

***1997 Annual Report - Gordon Creek No. 2/7/8 Mines - ACT/007/016***

*1997 Annual Report*

*Gordon Creek No. 2/7/8 Mines*

*ACT/007/016*

**Mountain Coal Company**

West Elk Mine  
Post Office Box 591  
Somerset, Colorado 81434  
Telephone 303 929-5015



*Mary Ann Wright  
Associate Director of Mining  
Utah Coal Regulatory Program  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801*

*Re: Submittal of 1997 Annual Reports  
Gordon Creek No. 2/7/8 Mines  
ACT/007/016; Folder #2  
Carbon County, Utah*

*Dear Ms. Wright:*

*Enclosed are 2 copies of the Annual Report for 1997 for the Gordon Creek  
No. 2/7/8 Mines.*

*The report is filed in the format provided by the Division.*

*Sincerely,*

*Dan W. Guy  
for  
Paige B. Beville*

*cc: Paige Beville  
File*

<b>GENERAL INFORMATION</b>	
1. Permit Number	ACT/007/016
2. Mine Name	Gordon Creek No. 2/7/8 Mines
3. Permittee Name	Mountain Coal Company
4. Operator Name (if other than Permittee)	
5. Permit Expiration Date	08/28/99
6. Company Representative, Title	Paige B. Beville,
7. Phone Number	(303) 293-7913
8. Fax Number	(303) 293-4073
9. Mailing Address	Mountain Coal Company
	P.O. Box 591
	Somerset, Colorado 81434
10. Resident Agent, Title	The Corp Trust Co.
Mailing Address	1209 Orange Street
	Wilmington, DE 19801

<b>IDENTIFICATION OF OTHER PERMITS</b>
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Identify other permits which are required in conjunction with mining and reclamation activities.			
Permit Type	ID Number	Description	Expires on
1. MSHA Mine ID(s)	N/A		
2. MSHA Impoundment(s)	N/A		
3. NPDES/UPDES Permit(s) (water)	UTG 040004	UPDES Permit	04/30/98
4. PSD (Air ) Permit(s)	N/A		
5.			
6.			



**LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION**

Changes in administration or corporate structure can often bring about necessary changes to information found in the mining and reclamation plan. The Division is requesting that each permittee review and update the legal, financial, compliance and related information in the plan as part of the Annual Report. Provide the Department of Commerce, Annual Report of Officers, or other equivalent information as necessary to ensure that the information provided in the plan is current. Provide any other changes as necessary regarding land ownership, lease acquisitions, legal results from appeals of violations, or other changes as necessary to update information required in the mining and reclamation plan. Include any certified financial statements, audits or worksheets which may be required to meet bonding requirements. Specify whether the information is currently ON FILE with the Division or included as APPENDIX C to this Annual Report.

Legal/Financial Data:	Report Required?		INCLUDED or ON FILE w/DOGM?			Comments
	YES	NO	YES	NO	ON FILE	
1. Department of Commerce, Annual Report of Officers	X				X	
2. Other						

**MINE MAPS**

Copies of mine maps, current and up-to-date through at least December 31, 1996, are to be provided to the Division as APPENDIX D to this Annual Report in accordance with the requirements of R645-301-525.270. These map copies shall be made in accordance with 30 CFR 75.1200, as required by MSHA. Upon request, mine maps shall be kept confidential by the Division.

Map Number(s)	Map Title / Description	Confidential?
Plate 3-3	Gordon Creek No. 2 Mine	No
Plate 3-5	Gordon Creek No. 7 Mine	No
Plate 3-4	Gordon Creek No. 8 Mine	No

**OTHER INFORMATION**

Please provide any comments or further information to be included as part of the Annual Report. Any other attachments are to be provided as APPENDIX E to this Annual Report.

