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

C/025/0005
Received 4/28/16
Task ID #5171

April 27, 2016

Daron R. Haddock
Coal Program Manager
Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

Subject: **NOV 21163, Alton Coal Development, LLC, Coal Hollow Mine, C/025/0005**

Dear Mr. Haddock,

In response to the Divisions letter dated April 27, 2016, Alton Coal Development (ACD) is submitting the revised text for chapter 5 of the MRP. The date of completion for backfill of the Highwall Trench (HWT) at the Coal Hollow Mine has been changed from July 31, 2016 to June 6, 2016 as requested.

In reply to the request for further information regarding compaction of the fill and a plan for handling water in the HWT, ACD will continue to backfill and handle water as described in the MRP and as we have for all previous pits. MRP Section 532.200 already addresses the stability of pit backfill and MRP Section 733.100 already describes management of mine water. As also stated in the approved MRP Appendix 7-16 North Private Lease PHC Section 8 Flooding or Streamflow Alteration "*It has been possible to manage such modest quantities of mine water by utilizing some of the water for mine process/dust control and by burying accumulated groundwaters remaining in the bottom of mine pits at the completion of mining of the pit during backfill operations.*" ACD does not need to make a different plan for backfilling and water handling in the HWT as previous experience has proven successful.

Changes to the MRP associated with this amendment have been uploaded to the DOGM's server for review. Upon approval, 2 (two) clean hard copies of the text and certified drawings for insertion into the MRP will be submitted. Please do not hesitate to contact me if you have any questions 435-691-1551.

Sincerely,

B. Kirk Nicholes
Environmental Specialist

APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow Mine **Permit Number:** C/025/0005
Title: HWT 2 Backfill

Description, Include reason for application and timing required to implement:
Response to Division Letter dated April 27, 2016

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?
☐ 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 # 21163
☐ 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?
☐ 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.

B. Kirk Nicholes	Environmental Specialist	2/2/16	B. Kirk Nicholes
Print Name	Position	Date	Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 2 day of February, 2016

Notary Public: Marty Nicholes, state of Utah.

My commission Expires: 9-11-2017
Commission Number: 670359
Address: 1670 E Millstone Cir
City: Enoch State: UT Zip: 84721

} ss:

Notary Public
MARTY NICHOLES
Commission #670359
My Commission Expires
Sept 11, 2017
State of Utah

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining

Form DOGM- C1 (Revised December 10, 2007)

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

Permittee: Alton Coal Development, LLC
Mine: Coal Hollow Mine
Permit Number: C/025/0005
Title: HUT 2 Backfill

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	Chapter 5 Text
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	Received by Oil, Gas & Mining

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 5-44 and Appendices 5-1 through 5-10 and 5-13 for the existing Coal Hollow Mine and on Drawings 5-45 through 5-78 and Appendices 5-11, 5-12, and 5-14 for the North Private Lease.

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, and primary roads have been certified by a qualified registered professional engineer. These certifications can be viewed on Drawings 5-22 through 5-37 for the existing Coal Hollow Mine and on Drawings 5-51A & 5-58 through 5-75 for the North Private Lease. 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 for the existing Coal Hollow Mine and of the Temporary Excess Spoil Pile for the North Private Lease according to 535.100. An expert in the field of slope stability and geotechnical analysis has provided a thorough review of the designs. These analyses can be viewed in Appendix 5-1 for the Coal Hollow Mine and in Appendix 5-11 for the North Private Lease.

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 R645-301-535.100 - 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 R645-301-743.

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 detailed investigation for impoundments 5 through 9 found soils to be representative of the Coal Hollow Mine, thus additional geotechnical analysis, specific stability analysis for the Coal Hollow Mine apply to the impoundments at the North Private Lease. The certifications and drawings can be viewed in Drawings 5-25 through 5-31 and Appendices 5-1 and 5-2 for the existing Coal Hollow Mine and on Drawings 5-65 through 5-73 and Appendix 5-11 and 5-12 for the North Private Lease. Although investigation and analysis have been performed for all impoundments of the North Private Lease, only those structures in Permit Area 1 are currently proposed (Ponds 5 and 6 and Ditches 5 through 11) while the structures in Permit Areas 2 and 3 remain under review.

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.

The MRP does not contemplate any variances from Approximate Original Contour for the Coal Hollow Mine or the North Private Lease.

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

Impoundments and sedimentation ponds meeting the size or other qualifying criteria of MSHA, 30 CFR 77.216(a) will comply with the requirements of MSHA, 30 CFR 77.216 (see R645-301-533.600, R645-301-742.222, and R645- 301-742.223).

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 (see R645-301-551).

Underground mine portals are located in the bottom of the Coal Hollow Pit 10, and will ultimately be reclaimed by the backfilling of the pit to a depth of 100 + when no longer required.

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. <u>Discharges into an underground mine</u>

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, excepting those described under R645-301-514.320, will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.*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.

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

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 must 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, shall be examined at least quarterly. A qualified person designated by the operator shall examine impoundments for the appearance of structural weakness and other hazardous conditions.

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

515.311

During a temporary cessation of the Underground operations, surface access openings to underground operations and 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 maintained secured. Portal access will be controlled by security personnel, signage, temporary fencing and/or other means as determined appropriate by the company and MSHA. Portal access will be provided as required. Any facilities or equipment required to protect the underground workings, i.e. fans, pumps, etc., will be maintained and operated during this time. Since the portal area is graded to drain to a collection sump, any surface runoff will be collected there and will be utilized for dust control during operations and 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.

For the North Private Lease, the temporary excess spoil pile is expected to be in place for less than 6 months. Should a temporary cessation occur and cause the pile to remain

longer than 6 months, erosion control measures such as a tackifier will be applied to the pile to minimize damage and ensure stability.

515.321.

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 surface acres and the horizontal and vertical extent of subsurface strata which have been in the permit area prior to cessation or abandonment,,
- 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.

515.322.

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 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 for the Coal Hollow Mine is located in the subsequent sections and Drawings 5-1 through 5-44 and Appendices 5-1 through 5-10 and Appendix 5-13. Topsoil piles and removal sequencing is shown on Drawing 2-2. All appropriate information for the North Private Lease is located in the subsequent sections and Drawings 5-45 through 5-79 and Appendices 5-11, 5-12 and 5-14. Topsoil piles and removal sequencing is shown on Drawing 2-4.

The Coal Hollow Mine is located approximately 2.5 miles south of Alton, Utah. The North Private Lease is located approximately 0.8 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, front end loaders, off-road trucks, underground continuous miner and a highwall auger miner. 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. Section 523 of this chapter provides detailed production, sequence, and timing information. Drawings 5-2 and 5-46 show the disturbance sequence for the Coal Hollow and North Lease permit areas, respectively.

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 5-44 for the existing Coal Hollow Mine and on Drawings and cross sections 5-45 through 5-79 for the North Private Lease.

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 areas 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 for the Coal Hollow Mine. There are no buildings in or within 1,000 feet of the permit area for the North Private Lease.

521.122. Surface and Subsurface Man-Made Features

The only known surface and subsurface manmade features that exist within the existing and proposed permit areas are:

- County Road 136 (locations shown on Drawing 5-3 and Drawing 5-47)
- Alton Coal Mine Road (location shown on Drawing 5-47)
- Water pipeline to Pond 20-1 (location shown on Drawing 7-7)
- Water pipelines for agricultural uses in the North Private Lease (locations shown on Drawing 7-7)

521.123. Public Roads

Two Class B public roads, Kane County Road 136 (K3900) and Alton Coal Mine Road (K3100), are located in or within 100 feet of the permit areas and are shown on Drawing 5-3 and Drawing 5-47.

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.

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 are three impoundments currently located within the existing Coal Hollow Mine permit area which are Pond 20-1, Pond 29-3 and Pond 29-5 shown on Drawing 7-7. The area of these impoundments are approximately 3,400, 10,500 and 6,963 square feet respectively. There are four impoundments located within the North Private Lease permit area, Ponds 12-1 thru 12-3 and Pond 13-1 shown on Drawing 7-7. The area of these impoundments are approximately 823, 3,853, 8,319 and 33,525square feet, respectively.

There are 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 for the Coal Hollow Mine and Drawing 5-47 for the North Private Lease. Appendix 5-12 and Drawing 5-79 detail the post-mining surface hydrology of the North Private Lease

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 an operating 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.

County Road 136 (K3900) and Alton Coal Mine Road (K3100) will be temporarily relocated outside the permit areas prior to mining for both the existing Coal Hollow Mine and the North Private Lease until mining is complete and then reconstructed. The relocation of County Road 136 for both the Coal Hollow Mine and the North Private Lease will require construction of temporary bypass roads. The locations of these bypass roads are shown in Drawings 5-3 and 5-45 for the Coal Hollow Mine and North Private Lease respectively. Plans and details for these roads are shown in Appendix 1-7 and 1-11. Each bypass road will be constructed, inspected, certified and available for public use prior to closure of the associated section of impacted County Road 136. The Alton Coal Mine Road (K3100) will not require a significant bypass, but will be accessed via a new intersection with the North Private Lease bypass road approximately 500 ft. south of the current intersection with County Road 136.

Upon completion of mining and reclamation activities in each permit area, the aforementioned pre-mining roads will be reestablished to their pre-mining state or better. The details for reestablishing road K3900 within the Coal Hollow Mine are shown on Drawings 5-22E, 5-22F and 5-22H. The details for reestablishing roads K3900 and K3100 within the North Private Lease are shown on Drawings 5-61 thru 5-63. The details related to reestablishing K3993 following mining are shown on Drawing 5-22C.

It is expected that County Road 136 will be diverted around the Coal Hollow Mine for approximately 5 years, and diverted around the North Private Lease for approximately 6 years.

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 5-44 for the Coal Hollow Mine and on Drawings 5-45 through 5-79 for the North Private Lease.

Current land disturbance for the Coal Hollow Mine is shown on Drawing 5-2, while the expected land disturbance sequence for the North Private Lease is shown on Drawing 5-46. Total disturbance for the Coal Hollow mine is 342 acres, with no current plans to increase. Total disturbance for the North Private Lease is expected to reach a maximum of 224.8 acres over a 6.5 year period, with 51.9 acres in Area 1 of operations, 115.7 acres

in Area 2, and 57.2 acres in Area 3. Area 1 is currently proposed for inclusion in the MRP while Areas 2 and 3 remain under review.

Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in the North Private Lease Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in Appendix 8-2, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of this chapter and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second North Private Lease bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Following Pit 6, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

Overburden mining for the Coal Hollow Mine and North Private Lease is depicted on Drawing 5-16 and Drawing 5-57 respectively, according to the methods and schedules detailed in section 523 Mining Methods of this chapter.

Coal mining for the Coal Hollow Mine and North Private Lease is depicted on Drawings 5-9 & 5-10 and Drawings 5-52 & 5-53 respectively, according to the methods and schedules detailed in section 522 Coal Recovery of this chapter.

A layout of facilities, structures, and features for the Coal Hollow Mine and North Private lease is shown on Drawing 5-3 and Drawing 5-47 respectively. Sections 521.160, 521.170, and 521.180 of this chapter describe these features and their construction and use.

Post-mining topography and cross-sections of the ~~R~~reclamation plans of the Coal Hollow Mine permit area are provided in Drawings 5-37 and 5-37A. This reclamation requires rehandling much of the fill above original contour to fill in the final pits, especially Pit 10 which will remain open until the closure of underground operations, but will then require additional borrow (apx. 1.3 Million C.Y.) from the areas outlined in Drawings 5-19, 5-37 and 5-37A . This rehandle and additional borrow will bring all disturbed ground back to Approximate Original Contour (AOC). All post-mining landforms, drainage, and slopes will be consistent with pre-mining conditions and regional trends. A detailed description of the reclamation scenario is provided in Section 528.200 Overburden and 553 Backfilling and Grading of this Chapter. The Coal Hollow Mine requires ~~175.5~~239.5 acres of Phase 1 reclamation, ~~342~~372.5 acres of Phase 2, and ~~342~~ 372.5 acres of Phase 3.

Reclamation plans for the North Private Lease area are provided in Drawings 5-74 thru 5-76B and Drawing 5-79. These plans include restoration of all disturbed ground to AOC with only slight variation in landform, most notably a material void on the east of Kanab

Creek which will result in a net increase of land available for agriculture and elimination of the center and western drainages east of Kanab Creek. All post-mining landforms, drainage, and slopes will be consistent with pre-mining conditions and regional trends. A detailed description of the reclamation scenario is provided in Section 528.200 Overburden and 553 Backfilling and Grading of this Chapter. The North Private Lease requires 178.4 acres of Phase 1 reclamation, 224.9 acres of Phase 2, and 224.9 acres of Phase 3.

Underground mining is also permitted for the Coal Hollow Mine. Mine portals will be within an existing pit and coal will be loaded within the pit and hauled in the same manner as with the surface mining. Underground mining plans are shown in Drawings 5-3, 5-3B, 5-9 and 5-10.

521.142

Drawing 5-10 shows the underground workings. All underground coal mining will be first mining only. Subsidence will be prevented by following the recommendations provided in the Norwest Corporation letter report found in Appendix 5-9.

521.143 The proposed disposal sites for placing excess spoil generated at surface areas affected by surface operations, underground 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 excess spoil disposal area in the Coal Hollow Mine 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.

  The soil resources for the North Private Lease temporary excess spoil disposal area are described in Volume 11. 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 2-4 and is described in Chapter 2 Section 231 and Section 523 of this Chapter. 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 5-37, 5-37A and 5-17 for the Coal Hollow Mine and Drawing 5-51A for the North Private Lease.

- *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 5-37 for the Coal Hollow Mine and on Drawing 5-47 and 5-51A for the North Private Lease. 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 of the Coal Hollow Mine is approximately 32 acres and varies in height from 35 to 110 feet. Design ~~of this fill can be viewed in Drawings 5-37 through 5-37A and the~~and the geotechnical study for this fill can be viewed in Appendix 5-1. Due to actual swell factors of overburden material differing from swell factors used in initial planning, the size and configuration of the excess spoils has varied greatly from what was originally analyzed in Appendix 5-1. It is now anticipated that the excess spoil pile will be completely rehandled as pit backfill.

The temporary excess spoil placed on the subsequent pit areas of the North Private Lease is approximately 9 acres and varies in height from 23 to 59 feet. Design of this temporary fill can be viewed in Drawing 5-51A and the geotechnical study can be viewed in Appendix 5-11.

- *R645-301-535.100 through R645-301-130: Disposal of Excess Spoil*

A geotechnical analysis of the Coal Hollow Mine long term 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 then be rehandled as pit backfill prior to final reclamation while the remaining landform shown in Drawing 5-37 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.

A geotechnical analysis of the North Private Lease temporary excess spoil structure design has also 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. As this excess spoil structure will be rehandled to backfill the open pit in a short time frame (less than 6 months), it is not anticipated that this fill will be covered with subsoil and topsoil. The geotechnical study can be viewed in Appendix 5-11.

- *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 Coal Hollow Mine long term excess spoil will be completely rehandled as pit backfill as shown in Drawing 5-37 and 5-37A. The remaining landform 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.

  The North Private Lease temporary excess spoil will be rehandled and used as backfill in a short time frame (less than 6 months) and will not require any reclamation measures.

- *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 Coal Hollow Mine long term excess spoil will be completely rehandled as pit backfill as shown in Drawings 5-37 and 5-37A. The remaining landform 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.

The North Private Lease temporary excess spoil will be rehandled and used as backfill in a short time frame (less than 6 months). The spoil will not include any terraces and the slopes will be maintained at no less than an overall 3h:1v. The static safety factor for these temporary 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 final landform following rehandle of the Coal Hollow Mine 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. The North Private Lease temporary excess spoil will be in use for such a short period of time and will be comprised entirely of high-clay tropic shale such that infiltration is also expected to be negligible. In addition, laboratory data located in Appendix 7-16 for the overburden shows that there is minimal potential for leaching of pollutants should infiltration rates become higher than expected.

  The foundations of both of the excess spoil areas also have high clay content with minimal potential for infiltration. This will provide an additional, natural barrier to protect ground water present beneath the proposed structures.

  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 either of the excess spoil areas. 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 located in Appendix 7-16 representative of the overburden planned for disposal in the excess spoil areas 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 areas. The final surface of the landform underneath the Coal Hollow Mine excess spoil will be regraded to a contour that will route water from snowmelt and rainfall to natural drainages ~~around the excess spoil~~ as shown on the final contours Drawing 5-37. There are no manmade water courses present in the excess spoil areas. No underdrains are planned for the excess spoil structures.

745.121: Diversions will comply with the requirements of R645-301-742.300

No diversions are planned in the excess spoil areas.

745.122 : Underdrains

No underdrains are planned in the excess spoil areas.

745.300: Durable Rock Fills

No durable rock fills are planned in the excess spoil areas.

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 Coal Hollow Mine permit area are shown on Drawing 5-1 and the post mining land configuration is shown on 5-37. Cross sections with both these landforms are shown on Drawing 5-37A.

Surface contours representing the existing land surface configuration of the proposed North Private Lease permit area are shown on Drawing 5-45 and the post mining land configuration is shown on 5-74. Cross sections with these landforms are shown on Drawing 5-75. Post mining land configuration is also shown for each of the individual Permit Areas on Drawings 5-74A through 5-74C. On the North Private Lease area, reclamation plans are proposed for Area 1, while Areas 2 and 3 remain under review. The surface contour maps are limited accordingly.

521.151 Slope Measurements or Surface Contours:

For both the Coal Hollow Mine and the North Private Lease, Drawings 5-1, 5-37 & 5-37A and Drawings 5-45, 5-74 & 5-75 respectively use topographical contours to represent the surface configuration for pre- and –post mining scenarios. The contours for the Coal Hollow Mine drawings occur at ~~5~~ 2 ft. elevation intervals, with index contours occurring at ~~25~~ 10 ft. elevation intervals. The contours for the North Private Lease drawings occur at 4 ft. elevation intervals, with index contours occurring at 20 ft. elevation intervals. Each Drawing has been certified according to R645-301-512.

521.152 Previously Mined Areas:

Neither the Coal Hollow Mine nor the North Private Lease propose activities on areas that have been previously mined.

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 for the Coal Hollow Mine and on Drawing 5-47 for the North Private Lease.

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 for the Coal Hollow Mine and on Drawing 5-46 for the North Private Lease.

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 in the Coal Hollow Mine is shown on Drawing 5-3. Drawing 5-3 was reconfigured in December of 2014 prior to phased bond release to remove performance bond from areas that are no-longer within the MRP planed disturbance (not disturbed by mining), thus removing the need to include in bond release.

The area of land that will have a performance bond posted in the North Private Lease is shown on Drawing 5-47. The lease boundary encompasses three Permit Areas, of which Area 1 is currently proposed for inclusion in the MRP and Areas 2 and 3 remain under review. Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in Appendix 8-2, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these

facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of this chapter and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second North Private Lease bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Following Pit 6, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

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 for the Coal Hollow Mine and on Drawing 5-47 through 5-51A for the North Private Lease. Note that coal loading will occur within the pits on the North Private Lease area, and the mine will not use a designated coal loading or stockpile area.

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;

For the Coal Hollow Mine, 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, 5-37 and 5-37A.

For the North Private Lease, prime farmland soils and topsoil storage areas and handling can be viewed on Drawings 2-4 and 5-51B. Temporary spoils placement can be viewed on Drawing 5-47 through 5-51A.

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. Instead, blasting will be contracted out to a local blasting company who is licensed to transport explosives. The blasting contractor will transport all explosives material needed for the shot into the mine for use, and take any remaining explosives inventory for storage offsite after each shot is completed. While onsite, all explosive materials will be handled solely by the licensed contractor. These activities will follow the blasting plan as outlined in Appendix 5-4. 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 eight 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: Three~~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 the pits (pits shown on Drawing 5-10). This road will be approximately 2,800 feet in length and will be utilized throughout 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 southeast to long term topsoil stockpile 2 and subsoil stockpile pile 1. This road is approximately 1,300 feet in length. 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 underground mine portal access and haul road in Pit 10 will also be a primary

road. This road is accessed from the main haul road from the coal unloading area. The underground access/haul road will be constructed to the same specifications for the haul roads above, except that the road may be narrowed to a 40 foot width. Drawing 5-22I provides the as-built plan and profile for the underground access road.

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 5-22H. This County road will be reconstructed within the permit area by Kane County. This reconstruction will occur concurrently with the final phase of reclamation as scheduled on Drawing 5-38 and is expected to be completed by 2017.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawing 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.

