C/025/005 Incoming

#4591

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

May 15, 2014

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

Subject: **Change of mining sequence, Coal Hollow Project, Kane County, Utah, C/025/0005**

Dear Mr. Haddock,

Alton Coal Development, LLC (ACD) is providing this submittal to address a change in the sequence of mining. With the arrival of the Highwall Miner, ACD began mining in the existing Pit 9 according to the approved MRP Drawing 5-10B. With this submittal, development of the Highwall Trench will begin adjoining the south end of Pit 9 and proceed to the south. All drawings in the MRP affected with this change have been provided. As we proceed into the Phase 3 Bonded area of the permit, the bond has been recalculated to reflect the submitted plan amendment that will occur as mining proceeds. As stated in the amendment Pit 9 will be utilized as access to the highwall trenches to the south. The proposed plan for backfilling Pit 9 includes acquiring the right to mine the adjacent federal coal reserves located immediately southwest or north of Pit 9. In the case that ACD is not successful with acquiring the federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining Pit 9. Thus ACD is requesting a variance of time beyond the 60 days for rough backfilling and grading of Pit 9

Please find enclosed 1 (one) redline copies of the revised text for review and 2 (two) clean copies of text and drawings for insertion into the MRP. 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: Change in Mining Sequence

Description, Include reason for application and timing required to implement:
Remove reference to contract miner

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 # _____
☐ 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	05/15/2014	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 15 day of May, 2014

Notary Public: Marty Nicholes, state of Utah.

My commission Expires: 9-11-2017
Commission Number: 670359
Address: 11670 E Millstone Cir
City: Enoch State: UT Zip: 84721

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
		RECEIVED MAY 16 2014 DIV. OF 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: Change in Mining Sequence

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.

Add	Replace	Remove	DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐	☒	☐	Chapter 5, Pages 5-22, 5-23, 5-25, 5-42, 5-43, 5-44, 5-65, and 5-71 through 5-73
☐	☒	☐	Chapter 8, Page 8-2
☐	☒	☐	Chapter 8, Appendix 8-1, Page 4
☐	☒	☐	Chapter 8, Appendix 8-1, Section : Mine Facilities - Reclamation Estimate
☐	☒	☐	Chapter 8, Appendix 8-1, Section : Phase 3 - Reclamation Estimate
☐	☒	☐	Chapter 5, Drawing 5-2A, 5-9A, 5-10A, 5-16A, 5-19, and 5-38A
☐	☐	☒	Chapter 5, Drawing 5-10B
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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
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Form DOGM - C2 (Revised December 10, 2007)

Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	900,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	~~172~~2,305,000
Recoverable Coal	Mined	16.3	6.4	~~4,471~~3.066,000

*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

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 oversteepen the loading face along the pit walls, thus recovering the maximum amount of coal.

Where pit geometry or operational factors preclude the use of backhoes for loading, a large rubber tire front end loader will be used. These machines provide similar horizon control, can operate on the floor of the pit or on an intermediate bench, and can recover coal from confined areas such as the ends of the pits.

With the alternative option, 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.

Rear dump haul trucks, loaded by the backhoes or front end loader, will be used to move the coal from the pit via inpit roads and the primary haulroad to the crusher and stockpile. The trucks will be equipped with "combo" beds suitable for hauling both coal and overburden, and configured to minimize coal spillage.

A net recovery of 95% (including the effects of in-pit coal losses and out-of-seam dilution) of the coal exposed in the open pit is anticipated. A net recovery of 45% of the coal mined by the alternative highwall system is anticipated. Normal coal losses are expected due to cleaning of the top of the seam, loading losses at the seam floor, and coal oxidation near the outcrop.

No coal washing is contemplated at this time, thus there will be no coal processing losses.

Maps and cross sections providing detailed information related to coal recovery activities can be viewed on Drawings 5-9 through 5-14.

523. MINING METHOD(s).

The Coal Hollow Mine will be a surface coal mining operation using open pit mining methods to produce up to 2 million tons of coal per year. Primary mining equipment will include hydraulic excavators, a highwall miner and end-dump mining trucks. The coal will be crushed at the mine site, and hauled to market in over-the-road coal trucks.

The mine is planned to produce approximately 4.64 million tons of coal over a life of approximately 6 years for the preferred option and approximately ~~4.2~~3.0 million tons of coal over a life of approximately ~~7~~ 5 years for the alternate option. The estimated production schedule is summarized below for the two options:

Preferred option		
		Tons Produced
Year		(000)
1		542
2		505
3		750
4		1,000
5		1,000
6		844
Total		4,641

Alternative option		
		Tons Produced
Year		(000)
1		542
2		505
3		567
4		~~792~~598
5		~~789~~816
~~6~~		~~802~~
~~7~~		~~153~~
Total		~~4,150~~3,029

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,

initial phase includes pits 1 through 8 as shown on Drawing 5-10. The mining and reclamation process for this phase can be viewed on Drawing 5-17.

From the initial mining area, operations will proceed eastward through the NE ¼ of Section 30 to the NW ¼ of Section 29 (as shown on Drawing 5-10) and from the southeast ¼ of Section 30, beginning with pit 28 and proceeding north. The mining and reclamation process for this phase can be viewed on Drawing 5-18. As shown on Drawing 5-19, ~~the final pits,~~ pit ~~17~~ 9 ~~through 21,~~ will not be backfilled at this stage. The proposed method for filling these pits back to approximate original contour will be accomplished by utilizing overburden from the pit(s) in the adjacent federal reserves located immediately southwest or north of this area. Alton Coal Development, LLC is currently in the process of an Environmental Impact Study for these reserves with the intent of acquiring the rights to mine. It is expected that these rights will be acquired prior to the completion of the final phase in the proposed Permit Area. The final landform for the Permit Area is shown on Drawings 5-35 and 5-36.

In the case that Alton Coal Development, LLC is not successful with acquiring the rights to the adjacent federal coal reserves, spoil will be rehandled from the excess spoil and variance from the approximate original contour to fill the remaining pits. The final landform for this alternate scenario is shown on Drawing 5-37 and 5-37A.

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

Diesel - Hydraulic Excavators (15 to 38 cu. yd. capacity)
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)

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.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 3.0 million LCY. Drawing 5-18 (Phase 2) shows the details of this stage of the overburden removal and resulting landform.

Phase 3 overburden removal begins in Pit 14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined. During this stage, the strip ratio reduces significantly from Phase 2 as mining progresses to Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding pits. This results in the distance between the backfill and the active coal face increasing. At the end of mining, an area will not be completely backfilled that is approximately 1,600 feet in length and 875feet wide and will require 3.3 million yards of fill to complete reclamation to approximate original contour. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan for backfilling these final pits includes acquiring the right to mine the adjacent federal coal reserves, located immediately west of this area. This plan provides an efficient method for transitioning operations into the federal reserves. At the time that this transition occurs, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawing 5-35 and 5-36.

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately ~~3.3~~2.5 million yards of spoil.

If the alternative highwall mining is selected, highwall mining would begin in Pit 9. ~~it is anticipated when pit 26 is~~Then, once coal is removed from Pit 22, the coal east of Pits 22 and 23 will be mined using the highwall miner while ~~completed,~~ Highwall Trench 1 (HWT1) ~~will be~~is excavated utilizing Pit 9 as access. Once mining is complete, the proposed plan for backfilling Pit 9 includes acquiring the right to mine the adjacent federal coal reserves, located immediately southwest or north of Pit 9. In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. ~~Dependent upon the arrival of the highwall machine, another option would be to utilize it in an active pit, for example Pit 9 is currently active with an exposed highwall. Highwalling would begin from this pit and surface disturbance of the successive pit (pits 10-15 going east) would not occur. Otherwise, the mining process, is for coal to be removed from the area of excavation. At this point a highwall miner is brought in.~~ In this method of mining, an

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 ~~southern panels of a~~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.

The anticipated coal removal sequence for the Highwall mining is shown on drawing 5-10A ~~or 5-10B if Pit 9 is the location selected for beginning highwall mining. Depending on the approval of the alternative and the delivery of the highwall miner, the highwall miner could be deployed on an exposed coal face.~~ 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. The alternate 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.

The following tables show the material balance during the different phases of overburden removal for each scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Federal)	~~3,300~~2,545,000	~~3,300~~2,545,000	0	5,782,000
Total	~~40,035~~39,280,000	~~34,253~~33,498,000	5,782,000	5,782,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Rehandle)	0	~~3,300~~2,545,000	- ~~3,300~~2,545,000	~~2,482~~3,237,000
Total	36,735,000	~~34,452~~33,498,000	~~2,482~~3,237,000	~~2,482~~3,237,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternative Scenario (Highwall mining)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	7,381,000	7,277,000	104,000	2,845,000
3	5,257,000	5,257,000	0	2,845,000
4 (Federal)	~~3,300~~2,545,000	~~3,300~~2,545,000	0	2,845,000
Total	23,~~874~~119,000	~~21,029~~20,274,000	2,845,000	2,845,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

The Preferred scenario for overburden removal will minimize overall disturbance and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial boxcut once operations are transitioned into these reserves.

During the course of mining, some additional excavated overburden may be placed temporarily on mined over and backfilled areas due to operational considerations. This material will be re-excavated and moved to it's final placement location as operations allow.

All maps related to the overburden removal process can be viewed on Drawings 5-15 through 5-19.

528.300. Spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures;

528.310. Excess Spoil. Excess spoil will be placed in designated disposal areas within the permit areas, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.

Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet in thickness. The material will be transported from the overburden removal area to the fill by end dump haul trucks

wind and water, decrease evaporation and seed predation, and increase survivability of the seeded species. Like the seeding methods, mulch will be applied with a variety of techniques and materials depending on the reclaimed area.

Generally, mined areas will be backfilled and graded within approximately 180 days following coal removal, or 1,500 feet of the active coal removal face. One exception to this standard is during mining and backfilling of the ~~final pits in the south end of the permit area~~Highwall Trench south of Pit 9. During this phase of mining, ~~backfilling will follow approximately 2,000 feet from the active coal face~~Pit 9 will be left open for access to the Highwall Trench. A detailed description of the reason for this variation are fully described in section 528 (Overburden) and the major steps can be viewed on Drawings 5-17 through 5-19. Areas needed for in-pit roads, ramps, drainage controls or areas which must be left open temporarily for operational reasons will be backfilled and graded when they are no longer needed. The rate of backfilling will depend on the availability of mined out pit areas for backfilling, and the rate of production at the mine. Based on anticipated production rates, Drawing 5-38, or Drawing 5-38A if the alternative highwall mining is selected, provides an estimated sequence and timing for reclamation.

