C/025/005 Incoming
#5097

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

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March 4, 2016

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

Re: **Phase 1 Bond Release, Alton Coal Development, LLC, Coal Hollow Project, Kane County, Utah, C/025/0005**

Dear Mr. Haddock:

Pursuant to R645-301-880.300, enclosed on behalf of Alton Coal Development, LLC is a copy of the application for Phase 1 Bond Release for select areas of the Coal Hollow Mine as follows:

- Application for Phase 1 Bond Release
- C1 and C2 Forms
- Public Notice for Bond Release Application
- Plan view and cross-section Figures of "Proposed Phase 1 Bond Release"

Also, as required by R645-301-880.600, notifications of the proposed bond release have been made to the following:

- Southern Utah News
- Alecia Swapp Dame Trust - Richard Dame
- C. Burton Pugh
- BLM-KFO
- Darlynn Sorensen
- Kane County Planning Commission
- Kane County Water Conservancy District
- Alton Mayor – Alton, Utah

Please contact me at 435-691-1551 should you have any questions or comments. This submittal is being provided electronically, a hard copy with certified drawings will follow.

Sincerely

B. Kirk Nicholes
Environmental Specialist

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: Phase 1 Bond Release

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

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Chapter 5, Drawings 5-17, 5-18 and 5-19
☐ Add	☒ Replace	☐ Remove	Chapter 8 Text
☐ Add	☒ Replace	☐ Remove	Chapter 8, Appendix 8-1
☐ Add	☒ Replace	☐ Remove	Chapter 8, Appendix 8-2
☒ Add	☐ Replace	☐ Remove	Figures 1, 1-A, 1-B, 1-C, 1-D, 1-E and 1-F (add to end of Chapter 8 Drawing section)
☐ Add	☐ Replace	☐ Remove	
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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 RECEIVED MAY 20 2010 DIV. OF OIL, GAS & MINING

CHAPTER 8

R645-301-800. BONDING AND INSURANCE

820. REQUIREMENT TO FILE A BOND

820.100 The Operator Agrees to File a Bond.

After the permit application is approved, but before the permit is issued, the applicant will file with the Division, on a form prescribed and furnished by the Division, a bond or bonds conditioned upon performance of all requirements of the State Program, the permit and the reclamation bond.

820.110-114 Area to be Covered by the Performance Bond and Incremental Bond

The disturbed areas at the Coal Hollow Project will be bonded. Bonding is representative of the full extent of current and expected disturbance for the Coal Hollow Mine permit area, and representative of discrete bond increments for the North Private Lease permit area. The areas to be bonded are located, scheduled and identified on Drawings 5-19 and 5-74, respectively.

The permittee will file with the Division an additional bond or bonds to cover each increment of the North Private Lease permit in accordance with R645-301-830. Estimates for each permit area and each increment are provided in Appendices 8-1 and 8-2. North Private Lease increments are shown in Drawing 5-77.

The North Private Lease permit area bond increment areas average over 20 acres in size and are of sufficient configuration to provide for efficient reclamation operations should reclamation by the Division become necessary according to R645-301-880.900.

820.120 Acceptance of Bond

The applicant agrees not to commence operations until the Division approves a performance bond for the Coal Hollow Project.

820.130 Coverage of Bond

The applicant will provide a performance bond for the disturbed area within the permit.

820.200 Form of the Performance Bond

820.223 Surety Bond

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Alton Coal Development, LLC is proposing to submit a surety bond consistent with the requirements of R645-301-860.100 and any additional requirements in the State Program.

830. DETERMINATION OF BOND AMOUNT

830.100 Determined by the Division

The amount of the bond required will be determined by the Division.

830.140 Detailed Estimated Costs

The bonding amount for final reclamation will depend upon the approved permit and reclamation plan (R645-301-830.120).

For the Coal Hollow Mine permit area, an estimate has been completed for the mining and reclamation scenario shown in Drawings 5-17 through 5-19 that will generate the largest disturbance and require the largest bond. This scenario includes completion of surface mining through HWT 3, completion of highwall holes through the same, and full mining of the currently planned underground mine as entering through portals located in Pit 10. This scenario also accounts for all Coal Hollow Mine facilities and special reclamation areas. This estimate is provided as Appendix 8-1. These cost calculations are based on the specific details shown on these drawings, as well as the indicated plan and schedule for bond release application. The remaining liability bond estimate by release stage, escalated for 2017 (anticipated end of mining) is the following:

Ultimate Disturbance:	$32,028,705
Release 15_1:	$13,078,197
Release 15_2:	$11,248,253
Release 16_1:	$7,217,148
Release 16_2:	$5,131,946
Release 17_1:	$4,152,986
Release 26_1:	$3,818,982
End of UG Release:	$ 0

This bonding and release schedule anticipates the opportunity for mining to commence on the North Private Lease as well as the potential for additional mining area to become available under the BLM's adjacent LBA tract. In both cases, the underground portals, coal facilities, and thereby Pit 10 would remain open requiring the continued surety shown at the end of 2017. Should these additional leases not become available, reclamation of the remaining area would be performed and the bond would be released as shown. As part of the application process for these additional areas, updated estimates and calculations will be provided.

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

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For the North Private Lease permit area, a set of incremental estimates have been completed for the mining and reclamation scenario shown in Drawings 5-76A through 5-77 that describe the detailed areas and require the largest adequate bond. This scenario includes mining, backfilling, grading, and replacement of adequate soils and revegetation to restore all disturbed ground to approximate original contour and land use. This scenario also accounts for all North Private Lease facilities and special reclamation areas. This estimate is provided as Appendix 8-2. These cost calculations are based on the specific details shown on these drawings, as well as the indicated plan and schedule for bond posting and bond release application. The incremental bond to be posted and the remaining liability by yearly increment, escalated for 2017 (anticipated end of mining) is the following:

	Bond Liability (start)	Bond Release (-)	Additional Bond for Following Increment (+)	Bond Liability (end)	Bond Net Change (+/-)
Carryover from CHM	$11,248,253	$0	$899,691	$12,147,944	$899,691 +
Pre-Year 1	$12,147,944	$4,031,105	$3,547,971	$11,664,810	$483,134 -
Year 1	$11,664,810	$4,611,306	$6,303,284	$13,356,788	$1,691,978 +
Year 2	$13,356,788	$4,752,379	$5,495,218	$14,099,627	$742,839 +
Year 3	$14,099,627	$4,133,663	$3,607,176	$13,573,140	$526,487 -
Year 4	$13,573,140	$5,655,768	$8,072,751	$15,990,123	$2,416,983 +
Year 5	$15,990,123	$1,501,290	$0	$14,488,833	$1,501,290 -
Year 6	$14,488,833	$3,606,248	$0	$10,882,585	$3,606,248-
Year 7	$10,882,585	$3,897,895	$0	$6,984,690	$3,897,895 -
Year 8	$6,984,690	$1,046,230	$0	$5,938,460	$1,046,230 -
Year 9	$5,938,460	$357,189	$0	$5,581,272	$357,189 -
Years 10-20	$5,581,272	$1,427,940	$0	$4,152,986	$1,428,286 -

This bonding and release schedule assumes a carryover of liability and posted bond from the Coal Hollow Mine permit area. The posted bond amount is $12,750,000, and the liability as shown in the table above. This schedule also anticipates the continued underground mining of the Coal Hollow Mine permit area, as well as the potential for additional mining area to become available under the BLM's adjacent LBA tract. In both cases, the underground portals, coal facilities, and thereby Coal Hollow Mine Pit 10 would remain open requiring the continued surety shown at the end of 2017 in Appendix 8-1. As part of the application process for these additional areas, updated estimates and calculations will be provided.

A summary and supporting calculations for these cost estimates is provided in Appendix 8-2.

840. GENERAL TERMS AND CONDITIONS OF THE BOND

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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

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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.

890. TERMS AND CONDITIONS FOR LIABILITY INSURANCE

890.100 Certificate of Liability Insurance

A copy of the Certificate of Liability Insurance is provided in Appendix 1-3. Alton Coal Development, LLC will meet the requirements of R645-301-890 prior to commencing any mining operations.

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BONDING

Introduction

The purpose of this appendix is to provide a reclamation bond estimate as required by R645-301-830.140.

This estimate includes liability calculations for:

- All areas of surface disturbance requiring Phase 2 and Phase 3 reclamation
- All facilities and special areas requiring demolition, demobilization, etc.
- All excavated pits requiring Phase 1 through Phase 3 reclamation
- Surface areas of the long-term excess spoil structure that require Phase 1 through Phase 3 reclamation

This appendix includes the following details:

- Bond Estimate Summary and Release Application Plan
- Mine Facilities Line Item Reclamation Estimate
- Spoil Pile, Surface Disturbance Only, and Facility and Special Area surface reclamation Estimate
- Excavated Areas Reclamation Estimate
- Production Model and Cost Model Assumptions
- Pit Backfill - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Subsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Topsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)

All material volume and surface area calculations were performed utilizing Carlson Civil and Mining software.

Cost data sources include:

- RSMeans Heavy Cost Construction 2015
- RSMeans Construction Cost Data 2015
- CostMine Coal Cost Guide 2015
- CostMine Mine and Mill Equipment Cost Data, 2015 (latest version available)

These sources are applied where appropriate in each of the cost estimates. Each line item in the estimate lists specifies which source is utilized for cost data.

Summary

The following is a brief summary of the information and methods used to calculate the costs for each category. The overall cost estimates below include total escalated costs applicable for all three phases of reclamation (where appropriate):

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Release Application Plan
While previous estimates for the Coal Hollow Mine were constructed as incremental bond packages, this estimate considers the permit area on a total disturbance basis and applies successive bond release applications as stepwise subtractions from the ultimate disturbance liability. Each release application potentially contains a combination of multiple pit & surface areas under different phases of reclamation. These area polygons can be viewed on Drawing 5-19.

Mine Facilities
This section includes line items for the demolition, disposal, earthwork and specialized land reclamation costs for the entire facilities area, including ponds and ditches. The calculations for this section is based on the facilities and pond drawings in the current version of the Mining and Reclamation Plan. These drawings are all provided in Chapter 5 as Drawings 5-3 through 5-8C. The RSMeans Cost data is applied to this estimate. The overall cost estimate for the facilities reclamation is approximately $1,138,714.

Spoil Pile, Surface Disturbance Only, and Specialized Reclamation Areas
The specialized reclamation areas include areas that only require surface (Phase 2 and Phase3) reclamation, the long term excess spoil structure, ditches 2, 3 and 4, ponds 3 and 4, along with the Lower Robinson Creek reconstruction. The surface reclamation for the loadout area is also included. The Phase 1 through Phase 3 (where applicable) calculations for these specific areas are provided separately and applied as appropriate. The overall cost estimate for this category is $1,472,383.

Excavated Areas
As shown on Drawings 5-17, 5-18, 5-19 and described in Chapter 5 text, the Coal Hollow Mine permit area is nearing completion of the open pit portion of the mining process. The mining and backfilling sequence has followed the pit progression shown in chapter 5 and the final pit void comprised of Pit 10 (including the underground portals) and a portion of the highwall trench remain to be backfilled in this last stage of surface mining. All other mined pits have currently been backfilled to Approximate Original Contour (AOC) as required by the reclamation plan in Chapter 5. While a significant portion of the required backfill and surface reclamation had been completed prior to 2015, bond release applications had not been submitted for any of this work. Therefore it is expedient to now consider the Coal Hollow Mine permit area on a total disturbance basis as opposed to the original incremental bond system. The overall cost estimate for all pits assuming total excavation is $29,417,608.

Production Model and Cost Assumptions
Caterpillar's Fleet Production and Cost analysis software was utilized to establish a baseline cost model with inputs from the appropriate cost guides. This model provided unit costs on a $/BCY and $/LCY basis.

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The following documentation provides the details for each section of this bond estimate.

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*All amounts escalated to 2017

Current Bond Amount Held $ 12,750,000

Stage of Reclamation / Release Application	Areas Included in Release Application	Phase 1 Bond Amount	Phase 1 Surface Area (acres)	Phase 2 Bond Amount	Phase 2 Surface Area (acres)	Phase 3 Bond Amount	Phase 3 Surface Area (acres)	Facilities Bond Amount	Total Bond Amount	Estimated Release Amount
Beginning Worst Case Scenario Bond Amount (all pits excavated)		**$ 28,250,679**	**208.6**	**$ 2,134,276**	**342.0**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 32,028,705**	
15_1 Release Submission										
	Phase 1 Pit 1-A	$ 511,688	3.6		-		-		$ 511,688	
	Phase 1 Pit 2	$ 894,801	8.3		-		-		$ 894,801	
	Phase 1 Pit 3	$ 2,138,083	7.0		-		-		$ 2,138,083	
	Phase 1 Pit 4	$ 601,615	6.3		-		-		$ 601,615	
	Phase 1 Pit 5	$ 1,246,966	6.7		-		-		$ 1,246,966	
	Phase 1 Pit 6	$ 2,039,655	12.1		-		-		$ 2,039,655	
	Phase 1 Pit 7	$ 3,155,020	6.3		-		-		$ 3,155,020	
	Phase 1 Pit 8	$ 1,090,479	5.6		-		-		$ 1,090,479	
	Phase 1 Pit 9-A	$ 466,087	4.4		-		-		$ 466,087	
	Phase 1 Pit 21-A	$ 281,593	1.7		-		-		$ 281,593	
	Phase 1 Pit 22	$ 987,837	5.3		-		-		$ 987,837	
	Phase 1 Pit 23	$ 786,691	4.5		-		-		$ 786,691	
	Phase 1 Pit 24	$ 684,518	4.6		-		-		$ 684,518	
	Phase 1 Pit 25	$ 1,215,383	6.8		-		-		$ 1,215,383	
	Phase 1 Pit 26	$ 854,410	5.2		-		-		$ 854,410	
	Phase 1 Pit 27	$ 895,868	5.5		-		-		$ 895,868	
	Phase 1 Pit 28	$ 1,099,814	6.5		-		-		$ 1,099,814	
Subtotal		**$ 18,950,507**	**100.5**	**$ -**	**-**	**$ -**	**-**	**$ -**	**$ 18,950,507**	**$ -**
Surface Area & Bond Remaining After Release		**$ 9,300,172**	**108.2**	**$ 2,134,276**	**342.0**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 13,078,197**	
15_2 Release Submission										
	Phase 1 Pit 20-A	$ 150,955	1.2		-		-		$ 150,955	
	Phase 1 Pit 20-B	$ 729,615	5.8		-		-		$ 729,615	
	Phase 1 Pit 21-B	$ 463,800	2.8		-		-		$ 463,800	
	Phase 1 HWT 1-A	$ 485,574	3.2		-		-		$ 485,574	
Subtotal		**$ 1,829,944**	**13.0**	**$ -**	**-**	**$ -**	**-**	**$ -**	**$ 1,829,944**	**$ 1,501,747**
Surface Area & Bond Remaining After Release		**$ 7,470,228**	**95.2**	**$ 2,134,276**	**342.0**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 11,248,253**	
16_1 Release Submission										
	Phase 1 Pit 1-B	$ 412,193	2.9		-		-		$ 412,193	
	Phase 1 Pit 9-B	$ 1,249,960	11.8		-		-		$ 1,249,960	
	Phase 1 HWT 1-B	$ 1,350,504	8.9		-		-		$ 1,350,504	
	Phase 1 HWT 2-A	$ 756,990	5.2		-		-		$ 756,990	
	Phase 1 HWT 3-A	$ 261,458	2.3		-		-		$ 261,458	
Subtotal		**$ 4,031,105**	**31.1**	**$ -**	**-**	**$ -**	**-**	**$ -**	**$ 4,031,105**	**$ 4,031,105**
Surface Area & Bond Remaining After Release		**$ 3,439,123**	**64.1**	**$ 2,134,276**	**342.0**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 7,217,148**	
16_2 Release Submission										
	Phase 1 Pit 9-C	$ 349,565	3.3		-		-		$ 349,565	
	Phase 1 HWT 2-B	$ 349,380	2.4		-		-		$ 349,380	
	Phase 1 HWT 3-B	$ 750,272	6.6		-		-		$ 750,272	
	Phase 1 & 2 SURF1	$ -	-	$ 61,123	9.8		-		$ 61,123	
	Phase 1 & 2 SURF4	$ -	-	$ 12,482	2.0		-		$ 12,482	
	Phase 1 & 2 SURF5	$ -	-	$ 111,092	17.8		-		$ 111,092	
	Phase 1 & 2 SURF6	$ -	-	$ 46,485	7.4		-		$ 46,485	
	Phase 1 & 2 SURF7	$ -	-	$ 7,495	1.2		-		$ 7,495	
	Phase 1 & 2 SPOIL1	$ 37,154	5.7	$ 35,405	5.7		-		$ 72,559	
	Phase 1 & 2 SPOIL2	$ 50,453	7.7	$ 48,077	7.7		-		$ 98,530	
	Phase 1 & 2 SPOIL3	$ 15,043	2.3	$ 14,334	2.3		-		$ 29,377	
	Phase 1 & 2 SPOIL4	$ 20,430	3.1	$ 19,468	3.1		-		$ 39,898	
	Phase 1 & 2 SPOIL5	$ 48,880	7.5	$ 46,578	7.5		-		$ 95,458	
	Phase 1 & 2 SPOIL6	$ 4,818	0.7	$ 4,591	0.7		-		$ 9,410	
	Phase 1 & 2 SPOIL7	$ 12,934	2.0	$ 12,324	2.0		-		$ 25,258	
	Phase 1 & 2 SPOIL8	$ 13,733	2.1	$ 13,086	2.1		-		$ 26,819	
Subtotal		**$ 1,652,662**	**43.4**	**$ 432,541**	**69.3**	**$ -**	**-**		**$ 2,085,202**	**$ 2,085,202**
Surface Area & Bond Remaining After Release		**$ 1,786,461**	**20.7**	**$ 1,701,736**	**272.7**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 5,131,946**	
17_1 Release Submission										
	Phase 2 HWT 1-A		-	$ 19,972	3.2		-		$ 19,972	
	Phase 2 HWT 1-B		-	$ 55,546	8.9		-		$ 55,546	
	Phase 2 HWT 2-A		-	$ 32,454	5.2		-		$ 32,454	
	Phase 2 HWT 2-B		-	$ 14,979	2.4		-		$ 14,979	
	Phase 2 HWT 3-A		-	$ 14,355	2.3		-		$ 14,355	
	Phase 2 HWT 3-B		-	$ 41,191	6.6		-		$ 41,191	
	Phase 2 Pit 1-A		-	$ 22,468	3.6		-		$ 22,468	
	Phase 2 Pit 1-B		-	$ 18,099	2.9		-		$ 18,099	
	Phase 2 Pit 2		-	$ 51,716	8.3		-		$ 51,716	
	Phase 2 Pit 3		-	$ 43,835	7.0		-		$ 43,835	
	Phase 2 Pit 4		-	$ 39,246	6.3		-		$ 39,246	
	Phase 2 Pit 5		-	$ 41,851	6.7		-		$ 41,851	
	Phase 2 Pit 6		-	$ 75,518	12.1		-		$ 75,518	
	Phase 2 Pit 7		-	$ 39,262	6.3		-		$ 39,262	
	Phase 2 Pit 8		-	$ 34,950	5.6		-		$ 34,950	
	Phase 2 Pit 9-A		-	$ 27,461	4.4		-		$ 27,461	
	Phase 2 Pit 9-B		-	$ 73,645	11.8		-		$ 73,645	
	Phase 2 Pit 9-C		-	$ 20,596	3.3		-		$ 20,596	
	Phase 2 Pit 20-A		-	$ 7,489	1.2		-		$ 7,489	
	Phase 2 Pit 20-B		-	$ 36,198	5.8		-		$ 36,198	
	Phase 2 Pit 21-A		-	$ 10,610	1.7		-		$ 10,610	
	Phase 2 Pit 21-B		-	$ 17,475	2.8		-		$ 17,475	
	Phase 2 Pit 22		-	$ 33,210	5.3		-		$ 33,210	
	Phase 2 Pit 23		-	$ 28,360	4.5		-		$ 28,360	
	Phase 2 Pit 24		-	$ 28,571	4.6		-		$ 28,571	
	Phase 2 Pit 25		-	$ 42,250	6.8		-		$ 42,250	
	Phase 2 Pit 26		-	$ 32,652	5.2		-		$ 32,652	
	Phase 2 Pit 27		-	$ 34,258	5.5		-		$ 34,258	
	Phase 2 Pit 28		-	$ 40,745	6.5		-		$ 40,745	
Subtotal		**$ -**	**-**	**$ 978,960**	**156.9**	**$ -**	**-**	**$ -**	**$ 978,960**	**$ 978,960**
Surface Area & Bond Remaining After Release		**$ 1,786,461**	**20.7**	**$ 722,775**	**115.8**	**$ 505,035**	**342.0**	**$ 1,138,714**	**$ 4,152,986**	
26_1 Release Submission										
	Phase 3 SURF1		-		-	$ 14,463	9.8		$ 14,463	
	Phase 3 SURF4		-		-	$ 2,954	2.0		$ 2,954	
	Phase 3 SURF5		-		-	$ 26,288	17.8		$ 26,288	
	Phase 3 SURF6		-		-	$ 11,000	7.4		$ 11,000	
	Phase 3 SURF7		-		-	$ 1,773	1.2		$ 1,773	
	Phase 3 SPOIL1		-		-	$ 8,378	5.7		$ 8,378	
	Phase 3 SPOIL2		-		-	$ 11,376	7.7		$ 11,376	
	Phase 3 SPOIL3		-		-	$ 3,392	2.3		$ 3,392	
	Phase 3 SPOIL4		-		-	$ 4,607	3.1		$ 4,607	
	Phase 3 SPOIL5		-		-	$ 11,022	7.5		$ 11,022	
	Phase 3 SPOIL6		-		-	$ 1,086	0.7		$ 1,086	
	Phase 3 SPOIL7		-		-	$ 2,916	2.0		$ 2,916	
	Phase 3 SPOIL8		-		-	$ 3,097	2.1		$ 3,097	
	Phase 3 HWT 1-A		-		-	$ 4,726	3.2		$ 4,726	
	Phase 3 HWT 1-B		-		-	$ 13,144	8.9		$ 13,144	
	Phase 3 HWT 2-A		-		-	$ 7,680	5.2		$ 7,680	
	Phase 3 HWT 2-B		-		-	$ 3,544	2.4		$ 3,544	
	Phase 3 HWT 3-A		-		-	$ 3,397	2.3		$ 3,397	
	Phase 3 HWT 3-B		-		-	$ 9,747	6.6		$ 9,747	
	Phase 3 Pit 1-A		-		-	$ 5,317	3.6		$ 5,317	
	Phase 3 Pit 1-B		-		-	$ 4,283	2.9		$ 4,283	
	Phase 3 Pit 2		-		-	$ 12,238	8.3		$ 12,238	
	Phase 3 Pit 3		-		-	$ 10,373	7.0		$ 10,373	
	Phase 3 Pit 4		-		-	$ 9,287	6.3		$ 9,287	
	Phase 3 Pit 5		-		-	$ 9,903	6.7		$ 9,903	
	Phase 3 Pit 6		-		-	$ 17,870	12.1		$ 17,870	
	Phase 3 Pit 7		-		-	$ 9,290	6.3		$ 9,290	
	Phase 3 Pit 8		-		-	$ 8,270	5.6		$ 8,270	
	Phase 3 Pit 9-A		-		-	$ 6,498	4.4		$ 6,498	
	Phase 3 Pit 9-B		-		-	$ 17,427	11.8		$ 17,427	
	Phase 3 Pit 9-C		-		-	$ 4,874	3.3		$ 4,874	
	Phase 3 Pit 20-A		-		-	$ 1,772	1.2		$ 1,772	
	Phase 3 Pit 20-B		-		-	$ 8,566	5.8		$ 8,566	
	Phase 3 Pit 21-A		-		-	$ 2,511	1.7		$ 2,511	
	Phase 3 Pit 21-B		-		-	$ 4,135	2.8		$ 4,135	
	Phase 3 Pit 22		-		-	$ 7,858	5.3		$ 7,858	
	Phase 3 Pit 23		-		-	$ 6,711	4.5		$ 6,711	
	Phase 3 Pit 24		-		-	$ 6,761	4.6		$ 6,761	
	Phase 3 Pit 25		-		-	$ 9,998	6.8		$ 9,998	
	Phase 3 Pit 26		-		-	$ 7,726	5.2		$ 7,726	
	Phase 3 Pit 27		-		-	$ 8,106	5.5		$ 8,106	
	Phase 3 Pit 28		-		-	$ 9,642	6.5		$ 9,642	
Subtotal		**$ -**	**-**	**$ -**	**-**	**$ 334,004**	**226.2**	**$ -**	**$ 334,004**	**$ 334,004**
Surface Area & Bond Remaining After Release		**$ 1,786,461**	**20.7**	**$ 722,775**	**115.8**	**$ 171,031**	**115.8**	**$ 1,138,714**	**$ 3,818,982**	
End of Underground Mining Release Submission										
	Phase 1,2 & 3 Pit 10	$ 1,786,461	20.7	$ 129,191	20.7	$ 30,571	20.7	$ -	$ 1,946,223	
	Phase 1,2 & 3 SURF8 HAUL & MAINT (includes Pond 2	$ -	-	$ 279,602	44.8	$ 66,162	44.8	$ -	$ 345,764	
	Phase 1,2 & 3 DITCH 3	$ -	-	$ 3,292	0.5	$ 779	0.5	$ -	$ 4,071	
	Phase 1,2 & 3 DITCH 2	$ -	-	$ 12,044	1.9	$ 2,850	1.9	$ -	$ 14,894	
	Phase 1,2 & 3 DITCH 4	$ -	-	$ 2,330	0.4	$ 551	0.4	$ -	$ 2,882	
	Phase 1,2 & 3 POND 3	$ -	-	$ 25,822	4.1	$ 6,110	4.1	$ -	$ 31,933	
	Phase 1,2 & 3 POND 4 (includes ditch 1)	$ -	-	$ 45,368	7.3	$ 10,735	7.3	$ -	$ 56,104	
	Phase 1,2 & 3 ROBINSON	$ -	-	$ 33,631	5.4	$ 7,958	5.4	$ -	$ 41,590	
	Phase 1,2 & 3 LOADOUT (includes Ponds 1 & 1B)	$ -	-	$ 191,494	30.7	$ 45,313	30.7	$ -	$ 236,807	
	Line Items Facilities Concrete Demolition	$ -	-	$ -	-	$ -	-	$ 162,340	$ 162,340	
	Line Items Facilities Structure Demolition	$ -	-	$ -	-	$ -	-	$ 662,581	$ 662,581	
	Line Items Facilities Earthwork	$ -	-	$ -	-	$ -	-	$ 313,794	$ 313,794	
Subtotal		**$ 1,786,461**	**20.7**	**$ 722,775**	**115.8**	**$ 171,031**	**115.8**	**$ 1,138,714**	**$ 3,818,982**	**$ 3,818,982**
Surface Area & Bond Remaining After Release		**$ 0**	**-**	**$ -**	**-**	**$ -**	**-**	**$ -**	**$ -**	

