibility period. The period of extended responsibility will continue for five or ten years based on precipitation data reported pursuant to R645-301-724.411 based on the following conditions.

357.210. (a). In areas of more than 26.0 inches average annual precipitation, the period of responsibility will continue for a period of not less than five full years.

357.220. (b). In areas of 26.0 inches or less average annual precipitation, the period of responsibility will continue for a period of not less than ten full years.

357.300. Husbandry Practices

357.301. Approval Information

DOGM may approve certain selective husbandry practices without lengthening the extended responsibility period. Practices that may be approved are identified in R645-301-357.310 *through* R645-301-357.365. The operator may propose to use additional practices, but they would need to be approved as part of the Utah Program in accordance with 30 CFR 732.17. Any practices used will first be incorporated into the mining and reclamation plan and approved in writing by DOGM. Approved practices are normal conservation practices for unmined lands within the region which have land uses similar to the approved postmining land use of the disturbed area. Approved practices may continue as part of the postmining land use, but discontinuance of the practices after the end of the bond liability period will not jeopardize permanent revegetation success. Augmented seeding, fertilization, or irrigation will not be approved without extending the period of responsibility for revegetation success and bond liability for the areas affected by said activities and in accordance with R645-301-820.330.

357.302. Demonstration of Appropriate Reclamation Techniques

The Coal Hollow Project will demonstrate that husbandry practices proposed for a reclaimed area are not necessitated by inadequate grading practices, adverse soil conditions, or poor reclamation procedures.

357.303. Bonded Area & Husbandry Practices

DOGM will consider the entire area that is bonded within the same increment, as defined in R645-301-820.110, when calculating the extent of area that may be treated by husbandry practices.

357.304. Separate Responsibility Periods

If it is necessary to seed or plant in excess of the limits set forth under R645-301-357.300, DOGM may allow a separate extended responsibility period for these reseeded or replanted areas in accordance with R645-301-820.330.

357.310. Reestablishing Trees and Shrubs

357.311. Planting Within the Responsibility Period

Trees or shrubs may be replanted or reseeded at a rate of up to a cumulative total of 20% of the required stocking rate through 40% of the extended responsibility period.

357.312. Planting Shrubs in Established Vegetation

If shrubs are to be established by seed in areas of established vegetation, small areas will be scalped (see section 341.220, Planting & Seeding Methods). The number of shrubs to be counted toward the tree and shrub density standard for success from each scalped area will be limited to one.

357.320. Weed Control and Associated Revegetation

Weed control through chemical, mechanical, and biological means discussed in R645-301-357.321 *through* R645-301-357.323 may be conducted through the entire extended responsibility period for noxious weeds and through the first 20% of the responsibility period for other weeds.

Any revegetation necessitated by the following weed control methods will be performed according to the seeding and transplanting parameters set forth in R645-301-357.324.

357.321. Chemical Weed Control

Weed control through chemical means will follow the current Weed Control Handbook (published annually or biannually by the Utah State University Cooperative Extension Service) and herbicide labels.

Weed surveys will also be conducted on the reclaimed areas on a yearly basis or during the revegetation monitoring studies. If undesirable, exotic or "weedy" plant species are present at a density that they could impede revegetation or out-compete desirable plant species, a certified or trained specialist will spray herbacide, kill or remove the weeds mechanically (see below).

357.322. Mechanical Weed Control

Mechanical practices that may be approved include hand roguing, grubbing and mowing.

357.323. Biological Weed Control

Selective grazing by domestic livestock may be used by the Coal Hollow Project. Biological control of weeds through disease, insects, or other biological weed control agents is allowed but will be approved on a case-by-case basis by DOGM, and other appropriate agency or agencies which have the authority to regulate the introduction and/or use of biological control agents.

357.324. Weed Control & Desirable Species Damage

Where weed control practices damage desirable vegetation, areas treated to control weeds may be reseeded or replanted according to the following limitations. Up to a cumulative total of 15% of a reclaimed area may be reseeded or replanted during the first 20% of the extended responsibility period without restarting the responsibility period. After the first 20% of the responsibility period, no more than 3% of the reclaimed area may be reseeded in any single year without restarting the responsibility period, and no continuous reseeded area may be larger than one acre. Furthermore, no seeding will be done after the first 60% of the responsibility period or Phase II bond release, whichever comes first. Any seeding outside these parameters will be considered to be "augmentative seeding," and will restart the extended responsibility period.

357.330. Control of Other Pests

357.331. Big Game

Control of big game (deer, elk, moose, antelope) may be used only during the first 60% of the extended responsibility period or until Phase II bond release, whichever comes first. Any methods used will first be approved by DOGM and, as appropriate, the land management agency and the State of Utah Division of Wildlife Resources (DWR). Methods that may be used include fencing and other barriers, repellents, scaring, shooting, and trapping and relocation. Trapping and special hunts or shooting will be approved by DWR. Other control techniques may be allowed but will be considered on a case-by-case basis by the DOGM and by DWR. Appendix C of the DOGM's "Vegetation Information Guidelines" includes a non-exhaustive list of publications containing big game control methods.

357.332. Small Mammal & Insects

Control of small mammals and insects will be approved on a case-by-case basis by DWR and/or the Utah Department of Agriculture. The recommendations of these agencies will also be approved by the appropriate land management agency or agencies. Small mammal control will be allowed only during the first 60% of the extended responsibility period or until Phase II bond release, whichever comes first. Insect control will be allowed through the entire extended responsibility period if it is determined, through consultation with the Utah Department of Agriculture or Cooperative Extension Service, that a specific practice is being performed on adjacent unmined lands.

357.340. Natural Disasters and Illegal Activities Occurring After Phase II Bond Release

Where necessitated by a natural disaster, excluding climatic variation, or illegal activities, such as vandalism, not caused by any lack of planning, design, or implementation of the mining and reclamation plan on the part of the Coal Hollow Project, the seeding and planting of the entire area which is significantly affected by the disaster or illegal activities will be allowed as an accepted husbandry practice and thus will not restart the extended responsibility period. Appendix C of the Division's "Vegetation Information Guidelines" references publications that show methods used to revegetate damaged land. Examples of natural disasters that may necessitate reseeding which will not restart the extended responsibility period include wildfires, earthquakes, and mass movements originating outside the disturbed area.

357.341. Extent of Area

The extent of the area where seeding and planting will be allowed will be determined by the DOGM in cooperation with the Coal Hollow Project.

357.342. Standards of Success

All applicable revegetation success standards will be achieved on areas reseeded following a disaster, including R645-301-356.232 for areas with a designated postmining land use of forestry or wildlife.

357.343. Seeding & Planting in Phase II Areas

Seeding and planting after natural disasters or illegal activities will only be allowed in areas where Phase II bond release has been granted.

357.350. Irrigation

The irrigation of transplanted trees and shrubs, but not of general areas, is allowed by DOGM through the first 20% of the extended responsibility period. Irrigation may be by such methods as, but not limited to, drip irrigation, hand watering, or sprinkling.

357.360. Highly Erodible Area and Rill and Gully Repair

The repair of highly erodible areas and rills and gullies will not be considered an augmentative practice, and will thus not restart the extended responsibility period, if the affected area as defined in R645-301-357.363 comprises no more than 15% of the disturbed area for the first 20% of the extended responsibility period and if no continuous area to be repaired is larger than one acre.

357.361. Highly Erodible Areas Responsibility Period

After the first 20% of the extended responsibility period but prior to the end of the first 60% of the responsibility period or until Phase II bond release, whichever comes first, highly erodible area and rill and gully repair will be considered augmentative, and will thus restart the responsibility period, if the area to be repaired is greater than 3% of the total disturbed area or if a continuous area is larger than one acre.

357.362. Extent of Area Affected

The extent of the affected area will be determined by the DOGM in cooperation with the Coal Hollow Project.

357.363. Definition of Highly Erodible Areas

The area affected by the repair of highly erodible areas and rills and gullies is defined as any area that is reseeded as a result of the repair. Also included in the affected areas are interspacial areas of thirty feet or less between repaired rills and gullies. Highly erodible areas are those areas which cannot usually be stabilized by ordinary conservation treatments and if left untreated can cause severe erosion or sediment damage.

357.364. Erodible Areas & Sediment Control

The repair and/or treatment of rills and gullies which result from a deficient surface water control or grading plan, as defined by the recurrence of rills and gullies, will be considered an augmentative practice and will thus restart the extended responsibility period.

357.365. Erodible Area Designs & Repairs

The Coal Hollow Project shall demonstrate by specific plans and designs the methods to be used for the treatment of highly erodible areas and rills and gullies. These will be based on a combination of treatments recommended in the Soil Conservation Service Critical Area Planting recommendations, literature recommendations including those found in Appendix C of the Division's "Vegetation Information Guidelines", and other successful practices used at other reclamation sites in the State of Utah. Any treatment practices used will be approved by the Division.

358. PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES

The Coal Hollow Project will, to the extent possible using the best technology currently available, minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and will achieve enhancement of such resources where practicable.

358.100. Threatened & Endangered Species

A review of the Utah Heritage Program database for sensitive species in the proposed mine site and adjacent areas has been accomplished. Field maps with locations of these species have been prepared and have been used for additional surveys and will continue to be used in future biological studies or when disturbance by mining in specific areas is proposed.

Due to the sensitivity of these species, specific location information is considered confidential and has not been submitted in this application. However, review of this information can be arranged by the regulatory authorities (see section 322.200, Site-Specific Resource Information).

No coal mining and reclamation operation will be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the Secretary or which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973. The Coal Hollow Project will promptly report to the DOGM any state- or federally-listed endangered or threatened species within the permit area of which the operator becomes aware. Upon notification, DOGM will consult with appropriate state and federal fish and wildlife agencies and, after consultation, will identify whether, and under what conditions, the operator may proceed.

358.200. Eagles

The coal mining and reclamation operations at the Coal Hollow Project will not be conducted in a manner which would result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs. The operator of the Coal Hollow Project will promptly report to the DOGM any golden or bald eagle nest within the permit area of which the operator becomes aware. Upon notification, the DOGM will consult with the U.S. Fish and Wildlife Service (USFWS) and DWR and, after consultation, will identify whether, and under what conditions, the mining operations may proceed.

358.300. Removal of a Threatened & Endangered Species

No regulations in the R645 Rules authorizes the taking of an endangered or threatened species or a bald or golden eagle, its nest, or any of its eggs in violation of the Endangered Species Act of 1973 or the Bald Eagle Protection Act, as amended, 16 U.S.C. 668 et seq.

358.400. Riparian & Wetland Areas

There are some riparian and wetland areas associated with springs and seeps in the Coal Hollow permit area (see Chapter 7). At this time, the Coal Hollow Project plans to avoid disturbances to them, enhance them where practicable, and restore, or replace, wetlands and riparian vegetation along rivers and streams if disturbance to them it done.

Additionally, the coal mining and reclamation operations at the Coal Hollow Project will avoid disturbances to, enhance where practicable, or restore, habitats of unusually high value for fish and wildlife (see Section 333, Procedures to Minimize Adverse Impacts to Fish & Wildlife in this document).

358.500. Best Technology Available

The Coal Hollow Project will apply the best technology currently available in all disciplines of the coal mining and reclamation activities.

358.510. Powerline & Transmission Facilities

The Coal Hollow Project will ensure that electric powerlines and other transmission facilities used for, or incidental to, coal mining and reclamation operations on the permit area are designed and constructed to minimize electrocution hazards to raptors, except where DOGM determines that such requirements are unnecessary.

358.520. Fences & Conveyers

The Coal Hollow Project will design fences, overland conveyers, and other potential barriers to permit passage for large mammals, except where the DOGM determines that such requirements are unnecessary.

358.530. Toxic-Forming Areas

The Coal Hollow Project has no plans for ponds that contain hazardous concentrations of toxic-forming materials.

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R645-301-422: Utah Bureau of Air Quality

The following page replaces the Table of Contents and page 4-10 in Chapter 4, Volume 2 of the MRP. This section has been modified to update the "description of coordination and compliance efforts which have been undertaken by the applicant with the Utah Bureau of Air Quality".

Appendix 4-2, Air Quality Notice of Intent is removed from the MRP.

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413.300. Criteria for Alternative Postmining Land Uses

Other than improvements to the existing land described above, the land will be returned to its pre-mining conditions.

420 AIR QUALITY

421 CLEAN AIR ACT

Coal mining and reclamation operations will be conducted in compliance with the requirements for the Clean Air Act and Any other applicable Utah or Federal statutes and regulations containing air quality standards.

422 UTAH BUREAU OF AIR QUALITY

Alton Coal Development, LLC has retained JBR Environmental Consultants to prepare a Notice of Intent (NOI) for a new source at the Coal Hollow Project. The original NOI ~~application has been completed and wa~~wass submitted to the Utah Division of Air Quality (UDAQ) on May 8, 2007. This NOI provided an initial assessment of air emissions for the project based on the MRP prior to being determined Administratively Complete. JBR coordinated preparation of the original NOI with Tom Bradley and Jon Black of the UDAQ~~Utah Division of Air Quality~~. In September 2008, JBR began development of a revised NOI to include air dispersion modeling. This air dispersion modeling was coordinated with Dave Prey of UDAQ. A conference call was conducted with representatives of UDAQ, JBR and Alton Coal on December 8th, 2008 to discuss modeling inputs, background emissions and preliminary modeling results. The revised NOI was submitted on April 20, 2009 . UDAQ ~~is currently in the process of evaluating this revised NOI~~ responded to the NOI on June 23, 2009 by asking for additional information. Alton Coal and JBR are currently in the process of providing the information. Specific control measures proposed in the NOI are included in the Fugitive Dust Control Plan which is provided as Appendix 4-5. Upon approval of the NOI, the Executive Secretary of the Utah Air Quality Board will issue an Approval Order for a new source.

423.100- 200 AIR POLLUTION CONTROL PLAN

Production rates at the Coal Hollow Mine are expected to exceed 1,000,000 tons of coal per year. Appendix 4-5 provides a Fugitive Dust Control Plan (FDCP). This plan includes controls and monitoring measures that will be taken to minimize air pollution related specifically to fugitive dust. ~~The revised Notice of Intent provided as Appendix 4-2 provides site specific air dispersion modeling, controls and monitoring for air pollutants not included in the FDCP.~~

424 PLAN FOR FUGITIVE DUST CONTROL PRACTICES

Proposed mining will exceed 1,000,000 tons annually. A Fugitive Dust Control Plan is provided as Appendix 4-5.

R645-301-423.200, *et seq,* Refer to Air Pollution Control Plan Findings, p. 88 of the TA: Restated from Task 2910, The regulatory applicability stated on page 1 of the fugitive dust control plan is not complete. The plan should cite the regulatory applicability of the Utah Coal Rules under which the plan was requested: R645-301-423 *et seq* ; R645-301-244 *et seq*; and R645-301-526.220 *et seq*. • The App. 4-5 monitoring program does not address the grading requirements of R645-301-244.300 for areas other than topsoil stockpiles. •The App. 4-5 plan for fugitive dust control practices addresses the requirements of R645-301-244.100 to protect (mulch) and stabilize (tackifier) exposed surface areas (topsoil and subsoil piles and regraded areas), however, the monitoring program does not include measurements of the effectiveness of mulching and tackifier applications to control fugitive dust and erosion from exposed surface areas. • The App. 4-5 monitoring program should specify what techniques will be used to determine opacity from a non-point source (the permit boundary). •App. 4-5 states that watering records will be maintained to show the dust control measures taken. However water applications alone are not sufficient data to evaluate the effectiveness of the fugitive dust control practices. Before and after opacity readings, wind speed and direction, should also be provided to allow an evaluation of the effectiveness of the watering applications.

The following document is a revised version of the Fugitive Dust Control Plan submitted to address the above deficiencies. Each change is highlighted in redline/strikeout text.

ALTON COAL DEVELOPMENT, LLC

463 NORTH 100 WEST, SUITE 1
(435) 867-5331

Fugitive Dust Control Plan

For

Coal Hollow Project

Located In:

T39S, R5W, Sections 19, 20, 29 and 30, southeast of Alton in Kane County, UT

for questions regarding this plan contact

Chris McCourt

at

(435) 867-5331

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Attachment 1 Responsible Parties for Fugitive Dust Control

Attachment 2 Fugitive Dust Management, Acknowledgement and Certification

I. Introduction

Alton Coal Development, LLC (Alton) intends to excavate and process coal from its Coal Hollow Mine Site, located south-southeast of Alton, UT. A Notice of Intent has been filed with the Utah Department of Environmental Quality, Division of Air Quality (UDAQ). Typical operations will include excavation, hauling, sizing and stockpiling the coal. The intent of this Fugitive Dust Control Plan (FDCP) is to outline Alton's plan to control fugitive dust during coal mining operations.

II. Regulatory Applicability

Utah Administrative Code R645-301-423 requires that all surface coal mining and reclamation activities with projected production rates exceeding 1,000,000 tons of coal per year must provide an air pollution control plan. The Coal Hollow Mine projects a production rate of 2,000,000 tons of coal a year, therefore this code is applicable to the operation. Although the Coal Hollow Mine is not subject to the requirements of UAC R307-309, ***Non-attainment and Maintenance Areas for PM10: Fugitive Emissions and Fugitive Dust***, as it is not in a non-attainment area or maintenance area, the mine is subject to R307-205, ***Emission Standards: Fugitive Emissions and Fugitive Dust.*** The purpose of R307-205 is to establish minimum work practices and emission standards for sources of fugitive emissions and fugitive dust located in all areas of the state, except those listed in the state implementation plan or non-attainment areas (UAC R307-205-1). While R307-205 does not require the implementation of a FDCP, Alton has prepared this FDCP to ensure the requirements of R645-301-423, R645-301-244, R645-301-526.220 and R307-205 are met.

The UAC R307-309-2 defines material as "sand, gravel, soil, minerals, other matter that may create fugitive dust." For this FDCP, material is used and defined in the same way. The following activities of concern to the UDAQ and UDOGM, will take place:

YES	NO	ACTIVITY
✓	☐	Storage, hauling or handling operations of material
✓	☐	Clearing, ~~or~~ leveling and reclamation of land one-quarter acre or greater in size
✓	☐	Earthmoving, excavation, or movement of trucks or construction equipment over cleared land one-quarter acre size or greater
✓	☐	Haul road access and activity
☐	✓	Engaging in demolition activities including razing homes, buildings or other structures

Alton recognizes that in some cases, an approval order or temporary relocation permit will be required for the project, especially in cases of equipment use such as crushers or screens. This document in no way releases Alton from the requirements of air quality permits.

III. Source Information

The section supplies the site specific information regarding the project. Although not required by the UAC, the Utah Division of Air Quality (UDAQ) suggests the FDCP contain the following source specific information. Therefore, the information provided in this section is not to be used for determining compliance with any applicable permits, rather to give an overall understanding of the project for fugitive dust applications only.

SOURCE INFORMATION	
Name of Operation:	**Alton Coal Development, LLC – Coal Hollow Mine**
Address or Approximate Location:	**T39S, R95W, Sections 19, 20, 29 and 30, South-southeast of Alton in Kane County, UT**
Approximate Length of Project:	**5 years**
Description of Process or Activity:	**Preparing site for mining operations including installation of buildings, haul roads and sizing/stockpiling equipment. Conducting coal mining operations including clearing topsoil, overburden removal, excavation of coal, and sizing, sorting and stockpiling coal.**
Type of Material Processed or Disturbed:	**Topsoil and vegetation temporarily removed (will be replaced and re-vegetated).** **Vegetation, topsoil, overburden, coal**
Amount of Material Processed or Disturbed:	**Approximately 240 acres of land will be cleared of topsoil and overburden to allow for excavation of coal. Approximately 193 acres will be cleared of topsoil to allow placement of support buildings and sizing and stockpiling operations, as well as construction of haul roads, sediment ponds, spoil placement and subsoil/topsoil stockpiles**

In all cases, the responsible parties for fugitive dust control are the owner and/or operator.

Attachment 1 identifies the owner and operators of this project, and the contact information of the individuals responsible for implementation and maintenance of the FDCP.

In addition, all subcontractors who may be active on the project have will be required to enter into an agreement of shared responsibility regarding fugitive dust control. Attachment 2 provides the form which would identify subcontractors and the duration of subcontractor activity on the project. Also included in Attachment 2 is a signed acknowledgement that would be provided for each subcontracting company. Included in that acknowledgement is: awareness of the FDCP, intent to comply with the FDCP, obligation of reporting to the owner and/or operator any problems with fugitive dust control, and shared responsibility of any fines incurred from subcontractor negligence regarding fugitive dust control.

IV. Fugitive Dust Emission Activities

The section fulfills the requirements set for the UAC R307-309-6(1)(a)-(k), by further addressing the specific project activities generating fugitive dust.

ACTIVITY	YES	NO	ACTIVITY DETAILS
MATERIAL STORAGE	✓	☐	*List the type of material, how many storage piles and area used for storage piles.* **Initially, topsoil will be removed from the facility area and stockpiled. Also topsoil and subsoil from the initial coal pits will be salvaged and stored in the east of the mining area. As mining progresses, topsoil and overburden from one pit will be direct hauled to reclamation areas, when practical. Any topsoil piles that exist for at least 1 year will be stabilized by sloping to a 3:1, reseeding and mulching. Piles that exist for less than 1 year will be coated with a tackifier at the manufacturer's suggested rate for dust control applications.** **There is one coal stockpile planned that is expected to contain approximately 50,000 ton.**
MATERIAL HANDLING, TRANSFER, HAULING LOADING, OR DUMPING	✓	☐	*List the type of material that will be handled, transferred, loaded, hauled and/or dumped and the equipment that will be used for these activities.* **Topsoil will be handled with loaders, dozers, trucks and/or graders.** **Overburden will be handled with loaders, excavators and trucks.** **Coal will be handled with loaders, excavators, trucks, conveyors, screens, and crushers.**
HAUL ROADS, ROADWAYS, OR YARD AREAS	✓	☐	*List vehicles, equipment, and frequency of driving on the haul roads, roadways, or yard areas. List approximate lengths of road or areas these items will take up.* **There will be two sets of roads at the site, coal haul roads and overburden haul roads. The majority of the coal haul roads will be mostly long term and centrally located at the site. The maximum length will be approximately 7900'. 80 to 100 ton haul trucks will be the primary vehicles on these roads.**

			Overburden haul roads will be located near the pits and location and length will be constantly changing as mining progresses. 150 to 250 ton haul trucks will be the primary vehicles on the overburden haul roads. **All haul roads will have marked speed limit of 25 mph and either watering or chemical suppressant dust control.**
CLEARING, LEVELING, AND UNVEGETATED RECLAMATION AREAS	✓	☐	*List the acreage of land being cleared or leveled.* **Approximately 433 acres will be cleared for mining and sizing/stockpiling activities. This area will be reclaimed contemperaneously with mining operations inorder to restore the lands post mining land use in an efficient and timely manner.**
EARTH MOVING, EXCAVATION	✓	☐	*List the areas of earthmoving, excavation or trenching.* **The coal pit areas, storage piles, roads, ditches and sediment pond locations.**
CONSTRUCTION, DEMOLITION	✓	☐	*List the structures that will be demolished or constructed and the areas associated with those activities.* **Several temporary buildings will be constructed in the processing area, in the northern portion of the site. These buildings include the South Control Room, Wash Bay, Shop, Oil Storage, and Office.**
DRILLING, BLASTING, PUSHING OPERATIONS	✓	☐	*List frequency of drilling blasting and pushing operations, (hours per day, days per week, weeks per year).* **Operations will occur up to 24 hr/day, 6 days per week, 52 weeks per year**
MATERIAL PROCESSING**	✓	☐	*Will any material be made or altered during the project? For example, crushing, screening, concrete production? Explain any material processing activities that will take place.* **The sizing and sorting operation involves crushing/breaking, screening, conveying, and stockpiling. Material is extracted at the mine using**

			hydraulic excavators and delivered to the processing plant by haul trucks. The material is sized by a feeder breaker which is a round shaft with bits attached that spin across the coal to break the coal. One conveyor transfers the broken up coal to the roll crusher and from the roll crusher to the stacker belt and into the stockpile.
OTHER	✓	☐	Reclamation areas that have topsoil applied during a season not suitable for seeding will have tackifier applied for dust control measures. During the appropriate season for seeding, all newly reclaimed areas will then be seeded and mulched.

**Material processing may require an approval order or other air permit. If applicable, the appropriate permits are in Attachment 3.

V. Fugitive Dust Controls

There are various aspects of fugitive dust control that must be addressed

- Road Activity – Fugitive Dust Control
- Activity Specific On-Site Fugitive Dust Control
- Off-Site Fugitive Dust Control

i. Road Activity – Fugitive Dust Control

The following are requirements, specific to road use that must be implemented during all projects, as indicated by the UAC. The UAC specifically identify activities that require prompt mitigation for control of fugitive dust. Due to the nature of Alton's business, these activities will always apply to a project; therefore, these techniques will be implemented for duration the project.

UAC R307-309-7. Storage, Hauling, and Handling of Coal and Overburden.
Any person owing, operating or maintaining a new or existing material storage, handling, or hauling operation shall prevent, to the maximum extent possible, material from being deposited onto any paved road other than a designated deposit site. Any such person who deposits materials that may create fugitive dust on a public or private paved road shall clean the road promptly.

UAC R307-309-7. Construction and Demolition Activities.
Any person engaging in clearing or leveling of land with an area of one-quarter acre or more, earthmoving, excavating, construction, demolition, or moving trucks or construction equipment over cleared land or access haul roads, shall prevent, to the maximum extent possible, material from being deposited onto any paved road other than a designated deposit site. Any such person who deposits materials that may create fugitive dust on a public or private paved road shall clean the road promptly.

UAC R307-309-9. Roads.
(1) Any person responsible for construction or maintenance of any existing road or having right-of-way easement or possessing the right to use the same whose activities results in fugitive dust from the road shall minimize fugitive dust to the maximum extent possible. Any such person who deposits material that may create fugitive dust on a public or private paved road shall clean the road promptly.
(2) Unpaved Roads. Any person responsible for construction or maintenance of any new or existing paved road shall prevent, to the maximum extent possible, the deposit of material from the unpaved road onto any intersecting paved road during construction or maintenance. Any person who deposits material that may create fugitive dust on a public or private paved road shall clean the road promptly.

ii. Activity Specific On-Site Fugitive Dust Control

For each activity that was described in ***IV. Fugitive Dust Emission Activities***, a control strategy or strategies are listed. The strategies are listed in a staged approach, meaning that if the first approach of control, Stage 1, is not satisfactory, then the next approach of control, Stage 2 will be attempted. Stage 3 is the final stage. If Stage 3 is unsuccessful in mitigating fugitive dust, this plan requires ceasing operation to control fugitive dust.

It is the owner/operator's responsibility to ensure that each of these control strategies are implemented and maintained on-site and that all subcontractors are aware of their obligation regarding these control strategies. Additional space has intentionally been included to allow the site supervisor to include any additional control strategies at each stage.

ACTIVITY	CONTROL STRATEGY	
MATERIAL STORAGE	Stage 1:	Either seeding and mulch or tackifier application for topsoil and subsoil. Coal: Inherent moisture with water sprays as needed.
	Stage 2:	Toposoil/Subsoil: Increase rate of tackifier application until fugitive dust is controlled. Coal: Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Topsoil/Subsoil and Coal: Minimize or reduce operations.
MATERIAL HANDLING, TRANSFER, HAULING LOADING, OR DUMPING	Stage 1:	Inherent moisture with water sprays only on an as-needed basis.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Minimize or reduce operations.
HAUL ROADS, ROADWAYS, OR YARD AREAS	Stage 1:	Water sprays only on as-needed basis.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled, apply magnesium chloride or gravel as needed.
	Stage 3:	Minimize or reduce travel on these areas.
CLEARING, LEVELING, AND UNVEGETATED RECLAMATION AREAS	Stage 1:	Inherent moisture with water sprays only on an as-needed basis. Reclamation areas that have been graded and topsoiled will either be seeded and mulched, if during the appropriate planting season, or tackifier will be applied to control fugitive dust and erosion until the proper planting season.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Minimize and reduce operations.

EARTH MOVING, EXCAVATION	Stage 1:	Inherent moisture with water sprays only on an as-needed basis.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Minimize or reduce operations.
CONSTRUCTION, DEMOLITION	Stage 1:	Water sprays only on an as-needed basis.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Minimize or reduce operations.
DRILLING, BLASTING, PUSHING OPERATIONS	Stage 1:	Perform activity when low or no wind exists, when practicable.
	Stage 2:	Use water sprays on the area where activity will occur.
	Stage 3:	Minimize or reduce operations.
MATERIAL PROCESSING** (includes crushing and screening type operations)	Stage 1:	Inherent moisture with water sprays only on an as-needed basis.
	Stage 2:	Increase use of water sprays until fugitive dust is controlled.
	Stage 3:	Minimize or reduce operations.

** If processing other than crushing or screening occurs, the fugitive dust controls for those operations are addressed in the "OTHER" category.

Alton will also implement an awareness level program to minimize fugitive dust due to mining activities and haul road traffic in the pit areas. The site supervisor, (or authorized representative) will periodically observe the dust throughout each shift to determine the level of control needed to minimize the dust.

The following levels of awareness and control will be used:

Level 0 – No dust present; current dust control measures are adequate.

Level 1 – Weather or production causing dust at 0-5% opacity at the permit boundary; increase dust control measures necessary. Watering frequency and application of magnesium chloride on the Out of Pit haul roads will be increased until Level 0 is reached.