Topsoil will be replaced on the graded areas as soon as operationally practicable. This work will depend on weather and soil conditions in the removal and replacement areas, but is generally anticipated to occur within 90 days of completion of regrading.

Revegetation activities will be seasonal in nature. As currently planned, initial seeding will occur at the first planting opportunity following replacement of topsoil. Supplemental seeding may be done subsequently as needed.

Some delay is unavoidable in reclamation of the initial mining areas due to the time required to establish the initial working pit and backfill area, and to achieve a steady state excavation/backfill operation. As currently planned the initial mining areas will be backfilled to the planned post mining contour, graded, and the topsoil replaced by late in the first year or in the first half of the second year of mining. Reclamation activities will proceed at the regular planned rate thereafter. Proposed final reclamation contours and cross sections can be viewed on Drawings 5-35 and 5-36.

The sequence and timing of reclamation activities is dependent on the coal production rate. Should that rate differ significantly from the current plan, the reclamation schedule will also vary.

Final reclamation includes the following:

- Backfilling and Grading. Backfilling of all final pits will commence at the conclusion of coal production. All highwalls, spoil piles, and depressions will be removed, except that small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation. No permanent final pit impoundments are currently planned. The

Based on the overburden isopach map (Drawing 5-15), the overburden removal and backfilling process has been separated into three major stages. The first stage of this process is for the initial mining area, Pits 1-8. These pits have a relatively low strip ratio, approximately 5:1 (refer to Drawing 5-13). In order to efficiently remove overburden for this phase, spoil from the first three pits will be placed in an excess spoil area located immediately west of Pit 1. This excess spoil structure will hold approximately 2.7 million loose cubic yards (LCY) of material and is shown on Drawing 5-17. Once the excess spoil pile is filled, overburden from the next 4 pits can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

Phase 2 requires mining to occur in two areas of the permit alternately. As mining progresses through Pits 9-13, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area require a fill above approximate original contour that is an extension of the excess spoil pile. Material from Pits 9-13 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Phase 1 and extends an additional 2,000 feet to the east as the mining sequence proceeds to Pit 15.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Phase 3 overburden removal begins in Pit 14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses to Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding Pit 15. This results in the distance between the backfill and the active coal face increasing because there is a lack of spoil in the lower ratio pits as mining proceeds south to fill the preceding higher ratio area. At the end of mining this phase, an area will not be completely backfilled that is approximately 1,600 feet in length and 875 feet wide and will require 3.3 million yards of fill to complete reclamation to approximate original contour. This remaining pit provides an open pit adjacent to the federal coal reserves for backfilling of overburden so that a smooth transition can be made without developing another boxcut and an excess spoil area. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan (Preferred Scenario) for backfilling the final pits is based on the assumption that Alton Coal Development, LLC will be successful with acquiring the adjacent federal coal reserves, located immediately to the west of the project area. This Preferred scenario for backfilling will minimize overall disturbance, and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial box cut as operations are transitioned into these reserves. In addition, this scenario provides a method for implementing concurrent reclamation during the project by eliminating temporary stockpiles of spoil that can not be reclaimed and have to be placed in backfilled areas at a

later time. Use of temporary spoil stockpiles significantly delay reclamation and this plan eliminates the need for these type of temporary structures.

At the time that the transition occurs into the federal reserves, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawings 5-35 and 5-36.

The following is an overburden and backfill balance for this scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Federal)	~~3,300~~2,545,000	~~3,300~~2,545,000	0	5,782,000
Total	~~43,535~~39,280,000	~~34,453~~33,498,000	5,782,000	5,782,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, an alternate scenario has been developed. The Alternate scenario requires that all fill above approximate original contour and part of the excess spoil structure will be rehandled and placed in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately ~~3.3~~2.5 million yards of spoil. In this scenario, reclamation of the project area will be significantly delayed and the transition into adjacent federal coal reserves at a later date will disturb additional backfill along the west permit boundary approximately 2,000 feet in length by 230 feet wide (10 acres). An additional excess spoil structure would then need to be constructed on the federal lands to place spoil from the initial boxcut. Part of the excess spoil would likely be material removed from the Permit Area to access the coal beneath the Permit Area highwalls and provide the proper layback of the backfill material along the Permit boundary.

If the alternative highwall mining is selected, highwall mining would begin in Pit 9.~~it is anticipated when pit 26 is~~Then, once coal is removed from Pit 22, the coal east of Pits 22 and 23 will be mined using the highwall miner while ~~completed,~~ Highwall Trench 1 (HWT1) ~~will be~~is excavated. ~~Coal is removed from the area of excavation. At this point a highwall miner is brought in.~~ 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 ~~southern panels of a~~ 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.

The anticipated coal removal sequence for the Highwall mining is shown on drawing 5-10A. ~~Depending on the approval of the alternative and the delivery of the highwall miner, the highwall miner could be deployed on an exposed coal face.~~ 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. The alternate 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.

The following tables summarizes the overburden and backfill balance for these two scenarios:

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Rehandle)	0	~~3,300~~2,545,000	- ~~3,300~~2,545,000	~~2,482~~3,237,000
Total	36,735,000	~~34,253~~33,498,000	~~2,482~~3,237,000	~~2,482~~3,237,000

Alternate Scenario (Highwall mining)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	7,381,000	7,277,000	104,000	2,845,000
3	5,257,000	5,257,000	0	2,845,000
4 (Federal)	~~3,300~~2,545,000	~~3,300~~2,545,000	0	2,845,000
Total	23,~~874~~119,000	~~21,029~~20,274,000	2,845,000	2,845,000

In both scenarios (Preferred and Alternate), Rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet except for the exemption ~~in the south end of the mining area (Pits 17 through 21)~~Pit 9. ~~, which is~~

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120). The alternative highwall mining will reduce surface disturbance. Mining disturbance to the surface will be reduced along with reclamation needs. Thus, estimates have been completed for the individual mining phases shown in Drawings 5-17, 5-18 and 5-19 ,the mining that will generate the largest disturbance and require the larger bond. These estimates are provided as Appendix 8-1. These cost calculations are based on the specific details shown on these drawings. As requested by the Division, a separate bond estimate is completed for all three phases shown in the drawings and in general, each stage is representative of the expected reclamation liability for Phase 1, 2 and 3, respectively. If the alternative highwall mining is selected the bond will be reduced as appropriate for the area of disturbance generated. The bond estimate by Phase, escalated for the 2017 (anticipated end of mining) is the following:

Phase 1:	$5,346,000
Phase 2:	$9,888,000
Phase 3:	$6,~~624~~573,000

A summary and supporting calculations for these cost estimates is provided in Appendix 8-1.

840. GENERAL TERMS AND CONDITIONS OF THE BOND

General terms and conditions of the bond as stated at R645-301-840 through R645-301-840.520 will be met by Alton Coal Development, LLC

850. BOND REQUIREMENTS FOR UNDERGROUND COAL MINING

Not Applicable

860. FORM OF BOND

860.100 Surety Bond

The applicant will submit a surety bond as defined under R645-100-200 and meet all the requirements under R645-301-860.110 to .120.

870. REPLACEMENT OF BONDS

Equivalent bond coverage will be provided if Alton Coal Development, LLC replaces the surety bond.

880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

Upon completion of reclamation operations, the applicant will apply for bond release and meet the requirements of R645-301-880.

The overall cost estimate for Phase 2 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $9,316,000

Phase 3

The detail for this phase of mine development is shown on Drawing 5-19. At this point, Pits 1 through ~~28~~ 9, Pits 22 through 28 and Highwall Trench 1 through 3 have been mined. Pits 1 through ~~16~~ 8~~and~~, 22 through 28 and Highwall Trench 1 through 3 have been backfilled and graded. The excess spoil pile/fill above approximate original contour contains approximately ~~5.7~~2.8 million yards of spoil. The estimate for this phase includes rehandling of the excess spoil to backfill pit 9~~s 17 through 21~~ which ~~are~~ is partially open pits. This requires material handling of approximately ~~3.3~~2.5 million cubic yards by a combination of dozers and truck/shovel equipment to complete. The same methods described above in Phase 1 are also used in Phase 3 to calculate the cost estimate.

The overall cost estimate for Phase 3 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $6,~~241~~286,000.

The following documentation provides the details for each of these bond estimates.

Coal under highwalls and sedimentation structures	Not Mined	17.2	4.8	900,000
Coal under Robinson Creek Diversion	Not Mined	15.5	3.9	2,305,000
Recoverable Coal	Mined	16.3	6.4	3,066,000

*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

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 oversteepen the loading face along the pit walls, thus recovering the maximum amount of coal.

Where pit geometry or operational factors preclude the use of backhoes for loading, a large rubber tire front end loader will be used. These machines provide similar horizon control, can operate on the floor of the pit or on an intermediate bench, and can recover coal from confined areas such as the ends of the pits.

With the alternative option, 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.

Rear dump haul trucks, loaded by the backhoes or front end loader, will be used to move the coal from the pit via inpit roads and the primary haulroad to the crusher and stockpile. The trucks will be equipped with "combo" beds suitable for hauling both coal and overburden, and configured to minimize coal spillage.

A net recovery of 95% (including the effects of in-pit coal losses and out-of-seam dilution) of the coal exposed in the open pit is anticipated. A net recovery of 45% of the coal mined by the alternative highwall system is anticipated. Normal coal losses are expected due to cleaning of the top of the seam, loading losses at the seam floor, and coal oxidation near the outcrop.

No coal washing is contemplated at this time, thus there will be no coal processing losses.

Maps and cross sections providing detailed information related to coal recovery activities can be viewed on Drawings 5-9 through 5-14.

523. MINING METHOD(s).

The Coal Hollow Mine will be a surface coal mining operation using open pit mining methods to produce up to 2 million tons of coal per year. Primary mining equipment will include hydraulic excavators, a highwall miner and end-dump mining trucks. The coal will be crushed at the mine site, and hauled to market in over-the-road coal trucks.

The mine is planned to produce approximately 4.64 million tons of coal over a life of approximately 6 years for the preferred option and approximately 3.0 million tons of coal over a life of approximately 5 years for the alternate option. The estimated production schedule is summarized below for the two options:

Preferred option		
		Tons Produced
Year		(000)
1		542
2		505
3		750
4		1,000
5		1,000
6		844
Total		4,641

Alternative option		
		Tons Produced
Year		(000)
1		542
2		505
3		567
4		598
5		816
Total		3,029

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.

initial phase includes pits 1 through 8 as shown on Drawing 5-10. The mining and reclamation process for this phase can be viewed on Drawing 5-17.