Additional attachments to this report?  No  Yes

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# **APPENDIX A**

## **Certified Reports**

Excess Spoil Piles  
Refuse Piles  
Impoundments

as required under R645-301-514

### **CONTENTS**

Annual Pond Certifications

***ANNUAL POND CERTIFICATIONS***

MOUNTAIN COAL COMPANY

1997 ANNUAL POND INSPECTION REPORT

POND: 2/7/8 Sediment Pond

LOCATION: G.C. 2/7/8

IMPOUNDMENTS

- |                                 |  |
|---------------------------------|--|
| (1) Stability                   | <u>Slopes Stable.</u>  |
| (2) Structural Weakness/Erosion | <u>None Noted.</u>   |
| (3) Potential Safety Hazards    | <u>None Noted.</u>   |
| (4) Depth of Impounded Water    | <u>1.0'-1.5' Water/Ice.</u>                                  |
| (5) Existing Storage Capacity   | <u>4.79 acre feet.</u>                                       |
| (6) Monitoring Procedures       | <u>Quarterly Inspection.</u><br><u>U.P.D.E.S. Discharge.</u> |

SEDIMENT PONDS ONLY

	<u>Cell #1</u>	<u>Cell #2</u>	<u>Cell #3</u>
(7) Sediment Accumulation (Elev.)	<u>7724.0</u>	<u>7713.0</u>	<u>7704.0</u>
(8) Sediment Cleanout Level (Elev.)	<u>7728.0</u>	<u>N/A</u>	<u>N/A</u>
(9) Principle Spillway (Elev.)	<u>7733.0</u>	<u>7723.0</u>	<u>7713.0</u>
(10) Emergency Spillway (Elev.)	<u>7733.0</u>	<u>7723.0</u>	<u>7713.0</u>
(11) Existing Sediment Capacity (To Cleanout)	<u>0.33</u>	<u>N/A</u>	<u>N/A</u>

GENERAL

- |                               |   |
|-------------------------------|---|
| (12) Comments/Recommendations | <u>Cells 2 &amp; 3 Expanded in</u><br><u>1996. Grouted, open channel</u><br><u>spillways. 3 cells. No</u><br><u>Inflow. No Discharge.</u> |
|-------------------------------|---|

STATEMENT

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meets or exceeds the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

  
(Signature)

11/19/97  
(Date)



MOUNTAIN COAL COMPANY

1997 ANNUAL POND INSPECTION REPORT

POND: Sweet's Canyon

LOCATION: G.C. 2/7/8

IMPOUNDMENTS

- |                                 |  |
|---------------------------------|--|
| (1) Stability                   | <u>Slopes Stable. Vegetated.</u>                   |
| (2) Structural Weakness/Erosion | <u>None Noted.</u>                                 |
| (3) Potential Safety Hazards    | <u>None Noted.</u>                                 |
| (4) Depth of Impounded Water    | <u>60"</u>   |
| (5) Existing Storage Capacity   | <u>(2.10 acre feet) Pond Full. Not a Sed. Pond</u> |
| (6) Monitoring Procedures       | <u>Quarterly Inspection.</u>                       |

SEDIMENT PONDS ONLY

- |   |            |
|---|------------|
| (7) Sediment Accumulation (Elev.)             | <u>N/A</u> |
| (8) Sediment Cleanout Level (Elev.)           | <u>N/A</u> |
| (9) Principle Spillway (Elev.)                | <u>N/A</u> |
| (10) Emergency Spillway (Elev.)               | <u>N/A</u> |
| (11) Existing Sediment Capacity (To Cleanout) | <u>N/A</u> |

GENERAL

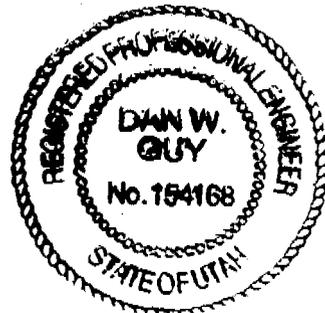
- |                               |   |
|-------------------------------|---|
| (12) Comments/Recommendations | <u>Pond for water fill and fish only. Operating properly.</u> |
|-------------------------------|---|