An additional stacking conveyor will be installed to transfer coal from the underground conveyor system to stockpile from which trucks will be loaded. The stacking conveyor will be a 48" wide, wheel-mounted system, approximately 125' in length.

Drawings of these systems can be viewed on Drawings 5-3 through 5-5.

Transportation facilities for the North Private Lease will consist of two primary roads, and miscellaneous ancillary/temporary roads. 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: A primary haul road shown in Drawings 5-47, 5-58 and 5-59 will extend from the entrance of the permit area to the Western end of Pit 19. This road is approximately 3,540 feet in length. This road is referred as the "Northern Haul Road". A second primary haul road shown in Drawings 5-47 and 5-60, the "Southern Haul Road" extends from the South end of Pit 1 on the West, to the South end of the Highwall Trench on the East. This road is approximately 2,980 feet in length. There are three culvert crossings along this road as shown in Drawing 5-60 including a substantial culvert to cross Kanab Creek. Culvert 1 (C-1) is sized at 24 inches. C-2 is sized at 36 inches to match the current culvert under County Road 136, and C-3 is sized at 144 inches for maximum anticipated flows in Kanab Creek. Final design of this culvert will be in conjunction with approvals and oversight from the Army Corps of Engineers. Culvert sizing calculations can be found in Appendix 5-12.

  The following specifications apply to this 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) Berms placed as necessary along fills

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. On the North Private Lease area, topsoil and approved subsoil will be removed and salvaged for all surface mining areas and roadways as they are developed according to the plan and methods described in Chapter 2 Section 231 and Section 523 of this chapter and shown on Drawing 2-4.

521.180. Support facilities.

Description of the support facilities is provided in Section 526.220. Drawings 5-3, 5-3B, 5-4, 5-5, 5-6, 5-7, 5-8, 5-8A, 5-8B, 5-8C, and 5-47, 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. The perimeter of all permitted and bonded surface disturbance areas will also be clearly marked with fencing or signage stating “disturbance boundary.”

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 11.0 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 for the Coal Hollow Mine and Drawings 5-54 and 5-55 for the North Private Lease.

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 tables for each area along with Drawing 5-9 for the Coal Hollow Mine and Drawing 5-52 for the North Private lease summarize the coal extraction for the permit area for the open pit mining, highwall mining and underground mining:

Existing Coal Hollow Mine

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	12,092,000
High Strip Ratio Area (NE corner of permit area)	Not Mined	16.0	13.5	2,930,000
Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	2,305,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	172,000
Highwall & Underground	Not Mined	16.0	0	2,662,000
Recoverable Coal (Surface)	Mined	16.3	6.4	3,298,000
Recoverable Coal (Underground)	Mined	16.0	0	725,000

*All strip ratios are bank cubic yards of overburden to tons of coal

**All coal tons are based on a 95% recovery factor for open pit mining and 45% for highwall mining and the underground mining.

North Private Lease

Description	Extraction Status	Average Coal Thickness (ft)	Average Strip Ratio* (yd^3/Ton)	Quantity (**Ton)
Total Fee Coal within Permit Boundary	N/A	15.4	4.5:1	7,127,300
Coal under highwalls and sedimentation structures	Not Mined	15.1	10.1:1	2,197,300
Highwall	Not Mined	15.2	0	1,528,100
Highwall	Mined	15.2	0	785,700
Open Pit	Mined	15.6	6.0:1	2,616,200
Total Recoverable Coal (Surface)	Mined	15.5	4.6:1	3,401,900

*All strip ratios are bank cubic yards of overburden to tons of coal
**All coal tons are based on a 95% recovery factor for open pit mining and 35% for highwall mining.
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.

With open pit mining, 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 over steepen 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.

With the highwall miner, the application of a highwall mining system will be employed to recover coal from the exposed face. In this method of mining, an unmanned cutter module is driven underground and operated in front of the highwall. The highwall mining machine stands on the pit floor or on a bench, directly in front of the exposed seam and makes long parallel rectangular drives into the coal seam. A remote-operated cutter module is pushed into the seam by a string of push beams (unmanned coal-

conveying elements) that transport the mined coal back to the entry of the drive onto a stockpile.

The underground mining will utilize standard extraction methods. These will include a continuous miner, shuttle cars and a conveyor system to the surface. The mine plan calls for first mining only to prevent subsidence. Coal brought to the surface will flow to a stacking conveyor and stockpile as shown on Drawing 5-3B.

The limited extraction, first-mining only and compliance with the recommendations in the Norwest Report (Appendix 5-9) will ensure access in the event the portals should need to remain open for future underground operations.

For the Coal Hollow Mine, 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. For the North private Lease, over-the-road 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 Coal Hollow Mine crushing facility. For the initial cut, coal waste will be temporarily pushed into a pile on top of unmined coal until enough coal has been removed to place the coal waste on the floor of the pit.

A net recovery of 95% (including the effects of in-pit coal losses and out-of-seam dilution) of the coal exposed in the open pit is anticipated. A net recovery of 45% of the coal mined by the highwall system as well as the underground mining 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 for the Coal Hollow and on Drawings 5-52 through 5-55 for coal recoveries at the North Private Lease.

523. **MINING METHOD(s).**

The Coal Hollow Mine will be a combination coal mining operation, utilizing open pit mining, highwall mining and underground mining methods. Primary mining equipment will include hydraulic excavators, a highwall miner, standard underground mining equipment including a continuous miner, shuttle cars and conveyor system, 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 Coal Hollow Mine is planned to produce approximately 2.7 million tons of coal over a life of approximately 5 years. The estimated production schedule is summarized below:

Production Schedule		
		Tons Produced
Year		(000)
2011		405
2012		578
2013		741
2014		534
2015 - Projected		395
Total		2,653

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. Drawing 5-10 has been modified from the original layout to accommodate modifications to the plan for highwall mining, underground mining and anomalies encountered in the coal (large sand channels), thus the non-sequential numbering of the pits. 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, 5-37 and 5-37A. 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. For the open pit mined coal, 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. Coal mined with a highwall miner would not require blasting.

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 9 as shown on Drawing 5-10.

From the initial mining area, operations will proceed from the southeast ¼ of Section 30, beginning with pit 28 and proceeding north to pit 22. Pit 9 will not be backfilled at this stage; it has been left open for placement of the highwall miner to recover coal from panels 1-3. In hole 27 of Pit 9 Panel 3, the highwall miner head became lodged. Another head was leased in order to continue highwall mining in pits 22 and 23 while a recover plan was approved to mine Pit 10 and recover the lodged miner head. Pit 21 was then mined along the highwall panels in 21, then Pit10. Pit 10 will remain open for development of the underground portals and remain open until all underground coal is mined. Surface mining will continue with mining of Highwall Trench (HWT) 1 continuing south to HWT 3.

The North Private Lease will be a combination coal mining operation, utilizing open pit mining, and highwall mining. Primary mining equipment will include hydraulic excavators, a highwall miner, and end-dump mining trucks. The raw coal will be mined from the open pits and loaded to over-the-road coal trucks and delivered to the Coal Hollow Mine for crushing then hauled to market in over-the-road coal trucks.

The North Private Lease is planned to produce approximately 3.4 million tons of coal over a life of approximately 6 years. The estimated production schedule is summarized below:

Production Schedule		
		Tons Produced

Year		(000)
1		585
2		857
3		600
4		735
5		281
6		237
7		108
Total		3,402

Initial mine development will involve removal and storage of topsoil from mine infrastructure locations. Construction of sedimentation ponds, diversion ditches, and mine roads accessing the initial mining areas will also be ongoing. See chapter 2, section 231.100 and Drawing 2-4 for topsoil handling methods, quantities, and plans. For the North Private Lease prior to mining Pit 1 the following steps will be followed:

1. The A horizon (topsoil) will be salvaged along with B horizon (subsoil) to a depth of 14 inches (1.2 feet) from all active mining areas (pits, ponds, roadways, haul roads, storage and repair yards, etc.). The only exception is that topsoil can remain under topsoil storage piles.

2. For the area inside the excavation perimeter of Pit 1, Pond 5 and Pond 6, the remaining subsoil (the B & C horizon above lithic contact, approximately 2.6 feet) will also be removed and stockpiled in a subsoil stockpile. This means that roadways and the subsoil and spoil piles depicted in Drawing 2-4 will be placed on top of native subsoil. This native subsoil will be protected in place beneath the spoil stockpile by using a marker fence to delineate the subsoil surface on 100 ft. centers and by using a gps survey grid of the topography of the subsoil surface layer. The native subsoil will be protected in place on any roadway receiving surface treatment (ie. Gravel, additional fill) by placing marker fence along the roadway centerline. The native subsoil will then be recovered as part of the subsequent mining sequence and placed directly over regraded backfill to the cover depth required in section 232.

4. A soil scientist will monitor the topsoil and subsoil removal and placement of geomarker.

5.A surveyor will map the surface elevation of the subsoil being protected in place.

As with the Coal Hollow Mine, topsoil and subsoil will be removed with dozers and/or scrapers to a depth determined by the soil scientist.
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 200 ft. in width and 500 to 1,300 ft. long. Layout of these pits can be viewed on Drawing 5-52. The overburden will be removed in layers or lifts approximately 20 to 40 feet deep. In practice, these overburden lifts are mined in a stair

step 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.

Following initial construction and prior to beginning mining of each pit, the area will be cleared of vegetation, and the topsoil will be recovered and either stockpiled or live hauled to regraded areas. Blasting of the overburden will then be performed according the plan and methods outlined in Section 524 of this chapter and Appendix 5-4. 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 temporary spoil area shown on Drawing 5-47. Overburden is removed in successively deeper benches until the coal seam is exposed. Some overburden 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, trackhoe, dozer or front end loader. The material removed will be placed in the adjacent mined out pit. For the open pit mined coal, 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 over-the-road trucks. Coal mined with a highwall miner would not require blasting.

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 the North Private Lease will begin near the subcrop of the coal seam at the southwestern end of the permit area in the SW ¼ NW ¼ of Section 13, T39S, R5W. Topsoil will be removed and stored separately in topsoil stockpiles as shown on Map 2-4. Overburden from the initial pit 1 and southern half of 2 will be hauled to the temporary excess spoil pile located on the future pits 3, 4 and 5. Once the initial pit is established, as much spoil as possible will be placed directly in the pit backfill, allowing reclamation to closely follow mining. As mining progresses to Pit 3, material from the temporary excess spoil pile can be rehandled to be placed in the mined out void. As mining proceeds from pit 5 to pit 10 all spoils mined is placed into pit backfill. This initial phase includes pits 1 through 10 as shown on Drawing 5-53.