From the initial mining area, operations will proceed eastward through the NE ¼ of Section 30 to the NW ¼ of Section 29 (as shown on Drawing 5-10) and from the southeast ¼ of Section 30, beginning with pit 28 and proceeding north. The mining and reclamation process for this phase can be viewed on Drawing 5-18. As shown on Drawing 5-19, pit 9 will not be backfilled at this stage. The proposed method for filling this pit back to approximate original contour will be accomplished by utilizing overburden from the pit(s) in the adjacent federal reserves located immediately southwest or north of this area. Alton Coal Development, LLC is currently in the process of an Environmental Impact Study for these reserves with the intent of acquiring the rights to mine. It is expected that these rights will be acquired prior to the completion of the final phase in the proposed Permit Area. The final landform for the Permit Area is shown on Drawings 5-35 and 5-36.

In the case that Alton Coal Development, LLC is not successful with acquiring the rights to the adjacent federal coal reserves, spoil will be rehandled from the excess spoil and variance from the approximate original contour to fill the remaining pits. The final landform for this alternate scenario is shown on Drawing 5-37 and 5-37A.

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

Diesel - Hydraulic Excavators (15 to 38 cu. yd. capacity)
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)

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.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 3.0 million LCY. Drawing 5-18 (Phase 2) shows the details of this stage of the overburden removal and resulting landform.

Phase 3 overburden removal begins in Pit 14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined. During this stage, the strip ratio reduces significantly from Phase 2 as mining progresses to Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding pits. This results in the distance between the backfill and the active coal face increasing. At the end of mining, an area will not be completely backfilled that is approximately 1,600 feet in length and 875feet wide and will require 2.5 million yards of fill to complete reclamation to approximate original contour. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan for backfilling these final pits includes acquiring the right to mine the adjacent federal coal reserves, located immediately west of this area. This plan provides an efficient method for transitioning operations into the federal reserves. At the time that this transition occurs, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawing 5-35 and 5-36.

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately 2.5 million yards of spoil.

If the alternative highwall mining is selected, highwall mining would begin in Pit 9. Then, once coal is removed from Pit 22, the coal east of Pits 22 and 23 will be mined using the highwall miner while Highwall Trench 1 (HWT1) is excavated utilizing Pit 9 as access. Once mining is complete, the proposed plan for backfilling Pit 9 includes acquiring the right to mine the adjacent federal coal reserves, located immediately southwest or north of Pit 9. In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area. 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.

The anticipated coal removal sequence for the Highwall mining is shown on drawing 5-10A 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. The alternate 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.

The following tables show the material balance during the different phases of overburden removal for each scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Federal)	2,545,000	2,545,000	0	5,782,000
Total	39,280,000	33,498,000	5,782,000	5,782,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Rehandle)	0	2,545,000	-2,545,000	3,237,000
Total	36,735,000	33,498,000	3,237,000	3,237,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

Alternative Scenario (Highwall mining)

Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	7,381,000	7,277,000	104,000	2,845,000
3	5,257,000	5,257,000	0	2,845,000
4 (Federal)	2,545,000	2,545,000	0	2,845,000
Total	23,119,000	20,274,000	2,845,000	2,845,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

The Preferred scenario for overburden removal will minimize overall disturbance and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial boxcut once operations are transitioned into these reserves.

During the course of mining, some additional excavated overburden may be placed temporarily on mined over and backfilled areas due to operational considerations. This material will be re-excavated and moved to it's final placement location as operations allow.

All maps related to the overburden removal process can be viewed on Drawings 5-15 through 5-19.

528.300. Spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures;

528.310. Excess Spoil. Excess spoil will be placed in designated disposal areas within the permit areas, in a controllable manner to ensure mass stability and prevent mass movement during and after construction. Excess spoil will meet the design criteria of R645-301-535. For the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, the permit application must include a description of the proposed disposal site and the design of the spoil disposal structures according to R645-301-211, R645-301-212, R645-301-412.300, R645-301-512.210, R645-528.310, R645-301-535.100 through R645-301-535.130, R645-301-535.300 through R645-301-535.500, R645-536.300, R645-301-542.720, R645-301-553.240, R645-301-745.100, R645-301-745.100, R645-301-745.300, and R645-301-745.400.

Excess spoil will be placed in the area designated on Drawing 5-3 and 5-35. This fill will be placed in lifts not to exceed 4 feet in thickness. The material will be transported from the overburden removal area to the fill by end dump haul trucks and a dozer(s) will spread the spoil to this lift thickness. The fill will meet at minimum 85% compaction as related to the standard Procter. Final slopes will be regraded to a maximum slope of 3h:1v. The top of the fill will be sloped to

Generally, mined areas will be backfilled and graded within approximately 180 days following coal removal, or 1,500 feet of the active coal removal face. One exception to this standard is during mining and backfilling of the Highwall Trench south of Pit 9. During this phase of mining, Pit 9 will be left open for access to the Highwall Trench. A detailed description of the reason for this variation are fully described in section 528 (Overburden) and the major steps can be viewed on Drawings 5-17 through 5-19. Areas needed for in-pit roads, ramps, drainage controls or areas which must be left open temporarily for operational reasons will be backfilled and graded when they are no longer needed. The rate of backfilling will depend on the availability of mined out pit areas for backfilling, and the rate of production at the mine. Based on anticipated production rates, Drawing 5-38, or Drawing 5-38A if the alternative highwall mining is selected, provides an estimated sequence and timing for reclamation.

Topsoil will be replaced on the graded areas as soon as operationally practicable. This work will depend on weather and soil conditions in the removal and replacement areas, but is generally anticipated to occur within 90 days of completion of regrading.

Revegetation activities will be seasonal in nature. As currently planned, initial seeding will occur at the first planting opportunity following replacement of topsoil. Supplemental seeding may be done subsequently as needed.

Some delay is unavoidable in reclamation of the initial mining areas due to the time required to establish the initial working pit and backfill area, and to achieve a steady state excavation/backfill operation. As currently planned the initial mining areas will be backfilled to the planned post mining contour, graded, and the topsoil replaced by late in the first year or in the first half of the second year of mining. Reclamation activities will proceed at the regular planned rate thereafter. Proposed final reclamation contours and cross sections can be viewed on Drawings 5-35 and 5-36.

The sequence and timing of reclamation activities is dependent on the coal production rate. Should that rate differ significantly from the current plan, the reclamation schedule will also vary.

Final reclamation includes the following:

- Backfilling and Grading. Backfilling of all final pits will commence at the conclusion of coal production. All highwalls, spoil piles, and depressions will be removed, except that small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation. No permanent final pit impoundments are currently planned. The excess spoil structure will remain. All exposed coal seams, and acidic or toxic-forming strata will be covered with at least five feet of noncombustible material.
- Topsoil and Subsoil Replacement. 8 inches of topsoil underlain by 40 inches of subsoil will be placed on the backfilled pits and excess spoil. Other disturbed areas will have topsoil replaced (including facilities sites, roads etc.).

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 and is shown on Drawing 5-17. Once the excess spoil pile is filled, overburden from the next 4 pits can then be used as pit backfill as the mining progresses through Pit 8. The completion of this phase is shown on Drawing 5-17.

Phase 2 requires mining to occur in two areas of the permit alternately. As mining progresses through Pits 9-13, the isopach (Drawing 5-15) shows that the overburden significantly increases. This increase and the shape of the mining boundary for the Permit Area require a fill above approximate original contour that is an extension of the excess spoil pile. Material from Pits 9-13 significantly exceeds the backfill capacity available from the preceding pits (Pits 1-8). The fill above approximate original contour blends in with the excess spoil structure from Phase 1 and extends an additional 2,000 feet to the east as the mining sequence proceeds to Pit 15.

Also, mining begins with Pit 28 and proceeds alternately with Pits 9-13, north to Pit 23. The isopach shows that Pits 28 -23 have a relatively low strip ratio, approximately 4.2:1 increasing to 4.9:1 respectively. Overburden from Pit 28 will all be hauled to the excess spoil structure, with overburden from the successive pits to north back filling the previously mined. In this stage, the fill above original contour is approximately 5.8 million LCY. Drawing 5-18 (Stage 2) shows the details of this stage of the overburden removal and resulting landform.

Phase 3 overburden removal begins in Pit 14 and proceeds alternately with Pit 22 coming from the south to meet at Pit 18, the last pit to be mined. During this stage, the strip ratio reduces significantly from Stage 2 as mining progresses to Pit 18. As the strip ratio reduces to the south, significant backfill capacity is available in the preceding Pit 15. This results in the distance between the backfill and the active coal face increasing because there is a lack of spoil in the lower ratio pits as mining proceeds south to fill the preceding higher ratio area. At the end of mining this phase, an area will not be completely backfilled that is approximately 1,600 feet in length and 875 feet wide and will require 3.3 million yards of fill to complete reclamation to approximate original contour. This remaining pit provides an open pit adjacent to the federal coal reserves for backfilling of overburden so that a smooth transition can be made without developing another boxcut and an excess spoil area. The backfill configuration at the end of this stage is shown in Drawing 5-19.

The proposed plan (Preferred Scenario) for backfilling the final pits is based on the assumption that Alton Coal Development, LLC will be successful with acquiring the adjacent federal coal reserves, located immediately to the west of the project area. This Preferred scenario for backfilling will minimize overall disturbance, and maximize resource recovery by providing a transition into the adjacent federal reserves with minimal effect to existing reclamation and backfill in the Permit Area. This scenario will also minimize variances from approximate original contour on the federal lands by eliminating the need for an excess spoil structure from the initial box cut as operations are transitioned into these reserves. In addition, this scenario provides a method for implementing concurrent reclamation during the project by eliminating temporary stockpiles of spoil that can not be reclaimed and have to be placed in backfilled areas at a later time. Use of temporary spoil stockpiles significantly delay reclamation and this plan eliminates the need for these type of temporary structures.

At the time that the transition occurs into the federal reserves, overburden will be removed from the federal reserves and placed in the final pits to approximate original contour. This final landform can be viewed on Drawings 5-35 and 5-36.