STATEMENT

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meets or exceeds the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

  
(Signature)

11/19/97  
(Date)



MOUNTAIN COAL COMPANY

1997 ANNUAL POND INSPECTION REPORT

POND: Jacob's Pond

LOCATION: G.C. 2/7/8

IMPOUNDMENTS

- |                                 |   |
|---------------------------------|---|
| (1) Stability                   | <u>Good</u>                               |
| (2) Structural Weakness/Erosion | <u>None</u>                               |
| (3) Potential Safety Hazards    | <u>None</u>                               |
| (4) Depth of Impounded Water    | <u>4" Snow - Frozen water under snow.</u> |
| (5) Existing Storage Capacity   | <u>N/A</u>                                |
| (6) Monitoring Procedures       | <u>Quarterly Inspection.</u>              |

SEDIMENT PONDS ONLY

- |   |            |
|---|------------|
| (7) Sediment Accumulation (Elev.)             | <u>N/A</u> |
| (8) Sediment Cleanout Level (Elev.)           | <u>N/A</u> |
| (9) Principle Spillway (Elev.)                | <u>N/A</u> |
| (10) Emergency Spillway (Elev.)               | <u>N/A</u> |
| (11) Existing Sediment Capacity (To Cleanout) | <u>N/A</u> |

GENERAL

- |                               |   |
|-------------------------------|---|
| (12) Comments/Recommendations | <u>Stock/Wildlife Watering Pond Re-Constructed in 1997.</u> |
|-------------------------------|---|

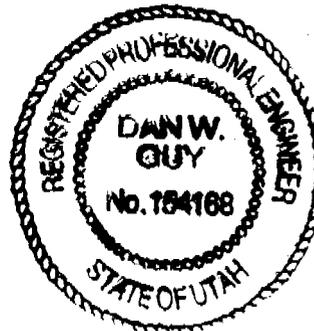
STATEMENT

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meets or exceeds the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

  
(Signature)

11/19/97

(Date)



## **APPENDIX B**

Reporting of Technical Data

including monitoring data, reports, maps, and other information  
as required under the approved plan  
or as required by the Division

in accordance with the requirements of R645-301-130 and R645-301-140.

### **CONTENTS**

Subsidence Monitoring Report

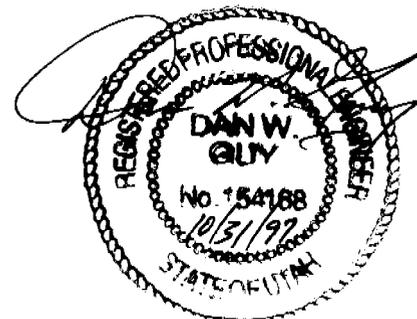
Vegetation Monitoring Report

***SUBSIDENCE MONITORING REPORT***

MOUNTAIN COAL COMPANY  
 SUBSIDENCE MONITORING  
 GORDON CREEK NO. 2 MINE

STATION	ORIGINAL ELEVATION 07/29/97	SURVEY ELEVATION 10/05/96	SURVEY ELEVATION 10/31/97	CHANGE LAST	CHANGE ACCUMULATED
SWEETS	9174.513	9174.513	9174.513	CONTROL	CONTROL
"H"	8849.120	8845.010	8845.010	0.000	-4.110
"A"	8653.167	8653.530	8653.530	0.000	0.363
"B"	8241.927	8241.990	8241.990	0.000	0.063
B-1	8542.205	8542.435	8542.430	-0.005	0.225
B-2	8557.768	8557.880	8557.880	0.000	0.112
B-3	8571.868	8572.020	8572.010	-0.010	0.142
B-4	8594.970	-	-	-	-
B-5	8590.990	8591.145	8591.145	0.000	0.155
B-6	8652.996	8652.842	8652.840	-0.002	-0.156
B-7	8635.952	8635.920	8635.900	-0.020	-0.052
B-8	8893.432	8893.260	8893.265	0.005	-0.167
B-9	8409.744	NOT FOUND	-	-	-
B-10	8792.587	8792.373	8792.370	-0.003	-0.217