Level 2 - Weather or production causing dust at 5-10% opacity at the permit boundary; increase dust control measures necessary. Watering frequency and application of magnesium chloride on the Out of Pit haul roads will be increased until Level 0 is reached. Production reduced until evident that these measures are controlling the dust.

Level 3 - Weather or production causing dust > 10% opacity at the permit boundary; increase dust control measures necessary. Production stopped until Level 2 is reached. Level 2 activities conducted until Level 0 is reached.

Watering records will be maintained to show the dust control measures taken. These records will be provided in the Annual Report made available to Utah Division of Oil, Gas and Mining and to the inspectors upon request.

Since this plan provides control strategies based on total project opacity impacts at the property boundary, monitoring at the property boundary will be sufficient to "judge the effectiveness of the fugitive dust control plan". In order to monitor opacity at the property boundary, Alton Coal will utilize standard method 9 methodologies for the highest density "aggregate" plume from all sources within the property thus capturing highest impact of both point and non-point sources. Attachment 3 contains a description of method 9 techniques.

iii. Activity Specific Off-Site Fugitive Dust Control

Alton will control off-site of fugitive dust, which includes track-out, with the following control strategies:

OFF-SITE ACTIVITY	CONTROL STRATEGY	
FUGITIVE DUST ESCAPING FROM TRUCK BEDS	Stage 1:	Inherent moisture in material.
	Stage 2:	Use a synthetic cover for haul trucks.
	Stage 3:	Minimize or reduce operations.
TRACK-OUT	Stage 1:	Course gravel will be placed at the entrances and exits of the construction area to public roads to prevent track-out.
	Stage 2:	Use of a grader to clean the road from track-out.
	Stage 3:	Minimize or reduce operations, or wash tires.

VI. Continuous Improvement

Alton will review this plan and activities associated with controlling the Coal Hollow site's fugitive dust at least ONCE A YEAR. Changes to the plan will occur at this time, or sooner, if necessary.

ATTACHMENT 1

Responsible Parties for Fugitive Dust Control

Responsible Parties for Fugitive Dust Control

OPERATOR:	Alton Coal Development, LLC
Contact Name:	Chris McCourt
Position:	Mine Manager
Phone Number:	435-867-5331
OWNER:	Alton Coal Development, LLC
Contact Name:	Robert C. Nead, Jr.
Position:	Managing Member
Phone Number:	(239) 825-2332

ATTACHMENT 2

Fugitive Dust Management, Acknowledgement and Certification

Fugitive Dust Management, Acknowledgement and Certification

Contractor:	
Contact Name:	
Position:	
Phone Number:	
Start Date on Project:	
Finish Date on Project:	

I certify that I have reviewed the Fugitive Dust Control Plan and understand the requirements of this Plan, required under the Utah Administrative Code R307-309, and will instruct all employees of the Contractor on site to follow guidelines set for in the plan to control fugitive dust. The Contractor is equally responsible for fugitive dust maintenance and any fugitive dust violations from the Utah Division of Air Quality that may be directly related to the Contractor or its employees. Any and all subsequent violations due to fugitive dust non-compliance that can be attributed to the Contractor may be monetarily assessed to the Contractor by the owner and/or operator receiving the fine. The Contractor will report any fugitive dust control non-compliance to the owner and/or operator listed in this document.

Contractor

_____
Company Name (Printed)

_____
Name (Printed)

_____ _____
Signature Date

Alton Coal Development, LLC

Chris McCourt
Name (Printed)

_____ _____
Signature Date

ATTACHMENT 3

Method 9 Opacity Methodology and Documentation

EMISSION MEASUREMENT TECHNICAL INFORMATION CENTER
NSPS TEST METHOD

Prepared by **Emission Measurement Branch**
Technical Support Division, OAQPS, EPA

EMTIC TM-009
October 25, 1990

Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources

INTRODUCTION

(a) Many stationary sources discharge visible emissions into the atmosphere; these emissions are usually in the shape of a plume. This method involves the determination of plume opacity by qualified observers. The methods includes procedures for the training and certification of observers and procedures to be used in the field for determination of plume opacity.

(b) The appearance of a plume as viewed by an observer depends upon a number of variables, some of which may be controllable in the field. Variables which can be controlled to an extent to which they no longer exert a significant influence upon plume appearance include: angle of the observer with respect to the plume; angle of the observer with respect to the sun; point of observation of attached and detached steam plume; and angle of the observer with respect to a plume emitted from a rectangular stack with a large length to width ratio. The method includes specific criteria applicable to these variables.

(c) Other variables which may not be controllable in the field are luminescence and color contrast between the plume and the background against which the plume is viewed. These variables exert an influence upon the appearance of a plume as viewed by an observer and can affect the ability of the observer to assign accurately opacity values to the observed plume. Studies of the theory of plume opacity and field studies have demonstrated that a plume is most visible and presents the greatest apparent opacity when viewed against a contrasting background. Accordingly, the opacity of a plume viewed under conditions where a contrasting background is present can be assigned with the greatest degree of accuracy. However, the potential for a positive error is also the greatest when a plume is viewed under such contrasting conditions. Under conditions presenting a less contrasting background, the apparent opacity of a plume is less and approaches zero as the color and luminescence contrast decrease toward zero. As a result, significant negative bias and negative errors can be made when a plume is viewed under less contrasting conditions. A negative bias decreases rather than increases the possibility that a plant operator will be incorrectly cited for a violation of opacity standards as a result of observer error.

(d) Studies have been undertaken to determine the magnitude of positive errors made by qualified observers while reading plumes under contrasting conditions and using the procedures set forth in this method. The results of these studies (field trials) which involve a total of 769 sets of 25 readings

each are as follows:

(1) For black plumes (133 sets at a smoke generator), 100 percent of the sets were read with a positive error of less than 7.5 percent opacity; 99 percent were read with a positive error of less than 5 percent opacity. (Note: For a set, positive error = average opacity determined by observers' 25 observations -average opacity determined from transmissometer's 25 recordings.)

(2) For white plumes (170 sets at a smoke generator, 168 sets at a coal-fired power plant, 298 sets at a sulfuric acid plant), 99 percent of the sets were read with a positive error of less than 7.5 percent opacity; 95 percent were read with a positive error of less than 5 percent opacity.

(e) The positive observational error associated with an average of twenty-five readings is therefore established. The accuracy of the method must be taken into account when determining possible violations of applicable opacity standards.

1. PRINCIPLE AND APPLICABILITY

1.1 Principle. The opacity of emissions from stationary sources is determined visually by a qualified observer.

1.2 Applicability. This method is applicable for the determination of the opacity of emissions from stationary sources pursuant to § 60.11(b) and for visually determining opacity of emissions.

2. PROCEDURES

The observer qualified in accordance with Section 3 of this method shall use the following procedures for visually determining the opacity of emissions.

2.1 Position. The qualified observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to his back. Consistent with maintaining the above requirement, the observer shall, as much as possible, make his observations from a position such that his line of vision is approximately perpendicular to the plume direction and, when observing opacity of emissions from rectangular outlets (e.g., roof monitors, open baghouses, noncircular stacks), approximately perpendicular to the longer axis of the outlet. The observer's line of sight should not include more than one plume at a time when multiple stacks are involved, and in any case the observer should make his observations with his line of sight perpendicular to the longer axis of such a set of multiple stacks (e.g., stub stacks on baghouses).

2.2 Field Records. The observer shall record the name of the plant, emission location, facility type, observer's name and affiliation, and the date on a field data sheet (Figure 9-1). The time, estimated distance to the emission location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and plume background are recorded on a field data sheet at the time opacity readings are initiated and

completed.

Figure 9-1. Record of visual determination of opacity.

Company

Location

Test No.

Date

Type Facility

Control Device

Hours of Observation

Observer

Observer Certification Date Observer Affiliation

Point of Emissions Height of Discharge Point

CLOCK TIME	Initial			Final
OBSERVER LOCATION				
Distance to				
Direction from				
Height of				
BACKGROUND				
WEATHER CONDITIONS				
Wind Direction				
Wind Speed				
Ambient				
SKY CONDITIONS (clear, overcast, % clouds, etc.)				
PLUME DESCRIPTION				
Color				
Distance				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time	Opacity	
	Start - End	Sum	Average

Readings ranged from ___ to ___ % opacity.

The source was/was not in compliance with ___ at the time evaluation was made.

Figure 9-2. Observation record.

Page ___ of ___

Company _____ Observer _____

Location _____ Type facility _____

Test Number _____ Point of emissions _____

Hr	Min	Seconds 0	15	30	45	Steam plume (check if applicable) Attached	Detached	Comments
	0							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
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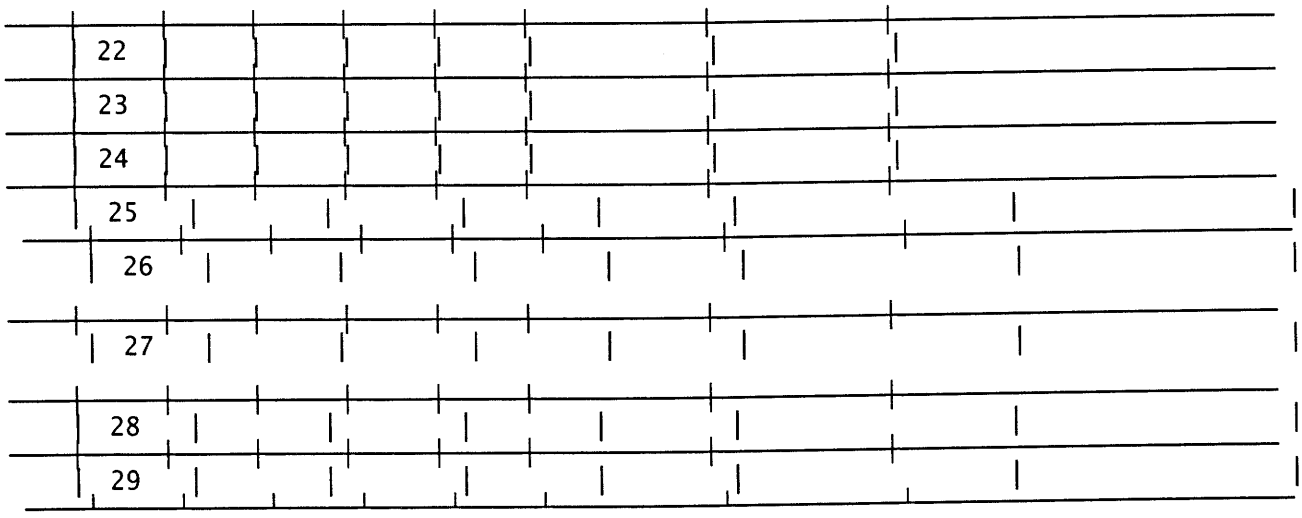
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							


22
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24
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28
29

Figure 9-2. Observation record (continued).

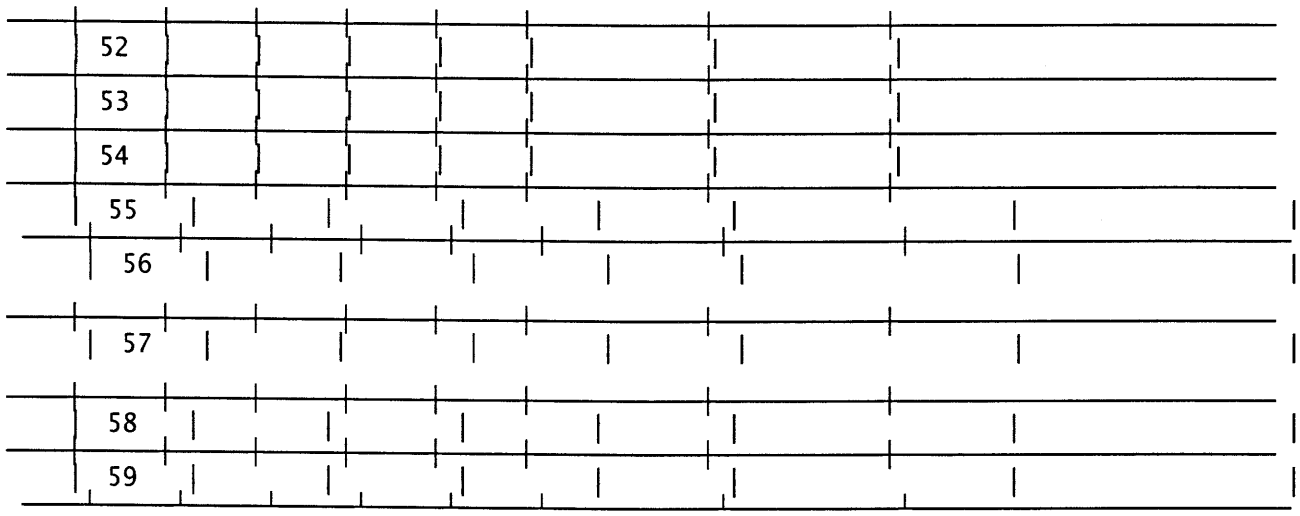
Page ___ of ___

Company _____ Observer _____

Location _____ Type facility _____

Test Number _____ Point of emissions _____

		Seconds				Steam plume (check if applicable)		Comments
Hr	Min	0	15	30	45	Attached	Detached	
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
	39							
	40							
	41							
	42							
	43							
	44							
	45							
	46							
	47							
	48							
	49							
	50							
	51							


52
53
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59

2.3 Observations. Opacity observations shall be made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. The observer shall not look continuously at the plume but instead shall observe the plume momentarily at 15-second intervals.

2.3.1 Attached Steam Plumes. When condensed water vapor is present within the plume as it emerges from the emission outlet, opacity observations shall be made beyond the point in the plume at which condensed water vapor is no longer visible. The observer shall record the approximate distance from the emission outlet to the point in the plume at which the observations are made.

2.3.2 Detached Steam Plume. When water vapor in the plume condenses and becomes visible at a distinct distance from the emission outlet, the opacity of emissions should be evaluated at the emission outlet prior to the condensation of water vapor and the formation of the steam plume.

2.4 Recording Observations. Opacity observations shall be recorded to the nearest 5 percent at 15-second intervals on an observational record sheet. (See Figure 9-2 for an example.) A minimum of 24 observations shall be recorded. Each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period.

2.5 Data Reduction. Opacity shall be determined as an average of 24 consecutive observations recorded at 15-second intervals. Divide the observations recorded on the record sheet into sets of 24 consecutive observations. A set is composed of any 24 consecutive observations. Sets need not be consecutive in time and in no case shall two sets overlap. For each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24. If an applicable standard specifies an averaging time requiring more than 24 observations, calculate the average for all observations made during the specified time period. Record the average opacity on a record sheet. (See Figure 9-1 for an example.)

3. QUALIFICATION AND TESTING

3.1 Certification Requirements. To receive certification as a qualified observer, a candidate must be tested and demonstrate the ability to assign opacity readings in 5 percent increments to 25 different black plumes and 25 different white plumes, with an error not to exceed 15 percent opacity on any one reading and average error not to exceed 7.5 percent opacity in each category. Candidates shall be tested according to the procedures described in Section 3.2. Smoke generators used pursuant to Section 3.2 shall be equipped with a smoke meter which meets the requirements of Section 3.3. The certification shall be valid for a period of 6 months, at which time the qualification procedure must be repeated by any observer in order to retain certification.

3.2 Certification Procedure. The certification test consists of showing the candidate a complete run of 50 plumes--25 black plumes and 25 white plumes-generated by a smoke generator. Plumes within each set of 25 black and 25 white runs shall be presented in random order. The candidate assigns an opacity value to each plume and records his observation on a suitable form. At the completion of each run of 50 readings, the score of the candidate is determined. If a candidate fails to

qualify, the complete run of 50 readings must be repeated in any retest. The smoke test may be administered as part of a smoke school or training program and may be preceded by training or familiarization runs of the smoke generator during which candidates are shown black and white plumes of known opacity.

3.3 Smoke Generator Specifications. Any smoke generator used for the purposes of Section 3.2 shall be equipped with a smoke meter installed to measure opacity across the diameter of the smoke generator stack. The smoke meter output shall display in-stack opacity based upon a pathlength equal to the stack exit diameter, on a full 0 to 100 percent chart recorder scale. The smoke meter optical design and performance shall meet the specifications shown in Table 91. The smoke meter shall be calibrated as prescribed in Section 3.3.1 prior to the conduct of each smoke reading test. At the completion of each test, the zero and span drift shall be checked and if the drift exceeds ±1 percent opacity, the condition shall be corrected prior to conducting any subsequent test runs. The smoke meter shall be demonstrated, at the time of installation, to meet the specifications listed in Table 9-1. This demonstration shall be repeated following any subsequent repair or replacement of the photocell or associated electronic circuitry including the chart recorder or output meter, or every 6 months, whichever occurs first.

TABLE 9-1 - SMOKE METER DESIGN AND PERFORMANCE SPECIFICATIONS

Parameter	Specification
a. Light Source	Incandescent lamp operated at nominal rated voltage
b. Spectral reponse of photocell	Photopic (daylight spectral response of the human eye - Citation 3)
c. Angle of view	15° maximum total angle
d. Angle of projection	15° maximum total angle
e. Calibration error	±3% opacity, maximum
f. Zero and span drift	±1% opacity, 30 minutes
g. Response time	5 seconds

3.3.1 Calibration. The smoke meter is calibrated after allowing a minimum of 30 minutes warmup by alternately producing simulated opacity of 0 percent and 100 percent. When stable response at 0 percent or 100 percent is noted, the smoke meter is adjusted to produce an output of 0 percent or 100 percent, as appropriate. This calibration shall be repeated until stable 0 percent and 100 percent opacity values may be produced by alternately switching the power to the light source on and off while the smoke generator is not producing smoke.

3.3.2 Smoke Meter Evaluation. The smoke meter design and performance are to be evaluated as follows:

3.3.2.1 Light Source. Verify from manufacturer's data and from voltage measurements made at the lamp, as installed, that the lamp is operated within ±5 percent of the nominal rated voltage.

3.3.2.2 Spectral Response of Photocell. Verify from manufacturer's data that the photocell has a photopic response; i.e., the spectral sensitivity of the cell shall closely approximate the standard spectral-luminosity in (b) of Table 91.

3.3.2.3 Angle of View. Check construction geometry to ensure that the total angle of view of the smoke plume, as seen by the photocell, does not exceed 15°. The total angle of view may be calculated from: $\Theta = 2 \tan^{-1} (d/2L)$, where Θ = total angle of view; d = the sum of the photocell diameter + the diameter of the limiting aperture; and L = the distance from the photocell to the limiting aperture. The limiting aperture is the point in the path between the photocell and the smoke plume where the angle of view is most restricted. In smoke generator smoke meters this is normally an orifice plate.

3.3.2.4 Angle of Projection. Check construction geometry to ensure that the total angle of projection of the lamp on the smoke plume does not exceed 15°. The total angle of projection may be calculated from: $\Theta = 2 \tan^{-1} (d/2L)$, where Θ = total angle of projection; d = the sum of the length of the lamp filament + the diameter of the limiting aperture; and L = the distance from the lamp to the limiting aperture.

3.3.2.5 Calibration Error. Using neutral-density filters of known opacity, check the error between the actual response and the theoretical linear response of the smoke meter. This check is accomplished by first calibrating the smoke meter according to Section 3.3.1 and then inserting a series of three neutral-density filters of nominal opacity of 20, 50, and 75 percent in the smoke meter pathlength. Filters calibrated within 2 percent shall be used. Care should be taken when inserting the filters to prevent stray light from affecting the meter. Make a total of five nonconsecutive readings for each filter. The maximum error on any one reading shall be 3 percent opacity.

3.3.2.6 Zero and Span Drift. Determine the zero and span drift by calibrating and operating the smoke generator in a normal manner over a 1-hour period. The drift is measured by checking the zero and span at the end of this period.

3.3.2.7 Response Time. Determine the response time by producing the series of five simulated 0 percent and 100 percent opacity values and observing the time required to reach stable response. Opacity values of 0 percent and 100 percent may be simulated by alternately switching the power to the light source off and on while the smoke generator is not operating.

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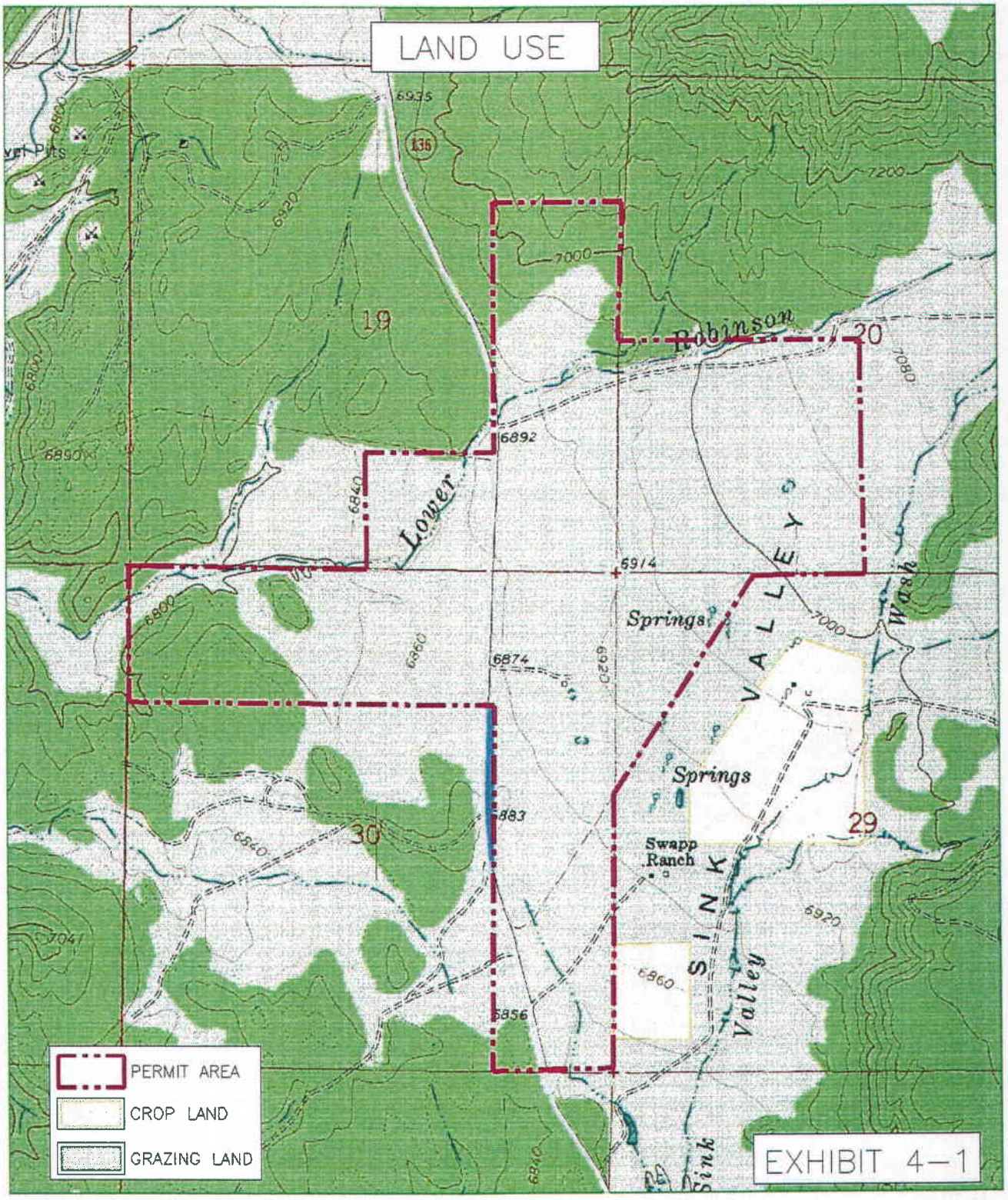

Acreage of crop land under production:
Sorensen: 90 acres (approximate)
Johnson: None currently
Dame: None currently
Pugh: None currently

0 0.5 1
1 mile

1,000 feet

The following colored pages describe how the deficiencies in Chapter 5 are addressed and where revisions are made in the MRP when needed to address a deficiency. These colored sheets are made as an addition to the redline/strikeout of Chapter 5 text which immediately follows. Similar to other sections, the Division's deficiency is provided in regular font followed by the ACD description of how the deficiency is addressed in italic font.

R645-301-514.100 and –514.120, Refer to Spoil and Waste Material, p. 115 of the TA: The Applicant must commit to regular inspections of lift thickness and compaction density during placement and compaction of fill materials. The Applicant must provide confirmation that compaction requirements meeting the minimum 85 % Proctor standard are being met as designated within the Taylor Geo-Tech slope stability analysis for spoil fill areas. •The inspection report must include a description of the test method that was used to determine that adequate compaction is being obtained as the fill is being placed. •The inspection report must include all other standard engineering test methods used to determine that a minimum long term static safety factor of 1.5 can and will be achieved. •The report must include any appearances of instability, structural weakness, and other hazardous conditions.

In the MRP, ACD made the commitment to comply with the detailed inspection standards described for excess spoil in R645-301-514.100 and -514.120. These standards were not specifically listed in the MRP, only a commitment to comply with the regulations (Page 5-5, Chapter 5, Volume 3). Therefore, ACD has revised the MRP to specifically list each regulation in R645-301-514.100 through 514.120 to make clear the commitment to meet these inspection standards. In addition, text has also been added to this section clarifying that compaction testing will be performed as part of the inspection process and will be included in the inspection reports.

R645-301-521.141, Refer to Maps Plans Cross-Sections of Mining Operations p. 131 of the TA: Restated from Task 2910, The Applicant must provide *"a detailed timetable for the completion of each major step in the reclamation plan"*. This requirement is relative to the initiation of final pit reclamation activities.

Based on the information provided on page 131 of the TA, ACD is assuming that this deficiency is specific to the request for a 2 year time frame between

completion of the last pit and the requirement to proceed with the alternative reclamation scenario. This 2 year time frame is requested as a worst case scenario should there be delays in the process of modifying the mine permit to include the federal coal reserves. The time frame for acquiring the federal lease is not of concern since ACD anticipates a coal lease sale within the first year of operation, therefore the ownership of the federal coal will be decided early in the project; making the switch to the alternative reclamation plan simple, should ACD not be the successful bidder. This statement is based on the fact that the Draft Environmental Impact Statement is complete except for the air modeling which is currently in process and is expected to be finalized within two months.

The concern is the major modification to the mine permit through the Division. ACD is seeking approval for a temporary cessation of operations in the case that ACD successfully acquires the federal lease in advance of completing the last pit but does not have authority to proceed with mining these reserves until the permit modification is complete. The Division does have the authority (R645-301-515.300) to grant this temporary cessation in the case that there are delays in the permitting process. Text is added to Section 521.141 to clarify that ACD must at least acquire the federal coal lease before mining is complete in the permit area to be granted this temporary cessation.

ACD requests that UDOGM reconsider this request based on the clarification added to Section 521.141 and the Division's authority to grant a temporary cessation of operations.

R645-301-522, Refer to Coal Recovery Findings, p. 89 of the TA: The Applicant must justify why they do not intend to recover coal reserves between the highwall and the edge of the proposed permit boundary (by augering or other methods) in order to maximize coal recovery and effectively utilize the resource.

As shown on Drawing 5-9 and referenced in the TA, there is 1,207,000 tons of coal located beneath the mine highwalls and edge of the permit boundary. 678,000 tons of this coal located along the west and southern permit boundary will be recovered by surface mining methods as part of mining the federal coal reserves. Once approval is granted to proceed into the federal coal, this coal will be fully recovered as part of the mining progression into

the adjacent reserves. Text is added to Section 522 to clarify this coal recovery.

The remaining 529,000 tons of coal along the eastern permit boundary, has significant recovery limitations. Utilizing the auger method for recovering the coal along this eastern boundary is infeasible for the following reasons:

- ***Mining Sequence:*** *This method of mining coal is typically utilized in the final pit of a surface mining operation to recover coal beneath the last highwall. This method is used on the final pit because it is has a limited pace of production (approximately 4,000 tons per day) combined with mobilization time which requires more time than is usually available at most surface coal mines without impacting the surface mining sequence. In most cases, backfilling of pits is immediately necessary as part of the surface mining process once the coal is removed, which leaves insufficient time to mobilize equipment, conduct auger mining and remove equipment without significantly inhibiting surface mining progress. Drawings 5-17 and 5-18 which show the major backfilling steps, details that the backfill from pits 1 through 15 follows closely behind the active pit. A similar process continues through approximately Pit 22, at which time there becomes more backfill capacity relative to spoil. Therefore, at the Coal Hollow Mine alternative backfill or spoil disposal areas are not available to allow overburden removal to continue without proceeding with backfilling previous pits, except in pits 22 through 30.*
- ***Limited recoverable Resource vs. Capital Investment /Mobilization:*** *Recovery of coal using auger mining methods is generally only 40% to 60%. Considering the geologic conditions of the Coal Hollow Mine and the structures located adjacent to the eastern permit boundary, recovery would most likely be at the lower end near 40%. The east endwall of Pits 22 through 30, for which augering could possibly be sequenced into the mining process, contains 280,000 tons of in-place coal. Using the 40% recovery rate, this leaves a recoverable resource of approximately 112,000 coal tons. The capital investment and mobilization costs for this specialized equipment compared to the expected sale price of the coal, with this limited of additional resource recovery, can not be justified. There is also little to no opportunity to utilize this method on the federal coal reserve until the final pit.*

- ***Sink Valley Fault:*** *Along the eastern highwall of pits 22 through 30, the Sink Valley Fault is known to exist. This fault is estimated to have a vertical offset in the 10' to 30' range. The auger can not cross this offset of the coal seam and therefore, coal recovery would again be limited to only the reserves located on the west side of the fault. This is expected to add further risk to the feasibility of attempting recovery of the coal using augering methods.*

In conclusion, the surface mining sequence can not implement coal augering into the process until pit 22. At that time, the recoverable resource is limited along the eastern permit boundary, from Pit 22 through pit 30, by augering recovery rates and the Sink Valley Fault. The expected limited resource recovery combined with the associated risks is not economically justifiable.