The following is an overburden and backfill balance for this scenario:

Preferred Scenario (Adjacent Federal Reserves Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Federal)	2,545,000	2,545,000	0	5,782,000
Total	39,280,000	33,498,000	5,782,000	5,782,000

*Loose Cubic Yards is estimated based on an overall 22% swell factor (Caterpillar Performance Handbook)

In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, an alternate scenario has been developed. The Alternate scenario requires that all fill above approximate original contour and part of the excess spoil structure will be rehandled and placed in the remaining backfill area. The final landform for this scenario is shown on Drawing 5-37. This step requires rehandle of approximately 2.5 million yards of spoil. In this scenario, reclamation of the project area will be significantly delayed and the transition into adjacent federal coal reserves at a later date will disturb additional backfill along the west permit boundary approximately 2,000 feet in length by 230 feet wide (10 acres). An additional excess spoil structure would then need to be constructed on the federal lands to place spoil from the initial boxcut. Part of the excess spoil would likely be material removed from the Permit Area to access the coal beneath the Permit Area highwalls and provide the proper layback of the backfill material along the Permit boundary.

If the alternative highwall mining is selected, highwall mining would begin in Pit 9.Then, once coal is removed from Pit 22, the coal east of Pits 22 and 23 will be mined using the highwall miner while Highwall Trench 1 (HWT1) is excavated. 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.

The anticipated coal removal sequence for the Highwall mining is shown on drawing 5-10A. 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. The alternate 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.

The following tables summarizes the overburden and backfill balance for these two scenarios:

Alternate Scenario (Adjacent Federal Reserves Not Acquired)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	14,168,000	11,127,000	3,041,000	5,782,000
3	14,631,000	14,631,000	0	5,782,000
4 (Rehandle)	0	2,545,000	-2,545,000	3,237,000
Total	36,735,000	33,498,000	3,237,000	3,237,000

Alternate Scenario (Highwall mining)				
Phase	Overburden (LCY)	Available Backfill (LCY)	Excess Spoil (LCY)	Total Excess Spoil (LCY)
1	7,936,000	5,195,000	2,741,000	2,741,000
2	7,381,000	7,277,000	104,000	2,845,000
3	5,257,000	5,257,000	0	2,845,000
4 (Federal)	2,545,000	2,545,000	0	2,845,000
Total	23,119,000	20,274,000	2,845,000	2,845,000

In both scenarios (Preferred and Alternate), Rough backfilling and grading operations will follow coal removal by not more than 60 days or 1500 linear feet except for the exemption Pit 9. Pit 9 will be utilized for access to the Highwall Trench. Once mining is complete, the proposed plan for backfilling Pit 9 includes acquiring the right to mine the adjacent federal coal reserves, located immediately southwest or north of Pit 9. In the case that Alton Coal Development is not successful with acquiring the adjacent federal coal reserves, all the fill above approximate original contour and part of the excess spoil structure will be rehandled and placed back in the remaining backfill area.

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120). The alternative highwall mining will reduce surface disturbance. Mining disturbance to the surface will be reduced along with reclamation needs. Thus, estimates have been completed for the individual mining phases shown in Drawings 5-17, 5-18 and 5-19 ,the mining that will generate the largest disturbance and require the larger bond. These estimates are provided as Appendix 8-1. These cost calculations are based on the specific details shown on these drawings. As requested by the Division, a separate bond estimate is completed for all three phases shown in the drawings and in general, each stage is representative of the expected reclamation liability for Phase 1, 2 and 3, respectively. If the alternative highwall mining is selected the bond will be reduced as appropriate for the area of disturbance generated. The bond estimate by Phase, escalated for the 2017 (anticipated end of mining) is the following:

Phase 1:	$5,346,000
Phase 2:	$9,888,000
Phase 3:	$6,573,000

A summary and supporting calculations for these cost estimates is provided in Appendix 8-1.

840. GENERAL TERMS AND CONDITIONS OF THE BOND

General terms and conditions of the bond as stated at R645-301-840 through R645-301-840.520 will be met by Alton Coal Development, LLC

850. BOND REQUIREMENTS FOR UNDERGROUND COAL MINING

Not Applicable

860. FORM OF BOND

860.100 Surety Bond

The applicant will submit a surety bond as defined under R645-100-200 and meet all the requirements under R645-301-860.110 to .120.

870. REPLACEMENT OF BONDS

Equivalent bond coverage will be provided if Alton Coal Development, LLC replaces the surety bond.

880. REQUIREMENT TO RELEASE PERFORMANCE BONDS

Upon completion of reclamation operations, the applicant will apply for bond release and meet the requirements of R645-301-880.

The overall cost estimate for Phase 2 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $9,316,000

Phase 3

The detail for this phase of mine development is shown on Drawing 5-19. At this point, Pits 1 through 9, Pits 22 through 28 and Highwall Trench 1 through 3 have been mined. Pits 1 through 8, 22 through 28 and Highwall Trench 1 through 3 have been backfilled and graded. The excess spoil pile/fill above approximate original contour contains approximately 2.8 million yards of spoil. The estimate for this phase includes rehandling of the excess spoil to backfill pit 9 which is partially open pits. This requires material handling of approximately 2.5 million cubic yards by a combination of dozers and truck/shovel equipment to complete. The same methods described above in Phase 1 are also used in Phase 3 to calculate the cost estimate.

The overall cost estimate for Phase 3 including facilities, specialized reclamation areas, and mine reclamation using this process is approximately $6,286,000.

The following documentation provides the details for each of these bond estimates.

Phase 3 - Reclamation Estimate

Estimate Details

Phase 3 Mine Reclamation Cost Estimate

Phase 3 Specialized Reclamation Areas

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 2 backfill from embankment	yd^3	160	$2.18	$349	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 2 backfill from excess spoil	yd^3	7,122	$6.50	$46,293	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 topsoil	yd^3	860	$6.50	$5,590	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 seeding	M.S.F	35	$26.17	$916	RS Means Heavy Constr., 32 92 19.14 3700
Pond 2 mulching	M.S.F	35	$51.27	$1,794	RS Means Heavy Constr., 32 91 13.16 0350
Pond 2 Subtotal				**$54,942**	
Pond 3 backfill from embankment	yd^3	4,767	$2.18	$10,392	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 3 backfill from excess spoil pile	yd^3	6,107	$6.50	$39,696	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 topsoil	yd^3	3,011	$6.50	$19,572	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 seeding	M.S.F	122	$26.17	$3,193	RS Means Heavy Constr., 32 92 19.14 3700
Pond 3 mulching	M.S.F	122	$51.27	$6,255	RS Means Heavy Constr., 32 91 13.16 0350
Pond 3 Subtotal				**$79,107**	
Pond 4 backfill from embankment	yd^3	1,410	$2.18	$3,074	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 4 backfill from excess spoil pile	yd^3	14,692	$6.50	$95,498	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 topsoil	yd^3	2,055	$6.50	$13,360	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 seeding	M.S.F	188	$26.17	$4,920	RS Means Heavy Constr., 32 92 19.14 3700
Pond 4 mulching	M.S.F	142	$51.27	$7,280	RS Means Heavy Constr., 32 91 13.16 0350
Pond 4 Subtotal				**$124,132**	
Robinson Creek Topsoil	yd^3	3520	$6.50	$22,878	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Robinson Creek Rip-Rap	yd^3	562	$60.00	$33,709	RS Means Heavy Constr., 31 37 13.10 0100
Robinson Creek Grass Matting	yd^2	2189	$7.95	$17,402	RS Means Heavy Constr., 31 25 13.10 0120
Robinson Creek seeding	M.S.F	188	$26.17	$4,920	RS Means Heavy Constr., 32 92 19.14 3700
Robinson Creek mulching	M.S.F	142	$51.27	$7,280	RS Means Heavy Constr., 32 91 13.16 0350
Robinson Creek Subtotal				**$86,189**	
Phase 3 Specialized Reclamation Areas Total				**$344,370**	

Phase 3 Mine Reclamation Cost Estimate

Phase 3 Pit Backfill and Land Reclamation

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pit Backfill Rehandle Excess Spoil Pile - Excavator	yd^3 (Loose)	2,545,000	$0.80	$2,036,000	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2012
Topsoil	yd^3 (Loose)	243,142	$1.40	$340,399	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2012
Subsoil	yd^3 (Loose)	224,013	$1.40	$313,618	Production from Fleet Production and Cost Analysis Software, Cost data from CostMine Coal Cost Guide 2012
Seeding	M.S.F	7,989	$30.00	$239,667	RS Means Heavy Constr., 32 92 19.14 3700
Mulching	M.S.F	7,989	$46.00	$367,490	RS Means Heavy Constr., 32 91 13.16 0350
Subtotal Pit Backfill & Land Reclamation				**$3,297,174**	

Phase 3 Reclamation Bond Summary

Facilities Reclamation	$1,315,715
Specialized Areas Reclamation	$344,370
Pit Backfill & Land Reclamation	$3,297,174
Phase 3 Total Direct Cost	**$4,957,259**

Phase 3 Indirect Cost

Mobilization/Demobolization (5%)	$247,863
Project Management/Engineering (6.8%)	$337,094
Contractor Profit/Overhead (15%)	$743,589
Phase 2 Total Indirect Cost	**$1,328,545**

Phase 3 Total Cost	**$6,285,804**
Phase 3 Overall Bond Total Escalated for 2017	**$6,572,929**

Phase 3 Mine Reclamation Material Handling Summary

Equipment Description	Production Rate (BCY)	Production Rate (LCY)	Cost/BCY	Cost/LCY	Total Volume (BCY)	Total Volume (LCY)	Total Cost
Rehandle with Truck/Shovel	586	779.4	$1.07	$0.80	1,913,534	2,545,000	$2,047,481
Topsoil	364	448.4	$1.72	$1.40	197,356	243,142	$339,451
Subsoil	364	448.4	$1.72	$1.40	182,124	224,013	$312,745
Total Phase 3 Material Handling							$2,699,678

Rehandle with Truck/Shovel Quantity	2,545,000	Loose Cubic Yards
Total Rehandle Quantity	2,545,000	Loose Cubic Yards
Software Overburden Swell Factor	33%	
Software Topsoil Swell Factor	23%	
Software Subsoil Swell Factor	23%	
Topsoil Area	183.4	acres
Subsoil Area (Open Pit)	33.9	acres

Equipment Cost Data (Cost Mine 2012 Coal Cost Guide/2012 Mine and Mill Equipment Costs)

Equipment Description	$/hr
7 yd. Excavator	$155.23
26 Ton Haul Truck	$33.02
5,000 Gal. Water Truck	$38.04
14 Grader	$52.76
D10 Dozer	$112.12
D7 Dozer	$50.21
13 yd. Excavator	$281.71
40 Ton Haul Truck	$57.87

Manpower Type	$/hr (46% burden)
Excavator Operator	$37.45
Truck Drivers	$37.62
Heavy Equipment Operators	$36.31
Utility Operators	$38.12