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Facilities Reclamation Cost Estimate

Concrete Demolition

Item	Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Office (footer)	lft	500	$21.40	$10,700	RSMeans Building Constr., 02 41 16.17 1140
Shop (footer)	lft	616	$25.68	$15,819	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Shop (foundation)	ft^2	3,080	$1.06	$3,252	RSMeans Building Constr., 02 41 16.17 2100 & 2200
Shop (floor)	ft^2	20,000	$0.80	$16,000	RSMeans Building Constr., 02 41 16.17 0440
Wash Bay (footer)	lft	244	$25.68	$6,266	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Wash Bay (foundation)	ft^2	660	$1.06	$697	RSMeans Building Constr., 02 41 16.17 2100 & 2200
Wash Bay (floor & sump)	ft^2	3,100	$0.80	$2,480	RSMeans Building Constr., 02 41 16.17 0440
Fuel Storage (slab)	yd^3	111	$109.55	$12,172	RSMeans Heavy Constr., 03 05 05.10 0060
Fuel Storage (containment wall)	yd^3	9	$109.55	$974	RSMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (slab)	yd^3	89	$109.55	$9,738	RSMeans Heavy Constr., 03 05 05.10 0060
Oil Storage (containment wall)	yd^3	12	$109.55	$1,339	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Tunnel Access)	yd^3	95	$109.55	$10,387	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Hopper Supports)	yd^3	190	$109.55	$20,774	RSMeans Heavy Constr., 03 05 05.10 0060
Coal Hopper/Feeder Breaker (Belt Tunnel)	yd^3	133	$109.55	$14,542	RSMeans Heavy Constr., 03 05 05.10 0060
Crusher Building (Footer)	lft	80	$25.68	$2,054	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Feed Conveyor (Support Footers)	lft	30	$25.68	$770	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Reclaim Belt (Support Footers)	lft	25	$25.68	$642	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Footers)	lft	72	$25.68	$1,849	RSMeans Building Constr., 02 41 16.17 1140 & 1220
Loadout (Scale Footer)	lft	60	$25.68	$1,541	RSMeans Building Constr., 02 41 16.17 1140 & 1220

Concrete Disposal

*Concrete Disposal (All Facilities)	yd^3	1,551	$15.70	$24,346	RSMeans Building Constr., 02 41 16.17 4250
Subtotal Concrete Demolition & Disposal				**$156,342**	

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

**All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals (Total Bare Cost)

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Div. of Oil Gas & Mining

Facilities Reclamation Cost Estimate

Structure Demolition & Disposal

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Office	ft^3	150,000	$0.30	$45,000	RSMeans Heavy Constr., 02 41 16.13 0100
Office (Sewage Tank)	Ea.	1	$3,455.00	$3,455	RSMeans Heavy Constr., 02 65 10.30 1233 & 1213
Shop	ft^3	1,000,000	$0.28	$280,000	RSMeans Heavy Constr., 02 41 16.13 0020
Wash Bay	ft^3	150,000	$0.28	$42,000	RSMeans Heavy Constr., 02 41 16.13 0020
Fuel Storage (3 tanks)	Ea.	3	$2,370.00	$7,110	RSMeans Heavy Constr., 02 65 10.30 0130 & 1029
Coal Hopper/Feeder Breaker (Demolition)	Ton	64	$186.50	$11,936	RSMeans Heavy Constr., 05 05 05.10 0260
Coal Hopper/Feeder Breaker (Disposal)	yd^3	570	$10.57	$6,025	RSMeans Heavy Constr., 02 41 19.18 0200
Crusher (structure)	ft^3	9,200	$0.28	$2,576	RSMeans Heavy Constr., 02 41 16.13 0020
Crusher (equipment demolition)	Ton	60	$186.50	$11,190	RSMeans Heavy Constr., 05 05 05.10 0260
Crusher (equipment disposal)	yd^3	150	$10.57	$1,586	RSMeans Heavy Constr., 02 41 19.18 0200
Coal Reclaim System (demolition)	Ton	50	$186.50	$9,325	RSMeans Heavy Constr., 05 05 05.10 0260
Coal Reclaim System (disposal)	yd^3	233	$10.57	$2,463	RSMeans Heavy Constr., 02 41 19.18 0200
Loadout (structure)	ft^3	19,000	$0.28	$5,320	RSMeans Heavy Constr., 02 41 16.13 0020
Loadout (equipment demolition)	Ton	68	$186.50	$12,682	RSMeans Heavy Constr., 05 05 05.10 0260
Loadout (equipment disposal)	yd^3	185	$10.57	$1,955	RSMeans Heavy Constr., 02 41 19.18 0200
100 lb/cu. Ft material - 48" Conveyors (demolition)	ft	545	$180.47	$98,356	CostMine - Mine and Mill Equipment Costs 2015 (Estimated as 25% of Construction Cost)
12" Drainage Culvert (demolition)	ft	50	$2.25	$113	RSMeans Heavy Constr., 02 41 13.40 0150
18" Drainage Culvert (demolition)	ft	413	$3.37	$1,392	RSMeans Heavy Constr., 02 41 13.40 0160
24" Drainage Culvert (demolition)	ft	455	$10.10	$4,596	RSMeans Heavy Constr., 02 41 13.40 0170
36" Drainage Culvert (demolition)	ft	184	$12.15	$2,236	RSMeans Heavy Constr., 02 41 13.40 0180
96" Drainage Culvert (demolition)	ft	184	$34.30	$6,311	RSMeans Heavy Constr., 02 41 13.40 0200
Culvert Excavation 6' - 10' Deep	yd^3	1,485	$3.82	$5,673	RSMeans Heavy Constr., 31 23 16.13 0510
Culvert Excavation 14' - 20' Deep	yd^3	2,208	$4.77	$10,532	RSMeans Heavy Constr., 31 23 16.13 1300
Perimeter Fencing (demolition)	ft	22,000	$2.15	$47,300	RSMeans Heavy Constr., 02 41 13.60 1650
Water Monitoring Wells - PVC (demolition)	VLF	1,919	$7.27	$13,947	RSMeans Heavy Constr., 02 41 13.76 0900
Water Monitoring Wells - Steel (demolition)	VLF	201	$14.55	$2,925	RSMeans Heavy Constr., 02 41 13.76 1000
Water System (tanks)	Ea.	2	$1,050.00	$2,100	RSMeans Heavy Constr., 02 65 10.30 1029
Subtotal Structure Demolition & Disposal				**$638,103**	

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 substitutes are utilized.

All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Bare Cost)

Div. of Oil, Gas & Mining
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Facilities Reclamation Cost Estimate

Facilities Earthwork

Item	*Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 1 backfill from embankment	yd^3	1,156	$1.95	$2,254	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 1 backfill from subsoil pile	yd^3	3,200	$5.88	$18,816	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	$1.95	$285	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 1B backfill from subsoil pile	yd^3	794	$5.88	$4,669	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 2 backfill from embankment	yd^3	160	$1.95	$312	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 2 backfill from subsoil pile	yd^3	7,122	$5.88	$41,877	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 3 backfill from embankment	yd^3	4,767	$1.95	$9,296	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 3 backfill from subsoil pile	yd^3	6,107	$5.88	$35,909	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 4 backfill from embankment	yd^3	1,410	$1.95	$2,750	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 4 backfill from subsoil pile	yd^3	13,282	$5.88	$78,098	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	$52.90	$33,709	RS Means Heavy Constr., 31 37 13.10 0100
Robinson Creek Grass Matting	yd^2	2,189	$5.08	$17,402	RS Means Heavy Constr., 31 25 14.16 0120
Ditch 1 recontouring	yd^3	3,096	$1.95	$6,037	RSMeans Heavy Constr., 31 23 23.17 0020
Ditch 2 recontouring	yd^3	2,014	$1.95	$3,927	RSMeans Heavy Constr., 31 23 23.17 0020
Ditch 3 recontouring	yd^3	11,556	$1.95	$22,534	RSMeans Heavy Constr., 31 23 23.17 0020
Ditch 4 recontouring	yd^3	2,333	$1.95	$4,550	RSMeans Heavy Constr., 31 23 23.17 0020
Ripping of haul roads and compacted surfaces	yd^3	9,600	$2.06	$19,776	RSMeans Heavy Constr., 31 23 16.32 2310
Subtotal Facilities Earthwork				**$302,201**	

Total Facilities Reclamation Cost Estimate	**$1,096,646**

** 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 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals except where specifically noted (Total Bare Cost)

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Coal Hollow Mine Bond Cost Estimate - November 2015