- NOTE:
- (1) THE AREA WAS WALKED BETWEEN ALL STATIONS. NO VISIBLE MOVEMENT, CRACKS OR OTHER RECENT SUBSIDENCE EFFECTS WERE NOTED DURING THE SURVEY.
  - (2) STATION B-9 WAS NOT LOCATED



**MOUNTAIN COAL COMPANY  
SUBSIDENCE MONITORING  
GORDON CREEK NO. 7 MINE**

STATION	ORIGINAL ELEVATION 06/12/86	SURVEY ELEVATION 10/12/96	SURVEY ELEVATION 10/30/97	CHANGE LAST	CHANGE ACCUMULATED
SWEETS	9174.513	9174.513	9174.513	CONTROL	CONTROL
"H"	8849.120	8845.010	8845.010	0.000	-4.110
"I"	9040.049	9038.170	9038.170	0.000	-1.879
Sub-1	8295.284	8295.250	8295.250	0.000	-0.034
Sub-2	8416.227	8413.510	8413.510	0.000	-2.717
Sub-4	9042.727	9040.160	9040.150	-0.010	-2.577
Sub-5	9220.773	9220.895	9220.900	0.005	0.117
Sub-6	8649.193	8646.305	8646.310	0.005	-2.883
Sub-7	8724.159	8723.180	8723.180	0.000	-0.979
Sub-8	8967.402	8966.340	8966.350	0.010	-1.052
Sub-9	8901.147	8899.730	8899.730	0.000	-1.417
Sub-10	8864.970	8863.420	8863.400	-0.020	-1.570
Sub-11	9050.850	9049.630	9049.630	0.000	-1.220
Sub-12	8977.577	8975.300	8975.250	-0.050	-2.327
Sub-13	8887.506	8885.020	8885.020	0.000	-2.486
Sub-14	9059.611	9059.761	9059.760	-0.001	0.149
Sub-15	9000.420	9000.500	9000.400	-0.100	-0.020
Sub-17	8905.849	8905.711	8905.720	0.009	-0.129
Sub-18	8662.317	8662.190	8662.170	-0.020	-0.147
Sub-19	9098.256	9097.203	9097.220	0.017	-1.036
Sub-20	8908.330	8906.095	8906.095	0.000	-2.235
Sub-21	8755.014	8754.400	8754.400	0.000	-0.614
Sub-22	8757.128	8755.276	8755.270	-0.006	-1.858
Sub-23	8788.448	8787.242	8787.220	-0.022	-1.228
Sub-24	8762.659	8758.740	8758.735	-0.005	-3.924

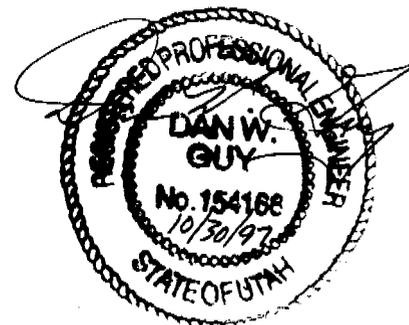


- NOTE:**
- (1) THE AREA WAS WALKED BETWEEN ALL STATIONS. NO VISIBLE MOVEMENT, CRACKS OR OTHER RECENT SUBSIDENCE EFFECTS WERE NOTED DURING THE SURVEY, EXCEPT AS NOTED BELOW.
  - (2) A SMALL "SUBSIDENCE HOLE" WAS REPAIRED IN THE CANYON SOUTHWEST OF THE NO. 7 PORTAL. THE HOLE WAS APPROXIMATELY 30' LONG BY 15' WIDE BY 5' DEEP. THE LOCATION AS SHOWN ON PLATE 3-5 INDICATES IT IS LIKELY THE RESULT OF MOVEMENT ALONG A SMALL FAULT PLANE, SINCE NO PILLARS WERE PULLED IN THAT LOCATION.