Phase 3 - Reclamation Estimate

Pit Backfill - Truck and Shovel
Fleet Production and Cost Analysis (FPC)
(Version 5.1.0.0; 2014)

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/14/2014**

Cycle Times

Hauler Cycle Time	
	5 769C
Load with Exchange (min)	1:15
Haul (min)	1:26
Dump and Maneuver (min)	1:12
Return (min)	1:04
Potential Cycle Time (min)	4:57
Wait on Slow Hauler (min)	0:00
Wait to Load (min)	1:18
Additional Bunching (min)	0:23
Wait to Dump (min)	0:00
TMPH Wait (min)	0:00
Total Cycle Time (min)	6:38
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time	
	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	2,107
Tons per Pass	7.64
System Passes per Hauler	3
Hauler Payload (Tons)	22.91
% of Max GVW	96.57
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0:15
First Bucket Dump (min)	0:03
Hauler Exchange Time (min)	0:42

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Backfill Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/14/2014**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	87.87	%
Production per Sched Hr	585.97	BCY
Total Production	2,545,000	BCY
Sched Hrs Required	4,343.25	
Total Cost ($)	2,718,659	
Cost per BCY ($)	1.068	
Production per Shift	1,171,933	BCY
Shifts Required	2.17	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	786	
2	5	769C	994	12.1

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	9.05	22.91	1,036.61
Fleet Tons per Operating Hour					1,036.61
x 90.00% Operator Efficiency =					932.95
x 87.87% Fleet Availability =					819.77

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		192.68	3,909	753,172	0.296
Haulers:	5	769C	C202	70.64	19,545	1,380,633	0.542
Totals	5				19,545	1,380,633	0.542
Support	1	5,000 Gal. Water Truck		62.58	3,909	244,621	0.096
	1	14 Grader		87.04	3,909	340,233	0.134
Totals	2				7,818	584,854	0.23
Fleet Totals	8				31,271	2,718,659	1.068

Phase : uck - Shovel | **Fleet Productio nd Cost Analysis** | **FLEET**
Alton Coal Development, LLC | **Pit 9 B. ill Haul** | **5/14/2014**
Coal Hollow Mine

Haul Times

Bank Density: 2798 Lbs per CY	Loose Density: 2107 Lbs per CY		
Model:	769C	Gross Weight:	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4 0	3.72	15	27.9	13.5	13.5	0:08	0	0.125
2	2,000		4 2	5.83	25	19.1	19.1	0	1:26	0	1.306

Return Times

Bank Density: 2798 Lbs per CY	Loose Density: 2107 Lbs per CY		
Model:	769C	Gross Weight:	118,200 Lbs
Identifier:		Payload:	22.91 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4 0	3.72	15	41.34	15	15	0:06	0	0.108
2	1,880		4 2	6.01	25	30.27	25	0	1:04	0	0.956

Phase : uck - Shovel
Alton Coal Development, LLC

Fleet Productic nd Cost Analysis
Pit 9 B. ill Haul
Coal Hollow Mine

FLEET
5/14/2014

Fleet Size Annual

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1 769C	145	145	17,565	2.565	6,528,123	289,774	8.78	79	61	
2	2 769C	282	137	9,014	1.542	3,923,259	564,653	4.51	77	60	
3	3 769C	396	114	6,424	1.259	3,204,097	792,386	3.21	72	56	
4	4 769C	489	93	5,200	1.149	2,924,222	978,887	2.6	66	52	
5	5 769C	586	97	4,343	1.068	2,718,659	1,171,933	2.17	59	46	

Fleet Size Efficiency

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Fleet Match		Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1	0.25	81	100	100	100	199	145	145	2.565	79	61	
2	2	0.51	81	100	97.43	97.43	397	282	137	1.542	77	60	
3	3	0.76	81	100	91.15	91.15	596	396	114	1.259	72	56	
4	4	1.01	81	98.89	85.4	84.45	795	489	93	1.149	66	52	
5	5	1.26	87.87	79.11	94.25	74.56	994	586	97	1.068	59	46	

Phase 3 - Reclamation Estimate

Topsoil
Fleet Production and Cost Analysis
(Version 5.1.0.0; 2014)

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Topsoil Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/14/2014**

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1:15
Haul (min)	3:11
Dump and Maneuver (min)	1:12
Return (min)	2:37
Potential Cycle Time (min)	8:15
Wait on Slow Hauler (min)	0:00
Wait to Load (min)	0:00
Additional Bunching (min)	0:48
Wait to Dump (min)	0:00
TMPH Wait (min)	0:00
Total Cycle Time (min)	9:04
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time

	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	1,601
Tons per Pass	5.8
System Passes per Hauler	3
Hauler Payload (Tons)	17.41
% of Max GVW	87.58
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0:15
First Bucket Dump (min)	0:03
Hauler Exchange Time (min)	0:42

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Topsoil Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/15/2015**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	81	%
Production per Sched Hr	364.1	BCY
Total Production	197,356	BCY
Sched Hrs Required	542.04	
Total Cost ($)	339,288	
Cost per BCY ($)	1.719	
Production per Shift	728,202	BCY
Shifts Required	0.27	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	724	
2	5	769C	548	7.3

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	6.62	17.41	576.62
Fleet Tons per Operating Hour					576.62
x 90.00% Operator Efficiency =					518.96
x 81.00% Fleet Availability =					420.35

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		192.68	488	93,996	0.476
Haulers:	5	769C	C202	70.64	2,439	172,303	0.873
Totals	5				2,439	172,303	0.873
Support	1	5,000 Gal. Water Truck		62.58	488	30,529	0.155
	1	14 Grader		87.04	488	42,461	0.215
Totals	2				976	72,990	0.37
Fleet Totals	8				3,903	339,288	1.719

Phase 3 Truck - Shovel | **Fleet Productic nd Cost Analysis** | **FLEET**

Alton Coal Development, LLC | **Pit 9 T[illegible]oil Haul** | **5/15/2014**

Coal Hollow Mine

Haul Times

Bank Density: 2309 Lbs per CY Loose Density: 1601 Lbs per CY

Model:	769C	Gross Weight:	107,195 Lbs
Identifier:		Payload:	17.41 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4 0	3.72	15	30.27	14.02	14.02	0:07	0	0.121
2	5,500		4 2	5.91	25	21.3	21.3	0	3:11	0	3.068

Return Times

Bank Density: 2309 Lbs per CY Loose Density: 1601 Lbs per CY

Model:	769C	Gross Weight:	107,195 Lbs
Identifier:		Payload:	17.41 Tons
Tire Type:	E3 28P	Propulsion Correction:	1
Tire Size:	18.00-33	Retarding Correction:	1
Speed Correction:	1		

	Distance (feet)	Nominal Rolling Resistance (%)	Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4 0	3.72	15	41.34	15	15	0:06	0	0.108
2	5,300		4 2	6.01	25	30.27	25	0	2:37	0	2.51

Phase 3 uck - Shovel
Alton Coal Development, LLC

Fleet Productic nd Cost Analysis
Pit 9 Tc, oil Haul
Coal Hollow Mine

FLEET
5/15/2014

Fleet Size Annual

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1 769C	80	80	2,470	4.652	918,089	159,781	1.24	121	93	
2	2 769C	160	80	1,235	2.724	537,571	319,562	0.62	121	93	
3	3 769C	237	77	834	2.108	416,058	473,207	0.42	119	91	
4	4 769C	303	67	651	1.855	366,093	606,337	0.33	114	88	
5	5 769C	364	61	542	1.719	339,288	728,202	0.27	110	84	

Fleet Size Efficiency

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Fleet Match		Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1	0.15	81	100	100	100	110	80	80	4.652	121	93	
2	2	0.3	81	100	100	100	219	160	80	2.724	121	93	
3	3	0.45	81	100	98.72	98.72	329	237	77	2.108	119	91	
4	4	0.61	81	100	94.87	94.87	438	303	67	1.855	114	88	
5	5	0.76	81	100	91.15	91.15	548	364	61	1.719	110	84	

Phase 3 - Reclamation Estimate

Subsoil
Fleet Production and Cost Analysis
(Version 5.1.0.0; 2014)

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Subsoil Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/14/2014**

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1:15
Haul (min)	3:11
Dump and Maneuver (min)	1:12
Return (min)	2:37
Potential Cycle Time (min)	8:15
Wait on Slow Hauler (min)	0:00
Wait to Load (min)	0:00
Additional Bunching (min)	0:48
Wait to Dump (min)	0:00
TMPH Wait (min)	0:00
Total Cycle Time (min)	9:04
Bunching	Avg
Haul Start mph	0
Haul End mph	0
Return Start mph	0
Return End mph	0

Loader Cycle Time

	5 769C
Loader Model	385C LME
Loader Quantity	1
Bucket Capacity (CY)	7.25
Loader Fill Factor (%)	100
Loose Density (Lbs/LCY)	1,601
Tons per Pass	5.8
System Passes per Hauler	3
Hauler Payload (Tons)	17.41
% of Max GVW	87.58
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0:15
First Bucket Dump (min)	0:03
Hauler Exchange Time (min)	0:42

Fleet Production and Cost Analysis

Phase 3 Truck - Shovel | **Pit 9 Subsoil Haul** | **FLEET**

Alton Coal Development, LLC | **Coal Hollow Mine** | **5/15/2015**

Fleet Production

Fleet Estimates

Operating Schedule		
Operator Efficiency	90	%
Schedule Period	Shift	
Scheduled Hours	2,000.00	
Fleet Estimates		
Fleet Availability	81	%
Production per Sched Hr	364.1	BCY
Total Production	197,356	BCY
Sched Hrs Required	542.04	
Total Cost ($)	339,288	
Cost per BCY ($)	1.719	
Production per Shift	728,202	BCY
Shifts Required	0.27	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	724	
2	5	769C	548	7.3

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	6.62	17.41	576.62
Fleet Tons per Operating Hour					576.62
x 90.00% Operator Efficiency =					518.96
x 81.00% Fleet Availability =					420.35

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		192.68	488	93,996	0.476
Haulers:	5	769C	C202	70.64	2,439	172,303	0.873
Totals	5				2,439	172,303	0.873
Support	1	5,000 Gal. Water Truck		62.58	488	30,529	0.155
	1	14 Grader		87.04	488	42,461	0.215
Totals	2				976	72,990	0.37
Fleet Totals	8				3,903	339,288	1.719