R645-301-535.100, Refer to Spoil and Waste Material, p. 116 of the TA: This rule requires that the fill be designed. The Applicant must commit to meeting all of the recommended earthwork specifications contained in Appendix F for spoil fills and impoundment embankments. This can be done by reference to the Appendix in Chapter 5, Section 528.310.• Rather than stating that "excess spoil will be…concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction, " the Applicant must specify how the Professional Engineer will confirm that adequate compaction requirements (Proctor standard) will be met (i.e., by nuclear density examination, or other means) as part of the required periodic inspections mandated under R645-301-514.100, 514.311, and R645-301-514.120.

The Recommendations that apply to the excess spoil in Appendix F from Appendix 5-1 are added, with some clarification, to Chapter 5, Section 528.310. This text also includes the requested clarification about the compaction testing method.

R645-301-542.100 and R645-301-121.200, Refer to Backfilling and Grading Findings, p. 142 of the TA: A timeframe for completing rough backfilling and grading is provided on p. 5-65 which states the following: "In both scenarios (Preferred and Alternate), rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet." Text on Page 5-66 states that "mined areas will be backfilled and graded within 180 days following coal removal, or 1500 feet of the active coal removal face." It appears that the information in the two

aforementioned paragraphs conflicts. However, they may not conflict if the Applicant means to say that the backfilling and grading will be completed in 60 days of coal removal and ready for topsoiling and seeding within 180 days following coal removal. If the Division's interpretation of these two statements is accurate, please make the necessary corrections to the statement on p. 5-66.

The statement on page 5-66 which states "mined areas will be backfilled and graded within 180 days following coal removal" should have stated 60 days following coal removal or 1500 feet, reflecting the requirement in R645-301-553. This statement is corrected in Chapter 5, Section 553.

R645-301-542.100, Refer to Backfilling and Grading Findings, p. 143 of the TA: The Applicant will provide a timetable detailing when the rough backfilling and grading of Pits 2 and 3 will be initiated. This reclamation step will be initiated before coal recovery has been completed in Pit 6 (approximately 1500 feet from northern edge of Pit 2).

The Technical Analysis details for this deficiency refers specifically to the last paragraph in Chapter 5, Section 553. ACD agrees with the Division that this paragraph is confusing and therefore has been replaced with clear language describing the backfilling timeline for the initial mining area. The standards set in R645-301-553 will be met during this initial mining phase. As described in this new text, Pit 2 and part of Pit 3 spoil will be placed in the excess spoil area and Pit 1. The remaining spoil from Pit 3 and Pit 4 will begin the sequential pit backfilling process by backfilling Pit 2. By the time coal recovery is complete in Pit 6, rough backfilling and grading will be complete in Pits 2 and 3.

R645-301-542.600, Refer to Road Systems and Other Transportation Facilities Findings, p. 148 of the TA: Maps and narrative in the application must describe reconstruction of County Road 136 to its original alignment as requested by the County. The application must provide a drawing and specifications for Option A described in the Amended Grant of Easement and Assignment Amendment for County Road K3900 found in Appendix 1-7. •Drawing 5-22C illustrates the reclaimed road across Pugh property to the boundary with the USFS. This approximates the alignment of K3993 which was temporarily closed during mining. The Applicant must document this re-alignment and re-construction of K3993 with the County.

Maps and narratives are provided in the MRP describing reconstruction of County Road 136 to the approximate original alignment. These details are provided in Drawings 5-22E, 5-22F and 5-22H. Text providing narratives related to the reconstruction of County Road 136 (K3900) is added in Sections 521.170, 521.123, 521.116.1, 526.116.2, and 527.100 in Chapter 5.

Drawing 5-22H is added to the MRP to provide the requested detail for Option A as described in the Amended Grant of Easement and Assignment for County Road K3900.

Drawing 5-22C is the K3993 public road. The road as shown on 5-22C is the same alignment as the existing road. An agreement has been reached with Kane County and is provided as Appendix 1-8. This agreement requires that the road be reestablished in conditions similar to the pre-mining conditions. The specifications shown on 5-22C accomplishes this reestablishment as per the agreement with the County.

R645-301-527.250 and R645-301-534.200, R645-301-512.250, Refer to Road Systems and Other Transportation Facilities Findings, p. 148 of the TA: Design and Reconstruction of Roads, The Applicant must provide a geotechnical analysis of the spoil materials associated with the Tropic Shale and alluvium for use as sub-grade material as part of the re-construction design of all post mining roads within the coal recovery area. A Utah professionally certified civil engineer specializing in highway construction must perform the analysis for the two roads to be reconstructed on fill:

1) The Class "B" Kane County road #136 which must be capable of handling the heaviest vehicle weights.
2) The Swapp Ranch access road (shown in both reclamation scenario drawings, Dwg 5-35 and Dwg. 5-37 and having the same specifications as the Water Well Road (Dwg. 5-22 D).

The application must include the results of the geotechnical analysis and any resulting design standards for road construction required to make the sub-grade materials stable. If the Applicant cannot provide adequate geotechnical confirmation or achieve the design standards to ensure that all post-mining roads to be reconstructed on spoil will be stable, then the Applicant must consider other options.

ACD has requested further review by the civil engineer who assisted with the initial design and specifications of the post-mining roads. Appendix 5-1

contains a geotechnical analysis which includes the properties for the materials that will be used as backfill. Will Spitzenberg of Boss Engineering and Surveying reviewed the properties of the materials and has determined that these materials are sufficient as backfill for the proposed post mining roads. Will is a licensed professional engineer in the State of Utah with significant experience in road construction. Will has made some additional recommendations specifically for County Road 136 (K3900) that ACD has added to the road specifications. These specifications are included in his certified letter which is provided as Appendix 5-6 and in the revised Drawings 5-22E,5-22F, 5-22G and the added Drawings 5-22H.

R645-301-553, Refer to Backfilling and Grading Findings, p. 143 of the TA: The current plan shows recovery of coal from Pits 2 through 8 covering a north / south distance of 2200 feet, as well as an additional 750 feet on an east / west direction from Pits 9 – 12 (all coal recovery during Year 1). This plan is double the length allowed in R645-301-553. This plan is deficient. In accordance with the requirements of R645-301-553, Backfilling and Grading, the Applicant must revise the current plan for backfilling, grading, topsoiling and revegetating stated on Page 5-66 such that it meets the requirements of R645-301-553. The Division requires that Pit 4 rough backfilling and grading be completed before overburden removal is initiated in Pit 9. Pits 1, 5, 6 and 7 must be completed (rough backfilling and grading) before mining in Pit 13 is initiated.

This deficiency does not correctly describe the mine plan as provided in the MRP. Tables are provided in Section 553 that show the backfill capacity of the pits in relation to the overburden (spoil) for each major step in the mining process. These tables show that all back fill capacity that is available is utilized when mining Pits 1 through 15. In addition, Drawings 5-17 and 5-18 show the major steps for grading and backfilling Pits 1 through 15. The Division makes the following statement on page 139 of the TA: "Overburden from pits 1-8 will be removed and stored, then used for the reclamation of those pits". This statement is not accurate based on the plan provided. The 2.7 million LCY excess spoil pile is only utilized to create a large enough open pit area to accommodate both mining and backfilling which allows for the contemporaneous reclamation process to begin. Once this step is accomplished by placing the overburden (spoil) from Pit 1, Pit 2 (boxcut) and part of Pit 3 into the excess spoil pile, the overburden (spoil) from the subsequent pits is immediately placed into the previously mined pits as backfill as it is removed. There is <u>not</u> a step in this

process where the overburden is "stored" and then placed later as backfill. The spoil is always immediately placed into the previous pits once the necessary pit area is open to accommodate the backfilling process. Drawing 5-17 shows how closely the backfill follows behind the active coal face. This drawing shows the stage at which Pit 8 is complete. At this point, Pits 1-6 are backfilled and graded as shown by the contour surface in the drawing. In the next major step, Drawing 5-18 shows the backfill status once Pit 15 is complete. At this point in the process, there is almost insufficient backfill available to contain all the spoil. Pits 9 through 14 are backfilled at this stage leaving just enough working space for the removal of coal in Pit 15.

In summary, the backfilling process in Pits 1 through 15 will not only meet the standards required by R645-301-553 but will at times follow the active coal face by as little as a hundred feet. The pits are being continuously backfilled as part of the mining process and the major steps are shown in 5-17 and 5-18 along with a table in Section 553 which shows the backfill capacity verses spoil.

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CHAPTER 5

R645-301-500. ENGINEERING

510. INTRODUCTION.

The engineering section of the Mining and Reclamation Plan (MRP) is divided into the operation plan, reclamation plan, design criteria, and performance standards. All of the activities associated with the coal mining and reclamation operations are designed, located, constructed, maintained, and reclaimed in accordance with the operation and reclamation plan.

511. GENERAL REQUIREMENTS

511.100 - 511.300. Contents

The operation and reclamation permit application includes descriptions of the coal mining and reclamation operations with attendant Drawings, plans, and cross sections. and its potential impacts to the environment as well as methods and calculations utilized to achieve compliance with design criteria.

All this information can be viewed in this section, Drawings 5-1 through 5-39 and Appendices 5-1 through 5-5.

512. CERTIFICATIONS

512.100. Cross Sections and Drawings.

All cross sections and Drawings required under applicable portions of sections 512.100 through 512.150 have been prepared by, or under the direction of, and certified by: a qualified, registered, professional engineer; a professional geologist; or a qualified, registered, professional land surveyor, with assistance from experts in related fields such as hydrology, geology and landscape architecture.

Compliance with this section has been completed and certifications are available on all cross sections and Drawings.

512.200. Plans and Engineering Designs.

All plans for excess spoil, durable rock fills, coal mine waste, impoundments, primary roads and variances from approximate original contour will be certified by a qualified registered professional engineer.

Plans for excess spoil, sediment impoundments, primary roads, and a variance from approximate original contour have been certified by a qualified registered professional

engineer. These certifications can be viewed on Drawings 5-22 through 5-37. No coal mine waste or durable rock fills are planned.

512.210 Excess Spoil Disposal Areas

A professional engineer experienced in the design and construction of earth and rock fills will certify the design of Excess Spoil Disposal Areas according to 535.100.

A professional engineer with experience in design and construction of earth and rock fills has certified the design of the Excess Spoil Disposal according to 535.100. An expert in the field of slope stability and geotechnical analysis has provided a thorough review of the design. This analysis can be viewed in Appendix 5-1.

512.220 - 230 Durable Rock Fills and Coal Mine Waste Structures

The MRP does not contemplate the construction of any permanent Durable Rock Fills or Coal Mine Waste structures. If such structures become part of the plan, a professional engineer experienced in the design of earth and rock fills and or disposal facilities will certify the design according to 535.100 - 536.

512.240. Impoundments.

A professional engineer experienced in the design and construction of impoundments will use current, prudent, engineering practices and will certify the design of the impoundment according to 743.

A professional engineer experienced in the design and construction of impoundments with assistance from a geotechnical expert has used current, prudent, engineering practices to design the proposed impoundments. The plans have been certified and a detailed geotechnical analysis has been provided. The certifications and drawings can be viewed in Drawings 5-25 through 5-31 and Appendices 5-1 and 5-2.

512.250. Primary Roads.

A professional engineer will certify the design and construction or reconstruction of primary roads as meeting the requirements of 742.420.

Designs of primary roads have been certified as meeting the requirements of 742.420.

512.260. Variance From Approximate Original Contour.

In areas of the MRP where a variance from the approximate original contour is required, a professional engineer will certify the design for the proposed variance from the approximate original contour, as described under 270, in conformance with professional standards established to assure the stability, drainage and configuration necessary for the intended use of the site.

A variance from the approximate original contour has been certified in conformance with professional standards to assure the stability, drainage and configuration necessary for the intended use of the site.

513. COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS.

513.100. Coal Processing Waste Dams and Embankments

The MRP does not contemplate the construction of any coal processing waste dams and embankments.

513.200. Impoundments and Sedimentation Ponds

No impoundments or sedimentation ponds meeting the size or other qualifying criteria of MSHA, 30 CFR 77.216(a) exist or are planned within the proposed Mine Permit Area. Should impoundments and sedimentation ponds meeting the size or other qualifying criteria of MSHA, 30 CFR 77.216(a) become necessary, compliance with the requirements of MSHA, 30 CFR 77.216 will be met.

513.300. Disposal of Underground Development Waste, Coal Processing Waste and Excess Spoil in underground mine workings.

The MRP does not contemplate any underground development waste, coal processing waste, or excess spoil being disposed of in underground mine workings.

513.400. Refuse Piles

The MRP does not contemplate the construction of any refuse piles.

513.500. Capping, Sealing and Backfilling Openings to the Surface from the Underground.

Each shaft, drift, adit, tunnel, exploratory hole, entryway or other opening to the surface from the underground will be capped, sealed, backfilled or otherwise properly managed consistent with MSHA, 30 CFR 75.1711

All wells will be managed to comply with R645-301-748 and R645-301-765. Water monitoring wells will be managed on a temporary basis according to R645-301-738.

Wells constructed for monitoring groundwater conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of groundwater and surface-water resources and to protect the hydrologic balance. A diagram depicting typical monitoring well construction methods is shown in Figure 7-11. Monitoring wells will include a protective hydraulic seal immediately above the screened interval, an annular seal plugging the borehole above the hydraulic seal to near the ground surface,

and a concrete surface seal extending from the top of the hydraulic seal to the ground surface which is sloped away from the well casing to prevent the entrance of surface flows into the borehole area. Well casings will protrude above the ground surface a sufficient height so as to minimize the potential for the entrance of surface water or other material into the well. A steel surface protector with a locking cover will be installed at monitoring wells to prevent access by unauthorized personnel. Where there is potential for damage to monitoring wells, the wells will be protected through the use of barricades, fences, or other protective devices. These protective devices will be periodically inspected and maintained in good operating conditions. Monitoring wells will be locked in a closed position between uses.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

513.600. Discharges into an underground mine

The MRP does not contemplate discharges into an underground mine.

513.700. Surface Mining Closer than 500 Feet to an Active Underground Mine

The MRP does not contemplate mining within 500 feet of an active underground mine.

513.800. Coal Mine Waste Fires

The MRP does not contemplate the generation of any coal mine waste.

514. INSPECTIONS

All engineering inspections, will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

514.100 ~~140~~ Excess Spoil.

The~~A~~ professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.

The construction method for the excess soil specified in 528.310 is expected to meet the 85% compaction standard. As verification, the fill compaction will be periodically field

tested using method(s) as directed by the qualified registered professional engineer. A description of the test method and the test results will be provided to the Division as part of the quarterly inspection reports.

514.110. Such inspections will be made at least quarterly throughout construction and during critical construction periods. Critical construction periods will include at minimum:

514.111. Foundation preparation, including the removal of all organic material and topsoil;

514.112. Placement of underdrains and protective filter systems.

No underdrains or protective filter systems are planned as part of the excess spoil.

514.113. Installation of final surface drain systems; and

514.114. The final graded and revegetated fill.

514.120. The qualified registered professional engineer will provide a certified report to the Division promptly after each inspection that the fill has been constructed and maintained as designed and in accordance with the approved plan and the R645-301 and R645-302 Rules. The report will include appearances of instability, structural weakness, and other hazardous conditions.

514.200 - 250. Refuse Piles.

The MRP does not contemplate the construction of any refuse piles.

514.300. Impoundments.

514.310 - 313. Certified Inspection.

A professional engineer or specialist experienced in the construction of impoundments will inspect impoundments. Inspections will be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond. The qualified registered professional engineer will promptly, after each inspection, provide to the Division, a certified report that the impoundment has been constructed and maintained as designed and in accordance with the approved plan and the R645 Rules. The report will include discussion of any appearances of instability, structural weakness or other hazardous conditions, depth and elevation of any impounded waters, existing storage capacity, any existing or required monitoring procedures and instrumentation and any other aspects of the structure affecting stability. A copy of the report will be retained at or near the mine site.

514.320. Inspection Standard and Frequency

The MRP does not contemplate construction of any impoundments meeting the NRCS Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR Sec. 77.216. If such impoundments become necessary, they will be examined in accordance with 30 CFR Sec. 77.216-3. Impoundments not meeting the NRCS Class B or C Criteria for dams in TR-60, or subject to 30 CFR Sec. 77.216, will be examined at least quarterly. A qualified person designated by Alton Coal Development LLC will examine impoundments for the appearance of structural weakness and other hazardous conditions.

515. REPORTING AND EMERGENCY PROCEDURES

515.100. Slides

Any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, Alton Coal Development LLC will notify the Division by the fastest available means and comply with any remedial measures required by the Division.

515.200. Impoundment Hazards.

If any examination or inspection of an impoundment discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately.

515.300. Temporary Cessation

515.312.

During a temporary cessation, surface facilities in areas in which there are no current operations, but in which operations are to be resumed under an approved permit will be effectively secured.

515.320.

Before temporary cessation of coal mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, a notice of intention to cease or abandon operations will be submitted to the division. This notice will include:

- A statement of the exact number of acres which have been affected in the permit area prior to such temporary cessation,
- The extent and kind of reclamation of those areas which has been accomplished, and

- Identification of the backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during the temporary cessation.

516. PREVENTION OF SLIDES

The moderate topography in the area of the planned Coal Hollow Mine will minimize the potential for unplanned slides. A natural barrier will, however, be left undisturbed except as necessary for roads, sedimentation control, temporary topsoil and spoil storage and similar features, beginning at the elevation of the coal seam and extending from the outslope for a distance of at least 50 ft. The barrier will be retained in place to prevent slides and erosion.

520. OPERATION PLAN.

521. GENERAL.

The proposed Coal Hollow Mine is located approximately 2.5 miles south of Alton, Utah. In order to maximize the use and conservation of the coal resource, coal will be recovered using large hydraulic excavators or front end loaders and off-road trucks. Mined coal will be hauled to a central coal area for crushing and placement into a stockpile. Coal from the stockpile will be transferred into a bin and loaded into over the road trucks for transport.

The plan, with Drawings, cross sections, narrative, descriptions, and calculations indicates how the relevant requirements will be met. The lands subject to coal mining and reclamation operations over the estimated life of the operations are identified and briefly described. All appropriate information is located in the subsequent sections and Drawings 5-1 through 5-39 and Appendices 5-1 through 5-5. Topsoil piles and removal sequencing is shown on Drawing 2-2.

521.100. Cross Sections and Drawings.

The application includes cross sections, Drawings and plans showing all the relevant information required by the Division. Appropriate information is provided in Drawings and cross sections 5-1 through 5-39.

521.110. Previously Mined Areas.

Historically, there has been some underground mining of coal within the Alton Amphitheater. The following underground mines are known to have historically existed within the Amphitheater:

- Seaman Mine
- Smirl Mine
- Alton Mine
- Johnson Mine

- Silver Mine

There are not any known mines that existed or currently exist within the permit area or the adjacent area as defined in R645-100-200. There is also not any active coal mining operations in the area.

521.120. Existing Surface and Subsurface Facilities and Features.

521.121. Buildings

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings is shown on Drawings 1-5 and 1-6.

521.122. Surface and Subsurface Man-Made Features

The only known surface and subsurface manmade features that exist within the permit area are:

- County Road 136 (location shown on Drawing 5-3)
- Water pipeline to Pond 20-1 (location shown on Drawing 7-7)

521.123. Public Roads

OneOne Class B public road, Kane County Road 136 (K3900) is located in or within 100 feet of the proposed permit area and is shown on Drawing 5-3. This road will be temporarily relocated outside the permit area until mining is complete and then reconstructed. In addition, Kane County has recently made a claim on the two-track road located adjacent to Lower Robinson Creek which is also located within the permit boundary. This road has mostly been closed to the public since it crosses private land and ACD has worked with Kane County to develop an access agreement which includes access through the permit area by mine personnel escort only. This agreement is included as Appendix 1-8 in Chapter 1. The County has named this Class D public road K3993.

The details for reestablishing road K3900 is shown on Drawings 5-22E, 5-22F and 5-22H. The details related to reestablishing K3993 following mining is shown on Drawing 5-22C.

521.124. Existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities.

There is one impoundment currently located within the permit area which is Pond 20-1 shown on Drawing 7-7. The area of this impoundment is approximately 3,400 square feet.

There no other areas of existing spoils, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the permit area.

521.125. Ponds and Other Impoundments

The MRP does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments. The planned location of each sedimentation pond is shown on Drawing 5-3.

521.130. Landowners and Right of Entry and Public Interest Drawings.

All boundaries of lands and the names of present owners of record of both surface and subsurface within the Mine Permit Area are shown on Drawing 1-3 (Surface) and Drawing 1-4 (Subsurface).

521.132. Permit Boundary

The boundaries of land within the proposed permit area are shown on all applicable Drawings.

521.133. Public Roads

No mining or reclamation operations are planned within 100 ft. of a public road. However mine vehicles may cross the right-of-way of Kane County Road #136 for a short period early in the operation's life. Appropriate measures, including signage and mine operating practices and training will be implemented to protect the public.

521.133.2 Relocating a Public Road:

The design of any relocated road will be approved by Kane County authorities, or such other authorities as have jurisdiction. Appropriate measures will be taken to prevent entrance into the mining area via the pre-existing road, and appropriate signage and barriers will be installed to protect the public.

521.140. Mine Drawings and Permit Area Drawings.

521.141 The boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations, with a description of size, sequence and timing of the mining, the coal mining and reclamation operations to be conducted, the lands to be affected throughout the operation, and changes in facilities or features to be caused by the proposed operations;

These items are depicted on Drawings 5-1 through 5-38.

Two options are provided for final reclamation of the permit area. The Preferred option is shown on Drawings 5-35 and 5-36. The anticipated time schedule for this option is shown on Drawing 5-38. This option includes mining operations transitioning into the adjacent federal coal reserves. In the case that these reserves are not acquired by ACD, an alternative plan is provided in Drawing 5-37 and 5-37A which requires rehandling much of the fill above original contour to fill in the final pits.

If a circumstance occurs where mining of the permit area is complete and ACD has acquired the federal lease but permit approval~~approvals~~ has~~ve~~ not yet been acquired to continue mining in the federal coal reserves; within two years of ceasing operations ACD will then proceed to reclaiming the final pits as specified in the alternative plan. Should the alternative reclamation scenario be implemented prematurely, reclamation along the western side and south end of the permit area will either be excavated to recover coal or these coal reserves beneath and adjacent to the reclamation will be unrecoverable. Also, an additional excess spoil structure will have be constructed for the boxcut for the federal reserves. A detailed description of the two reclamation scenarios and how each scenario would apply is provided in Section 528.200 Overburden and 553 Backfilling and Grading of this Chapter.

If ACD does not acquire the federal coal lease by the time that the final pit is complete, ACD will then immediately transition the reclamation plan to the alternative scenario.

521.143 The proposed disposal sites for placing excess spoil generated at surface areas affected by surface operations and facilities for the purposes COAL MINING and RECLAMATION ACTIVITIES according to:

- *R645-301-211: The applicant will present a description of the premining soil resources as specified under R645-301-221. Topsoil and subsoil to be saved under R645-301-232 will be separately removed and segregated from other material.*

  The soil resources for the proposed excess spoil disposal area are described in Appendix 2-1. A plan has been developed for removal of topsoil and suitable subsoil based on the soil descriptions in this appendix. The handling plan can be viewed on Drawing 2-2. Topsoil and acceptable subsoil will be separately removed and segregated from other material prior to placement of any spoil.

- *R645-301-212: After removal, topsoil will be immediately redistributed in accordance with R645-301-242, stockpiled pending redistribution under R645-301-234, or if demonstrated that an alternative procedure will provide equal or more protection for the topsoil, the Division may, on a case-by case basis, approve an alternative;*

  Excess spoil will have topsoil and subsoil redistributed in an approximately uniform, stable thickness with the approved post mining land use, contours and surface water drainage systems. Material handling practices will prevent excess

compaction of these materials. Handling practices will also protect the materials from wind and water erosion before and after seeding and planting.

- *R645-301-412.300: Criteria for Alternative Postmining Land Uses.*

  The MRP does not contemplate alternative postmining land uses.

- *R645-301-512.210: Excess Spoil. The professional engineer experienced in the design of earth and rock fills will certify the design according to R645-301-535.100.*

  A professional engineer experienced in the design of earth and rock fills with assistance from a geotechnical expert has certified the design according to R645-301-535.100. These certifications can be viewed on Drawings 5-35, 5-36 and 5-17 through 5-19.

- *R645-301-512.220: Durable Rock Fills*

  No durable rock fills are planned.

- *R645-301-514.100: Excess Spoil. The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.*

  A professional engineer or specialist that is experienced in the construction of earth and rock fills will inspect the fill during construction and regular inspections will also be conducted during placement and compaction of fill materials.

- *R645-301-528.310: Excess spoil will be placed in designated disposal areas within the permit area, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.*

  Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet. The material will be transported from the overburden removal area to the fill by end dump haul trucks and a dozer(s) will spread the spoil to this lift thickness. The fill will meet at minimum 85% compaction as related to the standard Procter. Final slopes will be regraded

to a maximum slope of 3h:1v. The top of the fill will be sloped to approximately 2% to prevent pooling of water and to reestablish drainage similar to original flow patterns. The excess spoil placed on the non-mined areas is approximately 32 acres and varies in height from 35 to 110 feet. The area of excess fill over mined out areas (variance from approximate original contour) is an extension of the fill placed on the non-mined area and is approximately 55 acres. Combined acreage of the excess fill placed on mined and non-mined areas is 87 acres and varies in height from 60 to 100 feet above original contour. Total excess fill is 8.6 million yards. Design of this fill can be viewed in Drawings 5-35 through 5-36 and the geotechnical study can be viewed in Appendix 5-1.

- *R645-301-535.100 through R645-301-130: Disposal of Excess Spoil*

  A geotechnical analysis of the excess spoil structure design has been completed by an expert in this field. The long term static safety factor for this structure design is estimated at 1.6 to 1.7. Lifts will be placed in thicknesses not to exceed 4 feet. The lifts will meet 85% compaction by the standard Procter. The fill will be graded to allow for drainage similar to original patterns and to prevent excessive infiltration of water. Fill will be covered with subsoil and topsoil as specified in Chapter 2 to provide conditions suitable for revegetation of the area. The geotechnical study can be viewed in Appendix 5-1.

- *R645-301-535.300 through R645-301-535.500: Disposal of Excess - Spoil Durable Rock Fills.*

  No durable rock fills are planned.

- *R645-301-536.300: Disposal of Coal Mine Waste in Excess Spoil*

  No coal mine waste is planned in the excess spoil area.

- *R645-301-542.720: Excess spoil will be placed in designated disposal areas within the permit area, in a controlled manner to ensure that the final fill is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use. Excess spoil that is combustible will be adequately covered with noncombustible material to prevent sustained combustion. The reclamation of excess spoil will comply with the design criteria under R645-301-553.240.*

  The excess spoil as shown in Drawing 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. No combustible excess spoil will be placed in the proposed structure. The reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v.

- *R645-301-553.240: The final fill configuration of the fill (excess spoil) will be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches will not be steeper than 2h:1v (50 percent).*

  The excess spoil as shown in Drawings 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. The reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v. The long term static safety factor for these slopes is estimated to be 1.6 to 1.7.

- *R645-301-745.100: General Requirements.*

  745.110: Excess Spoil will be placed in designated disposal areas within the permit area, in a controlled manner to:

  745.111: Minimize the adverse effects of leaching and surface water runoff from the fill on surface and underground water;

  Reclamation of the excess spoil will include topsoil and a subsoil layer. Infiltration through the reclamation is expected to be minimal based on the high clay content of these soils. In addition, laboratory data for the overburden shows that there is minimal potential for leaching of pollutants should infiltration rates become higher than expected.

  The foundation of the excess spoil area also has high clay content with minimal potential for infiltration. This will provide an additional, natural barrier to protect ground water present beneath the proposed structure.

  745.112: Ensure permanent impoundments are not located on the completed fill. Small depressions may be allowed by the Division if they are needed to retain moisture or minimize erosion, create and enhance wildlife habitat or assist revegetation, and if they are not incompatible with the stability of the fill; and

  Permanent impoundments are not planned on the excess spoil area. Small depressions may be constructed as allowed by the Division to retain moisture, minimize erosion, create and enhance wildlife habitat or assist revegetation.

  745.113: Adequately cover or treat the excess spoil that is acid- and toxic forming with nonacid nontoxic material to control the impact on the surface and ground water in accordance with R645-301-731.300 and to minimize adverse effects on plant growth and approved postmining land use.

  Laboratory data representative of the overburden planned for disposal in the excess spoil area does not show acid- and toxic forming characteristics.

745.120: Drainage Control. If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design will include diversions and underdrains as necessary to control erosion, prevent water infiltration into the fill and ensure stability.