								Phase 1 Cost									Phase 2 Cost									Phase 3 Cost					Facilities Cost		Total
	Pit	BCF [BCY * 27]	BCY	LCY	Area (sf) [acres * 43560]	Area (acres)	Backfill Cost	Subsoil Quantity (LCY)	Subsoil Cost	Total Direct Cost	Indirect Cost	Total Phase 1 Cost	Total Phase 1 Cost - Escalated	Topsoil Quantity (LCY)	Topsoil Cost	Mulching Quantity (M.S.F)	Mulching Cost	Seeding Quantity (M.S.F)	Seeding Cost	Total Direct Cost	Indirect Cost	Total Phase 2 Cost	Total Phase 2 Cost - Escalated	Re-Seed Quantity	Re-Seed Cost	Total Direct Cost	Indirect Cost	Total Phase 3 Cost	Total Phase 3 Cost - Escalated	Total Facilities Cost	Total Facilities Cost - Escalated	Total Bonded Amount - Escalated
Excavated Areas	HWT 1-A	9,752,043	361,187	399,924	139,392	3.2	$ 352,879	18,448	$ 15,918	$ 368,798	$ 98,838	$ 467,636	$ 485,574	3,690	$ 3,184	139	$ 8,396	139	$ 3,589	$ 15,169	$ 4,065	$ 19,234	$ 19,972	139	$ 3,589	$ 3,589	$ 962	$ 4,551	$ 4,726			$ 510,272
	HWT 1-B	27,122,871	1,004,551	1,112,289	387,684	8.9	$ 981,446	51,308	$ 44,273	$ 1,025,719	$ 274,893	$ 1,300,611	$ 1,350,504	10,262	$ 8,855	388	$ 23,350	388	$ 9,983	$ 42,188	$ 11,306	$ 53,494	$ 55,546	388	$ 9,983	$ 9,983	$ 2,675	$ 12,658	$ 13,144			$ 1,419,194
	HWT 2-A	15,173,962	561,999	622,273	226,512	5.2	$ 549,073	29,978	$ 25,867	$ 574,940	$ 154,084	$ 729,024	$ 756,990	5,996	$ 5,173	227	$ 13,643	227	$ 5,833	$ 24,649	$ 6,606	$ 31,255	$ 32,454	227	$ 5,833	$ 5,833	$ 1,563	$ 7,396	$ 7,680			$ 797,123
	HWT 2-B	7,003,367	259,384	287,203	104,544	2.4	$ 253,418	13,836	$ 11,939	$ 265,357	$ 71,116	$ 336,472	$ 349,380	2,767	$ 2,388	105	$ 6,297	105	$ 2,692	$ 11,376	$ 3,049	$ 14,425	$ 14,979	105	$ 2,692	$ 2,692	$ 721	$ 3,413	$ 3,544			$ 367,903
	HWT 3-A	5,171,686	191,544	212,087	100,188	2.3	$ 187,138	13,259	$ 11,441	$ 198,580	$ 53,219	$ 251,799	$ 261,458	2,652	$ 2,288	100	$ 6,034	100	$ 2,580	$ 10,902	$ 2,922	$ 13,824	$ 14,355	100	$ 2,580	$ 2,580	$ 691	$ 3,271	$ 3,397			$ 279,210
	HWT 3-B	14,840,491	549,648	608,598	287,496	6.6	$ 537,006	38,049	$ 32,831	$ 569,837	$ 152,716	$ 722,554	$ 750,272	7,610	$ 6,566	287	$ 17,316	287	$ 7,403	$ 31,285	$ 8,384	$ 39,670	$ 41,191	287	$ 7,403	$ 7,403	$ 1,984	$ 9,387	$ 9,747			$ 801,210
	Pit 1-A	10,245,166	379,451	420,147	156,816	3.6	$ 370,723	20,754	$ 17,908	$ 388,631	$ 104,153	$ 492,784	$ 511,688	4,151	$ 3,582	157	$ 9,445	157	$ 4,038	$ 17,065	$ 4,573	$ 21,638	$ 22,468	157	$ 4,038	$ 4,038	$ 1,082	$ 5,120	$ 5,317			$ 539,473
	Pit 1-B	8,253,050	305,669	338,451	126,324	2.9	$ 298,638	16,718	$ 14,426	$ 313,064	$ 83,901	$ 396,965	$ 412,193	3,344	$ 2,885	126	$ 7,608	126	$ 3,253	$ 13,747	$ 3,684	$ 17,431	$ 18,099	126	$ 3,253	$ 3,253	$ 872	$ 4,125	$ 4,283			$ 434,575
	Pit 2	17,642,275	653,418	723,497	360,952	8.3	$ 638,389	47,770	$ 41,220	$ 679,609	$ 182,135	$ 861,744	$ 894,801	9,554	$ 8,244	361	$ 21,740	361	$ 9,295	$ 39,279	$ 10,527	$ 49,805	$ 51,716	361	$ 9,295	$ 9,295	$ 2,491	$ 11,785	$ 12,238			$ 958,755
	Pit 3	43,911,690	1,626,359	1,800,786	305,947	7.0	$ 1,588,953	40,491	$ 34,938	$ 1,623,891	$ 435,203	$ 2,059,094	$ 2,138,083	8,098	$ 6,988	306	$ 18,427	306	$ 7,878	$ 33,293	$ 8,923	$ 42,216	$ 43,835	306	$ 7,878	$ 7,878	$ 2,111	$ 9,989	$ 10,373			$ 2,192,290
	Pit 4	11,763,124	435,671	482,397	273,917	6.3	$ 425,651	36,252	$ 31,281	$ 456,931	$ 122,458	$ 579,389	$ 601,615	7,250	$ 6,256	274	$ 16,498	274	$ 7,053	$ 29,807	$ 7,988	$ 37,796	$ 39,246	274	$ 7,053	$ 7,053	$ 1,890	$ 8,944	$ 9,287			$ 650,148
	Pit 5	25,251,319	935,234	1,035,538	292,103	6.7	$ 913,724	38,659	$ 33,357	$ 947,081	$ 253,818	$ 1,200,899	$ 1,246,966	7,732	$ 6,671	292	$ 17,593	292	$ 7,522	$ 31,786	$ 8,519	$ 40,305	$ 41,851	292	$ 7,522	$ 7,522	$ 2,016	$ 9,537	$ 9,903			$ 1,298,721
	Pit 6	41,147,880	1,523,996	1,687,444	527,076	12.1	$ 1,488,944	69,756	$ 60,191	$ 1,549,134	$ 415,168	$ 1,964,302	$ 2,039,655	13,951	$ 12,038	527	$ 31,746	527	$ 13,572	$ 57,356	$ 15,371	$ 72,728	$ 75,518	527	$ 13,572	$ 13,572	$ 3,637	$ 17,210	$ 17,870			$ 2,133,042
	Pit 7	65,357,399	2,420,644	2,680,259	274,027	6.3	$ 2,364,970	36,266	$ 31,293	$ 2,396,263	$ 642,198	$ 3,038,461	$ 3,155,020	7,253	$ 6,259	274	$ 16,505	274	$ 7,056	$ 29,819	$ 7,992	$ 37,811	$ 39,262	274	$ 7,056	$ 7,056	$ 1,891	$ 8,947	$ 9,290			$ 3,203,572
	Pit 8	22,118,746	819,213	907,073	243,936	5.6	$ 800,371	32,284	$ 27,857	$ 828,228	$ 221,965	$ 1,050,193	$ 1,090,479	6,457	$ 5,571	244	$ 14,692	244	$ 6,281	$ 26,545	$ 7,114	$ 33,659	$ 34,950	244	$ 6,281	$ 6,281	$ 1,683	$ 7,965	$ 8,270			$ 1,133,700
	Pit 9-A	9,178,039	339,927	376,385	191,664	4.4	$ 332,109	25,366	$ 21,888	$ 353,997	$ 94,871	$ 448,868	$ 466,087	5,073	$ 4,378	192	$ 11,544	192	$ 4,935	$ 20,857	$ 5,590	$ 26,446	$ 27,461	192	$ 4,935	$ 4,935	$ 1,323	$ 6,258	$ 6,498			$ 500,046
	Pit 9-B	24,613,833	911,623	1,009,395	514,008	11.8	$ 890,656	68,027	$ 58,698	$ 949,355	$ 254,427	$ 1,203,782	$ 1,249,960	13,605	$ 11,740	514	$ 30,959	514	$ 13,236	$ 55,934	$ 14,990	$ 70,924	$ 73,645	514	$ 13,236	$ 13,236	$ 3,547	$ 16,783	$ 17,427			$ 1,341,032
	Pit 9-C	6,883,530	254,946	282,288	143,748	3.3	$ 249,082	19,024	$ 16,416	$ 265,497	$ 71,153	$ 336,651	$ 349,565	3,805	$ 3,283	144	$ 8,658	144	$ 3,702	$ 15,643	$ 4,192	$ 19,835	$ 20,596	144	$ 3,702	$ 3,702	$ 992	$ 4,694	$ 4,874			$ 375,034
	Pit 10	34,651,213	1,283,378	1,421,021	901,692	20.7	$ 1,253,861	119,335	$ 102,971	$ 1,356,832	$ 363,631	$ 1,720,462	$ 1,786,461	23,867	$ 20,594	902	$ 54,309	902	$ 23,219	$ 98,122	$ 26,297	$ 124,418	$ 129,191	902	$ 23,219	$ 23,219	$ 6,223	$ 29,441	$ 30,571			$ 1,946,223
	Pit 20-A	3,003,497	111,241	123,171	52,272	1.2	$ 108,682	6,918	$ 5,969	$ 114,651	$ 30,727	$ 145,378	$ 150,955	1,384	$ 1,194	52	$ 3,148	52	$ 1,346	$ 5,688	$ 1,524	$ 7,213	$ 7,489	52	$ 1,346	$ 1,346	$ 361	$ 1,707	$ 1,772			$ 160,216
	Pit 20-B	14,516,903	537,663	595,327	252,648	5.8	$ 525,297	33,437	$ 28,852	$ 554,149	$ 148,512	$ 702,660	$ 729,615	6,687	$ 5,770	253	$ 15,217	253	$ 6,506	$ 27,493	$ 7,368	$ 34,861	$ 36,198	253	$ 6,506	$ 6,506	$ 1,744	$ 8,249	$ 8,566			$ 774,379
	Pit 21-A	5,676,782	210,251	232,801	74,052	1.7	$ 205,415	9,800	$ 8,457	$ 213,872	$ 57,318	$ 271,190	$ 281,593	1,960	$ 1,691	74	$ 4,460	74	$ 1,907	$ 8,058	$ 2,160	$ 10,218	$ 10,610	74	$ 1,907	$ 1,907	$ 511	$ 2,418	$ 2,511			$ 294,713
	Pit 21-B	9,349,995	346,296	383,436	121,968	2.8	$ 338,331	16,142	$ 13,928	$ 352,260	$ 94,406	$ 446,665	$ 463,800	3,228	$ 2,786	122	$ 7,346	122	$ 3,141	$ 13,272	$ 3,557	$ 16,830	$ 17,475	122	$ 3,141	$ 3,141	$ 842	$ 3,982	$ 4,135			$ 485,410
	Pit 22	20,002,682	740,840	820,295	231,787	5.3	$ 723,801	30,676	$ 26,469	$ 750,270	$ 201,072	$ 951,343	$ 987,837	6,135	$ 5,294	232	$ 13,961	232	$ 5,969	$ 25,223	$ 6,760	$ 31,983	$ 33,210	232	$ 5,969	$ 5,969	$ 1,600	$ 7,568	$ 7,858			$ 1,028,905
	Pit 23	15,887,560	588,428	651,537	197,937	4.5	$ 574,894	26,196	$ 22,604	$ 597,498	$ 160,130	$ 757,628	$ 786,691	5,239	$ 4,521	198	$ 11,922	198	$ 5,097	$ 21,539	$ 5,773	$ 27,312	$ 28,360	198	$ 5,097	$ 5,097	$ 1,366	$ 6,463	$ 6,711			$ 821,762
	Pit 24	13,738,342	508,827	563,399	199,413	4.6	$ 497,124	26,391	$ 22,772	$ 519,897	$ 139,332	$ 659,229	$ 684,518	5,278	$ 4,554	199	$ 12,011	199	$ 5,135	$ 21,700	$ 5,816	$ 27,516	$ 28,571	199	$ 5,135	$ 5,135	$ 1,376	$ 6,511	$ 6,761			$ 719,850
	Pit 25	24,579,611	910,356	1,007,992	294,885	6.8	$ 889,418	39,027	$ 33,675	$ 923,093	$ 247,389	$ 1,170,482	$ 1,215,383	7,805	$ 6,735	295	$ 17,761	295	$ 7,593	$ 32,089	$ 8,600	$ 40,689	$ 42,250	295	$ 7,593	$ 7,593	$ 2,035	$ 9,628	$ 9,998			$ 1,267,630
	Pit 26	17,214,402	637,570	705,950	227,894	5.2	$ 622,906	30,161	$ 26,025	$ 648,931	$ 173,914	$ 822,845	$ 854,410	6,032	$ 5,205	228	$ 13,726	228	$ 5,868	$ 24,799	$ 6,646	$ 31,446	$ 32,652	228	$ 5,868	$ 5,868	$ 1,573	$ 7,441	$ 7,726			$ 894,788
	Pit 27	18,049,211	668,489	740,185	239,102	5.5	$ 653,114	31,644	$ 27,305	$ 680,419	$ 182,352	$ 862,771	$ 895,868	6,329	$ 5,461	239	$ 14,401	239	$ 6,157	$ 26,019	$ 6,973	$ 32,992	$ 34,258	239	$ 6,157	$ 6,157	$ 1,650	$ 7,807	$ 8,106			$ 938,232
	Pit 28	22,187,018	821,741	909,873	284,384	6.5	$ 802,841	37,637	$ 32,476	$ 835,317	$ 223,865	$ 1,059,182	$ 1,099,814	7,527	$ 6,495	284	$ 17,128	284	$ 7,323	$ 30,946	$ 8,294	$ 39,240	$ 40,745	284	$ 7,323	$ 7,323	$ 1,963	$ 9,285	$ 9,642			$ 1,150,201
	Excavated Areas Totals	**564,287,688**	**20,899,544**	**23,141,020**	**7,734,366**	**177.6**	**$ 20,418,854**	**1,023,610**	**$ 883,246**	**$ 21,302,100**	**$ 5,708,963**	**$ 27,011,063**	**$ 28,047,234**	**204,722**	**$ 176,649**	**7,734**	**$ 465,841**	**7,734**	**$ 199,160**	**$ 841,650**	**$ 225,562**	**$ 1,067,212**	**$ 1,108,151**	**7,734**	**$ 199,160**	**$ 199,160**	**$ 53,375**	**$ 252,535**	**$ 262,222**			**$ 29,417,608**
Spoil Pile & Borrow Areas	SPOIL1				247,108	5.7	$ -	32,704	$ 28,219	$ 28,219	$ 7,563	$ 35,782	$ 37,154	6,541	$ 5,644	247	$ 14,883	247	$ 6,363	$ 26,890	$ 7,207	$ 34,097	$ 35,405	247	$ 6,363	$ 6,363	$ 1,705	$ 8,068	$ 8,378			$ 80,937
	SPOIL2				335,554	7.7	$ -	44,409	$ 38,319	$ 38,319	$ 10,270	$ 48,589	$ 50,453	8,882	$ 7,664	336	$ 20,210	336	$ 8,641	$ 36,515	$ 9,786	$ 46,301	$ 48,077	336	$ 8,641	$ 8,641	$ 2,316	$ 10,956	$ 11,376			$ 109,906
	SPOIL3				100,047	2.3	$ -	13,241	$ 11,425	$ 11,425	$ 3,062	$ 14,487	$ 15,043	2,648	$ 2,285	100	$ 6,026	100	$ 2,576	$ 10,887	$ 2,918	$ 13,805	$ 14,334	100	$ 2,576	$ 2,576	$ 690	$ 3,267	$ 3,392			$ 32,769
	SPOIL4				135,878	3.1	$ -	17,983	$ 15,517	$ 15,517	$ 4,159	$ 19,676	$ 20,430	3,597	$ 3,103	136	$ 8,184	136	$ 3,499	$ 14,786	$ 3,963	$ 18,749	$ 19,468	136	$ 3,499	$ 3,499	$ 938	$ 4,437	$ 4,607			$ 44,505
	SPOIL5				325,093	7.5	$ -	43,025	$ 37,125	$ 37,125	$ 9,949	$ 47,074	$ 48,880	8,605	$ 7,425	325	$ 19,580	325	$ 8,371	$ 35,376	$ 9,481	$ 44,857	$ 46,578	325	$ 8,371	$ 8,371	$ 2,243	$ 10,615	$ 11,022			$ 106,480
	SPOIL6				32,046	0.7	$ -	4,241	$ 3,660	$ 3,660	$ 981	$ 4,640	$ 4,818	848	$ 732	32	$ 1,930	32	$ 825	$ 3,487	$ 935	$ 4,422	$ 4,591	32	$ 825	$ 825	$ 221	$ 1,046	$ 1,086			$ 10,496
	SPOIL7				86,019	2.0	$ -	11,384	$ 9,823	$ 9,823	$ 2,633	$ 12,456	$ 12,934	2,277	$ 1,965	86	$ 5,181	86	$ 2,215	$ 9,361	$ 2,509	$ 11,869	$ 12,324	86	$ 2,215	$ 2,215	$ 594	$ 2,809	$ 2,916			$ 28,174
	SPOIL8				91,334	2.1	$ -	12,088	$ 10,430	$ 10,430	$ 2,795	$ 13,225	$ 13,733	2,418	$ 2,086	91	$ 5,501	91	$ 2,352	$ 9,939	$ 2,664	$ 12,603	$ 13,086	91	$ 2,352	$ 2,352	$ 630	$ 2,982	$ 3,097			$ 29,915
	Spoil Pile & Borrow Areas Totals				**1,353,079**	**31**	**$ -**	**179,074**	**$ 154,518**	**$ 154,518**	**$ 41,411**	**$ 195,929**	**$ 203,445**	**35,815**	**$ 30,904**	**1,353**	**$ 81,496**	**1,353**	**$ 34,842**	**$ 147,241**	**$ 39,461**	**$ 186,702**	**$ 193,864**	**1,353**	**$ 34,842**	**$ 34,842**	**$ 9,338**	**$ 44,179**	**$ 45,874**			**$ 443,184**
Surface Disturbance Only Areas	SURF1				426,607	9.8								11,292	$ 9,743	427	$ 25,695	427	$ 10,985	$ 46,423	$ 12,441	$ 58,865	$ 61,123	427	$ 10,985	$ 10,985	$ 2,944	$ 13,929	$ 14,463			$ 75,586
	SURF4				87,120	2.0								2,306	$ 1,990	87	$ 5,247	87	$ 2,243	$ 9,480	$ 2,541	$ 12,021	$ 12,482	87	$ 2,243	$ 2,243	$ 601	$ 2,845	$ 2,954			$ 15,436
	SURF5				775,368	17.8								20,523	$ 17,709	775	$ 46,700	775	$ 19,966	$ 84,375	$ 22,613	$ 106,988	$ 111,092	775	$ 19,966	$ 19,966	$ 5,351	$ 25,317	$ 26,288			$ 137,380
	SURF6				324,443	7.4								8,588	$ 7,410	324	$ 19,541	324	$ 8,354	$ 35,306	$ 9,462	$ 44,768	$ 46,485	324	$ 8,354	$ 8,354	$ 2,239	$ 10,593	$ 11,000			$ 57,485
	SURF7				52,309	1.2								1,385	$ 1,195	52	$ 3,151	52	$ 1,347	$ 5,692	$ 1,526	$ 7,218	$ 7,495	52	$ 1,347	$ 1,347	$ 361	$ 1,708	$ 1,773			$ 9,268
	SURF8 HAUL & MAINT (includes Pond 2)				1,951,488	44.8								51,654	$ 44,571	1,951	$ 117,538	1,951	$ 50,251	$ 212,360	$ 56,912	$ 269,272	$ 279,602	1,951	$ 50,251	$ 50,251	$ 13,467	$ 63,718	$ 66,162			$ 345,764
	Surface Disturbance Only Areas Totals				**3,617,335**	**83.0**								**95,748**	**$ 82,618**	**3,617**	**$ 217,872**	**3,617**	**$ 93,146**	**$ 393,637**	**$ 105,495**	**$ 499,131**	**$ 518,278**	**3,617**	**$ 93,146**	**$ 93,146**	**$ 24,963**	**$ 118,110**	**$ 122,640**			**$ 640,919**
Facilities & Special Areas	DITCH 3				22,976	0.5								608	$ 525	23	$ 1,384	23	$ 592	$ 2,500	$ 670	$ 3,170	$ 3,292	23	$ 592	$ 592	$ 159	$ 750	$ 779			$ 4,071
	DITCH 2				84,063	1.9								2,225	$ 1,920	84	$ 5,063	84	$ 2,165	$ 9,148	$ 2,452	$ 11,599	$ 12,044	84	$ 2,165	$ 2,165	$ 580	$ 2,745	$ 2,850			$ 14,894
	DITCH 4				16,265	0.4								431	$ 371	16	$ 980	16	$ 419	$ 1,770	$ 474	$ 2,244	$ 2,330	16	$ 419	$ 419	$ 112	$ 531	$ 551			$ 2,882
	POND 3				180,228	4.1								4,770	$ 4,116	180	$ 10,855	180	$ 4,641	$ 19,612	$ 5,256	$ 24,868	$ 25,822	180	$ 4,641	$ 4,641	$ 1,244	$ 5,885	$ 6,110			$ 31,933
	POND 4 (includes ditch 1)				316,647	7.3								8,381	$ 7,232	317	$ 19,072	317	$ 8,154	$ 34,457	$ 9,235	$ 43,692	$ 45,368	317	$ 8,154	$ 8,154	$ 2,185	$ 10,339	$ 10,735			$ 56,104
	ROBINSON				234,731	5.4								6,213	$ 5,361	235	$ 14,138	235	$ 6,044	$ 25,543	$ 6,846	$ 32,389	$ 33,631	235	$ 6,044	$ 6,044	$ 1,620	$ 7,664	$ 7,958			$ 41,590
	LOADOUT (includes Ponds 1 & 1B)				1,336,537	30.7								35,377	$ 30,526	1,337	$ 80,500	1,337	$ 34,416	$ 145,441	$ 38,978	$ 184,420	$ 191,494	1,337	$ 34,416	$ 34,416	$ 9,223	$ 43,639	$ 45,313			$ 236,807
																																$ -
	Facilities Concrete Demolition																													$ 156,342	$ 162,340	$ 162,340
	Facilities Structure Demolition																													$ 638,103	$ 662,581	$ 662,581
	Facilities Earthwork																													$ 302,201	$ 313,794	$ 313,794
	Facilities & Special Areas Totals				**2,191,447**	**50.3**								**$ 58,006**	**$ 50,052**	**$ 2,191**	**$ 131,991**	**$ 2,191**	**$ 56,430**	**$ 238,472**	**$ 63,911**	**$ 302,383**	**$ 313,982**	**$ 2,191**	**$ 56,430**	**$ 56,430**	**$ 15,123**	**$ 71,553**	**$ 74,298**	**$ 1,096,646**	**$ 1,138,714**	**$ 1,526,994**
	Grand Totals	**564,287,688**	**20,899,544**	**23,141,020**	**14,896,228**	**342.0**	**$ 20,418,854**	**1,202,684**	**$ 1,037,764**	**$ 21,456,618**	**$ 5,750,374**	**$ 27,206,992**	**$ 28,250,679**	**394,290**	**$ 340,222**	**14,896**	**$ 897,200**	**14,896**	**$ 383,578**	**$ 1,621,000**	**$ 434,428**	**$ 2,055,428**	**$ 2,134,276**	**14,896**	**$ 383,578**	**$ 383,578**	**$ 102,799**	**$ 486,377**	**$ 505,035**	**$ 1,096,646**	**$ 1,138,714**	**$ 32,028,705**

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Equipment Cost Data

Equipment Description	Equipment Cost $/hr	Equip + Labor Cost $/hr
7 yd. Excavator (385C LME)	$78.26	$114.75
40 Ton (30 CY) Haul Truck (769C)	$48.26	$83.63
5,000 Gal. Water Truck	$30.09	$66.58
14 Grader	$46.35	$82.84
D10 Dozer	$88.29	$124.78
D7 Dozer	$49.81	$86.30

Sourced from Cost Mine 2015 Coal Cost Guide and 2015 Mine and Mill Equipment Costs

Labor Cost Data

Manpower Type	Base Wage ($/hr)	Labor Cost @ 36% burden ($/hr)
Heavy Equipment Operator	$26.83	$36.49
Truck Drivers	$26.01	$35.37

Labor Data from 2015 Coal Cost Guide Table LA-6 for Western Surface Coal Mines (Non-Union)

Unit Cost Data

Movement Type	Cost/BCY	Cost/LCY	Unit Swell Factor	
Rehandle with Truck/Shovel	$ 0.98	$ 0.88	10.7%	
Subsoil	$ 0.93	$ 0.86	7.2%	
Topsoil	$ 0.93	$ 0.86	7.2%	
		Cost/M.S.F		
Mulching		$ 60.23		RS Means Heavy Constr., 32 91 13.16 0350 (2015 Bare)
Seeding		$ 25.75		RS Means Heavy Constr., 32 92 19.14 3700 (2015 Bare)

Unit Costs calculated from Caterpillar Inc. FPC production model (v. 5.2.0.2) using 2015 cost data and updated GEM swell factors

Indirect Cost Factor
26.8%

Escalation Factor 2015 to 2017
1.038361

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FPC_2015_November_Truck-Shovel_Backfill

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1.25
Haul (min)	1.2
Dump and Maneuver (min)	1.2
Return (min)	1.37
Potential Cycle Time (min)	5.02
Wait on Slow Hauler (min)	0
Wait to Load (min)	1.23
Additional Bunching (min)	0.42
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	6.67
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)	2,498
Tons per Pass	9.06
System Passes per Hauler	3
Hauler Payload (Tons)	27.17
% of Max GVW	103.52
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

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	691.02	BCY
Total Production	20,651,261	BCY
Sched Hrs Required	29,885.19	
Total Cost ($)	20,775,049	
Cost per BCY ($)	1.006	
Production per Shift	1,382,040	BCY
Shifts Required	14.94	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	932	
2	5	769C	1,161	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	9	27.17	1,222.46
Fleet Tons per Operating Hour					1,222.46
x 90.00% Operator Efficiency =					1,100.21
x 87.87% Fleet Availability =					966.74

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		124.78	26,897	3,356,167	0.163
Haulers:	5	769C	C202	95.18	131,298	0	0.605
Totals	5				131,298	0	0.605
Support	1	5,000 Gal. Water Truck		66.58	19,695	1,311,271	0.063
	1	14 Grader		82.84	13,130	1,087,671	0.053
	1	D7 Dozer		86.3	22,321	1,926,271	0.093
Totals	3				55,145	4,325,213	0.209
Fleet Totals	9				213,340	7,681,380	0.977

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FPC_2015_November_Truck-Shovel_Subsoil

Cycle Times

Hauler Cycle Time

	5 769C	
Load with Exchange (min)		1.25
Haul (min)		1.18
Dump and Maneuver (min)		1.2
Return (min)		1.37
Potential Cycle Time (min)		5
Wait on Slow Hauler (min)		0
Wait to Load (min)		1.25
Additional Bunching (min)		0.4
Wait to Dump (min)		0
TMPH Wait (min)		
Total Cycle Time (min)		6.65
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)		2,143
Tons per Pass		7.77
System Passes per Hauler		3
Hauler Payload (Tons)		23.31
% of Max GVW		97.21
Hauler Volume (LCY)		21.75
% of Body Fill		70
Loader Cycle Time (min)		0.25
First Bucket Dump (min)		0.05
Hauler Exchange Time (min)		0.7

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		720.28 BCY
Total Production		1,190,524 BCY
Sched Hrs Required		1,652.87
Total Cost ($)		1,134,089
Cost per BCY ($)		0.953
Production per Shift		1,440,558 BCY
Shifts Required		0.83

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
	1	1 385C LME	969	
	2	5 769C	1,212	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload In Tons	Tons per Hour
	1	5 769C	9.02	23.31	1,051.53
Fleet Tons per Operating Hour					1,051.53
x 90.00% Operator Efficiency =					946.37
x 87.87% Fleet Availability =					831.56

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders		1 385C LME		114.75	1,488	170,700	0.143
Haulers:		5 769C	C202	95.18	7,262	0	0.581
Totals		5			7,262	0	0.581
Support		1 5,000 Gal. Water Truck		66.58	1,089	72,523	0.061
		1 14 Grader		82.84	726	60,156	0.051
		1 D7 Dozer		86.3	1,234	106,537	0.089
Totals		3			3,050	239,215	0.201
Fleet Totals		9			11,799	409,915	0.925

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FPC_2015_November_Truck-Shovel_Topsoil

Cycle Times

Hauler Cycle Time

	5 769C	
Load with Exchange (min)		1.25
Haul (min)		1.18
Dump and Maneuver (min)		1.2
Return (min)		1.37
Potential Cycle Time (min)		5
Wait on Slow Hauler (min)		0
Wait to Load (min)		1.25
Additional Bunching (min)		0.4
Wait to Dump (min)		0
TMPH Wait (min)		
Total Cycle Time (min)		6.65
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)		2,143
Tons per Pass		7.77
System Passes per Hauler		3
Hauler Payload (Tons)		23.31
% of Max GVW		97.21
Hauler Volume (LCY)		21.75
% of Body Fill		70
Loader Cycle Time (min)		0.25
First Bucket Dump (min)		0.05
Hauler Exchange Time (min)		0.7

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		720.28 BCY
Total Production		336,238 BCY
Sched Hrs Required		466.82
Total Cost ($)		320,299
Cost per BCY ($)		0.953
Production per Shift		1,440,558 BCY
Shifts Required		0.23

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
	1	1 385C LME	969	
	2	5 769C	1,212	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
	1	5 769C	9.02	23.31	1,051.53
Fleet Tons per Operating Hour					1,051.53
x 90.00% Operator Efficiency =					946.37
x 87.87% Fleet Availability =					831.56

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders		1 385C LME		114.75	420	48,210	0.143
Haulers:		5 769C	C202	95.18	2,051	0	0.581
Totals		5			2,051	0	0.581
Support		1 5,000 Gal. Water Truck		66.58	308	20,482	0.061
		1 14 Grader		82.84	205	16,990	0.051
		1 D7 Dozer		86.3	349	30,089	0.089
Totals		3			861	67,561	0.201
Fleet Totals		9			3,332	115,772	0.925

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BONDING

Introduction

The purpose of this appendix is to provide a reclamation bond estimate for the North Private Lease permit areas as required by R645-301-830.140.