Phase 3 ...uck - Shovel | **Fleet Productio...nd Cost Analysis** | **FLEET**
Alton Coal Development, LLC | **Pit 9 S...oil Haul** | **5/15/2014**
Coal Hollow Mine

Haul Times

Bank Density: 2309 Lbs per CY Loose Density: 1601 Lbs per CY
Model: 769C Gross Weight: 107,195 Lbs
Identifier: Payload: 17.41 Tons
Tire Type: E3 28P Propulsion Correction: 1
Tire Size: 18.00-33 Retarding Correction: 1
Speed Correction: 1

	Distance (feet)	Nominal Rolling Resistance (%)		Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4	0	3.72	15	30.27	14.02	14.02	0:07	0	0.121
2	5,500		4	2	5.91	25	21.3	21.3	0	3:11	0	3.068

Return Times

Bank Density: 2309 Lbs per CY Loose Density: 1601 Lbs per CY
Model: 769C Gross Weight: 107,195 Lbs
Identifier: Payload: 17.41 Tons
Tire Type: E3 28P Propulsion Correction: 1
Tire Size: 18.00-33 Retarding Correction: 1
Speed Correction: 1

	Distance (feet)	Nominal Rolling Resistance (%)		Grade Pct.	Total Effective Grade (%)	mph Limit	Potential Speed	Segment Max	End Speed	Cumulative Min	Cumulative Fuel (Gallons)	Segment Time (min)
1	100		4	0	3.72	15	41.34	15	15	0:06	0	0.108
2	5,300		4	2	6.01	25	30.27	25	0	2:37	0	2.51

Fleet Size Annual

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Model	BCY per Sched Hr	Inc. BCY per Sched Hr	Sched Hrs Req.	$ per BCY	Total $	BCY per Shift	Shifts Required	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1 769C	80	80	2,470	4.652	918,089	159,781	1.24	121	93	
2	2 769C	160	80	1,235	2.724	537,571	319,562	0.62	121	93	
3	3 769C	237	77	834	2.108	416,058	473,207	0.42	119	91	
4	4 769C	303	67	651	1.855	366,093	606,337	0.33	114	88	
5	5 769C	364	61	542	1.719	339,288	728,202	0.27	110	84	

Fleet Size Efficiency

Loader: 1 385C LME Availability 90 % 90 % Operator Efficiency
Haulers: 5 769C Availability 90 % 2000 Sched Hours per Shift
Avg Bunching

Qty	Fleet Match		Fleet Avail	Mismatch	Bunching	Combined	BCY per 60 min Hour	BCY per Sched Hr	Inc. BCY per Sched Hr	$ per BCY	Normal TMPH Front*	Normal TMPH Rear*	Normal TMPH Trail*
1	1	0.15	81	100	100	100	110	80	80	4.652	121	93	
2	2	0.3	81	100	100	100	219	160	80	2.724	121	93	
3	3	0.45	81	100	98.72	98.72	329	237	77	2.108	119	91	
4	4	0.61	81	100	94.87	94.87	438	303	67	1.855	114	88	
5	5	0.76	81	100	91.15	91.15	548	364	61	1.719	110	84	

Mine Facilities - Reclamation Estimate

Estimate Details

Facilities Reclamation Cost Estimate

Concrete Demolition

Item	Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Office (footer)	lft	500	$27.41	$13,705	RSMeans Building Constr., 02 41 16.17 1140
Shop (footer)	lft	616	$32.31	$19,903	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Shop (foundation)	ft^2	3,080	$2.96	$9,117	RSMeans Building Constr., 02 41 16.17 2100 & 2200
Shop (floor)	ft^2	20,000	$8.03	$160,600	RSMeans Building Constr., 02 41 16.17 0440
Wash Bay (footer)	lft	244	$32.31	$7,884	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Wash Bay (foundation)	ft^2	660	$2.96	$1,954	RSMeans Building Constr., 02 41 16.17 2100 & 2200
Wash Bay (floor & sump)	ft^2	3,100	$8.03	$24,893	RSMeans Building Constr., 02 41 16.17 0440
Fuel Storage (slab)	yd^3	111	$113.82	$12,647	RSMeans Heavy Constr., 03 05 05.10 0060
Fuel Storage (containment wall)	yd^3	9	$113.82	$1,012	RSMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (slab)	yd^3	89	$113.82	$10,117	RSMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (containment wall)	yd^3	12	$113.82	$1,391	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Tunnel Access)	yd^3	95	$113.82	$10,792	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Hopper Supports)	yd^3	190	$113.82	$21,584	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Belt Tunnel)	yd^3	133	$113.82	$15,109	RSMeans Heavy Constr., 03 05 05.10 0060
Crusher Building (Footer)	lft	80	$32.31	$2,585	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Feed Conveyor (Support Footers)	lft	30	$32.31	$969	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Reclaim Belt (Support Footers)	lft	25	$32.31	$808	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Footers)	lft	72	$32.31	$2,326	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Scale Footer)	lft	60	$32.31	$1,939	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Concrete Disposal					
*Concrete Disposal (All Facilities)	yd^3	1,551	$18.13	$28,114	RSMeans Building Constr., 02 41 16.17 4250
Subtotal Concrete Demolition & Disposal				**$347,447**	

*Concrete is disposed of on site (in pits) within five miles of facilities

**All cost data is from the 2014 additions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals

Facilities Reclamation Cost Estimate

Structure Demolition & Disposal

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Office	ft^3	150,000	$0.36	$54,000	RSMeans Heavy Constr., 02 41 16.13 0100
Office (Sewage Tank)	Ea.	1	$2,839.04	$2,839	RSMeans Heavy Constr., 02 65 10.30 1233 & 1213
Shop	ft^3	1,000,000	$0.25	$250,000	RSMeans Heavy Constr., 02 41 16.13 0020
Wash Bay	ft^3	150,000	$0.25	$37,500	RSMeans Heavy Constr., 02 41 16.13 0020
Fuel Storage (3 tanks)	Ea.	3	$2,367.28	$7,102	RSMeans Heavy Constr., 02 65 10.30 0130 & 1029
Coal Hopper/Feeder Breaker (Demolition)	Ton	64	$231.72	$14,830	RSMeans Heavy Constr., 05 05 05.10 0260
Coal Hopper/Feeder Breaker (Disposal)	yd^3	570	$17.30	$9,861	RSMeans Heavy Constr., 02 41 19.23 5000
Crusher (structure)	ft^3	9,200	$0.34	$3,128	RSMeans Heavy Constr., 02 41 16.13 0020
Crusher (equipment demolition)	Ton	60	$231.72	$13,903	RSMeans Heavy Constr., 05 05 05.10 0260
Crusher (equipment disposal)	yd^3	150	$17.30	$2,595	RSMeans Heavy Constr., 02 41 19.23 5000
Coal Reclaim System (demolition)	Ton	50	$231.72	$11,586	RSMeans Heavy Constr., 05 05 05.10 0260
Coal Reclaim System (disposal)	yd^3	233	$17.30	$4,031	RSMeans Heavy Constr., 02 41 19.23 5000
Loadout (structure)	ft^3	19,000	$0.34	$6,460	RSMeans Heavy Constr., 02 41 16.13 0020
Loadout (equipment demolition)	Ton	68	$231.72	$15,757	RSMeans Heavy Constr., 05 05 05.10 0260
Loadout (equipment disposal)	yd^3	185	$17.30	$3,201	RSMeans Heavy Constr., 02 41 19.23 5000
Conveyors	ft	545	$141.00	$76,845	CostMine - Mine and Mill Equipment Costs (Estimated as 25% of Construction Cost)
Water System (tanks)	Ea.	2	$999.35	$1,999	RSMeans Heavy Constr., 02 65 10.30 1029
Subtotal Structure Demolition & Disposal				**$515,636**	

Exact makes and models of equipment are not currently known, therefore estimates are included for weights and yardages of equipment

** RS Means does not have direct cost data references for some specific items. Where needed, reasonable substitutues are utilized.

All cost data is from the 2009 additions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted

Facilities Reclamation Cost Estimate

Facilities Earthwork and Land Reclamation

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 1 backfill from embankment	yd^3	1,156	$2.18	$2,520	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 1 backfill from subsoil pile	yd^3	3,200	$6.50	$20,800	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 1B backfill from embankment	yd^3	146	$2.18	$318	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 1B backfill from subsoil pile	yd^3	794	$6.50	$5,161	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Ditch 3 recontouring	yd^3	11,556	$2.18	$25,192	RSMeans Heavy Constr., 31 23 23.17 0020
Ripping of roads and compacted surfaces	yd^3	9,600	$2.47	$23,712	RSMeans Heavy Constr., 31 23 16.32 2310
Grading of reclamation surface	yd^2	164,000	$0.16	$26,240	RSMeans Heavy Constr., 31 22 16.10 3300
Topsoil reclamation surface	yd^3	36,000	$6.50	$234,000	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Seeding	M.S.F	1,481	$26.17	$38,758	RS Means Heavy Constr., 32 92 19.14 3700
Mulching	M.S.F	1,481	$51.27	$75,931	RS Means Heavy Constr., 32 91 13.16 0350
Subtotal Facilities Earthwork and Land Reclamation				**$452,632**	

Total Facilities Reclamation Cost Estimate	**$1,315,715**

Range 6 West
Range 5 West

Township 39 South

17
18
19
20
29
30
31
32

1/16TH CORNER 19
1/16TH CORNER 19 - 20
QUARTER CORNER 19 - 20
1/16TH CORNER 19
1/16TH CORNER 19
SECTION CORNER 19-24-25-30
QUARTER CORNER 19-30
SECTION CORNER 19-25-29-30
PROPERTY CORNER
QUARTER CORNER 20-29
1/16TH CORNER 30
1/16TH CORNER 30
1/16TH CORNER 30
1/16TH CORNER 30
QUARTER CORNER 25-30
1/16TH CORNER 30
QUARTER CORNER 29 - 30
SECTION CORNER 25-30-31-36
QUARTER CORNER 30-31
1/16TH CORNER 30-31
SECTION CORNER 29-30-31-32

2010
2011
2012
2013
2014
2015
2014
2013

2010 = 179 acres
2011 = 21 acres
2012 = 24 acres
2013 = 56 acres
2014 = 40 acres
2015 = 12 acres

Total Disturbed = 332 acres

Coal Outcrop/Burn

N

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DIV. OF OIL, GAS & MINING

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- COAL LINE BOUNDARY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

DRAWN BY:	CHECKED BY:
C. McCOURT	LWJ
DRAWING: 5-2A	DATE: 10/15/2013
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
10/19/13	KN
5/7/14	KN