From the initial mining area, operations will proceed to the North to Pit 21. All spoils are placed in the proceeding void. Once coal is removed from Pit 21, overburden from the development of the highwall trench will be used to backfill the remaining Pit 21.

The final mining area will be developed on the East side of Kanab Creek. Overburden from Highwall Trench 1 will proceed north in the trench with overburden being placed

into the previously mined out area. Backfill for the final Highwall Trench will come from the temporary overburden stockpiles.

Alton Coal Development, LLC is currently in the process of an Environmental Impact Study for Federal Reserve's adjacent to the private mining areas known as the LBA. It is expected that these rights will be acquired prior to the completion of the final phase in the proposed Permit Area. Also, if acquired, Pit 10 along with the underground portals will remain open to access underground coal within the LBA. The final landform for Coal Hollow Mine is shown on Drawings 5-37 and 5-37A. The final landform for the North Private Lease is shown on Drawings 5-74 and 5-75.

An estimate of the primary mining equipment planned for use at the Coal Hollow Mine and North Private Lease is listed below:

Diesel - Hydraulic Excavators (15 to 38 cu. yd. capacity)
Highwall Mining System (CAT HW300 or equivalent)
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)
Underground miner and associated equipment

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. No surface mining or reclamation activities are proposed to take place within 500 feet of the underground mine.

524. **BLASTING AND EXPLOSIVES**

Explosives will be utilized as necessary at Coal Hollow Mine and the North Private Lease 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 R645-301-524..

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. Blaster certifications will be carried on the person of the Certified Blaster and copies of the Blasting license(s) will be on file at the mine. A blaster and at least one other person will be present at the firing of a blast.

The Certified Blaster will be responsible for blasting operations at the 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 for either the Coal Hollow Mine or the North Private Lease. There are also no historic underground mines within 500 feet of either of the permit areas.

Overburden shot size is generally 450x200 ft or 200,000 cubic yards. A typical overburden blast design has a burden and spacing of 18x18ft at a depth of 60ft. Stemming height is typically 13 ft. Shots will be loaded with Ammonium Nitrate Fuel Oil (ANFO) in dry holes, and packaged emulsion on wet holes. Average pounds per hole will be 833 lbs. Powder Factors can range from .4 lbs/cyd to 1.25 lbs/cyd depending on geology. Each hole will have at least one booster (0.75 lb or 1 lb) and a 25/500ms nonel cap, as shown in Figure 1 of Appendix 5-4.

Timing will typically be 25 ms between holes with 84 ms between rows, and follow the pattern shown in Figure 2 of Appendix 5-4.

The closest structure to any blast pattern for the Coal Hollow Mine is the Richard Dame (Swapp Ranch) property at 1,585 ft. from the closest blast pattern. For the North Private Lease, the nearest structures (a pole barn and a fish pond with an earthen dam) are located on property owned by Heaton Brothers LLC, at least 2032 ft. away (See Drawing 1-7 for measured distances). The required scaled distance is 55 for Coal Hollow Mine and 55 for the North Private Lease per 524.640 – 662. Based on these scaled distances, the maximum pounds of explosives per 8 ms delay is 2,066 lbs for the Coal Hollow Mine and North Private Lease respectively.

The above blast design, loading, and timing are general designs for the mine and may be altered due to geology, mine design, production needs, and blast optimization.

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 and shot report 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 and shot report will be prepared and signed by a Utah certified blaster. Records documenting blasting operations will be maintained at the mine site for at least three years and upon request will be made available to the Division upon request. These records will include all information as required in R645-301-524.700. The contractor will also keep blasting records for at least 3 years at the contractors' site office. See Appendix 5-4 Section 4 for a blank shot report and Section 1H for a typical blast design.

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.

  Preblasting surveys were conducted for the Swapp Ranch and the Darlynn Sorensen residence on August 23, 2011 for the Coal Hollow Mine.

There are no residences within ½ mile of the North Private Lease requiring a preblasting survey. However, a preblasting survey will be offered to each of the owners of the five land parcels with structures in Alton Town that are nearest to the Northwest corner of the lease boundary once approval of the North Private Lease Permit Area 2 has been obtained. These parcels and ownership are depicted on Drawing 1-7 along with measured distances. Also shown on Drawing 1-7, there are two structures, a Pole Barn and a Fish Pond with an earthen dam, located on property owned by Heaton Brothers LLC that are both within the ½ mile limit of Permit Area 1. Preblasting surveys will be offered and conducted for each of these structures prior to any blasting operations for Permit Area 1.

524.400 Blasting Schedule

Blasting will typically take place approximately once every 1.5 weeks, with adjustments made for production, weather, and the mine's or contractor's 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 (see section 524.500-532 for blasting signals), will notify residents within one-half mile of the blasting site and document the reason on the shot report in accordance with 524.760

Also, for unscheduled blast in the Coal Hollow Mine, Darlynn Sorensen, and Richard Dame will be notified. Within the North Private Lease there are no residents within a ½ mile radius that require notification.

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.

524.450 - 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.

A copy of the public notice is included in Appendix 5-4 as Exhibit 1

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.

A copy of the public notice is included in Appendix 5-4 as Exhibit 1

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.

Prior to blasting, all persons will be evacuated from the blasting zone and guards will be posted at the entrance of the blasting area. When blasting in the North

Private Lease, blockers will also be placed on County Road 136 (K3900) west of the permit boundary at least 1000 feet from the nearest blast hole to restrict public access into the blasting zone. The exact blocker location will be determined by the blaster at the pre blast safety meeting. A typical blast sequence will be the following:

- 30 minute warning – Blast announced over all Coal Hollow Mine or North Private Lease radio channels.
- 15 minute warning – Blast once again announced over all Coal Hollow Mine or North Private Lease radio channels. Guards are placed at the entrance of the blasting area and the pit is cleared.
- 5 minute warning – Guards blocking all access, pit cleared, access to the blasting area blocked, radio silence required and siren activated. Siren will be three prolonged wales.
- 1 minute warning – A series of short siren wales
- Countdown to ignition @ 5,4,3,2,1 – Announced across Coal Hollow Mine or North Private Lease radio channels
- All clear signal – One prolonged siren wale

A post blast inspection will be conducted by the qualified blaster and/or foreman prior to clearing the area. All guards will remain at their assigned positions until the blast area has been cleared by the qualified person.

The post blast inspection will include an examination of faces and/or muck piles associated with the blasting operation.

Access within the blasting areas will be controlled to prevent presence of livestock or unauthorized persons during blasting and until the Certified Blaster 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 by following industry best practices, limits, and regulations

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
2 Hz or lower – flat response		133 peak

(1)

524.630. Monitoring:

Periodic monitoring will be conducted once per quarter, unless there are no blasts, to ensure compliance with the airblast standards. Airblast measurements 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 125 Hz.

The first blast in the North Private Lease will be monitored from the earthen dam of the pond located to the west of the lease on Heaton Brothers LLC property and from a location approximately 2500' away from the blast along County Road 136 (K3900). The Division will be notified prior to the first blast taking place to provide the Division with their own opportunity to conduct monitoring activities. Following the first blast, each of the subsequent blasts in Permit Area 1 will be monitored from the earthen dam of the pond mentioned above until blasting activities are no longer within ½ mile of the structure. Periodic (quarterly) monitoring will then continue through Permit Area 2 until mining commences in Pit 20 (Shown in Drawing 5-57). Each blast in Pits 20 and 21 will be monitored from the nearest Alton Town structure located on Parcel A-B-23-2 (Shown on Drawing 1-7). Subsequent blasting activities in Permit Area 3 will be monitored periodically (quarterly).

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. Each shot will be recorded to ensure flyrock falls within the limits described above. If flyrock occurs, it will be documented on the shot report in the comments section.

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 the maximum peak-particle velocity limits. 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 if protected structures are within 2500 ft of the blast. If no protected structures are within the 2500 ft limit, periodic monitoring will be

conducted once per quarter, unless there are no blasts, to ensure compliance with the ground vibration limits. In the event a scaled distance less than 55 or PPV greater than 1.00 in/s is anticipated in the blast design, Maximum Peak Particle Velocity Method and Scaled Distance Equation Method will be used to monitor.

The first blast in the North Private Lease will be monitored for ground vibration from the earthen dam of the pond located to the west of the lease on Heaton Brothers LLC property and from a location approximately 2500' away from the blast along County Road 136 (K3900). The Division will be notified prior to the first blast taking place to provide the Division with their own opportunity to conduct monitoring activities. Following the first blast, each of the subsequent blasts in Permit Area 1 will be monitored from the earthen dam of the pond mentioned above until blasting activities are no longer within ½ mile of the structure. Periodic (quarterly) monitoring will then continue through Permit Area 2 until mining commences in Pit 20 (Shown in Drawing 5-57). Each blast in Pits 20 and 21 will be monitored from the nearest Alton Town structure located on Parcel A-B-23-2 (Shown on Drawing 1-7). Subsequent blasting activities in Permit Area 3 will be monitored periodically (quarterly).

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.

For the North Private Lease, as no structure resides within 300 feet of any planned blasting activity, all blasts will be designed and monitored to a threshold Peak-Particle Velocity of 1.00 inches/second.

524.690. <u>Standards not Applicable</u>

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 protected structures are within 2500 ft of the blast or it is periodic monitoring as outlined in sections 524.620 through 524.690, 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.

See Appendix 5-4 for example shot report.

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.

525. **SUBSIDENCE CONTROL PLAN**

The proposed underground mining is first-mining only and is planned for limited extraction with no subsidence. Refer to Appendix 5-9 (Norwest Report) for geotechnical and design information. Due to the design and mining method of underground mining in this plan, no subsidence is projected and no monitoring is planned. As requested by the Division, however, the company will conduct surface observation walkovers of each of the 4 developed panel areas in this proposed plan within 60 days of completion of mining in those areas. Two additional observation walkovers will be made at approximately 1 year intervals following the initial walkover. If the observations determine that no affects

or voids have developed to the surface, it will be documented and forwarded to the Division. If surface cracking, sinkholes or other surface impacts are noted during the walkovers, they will be documented, located on a surface topographic map, reported to the Division, photographed and repaired after approval by the Division. If the observation indicates no deformation is occurring, no further walkovers are proposed to be conducted on the respective panel areas.