**MOUNTAIN COAL COMPANY  
 SUBSIDENCE MONITORING  
 GORDON CREEK NO. 8 MINE**

<b>STATION</b>	<b>ORIGINAL ELEVATION 10/09/88</b>	<b>SURVEY ELEVATION 10/19/96</b>	<b>SURVEY ELEVATION 10/30/97</b>	<b>CHANGE LAST</b>	<b>CHANGE ACCUMULATED</b>
<b>SWEETS</b>	<b>9174.513</b>	<b>9174.513</b>	<b>9174.513</b>	<b>CONTROL</b>	<b>CONTROL</b>
<b>"H"</b>	<b>8849.120</b>	<b>8845.010</b>	<b>8845.010</b>	<b>CONTROL</b>	<b>-4.110</b>
<b>SUB-25</b>	<b>8561.790</b>	<b>8560.885</b>	<b>8560.880</b>	<b>-0.005</b>	<b>-0.910</b>
<b>SUB-26</b>	<b>8641.822</b>	<b>8638.422</b>	<b>8638.310</b>	<b>-0.112</b>	<b>-3.512</b>
<b>SUB-27</b>	<b>8615.259</b>	<b>8611.810</b>	<b>8611.800</b>	<b>-0.010</b>	<b>-3.059</b>

**NOTE: THE AREA WAS WALKED BETWEEN ALL STATIONS. NO VISIBLE MOVEMENT, CRACKS OR OTHER RECENT SUBSIDENCE EFFECTS WERE NOTED DURING THE SURVEY. PAST SUBSIDENCE EFFECTS ARE SHOWN ON PLATE 3-4.**



***VEGETATION MONITORING REPORTS***

**VEGETATION SAMPLING  
AT THE  
GORDON CREEK 2/7/8 MINES  
1997**

**SWEETS POND  
and the  
MOUNTAIN BRUSH  
REFERENCE AREA**



*Prepared by*

MT. NEBO SCIENTIFIC, INC.  
330 East 400 South, Suite 6  
P.O. Box 337  
Springville, Utah 84663  
(801) 489-6937

Patrick D. Collins, Ph.D.

*for*

BLACKHAWK ENGINEERING  
214 East 100 North  
Price, Utah 84501

March 1998

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# SWEETS POND and the MOUNTAIN BRUSH REFERENCE AREA

## INTRODUCTION

The following report has been prepared to monitor the current condition of the reclaimed vegetation at Sweets Pond near the Gordon Creek 2/7/8 Mines and compare it to a reference area that has been chosen as a standard for revegetation success.

The Gordon Creek 2/7/8 mine site is located in the Bryner Canyon and Beaver Creek area at about 8,000 ft elevation in Carbon County, Utah. General plant communities of the area include Mountain Brush, Sagebrush/Grass, Oak Shrubland, Aspen, and Douglas Fir.

## METHODS

Methodologies used herein were performed in accordance with the guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOG M). Quantitative and qualitative data were taken on the vegetation of the reclaimed Sweets Pond perimeter and Mountain Brush Reference Area. Sampling was conducted August 14, 1997.

### Transect and Quadrat Placement

Transect lines for sampling were placed randomly throughout the reclaimed and reference areas. Random/regular placement of sampling quadrats were designed to record data without preconceived bias. Once the transect lines were placed, regular points were then marked on them. From these marks, a random number dictated the direction and distance to place the quadrats at right angles from the transect lines.

### Cover and Composition

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows "A Utah Flora" (Welsh et al., 1993).

### Woody Species Density

Density of woody plant species of the reclaimed and reference areas were made using belt transects that were 5 ft by 50 ft (250 ft<sup>2</sup>) in size. Total number of individuals by species were counted in each of the belt transects. The average number was then calculated followed by the number of individuals per acre.

## Photographs

Color photographs of the sample areas were taken at the time of sampling and have been submitted with this report.