This estimate includes liability calculations for:

- All areas of surface disturbance requiring Phase 2 and Phase 3 reclamation
- All facilities and special areas requiring demolition, demobilization, etc.
- All excavated pits requiring Phase 1 through Phase 3 reclamation
- Surface areas of the long-term excess spoil structure that require Phase 1 through Phase 3 reclamation

This appendix includes the following details:

- Bond Estimate Summary and Release Application Plan
- Mine Facilities Line Item Reclamation Estimate
- Spoil Pile, Surface Disturbance Only, and Facility and Special Area surface reclamation Estimate
- Excavated Areas Reclamation Estimate
- Production Model and Cost Model Assumptions
- Pit Backfill - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Subsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)
- Topsoil - Truck/Shovel, Fleet Production and Cost Analysis (FPC)

All material volume and surface area calculations were performed utilizing Carlson Civil and Mining software.

Cost data sources include:

- RSMeans Heavy Cost Construction 2015
- RSMeans Construction Cost Data 2015
- CostMine Coal Cost Guide 2015
- CostMine Mine and Mill Equipment Cost Data, 2015

These sources are applied where appropriate in each of the cost estimates. Each line item in the estimate lists specifies which source is utilized for cost data.

Summary

The following is a brief summary of the information and methods used to calculate the costs for each category. The overall cost estimates below include total escalated costs applicable for all three phases of reclamation (where appropriate):

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Bond Addition and Release Application Plan

This estimate considers the permit area on an incremental basis and applies successive bond additions and bond release applications as stepwise additions and subtractions from the ultimate disturbance liability. Each bond addition and release application potentially contain a combination of multiple pit & surface areas under different phases of disturbance or reclamation. These area polygons can be viewed on Drawing 5-77. The table below details this schedule:

	Bond Liability (start)	Bond Release (-)	Additional Bond for Following Increment (+)	Bond Liability (end)	Bond Net Change (+/-)
Carryover from CHM	$11,248,253	$0	$899,691	$12,147,944	$899,691 +
Pre-Year 1	$12,147,944	$4,031,105	$3,547,971	$11,664,810	$483,134 -
Year 1	$11,664,810	$4,611,306	$6,303,284	$13,356,788	$1,691,978 +
Year 2	$13,356,788	$4,752,379	$5,495,218	$14,099,627	$742,839 +
Year 3	$14,099,627	$4,133,663	$3,607,176	$13,573,140	$526,487 -
Year 4	$13,573,140	$5,655,768	$8,072,751	$15,990,123	$2,416,983 +
Year 5	$15,990,123	$1,501,290	$0	$14,488,833	$1,501,290 -
Year 6	$14,488,833	$3,606,248	$0	$10,882,585	$3,606,248-
Year 7	$10,882,585	$3,897,895	$0	$6,984,690	$3,897,895 -
Year 8	$6,984,690	$1,046,230	$0	$5,938,460	$1,046,230 -
Year 9	$5,938,460	$357,189	$0	$5,581,272	$357,189 -
Years 10-20	$5,581,272	$1,427,940	$0	$4,152,986	$1,428,286 -

Due to bond requirements and the scarcity of open space with relation to the soil and spoil stockpiles in Permit Area 1, development of the mining pits must follow a rigid sequence. As depicted in the following tables, the first increment of bonding in Permit Area 1 covers all of Area 1's Phase 2, Phase 3, and Facilities costs while only allowing Phase 1 (excavation) cost for Pit 1. Therefore, as shown in Drawing 5-48, the first stage of mining activity involves construction of the South Haul Road, Ponds 5 and 6, Ditches 5 through 11, and the temporary topsoil, subsoil and spoil stockpiles. To construct each of these facilities, ground cover, topsoil, and subsoil must be removed and stockpiled according to the plan and methods set out in Chapter 2 section 231 and section 523 of chapter 5 and also shown on Drawing 2-4. Once these facilities have been constructed, excavation of Pit 1 will commence. The second bond increment will then allow continued excavation of Pits 2-6 to the Permit Area 1 boundary. Although the topsoil stockpile shown in Drawing 5-48 rests above a portion of the expected excavation limit of Pit 11 (shown on Drawing 5-57), this stockpile is planned to be placed directly on top of native topsoil so no disturbance of the surface above Pit 11 is expected. Therefore, no bond costs for Pit 11 are projected until the third bond increment. Following excavation of Pit 6 to the Permit Area 1 boundary, further disturbance and excavation requires the approval of Permit Areas 2 and 3 which currently remain under review.

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Mine Facilities
This section includes line items for the demolition, disposal, earthwork and specialized land reclamation costs for the entire facilities area, including ponds and ditches. The calculations for this section are based on the facilities and pond drawings in the current version of the Mining and Reclamation Plan. These drawings are all provided in Chapter 5 as Drawings 5-47 through 5-51B, and 5-58 through 5-77. The RSMeans Cost data is applied to this estimate. The overall escalated cost estimate for the facilities reclamation is approximately $1,096,195. This amount is separated into the years where the respective areas are disturbed.

Surface Disturbance Only Areas
These reclamation areas include areas that only require surface (Phase 2 and Phase3) reclamation, and include all ditches, ponds, roads, and other facilities that fall outside of the open pit boundaries shown on Drawing 5-77. The overall cost estimate for this category is $358,676. This amount is separated into the years where the respective areas are disturbed.

Excavated Areas
As shown on Drawings 5-74 through 5-77 and described in Chapter 5, Chapter 8, and the table above, the North Private Lease permit area will progress through eleven incremental stages of Bonding. Of these, excavation will occur in the first six, with reclamation activities and bond releases occurring thereafter. The total liability for all excavated areas is $26,471,221.

Production Model and Cost Assumptions
Caterpillar's Fleet Production and Cost analysis software (v. 5.2.0.2) was utilized to establish a baseline cost model with inputs from the appropriate cost guides. This model provided unit costs on a $/BCY and $/LCY basis.

The following documentation provides the details for each section of this bond estimate.

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Stage of Reclamation / Release Application	Pits/Areas Included in Bond	Phase 1 Bond Amount	Phase 2 Bond Amount	Phase 3 Bond Amount	Facilities Bond Amount	Total Bond Amount	Posted Bond Req'd	Addt'l Bond to Post / (-) for Bond Release	Current Bond Amount Held
Beginning Bond Liability (covering Coal Hollow Mine - Portals still open - Following Releases 15_1 & 15_2)						**$ 11,248,253**			**$ 12,750,000**
***All amounts escalated to 2017**									
Prior to Year 1: Construction and Startup Bond to Post									
All Phases & Area 1 Facilities	SURF 1		$ 78,171	$ 18,498		$ 96,669			
All Phases & Area 1 Facilities	Facilities Concrete Demolition				$ -	$ -			
All Phases & Area 1 Facilities	Facilities Structure Demolition				$ 43,328	$ 43,328			
All Phases & Area 1 Facilities	Facilities Earthwork				$ 188,781	$ 188,781			
All Phases	N Pit 01	$ 350,918	$ 18,267	$ 4,323		$ 373,509			
Phase 2&3 (Topsoil Removal & Site Preparation)	N Pit 02		$ 24,979	$ 5,911		$ 30,890			
Phase 2&3 (Topsoil Removal & Site Preparation)	N Pit 03		$ 33,224	$ 7,862		$ 41,086			
Phase 2&3 (Topsoil Removal & Site Preparation)	N Pit 04		$ 35,194	$ 8,328		$ 43,522			
Phase 2&3 (Topsoil Removal & Site Preparation)	N Pit 05		$ 36,004	$ 8,520		$ 44,524			
Phase 2&3 (Topsoil Removal & Site Preparation)	N Pit 06		$ 30,230	$ 7,153		$ 37,383			
	Subtotal	**$ 350,918**	**$ 256,070**	**$ 60,594**	**$ 232,109**	**$ 899,691**	**$ 12,147,944**	**$ (602,056)**	
Coal Hollow Release 16_1 Submission						**$ 4,031,105**			
Begin Year 1 Bond to Post									
Phase 1	N Pit 02	$ 741,003				$ 741,003			
Phase 1	N Pit 03	$ 794,411				$ 794,411			
Phase 1	N Pit 04	$ 639,771				$ 639,771			
Phase 1	N Pit 05	$ 630,927				$ 630,927			
Phase 1	N Pit 06	$ 741,858				$ 741,858			
	Subtotal	**$ 3,547,971**	**$ -**	**$ -**	**$ -**	**$ 3,547,971**	**$ 11,664,810**	**$ (1,085,190)**	**$ 483,134**
End Year 1 Release Submission + CHM Release 16_2						**$ 4,611,306**			
Begin Year 2 Bond to Post									
All Phases & Area 2 Facilities	SURF 2		$ 91,831	$ 21,730		$ 113,561			
All Phases & Area 2 Facilities	Facilities Concrete Demolition				$ -	$ -			
All Phases & Area 2 Facilities	Facilities Structure Demolition				$ 15,483	$ 15,483			
All Phases & Area 2 Facilities	Facilities Earthwork				$ 721,706	$ 721,706			
All Phases	N Pit 07	$ 724,261	$ 28,235	$ 6,681		$ 759,177			
All Phases	N Pit 08	$ 606,375	$ 30,003	$ 7,100		$ 643,478			
All Phases	N Pit 09	$ 610,267	$ 37,021	$ 8,760		$ 656,049			
All Phases	N Pit 10	$ 459,730	$ 55,198	$ 13,062		$ 527,989			
All Phases	N Pit 11	$ 680,586	$ 32,752	$ 7,750		$ 721,088			
All Phases	N Pit 12	$ 894,937	$ 36,846	$ 8,719		$ 940,502			
All Phases	N Pit 13	$ 1,159,035	$ 36,565	$ 8,652		$ 1,204,252			
	Subtotal	**$ 5,135,191**	**$ 348,451**	**$ 82,454**	**$ 737,189**	**$ 6,303,284**	**$ 13,356,788**	**$ 1,691,978**	
End Year 2 Release Submission + CH Release 17_1						**$ 4,752,379**			
Begin Year 3 Bond to Post									
All Phases	N Pit 14	$ 1,399,105	$ 44,428	$ 10,513		$ 1,454,045			
All Phases	N Pit 15	$ 1,457,543	$ 43,345	$ 10,257		$ 1,511,145			
All Phases	N Pit 16	$ 1,358,786	$ 48,689	$ 11,521		$ 1,418,996			
All Phases	N Pit 17	$ 1,049,325	$ 49,899	$ 11,808		$ 1,111,031			
	Subtotal	**$ 5,264,758**	**$ 186,361**	**$ 44,099**		**$ 5,495,218**	**$ 14,099,627**	**$ 742,839**	
End Year 3 Release Submission						**$ 4,133,663**			
Begin Year 4 Bond to Post									
All Phases	N Pit 18	$ 948,532	$ 56,589	$ 13,391		$ 1,018,511			
All Phases	N Pit 19	$ 841,582	$ 46,817	$ 11,078		$ 899,478			
All Phases	N Pit 20	$ 768,322	$ 46,289	$ 10,953		$ 825,564			
All Phases	N Pit 21	$ 732,968	$ 105,653	$ 25,001		$ 863,622			
	Subtotal	**$ 3,291,404**	**$ 255,348**	**$ 60,423**		**$ 3,607,176**	**$ 13,573,140**	**$ (526,487)**	
End Year 4 Release Submission						**$ 5,655,768**			
Begin Year 5 Bond to Post									
All Phases & Area 3 Facilities	SURF 3		$ 69,277	$ 16,393		$ 85,670			
All Phases & Area 3 Facilities	SURF 4		$ 50,763	$ 12,012		$ 62,775			
All Phases & Area 3 Facilities	Facilities Concrete Demolition				$ 24,736	$ 24,736			
All Phases & Area 3 Facilities	Facilities Structure Demolition				$ 32,422	$ 32,422			
All Phases & Area 3 Facilities	Facilities Earthwork				$ 69,739	$ 69,739			
All Phases	N HWT1	$ 3,606,248	$ 72,489	$ 17,153		$ 3,695,889			
All Phases	N HWT2	$ 3,897,895	$ 164,659	$ 38,963		$ 4,101,518			
	Subtotal	**$ 7,504,143**	**$ 357,189**	**$ 84,522**	**$ 126,897**	**$ 8,072,751**	**$ 15,990,123**	**$ 2,416,983**	
End Year 5 Release Submission						**$ 1,501,290**	**$ 14,488,833**	**$ (1,501,290)**	
End Year 6 Release Submission						**$ 3,606,248**	**$ 10,882,585**	**$ (3,606,248)**	
End Year 7 Release Submission						**$ 3,897,895**	**$ 6,984,690**	**$ (3,897,895)**	
End Year 8 Release Submission						**$ 1,046,230**	**$ 5,938,460**	**$ (1,046,230)**	
End Year 9 Release Submission						**$ 357,189**	**$ 5,581,272**	**$ (357,189)**	
Year 10-20 Release Submissions						**$ 1,428,286**	**$ 4,152,986**	**$ (1,428,286)**	
	Check	$ 25,094,386	$ 1,403,418	$ 332,091	$ 1,096,195				

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Stage of Reclamation / Release Application	Pits Included in Release Application	Phase 1 Bond Amount	Phase 1 Surface Area (acres)	Phase 2 Bond Amount	Phase 2 Surface Area (acres)	Phase 3 Bond Amount	Phase 3 Surface Area (acres)	Facilities Bond Amount	Total Bond Amount
Beginning Worst Case Scenario Bond Amount (all pits excavated)		**$ 25,094,386**	**178.4**	**$ 1,403,418**	**224.9**	**$ 332,091**	**224.9**	**$ 1,096,195**	**$ 27,926,091**
***All amounts escalated to 2017**									
Coal Hollow Release 16_1 Submission									
	Phase 1 Pits 1-B, 9-B, HWT 1-B & 2-A & 3-A								**$ 4,031,105**
End Year 1 Release Submission									
	Phase 1 N Pit 01	$ 350,918	2.9						$ 350,918
	Phase 1 N Pit 02	$ 741,003	4.0						$ 741,003
	Phase 1 N Pit 03	$ 794,411	5.3						$ 794,411
	Phase 1 N Pit 04	$ 639,771	5.6						$ 639,771
	Subtotal	**$ 2,526,104**	**17.9**	**$ -**		**$ -**			**$ 2,526,104**
End Year 2 Release Submission									
	Phase 1 N Pit 05	$ 630,927	5.8						$ 630,927
	Phase 1 N Pit 06	$ 741,858	4.8						$ 741,858
	Phase 1 N Pit 07	$ 724,261	4.5						$ 724,261
	Phase 1 N Pit 08	$ 606,375	4.8						$ 606,375
	Phase 1 N Pit 09	$ 610,267	5.9						$ 610,267
	Phase 1 N Pit 10	$ 459,730	8.8						$ 459,730
	Subtotal	**$ 3,773,419**	**34.7**	**$ -**		**$ -**			**$ 3,773,419**
End Year 3 Release Submission									
	Phase 1 N Pit 11	$ 680,586	5.2						$ 680,586
	Phase 1 N Pit 12	$ 894,937	5.9						$ 894,937
	Phase 1 N Pit 13	$ 1,159,035	5.9						$ 1,159,035
	Phase 1 N Pit 14	$ 1,399,105	7.1						$ 1,399,105
	Subtotal	**$ 4,133,663**	**24.1**	**$ -**		**$ -**			**$ 4,133,663**
End Year 4 Release Submission									
	Phase 1 N Pit 15	$ 1,457,543	6.9						$ 1,457,543
	Phase 1 N Pit 16	$ 1,358,786	7.8						$ 1,358,786
	Phase 1 N Pit 17	$ 1,049,325	8.0						$ 1,049,325
	Phase 1 N Pit 18	$ 948,532	9.1						$ 948,532
	Phase 1 N Pit 19	$ 841,582	7.5						$ 841,582
	Subtotal	**$ 5,655,768**	**39.3**	**$ -**		**$ -**			**$ 5,655,768**
End Year 5 Release Submission									
	Phase 1 N Pit 20	$ 768,322	7.4						$ 768,322
	Phase 1 N Pit 21	$ 732,968	16.9						$ 732,968
	Subtotal	**$ 1,501,290**	**24.3**	**$ -**		**$ -**			**$ 1,501,290**
End Year 6 Release Submission									
	Phase 1 N HWT1	$ 3,606,248	11.6						$ 3,606,248
	Subtotal	**$ 3,606,248**	**11.6**	**$ -**		**$ -**			**$ 3,606,248**
End Year 7 Release Submission									
	Phase 1 N HWT2	$ 3,897,895	26.4						$ 3,897,895
	Subtotal	**$ 3,897,895**	**26.4**	**$ -**		**$ -**			**$ 3,897,895**
End Year 8 Release Submission									
	Phase 2 N Pit 01			$ 18,267	2.9				$ 18,267
	Phase 2 N Pit 02			$ 24,979	4.0				$ 24,979
	Phase 2 N Pit 03			$ 33,224	5.3				$ 33,224
	Phase 2 N Pit 04			$ 35,194	5.6				$ 35,194
	Phase 2 N Pit 05			$ 36,004	5.8				$ 36,004
	Phase 2 N Pit 06			$ 30,230	4.8				$ 30,230
	Phase 2 N Pit 07			$ 28,235	4.5				$ 28,235
	Phase 2 N Pit 08			$ 30,003	4.8				$ 30,003
	Phase 2 N Pit 09			$ 37,021	5.9				$ 37,021
	Phase 2 N Pit 10			$ 55,198	8.8				$ 55,198
	Phase 2 N Pit 11			$ 32,752	5.2				$ 32,752
	Phase 2 N Pit 12			$ 36,846	5.9				$ 36,846
	Phase 2 N Pit 13			$ 36,565	5.9				$ 36,565
	Phase 2 N Pit 14			$ 44,428	7.1				$ 44,428
	Phase 2 N Pit 15			$ 43,345	6.9				$ 43,345
	Phase 2 N Pit 16			$ 48,689	7.8				$ 48,689
	Phase 2 N Pit 17			$ 49,899	8.0				$ 49,899
	Phase 2 N Pit 18			$ 56,589	9.1				$ 56,589
	Phase 2 N Pit 19			$ 46,817	7.5				$ 46,817
	Phase 2 N Pit 20			$ 46,289	7.4				$ 46,289
	Phase 2 N Pit 21			$ 105,653	16.9				$ 105,653
	Phase 2 SURF 1			$ 78,171	12.5				$ 78,171
	Phase 2 SURF 2			$ 91,831	14.7				$ 91,831
	Subtotal	**$ -**		**$ 1,046,230**	**167.6**	**$ -**		**$ -**	**$ 1,046,230**
End Year 9 Release Submission									
	Phase 2 N HWT1			$ 72,489	11.6				$ 72,489
	Phase 2 N HWT2			$ 164,659	26.4				$ 164,659
	Phase 2 SURF 3			$ 69,277	11.1				$ 69,277
	Phase 2 SURF 4			$ 50,763	8.1				$ 50,763
		$ -		**$ 357,189**	**57.2**	**$ -**		**$ -**	**$ 357,189**
Year 10-20 Release Submissions									
	Phase 3 N Pit 01					$ 4,323	2.9		$ 4,323
	Phase 3 N Pit 02					$ 5,911	4.0		$ 5,911
	Phase 3 N Pit 03					$ 7,862	5.3		$ 7,862
	Phase 3 N Pit 04					$ 8,328	5.6		$ 8,328
	Phase 3 N Pit 05					$ 8,520	5.8		$ 8,520
	Phase 3 N Pit 06					$ 7,153	4.8		$ 7,153
	Phase 3 N Pit 07					$ 6,681	4.5		$ 6,681
	Phase 3 N Pit 08					$ 7,100	4.8		$ 7,100
	Phase 3 N Pit 09					$ 8,760	5.9		$ 8,760
	Phase 3 N Pit 10					$ 13,062	8.8		$ 13,062
	Phase 3 N Pit 11					$ 7,750	5.2		$ 7,750
	Phase 3 N Pit 12					$ 8,719	5.9		$ 8,719
	Phase 3 N Pit 13					$ 8,652	5.9		$ 8,652
	Phase 3 N Pit 14					$ 10,513	7.1		$ 10,513
	Phase 3 N Pit 15					$ 10,257	6.9		$ 10,257
	Phase 3 N Pit 16					$ 11,521	7.8		$ 11,521
	Phase 3 N Pit 17					$ 11,808	8.0		$ 11,808
	Phase 3 N Pit 18					$ 13,391	9.1		$ 13,391
	Phase 3 N Pit 19					$ 11,078	7.5		$ 11,078
	Phase 3 N Pit 20					$ 10,953	7.4		$ 10,953
	Phase 3 N Pit 21					$ 25,001	16.9		$ 25,001
	Phase 3 N HWT1					$ 17,153	11.6		$ 17,153
	Phase 3 N HWT2					$ 38,963	26.4		$ 38,963
	Phase 3 SURF 1					$ 18,498	12.5		$ 18,498
	Phase 3 SURF 2					$ 21,730	14.7		$ 21,730
	Phase 3 SURF 3					$ 16,393	11.1		$ 16,393
	Phase 3 SURF 4					$ 12,012	8.1		$ 12,012
	Phase 3 SURF CROSSING					$ -			$ -
	Phase 3 Facilities Concrete Demolition							$ 24,736	$ 24,736
	Phase 3 Facilities Structure Demolition							$ 91,233	$ 91,233
	Phase 3 Facilities Earthwork							$ 980,226	$ 980,226
	Subtotal	**$ -**		**$ -**		**$ 332,091**	**224.9**	**$ 1,096,195**	**$ 1,428,286**