It should be noted that, in addition to the larger pillar sizing near the portals (Appendix 5-9), the portal entries will be lined with arches and/or crossbars in areas of less than 120' of cover, per recommendations in the Norwest Report (Appendix 5-9), to further reduce the possibility of subsidence or failure in that low cover area.

Highwall mining or Auger mining, as defined in the definitions in R645-100-200 is Surface Mining, thus Underground regulations do not apply. Therefore, highwall mining in this plan have been addressed using the regulations contained in R645-302-240, Special Categories of Mining. The alternate highwall option has limited extraction with no subsidence. Refer to Appendix 5-8 (Feasibility of highwall mining the Smirl seam) for geotechnical and design information. Do to the design and mining method of highwall mining in this plan, no subsidence is projected and no monitoring is planned. Appendix 1-2 Right of Entry, Exhibit 5 contains the New Dame Lease. In this document, under Article 7 Section 7.03, provisions have been made if there is material damage as a result of subsidence.

526. **MINE FACILITIES**:

The area of land that will have a performance bond posted in the North Private Lease is shown on Drawing 5-47. The lease boundary encompasses three Permit Areas, of which Area 1 is currently proposed for inclusion in the MRP and Areas 2 and 3 remain under review. Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, construction of facilities and development of the mining pits must follow a rigid sequence. As depicted in Appendix 8-2, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of this chapter and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second North Private Lease bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Following Pit 6, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

526.110-115 <u>Existing Structures.</u>

There are no existing structures within the permit areas.

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.

Initial mining operations at the North Private Lease will be on the western edge of the property, and will require rerouting Kane County Road #136 (K3900) and placing the intersection with the Alton Coal Mine Road (K3100) outside of the mine boundary. Although operations will come within 100 feet of these roads, the installation of a boundary fence with appropriate signage will provide adequate protection to the public. Details related to the road relocation and reestablishment can be viewed on Drawings 5-47, 5-61, through 5-63 and in Appendix 1-11.

526.116.2 Relocating a Public Road:

For the Coal Hollow Mine, 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.

For the North Private Lease, Kane County will temporarily relocate County Road #136 (K3900) and the intersection with the Alton Coal Mine Road (K3100) to Private lands located west and south of the permit area which are leased by ACD. This relocation will bypass the permit area for the duration of mining operations and is shown on Drawing 5-47. Details of agreements and appropriate approvals for these road relocations are located in Appendix 1-11. The relocated road is 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 property owner. 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. A fence will be installed on the mine boundary between the public road and the active mine. 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 1-11 and shown on Drawings 5-61 through 5-63.

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 areas. 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 primary 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 Coal Hollow Mine 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.

No additional support facilities are proposed for the North Private Lease permit area. Operations occurring within the North Private Lease will continue to utilize the Coal Hollow Mine support facilities as currently constituted.

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. These two tanks are located at the facilities area to provide a water supply to the facilities for non-potable uses (cleaning equipment, restrooms, etc…) and to load the water truck which will spray water on the active roads for dust control. The pipeline connecting the tanks to the well will be buried (3,578 ft). The tanks are portable units with its own elevated base, no base is required. These tanks supply water to the crusher through a buried pipe (869 ft.) A third tank is located east of the underground portals in Pit 10 and will supply water for dust control underground and other non-potable uses. The pipe line connecting the tank to the well will be above ground (996 ft.). This tank is also a portable unit with its own elevated base, no other base is required. It supplies water to the Underground facilities through a pipeline above ground (413 ft.). Further details related to this water system can be viewed on Drawing 5-8C.
- Underground Mining Facilities: Mine fan, portable generator/power supply, water supply system (described above) and stacking conveyor. The generator and stacker are mobile and considered temporary. The mine fan is a single unit that is mounted, but easily removed. All of these facilities are in an existing pit, and shown on Drawing 5-3B.

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 5-37 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 for the Coal Hollow Mine, 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. An evaluation of the possible addition of underground mine water pumped to Sediment Pond 3 is included as Appendix 5-13.

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 5-37 and 5-38.

In order to accomplish these objectives for the North Private Lease, 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, fifteen diversion ditches and miscellaneous berms. The locations of these

structures can be viewed on Drawing 5-65. The detailed analysis for these structures and specific designs can be viewed on Drawings 5-67 through 5-73. In addition, a geotechnical analysis of the impoundments to ensure stability can be viewed in Appendix 5-11. The watershed and structure sizing analysis can be viewed in Appendix 5-12.

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 5-74 through 5-76B.

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 three 16,000 gallon water tanks. Two of these are placed along the coal haul road near the crushingarea 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 and provide water for dust suppression at the crushing facilities as needed. The third tank is located above the underground 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.

Due to the close proximity between permit areas, aside from the addition (in correlation with the Division of Air Quality) of monitoring stations, proposed activities at the North Private Lease permit area will continue to utilize the air pollution control facilities as currently constituted at the Coal Hollow Mine.

For details related to air pollution control and monitoring, refer to Chapter 4 and Appendix 4-5 and 4-6 or additionally Air Approval Order DAQE-AN140470005-15 found at http://www.deq.utah.gov/Permits/air/index.htm.

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 are 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 three roads in the Coal Hollow mine 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", and the Underground Portal Access/Haul Road. The two main haul roads will be the main accesses for the pits throughout the life of the mine. Details for these roads are provided in Section 527.200 and on Drawings 5-22 and 5-23. An as-built plan & profile of the Underground Portal Access is also provided in Drawing 5-22I. In addition to these 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.

There are two roads in the North Private Lease that will be used to transport coal or spoil in excess of six months and are referred to as "Northern Haul Road" and "Southern Haul Road". Details for these roads are provided in Section 527.200 and on Drawings 5-58, 5-59 and 5-60. These roads and the North Private Lease will be accessed via an approximate 50 foot driveway from County Road 136 (K3900) as depicted on Drawings 5-47 and 5-48.

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), Alton Coal Mine Road (K3100), Access to Water Well and Road to Swapp Ranch. Details and locations for these roads are shown on Drawings 5-61through 5-63 5-35, 5-37, 5-22A, 5-22B, 5-22C, 5-22D, 5-22E, 5-22F and 5-22H.

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

Transportation facilities for the Coal Hollow Mine include eight primary roads, 2 stacking conveyors, 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 the pits (pits shown on Drawing 5-10). This road will be approximately 2,800 feet in length and will be utilized throughout 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 southeast to long term topsoil stockpile 2 and subsoil stockpile 1. This road is approximately 1,300 feet in length. 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 underground mine portal access and haul road in Pit 10 will also be a primary road. This road is accessed from the main haul road from the coal unloading area. The underground access road will be approximately 1500' in length and will be constructed to the same specifications for the haul roads above, except that the road may be narrowed to a 40 foot width. A plan & profile of the as-built configuration for the underground access road is provided in Drawing 5-22I.

  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 three 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 Drawing5-37 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.

  An additional stacking conveyor will be installed to transfer coal from the underground conveyor system to a stockpile from which trucks will be loaded. The

stacking conveyor will be a 48'wide, wheel-mounted system, approximately 250' in length.

Drawings of these systems can be viewed on Drawings 5-3 through 5-5.

Transportation facilities for the North Private Lease will consist of two primary roads, and miscellaneous ancillary/temporary roads. 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: A primary haul road shown in Drawings 5-47, 5-58 and 5-59 will extend from the entrance of the permit area to the Western end of Pit 19. This road is approximately 3,540 feet in length. This road is referred as the "Northern Haul Road". A second primary haul road shown in Drawings 5-47 and 5-60, the "Southern Haul Road" extends from the South end of Pit 1 on the West, to the South end of the Highwall Trench on the East. This road is approximately 2,980 feet in length. A portion of this road will be constructed in designated wet meadow under Army Corps of Engineers permit NWP-14. Alton submitted pre-construction notification SPK 2011-001248 describing the disturbance and mitigation. These roads and the North Private Lease will be accessed via an approximate 50 foot driveway from County Road 136 (K3900) as depicted on Drawings 5-47 and 5-48.
- There are three culvert crossings along this road as shown in Drawing 5-58 including a substantial culvert to cross Kanab Creek. Culvert 1 (C-1) is sized at 24 inches. C-2 is sized at 36 inches to match the current culvert under County Road 136. Culvert C-3 is sized at 144 inches for maximum anticipated flows in Kanab Creek. Final design of this culvert will be in conjunction with approvals and oversight from the Army Corps of Engineers. Culvert sizing calculations can be found in Appendix 5-12.

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) 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 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.

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. All culverts placed in natural drainageways for the North Private Lease have been described in Appendix 5-12 and shown on Drawing 5-47. Reclamation of these culverts is also described in the same Appendix and shown on Drawing 5-79.

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 underground portal areas, and the coal sizing/loading areas located north of Pit 10 at the Coal Hollow Mine. For the North Private Lease, coal handling activities will be isolated to the active mining pit. Temporary stockpiling of coal will only occur within the active pit. Coal will then be transported in over-the-road trucks from the North Private Lease active pit to the loadout at Coal Hollow Mine for sizing and final loading. 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.

For the Coal Hollow Mine, 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 1-9. These pits have a relatively low strip ratio, approximately 4.3:1 (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 the next 5 pits can then be used as pit backfill as the mining progresses through Pit 9.

~~5-75~~As is depicted, each Pit/Highwall Trench consists of Panels, each panel consisting of 10 holes. The spacing between the holes and the spacing between the panels are dictated by the amount of overburden over the panels. Highwall mining is designed such that subsidence does not occur to the surface with nonyieldable webs and barriers. Specific information concerning these design are found in Appendix 5-8. Highwall mining will have only the disturbance associated with the pit/trench for placement of the highwall miner and will have no impact on the surface above the highwall panels.

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 a final placement location as operations allow.

Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016.

The underground mining will be accessed through portals in an existing pit. There will be no additional overburden removal associated with the underground mining; however, cross sections of the portal area are shown on Drawing 5-3B. Cover or overburden depths for the underground mining are described in Section 627. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC.

All maps related to the overburden removal process can be viewed on Drawings 5-15 through 5-17.
The following table summarizes overburden movement for the Coal Hollow Mine.