A spring and seep survey available in Chapter 7 has identified no springs or wet weather seeps in the proposed excess spoil area. The final surface will be regraded to a contour that will route water from snowmelt and rainfall around the excess spoil as shown on the final contours Drawing 5-35. There are no manmade water courses present in the excess spoil area. No underdrains are planned for the excess spoil structure.

745.121: Diversions will comply with the requirements of R645-301-742.300

No diversions are planned in the excess spoil area.

745.122 : Underdrains

No underdrains are planned in the excess spoil area.

745.300: Durable Rock Fills

No durable rock fills are planned in the excess spoil area.

745.400: Preexisting Benches

Excess spoil will not be disposed of through placement on preexisting benches.

521.150. Land Surface Configuration Drawings.

Surface contours representing the existing land surface configuration of the proposed permit area are shown on Drawing 5-1 and the post mining land configuration is shown on 5-35. Cross sections with both these landforms are shown on Drawing 5-36.

521.160. Maps and Cross sections of the Proposed Features for the Proposed Permit Area. These maps and cross sections will clearly show:

521.161 Buildings, utility corridors, and facilities to be used:

These items are shown on Drawings 5-3 through 5-8C.

521.162 The area of land to be affected within the proposed permit area, according to the sequence of mining and reclamation:

A yearly and overall disturbance sequence for the permit area is provided on Drawing 5-2.

521.163 Each area of land for which a performance bond or other equivalent guarantee will be posted under R645-301-512;

The area of land that will have a performance bond posted is shown on Drawing 5-3.

521.164 Each coal storage, cleaning and loading area. The map will be prepared and certified according to R645-301-512;

These facilities can be viewed on Drawings 5-3 through 5-5.

521.165 Each topsoil, spoil, coal preparation waste, underground development waste, and noncoal waste storage area. The maps will be prepared and certified according to R645-301-512;

Topsoil storage areas and handling can be viewed on Drawing 2-2. Spoil placement and the excess spoil structure can be viewed on Drawings 5-3, 5-17, 5-18, 5-19, 5-35 and 5-36.

521.166 Each source of waste and each waste disposal area relating to coal processing or pollution control;

Only sizing of the coal is proposed. This process will not produce any waste.

521.167 Each explosive storage and handling facility;

Need for these facilities are not anticipated at this time. Should these facilities become necessary, appropriate drawings will be provided to the Division.

521.168 For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, each air pollution collection and control facility; and

There are no specific air pollution collection or control facilities proposed.

521.169 Each proposed coal processing waste bank, dam or embankment. The map will be prepared and certified according to R645-301-512.

The MRP does not contemplate processing of coal that will produce waste.

521.170. Transportation Facilities Drawings.

Transportation facilities for the Coal Hollow Mine include seven primary roads, a conveyor system, and miscellaneous ancillary/temporary roads. Numerous drawings detail the designs and specifications for each one of the proposed facilities. The following is a description of each facility and a reference for the associated drawings:

- Roads: Two primary mine haul roads are planned within the permit area. The first road extends from the coal unloading area to the first series of pits along the west side of the property. This road will be utilized for access to pits 1 through 15 (pits shown on Drawing 5-10). This road will be approximately 2,600 feet in length and will be utilized mainly during the first two years of mining. There will be three culverts installed along this road all sized for a 100 year, 24 hour storm event. The first culvert will be across a tributary of Lower Robinson Creek and will be a 36 inch corrugated steel pipe. The second culvert is the main crossing over Lower Robinson Creek and is a 96 inch corrugated steel pipe. Both of these culverts have been sized based on analysis of the Lower Robinson Creek watershed. This analysis can be viewed in Appendix A5-3. The third culvert is crossing over a diversion ditch that will route water mainly from disturbed areas along the south side of Lower Robinson Creek to a sediment impoundment. This culvert will be a 24 inch corrugated steel pipe.

  The second road extends from an intersection with the first road, located just south of the Lower Robinson Creek crossing, and proceeds south to approximately pit 25. This road is approximately 2,500 feet in length and will be used for the south pits 16 through 30. There is one culvert crossing along this road to cross a diversion ditch. This culvert will be a 24 inch culvert sized for maximum anticipated flows in the diversion.

  The following specifications apply to these Primary mine haul roads:
  1) Roads will be approximately 80' in width
  2) Approximately a 2% crown
  3) Approximately one foot deep cut ditches along shoulders for controlling storm water
  4) 18" of crushed rock or gravel for road surfacing
  5) Cut and fill slopes of 1.5 h:1v
  6) Minimum fill over each culvert will be 2 times diameter of culvert
  7) Berms placed as necessary along fills

  The ancillary roads will have similar specifications except surfacing will occur only as needed and may be narrowed to a 40 foot road width. A typical cross section for the ancillary roads can be viewed on Drawing 5-24.

  The location and details for Primary Mine Haul roads can be viewed on Drawings 5-3 and 5-22 and 5-23.

  In addition to the two roads primary Mine Haul roads, the road located within the facilities area is also classified as a primary road. This road is planned to be 24 feet wide with 24 inches of compacted sub base and 8 inches of compacted 1 inch minus gravel as surfacing. This road is referred to as "Facilities Roadway" and more details are described in 527.200 along with Drawings 5-22A and 5-22B.

In addition to the primary roads that will be present during active mining, four additional roads are planned to exist postmining and are also classified as primary roads for this reason.

Roads that will remain postmining are the following:

- Road to Water Well with details shown on Drawing 5-22D
- Road to east C. Burton Pugh property (K3993) with details shown on Drawing —5-22C. Kane County has claimed this road as County Road K3993.
- County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22HG. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by the end of Year 4.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawings 5-35 and 5-37 along with the post mining topography.

The ramps, benches and equipment travel paths within the active surface mining area are temporary in nature and will be relocated frequently as mining progresses. These temporary travelways are considered part of the pit due to their short term use, and are not individually designed nor engineered. They will be built and maintained to facilitate safe and efficient mine and reclamation operations.

- Conveyors: A conveyor system will be used to stockpile coal and to load highway approved haul trucks for transportation to market. The first conveyor is mainly a stacker system for the coal stockpile which will be located at the coal unloading area and will be approximately 451' in length. This conveyor is estimated to be a 48" solid frame system.

  The second conveyor is a coal reclaim belt that will be loaded by an above ground reclaim feeder from the coal stockpile and will convey coal to the loadout chute which will load the highway approved coal haulage trucks. This section will be approximately 290' in length. Similar to the first section, this conveyor is estimated to be a 48" solid frame system.

  Drawings of this system can be viewed on Drawings 5-3 through 5-5.

521.180. Support facilities.

Description of the support facilities is provided in Section 526.220. Drawings 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-8A, 5-8B, and 5-8C provide the maps, appropriate cross sections, design drawings and specifications to demonstrate compliance with R645-301-526.220 through R645-301-526.222 for each facility.

521.200. Signs and Markers Specifications.

Signs and markers will be posted, maintained, and removed by Alton Coal Development LLC. Signs and markers will be a uniform design that can be easily seen and read; made of durable material; conform to local laws and regulations, and be maintained during all activities to which they pertain;

521.240. Mine and Permit Identification Signs.

Identification signs showing the name, business address, and telephone number of Alton Coal Development LLC and the identification number of the permanent program permit authorizing coal mining and reclamation operations will be displayed at each point of access to the permit area from public roads, and will be retained and maintained until after the release of all bonds for the permit area;

521.250. Perimeter Markers.

The perimeter of a permit area will be clearly marked before the beginning of surface mining activities;

521.260. Buffer Zone Markers.

Buffer zones will be marked along their boundaries as required under 731.600

521.270. Topsoil Markers.

Markers will be erected to mark where topsoil or other vegetation - supporting material is physically segregated and stockpiled.

522. **COAL RECOVERY**.

The MRP is designed to maximize recovery of the coal resource within technological, safety and legal limitations. Coal will be recovered from the Smirl Seam which ranges in thickness from 13.5 to 18.5 feet averaging approximately 16 feet in the planned mining area. The Smirl Seam is the only surface mineable seam in the permit area. Isopach maps of the coal thickness and strip ratio can be viewed on Drawings 5-13 and 5-14

Some coal along the boundaries of the mine area will not be recovered in conjunction with the proposed operation. This includes coal underlying the pit highwalls and areas where drainage or sedimentation control structures (diversions, ditches, ponds, etc) are located. The mine is designed to minimize such losses by locating haulage ramps in the spoil rather than on the pit wall, by oversteepening the coal face at the pit edges, and by minimizing the use of out of pit ancillary roads. Coal which is left in place in these areas may be recovered in the future when adjacent property rights are secured. Current plans are for a planned maximum mining depth of approximately 200 ft. and a strip ratio of 10:1; however, the ultimate mining depth will depend on cost related factors.

A detailed mine plan has been developed for the proposed permit area and the following table along with Drawing 5-9 summarize the coal extraction for the permit area:

Description	Extraction Status	Average Coal Thickness (ft)	Average Strip Ratio* (yd^3/Ton)	Quantity (**Ton)
Total Coal within Permit Boundary	N/A	16.3	7.7	9,159,000
High Strip Ratio Area (NE corner of permit area)	Not Mined	16.5	13.5	2,764,000
Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	1,207,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	172,000
Recoverable Coal	Mined	16.3	6.4	5,016,000

*All strip ratios are bank cubic yards of overburden to tons of coal
**All coal tons are based on a 95% recovery factor

Once approval is received to progress with mining on the adjacent federal coal reserves, an additional 57% of the coal under the highwalls will be recovered as part of the progression into these adjacent reserves.

The application of highly flexible, open pit truck/shovel techniques will minimize losses of coal due to pit geometry or spoil support requirements, allowing the maximum possible exposure of the coal resource. The full seam section will be loaded primarily using large hydraulic backhoes. The backhoes, which can work from the top of the seam, provide the ability to efficiently and cleanly excavate the lower part of the coal seam without disturbing the pit floor. This, along with the machine's high degree of bucket horizon control will minimize floor losses. The backhoes can also work safely from the top of the seam to oversteepen the loading face along the pit walls, thus recovering the maximum amount of coal.

Where pit geometry or operational factors preclude the use of backhoes for loading, a large rubber tire front end loader will be used. These machines provide similar horizon control, can operate on the floor of the pit or on an intermediate bench, and can recover coal from confined areas such as the ends of the pits.

Rear dump haul trucks, loaded by the backhoes or front end loader, will be used to move the coal from the pit via inpit roads and the primary haulroad to the crusher and stockpile. The trucks will be equipped with "combo" beds suitable for hauling both coal and overburden, and configured to minimize coal spillage.

A net recovery of 95% (including the effects of in-pit coal losses and out-of-seam dilution) of the coal exposed in the pit is anticipated. Normal coal losses are expected due to cleaning of the top of the seam, loading losses at the seam floor, and coal oxidation near the outcrop.

No coal washing is contemplated at this time, thus there will be no coal processing losses.

Maps and cross sections providing detailed information related to coal recovery activities can be viewed on Drawings 5-9 through 5-14.

523. MINING METHOD(s).

The Coal Hollow Mine will be a surface coal mining operation using open pit mining methods to produce up to 2 million tons of coal per year. Primary mining equipment will include hydraulic excavators and end-dump mining trucks. The coal will be crushed at the mine site, and hauled to market in over-the-road coal trucks.

The mine is planned to produce approximately 5.02 million tons of coal over a life of approximately 3 years. The estimated production schedule is summarized below:

		Tons Produced
Year		(000)
1		2,000
2		2,000
3		1,016
Total		5,016

Initial mine development will involve removal and storage of topsoil from mine infrastructure locations. Facilities for equipment maintenance/warehouse, coal handling, and offices will be constructed. During the development and initial mining period, facilities temporary in nature may be used until permanent facilities can be built. Construction of sedimentation ponds, diversion ditches, and mine roads accessing the initial mining areas will also be ongoing.

Mining will employ typical open pit methods using truck/loader type equipment to remove overburden and recover the coal. Mining will advance across the property in successive cuts approximately 250 ft. in width and 800 to 1,300 ft. long (generally equal to the width of the property less property barriers). Layout of these pits can be viewed on Drawing 5-10. The overburden will be removed in layers or lifts approximately 20 to 40 feet deep. In practice, these overburden lifts are mined in a stairstep fashion ahead of the coal removal operation to provide adequate working room for the equipment and stable advancing slopes. Once mining is complete, excavated overburden (spoil) from a successive cut is used to backfill the excavation. General cross sections of this process can be viewed on Drawings 5-11 and 5-12.

Prior to beginning mining, the area will be cleared of vegetation, and the topsoil will be recovered and either stockpiled or live hauled to regraded areas. It is not anticipated that blasting of the overburden will be necessary based on drilling data. Should this process become necessary, this is the phase where it would be implemented. Overburden will

then be removed using large hydraulic excavator(s) or front end loaders and off-road trucks which will haul the spoil and place it in parts of the pit where the coal has been removed, or in the excess spoil area shown on Drawings 5-3, 5-35 and 5-36. Overburden is removed in successively deeper benches until the coal seam is exposed. Some overburden in lower lifts may be moved by direct dozing into the mined out pit by large bulldozers.

When overburden removal is finished in a particular pit, the top of the coal will be cleaned (removal of any roof rock or other non-coal material on top of the seam) using a motor grader, dozer or front end loader. The material removed will be placed in the adjacent mined out pit. If necessary, the coal seam will be loosened by drilling and blasting or ripping prior to loading. Drilling and blasting of the coal is not expected to be necessary. The cleaned, exposed coal is then excavated by backhoe or front end loader and placed into off-road rear dump trucks.

Once the coal is removed, the pit will be backfilled by spoil from adjacent mine pits. Spoil will be placed in lifts and spread with a dozer. Once the pit is backfilled to the planned final surface contour, suitable topsoil and subsoil will be replaced, and the area reseeded. Revegetation work will proceed seasonally as appropriate for planting.

Overburden excavation and coal mining at Coal Hollow will begin near the subcrop of the coal seam at the western end of the permit area in the NW ¼ NE ¼ of Section 30, T39S, R5W. Topsoil will be removed and stored separately in topsoil stockpiles as shown on Map 2-2. Overburden from the initial pits will be hauled to the excess spoil pile east of the mining area. Once the initial pits are established, as much spoil as possible will be placed directly in the pit backfill, allowing reclamation to closely follow mining. This initial phase includes pits 1 through 8 as shown on Drawing 5-10. The mining and reclamation process for this phase can be viewed on Drawing 5-17.

From the initial mining area, operations will proceed eastward through the NE ¼ of Section 30 to the NW ¼ of Section 29 (as shown on Drawing 5-10). The mining and reclamation process for this phase can be viewed on Drawing 5-18. The pit will then turn south, and advance to the north edge of Section 31 T39S, R5W. This mining and reclamation phase can be viewed on Drawing 5-19. As shown on Drawing 5-19, the final pits will not be backfilled at this stage. The proposed method for filling these pits back to approximate original contour will be accomplished by utilizing overburden from the pit(s) in the adjacent federal reserves located immediately west of this area. Alton Coal Development, LLC is currently in the process of an Environmental Impact Study for these reserves with the intent of acquiring the rights to mine. It is expected that these rights will be acquired prior to the completion of the final phase in the proposed Permit Area. The final landform for the Permit Area is shown on Drawings 5-35 and 5-36.

In the case that Alton Coal Development, LLC is not successful with acquiring the rights to the adjacent federal coal reserves, spoil will be rehandled from the excess spoil and variance from the approximate original contour to fill the remaining pits. The final landform for this alternate scenario is shown on Drawing 5-37 and 5-37A.

An estimate of the primary mining equipment planned for use at the Coal Hollow Mine is listed below:

Diesel - Hydraulic Excavators (15 to 38 cu. yd. capacity).
Rubber Tired Front End Loaders (8 to 20 cu. yd. capacity)
End Dump Trucks (100 to 240 ton capacity class)
Track Dozers (Caterpillar D7 through D11 Class)
Motor Graders (Caterpillar 16H to 24H Class)
Water Trucks (8,000 to 20,000 Gallon Class)

A variety of other equipment will also be used to support the mining operation.

Proposed engineering techniques for meeting the proposed mining methods will include:

- Design support for roads, pits, sediment impoundments etc…
- Field staking of designs utilizing high precision GPS survey systems.
- Weekly field engineering support to view and provide guidance related to designs and environmental controls.
- Ongoing geotechnical support for ensuring highwall stability
- As additional information becomes available, update geological models to ensure full recovery of resource.
- Weekly mine plans that specify appropriate engineering and environmental specifications.

There are no known underground mines within 500 feet of the permit boundary; therefore, no surface mining or reclamation activities will take place within 500 feet of any underground mine.

524. BLASTING AND EXPLOSIVES

As a result of the 2005 drilling program and overburden characterization, it was determined that the soil over the coal seam is void of any solid structure and that the overburden is extremely homogenous consisting of soft clay and soft shale. As results of this cursory investigation, it is anticipated that there would be no need to drill and blast the overburden to facilitate the removal of the spoil above the coal seam. Also, due to the fact that the coal will have to be mined from on top of the seam due to wet clay zone beneath the coal seam it is anticipated that there would be no need to drill and blast the coal seam to facilitate coal removal.

As a safeguard or fallback position if mining condition should change, all blasting and explosive criteria will be addressed.

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Though not anticipated, explosives may be utilized as necessary at Coal Hollow Mine to break the overburden over the coal and may be used to break the coal for loading if necessary. In accordance with the requirements of this section, a blasting plan is provided to the Division in Appendix 5-4. Blasts that use more than five pounds of explosives or blasting agents will be conducted according to the schedule provided in 524.400.

524.100 Blaster Certification

Alton Coal Development, LLC (ACD) will, prior to conducting any surface blasting operations, ensure that all surface blasting incident to surface mining in Utah is conducted under the direction of a Utah Certified Blaster. Certificates of blaster certification will be carried by the blasters or will be on file at the mine permit area during blasting operations. A blaster and at least one other person will be present at the firing of a blast.

Persons responsible for blasting operations at a blasting site will be familiar with the blasting plan and site-specific performance standards and give on-the-job training to persons who are not certified and who are assigned to the blasting crew or assist in the use of explosives.

524.200 Blast Design

There are no dwellings, public buildings, schools, churches, or community or institutional building within 1,000 feet of the planned blasting area in the initial (year 1) mining period. There are also no underground mines within 500 feet of the permit. The anticipated blast design can not be reasonably estimated at this time since ACD is not sure what geologic conditions exist that may require blasting. If conditions are encountered that require blasting, ACD will provide the Division with the designed pattern prior to conducting blasting.

Blasts conducted within 1000 ft. of a dwelling, public building, school, church, or community or institutional building will be submitted for Division and MSHA approval, prior to blasting. The blast design will contain sketches of the drill and delay patterns, decking, type and amount of explosives required per blast, critical dimensions, design factors utilized to protect the public, general location drawings of protected structures, which meet the applicable airblast, flyrock, and ground vibration standards in 524.600.

The blast design will be prepared and signed by a Utah certified blaster.

524.300 - 350 Preblasting Survey

A preblasting survey will be conducted prior to commencement of blasting operations. As part of the preblasting survey Alton Coal Development LLC will:

- Notify, in writing, all residents or owners of dwellings or other structures located within one-half mile of the permit area how to request a preblasting survey at least 30 days before initiation of blasting.
- Prepare a written report of any preblasting survey. A resident or owner of a dwelling or structure within one-half mile of any part of the permit area may request a preblasting survey. This request will be made, in writing, directly to Alton Coal Development LLC or to the Division, who will promptly notify Alton Coal Development LLC. Alton Coal Development LLC will promptly conduct a

preblasting survey of the dwelling or structure and promptly prepare the written report. An updated survey of any additions, modifications, or renovation will be performed by Alton Coal Development LLC if requested by the resident or owner.

- Determine the condition of the dwelling or structure and will document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.
- Require the written report of the survey be signed by the person who conducted the survey. Copies of the report will be promptly provided to the Division and to the person requesting the survey. If the person requesting the survey disagrees with the contents and/or recommendations contained therein, he or she may submit to both Alton Coal Development LLC and the Division a detailed description of the specific areas of disagreement.
- Complete any survey requested more than ten days before the planned initiation of blasting, before blasting occurs.

524.400 Blasting Schedule

524.420. Timing of Blasting

All blasting will be conducted between sunrise and sunset unless nighttime blasting is approved by the Division. Alton Coal Development LLC will conduct blasting operations at times approved by the Division and announced in the blasting schedule.

524.410. Unscheduled Blasts

Unscheduled blasts will be conducted only where public or operator health and safety so requires and for emergency blasting actions. When an unscheduled surface blast incidental to coal mining and reclamation operations is conducted, Alton Coal Development LLC, using audible signals, will notify residents within one-half mile of the blasting site and document the reason in accordance with 524.760.

524.450 - 453. Blasting Schedule Publication and Distribution.

Alton Coal Development, LLC will:

- Publish the blasting schedule in a newspaper of general circulation in the locality of the blasting site at least ten days, but not more than 30 days, before beginning a blasting program;

- Distribute copies of the schedule to local governments and public utilities and to each local residence within one-half mile of the proposed blasting site described in the schedule; and
- Republish and redistribute the schedule at least every 12 months and revise and republish the schedule at least ten days, but not more than 30 days, before blasting whenever the area covered by the schedule changes or actual time periods for blasting significantly differ from the prior announcement; and

524.460 - 465. Blasting Schedule Contents.

The blasting schedule will contain, at a minimum:

- Name, address, and telephone number of operator;
- Identification of the specific areas in which blasting will take place;
- Dates and time periods when explosives are to be detonated;
- Methods to be used to control access to the blasting area; and
- Type and patterns of audible warning and all-clear signals to be used before and after blasting.

524.500 - 532 Blasting and Warning Signs, Access Control

Blasting signs will read **"Blasting Area"** and be conspicuously placed along the edge of any blasting area that comes within 100 feet of any public right-of-way, and at the point where any other road provides access to the blasting area. At all entrances to the mine permit area from public roads or highways, signs will be conspicuously placed which read **"Warning! Explosives in Use"**, clearly list and describe the meaning of the audible blast warning and all-clear signals in use, and explain the identification of blasting areas where charged holes await firing at the blasting site in the mine permit area.

Warning and all-clear signals of different character or pattern that are audible within a range of one-half mile from the point of the blast will be given. Each person within the permit area and each person who resides or works regularly within one-half mile of the blast site in the mine permit area will be notified of the meaning of the signals in the blasting schedule and notification.

Access within the blasting areas will be controlled to prevent presence of livestock or unauthorized persons during blasting and until an authorized representative of Alton Coal Development LLC has reasonably determined that no unusual hazards exist, such as imminent slides or un-detonated charges; and access to and travel within the blasting area can be safely resumed.

524.600 - 610 Adverse Effects Of Blasting

Blasting will be conducted to prevent injury to persons, damage to public or private property outside the mine permit area, and changes in the course, channels, or availability of surface or ground water outside the mine permit area.

524.620 Airblast Limits

Airblast will not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the mine permit area, except for those structures and facilities owned by Alton Coal Development LLC as approved by the Division. Maximum airblast limits are as follows:

Lower Frequency Limit of Measuring System, HZ (+3dB)		Maximum Level dB
0.1 Hz or lower – flat response [1]		134 peak
2 Hz or lower – flat response		133 peak
6 Hz or lower – flat response		129 peak
C-weighed – slow response [1]		105 peak dBC

(1) Only when approved by the Division.

524.630. Monitoring:

Periodic monitoring will be conducted to ensure compliance with the airblast standards. Airblast measurements and will be taken as required by the Division at locations specified by the Division. The measuring system used will have an upper-end flat frequency response of at least 200 Hz.

524.633. Flyrock:

Flyrock traveling in the air or along the ground will not be cast from the blasting site more than one-half the distance to the nearest dwelling or other occupied structure; beyond the area of blasting access control or beyond the mine permit area boundary.

524.640 - 662. Ground Vibration.

In all blasting operations, except as otherwise authorized by the Division, the maximum ground vibration will not exceed the values approved by the Division. The maximum ground vibration for protected structures will be in accordance with either the maximum peak-particle velocity limits, the scaled-distance equation, the blasting-level chart, or by the Division. All other structures in the vicinity of the blasting area such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines will be protected from damage by establishment of a maximum allowable limit on the ground vibration. These limits will be submitted by Alton Coal Development LLC and approved by the Division prior to blasting. A seismographic record will be provided for each blast.

Maximum Peak-Particle Velocity Method: The maximum ground vibration will not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the mine permit area in accordance with the following:

Distance (D) from Blast Site in feet	Maximum allowable Particle Velocity (Vmax) for ground vibration, in inches/second (1)	Scaled distance factor to be applied without seismic monitoring (Ds) (2)
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

(1) Ground vibration will be measured as the particle velocity. Particle velocity will be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity will apply to each of the three measurements.
(2) Applicable in the scale-distance equation of 524.651.

Scaled Distance Equation Method: Alton Coal Development LLC will use the scaled-distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any eight-millisecond period, without seismic monitoring: where W = the maximum weight of explosives, in pounds: D = the distance, in feet, from the blasting site to the nearest protected structure: and Ds = the scaled-distance factor, which may initially be approved by the Division using the values for scaled-distance factor listed in 524.642.

The development of a modified scaled-distance factor may be authorized by the Division on receipt of a written request by Alton Coal Development LLC, supported by seismographic records of blasting at the mine site. The modified scaled-distance factor of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of 524.642 at a 95% confidence level.

Blasting-Level-Chart. Alton Coal Development LLC may use the ground-vibration limits in Figure 1 (Figure 1, showing maximum allowable ground particle velocity at specified frequencies, is incorporated by reference. Figure 1 may be viewed at 30 CFR 817.67 or at the Division of Oil, Gas and Mining State Office.) to determine the maximum allowable ground vibration. If the Figure 1 limits are used, a seismographic record including both particle velocity and vibration-frequency levels will be provided for each blast. The method for the analysis of the predominant frequency contained in the blasting records will be approved by the Division before application of this alternative blasting criterion.

524.690. Standards not Applicable

The maximum airblast and ground-vibration standards of 524.620 through 524.632 and 524.640 through 524.680 will not apply at the following locations: At structures owned by Alton Coal Development LLC and not leased to another person; and at structures

owned by Alton Coal Development LLC and leased to another person, if a written waiver by the lessee is submitted to the Division before blasting.

524.700 Records of Blasting Operations:

Blasting records will be maintained at the mine site for at least three years and upon request, records will be available for inspection by the Division or the public. A blasting record will contain the name of Alton Coal Development LLC; location, date, and time of the blast; name, signature, and Utah certification number of the blaster conducting the blast. It will also include the identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in 524.690 and weather conditions, including those which may cause possible adverse blasting effects.

The blasting record will include: The type of material blasted; sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern; diameter and depth of holes; types of explosives used; total weight of explosives detonated in an eight-millisecond period; initiation system; type and length of stemming; and mats or other protection used.

If required, a record of seismographic and airblast information will include: type of instrument, sensitivity, and calibration signal or certification of annual calibration; exact location of instrument and the date, time, and distance from the blast; name of the person and firm analyzing the seismographic record; and the vibration and/or airblast level recorded; and the reasons and conditions for each unscheduled blast.

524.800 Use of Explosives:

Alton Coal Development LLC will comply with all appropriate Utah and federal laws and regulations in the use of explosives.

526. **MINE FACILITIES**:

526.110-115 Existing Structures.

There are no existing structures within the permit area.

526.116. Public Roads:

526.116.1. Operations Within 100 ft. of a Public Road

Initial mining operations at the Coal Hollow Mine will be on the western edge of the property, and will require rerouting Kane County Road #136 (K3900) -so that operations do not come within 100 feet of this road. During the initial development phase (topsoil removal, diversion construction, etc..), equipment traffic may cross the county road right-

of-way to access the necessary area. see Drawing 5-3. Details related to the road relocation and reestablishment can be viewed on Drawings 5-3, 5-22E, 5-22F, 5-22H and in Appendix 1-7.

In addition, the road adjacent to Lower Robinson Creek (K3993) has been claimed by Kane County as a public road. An agreement has been developed with the County to restrict access on this road to escort by mine personnel only. Details for the reestablishment of this road following mining are provided on Drawing 5-22C.

526.116.2 Relocating a Public Road:

Following the initial development period, Kane County will temporarily relocate County Road #136 (K3900) to federal lands located west of the permit area which are managed by the BLM. This relocation will bypass the permit area for the duration of mining operations and is shown on Drawing 5-3. Details of agreements and appropriate approvals for this road relocation are located in Appendix 1-7. The relocated road is not within 100 ft. of mining or reclamation operations. The design and route of the relocated road has been approved by Kane County authorities and the BLM. Kane County will continue to have sole jurisdiction and will maintain it as a public road. Following completion of mining operations within the permit area, Kane County will reestablish the road to the approximate original location and will also reclaim the temporary road as required by the BLM. The existing road from the north relocation diversion point to the permit boundary will also continue to be maintained as a public road by Kane County. Once the road intersects the permit boundary, appropriate signs and barricades will be installed to protect the public. This road will be reestablished following mining as provided in the agreements in Appendix 1-7 and shown on Drawings 5-22E, 5-22F and 5-22H.

526.200 Utility Installation and Support Facilities

526.210 Existing Utilities.

There are no known oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines passing over, under, or through the permit area. Should such facilities be installed, mining and reclamation operations will be conducted in a manner that minimizes damage, destruction, or disruption of services provided by such facilities unless otherwise approved by the owner of those facilities and the Division.