DISTURBANCE SEQUENCE

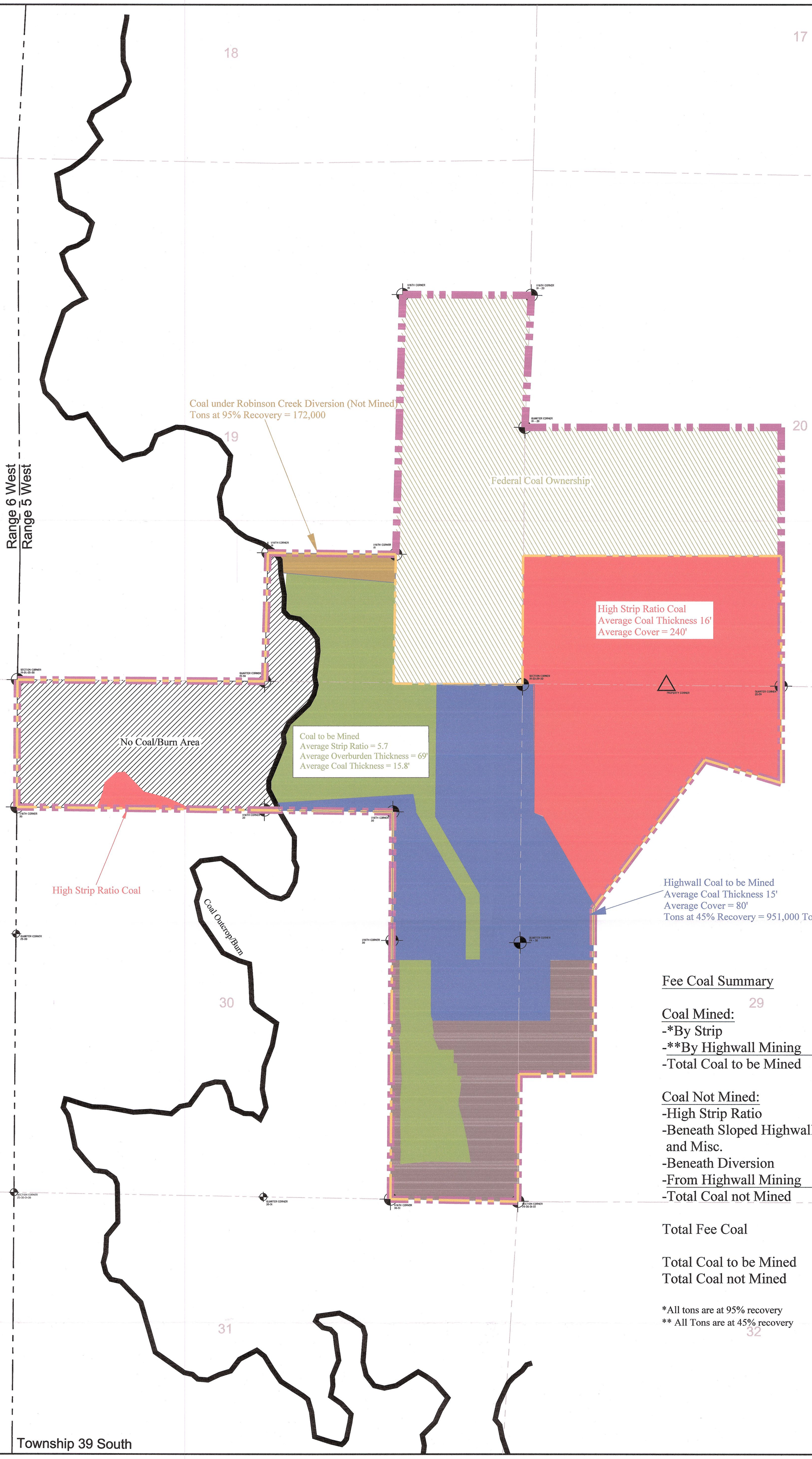
Surface & Highwall Mining

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-2A

UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER 5/15/14

Alton Coal Development
Coal Hollow Project
463 North 100 West, Suite 1
Cedar City, Utah 84721
Phone (435)867-5331
Fax (435)867-1192



Fee Coal Summary

Coal Mined:	
-*By Strip	= 2,115,000 Ton
-**By Highwall Mining	= 951,000 Ton
-Total Coal to be Mined	= 3,066,000 Ton
Coal Not Mined:	
-High Strip Ratio	= 4,268,000 Ton
-Beneath Sloped Highwall's and Misc.	= 2,305,000 Ton
-Beneath Diversion	= 172,000 Ton
-From Highwall Mining	= 2,281,000 Ton
-Total Coal not Mined	= 9,026,000 Ton
Total Fee Coal	= 12,092,000 Ton
Total Coal to be Mined	= 3,066,000 Ton
Total Coal not Mined	= 9,026,000 Ton

*All tons are at 95% recovery
** All Tons are at 45% recovery

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9/16/08	CRM
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10/01/13	LWJ
05/09/14	KN

COAL EXTRACTION OVERVIEW

SURFACE & HIGHWALL MINING

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-9A

UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER 5/15/14

Alton Coal Development
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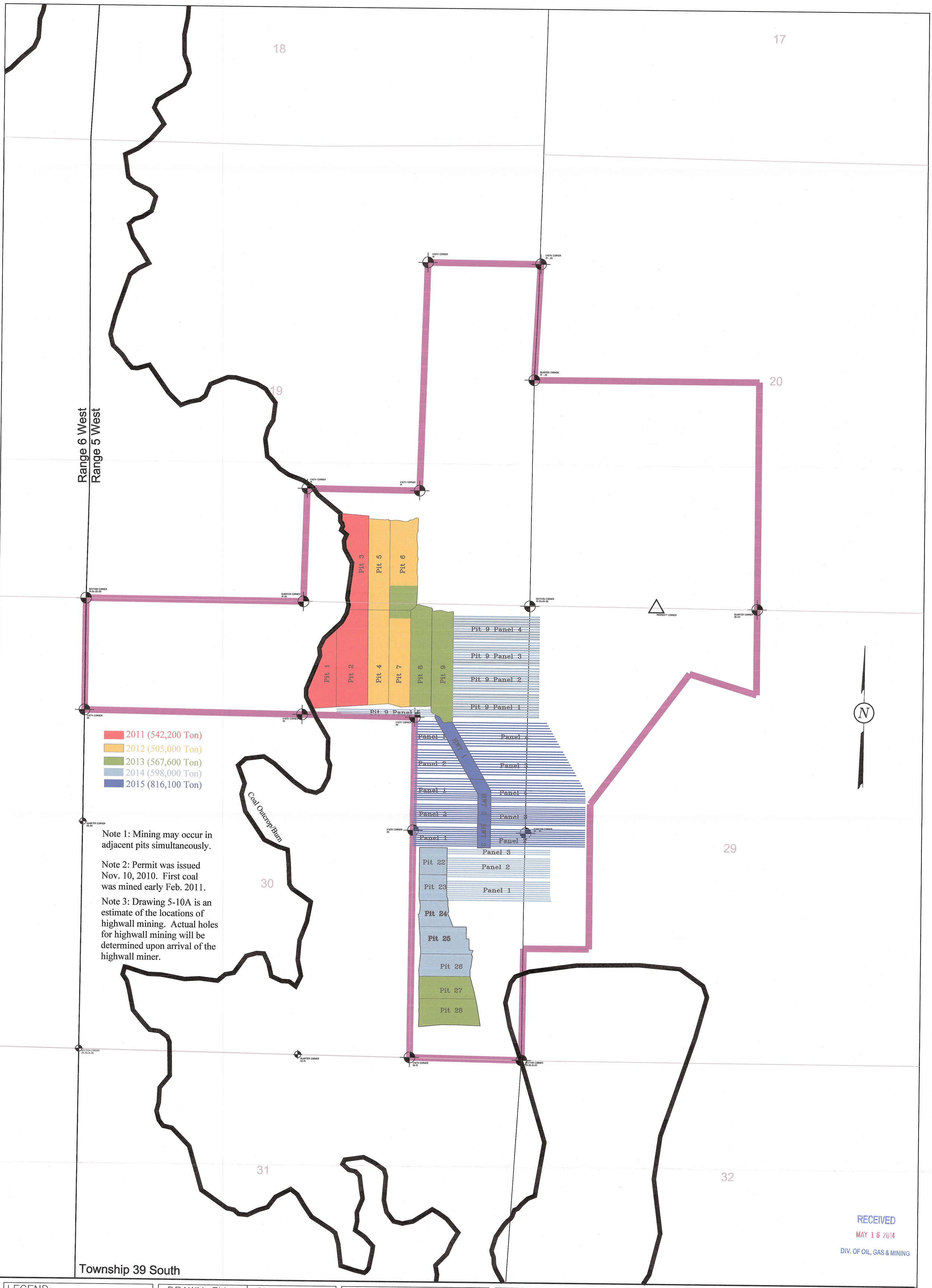

Note 1: Mining may occur in adjacent pits simultaneously.

Note 2: Permit was issued Nov. 10, 2010. First coal was mined early Feb. 2011.

Note 3: Drawing 5-10A is an estimate of the locations of highwall mining. Actual holes for highwall mining will be determined upon arrival of the highwall miner.