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Bond Cost Estimate

	Pit	BCF	BCY	Backfill LCY	Area (sf)	Area (acres)	Backfill Cost	Subsoil Quantity (LCY)	Subsoil Cost	Phase 1 Cost: Total Direct Cost	Indirect Cost	Total Phase 1 Cost	Total Phase 1 Cost - Escalated	Topsoil Quantity (LCY)	Topsoil Cost	Mulching Quantity (M.S.F)	Mulching Cost	Seeding Quantity (M.S.F)	Phase 2 Cost: Seeding Cost	Total Direct Cost	Indirect Cost	Total Phase 2 Cost	Total Phase 2 Cost - Escalated	Re-Seed Quantity	Re-Seed Cost	Phase 3 Cost: Total Direct Cost	Indirect Cost	Total Phase 3 Cost	Total Phase 3 Cost - Escalated	Facilities Cost: Area 1 Facilities Cost	Area 1 Facilities Cost - Escalated	Area 2 Facilities Cost	Area 2 Facilities Cost-Escalated	Area 3 Facilities Cost	Area 3 Facilities Cost - Escalated	Total Facilities Cost	Total Facilities Cost - Escalated	Total: Total Bonded Amount - Escalated
North Area																																						
Excavated Areas	N Pit 01			285,556	127,498.2	2.9	$ 251,965	16,874	$ 14,560	$ 266,525	$ 71,429	$ 337,954	$ 350,918	3,375	$ 2,912	127	$ 7,679	127	$ 3,283	$ 13,874	$ 3,718	$ 17,593	$ 18,267	127	$ 3,283	$ 3,283	$ 880	$ 4,163	$ 4,323									$ 373,509
	N Pit 02			615,264	174,342.8	4.0	$ 542,889	23,074	$ 19,910	$ 562,798	$ 150,830	$ 713,628	$ 741,009	4,615	$ 3,982	174	$ 10,501	174	$ 4,489	$ 18,972	$ 5,084	$ 24,056	$ 24,979	174	$ 4,489	$ 4,489	$ 1,203	$ 5,692	$ 5,911									$ 771,894
	N Pit 03			653,788	231,889.1	5.3	$ 576,880	30,690	$ 26,481	$ 603,362	$ 161,701	$ 765,063	$ 794,411	6,138	$ 5,296	232	$ 13,967	232	$ 5,971	$ 25,234	$ 6,763	$ 31,997	$ 33,224	232	$ 5,971	$ 5,971	$ 1,600	$ 7,571	$ 7,862									$ 835,497
	N Pit 04			518,901	245,636.1	5.6	$ 457,860	32,509	$ 28,051	$ 485,911	$ 130,224	$ 616,136	$ 639,771	6,502	$ 5,610	246	$ 14,795	246	$ 6,325	$ 26,730	$ 7,164	$ 33,894	$ 35,194	246	$ 6,325	$ 6,325	$ 1,695	$ 8,020	$ 8,328									$ 683,293
	N Pit 05			510,556	251,290.3	5.8	$ 450,498	33,257	$ 28,697	$ 479,194	$ 128,424	$ 607,619	$ 630,927	6,651	$ 5,739	251	$ 15,135	251	$ 6,471	$ 27,345	$ 7,329	$ 34,674	$ 36,004	251	$ 6,471	$ 6,471	$ 1,734	$ 8,205	$ 8,520									$ 675,451
	N Pit 06			611,257	210,990.1	4.8	$ 539,353	27,924	$ 24,095	$ 563,447	$ 151,004	$ 714,451	$ 741,858	5,585	$ 4,819	211	$ 12,708	211	$ 5,433	$ 22,960	$ 6,153	$ 29,113	$ 30,230	211	$ 5,433	$ 5,433	$ 1,456	$ 6,889	$ 7,153									$ 779,241
	N Pit 07			597,932	197,063.8	4.5	$ 527,578	26,081	$ 22,504	$ 550,082	$ 147,622	$ 697,504	$ 724,261	5,216	$ 4,501	197	$ 11,869	197	$ 5,074	$ 21,444	$ 5,747	$ 27,191	$ 28,235	197	$ 5,074	$ 5,074	$ 1,360	$ 6,434	$ 6,681									$ 759,177
	N Pit 08			494,843	209,407.1	4.8	$ 436,633	27,714	$ 23,914	$ 460,547	$ 123,427	$ 583,973	$ 606,375	5,543	$ 4,783	209	$ 12,613	209	$ 5,392	$ 22,788	$ 6,107	$ 28,895	$ 30,003	209	$ 5,392	$ 5,392	$ 1,445	$ 6,837	$ 7,100									$ 643,478
	N Pit 09			491,854	258,391.9	5.9	$ 433,995	34,197	$ 29,508	$ 463,503	$ 124,219	$ 587,722	$ 610,267	6,839	$ 5,902	258	$ 15,563	258	$ 6,654	$ 28,118	$ 7,536	$ 35,654	$ 37,021	258	$ 6,654	$ 6,654	$ 1,783	$ 8,437	$ 8,760									$ 656,049
	N Pit 10			345,858	385,255.3	8.8	$ 305,173	50,987	$ 43,995	$ 349,169	$ 93,577	$ 442,746	$ 459,730	10,197	$ 8,799	385	$ 23,204	385	$ 9,920	$ 41,923	$ 11,235	$ 53,159	$ 55,198	385	$ 9,920	$ 9,920	$ 2,659	$ 12,579	$ 13,062									$ 527,989
	N Pit 11			556,238	228,593.2	5.2	$ 490,806	30,253	$ 26,105	$ 516,911	$ 138,532	$ 655,443	$ 680,586	6,051	$ 5,221	229	$ 13,768	229	$ 5,886	$ 24,875	$ 6,667	$ 31,542	$ 32,752	229	$ 5,886	$ 5,886	$ 1,578	$ 7,464	$ 7,750									$ 721,088
	N Pit 12			737,045	257,167.6	5.9	$ 650,344	34,035	$ 29,368	$ 679,712	$ 182,163	$ 861,874	$ 894,937	6,807	$ 5,874	257	$ 15,489	257	$ 6,622	$ 27,985	$ 7,500	$ 35,485	$ 36,846	257	$ 6,622	$ 6,622	$ 1,775	$ 8,397	$ 8,719									$ 940,502
	N Pit 13			964,625	255,204.9	5.9	$ 851,153	33,775	$ 29,144	$ 880,297	$ 235,919	$ 1,116,216	$ 1,159,035	6,755	$ 5,829	255	$ 15,371	255	$ 6,572	$ 27,771	$ 7,443	$ 35,214	$ 36,565	255	$ 6,572	$ 6,572	$ 1,761	$ 8,333	$ 8,652									$ 1,204,252
	N Pit 14			1,164,166	310,084.3	7.1	$ 1,027,220	41,038	$ 35,411	$ 1,062,631	$ 284,785	$ 1,347,417	$ 1,399,105	8,208	$ 7,082	310	$ 18,676	310	$ 7,985	$ 33,743	$ 9,043	$ 42,786	$ 44,428	310	$ 7,985	$ 7,985	$ 2,140	$ 10,125	$ 10,513									$ 1,454,045
	N Pit 15			1,215,444	302,530.8	6.9	$ 1,072,467	40,039	$ 34,548	$ 1,107,015	$ 296,680	$ 1,403,695	$ 1,457,543	8,008	$ 6,910	303	$ 18,221	303	$ 7,790	$ 32,921	$ 8,823	$ 41,744	$ 43,345	303	$ 7,790	$ 7,790	$ 2,088	$ 9,878	$ 10,257									$ 1,511,145
	N Pit 16			1,125,612	339,825.1	7.8	$ 993,202	44,974	$ 38,807	$ 1,032,009	$ 276,578	$ 1,308,588	$ 1,358,786	8,995	$ 7,761	340	$ 20,468	340	$ 8,750	$ 36,980	$ 9,911	$ 46,890	$ 48,689	340	$ 8,750	$ 8,750	$ 2,345	$ 11,096	$ 11,521									$ 1,418,996
	N Pit 17			858,146	348,270.0	8.0	$ 757,199	46,092	$ 39,772	$ 796,971	$ 213,588	$ 1,010,559	$ 1,048,325	9,218	$ 7,954	348	$ 20,976	348	$ 8,968	$ 37,899	$ 10,157	$ 48,055	$ 49,899	348	$ 8,968	$ 8,968	$ 2,403	$ 11,171	$ 11,808									$ 1,111,031
	N Pit 18			765,344	394,965.3	9.1	$ 675,313	52,272	$ 45,104	$ 720,417	$ 193,072	$ 913,489	$ 948,532	10,454	$ 9,021	395	$ 23,789	395	$ 10,170	$ 42,980	$ 11,519	$ 54,499	$ 56,589	395	$ 10,170	$ 10,170	$ 2,726	$ 12,896	$ 13,391									$ 1,018,511
	N Pit 19			682,113	326,762.4	7.5	$ 601,873	43,246	$ 37,315	$ 639,189	$ 171,303	$ 810,491	$ 841,582	8,649	$ 7,463	327	$ 19,681	327	$ 8,414	$ 35,558	$ 9,530	$ 45,088	$ 46,817	327	$ 8,414	$ 8,414	$ 2,255	$ 10,669	$ 11,078									$ 899,478
	N Pit 20			619,530	323,072.3	7.4	$ 546,653	42,757	$ 36,894	$ 583,547	$ 156,191	$ 739,937	$ 768,322	8,551	$ 7,379	323	$ 19,459	323	$ 8,319	$ 35,157	$ 9,422	$ 44,579	$ 46,289	323	$ 8,319	$ 8,319	$ 2,230	$ 10,549	$ 10,953									$ 825,564
	N Pit 21			535,475	737,409.2	16.9	$ 472,485	97,593	$ 84,210	$ 556,695	$ 149,194	$ 705,890	$ 732,968	19,519	$ 16,842	737	$ 44,414	737	$ 18,988	$ 80,245	$ 21,506	$ 101,750	$ 105,653	737	$ 18,988	$ 18,988	$ 5,089	$ 24,077	$ 25,001									$ 863,622
	N HWT1			3,038,645	505,935.4	11.6	$ 2,681,198	66,958	$ 57,777	$ 2,738,974	$ 734,045	$ 3,473,019	$ 3,606,248	13,392	$ 11,555	506	$ 30,472	506	$ 13,028	$ 55,056	$ 14,755	$ 69,811	$ 72,489	506	$ 13,028	$ 13,028	$ 3,491	$ 16,519	$ 17,153									$ 3,695,889
	N HWT2			3,206,426	1,149,244.4	26.4	$ 2,829,242	152,098	$ 131,241	$ 2,960,483	$ 793,409	$ 3,753,892	$ 3,897,895	30,420	$ 26,248	1,149	$ 69,219	1,149	$ 29,593	$ 125,060	$ 33,516	$ 158,576	$ 164,659	1,149	$ 29,593	$ 29,593	$ 7,931	$ 37,524	$ 38,963									$ 4,101,518
	Excavated Areas Totals	0	0	20,594,599	7,770,830	178.4	$ 18,171,979	1,028,436	$ 887,410	$ 19,059,388	$ 5,107,916	$ 24,167,304	$ 25,094,386	205,687	177,482	7,771	$ 468,037	$ 7,771	$ 200,099	$ 845,618	$ 226,626	$ 1,072,243	$ 1,113,376	7,771	$ 200,099	$ 200,099	$ 53,626	$ 253,725	$ 263,459									$ 26,471,221
Surface Disturbance Only Areas	SURF 1				545,598	12.5								14,442	$ 12,461	546	$ 32,861	546	$ 14,049	$ 59,372	$ 15,912	$ 75,283	$ 78,171	546	$ 14,049	$ 14,049	$ 3,765	$ 17,814	$ 18,498									$ 96,669
	SURF 2				640,935	14.7								16,965	$ 14,639	641	$ 38,604	641	$ 16,504	$ 69,746	$ 18,692	$ 88,438	$ 91,831	641	$ 16,504	$ 16,504	$ 4,423	$ 20,927	$ 21,730									$ 113,561
	SURF 3				483,523	11.1								12,798	$ 11,043	484	$ 29,123	484	$ 12,451	$ 52,617	$ 14,101	$ 66,718	$ 69,277	484	$ 12,451	$ 12,451	$ 3,337	$ 15,787	$ 16,393									$ 85,670
	SURF 4				354,303	8.1								9,378	$ 8,092	354	$ 21,340	354	$ 9,123	$ 38,555	$ 10,333	$ 48,888	$ 50,763	354	$ 9,123	$ 9,123	$ 2,445	$ 11,568	$ 12,012									$ 62,775
	SURF CROSSING				-	-								-	$ -	-	$ -	-	$ -	$ -	$ -	$ -	$ -	-	$ -	$ -	$ -	$ -	$ -									$ -
	Surface Disturbance Only Areas Totals				2,024,359	46.5								53,583	$ 46,235	2,024	$ 121,927	2,024	$ 52,127	$ 220,290	$ 59,038	$ 279,327	$ 290,043	2,024	$ 52,127	$ 52,127	$ 13,970	$ 66,097	$ 68,633									$ 358,676
Facilities & Special Areas*																																						
*All Topsoiling, Mulching & Seeding included in surface disturbance area calculations	Facilities Concrete Demolition																													$ -	$ -	$ -	$ -	$ 23,823	$ 24,736	$ 23,823	$ 24,736	$ 24,736
	Facilities Structure Demolition																													$ 41,727	$ 43,328	$ 14,911	$ 15,483	$ 31,225	$ 32,422	$ 87,862	$ 91,233	$ 91,233
	Facilities Earthwork																													$ 181,807	$ 188,781	$ 695,043	$ 721,706	$ 67,162	$ 69,739	$ 944,012	$ 980,226	$ 980,226
	Facilities & Special Areas* Totals																													$ 223,534	$ 232,109	$ 709,954	$ 737,189	$ 122,209	$ 126,897	$ 1,055,697	$ 1,096,195	$ 1,096,195
	South Area Totals	0	0	20,594,599	9,795,189	224.9	$ 18,171,979	1,028,436	$ 887,410	$ 19,059,388	$ 5,107,916	$ 24,167,304	$ 25,094,386	259,270	$ 223,717	9,795	$ 589,964	9,795	$ 252,226	$ 1,065,908	$ 285,663	$ 1,351,571	$ 1,403,418	9,795	$ 252,226	$ 252,226	$ 67,597	$ 319,823	$ 332,091							$ 1,055,697	$ 1,096,195	$ 27,926,091

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North Area Facilities Reclamation Cost Estimate

Concrete Reclamation Cost Estimate

Concrete Demolition

Item	Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
New Kanab Creek Crossing (Box Culvert C-3)	lft	450	$18.05	$8,123	RSMeans Building Constr., 02 41 13.43 0200
Concrete Disposal					
*Concrete Disposal (All Facilities)	yd^3	1,000	$15.70	$15,700	RSMeans Building Constr., 02 41 16.17 4250
Subtotal Concrete Demolition & Disposal				**$23,823**	

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

**All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals (Total Bare Cost)

Structures Reclamation Cost Estimate

Structure Demolition & Disposal

Item	Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
12" Drainage Culvert (demolition) ASCA-1 Drop Pipe	ft	10	$2.25	$23	RSMeans Heavy Constr., 02 41 13.40 0150
24" Drainage Culvert (demolition) C-1	ft	140	$10.10	$1,414	RSMeans Heavy Constr., 02 41 13.40 0170
24" Drainage Culvert (demolition) C-4	ft	120	$10.10	$1,212	RSMeans Heavy Constr., 02 41 13.40 0170
36" Drainage Culvert (demolition) C-2	ft	150	$12.15	$1,823	RSMeans Heavy Constr., 02 41 13.40 0180
144" Drainage Culvert (demolition) C-3	ft	215	$34.30	$7,375	RSMeans Heavy Constr., 02 41 13.40 0200
ASCA-1 Box Drain	each	1	$169.50	$170	RSMeans Heavy Constr., 02 41 13.42 0400
Culvert Excavation 6' - 10' Deep ASCA-1 Drop Pipe	yd^3	37	$3.82	$141	RSMeans Heavy Constr., 31 23 16.13 0510
Culvert Excavation 6' - 10' Deep C-1	yd^3	187	$3.82	$713	RSMeans Heavy Constr., 31 23 16.13 0510
Culvert Excavation 6' - 10' Deep C-4	yd^3	160	$3.82	$611	RSMeans Heavy Constr., 31 23 16.13 0510
Culvert Excavation 14' - 20' Deep C-2	yd^3	1,089	$4.77	$5,194	RSMeans Heavy Constr., 31 23 16.13 1300
Culvert Excavation 14' - 20' Deep C-3	yd^3	5,000	$4.77	$23,850	RSMeans Heavy Constr., 31 23 16.13 1300
Perimeter Fencing (demolition)	ft	15,000	$2.15	$32,250	RSMeans Heavy Constr., 02 41 13.60 1650
Water Monitoring Wells - PVC (demolition)	VLF	1,500	$7.27	$10,905	RSMeans Heavy Constr., 02 41 13.76 0900
Water Monitoring Wells - Steel (demolition)	VLF	150	$14.55	$2,183	RSMeans Heavy Constr., 02 41 13.76 1000
Subtotal Structure Demolition & Disposal				**$87,862**	

**All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals (Total Bare Cost)

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

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Earthwork Reclamation Cost Estimate

Facilities Earthwork

Item	Unit	Quantity	Unit Cost ($)	Cost	**Cost Data Reference
Pond 5 backfill from embankment	yd^3	124	$1.95	$243	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 5 backfill from subsoil pile	yd^3	7,765	$5.88	$45,660	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 6 backfill from embankment	yd^3	242	$1.95	$472	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 6 backfill from subsoil pile	yd^3	8,665	$5.88	$50,949	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 7 backfill from embankment	yd^3	219	$1.95	$427	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 7 backfill from subsoil pile	yd^3	118,132	$5.88	$694,616	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 8 backfill from embankment	yd^3	5,467	$1.95	$10,660	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 8 backfill from subsoil pile	yd^3	0	$5.88	$0	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Pond 9 backfill from embankment	yd^3	371	$1.95	$724	RSMeans Heavy Constr., 31 23 23.17 0020
Pond 9 backfill from subsoil pile	yd^3	9,486	$5.88	$55,778	RSMeans Heavy Constr., 31 23 23.20 3014 & 31 23 16.42 1300 & 31 23 23.17 0020
Ditch DD-05 TO DD-20 recontouring	yd^3	2,470	$1.95	$4,817	RSMeans Heavy Constr., 31 23 23.17 0020
Ripping of haul roads and compacted surfaces	yd^3	38,673	$2.06	$79,666	RSMeans Heavy Constr., 31 23 16.32 2310
Subtotal Facilities Earthwork				**$944,012**	