526.220 Support Facilities

The mine support facilities will include an office, shop, wash bay, oil containment, fuel containment, coal stacking system, coal loadout system and an equipment parking area These facilities will be constructed on an isolated section of the permit area that is approximately 34 acres. This area is located immediately north of Lower Robinson Creek, in Township 39 South, Range 5 West, Section 19. A diversion ditch will route

water from the upgradient area immediately east of the area around the facilities and into a tributary of Lower Robinson Creek as shown on Drawing 5-3. Storm water and snow melt that occurs within the facilities area will be routed to an impoundment that will contain sediment. This impoundment will have a drop-pipe spillway installed that will allow removal of any oil sheens that may result from parking lots or maintenance activities by using absorbent materials to remove the sheen. In addition to this pond, an additional small impoundment will also be located in the southwest corner of the facilities area to control drainage from the mine access road. Details for these impoundments can be viewed on Drawings 5-28 and 5-28B.

The following is a detailed description of each proposed facility and a reference to where detailed drawings can be found:

- Office: The office will be located on the northwest corner of the facilities area, immediately adjacent to the facilities access road. This building will be a steel structure with concrete footers. This structure will be 150 feet long by 100 feet wide and will be two stories in height. The office will provide working space for administrative and technical personnel. Details for the office can be viewed of Drawings 5-3 and 5-6.
- Shop: The shop will be located on the northeast side of the facilities area. This building will be a steel structure with concrete floors and foundation. The structure will be approximately 200 feet long by 100 feet wide and 50 feet high. This building will be used for maintenance of equipment, parts storage, tool storage, and office space for maintenance personnel. Details for this building can be viewed on Drawings 5-3 and 5-7.
- Wash Bay: The wash bay will be located immediately east of the shop. This building will be a steel structure with a concrete foundation. The structure will be 50 feet long by 60 feet wide and 50 feet high. Included will be a closed circuit water recycle system. This system will eliminate and store water impurities and reroute water back through the wash bay for cleaning equipment. Details for this structure can be viewed on Drawings 5-3, 5-8, and 5-8A.
- Oil and Fuel Containments: The oil and fuel containments will be concrete structures appropriately sized for containing metal tanks. The oil containment will contain 55 gallon barrels and up to 2,000 gallon totes. This containment will be 80 feet long by 30 feet wide and 3 feet deep. The fuel containment will store 3 fuel tanks. Included will be a 4,000 gallon unleaded fuel tank and two 12,000 gallon diesel tanks. This structure will 50 feet long by 30 feet wide and 3 feet deep. Details for this structure can be viewed on Drawings 5-3 and 5-8.
- Coal Stacking System: The coal stacking system will be located in the central part of the facilities area. This system will include a coal hopper, coal feeder breaker, feed conveyor, crusher, and an inclined conveyor belt. Trucks will dump coal into the coal hopper which will funnel coal through the feeder breaker onto a short feed conveyor belt. This conveyor belt will transport the coal approximately 195 feet to a crusher that will size the coal appropriately for market. Once the coal is sized through the crusher it will enter an inclined stacker conveyor belt that is angled at approximately 16 degrees and is 186 feet long. This system will be a radial conveyor which will

feed a coal stock pile with a live storage of approximately 50,000 tons. This system can be viewed on Drawings 5-3 through 5-5.

- Coal Loadout System: The coal loadout system will be located in the central part of the facilities area. This system will include an above ground reclaim feeder, a coal reclaim conveyor and an inclined conveyor. The reclaim feeder will be loaded by a dozer pushing the coal onto the feeder. One inclined conveyor that is approximately 290 feet in length will convey the coal from the feeder to the loadout hopper. This loadout hopper will load highway approved haul trucks that transport coal to market.
- Minor Facilities: The minor facilities will include a septic vault at the office (Drawing 5-6), a power washing and water recycle system in the Wash Bay (Drawing 5-8A), conduit with electrical lines running from generators to various facilities (Drawing 5-8B), Water System (Drawing 5-8C), an Equipment Hotstart Area (Drawing 5-3, 5-8B) and a Field Hydrant (Drawing 5-4, 5-5, 5-8B).
- Electrical System: The electrical system for the facilities at Coal Hollow will consist of two diesel fuel powered generators. One generator is a 750 KVA unit that will provide electricity to all the buildings. The other generator is a 1200 KVA unit that will be used to supply electricity to the coal conveying, sizing, stockpiling and loading system. The anticipated layout of the electrical system is shown on Drawing 5-8B.
- Dust Control Structures: A water system will be constructed to provide water for non-potable uses at the facilities and also for fugitive dust control measures. This system will consist of a water well, 6" water transport pipe, and two 16,000 gallon water tanks. The first water tank will be placed near the mining area and will be used specifically to load the water truck which will spray water on the active roads within the permit area to control dust. The second tank is located at the facilities area to provide a water supply to the facilities for non-potable uses (cleaning equipment, restrooms, etc...). Further details related to this water system can be viewed on Drawing 5-8C.

During mine development and the initial mining period, some facilities of a temporary nature such as mobile buildings and crusher/stacking conveyors may be utilized.

Support facilities to provide lighting at night will be kept to a minimum but will need to be sufficient enough to provide safe operating conditions in the dark. The following lighting equipment is anticipated to be used to provide safe working conditions:

- Two to three mobile light plants: Each light plant will have up to four 1,000 watt lights.
- Four to six exterior lights at the facilities area for lighting walkways and miscellaneous work areas: Each of these is expected to be 250 watt lights.
- Lights on mobile mining equipment, support vehicles and building lights

The support facilities will be located, maintained, and used in a manner that prevent or control erosion and siltation, water pollution, and damage to public or private property; and to the extent possible use the best technology currently available to minimize damage to fish, wildlife, and related environmental values; and minimize additional contributions

of suspended solids to stream flow or runoff outside the mine permit area. Any such contributions will not be in excess of limitations of Utah or Federal law.

The facilities will be fully reclaimed at the end of mining operations with the exception of the water well. The final contour for this area can be viewed on Drawing 5-35 and 5-37 and an anticipated timetable is shown on Drawing 5-38.

526.300 Water Pollution Control Facilities:

Water pollution associated with mining and reclamation activities within the permit areas will be controlled by:

- Construction of berms and/or diversion ditches to control runoff from all facilities areas.
- Roads will be constructed with ditches to capture runoff
- Diversion ditches will be constructed as necessary around active mining and reclamation areas to capture runoff from those areas.
- Sedimentation impoundments will be constructed to control discharges
- In areas where impoundments or diversions are not suitable to the surrounding terrain, silt fence or other appropriate structures will be utilized to control sediment discharge from the permit area.

In order to accomplish these objectives, watershed analysis of the permit and adjacent areas has been completed and specific designs are established for each water pollution control structure. Primary control structures include five sediment impoundments, four diversion ditches and miscellaneous berms. The locations of these structures can be viewed on Drawing 5-3. The detailed analysis for these structures and specific designs can be viewed on Drawings 5-25 through 5-34. In addition, a geotechnical analysis of the impoundments to ensure stability can be viewed in Appendix 5-1. The watershed and structure sizing analysis can be viewed in Appendix 5-2.

In addition to these primary structures, temporary diversions and impoundments may also be implemented, as necessary, in mining areas to further enhance pollution controls.

All these facilities will be reclaimed to approximate original contour. The reclamation sequence and final landform can be viewed on Drawings 5-35 and 5-38.

526.400 Air Pollution Control Facilities:

Air pollution (fugitive dust) emissions from mining and reclamation operations in the permit area will be controlled by a number of means, including:

- Haul roads will be maintained and will have water or other dust suppressants applied as appropriate.
- Road surfaces will be graded to stabilize/remove dust-forming debris as required.

- Areas adjoining primary roads will be stabilized and vegetated as required.
- Mobile equipment speeds will be controlled to minimize dusting conditions.
- Cleared vegetation debris within the mine area will be disposed of by placement in pit backfills.

A water system will be constructed to provide water for non-potable uses at the facilities and also for fugitive dust control measures. This system will consist of a water well, 6" water transport pipe, and two 16,000 gallon water tanks. The first water tank will be placed near the mining area and will be used specifically to load the water truck which will spray water on the active roads within the permit area to control dust. The second tank is located at the facilities area to provide a water supply to the facilities for non-potable uses (cleaning equipment, restrooms, etc...). Further details related to this water system can be viewed on Drawing 5-8C.

For details related to air pollution control and monitoring, refer to Chapter 4 and Appendix 4-2 and 4-5.

527. TRANSPORTATION FACILITIES

527.100 Classification of Roads

Primary roads are any road that is used to transport coal or spoil and is frequently used for access or other purposes for a period in excess of six months; or is to be retained for an approved postmining land use. The following is the roads that meet the classification of a primary road based on this standard:

Roads used to transport coal or spoil in excess of six months

There are two roads that will be used to transport coal or spoil in excess of six months and are referred to as "Year 1 and 2 Mine Haul Road" and "Year 2 and 3 Mine Haul Road". These two roads will be the main accesses for the pits throughout the life of the mine. Details for these two roads are provided in Section 527.200 and on Drawings 5-22 and 5-23. In addition to these two roads, the road located within the facilities area is also classified as a primary road. This road is referred to as "Facilities Roadway" and details are described in 527.200 along with Drawings 5-22A and 5-22B.

Roads retained for an approved postmining land use

Roads retained for an approved postmining land use include the following: Access to East Pugh Property (K3993), County Road 136 (K3900), Access to Water Well and Road to Swapp Ranch. Details and locations for these roads are shown on Drawings 5-35, 5-37, 5-22A, 5-22B, 5-22C, 5-22D, 5-22E, 5-22F and 5-22H~~G~~.

All other roads planned for construction within the permit area will be classified as ancillary. These will include temporary ramps, benches and equipment travel paths within the active mining area.

527.200 Description of Roads

Roads for the Coal Hollow Mine include seven primary roads, a conveyor system, and miscellaneous ancillary/temporary roads. Numerous drawings detail the designs and specifications for each one of the proposed facilities. The following is a description of each facility and a reference for the associated drawings:

- Roads: Two primary mine haul roads are planned within the permit area. The first road extends from the coal unloading area to the first series of pits along the west side of the property. This road will be utilized for access to pits 1 through 15 (pits shown on Drawing 5-10). This road will be approximately 2,600 feet in length and will be utilized mainly during the first two years of mining. There will be three culverts installed along this road all sized for a 100 year, 24 hour storm event. The first culvert will be across a tributary of Lower Robinson Creek and will be a 36 inch corrugated steel pipe. The second culvert is the main crossing over Lower Robinson Creek and is a 96 inch corrugated steel pipe. Both of these culverts have been sized based on analysis of the Lower Robinson Creek watershed. This analysis can be viewed in Appendix A5-3. The third culvert is crossing over a diversion ditch that will route water mainly from disturbed areas along the south side of Lower Robinson Creek to a sediment impoundment. This culvert will be a 24 inch corrugated steel pipe.

  The second road extends from an intersection with the first road, located just south of the Lower Robinson Creek crossing, and proceeds south to approximately pit 25. This road is approximately 2,500 feet in length and will be used for the south pits 16 through 30. There is one culvert crossing along this road to cross a diversion ditch. This culvert will be a 24 inch culvert sized for maximum anticipated flows in the diversion.

  The following specifications apply to these Primary mine haul roads:
  1) Roads will be approximately 80' in width
  2) Approximately a 2% crown
  3) Approximately one foot deep cut ditches along shoulders for controlling storm water
  4) 18" of crushed rock or gravel for road surfacing
  5) Cut and fill slopes of 1.5 h:1v
  6) Minimum fill over each culvert will be 2 times diameter of culvert
  7) Berms placed as necessary along fills

  The ancillary roads will have similar specifications except surfacing will occur only as needed and may be narrowed to a 40 foot road width. A typical cross section for the ancillary roads can be viewed on Drawing 5-24.

The location and details for Primary Mine Haul roads can be viewed on Drawings 5-3 and 5-22 and 5-23.

In addition to the two roads primary Mine Haul roads, the road located within the facilities area is also classified as a primary road. This road is planned to be 24 feet wide with 24 inches of compacted sub base and 8 inches of compacted 1 inch minus gravel as surfacing. This road is referred to as "Facilities Roadway" and more details are described in 527.200 along with Drawings 5-22A and 5-22B.

In addition to the primary roads that will be present during active mining, four additional roads are planned to exist postmining and are also classified as primary roads for this reason.

Roads that will remain postmining are the following:

- Road to Water Well with details shown on Drawing 5-22D
- Road to east C. Burton Pugh property (K3993) with details shown on Drawing —5-22C
- County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22G. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by the end of Year 4.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawings 5-35 and 5-37 along with the post mining topography.

The ramps, benches and equipment travel paths within the active surface mining area are temporary in nature and will be relocated frequently as mining progresses. These temporary travelways are considered part of the pit due to their short term use, and are not individually designed nor engineered. They will be built and maintained to facilitate safe and efficient mine and reclamation operations.

- Conveyors: A conveyor system will be used to stockpile coal and to load highway approved haul trucks for transportation to market. The first conveyor is mainly a stacker system for the coal stockpile which will be located at the coal unloading area and will be approximately 451' in length. This conveyor is estimated to be a 48" solid frame system.

The second conveyor is a coal reclaim belt that will be loaded by an above ground reclaim feeder from the coal stockpile and will convey coal to the loadout chute which will load the highway approved coal haulage trucks. This section will be approximately 290' in length. Similar to the first section, this conveyor is estimated to be a 48" solid frame system.

Drawings of this system can be viewed on Drawings 5-3 through 5-5.

527.220 Alteration or Relocation of Natural Drainageways.

As currently planned, no natural drainageways will be altered or relocated due to road construction, though a temporary diversion of Lower Robinson Creek will be constructed to allow for maximum recovery of coal. This temporary diversion of Lower Robinson Creek is not being constructed to facilitate road construction. If any other alterations or relocations are necessary, appropriate measures will be taken to obtain Division approval for such alterations or relocations.

Mine development work will include a temporary diversion of Lower Robinson Creek away from the mining area. This diversion has been designed for a flow capacity of a 100 year, 24 hour storm event. The sides will be graded to a 3h:1v slope and rip-rap will be appropriately placed to minimize erosion of the channel beyond current channel conditions. All specifications required to meet the requirements for such a diversion have been included in this diversion design. Appendix 5-2 details the analysis/specifications for this diversion and Drawings 5-20 and 5-21 show the details of this design.

As part of the reclamation process, Lower Robinson Creek will be reconstructed to its approximate original location. The design for this reconstruction is shown on Drawings 5-20A and 5-21A. This design includes considerable improvements to the channel compared to the channel's current condition. The current condition is such that less than 25% of the channel within the disturbed area has a flood plain present and most of the slopes are near the angle of repose with fair to poor vegetative cover. The reconstructed channel includes stable slope angles that will be revegetated with a flood plain on both sides of the channel for the entire length reconstructed. Sharp corners in the original alignment have been rounded to sinuous curve shapes and rip-rap will be installed in the bottom section of the channel to minimize erosion. The flood plain will seeded and covered with erosion matting to control erosion until a natural vegetative condition can be attained.

527.230 Road Maintenance

All roads will be maintained on an as needed basis using motor graders, water trucks for dust suppression, and other equipment as necessary. Crushed stone and/or gravel will be used as a surface course for primary roads outside the active mining area, and may be used as needed for ramps and travelways within the pit. Should the roads be damaged by a catastrophic event, such as an earthquake or a flood, repairs will be made as soon as possible after the damage has occurred or the road will be closed and reclaimed.

527.250. Geotechnical Analysis

No alternative specifications or steep cut slopes associated with roads are anticipated outside the active mine area. A report of appropriate geotechnical analysis will be provided should such alternative specifications or steep cut slopes where approval of the Division is required, become necessary.

528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE:

528.100. Coal removal, handling, storage, cleaning, and transportation areas and structures;

Coal handling activities are confined to the active pit, and the coal sizing/loading areas located north of the pit. All areas and facilities will be designed and constructed, utilized and maintained in conformance with industry standards and all applicable regulations. At the conclusion of mining, the facilities will be removed as part of final mine reclamation activities. Material from coal stockpile areas, and other areas of potential coal accumulation will be excavated and the excavated material placed in the final mined out pit.

528.200. Overburden;

Overburden will be excavated after the removal of topsoil and subsoil as defined in Chapter 2. The overburden excavation will be accomplished by utilizing hydraulic excavators with end dump haul trucks and dozers. This process will include excavating this material in a stairstep fashion that will include benches approximately every 40 feet in depth. These benches are planned to be approximately 40 feet in width and will create an overall 2h:1v slope for the highwalls to create a stable and safe working area. This is a conservative approach for initial mining and once mining begins, ongoing geotechnical studies and monitoring will be used to further define the proper slope angle to ensure slope stability while maximizing resource recovery.

Based on the overburden isopach map (Drawing 5-15), the overburden removal has been separated into three major stages. The first stage of overburden removal is the initial mining area, Pits 1-8. These pits have a relatively low strip ratio, approximately 5:1 (refer to Drawing 5-13). In order to efficiently remove overburden for this phase, spoil from the first three pits will be placed in an excess spoil area. This excess spoil structure will hold approximately 2.7 million loose cubic yards (LCY) of material. Once the excess spoil pile is filled, overburden from Pits 4 through 8 can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

As mining progresses through Pits 9-15, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area requires a fill above approximate original contour. Material from Pits 9-15 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Stage 1 and extends an additional 2,500 feet to the east as the mining sequence proceeds to Pit 15. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Stage 3 overburden removal begins in Pit 16 and proceeds through Pit 30. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses to the south end of the property. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding pits. This results in the distance between the backfill and the active coal face increasing. At the end of mining, an area will not be completely backfilled that is approximately 2,000 feet in length and 1,300 feet wide and will require 6.8 million yards of fill to complete reclamation to approximate original contour. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan for backfilling these final pits includes acquiring the right to mine the adjacent federal coal reserves, located immediately west of this area. This plan provides an efficient method for transitioning operations into the federal reserves. At the time that this transition occurs, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawing 5-35 and 5-36.

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately 6.8 million yards of spoil.

The following tables show the material balance during the different phases of overburden removal for each scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,945,000	5,204,000	2,741,000	2,741,000
2	15,145,000	9,303,000	5,842,000	8,583,000
3	15,447,000	22,247,000	0	8,583,000
4 (Federal)	6,800,000	6,800,000	0	8,583,000
Total	45,337,000	36,754,000	8,583,000	8,583,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,945,000	5,204,000	2,741,000	2,741,000
2	15,145,000	9,303,000	5,842,000	8,583,000
3	15,447,000	22,247,000	0	8,583,000
4 (Rehandle)	0	6,800,000	-6,800,000	1,783,000
Total	38,537,000	36,754,000	1,783,000	1,783,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

The Preferred scenario for overburden removal will minimize overall disturbance and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial boxcut once operations are transitioned into these reserves.

During the course of mining, some additional excavated overburden may be placed temporarily on mined over and backfilled areas due to operational considerations. This material will be re-excavated and moved to it's final placement location as operations allow.

All maps related to the overburden removal process can be viewed on Drawings 5-15 through 5-19.

528.300. Spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures;

528.310. Excess Spoil. Excess spoil will be placed in designated disposal areas within the permit areas, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.

Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet in thickness. The material will be transported from the overburden removal area to the fill by end dump haul trucks and a dozer(s) will spread the spoil to this lift thickness. The fill will meet at minimum 85% compaction as related to the standard Procter. Final slopes will be regraded to a maximum slope of 3h:1v. The top of the fill will be sloped to approximately 2% to prevent pooling of water and to reestablish drainage similar to original flow patterns. The excess spoil placed on the non-mined areas is approximately 32 acres and varies in height from 35 to 120 feet. The area of excess fill over mined out areas (variance from approximate original contour) is an extension of the fill placed on the non-mined area and is approximately 55 acres. Combined acreage of the excess fill placed on mined and non-mined areas is 87 acres and varies in height from 60 to 100 feet above original contour. Total

excess fill is 8.6 million yards. Design of this fill can be viewed in Drawings 5-35 through 5-36 and the geotechnical study can be viewed in Appendix 5-1.

- *R645-301-211: The applicant will present a description of the premining soil resources as specified under R645-301-221. Topsoil and subsoil to be saved under R645-301-232 will be separately removed and segregated from other material.*

  The soil resources for the proposed excess spoil disposal area are described in Appendix 2-1. A plan has been developed for removal of topsoil and suitable subsoil based on the soil descriptions in this appendices. The handling plan can be viewed on Drawing 2-2. Topsoil and acceptable subsoil will be separately removed and segregated from other material prior to placement of any spoil.

- *R645-301-212: After removal, topsoil will be immediately redistributed in accordance with R645-301-242, stockpiled pending redistribution under R645-301-234, or if demonstrated that an alternative procedure will provide equal or more protection for the topsoil, the Division may, on a case-by case basis, approve an alternative;*

  Excess spoil will have topsoil and subsoil redistributed in an approximately uniform, stable thickness with the approved post mining land use, contours and surface water drainage systems. Material handling practices will prevent excess compaction of these materials. Handling practices will also protect the materials from wind and water erosion before and after seeding and planting. These practices include seeding and grading stockpiles that will exist for more than year to stabilize the soil.

- *R645-301-412.300: Criteria for Alternative Postmining Land Uses.*

  The MRP does not contemplate Alternative Postmining Land Uses.

- *R645-301-512.210: Excess Spoil. The professional engineer experienced in the design of earth and rock fills will certify the design according to R645-301-535.100.*

  A professional engineer experienced in the design of earth and rock fills with assistance from a geotechnical expert has certified the design according to R645-301-535.100. These certifications can be viewed on Drawings 5-35, 5-36 and 5-17 through 5-19.

- *R645-301-512.220: Durable Rock Fills*

  No durable rock fills are planned.

- *R645-301-514.100: Excess Spoil. The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.*

  A professional engineer or specialist that is experienced in the construction of earth and rock fills will inspect the fill during construction and regular inspections will also be conducted during placement and compaction of fill materials.

- *R645-301-535.100 through R645-301-130: Disposal of Excess Spoil*

  A geotechnical analysis of the excess spoil structure design has been completed by an expert in this field. The long term static safety factor for this structure design is estimated at 1.6 to 1.7. Lifts will be placed in thicknesses not to exceed 4 feet. The lifts will meet 85% compaction by the standard Procter. The fill will be graded to allow for drainage similar to original patterns and to prevent excessive infiltration of water. Fill will be covered with subsoil and topsoil as specified in Chapter 2 to provide conditions suitable for revegetation of the area. The geotechnical study can be viewed in Appendix A5-1.

- *R645-301-535.300 through R645-301-535.500: Disposal of Excess - Spoil Durable Rock Fills.*

  No durable rock fills are planned.

- *R645-301-536.300: Disposal of Coal Mine Waste in Excess Spoil*

  No coal mine waste is planned in the excess spoil area.

- *R645-301-542.720: Excess spoil will be placed in designated disposal areas within the permit area, in a controlled manner to ensure that the final fill is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use. Excess spoil that is combustible will be adequately covered with noncombustible material to prevent sustained combustion. The reclamation of excess spoil will comply with the design criteria under R645-301-553.240.*

  The excess spoil as shown in Drawing 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. No combustible excess spoil will be placed in the proposed structure. The final reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v.

- *R645-301-553.240: The final fill configuration of the fill (excess spoil) will be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil*

moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches will not be steeper than 2h:1v (50 percent).

The excess spoil as shown in Drawings 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. The reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v. The long term static safety factor for these slopes is estimated to be 1.6 to 1.7.

- *R645-301-745.100: General Requirements.*

  745.110: Excess Spoil will be placed in designated disposal areas within the permit area, in a controlled manner to:

  745.111: Minimize the adverse effects of leaching and surface water runoff from the fill on surface and underground water;

  Reclamation of the excess spoil will include a topsoil cover and subsoil layer. Infiltration through the reclamation is expected to be minimal based on the high clay content of these soils. In addition, laboratory data for the overburden shows that there is minimal potential for leaching of pollutants should infiltration rates become higher than expected.

  The foundation of the excess spoil area also has high clay content with minimal potential for infiltration. This will provide an additional, natural barrier to protect ground water present beneath the proposed structure.

  745.112: Ensure permanent impoundments are not located on the completed fill. Small depressions may be allowed by the Division if they are needed to retain moisture or minimize erosion, create and enhance wildlife habitat or assist revegetation, and if they are not incompatible with the stability of the fill; and

  Permanent impoundments are not planned on the excess spoil area. Small depressions may be constructed as allowed by the Division to retain moisture, minimize erosion, create and enhance wildlife habitat or assist revegetation.

  745.113: Adequately cover or treat the excess spoil that is acid- and toxic forming with nonacid nontoxic material to control the impact on the surface and ground water in accordance with R645-301-731.300 and to minimize adverse effects on plant growth and approved postmining land use.

  Laboratory data representative of the overburden planned for disposal in the excess spoil area does not show acid- and toxic forming characteristics.

  745.120: Drainage Control. If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design will include

diversions and underdrains as necessary to control erosion, prevent water infiltration into the fill and ensure stability.

A spring and seep survey available in Chapter 7 has identified no springs or wet weather seeps in the proposed excess spoil area. The final surface will be regraded to a contour that will route water from snowmelt and rainfall around the excess spoil as shown on the final contours Drawing 5-35. There are no manmade water courses present in the excess spoil area. No underdrains are planned for the excess spoil structure.

745.121: Diversions will comply with the requirements of R645-301-742.300

No diversions are planned in the excess spoil area.

745.122 : Underdrains

No underdrains are planned in the excess spoil area.

745.300: Durable Rock Fills

No durable rock fills are planned.

745.400: Preexisting Benches

The MRP does not contemplate disposal of excess spoil on preexisting benches.

528.320. Coal Mine Waste.

The MRP does not contemplate processing coal that would produce coal mine waste.

528.322. Refuse Piles.

The MRP does not contemplate the construction of any refuse piles,

528.323. Burning and Burned Waste Utilization.

The MRP does not contemplate processing coal that would produce coal mine waste, eliminating the any potential for coal mine waste fires.

528.330. Noncoal Mine Waste.

Noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities will be temporarily stored in appropriate containers

and removed from the permit area and will be properly disposed of according to applicable State and Federal regulations.

528.332.

Final disposal of noncoal mine wastes will be in a State-approved solid waste disposal site not located within the permit area.

528.333.

At no time will any noncoal mine waste be deposited in a refuse pile or impounding structure, nor will any excavation for a noncoal mine waste disposal site be located within eight feet of any coal outcrop or coal storage area.

528.334.

Notwithstanding any other provision to the R645 Rules, any noncoal mine waste defined as "hazardous" under 3001 of the Resource Conservation and Recovery Act (RCRA) (Pub. L. 94-580, as amended) and 40 CFR Part 261 will be handled in accordance with the requirements of Subtitle C of RCRA and any implementing regulations.

528.350. Acid-Forming and Toxic Materials

Debris, acid-forming, toxic-forming materials and materials constituting a fire hazard will be identified and disposed of in accordance with R645-301-528.330, R645-301-537.200, R645-301-542.740, R645-301-553.100 through R645-301-553.600, R645-301-553.900, and R645-301-747. Appropriate measures will be implemented to preclude sustained combustion of such materials; and

528.400. Dams, embankments and other impoundments.

Plans do not include using dams, embankments or other impoundments for disposal of coal, overburden, excess spoil or coal mine waste

529. **MANAGEMENT OF MINE OPENINGS.**

All wells will be managed to comply with R645-301-748 and R645-301-765. Water monitoring wells will be managed on a temporary basis according to R645-301-738.

Wells constructed for monitoring groundwater conditions in the proposed Coal Hollow Mine permit and adjacent area, including exploration holes and boreholes used for water wells or monitoring wells, will be designed to prevent contamination of groundwater and surface-water resources and to protect the hydrologic balance. A diagram depicting typical monitoring well construction methods is shown in Drawing 7-11. Monitoring wells will include a protective hydraulic seal immediately above the screened interval, an annular seal plugging the borehole above the hydraulic seal to near the ground surface, and a concrete surface seal extending from the top of the hydraulic seal to the ground

surface which is sloped away from the well casing to prevent the entrance of surface flows into the borehole area. Well casings will protrude above the ground surface a sufficient height so as to minimize the potential for the entrance of surface water or other material into the well. A steel surface protector with a locking cover will be installed at monitoring wells to prevent access by unauthorized personnel. Where there is potential for damage to monitoring wells, the wells will be protected through the use of barricades, fences, or other protective devices. These protective devices will be periodically inspected and maintained in good operating conditions. Monitoring wells will be locked in a closed position between uses.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to

minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

530 OPERATIONAL DESIGN CRITERIA AND PLANS:

531 GENERAL:

There are five sediment impoundments proposed for the permit area. These structures will be constructed using a combination of dozers and backhoes. The structures have been designed to contain the required storm events as specified in Appendix 5-2. The structures will have sediment removed as necessary to ensure the required capacities. Details for these structures can be viewed on Drawings 5-25, 5-26 and 5-28 through 5-32. Calculations and supporting text can be viewed in Appendix 5-2.

There are no other coal processing waste banks, dams or embankments proposed within the permit area.

Underground mining has not occurred within the permit area.