Township 39 South

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- COAL LINE BOUNDARY
- COAL RECOVERY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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C. McCOURT	LWJ
DRAWING: 5-10A	DATE: 4/20/07
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

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1/30/14	KN
5/7/14	KN

COAL REMOVAL SEQUENCE

SURFACE & HIGHWALL MINING

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-10A

UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER 5/15/14

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Coal Hollow Project
463 North 100 West, Suite 1
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Range 6 West
Range 5 West

Township 39 South

18
17
19
20
30
29
31
32

2011
2012
2013
2014
2015
2014
2013

2011 (2,065,000 yd3)
2012 (3,582,000 yd3)
2013 (4,000,000 yd3)
2014 (1,630,000 yd3)
2015 (2,753,000 yd3)
2016 (1,149,000 yd3)
Total = 13,712,000 yd3

Coal Outcrop/Burn

1/16TH CORNER 20
1/16TH CORNER 19 - 20
QUARTER CORNER 19 - 20
1/16TH CORNER 19
1/16TH CORNER 19
SECTION CORNER 19-24-25-30
QUARTER CORNER 19-30
SECTION CORNER 19-20-29-30
PROPERTY CORNER
QUARTER CORNER 20-29
1/16TH CORNER 30
1/16TH CORNER 30
1/16TH CORNER 30
QUARTER CORNER 25-30
1/16TH CORNER 30
QUARTER CORNER 29 - 30
SECTION CORNER 25-30-31-36
QUARTER CORNER 30-31
1/16TH CORNER 30-31
SECTION CORNER 29-30-31-32

N

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- COAL LINE BOUNDARY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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C. McCOURT	LWJ
DRAWING: 5-16A	DATE: 10/15/2013
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
LWJ	10/17/13
KN	02/26/14
KN	05/09/14

OVERBURDEN REMOVAL SEQUENCE

SURFACE & HIGHWALL MINING

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-16A

UTAH REGISTERED #154168 DAN, W. GUY PROFESSIONAL ENGINEER 5/15/14

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ALTON COAL DEVELOPMENT
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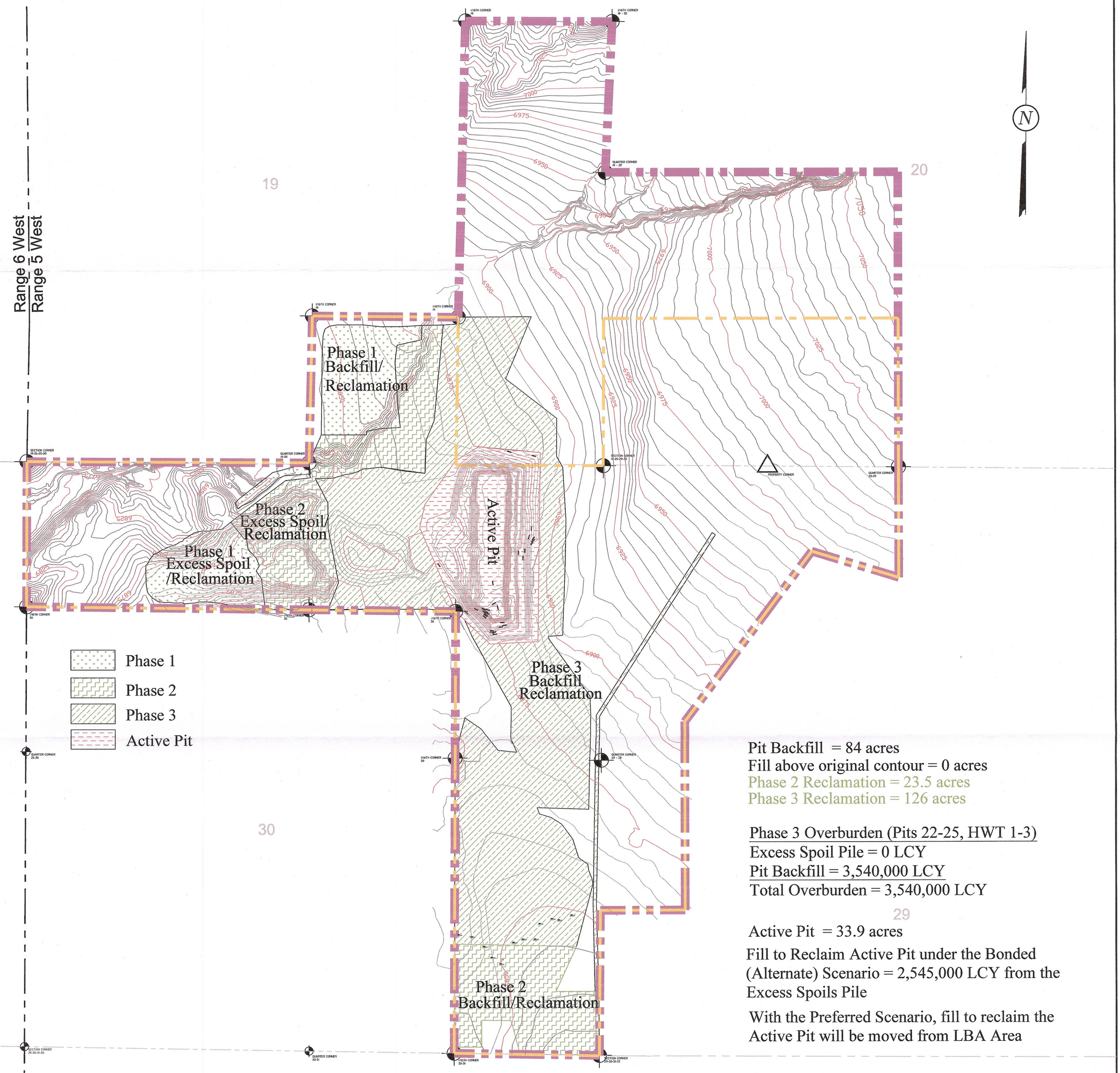

Pit Backfill = 84 acres
Fill above original contour = 0 acres
Phase 2 Reclamation = 23.5 acres
Phase 3 Reclamation = 126 acres

Phase 3 Overburden (Pits 22-25, HWT 1-3)
Excess Spoil Pile = 0 LCY
Pit Backfill = 3,540,000 LCY
Total Overburden = 3,540,000 LCY

Active Pit = 33.9 acres

Fill to Reclaim Active Pit under the Bonded (Alternate) Scenario = 2,545,000 LCY from the Excess Spoils Pile

With the Preferred Scenario, fill to reclaim the Active Pit will be moved from LBA Area

Overburden Sequence Only - other facilities not shown

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- PRIVATE COAL OWNERSHIP
- COAL LINE BOUNDARY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

DRAWN BY:	CHECKED BY:
C. McCOURT	LWJ
DRAWING: 5-19	DATE: 4/20/07
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
11/28/08	CRM
01/31/13	KN
03/17/13	KN
12/26/13	KN
5/13/14	KN

OVERBURDEN REMOVAL PHASE 3

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-19

UTAH REGISTERED PROFESSIONAL ENGINEER
#154168
DAN W. GUY
5/13/14

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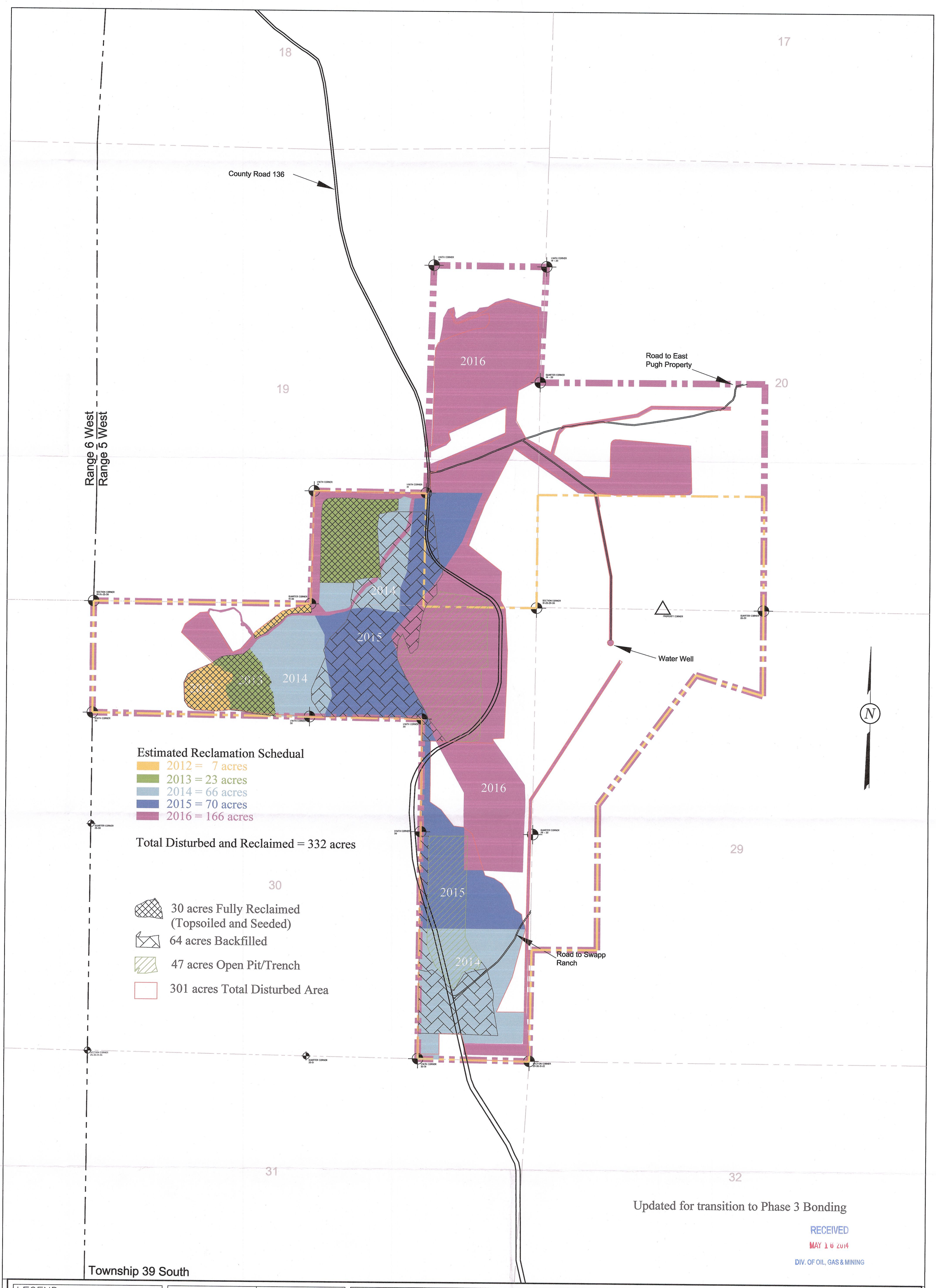

Estimated Reclamation Schedual

2012 = 7 acres
2013 = 23 acres
2014 = 66 acres
2015 = 70 acres
2016 = 166 acres

Total Disturbed and Reclaimed = 332 acres

30 acres Fully Reclaimed (Topsoiled and Seeded)

64 acres Backfilled

47 acres Open Pit/Trench

301 acres Total Disturbed Area

Updated for transition to Phase 3 Bonding

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DIV. OF OIL, GAS & MINING

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER
- POSTMINING ROADS

DRAWN BY:	CHECKED BY:
C. McCOURT	LWJ
DRAWING: 5-38A	DATE: 10/18/2013
	SCALE: 1" = 500'
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
10/18/13	LWJ
03/14/14	KN
05/14/14	KN

RECLAMATION SEQUENCE

Surface & Highwall Mining

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-38A

UTAH REGISTERED #154168 DAN W. GUY 5/15/14 PROFESSIONAL ENGINEER

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