**All cost data is from the 2015 editions of either the RS Means Heavy Construction or Building Construction Cost Data Manuals (Total Bare Cost)

Total Facilities Reclamation Cost Estimate	**$1,055,697**

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Equipment Cost Data

Equipment Description	Equipment Cost $/hr	Equip + Labor Cost $/hr
7 yd. Excavator (385C LME)	$78.26	$114.75
40 Ton (30 CY) Haul Truck (769C)	$48.26	$83.63
5,000 Gal. Water Truck	$30.09	$66.58
14 Grader	$46.35	$82.84
D10 Dozer	$88.29	$124.78
D7 Dozer	$49.81	$86.30

Sourced from Cost Mine 2015 Coal Cost Guide and 2015 Mine and Mill Equipment Costs

Labor Cost Data

Manpower Type	Base Wage ($/hr)	Labor Cost @ 36% burden ($/hr)
Heavy Equipment Operator	$26.83	$36.49
Truck Drivers	$26.01	$35.37

Labor Data from 2015 Coal Cost Guide Table LA-6 for Western Surface Coal Mines (Non-Union)

Unit Cost Data

Movement Type	Cost/BCY	Cost/LCY	Unit Swell Factor	
Rehandle with Truck/Shovel	$ 0.98	$ 0.88	10.7%	
Subsoil	$ 0.93	$ 0.86	7.2%	
Topsoil	$ 0.93	$ 0.86	7.2%	
		Cost/M.S.F		
Mulching		$ 60.23		RS Means Heavy Constr., 32 91 13.16 0350 (2015 Bare)
Seeding		$ 25.75		RS Means Heavy Constr., 32 92 19.14 3700 (2015 Bare)

Unit Costs calculated from Caterpillar Inc. FPC production model (v. 5.2.0.2) using 2015 cost data and updated GEM swell factors

Indirect Cost Factor
26.8%

Escalation Factor 2015 to 2017
1.038361

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FPC_2015_November_Truck-Shovel_Backfill

Cycle Times

Hauler Cycle Time

	5 769C
Load with Exchange (min)	1.25
Haul (min)	1.2
Dump and Maneuver (min)	1.2
Return (min)	1.37
Potential Cycle Time (min)	5.02
Wait on Slow Hauler (min)	0
Wait to Load (min)	1.23
Additional Bunching (min)	0.42
Wait to Dump (min)	0
TMPH Wait (min)	
Total Cycle Time (min)	6.67
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)	2,498
Tons per Pass	9.06
System Passes per Hauler	3
Hauler Payload (Tons)	27.17
% of Max GVW	103.52
Hauler Volume (LCY)	21.75
% of Body Fill	70
Loader Cycle Time (min)	0.25
First Bucket Dump (min)	0.05
Hauler Exchange Time (min)	0.7

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	691.02	BCY
Total Production	20,651,261	BCY
Sched Hrs Required	29,885.19	
Total Cost ($)	20,775,049	
Cost per BCY ($)	1.006	
Production per Shift	1,382,040	BCY
Shifts Required	14.94	

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
1	1	385C LME	932	
2	5	769C	1,161	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
1	5	769C	9	27.17	1,222.46
Fleet Tons per Operating Hour					1,222.46
x 90.00% Operator Efficiency =					1,100.21
x 87.87% Fleet Availability =					966.74

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders	1	385C LME		124.78	26,897	3,356,167	0.163
Haulers:	5	769C	C202	95.18	131,298	0	0.605
Totals	5				131,298	0	0.605
Support	1	5,000 Gal. Water Truck		66.58	19,695	1,311,271	0.063
	1	14 Grader		82.84	13,130	1,087,671	0.053
	1	D7 Dozer		86.3	22,321	1,926,271	0.093
Totals	3				55,145	4,325,213	0.209
Fleet Totals	9				213,340	7,681,380	0.977

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FPC_2015_November_Truck-Shovel_Subsoil

Cycle Times

Hauler Cycle Time

	5 769C	
Load with Exchange (min)		1.25
Haul (min)		1.18
Dump and Maneuver (min)		1.2
Return (min)		1.37
Potential Cycle Time (min)		5
Wait on Slow Hauler (min)		0
Wait to Load (min)		1.25
Additional Bunching (min)		0.4
Wait to Dump (min)		0
TMPH Wait (min)		
Total Cycle Time (min)		6.65
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)		2,143
Tons per Pass		7.77
System Passes per Hauler		3
Hauler Payload (Tons)		23.31
% of Max GVW		97.21
Hauler Volume (LCY)		21.75
% of Body Fill		70
Loader Cycle Time (min)		0.25
First Bucket Dump (min)		0.05
Hauler Exchange Time (min)		0.7

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		720.28 BCY
Total Production		1,190,524 BCY
Sched Hrs Required		1,652.87
Total Cost ($)		1,134,089
Cost per BCY ($)		0.953
Production per Shift		1,440,558 BCY
Shifts Required		0.83

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
	1	1 385C LME	969	
	2	5 769C	1,212	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
	1	5 769C	9.02	23.31	1,051.53
Fleet Tons per Operating Hour					1,051.53
x 90.00% Operator Efficiency =					946.37
x 87.87% Fleet Availability =					831.56

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders		1 385C LME		114.75	1,488	170,700	0.143
Haulers:		5 769C	C202	95.18	7,262	0	0.581
Totals		5			7,262	0	0.581
Support		1 5,000 Gal. Water Truck		66.58	1,089	72,523	0.061
		1 14 Grader		82.84	726	60,156	0.051
		1 D7 Dozer		86.3	1,234	106,537	0.089
Totals		3			3,050	239,215	0.201
Fleet Totals		9			11,799	409,915	0.925

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FPC_2015_November_Truck-Shovel_Topsoil

Cycle Times

Hauler Cycle Time

	5 769C	
Load with Exchange (min)		1.25
Haul (min)		1.18
Dump and Maneuver (min)		1.2
Return (min)		1.37
Potential Cycle Time (min)		5
Wait on Slow Hauler (min)		0
Wait to Load (min)		1.25
Additional Bunching (min)		0.4
Wait to Dump (min)		0
TMPH Wait (min)		
Total Cycle Time (min)		6.65
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)		2,143
Tons per Pass		7.77
System Passes per Hauler		3
Hauler Payload (Tons)		23.31
% of Max GVW		97.21
Hauler Volume (LCY)		21.75
% of Body Fill		70
Loader Cycle Time (min)		0.25
First Bucket Dump (min)		0.05
Hauler Exchange Time (min)		0.7

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		720.28 BCY
Total Production		336,238 BCY
Sched Hrs Required		466.82
Total Cost ($)		320,299
Cost per BCY ($)		0.953
Production per Shift		1,440,558 BCY
Shifts Required		0.23

Theoretical Production

	Quantity	Model	BCY per Hour	Cycles per Hour
	1	1 385C LME	969	
	2	5 769C	1,212	12

Actual Production

	Quantity	Model	Cycles per Hour	Payload in Tons	Tons per Hour
	1	5 769C	9.02	23.31	1,051.53
Fleet Tons per Operating Hour					1,051.53
x 90.00% Operator Efficiency =					946.37
x 87.87% Fleet Availability =					831.56

Cost

	Qty	Model	Machine Code	Hourly Cost Each Unit	Operating Hours	Total $	$ per BCY
Loaders		1 385C LME		114.75	420	48,210	0.143
Haulers:		5 769C	C202	95.18	2,051	0	0.581
Totals		5			2,051	0	0.581
Support		1 5,000 Gal. Water Truck		66.58	308	20,482	0.061
		1 14 Grader		82.84	205	16,990	0.051
		1 D7 Dozer		86.3	349	30,089	0.089
Totals		3			861	67,561	0.201
Fleet Totals		9			3,332	115,772	0.925

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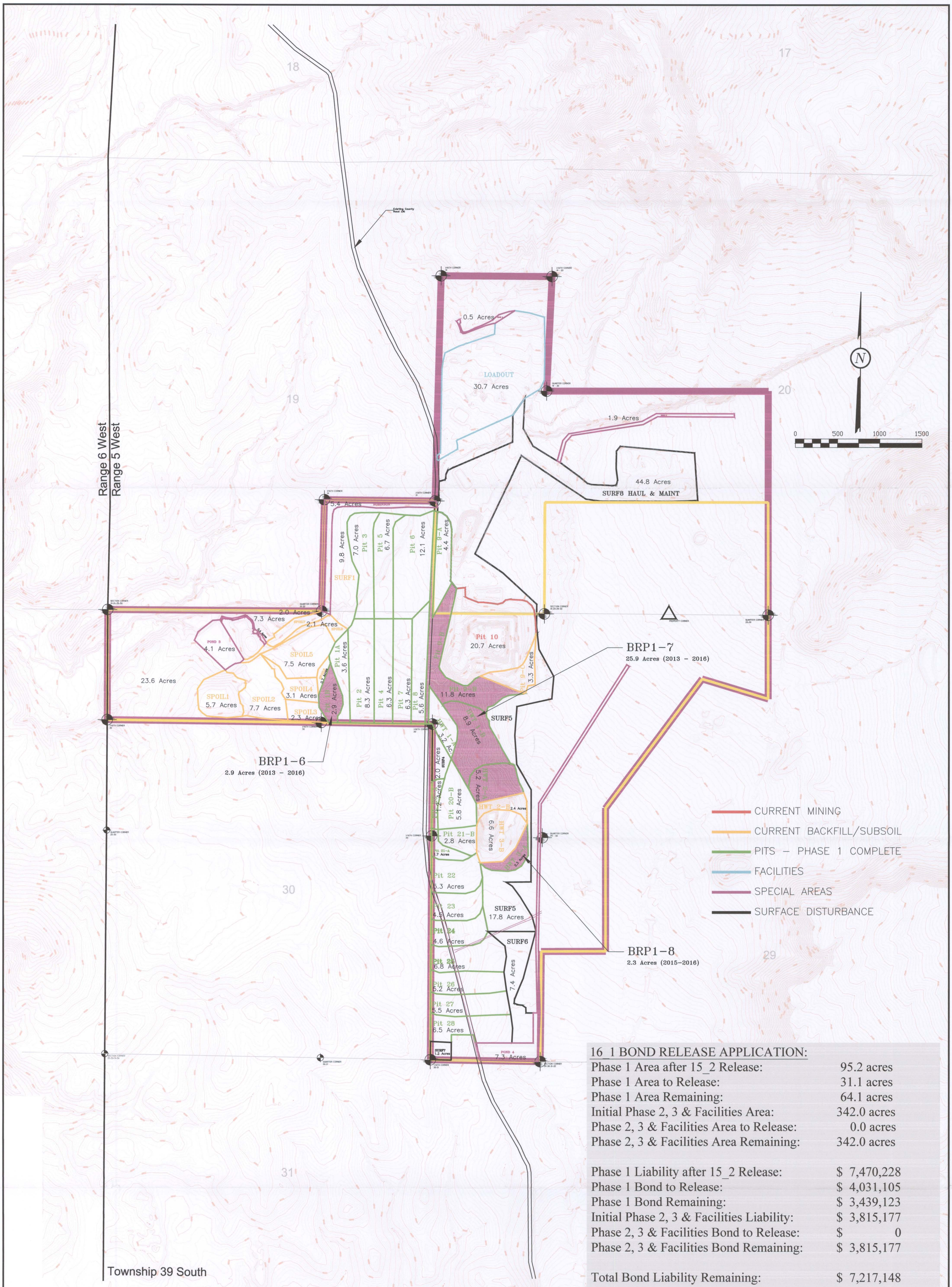

16_1 BOND RELEASE APPLICATION:

Phase 1 Area after 15_2 Release:	95.2 acres
Phase 1 Area to Release:	31.1 acres
Phase 1 Area Remaining:	64.1 acres
Initial Phase 2, 3 & Facilities Area:	342.0 acres
Phase 2, 3 & Facilities Area to Release:	0.0 acres
Phase 2, 3 & Facilities Area Remaining:	342.0 acres
Phase 1 Liability after 15_2 Release:	$ 7,470,228
Phase 1 Bond to Release:	$ 4,031,105
Phase 1 Bond Remaining:	$ 3,439,123
Initial Phase 2, 3 & Facilities Liability:	$ 3,815,177
Phase 2, 3 & Facilities Bond to Release:	$ 0
Phase 2, 3 & Facilities Bond Remaining:	$ 3,815,177
Total Bond Liability Remaining:	$ 7,217,148

Contour Interval = 2'

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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A. Christensen	KN
DRAWING: Fig. 1	DATE: 3/3/2016
	SCALE: 1" = 500' Printed on 24" x36"
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OVERVIEW PROPOSED BOND RELEASE 16_1

COAL HOLLOW PROJECT
ALTON, UTAH

Figure 1

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Coal Hollow Project
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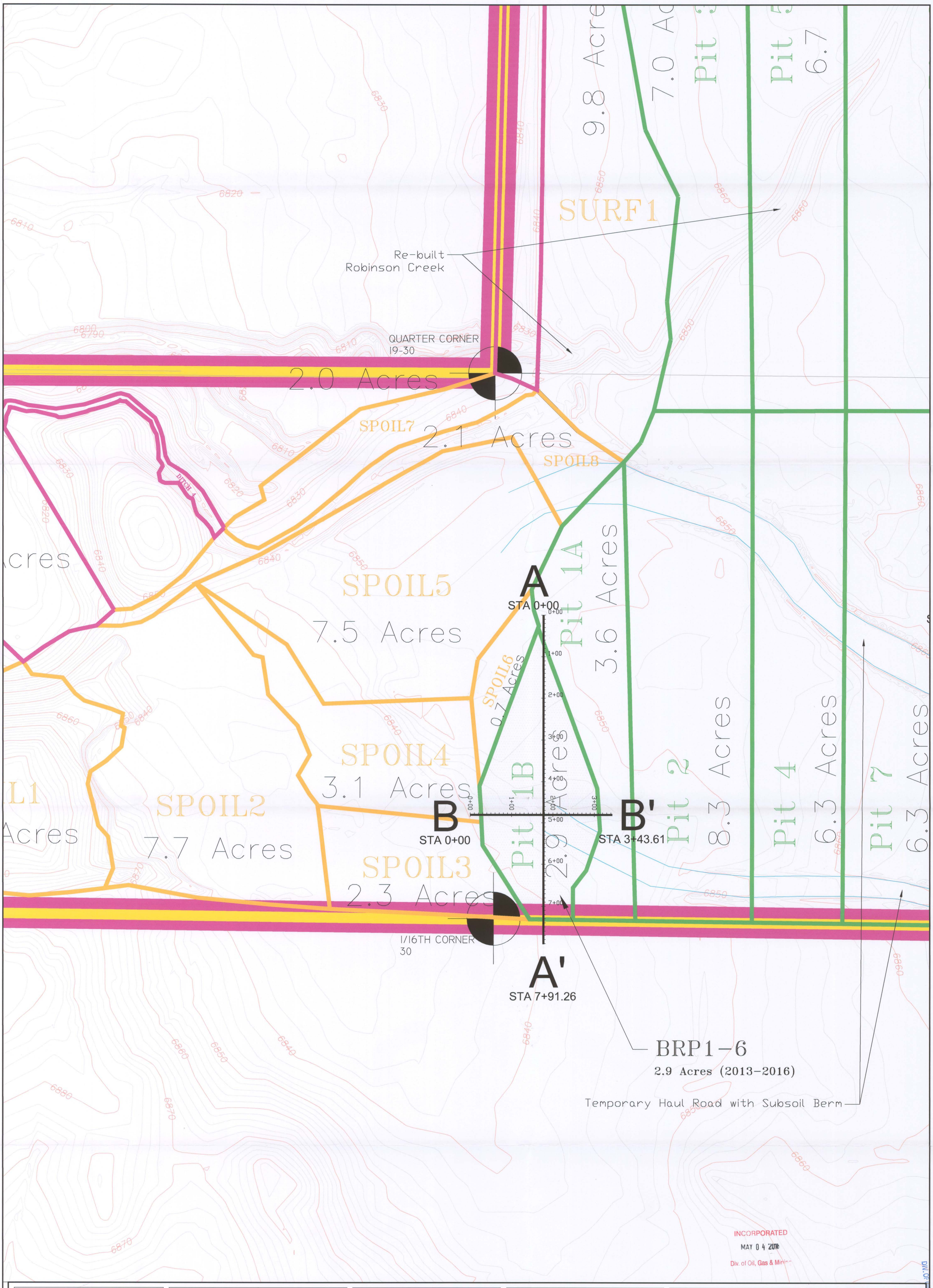

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LEGEND:

- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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FIGURE 1-A	3/3/2016
	SCALE: 1" = 100' Printed on 24" x36"
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5/18/16	AC

PROPOSED
PHASE 1
BOND RELEASE
BRP 1-6

COAL HOLLOW
PROJECT
ALTON, UTAH

FIGURE 1-A

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 5/18/16

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Fax (435)867-1192

LEGEND:

- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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FIGURE 1-B	3/3/2016
	SCALE: 1" = 100' Printed on 24" x36"
JOB NUMBER:	SHEET

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PROPOSED
PHASE 1
BOND RELEASE
BRP 1-7

COAL HOLLOW
PROJECT
ALTON, UTAH

FIGURE 1-B

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 4/10/16

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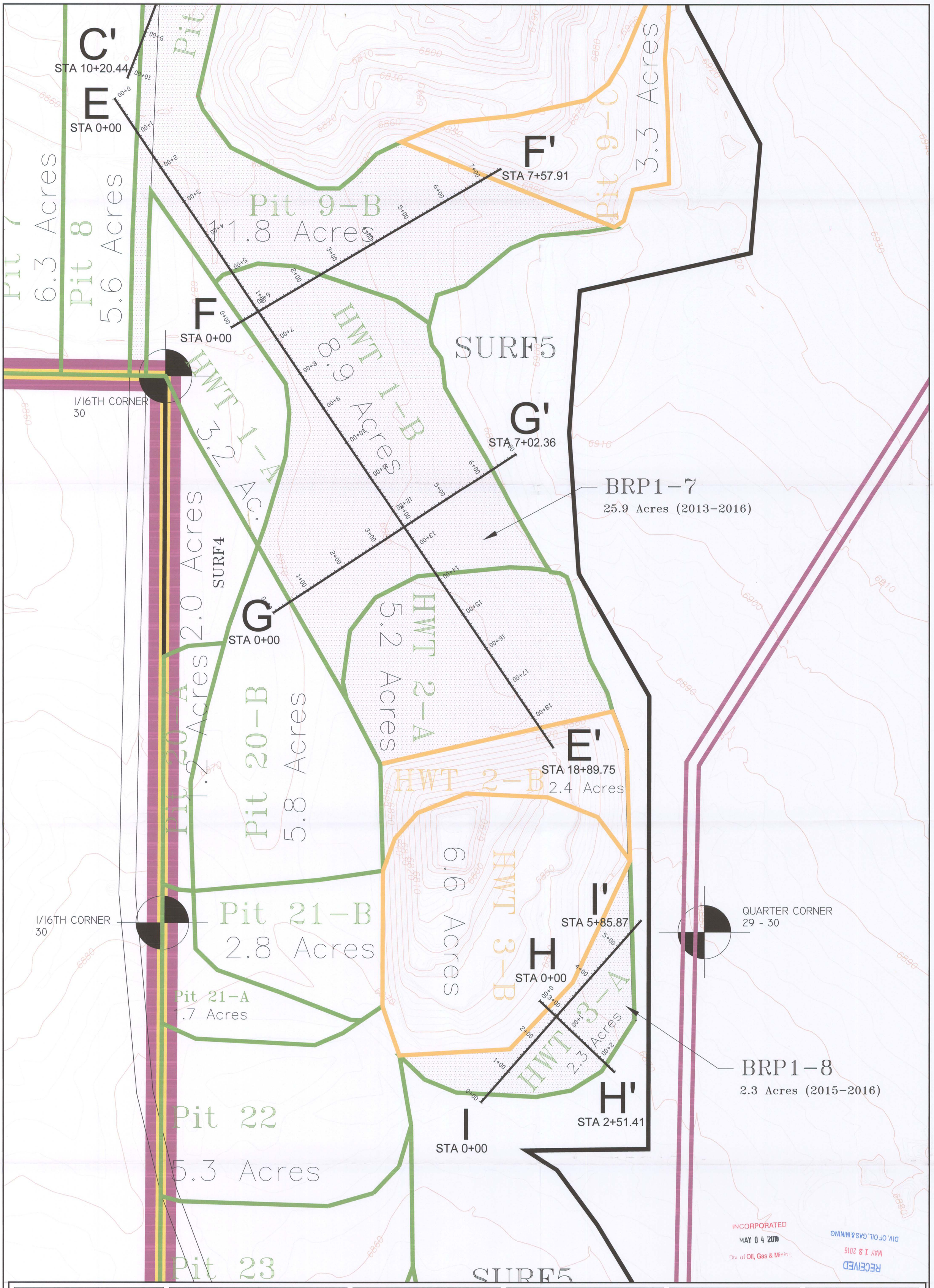