532 SEDIMENT CONTROL:

Four diversion ditches along with five sediment impoundments are proposed for the permit area. In addition, miscellaneous controls such as silt fence and berms are also proposed for specific areas. The proposed locations for these structures are shown on Drawing 5-3. Details associated with these structures can be viewed on Drawings 5-25 through 5-34 and Appendix 5-2.

Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished in areas that will be reclaimed to native plant communities. The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques

and materials depending on the reclaimed area.

532.100 Disturbed Area:

The smallest practicable area, consistent with reasonable and safe mine operational practices will be disturbed at any one time during the mining operation and reclamation phases. This will be accomplished through progressive backfilling, grading, and prompt revegetation of disturbed areas. An estimated reclamation schedule is shown on Drawing 5-38.

532.200 Backfill Stabilization:

The backfilled material will be stabilized by grading to promote a reduction of the rate and volume of runoff in accordance with the applicable requirements. The excess spoil and fill above approximate original contour will be graded to a maximum angle 3h:1v slope and revegetated to minimize erosion. This area is designed with concave slopes and slope irregularities that will also assist in minimizing erosion. A geotechnical analysis of this configuration has been completed and the factor of safety is estimated at 1.6 to 1.7. This analysis can be viewed in Appendix A5-1. The remaining backfill will be placed in the mined out pit, and thus confined on all sides. The backfill will be inherently stable.

Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished in areas that will be reclaimed to native plant communities. The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques and materials depending on the reclaimed area.

533. IMPOUNDMENTS.

533.100.

No impoundments meeting the NRCS Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR Sec. 77.216(a) are planned for the Coal Hollow Mine.

533.110

Impoundments not included in 533.100, will be designed and constructed with a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions or meet the requirements of R645-301-733.210.

The proposed sediment impoundments are expected to impound seasonal water and storms. A geotechnical analysis of these designs has been performed and can be reviewed in Appendix 5-1. Static safety factors for the proposed designs range from 2.2 to 5.3.

533.200. Foundations.

Foundations for temporary and permanent impoundments will be designed so that

- *Foundations and abutments for the impounding structure are stable during all phases of construction and operation. Such foundations for temporary and permanent impoundments will be designed based on adequate and accurate information on the foundation conditions*

  Refer to Appendix 5-1 for information related to foundations of the proposed impounding structures. No permanent impoundments are proposed.

- *All vegetative and organic materials will be removed and foundations excavated and prepared to resist failure. Cutoff trenches will be installed if necessary to ensure stability.*

  All vegetation, topsoil and subsoil as identified in Chapter 2 will be removed from the impoundment areas prior to construction. Cutoff trenches will not be necessary for stability.

- *Slope protection will be provided to protect against surface erosion at the site and protect against sudden drawdown.*

  Slopes of impoundments will be seeded and sloped to protect against erosion at the site. The high clay content and compaction characteristics of the material present at the impoundments will also assist with minimizing erosion of the slopes.

- *Faces of embankments and surrounding areas will be vegetated except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.*

  Faces of embankments will be vegetated to minimize erosion. Standing water in the ponds is expected to be minimal and therefore these faces will also be seeded for erosion control.

- *The vertical portion of any remaining highwall will be located far enough below the low- water line along the full extent of highwall to provide adequate safety and access for the proposed water users.*

  All highwalls will be fully covered following active use and backfilling of pits.

533.300

A rapid drawdown analysis was completed assuming the spillways are plugged, the basin fills to top of the embankments and then the water is released or pumped down to the base of basins. The soil strengths utilized were based on total stress conditions as determined from the triaxial shear tests completed for this project. It should be noted that rapid drawdown is highly unlikely since spillway and outlet piping will be no more than 4-feet below the top of embankments. The resulting safety factors under these conditions range from 1.2 to 1.9. Based on this analysis, no additional protection measures are

needed for the impoundments in relation to rapid drawdown. Details for this analysis are provided in Appendix 5-1, pages 6 through 7 in the main section of the report.

533.600.

The MRP does not contemplate construction of impoundments that meet the criteria of MSHA, 30 CFR 77.216(a).

533.700 - 714. Plans.

Each detailed design plan for structures not included in 533.610 shall:

- *Be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, except that all coal processing waste dams and embankments covered by R645-301-536 and R645-301- 746.200 shall be certified by a qualified, registered, professional engineer;*

  Designs for the proposed impoundments have been prepared by a qualified, registered, professional engineer, with assistance from a geotechnical expert. These certifications can be viewed on Drawings 5-28 through 5-31.

- *Include any design and construction requirements for the structure, including any required geotechnical information;*

  A geotechnical analysis of the impoundments has been prepared by an expert in this field. This analysis can be viewed in Appendix 5-1. Embankments will be constructed in 2 foot lifts as recommended by the analysis.

- *Describe the operation and maintenance requirements for each structure; and*

  The proposed impoundments are designed to temporarily store water from storm events and snow melt. Long term standing water in the impoundments is anticipated to be seasonal and sediment will be removed as necessary to provide the required storage capacities. Emergency spillways have been included in the designs to provide a non-destructive discharge route should the capacities ever be exceeded. Surveys of these impoundments will be regularly conducted to ensure that design capacities are available.

- *Describe the timetable and plans to remove each structure, if appropriate.*

  All impoundments will be reclaimed at the end of operations. The estimated timeline for removal of these structures are shown on Drawing 5-38. Expected removal is year four of the mining and reclamation process. In areas where soils are not stabilized following the removal of these sediment impoundments, silt fence will be appropriately installed and maintained to provide sediment control until stable conditions are met.

Detailed designs of impoundments can be viewed on Drawings 5-28 through 5-31. Locations can be viewed on Drawing 5-3 and 5-25.

534. **ROADS**

534.100-200 Roads will be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:

- *Prevent or control damage to public or private property;*

  All roads will be reclaimed to approximate original contour as shown on Drawings 5-35, 5-36 and 5-38. These roads are designed to control damage to public and private property.

- *Use nonacid - or nontoxic-forming substances in road surfacing; and*

  There will be no acid or toxic forming substances used in road surfacing.

- *Have, at a minimum, a static safety factor of 1.3 for all embankments.*

  All embankments are designed with static safety factors that exceed 1.3.

- *Have a schedule and plan to remove and reclaim each road that would not be retained under an approved postmining land use.*

  All roads not planned to remain postmining will be removed and reclaimed according to Drawings 5-35 and 5-36. The estimated timetable for removing these roads is shown on Drawing 5-38.

- *Control or prevent erosion, siltation and the air pollution attendant to erosion by vegetating or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices.*

  Cut ditches will be established on the shoulders of all primary roads to control drainage and erosion. Cut and fill slopes along the primary roads will be minimal and are not expected to cause significant erosion. In locations where there are culvert crossings (i.e. Lower Robinson Creek), the fills slopes will be stabilized by utilizing standard methods such as grass matting or straw wattles.

- *To ensure environmental protection and safety appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and reconstruction of roads will incorporate appropriate limits for grade, width, surface materials, and any necessary design criteria established by the Division.*

The following specifications apply to the Primary Mine Haul roads:

1) Roads will be approximately 80' in width
2) Approximately a 2% crown
3) Approximately one foot deep cut ditches along shoulders for controlling storm water
4) 18" of crushed rock or gravel for road surfacing
5) Cut and fill slopes of 1.5 h:1v
6) Minimum fill over each culvert will be 2 times diameter of culvert
7) Berms placed as necessary along fills

The ancillary roads will have similar specifications except surfacing will occur only as needed and may be narrowed to a 40 foot road width. A typical cross section for the ancillary roads can be viewed on Drawing 5-24.

The location and details for Primary Mine Haul roads can be viewed on Drawings 5-3 and 5-22 and 5-23.

In addition to the two roads primary Mine Haul roads, the road located within the facilities area is also classified as a primary road. This road is planned to be 24 feet wide with 24 inches of compacted sub base and 8 inches of compacted 1 inch minus gravel as surfacing. This road is referred to as "Facilities Roadway" and more details are described in 527.200 along with Drawings 5-22A and 5-22B.

In addition to the primary roads that will be present during active mining, four additional roads are planned to exist postmining and are also classified as primary roads for this reason.

Roads that will remain postmining are the following:

- Road to Water Well with details shown on Drawing 5-22D
- Road to east C. Burton Pugh property (K3993) with details shown on Drawing —5-22C
- County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22G. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by the end of Year 4.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawings 5-35 and 5-37 along with the post mining topography.

The ramps, benches and equipment travel paths within the active surface mining area are temporary in nature and will be relocated frequently as mining progresses. These temporary travelways are considered part of the pit due to their short term use, and are not individually designed nor engineered. They will be built and maintained to facilitate safe and efficient mine and reclamation operations.

534.300-340. Primary Roads.

Primary roads will:

- *Be located, insofar as practical, on the most stable available surfaces;*

  These roads are designed on the most practicable, stable surfaces.

- *Be surfaced with rock, crushed gravel, asphalt, or other material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road;*

Primary roads haul roads will be surfaced with approximately 18" of crushed rock or gravel to provide a durable surface for the anticipated volume of traffic and equipment.

- *Be routinely maintained to include repairs to the road surface, blading, filling potholes and adding replacement gravel or asphalt. It will also include revegetation, brush removal, and minor reconstruction of road segments as necessary; and*

  All roads will be maintained on an as needed basis using motor graders, water trucks for dust suppression, and other equipment as necessary. Crushed stone and/or gravel will be used as a surface course for primary roads outside the active mining area, and may be used as needed for ramps and travelways within the pit. Should the roads be damaged by a catastrophic event, such as an earthquake or a flood, repairs will be made as soon as possible after the damage has occurred or the road will be closed and reclaimed. Roads will be reclaimed once they are no longer needed for their intended use.

- *Have culverts that are designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.*

  Road fill over culverts will be at minimum two times the diameter of the culvert. This is a conservative standard that has been effectively utilized at mining operations with similar equipment and mining practices.

535. SPOIL

535.100 -150 Disposal of Excess Spoil. *Excess spoil will be placed in designated disposal areas within the permit area in a controlled manner. The fill and appurtent structures will be designed using current, prudent engineering practices and will meet any design criteria established by the Division.*

- *The fill will be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill must be stable under all conditions of construction.*

  A geotechnical analysis has been completed for the proposed excess spoil structure. This analysis estimates the long-term safety factor to be 1.6 to 1.7 based on the proposed design. Following proper construction practices of building the structure in maximum four foot lifts and meeting 85% compaction based on the standard Procter will ensure that the structure will be stable under all conditions of construction. The following earthwork specifications will be followed:

  1) Areas to receive fill will be stripped of all vegetation, organic material, and debris. Any existing undocumented or non-structural fill/backfill materials and other unsuitable materials will be excavated in their entirety.

All areas that are to receive fill will be observed by a professional engineer experienced in the design of earth and rock fills prior to placement of fill.

2) Fill will be compacted to 85% of the maximum density as compared to ASTM D 698 (standard proctor) for the spoil.

3) Individual lift thickness will not exceed 4 feet, unless approved by both the Division and the professional engineer based on compaction test results during field verification.

4) Saturated soils will be placed in an area that will have minimal effect on the performance of slopes.

5) A qualified professional engineer with experience in the design of earth and rock fills will periodically observe the placement of fill and conduct in-place field density tests on the fill to check for adequate moisture and relative compaction. The compaction tests will be conducted as part of the periodic inspections required in R645-301-514.100, 514.311, and R645-301-514.120. These compaction tests will be conducted using nuclear density (ASTM D2292-9) or equivalent method. If less than the specified relative compaction is obtained, additional compactive effort will be applied and the fill moisture-conditioned as necessary until the specified relative compaction is attained.

6) Wherever, in the opinion of the ACD's representatives, an unstable condition is being created, the work will not proceed in that area until an evaluation has been made and the grading operations revised, if necessary.

7) During unfavorable weather conditions, construction of the fill will not proceed without confirmation from the professional engineer experienced in the design of earth and rock fills.

–This construction will occur only in the designated excess spoil area as shown on Drawing 5-3 and 5-35. The fill will be placed with end dump haul trucks and lifts will be constructed using dozers. High precision GPS systems will be regularly utilized to check grades and appropriate lift thickness. The geotechnical analysis for this structure can be viewed in Appendix 5-1.

- *Be located on the most moderately sloping and naturally stable areas available, as approved by the Division, and placed, where possible, upon or above a natural terrace, bench or berm, if such placement provides additional stability and prevents mass movement;*

The excess spoil is planned to be placed in an area where natural grades range from 0 to 5%. This is one of the most moderately sloping locations in the Permit

Area. Stability of this structure is estimated to be 1.6 to 1.7 based on the Appendix 5-1.

- *Be subject of sufficient foundation investigations. Any necessary laboratory testing of foundation material, will be performed in order to determine the design requirements for foundation stability. The analyses of foundation conditions will take into consideration the effect of underground mine workings, if any, upon the stability of the fill and appurtent structures; and*

  Geotechnical borings were completed in the foundation of the proposed disposal area. Laboratory analysis of these borings has also been completed. Details of this analysis can be viewed in Appendix 5-1.

- *Incorporate keyway cuts (excavations to bedrock) or rock buttresses to ensure stability where the slope in the disposal area is in excess of 2.8h:1v (36 percent), or such lesser slope as may be designated by the Division based on local conditions. Where the toe of the spoil rests on a downslope, stability analyses will be performed in accordance with R645-301-535.150 to determine the size of rock toe buttresses and keyway cuts*

  Permanent slopes for the proposed excess spoil will not exceed 3h:1v (33 percent), therefore no keyway cuts have been proposed in the design. Appendix 5-1 details the stability analysis for the proposed structure.

- *Excess spoil may be disposed of in underground mine workings,..*

  Excess spoil will not be disposed of in underground mine workings.

- *Placement of Excess Spoil. Excess spoil will be transported and placed in a controlled manner in horizontal lifts not exceeding four feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; graded so that surface and subsurface drainage is compatible with the natural surroundings: and covered with topsoil or substitute material in accordance with R645-301-232.100 through R645-301-232.600, R645-301-234, R645-301-242, and R645-301-243. The Division may approve a design which incorporates placement of excess spoil in horizontal lifts other than four feet in thickness when it is demonstrated by the operator and certified by a professional engineer that the design will ensure the stability of the fill and will meet all other applicable requirements.*

  Horizontal lifts will not exceed four feet in thickness unless otherwise approved by the Division. The lifts will be concurrently compacted to meet 85% of the standard Procter. The geotechnical analysis (Appendix 5-1), provides information showing that these construction standards will provide mass stability and will prevent mass movement during and after construction. The excess spoil will be graded to provide drainage similar to original flow patterns. Topsoil and subsoil

as designated in Chapter 2 will be removed and separated from other materials prior to placement of spoil.

- *For the purposes of SURFACE COAL MINING AND RECLMATION ACTIVITIES the design of the spoil disposal structures will include the results of geotechnical investigations as follows:*

  1) The Character of the bedrock and any adverse geologic conditions in the disposal area;

  Refer to Appendix 5-1.

  2) A survey identifying all springs, seepage, and ground water flow observed or anticipated during wet periods in the area of the disposal site;

  Spring and seep survey information is provided on Drawing 7-1. There are no springs or seeps identified in the excess spoil area.

  3) A survey of the potential effects of subsidence of the subsurface strata due to past and future mining operations;

  There no historical underground mining operations in the proposed excess spoil area. There are also no future underground operations proposed.

  4) A technical description of the rock material to be utilized in the construction of those disposal structures containing rock chimney cores or underlain by a rock drainage blanket; and

  There are no rock chimneys or drainage blankets proposed.

  5) A stability analysis including, but not limited to, strength parameters, pore pressures and long-term seepage conditions. These data will be accompanied by a description of all engineering design assumptions and calculations and the alternative considered in selecting the specific design specifications and methods.

  The stability analysis and all supporting data are available in Appendix 5-1.

- *If for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, under R645-301-535.112 and R645-301-535.113, rock-toe buttresses or key-way cuts are required, the will include the following:*

  Neither rock-toe buttresses or key-way cuts are required under R645-301-535.112 or R645-301-535.113.

535.200. Disposal of Excess Spoil: Valley Fills/Head-of-Hollow Fills.

The MRP does not contemplate disposal of excess spoil as valley fill or head-of-hollow fills.

535.300. Disposal of Excess Spoil: Durable Rock Fills.

The MRP does not contemplate disposal of excess spoil as durable rock fill.

535.400. Disposal of Excess Spoil: Preexisting Benches.

The MRP does not contemplate disposal of excess spoil on preexisting benches.

536. Coal Mine Waste.

The MRP does not contemplate processing of coal that would produce coal mine waste.

537 REGRADED SLOPES:

537.100 Geotechnical Analysis:

The excess spoil structure and fill above approximate original contour are the only alternative specifications proposed. A geotechnical analysis has been completed for this proposal and can be viewed in Appendix 5-1. All other mined areas will be restored to approximate original contour.

540 RECLAMATION PLAN:

541.100 - 400 General

When coal mining is completed, all pits will be backfilled and reclaimed in accordance with the R645 rules and this permit. All equipment, structures, and other facilities, unless approved by the Division as suitable for the postmining land use or environmental monitoring, will be removed and the affected land reclaimed.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

542 NARRATIVE, DRAWINGS AND PLANS:

542-100 through 600 Plan and Timetable.

Reclamation at the Coal Hollow Mine includes both ongoing reclamation and final reclamation activities. Ongoing reclamation will follow mining operations as closely as practicable during the mine production phase. Major steps in the ongoing reclamation process are:

- Backfilling and Grading. The planned backfilling and grading operations are described more fully under section 553 below.
- Topsoil and Subsoil Replacement. Following grading, suitable topsoil and subsoil will be replaced on the regraded area. Topsoil may be direct placed from areas ahead of the mine, or may be taken from available stockpiled material. The planned topsoil operation will have topsoil ahead of the operation dozed into windrows, and loaded into trucks by a front end loader. The trucks will haul the topsoil to the regraded area, or to a temporary topsoil stockpile. Subsoil will be handled similar to topsoil. Once dumped on the regraded area, topsoil and subsoil layers will be dozed to a consistent thickness. Approximately 8 inches of topsoil is expected to be removed ahead of mining and replaced over the regraded area. Subsoil removed and replaced will average 40 inches thick and will be placed between the topsoil layer and run of mine spoil. The total profile thickness of topsoil and subsoil in mined areas will average 48 inches. Once in place, the area will be fine graded to remove small erosion features and depressions.
- Revegetation. Following replacement of topsoil the area will be revegetated by seeding. Mulch will be placed on the seedbed surface once soil amendments have been incorporated and seeding has been accomplished in areas that will be reclaimed to native plant communities. The mulch should control erosion by wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques and materials depending on the reclaimed area.

Generally, mined areas will be backfilled and graded within approximately 180 days following coal removal, or 1,500 feet of the active coal removal face. One exception to this standard is during mining and backfilling of the final pits in the south end of the permit area. During this phase of mining, backfilling will follow approximately 2,000 feet from the active coal face. A detailed description of the reason for this variation are fully described in section 528 (Overburden) and the major steps can be viewed on Drawings 5-17 through 5-19. Areas needed for in-pit roads, ramps, drainage controls or areas which must be left open temporarily for operational reasons will be backfilled and graded when they are no longer needed. The rate of backfilling will depend on the availability of mined out pit areas for backfilling, and the rate of production at the mine. Based on anticipated production rates, Drawing 5-38 provides an estimated sequence and timing for reclamation.

Topsoil will be replaced on the graded areas as soon as operationally practicable. This work will depend on weather and soil conditions in the removal and replacement areas, but is generally anticipated to occur within 90 days of completion of regrading.

Revegetation activities will be seasonal in nature. As currently planned, initial seeding will occur at the first planting opportunity following replacement of topsoil. Supplemental seeding may be done subsequently as needed.

Some delay is unavoidable in reclamation of the initial mining areas due to the time required to establish the initial working pit and backfill area, and to achieve a steady state excavation/backfill operation. As currently planned the initial mining areas will be backfilled to the planned post mining contour, graded, and the topsoil replaced by late in the first year or in the first half of the second year of mining. Reclamation activities will proceed at the regular planned rate thereafter. Proposed final reclamation contours and cross sections can be viewed on Drawings 5-35 and 5-36.

The sequence and timing of reclamation activities is dependent on the coal production rate. Should that rate differ significantly from the current plan, the reclamation schedule will also vary.

Final reclamation includes the following:

- Backfilling and Grading. Backfilling of all final pits will commence at the conclusion of coal production. All highwalls, spoil piles, and depressions will be removed, except that small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation. No permanent final pit impoundments are currently planned. The excess spoil structure will remain. All exposed coal seams, and acidic or toxic-forming strata will be covered with at least five feet of noncombustible material.
- Topsoil and Subsoil Replacement. 8 inches of topsoil underlain by 40 inches of subsoil will be placed on the backfilled pits and excess spoil. Other disturbed areas will have topsoil replaced (including facilities sites, roads etc.).
- Removal of Structures. Before abandoning the permit area or seeking bond release, all structures not needed for the approved post mining land use will be removed and reclaimed. The Lower Robinson Creek diversion is proposed to be temporary. Material from the coal stockpile base area and other areas where coal spillage may accumulate will be excavated and placed in a controlled manner in the final pit and covered with noncombustible material to prevent sustained combustion. The only structure planned to exist postmining is the water well with details shown in Drawing 5-8C and location shown on 5-3, 5-35 and 5-37.
- Removal of Roads. Roads not retained for use under an approved postmining land use will be reclaimed immediately after they are no longer needed for mining and reclamation operations. Roads that are not listed as postmining roads in this

section, will be closed to traffic; and all bridges and culverts removed. Prior to reclamation, surface material that is incompatible with the postmining land use and revegetation requirements will be removed from the roads and properly disposed of at the mine site. The roadbeds will be scarified or ripped to break up the surface. Topsoil will be replaced on the roadbed and the surface revegetated in accordance with the standards set forth in R645.

Roads that will remain postmining are the following:

- Road to Water Well with details shown on Drawing 5-22D
- Road to east C. Burton Pugh property (K3993) with details shown on Drawing 5-22C
- County Road 136 (K3900) with details on Drawing 5-22E, 5-22F and 5-22G. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 and is expected to be completed by the end of Year 4.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawings 5-35 and 5-37 along with the post mining topography.

- Removal of Water Control Structures. All sedimentation control structures, including ditches, berms and sedimentation ponds not retained as part of the approved post-mining land use will be removed, the areas regraded, topsoiled, and revegetated. All water control structures will be removed at final reclamation.

Final pit backfilling, removal of buildings, roads and other facilities, along with replacement of topsoil is expected to require approximately 15 months after the last coal is removed. In the alternate reclamation scenario (Drawing 5-37), the bulk of this period will be required to backfill the final pits.

542.700. Final Abandonment of Mine Openings and Disposal Areas.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be

completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

542.720. Disposal of Excess Spoil.

A geotechnical analysis has been completed for the proposed excess spoil structure. This analysis estimates the long-term safety factor to be 1.6 to 1.7 based on the proposed design. Following proper construction practices of building the structure in maximum four foot lifts and meeting 85% compaction based on the standard Procter will ensure that the structure will be stable under all conditions of construction. This construction will occur only in the designated excess spoil area as shown on Drawing 5-3 and 5-35. The fill will be placed with end dump haul trucks and lifts will be constructed using dozers.

High precision GPS systems will be regularly utilized to check grades and appropriate lift thickness. The geotechnical analysis for this structure can be viewed in Appendix 5-1.

Excess spoil that is combustible will be adequately covered with noncombustible material to prevent sustained combustion.

542.730. Disposal of Coal Mine Waste.

The MRP does not contemplate processing of coal that would produce coal mine waste.

542.740. Disposal of Noncoal Mine Wastes.

Noncoal mine waste including, but not limited to grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities will be placed and temporarily stored in a controlled manner in a designated portion of the permit area and hauled offsite to a state approved recycling or solid waste disposal site. Final disposal of noncoal mine waste will not take place within the permit area.

542.800. Reclamation Cost.

The amount of the bond will depend upon the requirements of the ***approved*** permit and reclamation plan (R645-830.120).

A preliminary estimate of reclamation costs is included in Appendix 8-1. This estimate is based upon the proposed plan. A final bond estimate will be provided by the applicant to the Division upon completion of the approved permit and reclamation plan.

550. RECLAMATION DESIGN CRITERIA AND PLANS

551. SEALING AND CASING OF UNDERGROUND OPENINGS

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well under R645-301-731.100 through R645-301-731.522 and R645-301-731.800, each well will be capped, sealed, backfilled, or otherwise properly managed, as required by the Division in accordance with R645-301-529.400, R645-301-631.100, and R645-301-748. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.

Permanent closure and abandonment of water wells greater than 30 feet in depth will be in accordance with the requirements of "Administrative Rules for Water Well Drillers", State

of Utah, Division of Water Rights or other applicable state regulations. Abandonment of wells will be performed by a licensed water well driller. The wells to be abandoned will be completely filled using neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout, or other materials approved by the Utah State Engineer's office. Alternatively, the well may be abandoned using a different procedure upon approval from the Utah State Engineer's office.

Abandonment materials will be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. The casing will be severed a minimum of 2 feet below the ground surface. A minimum of 2 feet of compacted native material will be placed above the abandoned well upon completion.

Within 30 days of the completion of well abandonment procedures, a report will be submitted to the State Engineer by the responsible licensed driller giving data related to the abandonment of the well. This shall include the name of the licensed driller or other person(s) performing abandonment procedures, name of well owner at the time of abandonment, the address or location of the well by section, township, and range, abandonment materials and equipment used, water right or file number covering the well, the final disposition of the well, and the date of completion.

Exploration holes and boreholes will be backfilled, plugged, cased, capped, sealed, or otherwise managed to prevent acid or toxic contamination of water resources and to minimize disturbance to the prevailing hydrologic balance. Exploration holes and boreholes will be managed to ensure the safety of people, livestock, fish and wildlife, and machinery.

If a water well is exposed by coal mining and reclamation operations, it will be permanently closed unless otherwise managed in a manner approved by the Division.
If any exploration boreholes are to be used as monitoring wells or water wells, these will meet the provisions of R645-301-731

Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division.

552. **PERMANENT FEATURES.**

552.100

Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

552.200

All impoundments will be reclaimed, no permanent impoundments are proposed.

553 BACKFILLING AND GRADING:

Backfilling and Grading of the mined area will proceed in conjunction with coal recovery operations.

The planned mine will recover approximately 5.02 million tons of coal, and remove approximately 31.6 million Bank Cubic Yards (BCY) of overburden. The following is a description of the overburden removal and backfilling process:

Based on the overburden isopach map (Drawing 5-15), the overburden removal and backfilling process has been separated into three major stages. The first stage of this process is for the initial mining area, Pits 1-8. These pits have a relatively low strip ratio, approximately 5:1 (refer to Drawing 5-13). In order to efficiently remove overburden for this phase, spoil from the first three pits, including Pit 2 the boxcut, will be placed in an excess spoil area located immediately west of Pit 1. This excess spoil structure will hold approximately 2.7 million loose cubic yards (LCY) of material and is shown on Drawing 5-17. Once the excess spoil pile is filled, overburden from Pits 4 through 8 can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

As mining progresses through Pits 9-15, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area require a fill above approximate original contour that is an extension of the excess spoil pile. Material from Pits 9-15 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Stage 1 and extends an additional 2,500 feet to the east as the mining sequence proceeds to Pit 15. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Stage 3 overburden removal begins in Pit 16 and proceeds through Pit 30. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses to the south end of the property. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding Pit 15. This results in the distance between the backfill and the active coal face increasing because there is a lack of spoil in the lower ratio pits as mining proceeds south to fill the preceding higher ratio area. At the end of mining this phase, an area will not be completely backfilled that is approximately 2,000 feet in length and 1,300 feet wide and will require 6.8 million yards of fill to complete reclamation to approximate original contour. This remaining pit provides an open pit adjacent to the federal coal reserves for backfilling of overburden so that a smooth transition can be made without developing another boxcut and an excess spoil area. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan (Preferred Scenario) for backfilling the final pits is based on the assumption that Alton Coal Development, LLC will be successful with acquiring the adjacent federal coal reserves, located immediately to the west of the project area. This Preferred scenario for backfilling will minimize overall disturbance, and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial box cut as operations are transitioned into these reserves. In addition, this scenario provides a method for implementing concurrent reclamation during the project by eliminating temporary stockpiles of spoil that can not be reclaimed and have to be placed in backfilled areas at a later time. Use of temporary spoil stockpiles significantly delay reclamation and this plan eliminates the need for these type of temporary structures.

At the time that the transition occurs into the federal reserves, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawings 5-35 and 5-36.

The following is an overburden and backfill balance for this scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,945,000	5,204,000	2,741,000	2,741,000
2	15,145,000	9,303,000	5,842,000	8,583,000
3	15,447,000	22,247,000	0	8,583,000
4 (Federal)	6,800,000	6,800,000	0	8,583,000
Total	45,337,000	36,754,000	8,583,000	8,583,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, an alternate scenario has been developed. The Alternate scenario requires that all fill above approximate original contour and part of the excess spoil structure will be rehandled and placed in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately 6.8 million yards of spoil. In this scenario, reclamation of the project area will be significantly delayed and the transition into adjacent federal coal reserves at a later date will disturb additional backfill along the west permit boundary approximately 2,000 feet in length by 230 feet wide (10 acres). An additional excess spoil structure would then need to be constructed on the federal lands to place spoil from the initial boxcut. Part of the excess spoil would likely be material removed from the Permit Area to access the coal beneath the Permit Area highwalls and provide the proper layback of the backfill material along the Permit boundary.