Coal Hollow Mine Overburden Summary	
2011	3,511,849 CY
2012	2,135,022 CY
2013	3,090,547 CY
2014	3,423,635 CY
2015 - Projected	1,613,023 CY
Total	13,774,076 CY

For the North Private Lease, the lease boundary encompasses three Permit Areas, of which Area 1 is currently proposed for inclusion in the MRP and Areas 2 and 3 remain

under review. Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in Appendix 8-2, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of this chapter and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second North Private Lease bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Following Pit 6, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

Based on the overburden isopach map (Drawing 5-56), the overburden removal has been separated into three major stages. The initial area of overburden removal is the mining area, Pits 1-10. These pits have a relatively low strip ratio, approximately 4.6:1 (refer to Drawing 5-52). In order to efficiently remove overburden for this phase, spoil from pit 1and pit 2 will be placed in a temporary excess spoil area on the area of pits 5 and 6. This excess spoil structure will hold approximately 505,866 loose cubic yards (LCY) of material. Once the excess spoil pile is filled, overburden from the remaining pits can then be used as pit backfill as the mining progresses through Pit 10, also as pit 4 is completed, material from the temporary spoils pile can be placed in pit backfill.

In the North Private Lease permit area, coal will be loaded directly into over-the-road trucks at the pit floor. To the extent it is needed, a coal surge pile will be located on the pit floor. Coal waste from cleaning the exposed seam will be retained in the pit. For the initial cut, coal waste will be temporarily pushed into a pile on top of unmined coal until enough coal has been removed to place the coal waste on the floor of the pit.

From the initial mining area, operations will proceed North from pit 11to Pit 21. These pits have a strip ratio increasing from 4.7:1 to 9.6:1. All spoils are placed in the preceding void. Once coal is removed from Pit 21, overburden from the development of the highwall trench in the eastern side of Kanab Creek will be used to backfill the remaining Pit 21.

The final mining area will be developed on the East side of Kanab Creek. Overburden removal from Highwall Trench 1 will proceed north in the trench with overburden being placed into the previously mined out area of Pit 21 until it reaches AOC. After Pit 21 is filled, material mined from the highwall trench will be placed directly as backfill in the same highwall trench, progressing from South to North.

The following table summarizes overburden movement for the North Private Lease.

North Private Lease Overburden

Summary	
Year 1	2,094,000 CY
Year 2	2,972,900 CY
Year 3	3,535,700 CY
Year 4	3,449,100 CY
Year 5	2,790,200 CY
Year 6	2,780,700 CY
Year 7	977,200 CY
Total	18,599,800 CY

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 areas designated on Drawing~~s~~ 5-3 ~~and 5-37~~ for the Coal Hollow Mine and on 5-47 & 5-51A for the North Private Lease. 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 at the Coal Hollow Mine is approximately 32 acres and varies in height from 35 to 120 feet. The excess spoil pile will be completely rehandled as pit backfill prior to final reclamation. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Design and the geotechnical study of this long-term fill can be viewed in ~~Drawings 5-37 through 5-37A and the geotechnical study can be viewed in~~ Appendix 5-1. The report provided in Appendix 5-11 lists the spoil geotechnical characteristics for the North Private Lease.

- *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 long-term excess spoil disposal area in the Coal Hollow Mine are described in Appendix 2-1. The soil resources for the North Private Lease temporary spoil disposal area are described in Volume 11. A plan has been developed for removal of topsoil and suitable subsoil based on the soil descriptions in these appendices. The handling plan can be viewed on Drawings 2-2 and 2-4. 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 5-37, 5-37A and 5-17 for the Coal Hollow Mine and on Drawing 5-47 & 5-51A for the North Private Lease.

- *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 designs has been completed by an expert in this field. The long term static safety factor for these structure designs are 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. For the Coal Hollow Mine, fill will be covered with subsoil and topsoil as specified in Chapter 2 to provide conditions suitable for revegetation of the area. The excess spoil pile will be completely rehandled as pit backfill prior to final reclamation. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Design and the geotechnical study of this long-term fill can be viewed in Appendix 5-1. The geotechnical studies for both permit areas can be viewed in Appendix 5-1for the Coal Hollow Mine and 5-11 for the North Private Lease.

- *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 landform underneath the Coal Hollow Mine long-term excess spoil as shown in Drawing 5-37 and 5-37A 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.

The North Private Lease temporary spoil pile will be in place for less than 6 months before being rehandled as pit backfill. Therefore, no postmining land use has been considered.

- *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 landform underneath the Coal Hollow long-term excess spoil as shown in Drawings 5-37 and 5-37A 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 landform underneath the Coal Hollow long-term 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. The North Private Lease temporary excess spoil will be in use for such a short period of time and will be comprised entirely of high-clay tropic shale such that infiltration is also expected to be negligible. In addition, laboratory data found at Appendix 7-16, page 20, for the overburden shows that there is minimal potential for leaching of pollutants should infiltration rates become higher than expected.

  The foundations of these excess spoil areas 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 areas. 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 discussed at Appendix 7-16, pages 26-27, and representative of the overburden planned for disposal in the excess spoil areas 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 areas. The final surfaces 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 5-37 and 5-74. 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. <u>Coal Mine Waste.</u>

The MRP does not contemplate processing coal that would produce coal mine waste.

528.321 Coal Processing Waste

The MRP does not contemplate processing coal that would produce coal processing waste that would be returned to the Underground workings.

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. Exceptions to the removal of all noncoal mine waste from the permit area is concrete pads for the generator and fan utilized in the underground operation will remain and will be covered with approximately 120’ of overburden.

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.

528.340

As development of the Underground workings originates in the existing Surface mining Pit, development wastes have been stored in the excess spoils pile. Once all mining is complete spoils will be returned to the mined out Pit following the surface mining regulations.

528.350. Acid-Forming and Toxic Materials

If coal, having qualities that make it unmarketable, are to be left in the pit backfill in quantities greater than 5,000 tons: a minimum of 1 composite sample per 5,000 Tons of coal will be analyzed for the parameters list in Table 3 and 7 of the "Soil and Overburden Guidelines". A record of the volume of coal remaining and laboratory analytical results will be kept onsite. 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**.

When no longer required, underground mine openings will be closed in accordance with R645-301-513, R645-301-529, R645-301-551 and MSHA approved requirements and backfilled. Each entry to the Underground mine if temporarily inactive, but having further projected useful service will be secured by barricades or other covering devices and posted with signs, to prevent access into the entry and identify the hazardous nature of the openings.

Highwall mining will produce openings (holes) in the coal at the bottom of trenches specifically constructed for highwall mining. Trench depth to the holes range from 60 feet to 200 feet. After highwall mining is completed in a given trench, that trench will be completely backfilled, burying any openings made by highwall mining.

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 for the Coal Hollow Mine permit area and five sediment impoundments for the North Private Lease. 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 for the Coal Hollow Mine and Appendix 5-11 for the North Private Lease. 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 with calculations and supporting text in Appendix 5-2 for the Coal Hollow Mine. An evaluation of the possible addition of underground mine water pumped to Sediment Pond 3 is included as Appendix 5-13. Details for the North Private Lease sediment impoundments are on drawings 5-67- through 5-71 with calculations and supporting text in Appendix 5-12.

There are no other coal processing waste banks, dams or embankments proposed within the permit areas.

Underground mining has begun within the Coal Hollow Mine permit area, but none of the planned underground workings are closer than 900 ft. from the nearest sediment impoundment as shown by comparing Drawing 5-3 to Drawing 5-10. Also, all underground mining has been planned as "first mining" only, which means that underground workings are not expected to cause any surface subsidence.

532 SEDIMENT CONTROL:

Four diversion ditches along with five sediment impoundments are proposed for the Coal Hollow Mine. 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. An evaluation of the possible addition of the underground mine water pumped to Sediment Pond 3 is included as Appendix 5-13. Fifteen diversion ditches along with five sediment impoundments are proposed for the North Private Lease. 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 5-65. Details associated with these structures can be viewed on Drawings 5-67 through 5-71 and Appendix 5-12.

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 for the Coal Hollow Mine and on 5-76A and 5-76B for the North Private Lease.

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 5-1. The remaining backfill will be placed in the mined out pit, and thus confined on all sides. The backfill will be inherently stable. Any backfill material that must be stockpiled for longer than six months will be stabilized using tackifier or another surface stabilization method. Additionally, in areas upgradient of completed or near completed reclamation, temporary berms will be utilized to ensure a reduction of rate and volume of runoff into and through working areas. Also, all pits will be bermed to minimize runoff into and through working areas.

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 for the Coal Hollow Mine and Appendix 5-11 for the North Private Lease. 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 Appendices 5-1 and 5-11 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 on Coal Hollow impoundments are provided in Appendix 5-1, pages 6 through 7 in the main section of the report. Details for this analysis on the North Private Lease also refer to Appendix 5-1, pages 6 and 7, as the geotechnical report provided in Appendix 5-11 lists the soil characteristics present in the North Private Lease to be identical to those in the Coal Hollow Mine.

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 for the Coal Hollow Mine and on Drawings 5-67 through 5-71 for the North Private Lease.

- *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 for the Coal Hollow Mine and Appendix 5-11 for The North Private Lease. 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. An evaluation of the possible addition of underground mine water pumped to Sediment Pond 3 is included as Appendix 5-13.

- *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 for the Coal Hollow Mine and Drawing 5-76B for the North Private Lease. Expected removal is year seven of the mining and reclamation process for the Coal Hollow Mine and year five -seven for the North Private Lease. 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 for the Coal Hollow Mine and Drawings 5-67 through 5-71 for the North Private Lease. Locations can be viewed on Drawing 5-3 and 5-25 for the Coal Hollow Mine and Drawings 5-47 and 5-65 for the North Private Lease.

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 5-37, 5-37A and 5-38 for the Coal Hollow Mine and Drawings 5-74 through 5-76B for the North Private Lease. 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 5-37 and 5-37A for the Coal Hollow Mine and Drawings 5-74, and 5-75 for the North Private Lease. The estimated timetable for removing these roads is shown on Drawing 5-38 and 5-76B respectively.

- *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. Also, the upper slope of pit 10 is cut into alluvium at 4:1, this slope will be stabilized by planting with the interim seed mix found in Chapter 2 page 2-25.

- *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 underground mine portal access and haul road in Pit 10 (shown in Drawing 5-22I) will also be a primary road. This road is accessed from the main haul road from the coal unloading area. The underground access road will be approximately 1500' in length and will be constructed to the same specifications for the haul roads above, except that the road may be narrowed to a 40 foot width.

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, 5-22, 5-23, 5-47, and 5-58 through 5-60.