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LEGEND:

- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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	SCALE: 1" = 100' Printed on 24" x36"
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PROPOSED
PHASE 1
BOND RELEASE
BRP 1-7 & 1-8

COAL HOLLOW
PROJECT
ALTON, UTAH

FIGURE 1-C

UTAH REGISTERED #154168 DAN W. GUY PROFESSIONAL ENGINEER

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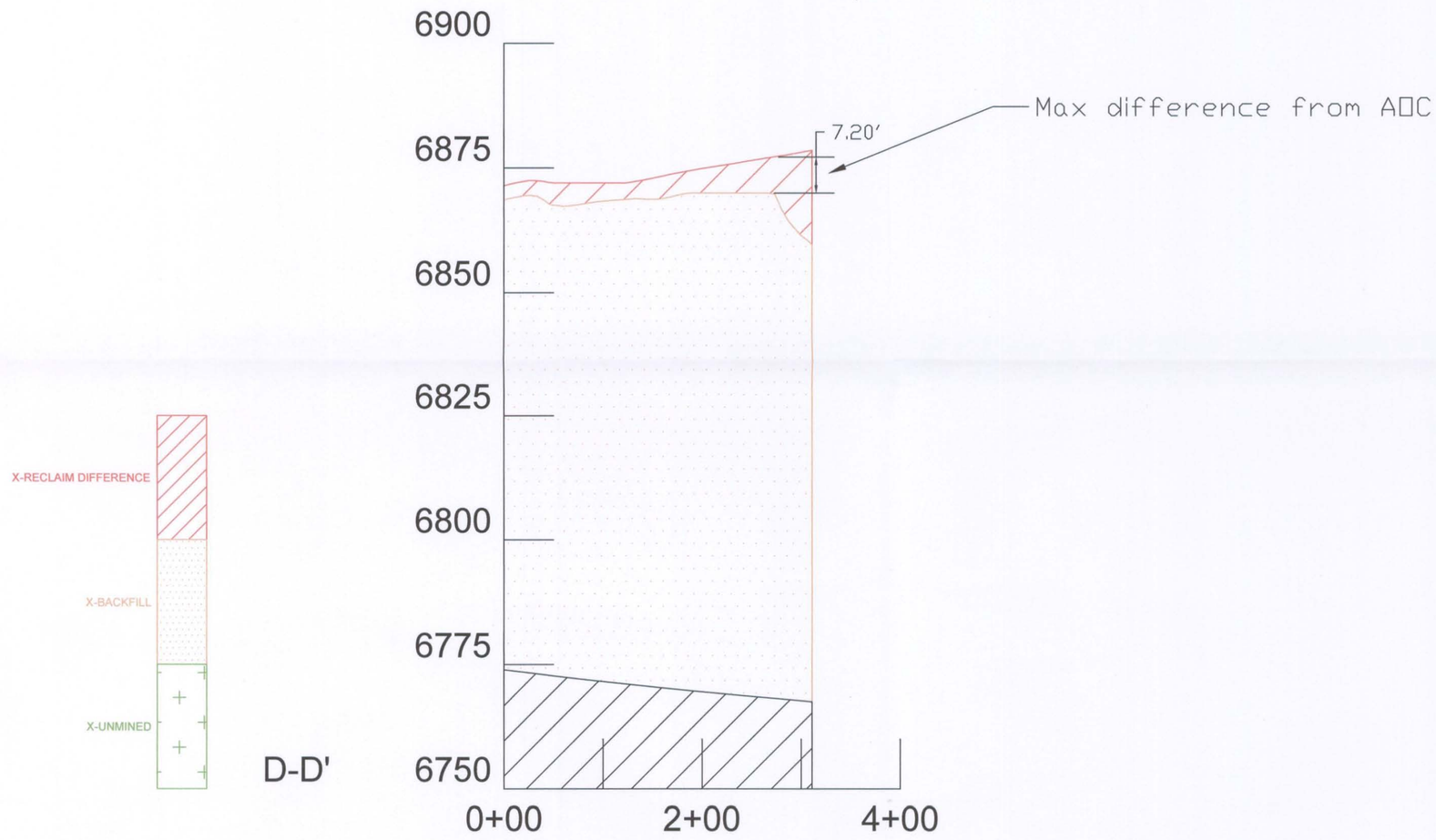

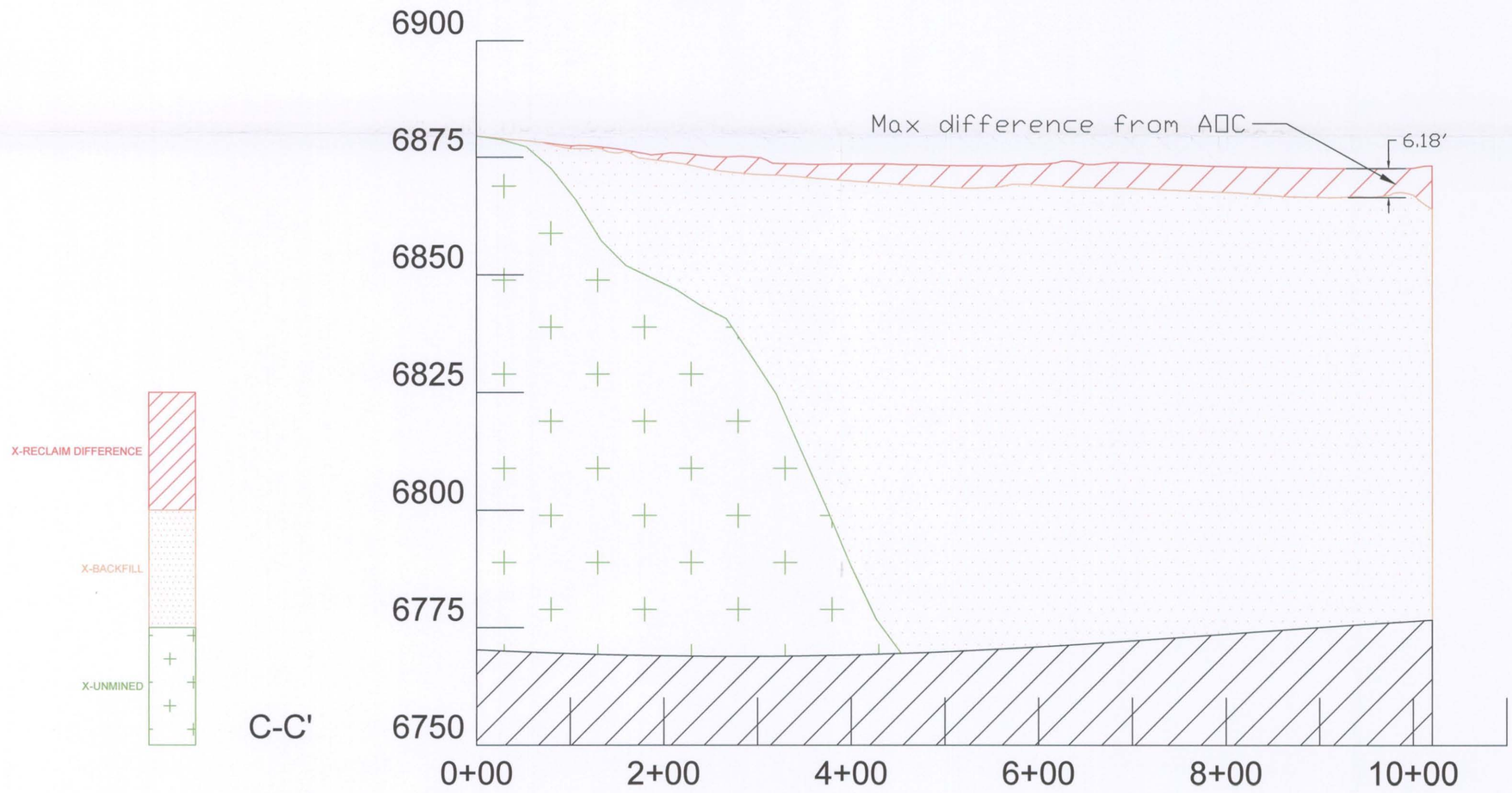

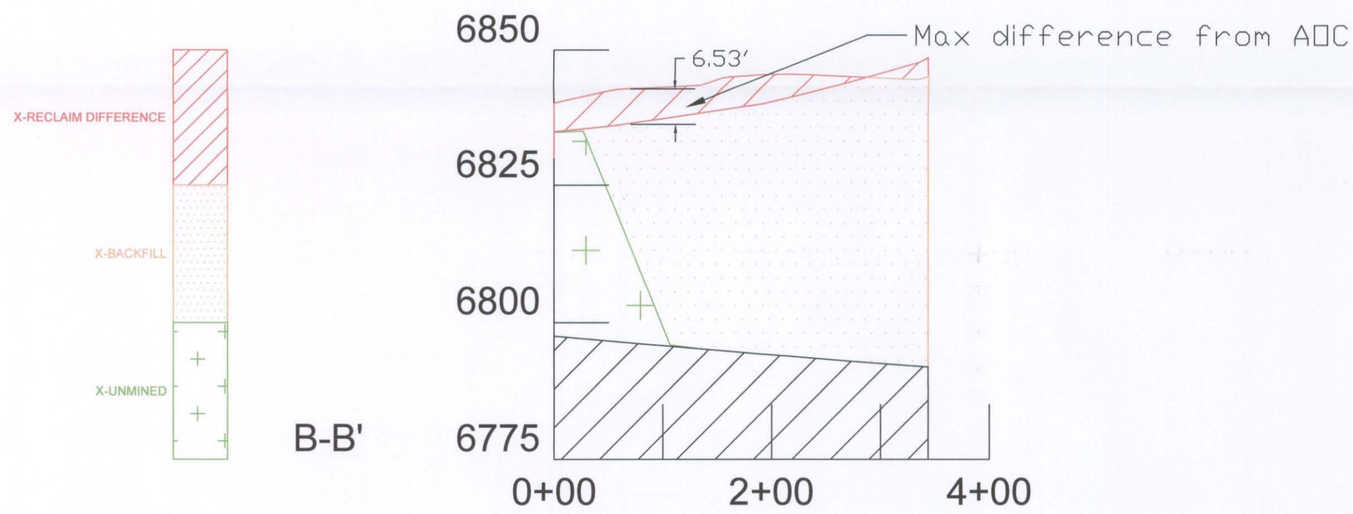

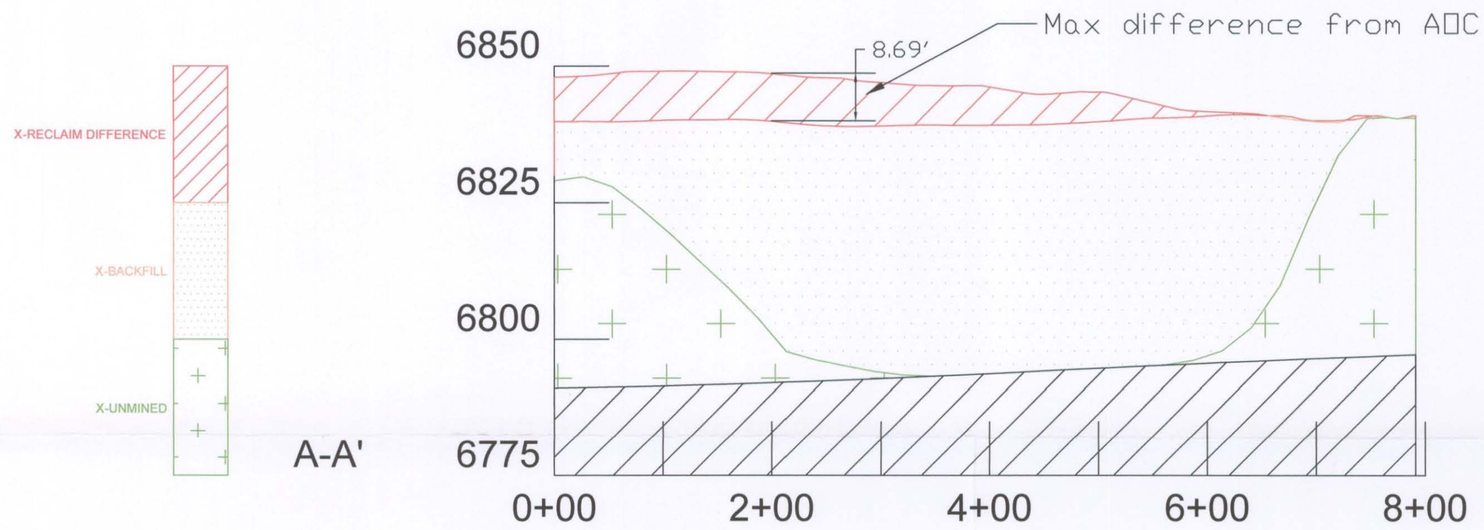

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1"=20' X-Section Scale 1"=100'

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- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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FIGURE 1-D	3/3/2016
	SCALE: 1" = 100' Printed on 24" x36"
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CROSS-SECTIONS
BOND RELEASE
BRP 1-6 & 1-7
(1 of 2)

COAL HOLLOW PROJECT
ALTON, UTAH

FIGURE 1-D

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 5/10/16

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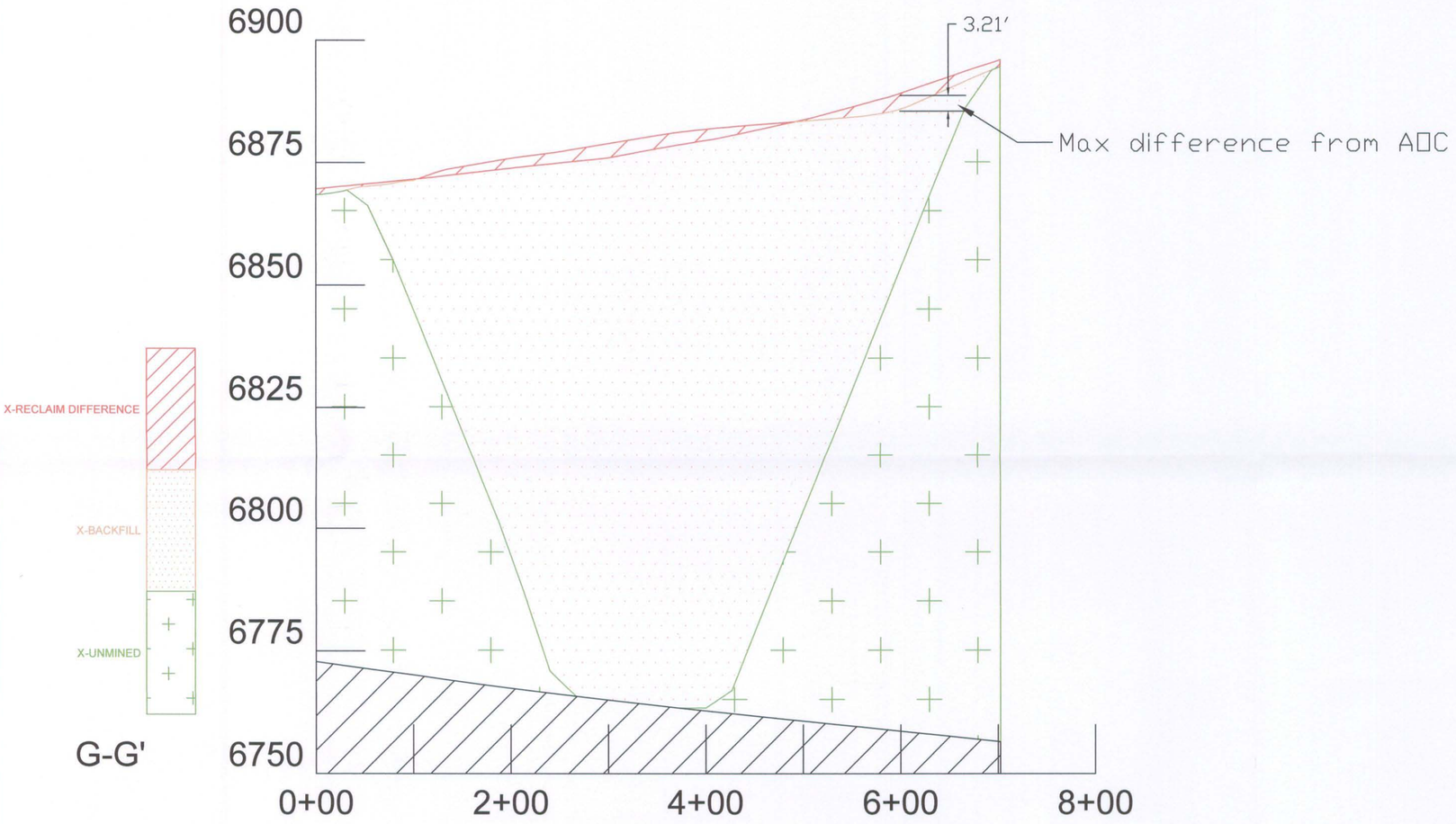

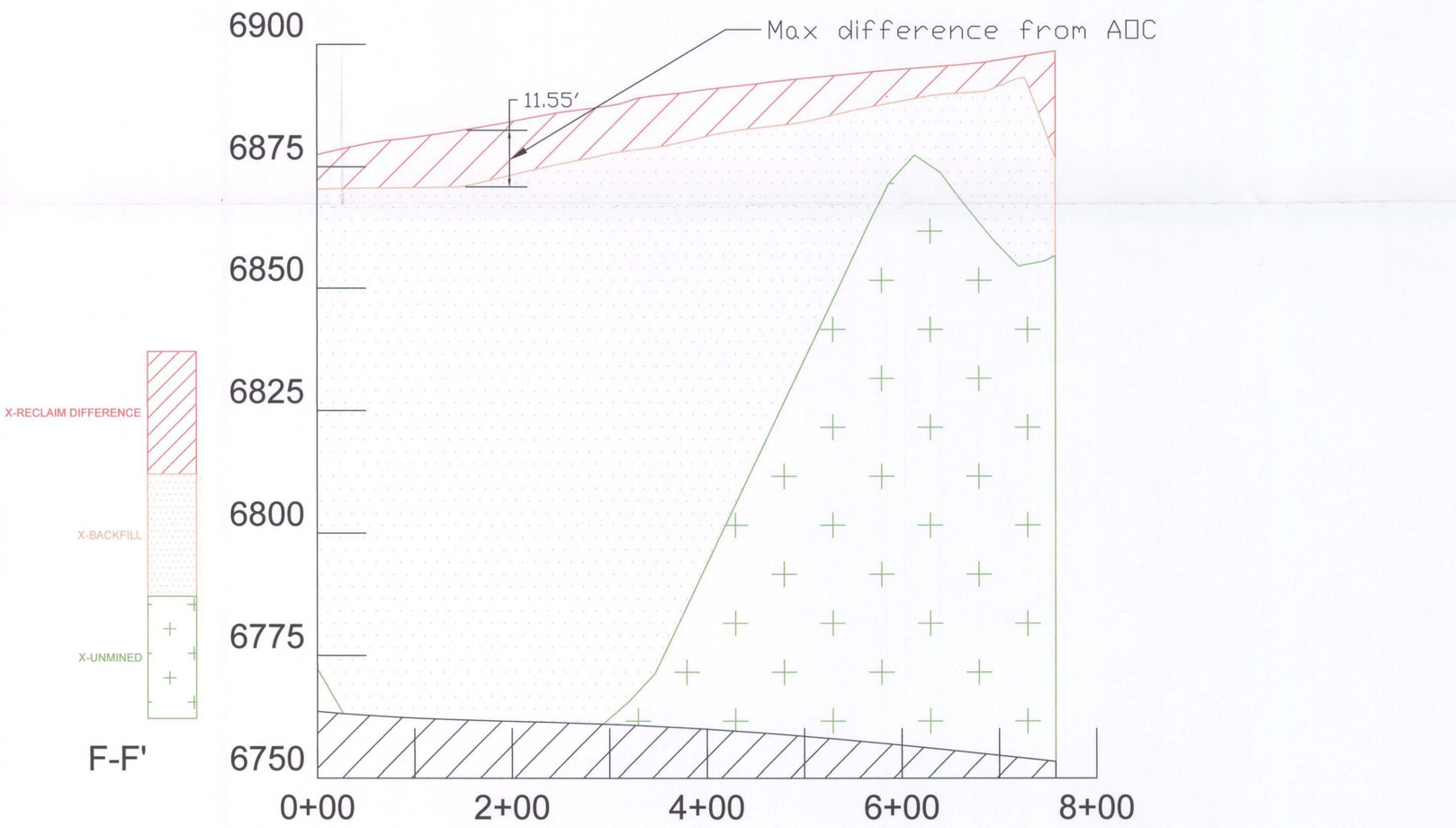

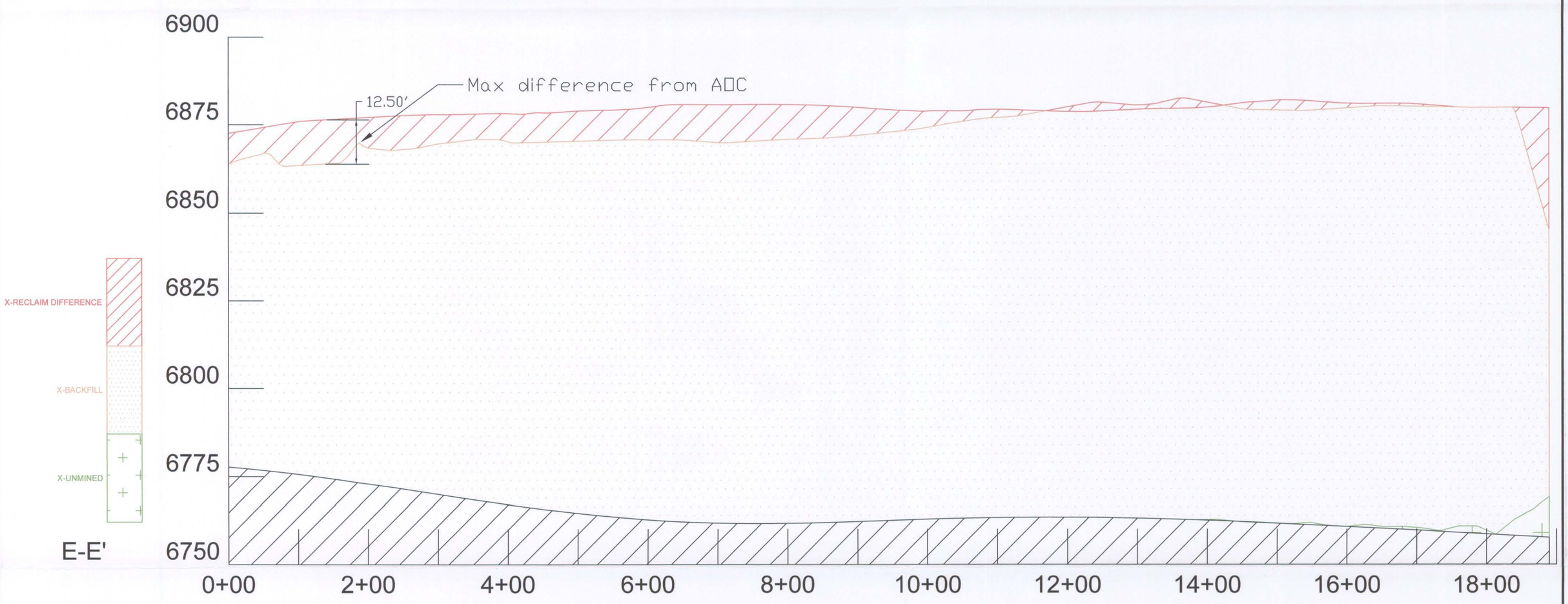

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X–Section Scale
1"=20'
1"=100'