The following table summarizes the overburden and backfill balance for this scenario:

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,945,000	5,204,000	2,741,000	2,741,000
2	15,145,000	9,303,000	5,842,000	8,583,000
3	15,447,000	22,247,000	0	8,583,000
4 (Rehandle)	0	6,800,000	-6,800,000	1,783,000
Total	38,537,000	36,754,000	1,783,000	1,783,000

In both scenarios (Preferred and Alternate), Rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet except for the exemption in the south end of the mining area (Pits 24 through 30), which is described above in a step by step manner in the Stage 3 overburden removal process, the above tables and Drawings 5-17 through 5-19. This exemption is expected to take place in Year 3 of the mining process.

Major steps in the backfilling and grading process are:

- Backfilling of the Mined Out Pit. Material from active pits will be used to backfill mined out pits as mining progresses. Material will be placed in the in-pit backfill in lifts, until the approximate planned final elevation is reached. Working stability in the backfill will be achieved by placement of the material, and control of the overall spoil face slope at stable angles. The mined out area will be filled to its planned post-mining elevation, which approximates the pre-mining land contour. The backfill will be inherently stable because the exposed surface will have shallow slopes, and the backfill surface will not be significantly higher than the surrounding undisturbed ground with the exception of the variance shown on Drawing 5-3.
- Backfilling of Ramps. Ramps and travelways within the active mining will be moved as necessary for safe operation and efficient hauling of overburden and coal. When a particular ramp or travelway is no longer needed, it will be backfilled with excavated overburden from the advancing pit.
- Grading. After backfilling is complete in each mined out area, the area will be graded using dozers and motor graders to achieve the planned post-mining contour, facilitate stable positive drainage patterns, and to blend in with the surrounding topography. Postmining slopes will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevent slides. A geotechnical analysis has been completed for the excess spoil structure and can be found in Appendix 5-1.

Timing of backfilling and grading operations will depend on the rate of mine advance and the availability of backfill space and material. It is planned that mined areas will be backfilled and graded within approximately 6~~1~~80 days following coal removal, or 1,500

feet of the active coal removal face. As described in the previous text and shown on Drawing 5-19, there will be a variance from this standard in the final pits. Areas needed for in-pit roads, ramps, drainage controls or areas which must be left open temporarily for operational reasons will be backfilled and graded as they become available.

In ~~Some delay is unavoidable in backfilling~~ the initial mining areas, spoil from Pit 2 and part of Pit 3 will be permanently placed in the excess spoil area and pit 1. Part of Pit 3 and all of Pit 4 spoil is placed as backfill in Pit 2, beginning the sequential pit backfilling process. By the time coal recovery is complete in Pit 6, rough backfilling and grading will be complete in Pits 2 and 3. ~~due to the time required to establish the initial working pit and backfill area, and to achieve a steady state excavation/backfill operation. As currently planned, the initial mining areas will be backfilled to the planned post mining contour, graded, and the topsoil replaced in late Year 1.~~

553.110

All areas except for the excess spoil pile and the variance from AOC (approximately 85 acres), will be restored to approximate original contour as shown on Drawing 5-35. R645-301-553.800 (Thick Overburden) does apply to this surface mine. In areas where excess spoil and variance from approximate original contour occur, the slopes will be regraded to a maximum angle of 3h:1v and most slopes are flatter as shown on Drawing 5-35 and 5-36. A geotechnical analysis has been completed to verify that the spoil material will be stable long term. This analysis can be viewed in Appendix 5-1.

553.120

All highwalls will be eliminated in the final landform. Small depressions may be constructed as needed to retain moisture, minimize erosion, create and enhance wildlife habitat or assist vegetation. All spoil piles will be eliminated with the exception of the planned excess spoil and variance from original contour as shown on Drawing 5-35.

553.130

Postmining slopes will not exceed the angle of repose which is expected to be approximately 1.5h:1v as described in Appendix 5-5. This appendix is an analysis by Dr. Ben Seegmiller addressing the safety factor for the post mining slope with the lowest safety factor outside the excess spoil area. This analysis concludes that a minimum safety factor of these slopes will be 1.7 which exceeds the requirement of 1.3. The excess spoil slopes have been analyzed by Alan Taylor, P.E., an expert in geotechnical engineering. These slopes also significantly exceed the required 1.3 safety factor. Details for this analysis by Mr. Taylor can be viewed in Appendix 5-1.

553.140

Slopes will be regraded and vegetated to minimize erosion and water pollution on and off the site.

553.150

Backfilling and grading will be conducted to support the approved postmining land use.

553.200 Spoil and Waste.

Spoil located in the excess spoil area and the variance from approximate original contour will be compacted to 85% of the standard Procter to provide long term stability of these structures. Remaining backfill in mined out areas will be confined and regraded to approximate original contour and will therefore not require compaction for long term stability. Subsoil will be placed over spoils and waste prior to placement of topsoil. This subsoil layer will provide a covering with minimal infiltration rate to prevent leaching of toxic materials.

553.210

Excess spoil from surface mining activities will be disposed of according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400. Detail for meeting these standards can be reviewed in the corresponding sections.

553.220

The MRP does not contemplate placing spoil on areas outside the mined-out surface area for the purposes of restoring the approximate original contour.

553.300. Covering of Exposed Coal Seams, and Acid- and Toxic-Forming Materials.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining will be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water in accordance with R645-301-731.100 through R645-301-731.522 and R645-301-731.800, to prevent sustained combustion, and to minimize adverse effects on plant growth and on the approved postmining land use.

553.400. Cut and Fill Terraces

The MRP does not contemplate constructing cut and fill terraces.

553.500. Previously Mined Areas (PMA's) and Continuously Mined Areas (CMA's).

The MRP does not contemplate operations associated with PMA's, CMA's, or areas with remaining highwalls.

553.600. Highwall Management

The MRP does not contemplate operations associated with PMA's, CMA's, or areas with remaining highwalls.

553.700. Backfilling and Grading: Thin Overburden.

The Coal Hollow project is expected to have approximately 1.8 million loose cubic yards of excess spoil; therefore R645-301-800 applies rather than R645-301-553.700.

553.800. Backfilling and Grading: Thick Overburden.

553.810

The spoil will be placed to attain the lowest practicable grade, and will not exceed the angle of repose for the material. A sequence of the steps for practicable movement of the excess spoil is shown on Drawings 5-17 through 5-19. The slopes on the excess spoil and variance from the approximate original contour will not exceed 3h:1v or flatter, which will provide a long-term, stable structure. The general design of the tall (60'+ vertically) excess spoil slopes is 5h:1v to 4h:1v to 3h:1v, bottom to top. This design creates a concave shape slope that resembles naturally occurring hills in the area and will minimize erosion. In addition, irregularities (flatter areas) have been added to break up long slopes. The overall shape of the pile is also irregular to be similar to hills in the surrounding area. The final configuration of this excess spoil can be viewed in Drawings 5-35 and 5-36. The rough grading of the excess spoil outlsopes will follow by not more than 60 days after completed construction. The angle of repose for the spoil material is expected to be 1.5h:1v as provided in Appendix 5-5 in the Introductory Overview (page 1) by Dr. Ben Seegmiller, an expert in the field of rock mechanics and slope stability. The design slopes are significantly flatter than the angle of repose expected for the spoil.

553.820 - 553.830

Backfilling and Grading of thick overburden will meet the following requirements:

- *R645-301-211: The applicant will present a description of the premining soil resources as specified under R645-301-221. Topsoil and subsoil to be saved under R645-301-232 will be separately removed and segregated from other material.*

  The soil resources for the proposed excess spoil disposal area are described in 2-1. A plan has been developed for removal of topsoil and suitable subsoil based on the soil descriptions in this appendices. The handling plan can be viewed on Drawing 2-2. Topsoil and acceptable subsoil will be separately removed and segregated from other material prior to placement of any spoil.

- *R645-301-212: After removal, topsoil will be immediately redistributed in accordance with R645-301-242, stockpiled pending redistribution under R645-301-234, or if demonstrated that an alternative procedure will provide equal or more protection for the topsoil, the Division may, on a case-by case basis, approve an alternative;*

  Excess spoil will have topsoil and subsoil redistributed in an approximately uniform, stable thickness with the approved post mining land use, contours and surface water drainage systems. Material handling practices will prevent excess compaction of these materials. Handling practices will also protect the materials from wind and water erosion before and after seeding and planting.

- *R645-301-412.300: Criteria for Alternative Postmining Land Uses.*

  Not Applicable

- *R645-301-512.210: Excess Spoil. The professional engineer experienced in the design of earth and rock fills will certify the design according to R645-301-535.100.*

  A professional engineer experienced in the design of earth and rock fills with assistance from a geotechnical expert has certified the design according to R645-301-535.100. These certifications can be viewed on Drawings 5-35, 5-36 and 5-17 through 5-19.

- *R645-301-512.220: Durable Rock Fills*

  No durable rock fills are planned.

- *R645-301-514.100: Excess Spoil. The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.*

  A professional engineer or specialist that is experienced in the construction of earth and rock fills will inspect the fill during construction and regular inspections will also be conducted during placement and compaction of fill materials.

- *R645-301-528.310: Excess spoil will be placed in designated disposal areas within the permit areas within the permit area, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100*

through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.

Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet. The material will be transported from the overburden removal area to the fill by end dump haul trucks and a dozer(s) will spread the spoil to this lift thickness. The fill will meet at minimum 85% compaction as related to the standard Procter. Final slopes will be regraded to a maximum slope of 3h:1v. The top of the fill will sloped to approximately 2% to prevent pooling of water and to reestablish drainage similar to the original flow patterns. The excess spoil placed on the non-mined areas is approximately 32 acres and varies in height from 35 to 110 feet. The area of excess fill over mined out areas (variance from approximate original contour) is an extension of the fill placed on the non-mined area and is approximately 55 acres. Combined acreage of the excess fill placed on mined and non-mined areas is 87 acres and varies in height from 60 to 100 feet above original contour. Total excess fill is 8.6 million yards. Design of this fill can be viewed in Drawings 5-35 through 5-36 and the geotechnical study can be viewed in Appendix 5-1.

- *R645-301-535.100 through R645-301-130: Disposal of Excess Spoil*

  A geotechnical analysis of the excess spoil structure design has been completed by an expert in this field. The long term static safety factor for this structure design is estimated at 1.6 to 1.7. Lifts will be placed in thicknesses not to exceed 4 feet. The lifts will meet 85% compaction by the standard Procter. The fill will be graded to allow for drainage similar to original patterns and to prevent excessive infiltration of water. Fill will be covered with subsoil and topsoil as specified in Chapter 2 to provide conditions suitable for revegetation of the area. The geotechnical study can be viewed in Appendix A5-1.

- *R645-301-535.300 through R645-301-535.500: Disposal of Excess - Spoil Durable Rock Fills.*

  Not Applicable

- *R645-301-536.300: Disposal of Coal Mine Waste in Excess Spoil*

  No coal mine waste is planned in the excess spoil area.

- *R645-301-542.720: Excess spoil will be placed in designated disposal areas within the permit area, in a controlled manner to ensure that the final fill is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use. Excess spoil that is combustible will be adequately covered with noncombustible material to prevent*

sustained combustion. The reclamation of excess spoil will comply with the design criteria under R645-301-553.240.

The excess spoil as shown in Drawing 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. No combustible excess spoil will be placed in the proposed structure. The reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v.

- *R645-301-553.240: The final fill configuration of the fill (excess spoil) will be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches will not be steeper than 2h:1v (50 percent).*

  The excess spoil as shown in Drawings 5-35 and 5-36 will be suitable to the surrounding area and for the postmining land use of primarily grazing. The reclamation of the spoil does not include any terraces and the slopes will not exceed 3h:1v. This slope angle has been utilized at similar mining operations and found to be suitable for erosion control and revegetation of reclaim slopes. The long term static safety factor for these slopes is estimated to be 1.6 to 1.7.

- *R645-301-745.100: General Requirements.*

  745.110: Excess Spoil will be placed in designated disposal areas within the permit area, in a controlled manner to:

  745.111: Minimize the adverse effects of leaching and surface water runoff from the fill on surface and underground water;

  Reclamation of the excess spoil will include a topsoil cover and subsoil layer. Infiltration through the reclamation is expected to be minimal based on the high clay content of these soils. In addition, laboratory data for the overburden shows that there is minimal potential for leaching of pollutants should infiltration rates become higher than expected.

  The foundation of the excess spoil area also has high clay content with minimal potential for infiltration. This will provide an additional, natural barrier to protect ground water present beneath the proposed structure.

  745.112: Ensure permanent impoundments are not located on the completed fill. Small depressions may be allowed by the Division if they are needed to retain moisture or minimize erosion, create and enhance wildlife habitat or assist revegetation, and if they are not incompatible with the stability of the fill; and

Permanent impoundments are not planned on the excess spoil area. Small depressions are also not planned in the excess spoil and are not viewed as a necessary enhancement to final reclamation based on average annual moisture data and the proposed slope configuration of the pile.

745.113: Adequately cover or treat the excess spoil that is acid- and toxic forming with nonacid nontoxic material to control the impact on the surface and ground water in accordance with R645-301-731.300 and to minimize adverse effects on plant growth and approved postmining land use.

Laboratory data representative of the overburden planned for disposal in the excess spoil area does not show acid- and toxic forming characteristics.

745.120: Drainage Control. If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design will include diversions and underdrains as necessary to control erosion, prevent water infiltration into the fill and ensure stability.

A spring and seep survey available in Chapter 7 has identified no springs or wet weather seeps in the proposed excess spoil area. The final surface will be appropriately regraded to a contour that will route natural water from snowmelt and rainfall around the excess spoil as shown on the final contours Drawing 5-35. There are no manmade water courses present in the excess spoil area. No underdrains are planned for the excess spoil structure.

745.121: Diversions will comply with the requirements of R645-301-742.300

No diversions are planned in the excess spoil area.

745.122 : Underdrains

No underdrains are planned in the excess spoil area.

745.300: Durable Rock Fills

No Durable Rock fills are planned.

745.400: Preexisting Benches

The MRP does not contemplate disposal of excess spoil on preexisting benches.

Alton Coal Development, LLC will provide the Division, as part of the annual report for each calendar year, a plan view outline of the coal recovery, a 5' interval contour map of backfill progress and a reclamation progress map. This information will be submitted by June 30th of each calendar year.

560. Performance Standards

Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-510 through R645-301-553.

Appendix 5-6, Post-Mining Roads Backfill Analysis

Appendix 5-6 is added to the MRP to address the Division concerns about post-mining roads constructed on shale backfill.

APPENDIX 5-6

Post-Mining Roads Backfill Analysis

By: Boss Engineering & Surveying
William E. Spitzenberg, P.E.

BOSS ENGINEERING & SURVEYING

1909 West State Road, Suite 200, Pleasant Grove, UT 84062
Office: 801.763.8467 Fax: 801.763.8472

July 27, 2009

Chris McCourt
Alton Coal Development
463 N 100 W, Suite 1
Cedar City, UT 84721

RE: Backfill Material for Postmining Road Construction

Dear Chris,

This is a reply to your request to provide an analysis discussing whether the shale material excavated from the mining area can meet class "B" sub-grade requirements for the proposed County Road #136 relocation and whether this material is also suitable as backfill for the Swapp Ranch access road

Based on the Geo-technical report completed by Taylor Geo-Engineering (TGE), the excavated material will consist of a mixture of clay material, silty sand, rocks, and shale. I have reviewed the laboratory analysis in the TGE report and this mixture of material is suitable as backfill for the private roads within the mining area. The reconstruction of County Road #136 will need to meet the following Kane County criteria within the County Road ROW where mining occurs:

1. The backfill material is to be compacted at 8" lifts 8ft below the roadway cross-section to a 95% maximum dry density as measured by ASTM (D 2922 2937 2167 1556).
2. The moisture content during compaction shall be two to five percent above optimum for this fine grained material.

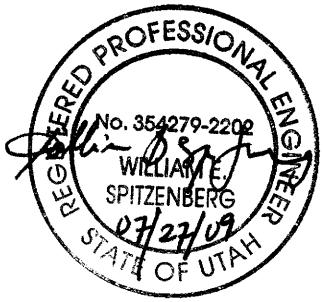
This will meet county requirements for a Class "B" subgrade and help minimize settling for the new roadway. It should also be noted that the construction plans for this roadway provided in Drawings 5-22E, 5-22F, 5-22G and 5-22H have been designed under my supervision and have been revised to reflect this change.

The other road planned for reconstruction across backfill (Swapp Ranch Access Road), will be suitable as a private access to the Ranch by following the specifications provided on Drawing 5-22D.

If you should have any questions or need further information, please give me a call at 801-763-8467 or via email at will@boss-eng.com.

Sincerely,

William E Spitzenberg PE



Chapter 5 Drawings 5-22E, 5-22F, 5-22G and 5-22H

Drawings 5-22E, 5-22F and 5-22G are resubmitted with changes that reflect the updated specifications for the County 136 reconstruction as outlined in the Appendix 5-6 Backfill Analysis. These drawings replace the original drawings in the MRP.

5-22H is provided as an additional drawing that shows the details for the County Road 136 , Option A per the Kane County Road agreement. This drawing is added to the MRP.

The pediment alluvium deposits in the region consist of poorly sorted alluvial and colluvial silt, sand, and gravel deposited on broad pediments. After deposition, the pediment surfaces were abandoned as streams have cut down to lower levels.

Landslide deposits in the area are primarily gravity-transported hummocky deposits of mud, sand, and occasional blocks of sandstone. Most of the landslide deposits originated from the lower portion of the Straight Cliffs Formation and slid onto the underlying Tropic Shale, although movement within the Tropic Shale has also occurred. A conspicuous series of progressively built landslide deposits is present east of the Alton Amphitheater as a broad, rolling apron below the lowest cliffs of the Straight Cliffs Formation. The thickness of the landslide deposits locally ranges from a few feet to more than 100 feet.

Alluvium deposits in the region consist of unconsolidated clay, silt, sand, and gravel in and near existing drainages. These deposits exist as stream and fan alluvium and terrace deposits. In the headwaters of the mountain streams, the alluvial material consists predominantly of sand and gravel. In downstream areas, the alluvial material consists mostly of mud derived from the Tropic Shale. Alluvial thickness in the Alton Quadrangle typically ranges from a thin covering to about 10 feet or more.

In the Sink Valley and Lower Robinson Creek drainages near the proposed Coal Hollow Mine permit area, drilling information indicates that alluvial thicknesses are in some locations considerably greater. Alluvial thicknesses measured in the permit and adjacent area range from a thin veneer overlying bedrock formation in many areas to at least 140 feet in thickness along the eastern margins of Sink Valley (see Drawing 6-39). Much of the land surface in the proposed Coal Hollow Mine permit area consists of fan alluvium (mostly composed of clays, silts, and fine-grained sands) derived largely from the highly erodable Tropic Shale in adjacent highland areas east of the proposed permit area. Field investigations suggest that these fan deposits are associated with sheetfloods, debris flows and mud flows. Additional geologic information on alluvial deposition in the proposed Coal Hollow Mine permit and adjacent area is presented in Appendix 7-1.

An igneous dike consisting of black, fine-grained porphyritic olivine basalt is present northeast of Alton near Kanab Creek.

Structure

Rock strata in the region dip gently toward the north and north-east, generally from 1 to 5 degrees. The Alton Coal Field is bounded on the east by the Paunsaugunt Fault and on the west by the Sevier Fault. Regional displacements on these two faults are about 1,000 to 2,000 feet, and 100 to 800 feet, respectively. Additionally, several faults with lesser displacements have been mapped in the region, including the Sand Pass Fault zone (about 400 feet of offset), the Bald Knoll Fault (about 650 feet of offset), and the Sink Valley Fault (likely a few tens of feet of offset). Most local faults in the Alton Quadrangle trend in a northerly or north-westerly direction, are several miles long, and are near vertical. A preminent north- to northwest-trending vertical joint set is present in the Upper Cretaceous sandstone rocks in the region. Stratal dips vary appreciably near the fault zones.

Description of Coal Seam Geology

The coal seams in the Alton Coal Field are located in the Smoky Hollow Member of the Straight Cliffs Formation, and in the Dakota Formation. The coal seam in the Smoky Hollow Member, which occurs within the lower 3 feet of the Member, is only a few inches in thickness and is not of economic importance. Within the Dakota Formation, two regionally important coal zones are present. These include the Smirl coal zone, which is located near the upper formational contact with the Tropic Shale, and the Bald Knoll coal zone, which is located about 200 feet below the Smirl coal zone near the base of the Dakota Formation. Doelling (1972) reported that the Smirl coal zone is 14 to 18 feet thick without splits, while the Bald Knoll coal zone contains several coal seams separated by thin splits, with the thickest seam being 4.8 feet thick. Doelling (1972) reports that coal in the Alton area is a high-volatile Bituminous coal. Additional information on coal quality is presented in Appendix 6-1 (confidential binder).

The coal seams in the Alton Coal Field are located in the Smoky Hollow Member of the Straight Cliffs Formation, and in the Dakota Formation. The coal seam in the Smoky Hollow Member, which occurs within the lower 3 feet of the Member, is only a few inches in thickness and is not of economic importance. Within the Dakota Formation, two regionally important coal zones are present. These include the Smirl coal zone, which is located near the upper formational contact with the Tropic Shale, and the Bald Knoll coal zone, which is located about 200 feet below the Smirl coal zone near the base of the Dakota Formation.

Within the Alton Quadrangle, five small mines and two prospects have been worked. Production from these mines was small, with a total production from all mines of 35,000 and 50,000 tons from the late 1920s to 1969, when the last mine closed. The last operating mine in the Alton Coal Field was the Smirl Mine, which was located about 1.5 miles south of the town of Alton. In its last year of operation, a total of 1,597 tons of coal was produced. The Smirl Mine portal was sealed by the Utah Division of Oil, Gas and Mining in 1992.

622 CROSS-SECTIONS, MAPS AND PLANS

622.100
Elevations of the coal seam to be mined and locations of drill holes are listed in Table 6-1 and shown in Drawing 6-5. Drill hole collar elevations and intervals cored and plugged are shown in Table 6-1.

622.200
The depth and thickness of surrounding strata are shown on geologic cross-sections ~~on a stratigraphic column~~ in Drawing 6-3. Additional information regarding thicknesses of strata in the proposed Coal Hollow Mine permit area from drilling information is given in Appendix 6-4. Information on the thickness of the Smirl coal zone is listed in Table 6-1. A Smirl coal zone thickness isopach map is presented in Drawing 5-14 . Two cross-sections through the proposed Coal Hollow Mine permit area, showing stratigraphic relationships, approximate overburden thickness, and coal seam thickness, together with a cross-section location map are presented in Drawings 6-6, 6-7, and 6-8. Two additional cross-sections showing stratigraphic relationships, and

approximate overburden thicknesses~~, and approximate coal seam thicknesses~~ are shown in Drawing 6-9. A geologic cross-section depicting regional stratigraphic relationships is shown in Drawing 6-2. An overburden isopach map is provided in Drawing 5-15.

Representative drill hole logs depicting the nature, depth and thickness of the coal seam to be mined and rider seams in the overlying strata and the nature of the Dakota Formation strata immediately below the coal seam to be mined are presented in Appendix 6-4. No rider seams are present in the overburden strata in the proposed coal mining area.

622.300
The outcrop line of the seam to be mined (Smirl coal zone) is shown on the geologic map in Drawing 6-1 .The strike and dip of the Smirl coal zone in the permit area is also shown on Drawings 6-1 and 6-6.

622.400
No oil and gas wells exist within the proposed Coal Hollow Mine permit area.

623 GEOLOGIC INFORMATION

623.100 Acid or Toxic-Forming Strata

No acid-forming or toxic-forming strata are present in strata overlying or in the stratum immediately below the Smirl coal seam in planned mining areas in the proposed Coal Hollow Mine permit area.

Chemical information on the acid- and toxic-forming potential of earth materials naturally present in the proposed permit area are presented in Appendix 6-2. Chemical information on the low-sulfur Smirl coal zone proposed for mining is presented in Appendix 6-1 (confidential binder). Based on laboratory analytical data, it is apparent that acid-forming and toxic-forming materials that could result in the contamination of surface-water or groundwater supplies in the proposed Coal Hollow Mine permit and adjacent area are generally not present.

Selenium was not detected in any of the samples from the proposed Coal Hollow Mine permit area. Likewise, concentrations of water-extractable boron were also low, being less than 3 mg/kg in all samples analyzed. The pH of groundwaters in and around the proposed Coal Hollow Mine permit area are moderately alkaline. Data in Appendix 6-2 likewise indicate moderately alkaline conditions in sediments in the proposed permit area. The solubility of dissolved trace metals is limited in waters with alkaline pH conditions. Consequently, high concentrations of these metal constituents in groundwaters and surface waters with elevated pH levels are not anticipated.

The neutralization potential greatly exceeded the acid potential in all samples analyzed, with the neutralization potential commonly exceeding the acid potential by many times, suggesting that acid-mine-drainage will not be a concern at the proposed Coal Hollow Mine. Acid-forming materials in western coal mine environments often consist of sulfide minerals, commonly including pyrite and marcasite, which, when exposed to air and water, are oxidized causing the

liberation of H^+ ions (acid) into the water. Oxidation of sulfide minerals may occur in limited amounts in the mine pits where oxygenated water encounters sulfide minerals. However, the acid produced by pyrite oxidation is quickly consumed by dissolution of abundant, naturally occurring carbonate minerals (Appendix 6-2). Dissolved iron is readily precipitated as iron-hydroxide in well aerated waters, and consequently excess iron is not anticipated in mine discharge water.

Other acid-forming materials or toxic-forming materials have not been identified in significant concentrations nor are such suspected to exist in materials to be disturbed by mining.

Because of the overall low-permeability of the rock strata and sediments surrounding the mine workings (primarily the shales and claystones of the lower Tropic Shale), the potential for seepage of mine water into adjacent stratigraphic horizons is low. Additionally, because the floors of the mine pits need to be accessible in order to extract the coal, the mining operations will be carried out in such a manner that the accumulation of large amounts of water in the mine pits will be avoided.

Based on the information in Appendix 6-2 there is no indication that appreciable potential for acid or toxic formation is present.

It is anticipated that coal produced from the proposed Coal Hollow Mine will be shipped as a mine-run product. Thus, no coal processing wastes are anticipated.

623.200 Reclamation Feasibility

Based on the proposed mine plan and the existing geologic and hydrogeologic conditions encountered at the propose Coal Hollow Mine permit and adjacent area, it is anticipated that successful reclamation of the site will be feasible. Additional information on the feasibility of reclamation at the proposed Coal Hollow Mine permit area is given in Chapter 2 (soils) and Chapter 3 (biology) of this MRP. There are no special categories or circumstances associated with mining at the proposed Coal Hollow Mine permit area that would render reclamation unfeasible.

Most of the materials that will be handled as part of mining and reclamation activities in the proposed Coal Hollow Mine area are of low hydraulic conductivity (i.e. clays, shales, siltstones, claystones, etc.). Consequently, it is anticipated that groundwater seepage volumes through backfilled and reclaimed land surfaces in reclaimed mine pit areas and excess spoils storage areas will not be large. Additionally, reclaimed areas will be regraded, sloped, and otherwise managed to minimize the potential for land erosion, to restore approximate surface-water drainage patterns, and also to minimize the potential for ponding of surface waters on reclaimed areas (other than "roughening" or "gouging" of some areas to enhance reclamation). Thus, the potential for interactions between large amounts of disturbed earth materials and groundwaters and surface waters, which could result in leaching of chemical constituents into groundwater and surface-water resources, will be minimized.

Additionally, the mining plan calls for the emplacement of 40 inches of suitable cover material

over backfilled areas made up of material types which could negatively impact vegetation (materials with elevated SAR ratios or other physical or chemical characteristics that could cause appreciable adverse impacts on vegetation).

Several investigations involving reclamation of surface disturbed areas in the vicinity have been performed by other entities. These included the use of test plots to measure reclamation feasibility and success. The results of these investigations have been presented in published documents (Ferguson and Frischknecht 1985; USDI 1975). These investigations have demonstrated the feasibility of successful reclamation in the area.

623-300 Subsidence Control Plan

The proposed mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities. This section is not applicable.

624 GEOLOGIC DESCRIPTION

624.100 Regional and Structural Geology

The coal to be mined in the proposed Coal Hollow Mine permit area is of Cretaceous age and resides in the Alton Coal Field of southwestern Utah. The Alton Coal Field is a roughly horseshoe-shaped region that is situated between the Kaiparowits Coal Field to the east, and the Kolob Coal Field to the west.

The topography in the Alton Coal Field is marked by bench and slope topography. Topographic relief in the region is approximately 2,800 feet, with elevations ranging from about 9,300 feet on top of the Paunsaugunt Plateau, to about 6,500 feet in the valley bottoms. The economic coal seams are located primarily along the western and southern flanks of the Paunsaugunt Plateau.

The geologic history, geology, stratigraphy, and structure of the Alton Coal Field have been described by Doelling (1972) and Tilton (Appendix 6-3; 2001) and are summarized below. A map of geologic formations exposed at the surface in the proposed Coal Hollow Mine permit area is shown in Drawing 6-1. ~~A e~~Cross-sections showing the regional geologic conditions in the Alton Coal Field ~~is~~are presented in Drawings 6-3 and 6-~~92~~.