For the Coal Hollow Mine, in addition to the two 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 Drawings 5-22E, 5-22F and 5-22G for the Coal Hollow Mine, and Drawings 5-61 and 5-63 for the North Private Lease. 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 Drawings 5-38 and 5-76B and is expected to be completed by the end of Year 5 for the Coal Hollow Mine and Year 7 for the North Private Lease.
- Alton Coal Mine Road (K3100) in the North Private Lease with details on Drawings 5-62 and 5-63. This short section of County Road will also be reconstructed within the permit area by Kane County. The reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-76B and will be completed in Year 7.
- Road to Swapp Ranch (same specification as the Water Well Road)

The location of these roads is shown on Drawings 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 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 appurtenant 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 both the long term excess spoil structure located at the Coal Hollow Mine and the temporary excess spoil structure located at the North Private Lease. These analyses estimate the long-term safety factor to be 1.6 to 1.7 based on the proposed designs. Following proper construction practices of building the structures in maximum four foot lifts and meeting 85% compaction based on the standard Procter will ensure that the structures 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 areas as shown on Drawings 5-3, 5-37, for the Coal Hollow Mine and Drawing 5-47 for the North Private Lease. 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. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit have been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. The geotechnical analysis for this structure can be viewed in Appendix 5-1 for the Coal Hollow Mine and in Appendix 5-11 for the North Private Lease.

- *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 areas where natural grades range from 0 to 5%. These are some of the most moderately sloping locations in the Permit Area. Stability of these structures 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 and trench samples were completed in the foundations of the proposed disposal areas. Laboratory analysis of these borings and trench samples have also been completed. Details of this analysis can be viewed in Appendix 5-1 and Appendix 5-11.

- *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 s~~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 and Appendix 5-11 detail the stability analyses for the proposed structures.

- *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 and Appendix 5-11), 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 and Appendix 5-11.

  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 5-1for Coal Hollow and Appendix 5-11 for the North Private Lease.

- *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 nor 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.

535.500 Disposal of Excess Spoil: At Drift Entries.

The MRP does not con~~mp~~template disposal of spoils resulting from face-up operations at the drift entries. Drift entries will originate from the existing Pit, excess spoil for which are stored in the pit backfill or in the approved Excess Spoils Pile.

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 long-term excess spoil structure and fill above approximate original contour at the Coal Hollow Mine are the only alternative specifications proposed. Although the structure will be rehandled as pit backfill prior to final reclamation to achieve AOC, ~~a~~A geotechnical analysis has been completed for this proposal and can be viewed in Appendix 5-1. All other mined areas within the Coal Hollow Mine and North Private Lease, for surface or underground will be restored to approximate original contour.

537.200 Regrading of Underground Fills/Spoil:

Any spoils produced by underground operations at the Coal Hollow Mine will be placed in the first instance in unused crosscuts or underground voids. If necessary, underground spoils may also be placed in the Pit 10 void, not to exceed approximate original contour. As a last resort, underground spoils may also be placed in the long-term excess spoil structure under the design criteria detailed in Appendix 5-1. No underground spoils are expected from the North Private Lease permit area.

540 **RECLAMATION PLAN**:

541.100 - 400 General

Concurrent with mining operations and when coal mining is complete, all pits within each permit area 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. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016.

Underground mine portals will be closed in accordance with R645-301-513, R645-301-529, R645-301-551 and approved MSHA plans and backfilled.

Since the underground mine portals are located in the bottom of Pit 10 at the Coal Hollow Mine, they will be reclaimed and permanently closed by the backfilling of the pit to a depth of greater than 100' when no longer required. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC.

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 an exploration borehole 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 and North Private Lease 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~~ 60 days following coal removal, or 1,500 feet of the active coal removal face. One exception to this standard is that a portion of Pit 10 will be left open for access to the underground portals until completion of underground mining. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC. 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 for the Coal Hollow Mine and Drawing 5-76A and 5-76B for the North Private Lease provide 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.

At the Coal Hollow Mine, surface mining operations are at a steady state and nearing completion. As such, all material mined goes directly to a backfill or reclaim capacity and is covered by subsoil and topsoil then prepared for mulching and seeding as soon as possible. During this last stage of mining, material from the Highwall Trench is directly backfilled into the remnants of Pits 9, 10 (a portion), 20, 21 and the northern extent of the trench itself. While a majority of Pit 10 will remain open until completion of underground mining, all other pits will be backfilled and reclaimed to approximate original contour. Any shortage of material for final backfill of the Highwall Trench will be made up by rehandle of spoil from the long term excess spoil pile. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit have been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016.~~The long term excess spoil pile will also be the source of material for final backfill of Pit 10 after completion of underground mining activities.~~

For start-up of the North Private Lease, 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, Pits 1 and 2 will be backfilled to the planned post mining contour, graded, and the subsoil and topsoil replaced concurrently with mining of Pits 3, 4, and 5 midway through the first year of mining. Reclamation activities will proceed at the regular planned rate thereafter. As mining progresses through the second and into the third year (culminating with Pit 21), a backfill void will develop between the mining face and the direct backfill behind it. This void is a product of the interaction between coal being mined (leaving approximately 15 ft. of extra depth to fill) and the placed backfill swelling from in-situ to loose at an average factor of 10.725%, which is insufficient to make up for the coal depth loss. The final void on completion of Pit 21 will be approximately 1,000,000 cubic yards. As mining commences on the eastern side of the permit area in the Highwall Trench, material will be hauled from the trench back across the property to backfill the remaining void. Therefore, the void will in effect be transferred to the eastern side of the permit where a natural topographic ridge rests above the Highwall trench. This ridge will provide adequate material to fill the Pit 21 void while natural landform, post-mining land use, and drainage will be maintained or improved. Proposed final reclamation contours and cross sections can be viewed on Drawings 5-37 and 5-37A for the Coal Hollow Mine and on Drawings 5-74 and 5-75 for the North Private Lease.

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. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Therefore, a small portion (apx. 250k C.Y.) of ~~T~~the long-term excess spoil structure may remain at the Coal Hollow Mine~~, but smaller than designed due to swell factors that varied from initial design~~ until final backfill of Pit 9-C. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC. 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 for both permit areas planned to exist postmining is the water well in the Coal Hollow Mine permit area 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 main haul road 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. The portal access/haul road is in Pit 10 and will be backfilled when no longer needed.

  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 for the Coal Hollow Mine permit area and Drawings 5-61 and 5-63 for the North Private Lease. This County road will be reconstructed within the permit areas by Kane County. This reconstruction will occur concurrently with the final stage of reclamation as scheduled on Drawing 5-38 for the Coal Hollow Mine and Drawing 5-76B for the North Private Lease and is expected to be completed by 2017 and year 5 of operations, respectively.
  - Alton Coal Mine Road (K3100) with details on Drawings 5-62 and 5-63. This County road will also be reconstructed within the permit area by Kane County, and will also be constructed concurrently with the final stage of reclamation as shown on Drawing 5-76B. It is expected to be completed by year 5 of operations.
  - Road to Swapp Ranch (same specification as the Water Well Road)

  The location of these roads is shown on Drawings 5-37 and 5-38 along with the post mining topography for each permit area.

- 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. See Appendix 5-12 and Drawing 5-79 for descriptions and plans.

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.

542.700. Final Abandonment of Mine Openings and Disposal Areas.

Final abandonment of alternative mined highwall panels will be at the time when completed panels are backfilled as described in Section 529.

Underground mine openings will be closed in accordance with R645-301-513, R645-301-529, R645-301-551 and approved MSHA requirements and backfilled.

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 an exploration hole 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 long term and temporary excess spoil structures for each permit area. 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 Drawings 5-3 and 5-35 for the Coal Hollow Mine and Drawing 5-47 and 5-51A for the North Private Lease. 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 for the Coal Hollow Mine and Appendix 5-11 for the temporary structure at the North Private Lease. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Therefore, a small portion (apx. 250k C.Y.) of the long-term excess spoil structure may remain at the Coal Hollow Mine until final backfill of Pit 9-C. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC.

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. With the exception of removal of perforated piping used in the construction of Alluvial Ground Water Drains that will be left in place as mining advances and water line piping. This perforated piping will be covered in place approximately 20' to 30' below the final reclaimed surface. All other waste materials (ie. metal culvert) associated with the Alluvial Ground Water Drains will be removed and disposed of in a State-approved solid waste disposal site. The buried water line from the well to the Coal Yard, all buried water pipe within the Coal Yard and the buried water line from the tank East of Pit 10 will be cut off 4' below the final surface, capped and left in place.

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 Chapter 8 and Appendices~~x~~ 8-1 and 8-2. This estimate is based upon the proposed plan of open pit, highwall and underground mining. 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 required, underground mine openings will be closed in accordance with R645-301-513, R645-301-529, R645-301-551 and MSHA approved requirements and backfilled. 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 an exploration hole 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 areas will proceed in conjunction with coal recovery operations.

The following is a description of the overburden removal and backfilling process:

For the Coal Hollow Mine, 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 1-9. These pits have a relatively low strip ratio, approximately 4:3 (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 located immediately west of Pit 1. 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 the next 5 pits can then be used as pit backfill as the mining progresses through Pit 9. Pit 9 will not be backfilled at this stage; it has been left open for placement of the highwall miner to recover coal from panels 1-3.

From the initial mining area, operations will proceed from the southeast ¼ of Section 30, beginning with pit 28 and proceeding north to pit 20. Material from pit 28 was place in the excess spoil structure with overburden material from successive pits to the north being placed in the mined out pit to the south. These pits were not mined as initially laid out due to the coal being eroded in the eastern half of pit 28 and numerous sand channels replacing much of the coal in the eastern portions of pit 22-27. These pits as mined have a relatively low strip ratio of approximately 5.0:2. While overburden removal was occurring in pit 22, coal recovery was occurring from the pit 9 highwall panels. In this method of mining, an unmanned cutter module is driven underground and operated in front of the highwall. The highwall mining machine stands on the pit floor or on a bench, directly in front of the exposed seam and makes long parallel rectangular drives into the coal seam. A remote-operated cutter module is pushed into the seam by a string of push beams (unmanned coal-conveying elements) that transport the mined coal back to the entry of the drive onto a stockpile. Coal is then removed to the sizing/loading area. The miner is moved along the face making successive pushes into the coal face. Once coal is removed from the Pits/ Highwall Trench, overburden from excavation of the next

Highwall Trench is used to backfilled the mined out area continuing with the progression of the trench. In hole 27 of Pit 9 Panel 3, the highwall miner head became lodged. Another head was leased in order to continue highwall mining from pits 22 and 23 while a recover plan was approved to mine Pit 10 and recover the lodged miner head.