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LEGEND:
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- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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DRAWING: FIGURE 1-E	DATE: 3/3/2016
	SCALE: 1" = 100' Printed on 24" x36"
JOB NUMBER:	SHEET

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CROSS-SECTIONS
BOND RELEASE
BRP 1-7
(2 of 2)

COAL HOLLOW PROJECT
ALTON, UTAH

FIGURE 1-E

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 4/20/16

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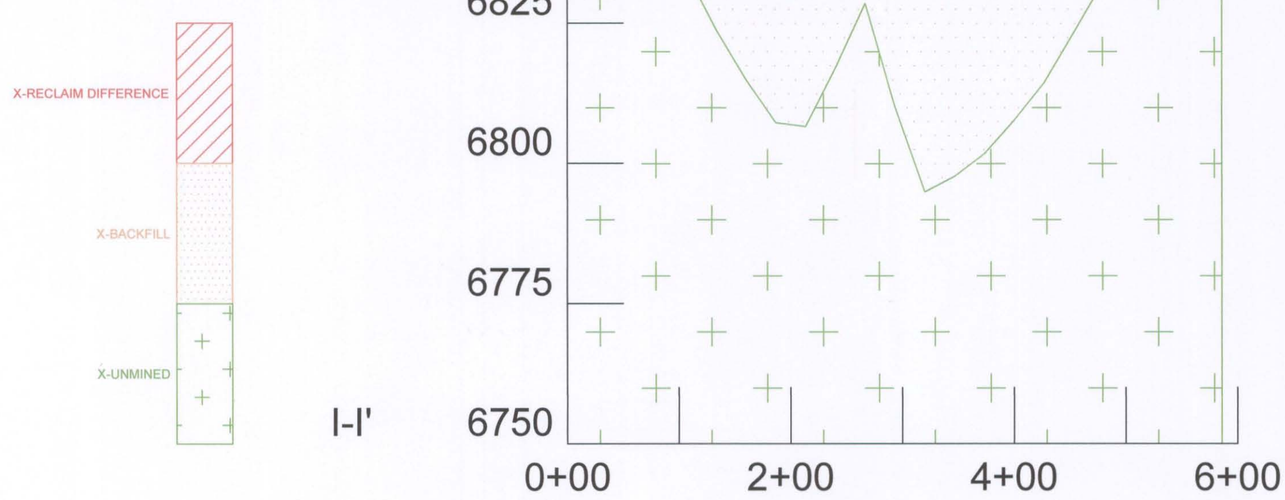
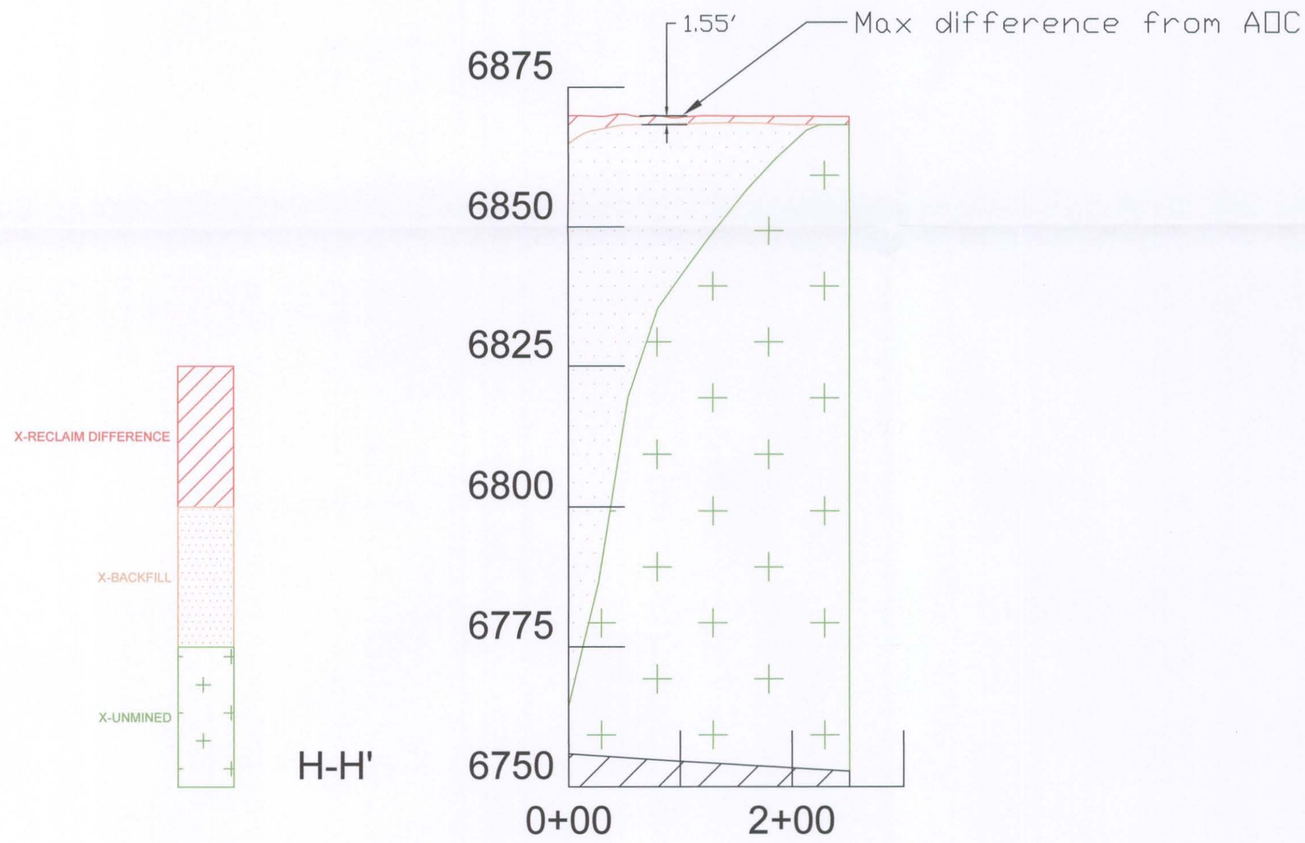


I-I'



H-H'

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X-Section Scale
1"=20'
1"=100'

LEGEND:
- PERMIT BOUNDARY
- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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A. Christensen	KN
DRAWING: FIGURE 1-F	DATE: 3/3/2016
	SCALE: 1" = 100' Printed on 24" x36"
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CROSS-SECTIONS
BOND RELEASE
BRP 1-8

COAL HOLLOW PROJECT
ALTON, UTAH

FIGURE 1-F

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 5/10/16

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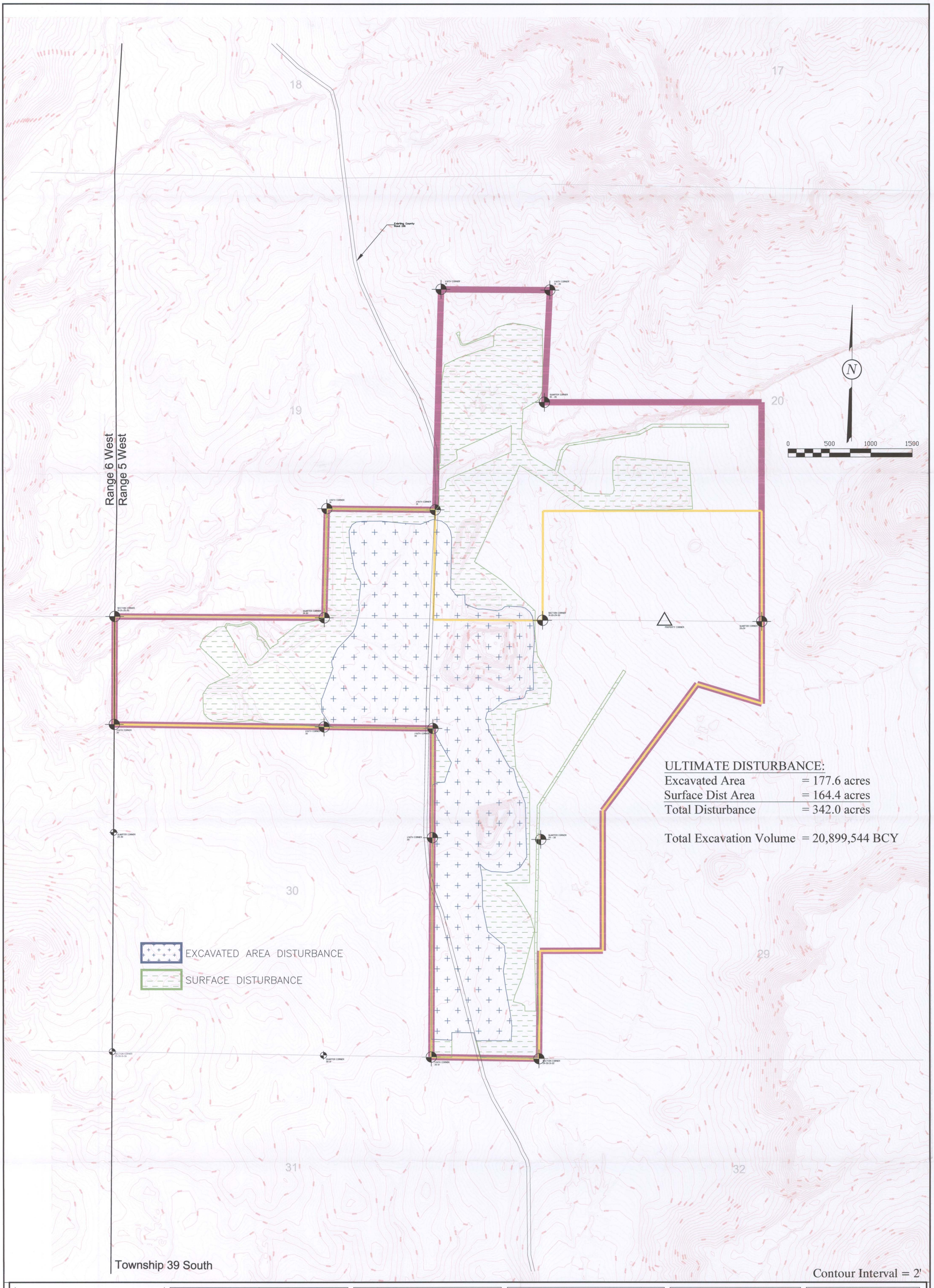
Fax (435)867-1192



LEGEND:

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- PRIVATE COAL OWNERSHIP
- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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K NICHOLES	LWJ
DRAWING: 5-17	DATE: 12/24/2014
	SCALE: 1" = 500' Printed on 24" x36"
JOB NUMBER: 1400	SHEET

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6/15/15	AC
9/8/15	AC
10/20/15	AC
11/24/15	AC
3/3/16	AC

OVERBURDEN REMOVAL ULTIMATE DISTURBANCE

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-17

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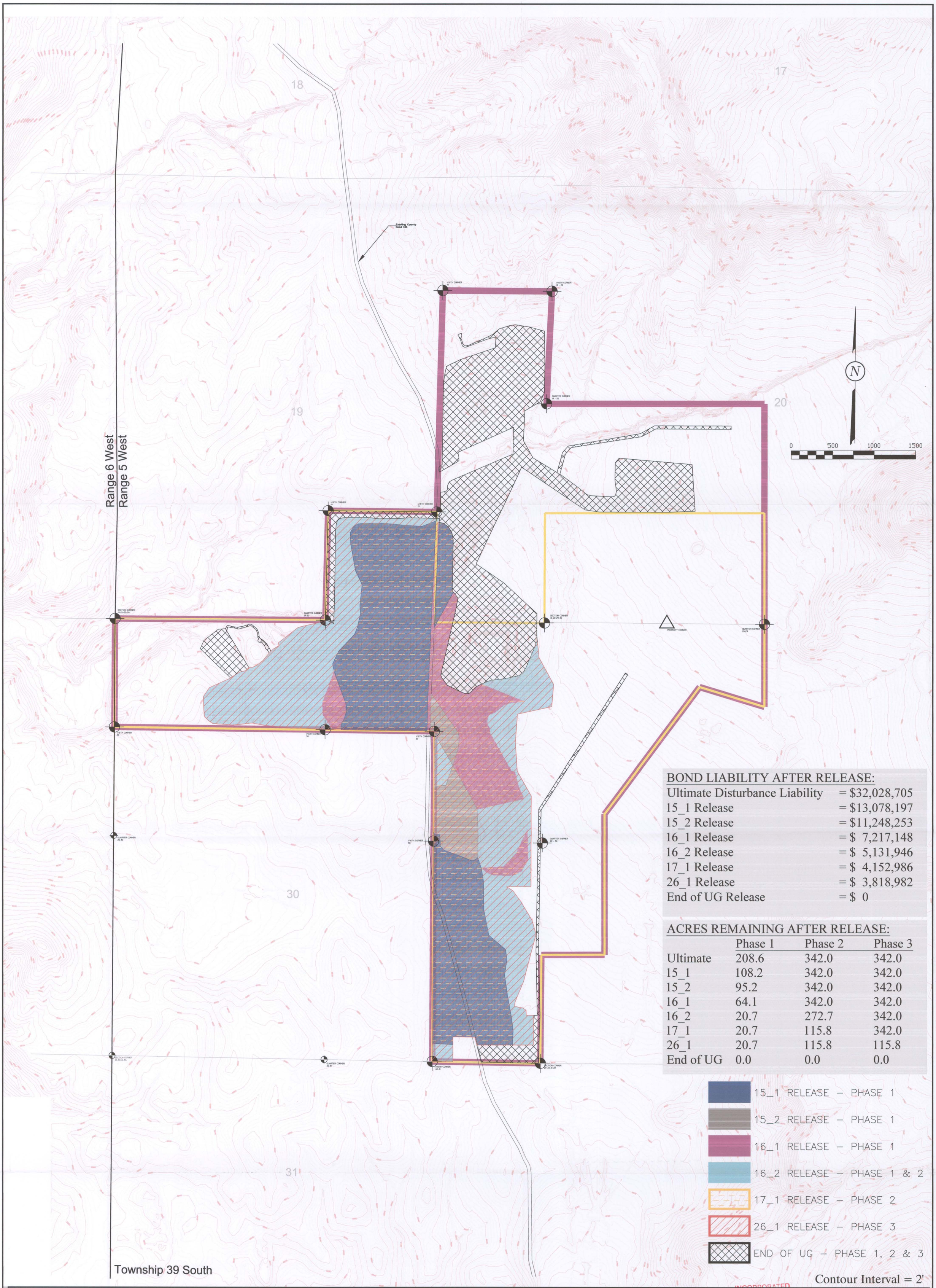

BOND LIABILITY AFTER RELEASE:

Ultimate Disturbance Liability	= $32,028,705
15_1 Release	= $13,078,197
15_2 Release	= $11,248,253
16_1 Release	= $ 7,217,148
16_2 Release	= $ 5,131,946
17_1 Release	= $ 4,152,986
26_1 Release	= $ 3,818,982
End of UG Release	= $ 0

ACRES REMAINING AFTER RELEASE:

	Phase 1	Phase 2	Phase 3
Ultimate	208.6	342.0	342.0
15_1	108.2	342.0	342.0
15_2	95.2	342.0	342.0
16_1	64.1	342.0	342.0
16_2	20.7	272.7	342.0
17_1	20.7	115.8	342.0
26_1	20.7	115.8	115.8
End of UG	0.0	0.0	0.0

LEGEND:
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- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

DRAWN BY:	CHECKED BY:
A CHRISTENSEN	DWG
DRAWING: 5–18	DATE: 6/15/2015
	SCALE: 1" = 500' Printed on 24" x36"
JOB NUMBER: 1400	SHEET

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9/8/15	AC
10/20/15	AC
11/05/15	AC
11/24/15	AC
3/3/16	AC

BOND SEQUENCE

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-18

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Range 6 West
Range 5 West
Township 39 South

Existing County Road 136

LOADOUT 30.7 Acres
0.5 Acres
1.9 Acres
44.8 Acres SURF8 HAUL & MAINT
5.4 Acres
9.8 Acres SURF1
Pit 3 7.0 Acres
Pit 5 6.7 Acres
Pit 6 12.1 Acres
Pit 9-A 4.4 Acres
2.0 Acres
7.3 Acres
2.1 Acres
POND 3 4.1 Acres
23.6 Acres
SPOIL5 7.5 Acres
SPOIL4 3.1 Acres
SPOIL1 5.7 Acres
SPOIL2 7.7 Acres
SPOIL3 2.3 Acres
Pit 1A 3.6 Acres
Pit 1B 2.9 Acres
Pit 2 8.3 Acres
Pit 4 6.3 Acres
Pit 7 6.3 Acres
Pit 8 5.6 Acres
Pit 9-B 11.8 Acres
Pit 9-C 3.3 Acres
Pit 10 20.7 Acres
HWT 1-B 8.9 Acres
HWT 1-A 3.2 Ac.
SURF5
Pit 20-B 5.8 Acres
HWT 2-A 5.2 Acres
HWT 2-B 2.4 Acres
HWT 3-B 6.6 Acres
HWT 3-A 2.2 Acres
Pit 21-B 2.8 Acres
Pit 21-A 1.7 Acres
Pit 22 5.3 Acres
Pit 23 4.5 Acres
SURF5 17.8 Acres
Pit 24 4.6 Acres
SURF6
Pit 25 6.8 Acres
7.4 Acres
Pit 26 5.2 Acres
Pit 27 5.5 Acres
Pit 28 6.5 Acres
SURF7 1.2 Acres
POND 4 7.3 Acres

CURRENT MINING
CURRENT BACKFILL/SUBSOIL
PITS – PHASE 1 COMPLETE
FACILITIES
SPECIAL AREAS
SURFACE DISTURBANCE

0 500 1000 1500

Contour Interval = 2'

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LEGEND:
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- ULTIMATE PIT BOUNDARY
- DISTURBANCE BNDY
- SECTION LINE
- FOUND SECTION CORNER
- FOUND PROPERTY CORNER

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A CHRISTENSEN	DWG
DRAWING: 5-19	DATE: 6/15/2015
	SCALE: 1" = 500' Printed on 24" x36"
JOB NUMBER: 1400	SHEET

REVISIONS

DATE:	BY:
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10/20/15	AC
3/3/16	AC

BOND POLYGONS

COAL HOLLOW PROJECT
ALTON, UTAH

DRAWING: 5-19

UTAH REGISTERED PROFESSIONAL ENGINEER #154168 DAN W. GUY 5/10/16

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