Stratigraphy

Stratigraphic units present in the Alton Coal Field area are described in ascending order below. A stratigraphic column showing these geologic formations is shown in Drawing 6-3. A diagrammatic correlation of Cretaceous units in southern and south-central Utah is shown in Drawing 6-4.

Navajo Sandstone (Lower Jurassic)

The Navajo Sandstone is a light gray to tan, locally cross-bedded, massive eolian sandstone that underlies the region. Where exposed south of the Alton area, it forms the regionally prominent White Cliffs topographic feature. The Thousand Pockets Tongue of the Navajo Sandstone intertongues with the overlying Carmel Formation. Thickness of the Navajo Sandstone exceeds 1,000 feet in the Paunsaugunt Plateau region. The Navajo Sandstone does not crop out in the proposed Coal Hollow Mine permit and adjacent area.

Carmel Formation (Upper Jurassic)

The Carmel Formation unconformably overlies the Navajo Sandstone in the region. The Carmel Formation is heterogeneous and consists of limestone, siltstone, sandstone, and gypsum beds. The formation has been subdivided into several members by previous researchers. These include the Wiggler Wash Member, the Winsor Member, the Paria River Member, the Crystal Peak Member, and the Kolob Limestone Member. The thickness of the Carmel Formation ranges from about 650 to 800 feet in the Alton Coal Field area and the formation thickens to the west. The Winsor Member of the Carmel Formation crops out in the bottom of the Kanab Creek drainage about one mile south of the proposed Coal Hollow Mine permit area.

Entrada Sandstone (Upper Jurassic)

The Entrada Sandstone, which may be as thick as 500 feet regionally, is present above the Carmel Formation in the eastern portion of the Alton Coal Field. The formation consists predominantly of siltstone and cross-bedded or fine-grained massive sandstone. The formation is not present in the proposed Coal Hollow Mine permit and adjacent area.

Dakota Formation (Cretaceous)

The Dakota Formation contains the economic coal seams in the Alton Coal Field. The formation consists of fine- to medium-grained sandstone with interbedded gray shale, carbonaceous shale, and coal. In most locations, shaley strata dominate the formation, comprising about 60 to 75 percent of the formation. The unit characteristically forms ledge and slope topography. In the proposed Coal Hollow Mine permit area the Dakota Formation directly overlies the Carmel Formation. Regionally, the outcrop of the Dakota Formation forms the Gray Cliffs topographic feature. The economic coal seams in the Alton Coal Field are present near the base (Bald Knoll coal zone) and near the top of the formation (Smirl coal zone). Local thinner coal seams that are not of economic importance are present in the center of the formation. The thickness in the western portion of the Alton Coal Field is about 450 feet. In the eastern portion of the Alton Coal Field, the Dakota Formation is about 150 feet thick and rests on the Entrada Sandstone.

Tropic Shale (Cretaceous)

The Tropic Shale consists predominantly of gray and carbonaceous silty shale and claystone with a few marine sandstone beds located mostly in its upper part. The formation typically weathers at the surface to a clayey soil that typically forms gentle, vegetated slopes. The Tropic Shale is present (in some locations covered with shallow alluvial or colluvial deposits) at the land surface over most of the proposed Coal Hollow Mine permit area. The formation was deposited in an open-marine offshore environment during the maximum westward transgression of the Cretaceous Western Interior Seaway in the Late Cretaceous (Tilton, 2001). Near the top of the formation, more sandy horizons are interbedded with the mudstone units of the formation. These sandy units together with the sandstone at the base of the overlying Straight Cliffs Formation reflect the initial sand influx onto the marine environment of the Tropic Shale. The thickness of the Tropic Shale in the Alton Quadrangle is about 700 feet. In areas planned for mining at the proposed Coal Hollow Mine permit area, only the lower 200 to 250 feet of the Tropic Shale is present. The middle and upper portions of the formation having been removed from proposed mining areas by erosion in Sink Valley.

Information obtained from continuous core drilling in the Tropic Shale in planned mining areas in the proposed Coal Hollow Mine permit area indicates that the lower 200 to 250 feet of the formation consists of a fairly uniform sequence of soft, dark gray silty shale or thinly bedded claystone with occasional thin lenses of siltstone and occasional layers of bentonite-like clay being present. Strong, competent rock strata that could be of consequence to surface mining operations were not encountered in any of the boreholes. Drilling information obtained from the Tropic Shale during the 2005 drilling program is presented in Appendix 6-4. Physical and chemical information from the Tropic Shale are presented in Appendix 6-2. The locations of the 2005 boreholes are shown in Appendix 6-4 and also on Drawing 6-5.

Straight Cliffs Formation (Cretaceous)

The Straight Cliffs Formation is approximately 1,200 feet thick in the Alton Quadrangle. The formation is comprised predominantly of calcite-cemented sandstone and mudstone, with sandstone composing about 75 percent of the total composition. The sandstones of the Straight Cliffs Formation make up the lower two-thirds of the ledges radiating out from the southern Paunsaugunt Plateau. Four members of the Straight Cliffs Formation have been identified in the Alton Quadrangle by Tilton (2001). These include the Tibbet Canyon Member (orange-gray weathering fine- to medium grained sandstone), the Smoky Hollow Member (interbedded sandstone, mudstone, and thin coal), the John Henry Member (interbedded mudstone and fluvial sandstone), and Drip Tank Member (light-gray cliff forming sandstone). The Straight Cliffs Formation outcrops on the hillsides east and north of the proposed Coal Hollow Mine permit area.

Wahweap and Kaiparowits Formations (Cretaceous)

The Wahweap Formation is composed of alternating sandy shales and thin- to thick-bedded sandstones. The unit contains carbonaceous shale and thin coal beds that are not of economic

importance in its lower part. The unit forms step-like topography. Regionally, the Wahweap Formation is separated from the overlying Kaiparowits Formation by an unconformity. Erosion of both the Wahweap and Straight Cliffs Formations prior to the deposition of the Kaiparowits Formation may have locally reduced the thicknesses of these formations in the vicinity of the Paunsaugunt Plateau. The Kaiparowits Formation is composed of irregular beds of arkosic sandstone. The sandstone is weakly cemented by calcite cement. Because of difficulties identifying mappable boundaries between the Wahweap and Kaiparowits Formations in the Alton Quadrangle, the formations were mapped as an undivided unit (Tilton, 2001). The total thickness of the Wahweap and Kaiparowits Formations in the Alton Quadrangle ranges from about 600 to 800 feet.

Claron Formation (Tertiary)

The Claron Formation (also sometimes known as the Wasatch Formation, although the Utah Geological Survey uses the name Claron Formation) forms the cap rock over much of the Paunsaugunt Plateau. The formation is also present west of the Sevier Fault Zone west and north of the town of Alton. The unit is subdivided into a lower pink (also known as red) member and an upper white member, both consisting mostly of massive, fine-grained crystalline limestone of fluvial and lacustrine origin. Resistance to erosion varies both vertically and horizontally in the Claron Formation, resulting in a series of cliffs and steep joints. This condition, together with the presence of closely spaced joints, produces the unique topography associated with the Claron Formation. The Claron Formation is about 800 thick in the Alton Quadrangle. Also mapped together with the Claron Formation in the Alton Quadrangle is the Cretaceous Canaan Peak Formation. The Canaan Peak is a thin, discontinuous formation consisting primarily of conglomerate and conglomeratic sandstone with some mudstone interbeds sometimes present at the base of the Claron Formation. Thickness of the Canaan Peak Formation locally ranges from 0 to 30 feet.

Brian Head Formation (Tertiary)

The Brian Head Formation consists of interbedded pink and purplish-gray very fine-grained sandstone, friable sandstone, conglomerate, siltstone, mudstone, and limey mudstone in its lower part, and gray to white, fine- to medium-grained sandstone and calcarenite, in part with a volcanically derived clay matrix. The formation includes rocks present above the underlying white member of the Claron Formation and the overlying ash-flow tuff of the Needles Range Group. The unit is not resistant to erosion and has been eroded away from the top of the Paunsaugunt Plateau in the Alton Quadrangle. The formation is present in the rugged hills west of the Sevier Fault zone near the town of Alton. The unit is about 200 feet thick in the Alton Quadrangle.

Quaternary Deposits

Quaternary deposits present in the area include pediment alluvium, landslide deposits, mass-wasting debris, and alluvium.

The pediment alluvium deposits in the region consist of poorly sorted alluvial and colluvial silt, sand, and gravel deposited on broad pediments. After deposition, the pediment surfaces were abandoned as streams have cut down to lower levels.

Landslide deposits in the area are primarily gravity-transported hummocky deposits of mud, sand, and occasional blocks of sandstone. Most of the landslide deposits originated from the lower portion of the Straight Cliffs Formation and slid onto the underlying Tropic Shale, although movement within the Tropic Shale has also occurred. A conspicuous series of progressively built landslide deposits is present east of the Alton Amphitheater as a broad, rolling apron below the lowest cliffs of the Straight Cliffs Formation. The thickness of the landslide deposits locally ranges from a few feet to more than 100 feet.

Alluvium deposits in the region consist of unconsolidated clay, silt, sand, and gravel in and near existing drainages. These deposits exist as stream and fan alluvium and terrace deposits. In the headwaters of the mountain streams, the alluvial material consists predominantly of sand and gravel. In downstream areas, the alluvial material consists mostly of mud derived from the Tropic Shale. Alluvial thickness in the Alton Quadrangle typically ranges from a thin covering to about 10 feet or more.

In the Sink Valley and Lower Robinson Creek drainages near the proposed Coal Hollow Mine permit area, drilling information indicates that alluvial thicknesses are in some locations considerably greater. Alluvial thicknesses measured in the permit and adjacent area range from a thin veneer overlying bedrock formation in many areas to at least 140 feet in thickness along the eastern margins of Sink Valley (see Drawing 6-39). Much of the land surface in the proposed Coal Hollow Mine permit area consists of fan alluvium (mostly composed of clays, silts, and fine-grained sands) derived largely from the highly erodable Tropic Shale in adjacent highland areas east of the proposed permit area. Field investigations suggest that these fan deposits are associated with sheetfloods, debris flows and mud flows. Additional geologic information on alluvial deposition in the proposed Coal Hollow Mine permit and adjacent area is presented in Appendix 7-1.

An igneous dike consisting of black, fine-grained porphyritic olivine basalt is present northeast of Alton near Kanab Creek.

Structure

Rock strata in the region dip gently toward the north and north-east, generally from 1 to 5 degrees. The Alton Coal Field is bounded on the east by the Paunsaugunt Fault and on the west by the Sevier Fault. Regional displacements on these two faults are about 1,000 to 2,000 feet, and 100 to 800 feet, respectively. Additionally, several faults with lesser displacements have been mapped in the region, including the Sand Pass Fault zone (about 400 feet of offset), the Bald Knoll Fault (about 650 feet of offset), and the Sink Valley Fault (likely a few tens of feet of offset). Most local faults in the Alton Quadrangle trend in a northerly or north-westerly direction, are several miles long, and are near vertical. A prominent north- to northwest-trending vertical joint set is present in the Upper Cretaceous sandstone rocks in the region. Stratal dips vary appreciably near the fault zones.

The Sink Valley Fault extends in a roughly north-south direction through the proposed Coal Hollow Mine permit area from upland areas north of the permit area southward through the central part of the proposed permit area subsequently further south near the eastern edge of the proposed permit area (Drawing 6-1; Appendix 6-3; Drawing 6-2). The fault has down-dropped the strata on the west side of the fault (Appendix 6-3). The offset on the Sink Valley Fault is not known precisely, however based on drilling information from the proposed permit and adjacent area it is apparent that offset on the fault in the vicinity of the proposed Coal Hollow Mine permit area is a few 10s of feet or less.

Description of Coal Seam Geology

The coal seams in the Alton Coal Field are located in the Smoky Hollow Member of the Straight Cliffs Formation, and in the Dakota Formation. The coal seam in the Smoky Hollow Member, which occurs within the lower 3 feet of the Member, is only a few inches in thickness and is not of economic importance. Within the Dakota Formation, two regionally important coal zones are present. These include the Smirl coal zone, which is located near the upper formational contact with the Tropic Shale, and the Bald Knoll coal zone, which is located about 200 feet below the Smirl coal zone near the base of the Dakota Formation. Doelling (1972) reported that the Smirl coal zone is 14 to 18 feet thick without splits, while the Bald Knoll coal zone contains several coal seams separated by thin splits, with the thickest seam being 4.8 feet thick. Doelling (1972) reports that coal in the Alton area is a high-volatile Bituminous coal. Additional information on coal quality is presented in Appendix 6-1 (confidential binder).

The coal seams in the Alton Coal Field are located in the Smoky Hollow Member of the Straight Cliffs Formation, and in the Dakota Formation. The coal seam in the Smoky Hollow Member, which occurs within the lower 3 feet of the Member, is only a few inches in thickness and is not of economic importance. Within the Dakota Formation, two regionally important coal zones are present. These include the Smirl coal zone, which is located near the upper formational contact with the Tropic Shale, and the Bald Knoll coal zone, which is located about 200 feet below the Smirl coal zone near the base of the Dakota Formation.

Within the Alton Quadrangle, five small mines and two prospects have been worked. Production from these mines was small, with a total production from all mines of 35,000 and 50,000 tons from the late 1920s to 1969, when the last mine closed. The last operating mine in the Alton Coal Field was the Smirl Mine, which was located about 1.5 miles south of the town of Alton. In its last year of operation, a total of 1,597 tons of coal was produced. The Smirl Mine portal was sealed by the Utah Division of Oil, Gas and Mining in 1992.

Groundwater

The depositional history of geologic formations in the proposed permit and adjacent area has resulted in a heterogeneous sequence of rocks that have a profound effect on the movement and availability of groundwater. The stratigraphic package located in the upland regions along the Paunsaugunt Plateau lies well beyond the zone that could potentially be impacted by mining

operations in the proposed Coal Hollow Mine permit area. With the exception of the Navajo Sandstone, the rock formations present along the flanks of the Paunsaugunt Plateau area are typically lenticular in nature. Although aquifer-quality rocks may be present in lenses within individual geologic formations, the fact that the lenses are discontinuous in their extent and are typically encased in a surrounding low-permeability matrix, regional type groundwater flow regimes typically do not form. Additionally, because the geologic formations in the Paunsaugunt Plateau overlying the Tropic Shale are truncated by the plateau escarpment, long, regional type groundwater flow paths typically cannot exist in the proposed permit area. In the immediate vicinity of the proposed Coal Hollow Mine permit and adjacent area, the only bedrock formations that crop out are the Tropic Shale and underlying Dakota Formation. The Windsor Member of the Carmel Formation also crops out at the surface about one mile southwest of the proposed permit area. The water-transmitting properties of the lower portion of the marine Tropic Shale unit that overlies the Smirl coal seam in areas proposed for mining are poor.

Lithologic data collected during continuous core drilling in the Tropic Shale indicate that the rocks of the Tropic Shale in the proposed mining area are composed almost entirely of a fairly uniform sequence of dark gray shale, silty shale, and claystone with high clay content. No appreciable water was encountered during drilling activities in the Tropic Shale in the proposed mining areas and no appreciable spring discharge from formation has been observed. The Tropic Shale in the proposed permit area is underlain by the Dakota Formation, which crops out in the western portion of the proposed permit area and in the bottoms of the Kanab Creek drainage (Drawing 6-1; Appendix 6-3). Vertical recharge to the Dakota Formation through the overlying Tropic Shale is likely negligible due to the poor groundwater transmitting properties of the Tropic Shale discussed above. In addition to the lack of vertical recharge to the Dakota Formation, vertical and horizontal groundwater flow in the formation is impeded because of the abundant presence of low-permeability shaley strata that encase potentially permeable lenticular sandstone strata both vertically and horizontally. Consequently, the potential for the transmission of appreciable quantities of groundwater through the formation is limited (i.e., it is not a good aquifer). Consequently, groundwater discharge from the rocks of the Dakota Formation in the proposed permit area is not appreciable. Because vertical recharge to the Dakota Formation from the Tropic Shale is minimal, the removal of the Tropic Shale from above the Dakota Formation during mining operations followed shortly thereafter by the backfilling and reclamation of mine pits with low-permeability materials would likely not detrimentally impact groundwater systems in the Dakota Formation (i.e., the post-mining conditions will be similar to the pre-mining conditions) .

Shallow groundwater systems have been identified in alluvial sediments in the proposed Coal Hollow Mine permit and adjacent area, most notably in Sink Valley. These shallow alluvial groundwater systems exist in much of Sink Valley and in some locations in the Lower Robinson Creek drainage. The alluvial groundwater systems are likely recharged along the flanks of the Paunsaugunt Plateau through mountain-front-recharge processes. Groundwater flow directions in these alluvial groundwater systems is generally from recharge areas east of the proposed permit area toward lower elevation areas to the west and south. In most locations near the proposed Coal Hollow Mine permit area, the alluvial groundwater systems are directly underlain by the low-permeability Tropic Shale bedrock, which likely prevents appreciable downward migration of the alluvial groundwater into deeper formations. Additional information on groundwater resources in the proposed Coal Hollow Mine permit and adjacent area is provided in Chapter 7 of this MRP and

in Appendix 7-1.

624.110 Cross Sections, Maps, Plans.

624.120 Information for this section is found in R645-301-624.200, R645-301-624.300 and R645-301-625.

624.130 Geologic Literature and Practices

The geologic literature utilized in preparing R645-301-600 is listed in the reference list presented at the end of this chapter.

Additional geologic data were collected during field investigations conducted by qualified personnel. Geologic analysis and geologic interpretations were performed by a registered professional geologist in the State of Utah. All practices and procedures for obtaining geologic information have been standard for the industry.

624.200
Samples have been collected and analyzed from test borings in the proposed permit area. The samples were collected from fresh, unweathered, uncontaminated drill cores. The samples were collected and analyzed from the ground surface down to and including the first stratum immediately below the Smirl coal zone to be mined. The laboratory analytical parameters analyzed were comprehensive and as recommended by the Division of Oil, Gas and Mining. Results of the analyses are presented in Appendix 6-2. Additional information regarding the physical and chemical characteristics of the Smirl coal zone to be mined are presented in Appendix 6-1 (confidential binder).

624.210
Geologic logs were prepared that show the lithologic characteristics including physical properties and thickness of each stratum and locations of groundwater where occurring. The well logs are presented in Appendix 6-1. Cross-sections prepared from geologic logs of drillholes in the proposed permit and adjacent area are provided in Drawing 6-39. Additional geologic logs are presented in Appendix 5-1 and Appendix 7-4. Additional lithologic characterization is provided in Appendix 7-1.

624.220
Chemical analyses of strata overlying and immediately below the Smirl coal zone for acid- or toxic-forming materials are presented in Appendix 6-2.

No acid-forming or toxic-forming strata are present in strata overlying or in the stratum immediately below the Smirl coal seam in planned mining areas in the proposed Coal Hollow Mine permit area.

Chemical information on the acid- and toxic-forming potential of earth materials naturally

present in the proposed permit area are presented in Appendix 6-2. Chemical information on the low-sulfur Smirl coal zone proposed for mining is presented in Appendix 6-1 (confidential binder). Based on laboratory analytical data, it is apparent that acid-forming and toxic-forming materials that could result in the contamination of surface-water or groundwater supplies in the proposed Coal Hollow Mine permit and adjacent area are generally not present.

Selenium was not detected in any of the samples from the proposed Coal Hollow Mine permit area. Likewise, concentrations of water-extractable boron were also low, being less than 3 mg/kg in all samples analyzed. The pH of groundwaters in and around the proposed Coal Hollow Mine permit area are moderately alkaline. Data in Appendix 6-2 likewise indicate moderately alkaline conditions in sediments in the proposed permit area. The solubility of dissolved trace metals is usually limited in waters with alkaline pH conditions. Consequently, high concentrations of these metal constituents in groundwaters and surface waters with elevated pH levels are not anticipated.

The neutralization potential greatly exceeded the acid potential in all samples analyzed, with the neutralization potential commonly exceeding the acid potential by many times, suggesting that acid-mine-drainage will not be a concern at the proposed Coal Hollow Mine. Acid-forming materials in western coal mine environments often consist of sulfide minerals, commonly including pyrite and marcasite, which, when exposed to air and water, are oxidized causing the liberation of H^+ ions (acid) into the water. Oxidation of sulfide minerals may occur in limited amounts in the mine pits where oxygenated water encounters sulfide minerals. However, the acid produced by pyrite oxidation is quickly consumed by dissolution of abundant, naturally occurring carbonate minerals (Appendix 6-2). Dissolved iron is readily precipitated as iron-hydroxide in well aerated waters, and consequently excess iron is not anticipated in mine discharge water.

Other acid-forming materials or toxic-forming materials have not been identified in significant concentrations nor are such suspected to exist in materials to be disturbed by mining.

Because of the overall low-permeability of the rock strata and sediments surrounding the mine workings (primarily the shales and claystones of the lower Tropic Shale), the potential for seepage of mine water into adjacent stratigraphic horizons is low. Additionally, because the floors of the mine pits need to be accessible in order to extract the coal, the mining operations will be carried out in such a manner that the accumulation of large amounts of water in the mine pits will be avoided.

Based on the information in Appendix 6-2 there is no indication that appreciable potential for acid or toxic formation is present.

It is anticipated that coal produced from the proposed Coal Hollow Mine permit area will be shipped as a mine-run product. Thus, no coal processing wastes are anticipated.

624.230
Chemical analyses of the Smirl coal seam for acid- or toxic-forming materials including total sulfur

and pyritic sulfur are presented in Appendix 6-1 (confidential binder).

624.300
The proposed mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities. This section is not applicable.

627 OVERBURDEN THICKNESS AND LITHOLOGY

The planned mining in the proposed Coal Hollow Mine permit area does not include underground coal mining activities.

Overburden in planned mining areas in the proposed Coal Hollow Mine permit area consists of the following.

Alluvium

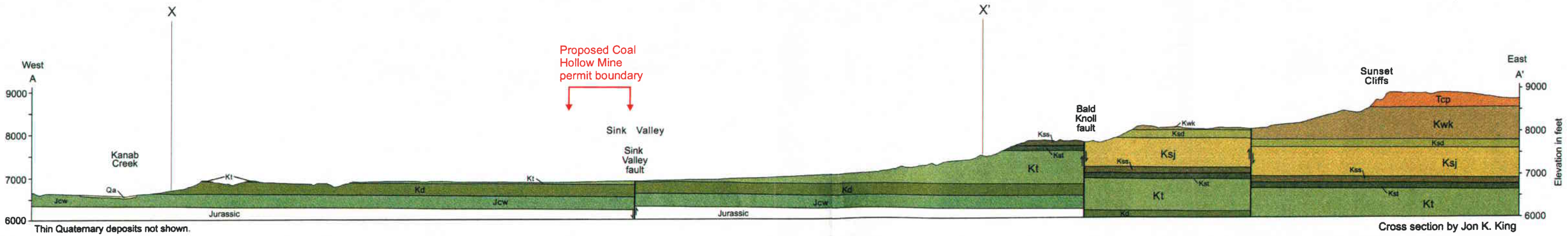
Alluvial sediments are present at the surface in most areas proposed for mining. These sediments consist primarily of clays, silts, and fine-grained sands. The thickness of the alluvium in proposed mining areas ranges from a thin veneer to about 50 feet. The alluvial sediments in most areas are not well sorted and are derived largely from weathering of the Tropic Shale in adjacent upland areas.

Tropic Shale

In all proposed mining areas, the lower portion of the Tropic Shale overlies the Dakota Formation Smirl coal zone to be mined. The thickness of the Tropic Shale overlying the coal seam in proposed mining areas ranges from a few feet up to about 200 feet. The lower Tropic Shale consists predominantly of soft shales, silty shales, and claystones, with occasional thin layers of siltstone and bentonite-like clay layers up to about 1 foot in thickness. Strong, competent rock strata were not encountered in exploration boreholes drilled during 2005 in the proposed Coal Hollow Mine permit area. Well logs graphically depicting this information are presented in Appendix 6-1. Cross-sections prepared from geologic logs of drillholes in the proposed permit and adjacent area are provided in Drawing 6-39. Additional geologic logs are presented in Appendix 5-1 and Appendix 7-4. Additional lithologic characterization is provided in Appendix 7-1.

630 OPERATION PLAN

631 PLAN FOR CASING AND SEALING EXPLORATION HOLES



Thin Quaternary deposits not shown.

Cross section by Jon K. King

2,000 feet

See Drawing 6-9b Location map and legend for section location and legend.

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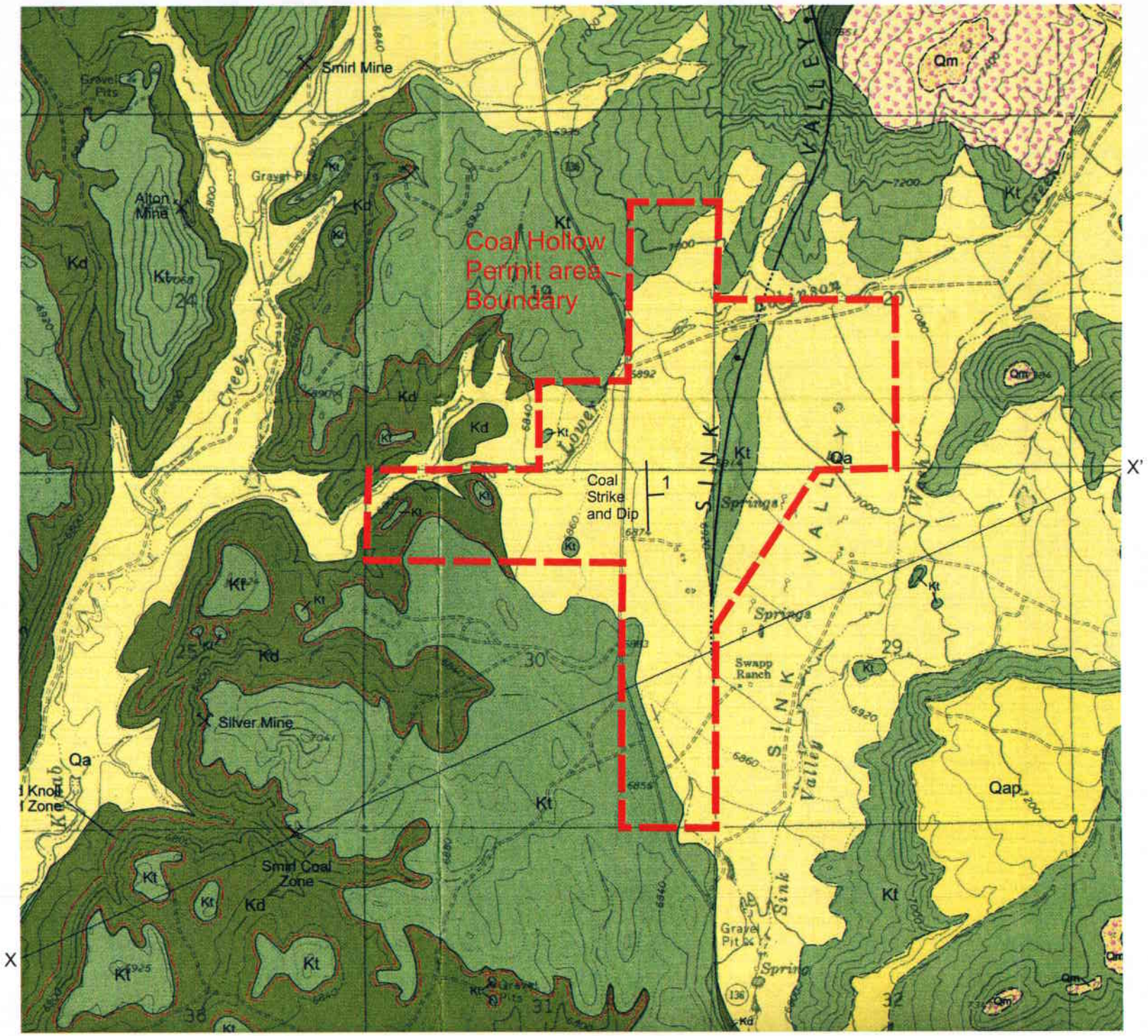
Drawing 6-9a
Regional geologic cross-section through the Alton Coal Field and proposed Coal Hollow Mine Permit area (after Tilton, 2001).



Map Symbols

- Contact - *dashed where approximately located*
- Normal Fault - *dashed where approximately located or inferred; dotted where concealed; ball and bar on down-thrown side; X marks the point of reversal of offset on scissor(?) faults; arrows on cross section show offset*
- Strike and dip of bedding
- Strike of vertical joint
- Horizontal joint
- Line of cross section
- Coal zone - approximately located
- Coal mine or prospect
- Approximate line of measured section (appendix)

2,000 feet

N

Qa	Alluvium
Qms	Landslide deposits
Qm	Mass-wasting debris
Qap	Pediment alluvium
Qb	Basalt
Tbh	Brian Head Formation
Tcw	White member of Claron Formation
Tcp	Pink member of Claron Formation
Kwk	Wahweap and Kaiparowits Formations (undivided)
Ksd	Drip Tank Member of the Straight Cliffs Formation
Ksj	John Henry Member of the Straight Cliffs Formation
Kss	Smoky Hollow Member of the Straight Cliffs Formation
Kst	Tibbet Canyon Member of the Straight Cliffs Formation
Kt	Tropic Shale
Kd	Dakota Formation
Jcw	Winsor Member of the Carmel Formation

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Drawing 6-9b - Location map and legend (after Tilton, 2001).