In Stage three, Pit 21 was then mined along with the highwall panels in 21, then Pit10. The strip ratio for these two pits was 8.0 and 12.1 respectively. Overburden was placed in the pits to the south from pit 21 and in pit 9 from pit 10. Pit 10 will remain open for development of the underground portals and remain open until all underground coal is mined. There will be no additional overburden removal associated with the underground mining. Surface mining will continue with mining of Highwall Trench (HWT) 1 continuing south to HWT 3. The strip ratio for the highwall trench is 10.3:1. Overburden from HWT 1 will fill the remaining pit 9 with material from HWT 2 and 3 filling the previously mined portions of highwall trench and any remaining void in Pits 9, 20, 21, and 22.

Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Therefore, a small portion (apx. 250k C.Y.) of the long-term excess spoil structure may remain at the Coal Hollow Mine until final backfill of Pit 9-C. Following the completion of underground mining, backfill of Pit 10 will be completed utilizing borrow from the areas delineated in Drawings 5-19 and 5-37. Final backfill will require approximately 1.3 Million C.Y. of borrow material, but will still achieve AOC.

~~Any remaining void in the Highwall Trench as well as Pit 10 at the end of underground mining will require part of the excess spoil structure to 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 2.5 million yards of spoil.~~

The following table summarizes the overburden and backfill movement for the Coal Hollow Mine:

Coal Hollow Mine Overburden Summary	
2011	3,511,849 CY
2012	2,135,022 CY
2013	3,090,547 CY
2014	3,423,635 CY
2015 - Projected	1,613,023 CY
Total	13,774,076 CY

Rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet except that Pit 10 will remain open until removal of underground coal is complete.

For the North Private Lease, the lease boundary encompasses three Permit Areas, of which Area 1 is currently proposed for inclusion in the MRP and Areas 2 and 3 remain under review. Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in Appendix 8-2, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of this chapter and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second North Private Lease bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Following Pit 6, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

Based on the overburden isopach map (Drawing 5-56), the overburden removal has been separated into three major stages. The initial area of overburden removal is the mining area, Pits 1-10. These pits have a relatively low strip ratio, approximately 4.6:1 (refer to Drawing 5-54). In order to efficiently remove overburden for this phase, spoil from pit 1 and pit 2 will be placed in a temporary excess spoil area on the area of pits 5 and 6. This excess spoil structure will hold approximately 506,000 loose cubic yards (LCY) of material. Once the excess spoil pile is filled, overburden from the remaining pits can then be used as pit backfill as the mining progresses through Pit 10, also as pit 4 is completed, material from the temporary spoils pile can be placed in pit backfill.

From the initial mining area, operations will proceed North from Pit 11to Pit 21. These pits have a strip ratio increasing from 4.7:1 to 9.6:1. All spoils are placed in the proceeding void. Once coal is removed from Pit 21, overburden from the development of the highwall trench will be used to backfill the remaining Pit 21.

The final mining area will be developed on the East side of Kanab Creek. Overburden removal from Highwall Trench 1 will proceed north in the trench with overburden being placed into the previously mined out area of Pit 21 until it reaches AOC. After Pit 21 is filled, material mined from the highwall trench will be placed directly as backfill in the same highwall trench, progressing from South to North.

For start-up of the North Private Lease, 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. In accordance with R645-301-553, backfill of each pit will commence no more than 60 days after the

removal of coal. As currently planned, Pits 1 and 2 will be backfilled to the planned post mining contour, graded, and the subsoil and topsoil replaced concurrently with mining of Pits 3, 4, and 5. Reclamation activities will proceed at the regular planned rate thereafter. As mining progresses from the second to the fourth year (culminating with Pit 21), a backfill void will develop between the mining face and the direct backfill behind it. This void is a product of the interaction between coal being mined (leaving approximately 15 ft. of extra depth to fill) and the placed backfill swelling from in-situ to loose at an average factor of 10.725%, which is insufficient to make up for the coal depth loss. The final void on completion of Pit 21 will be approximately 1,000,000 cubic yards. As mining commences on the eastern side of the permit area in the Highwall Trench, material will be hauled from the trench back across the property to backfill the remaining void. Therefore, the void will in effect be transferred to the eastern side of the permit where a natural topographic ridge rests above the Highwall trench. This ridge will provide adequate material to fill the Pit 21 void while natural landform, post-mining land use, and drainage will be maintained or improved.

Of note, erosional scours (center and western drainage) existing prior to mining will be eliminated per the landowner request. This requires coordination with the USACOE for the elimination of wet lands (final landform shown on Drawings 5-74 and 5-75) identified in the Preliminary Jurisdictional Determination SPK-2011-01248 November of 2012 and updated September 2015 (MRP, Volume 10, NPL Wetland Study Report Final). Disturbances within the identified wetlands will not occur until approval of the 404 permit. The 404 permit will allow for take of the wetlands within the center drainage with wetlands being replaced in offsite mitigation under USCOE jurisdiction.

The following table summarizes overburden movement for the North Private Lease.

North Private Lease Overburden Summary	
Year 1	2,094,000 CY
Year 2	2,972,900 CY
Year 3	3,535,700 CY
Year 4	3,449,100 CY
Year 5	2,790,200 CY
Year 6	2,780,700 CY
Year 7	977,200 CY
Total	18,599,800 CY

Major steps in the backfilling and grading process for both permit areas 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.

- 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 commence backfilling and grading within 60 days following coal removal. As described in the previous text there will be a variance from this standard for Pit 10 of the Coal Hollow Mine as it remains open during underground mining operations. Also, as the North Private Lease progresses toward Pit 21 in the North of Permit Area 2 and accumulates an ever-growing void, the width of the void space increases but never exceeds 400 ft., therefore the area in the void may take slightly longer to commence backfill activities than the standard 60 days. This will be immediately resolved once mining commences in the Highwall Trench on the eastern side of the permit area. 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.

553.110

All areas will be restored to approximate original contour for the Coal Hollow Mine as shown on Drawing 5-37. R645-301-553.800 (Thick Overburden) does not apply to this surface mine. The slopes will be regraded to a maximum angle of 3h:1v and most slopes are flatter as shown on Drawing 5-37 and 5-37A. 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.

All areas will be restored to approximate original contour for the North Private Lease as shown on Drawings 5-74 and 5-75. R645-301-553.700 (Thin Overburden) does not apply to this surface mine. The slopes will be regraded to a maximum angle of 3h:1v and most slopes are flatter as shown on Drawing 5-74 and 5-75. A geotechnical analysis has been completed to verify that the spoil material will be stable long term. This analysis can be viewed in Appendix 5-11.

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 as shown on ~~with the exception of the planned Coal Hollow Mine long term excess spoil as shown on~~ Drawing 5-37.

553.130

Postmining slopes for both permit areas 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 post mining land use.

553.200 Spoil and Waste.

Spoil located in each of the excess spoil areas 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 1.3~~8~~ million ~~loose~~ cubic yards of ~~excess~~ spoil shortfall; therefore R645-301-553-7~~8~~00 applies rather than R645-301-553.8~~7~~00. But, ACD proposes to make up for this void and still meet approximate original contour by handling approximately 1.3 million cubic yards of material from a borrow area as shown in Drawings 5-19, 5-37 and 5-37A to complete backfill of Pit 10 and the underground portals. In so doing, a surface configuration and drainage pattern that closely resemble original conditions will be achieved so that neither R645-301-553.700 nor 301-553.800 apply to the Coal Hollow Mine permit area.

For the North Private Lease, based on updated swell factors of mined material found in Appendix 5-11, mining is expected to result in a deficit of spoil of approximately 1.0 million cubic yards. ACD proposes to make up for this void and still meet approximate original contour by handling approximately 1.0 million cubic yards of material from a

topographic high ridge in Area 3 to backfill the last portion of Area 2 (As shown in the post-mining topography of Drawing 5-74). In so doing, a surface configuration and drainage pattern that closely resemble original conditions will be achieved so that neither R645-301-553.700 nor 301-553.800 apply to the North Private Lease permit area.

553.800. Backfilling and Grading: Thick Overburden.

553.810

The Coal Hollow project is expected to have approximately 1.3 million cubic yards of spoil shortfall; therefore R645-301-553-700 applies rather than R645-301-553.800. ~~The spoil in the Coal Hollow Mine will be placed to attain the lowest practicable grade, and will not exceed the angle of repose for the material. The slopes on the excess spoil areas 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 5-37 and 5-37A. 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 areas 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;*

The landform underneath the 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 5-37, 5-37A, 5-47, 5-51A and 5-17.

- *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 areas designated on Drawings 5-3 and 5-37 for the Coal Hollow Mine. 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 the original flow patterns. The excess spoil placed on the non-mined areas at the Coal Hollow Mine is approximately 32 acres and varies in height from 35 to 110 feet. The excess spoil pile will be completely rehandled as pit backfill prior to final reclamation. Following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit has been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the 9th of June, 2016. Design and the geotechnical study of this long-term fill can be viewed in Appendix 5-1~~ Design of this long term fill can be viewed in Drawings 5-37 and5-37A 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 designs has been completed by an expert in this field. The long term static safety factor for these structure designs 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 fills will be graded to allow for drainage similar to original patterns and to prevent excessive infiltration of water. For the Coal Hollow Mine, following the completion of surface mining in the highwall trench, backfill operations from the long-term excess spoil structure to the open pit have been ongoing to bring both the spoil structure and highwall trench areas to AOC. It is anticipated that backfill of the highwall trench will be completed by the end of July, 2016. The landform beneanth the 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 5-1for the Coal Hollow Mine.

- *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 landform beneath the Coal Hollow Mine long term excess spoil as shown in Drawing 5-37 and 5-37A 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 landform beneath the Coal Hollow Mine excess spoil as shown in Drawings 5-37 and 5-37A 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 landform beneath the Coal Hollow long term 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 regraded to a contour that will route natural water from snowmelt and rainfall around the excess spoil as shown on the final contours Drawing 5-37. 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, Drawing 5-38 for the Coal Hollow Mine and Drawing 5-76A and 5-

76B for the North Private Lease. The Drawings will provide an as-built of the reclamation sequence, depicting the acres of open pit and /or trench, the acres backfilled, the acres fully reclaimed (topsoiled and seeded) and revisions to the reclamation timetable. This information will be submitted by March 28th of each calendar year with the appropriate C1/C2.

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.