## Raw Data

The raw data have been summarized on a spreadsheet and are included in this report.

## RESULTS

### Sweets Pond

Total living cover of Sweets Pond was estimated to be 57.50% (Table 1A). Grasses dominated the area and comprised 79.21% of the living cover, whereas, shrubs and forbs values were 16.03% and 4.76%, respectively (Table 1B).

Woody species density was estimated to be 1,666.17 individuals per acre (Table 1C). The dominant shrub by density was rubber rabbitbrush (*Chrysothamnus nauseosus*). The most common plant species by cover and frequency was smooth brome (*Bromus inermis*) followed by rubber rabbitbrush by cover and Western wheatgrass (*Elymus smithii*) by frequency (Table 2).

## Reference Area

Total living cover of the Mountain Brush Reference Area was 43.67% (Table 3A). Like Sweets Pond, grasses dominated the area comprising 65.65% of the living cover (Table 3B).

Woody species density was estimated to be 2,578.72 plants per acre (Table 3C). Dominant woody species by density measurements were broom snakeweed (*Gutierrezia sarothrae*), mountain mahogany (*Cercocarpus montanus*), and corymbed buckwheat (*Eriogonum corymbosum*). The dominant plant species in the cover and frequency data was Salina wildrye (*Elymus salinus*), followed distantly by mountain mahogany and corymbed buckwheat (Table 4).

## DISCUSSION

The reclaimed area (Sweets Pond) had more cover than the reference area. Lifeform composition measurements were comparable with the reference area. Woody species density was greater in the reference area.

Statistical analyses were not employed for the scope of this document because another report that compares the reclaimed and reference areas for the past 2 years (1996-1997) will be submitted in the near future. Statistical comparisons will be included for these areas in that report.

**TABLE 1:** Summary of total cover (A), composition (B), and woody species density (C) for the Sweets Pond area of Gordon Creek 2/7/8 mines (1997).

**A.**

<b>TOTAL COVER</b>	<b>% MEAN COVER</b>	<b>STANDARD DEVIATION</b>	<b>SAMPLE SIZE</b>
Total Living	57.50	11.99	20
Litter	20.50	7.23	20
Bareground	13.00	7.44	20
Rock	9.00	7.31	20

**B.**

<b>UNDERSTORY COMPOSITION</b>	<b>PERCENT</b>	<b>STANDARD DEVIATION</b>	<b>SAMPLE SIZE</b>
Shrubs	16.03	20.74	20
Forbs	4.76	7.94	20
Grasses	79.21	18.46	20

**C.**

<b>WOODY SPECIES DENSITY</b>	<b>NUMBER/ACRE</b>
<i>Acer glabrum</i>	10.89
<i>Artemisia tridentata</i>	54.45
<i>Chrysothamnus nauseosus</i>	1470.15
<i>Chrysothamnus viscidiflorus</i>	32.67
<i>Rosa woodsii</i>	87.12
<i>Sambucus caerulea</i>	<u>10.89</u>
<b>TOTAL</b>	<u><b>1666.17</b></u>

TABLE 2: Summary of living cover and frequency by species for the Sweets Pond area of Gordon Creek 2/7/8 mines (1997).

<b>UNDERSTORY COVER BY SPECIES</b>				
	MEAN COVER	STANDARD DEVIATION	RELATIVE FREQUENCY	SAMPLE SIZE
<u>Trees &amp; Shrubs</u>				
<i>Chrysothamnus nauseosus</i>	8.50	11.08	40.00	20
<u>Forbs</u>				
<i>Cirsium</i> sp.	0.75	2.38	10.00	20
<i>Kochia scoparia</i>	0.50	2.18	5.00	20
<i>Machaeranthera canescens</i>	1.50	3.20	20.00	20
<u>Grasses</u>				
<i>Agropyron cristatum</i>	0.75	3.27	5.00	20
<i>Bromus inermis</i>	30.00	19.10	90.00	20
<i>Bromus tectorum</i>	1.00	3.00	10.00	20
<i>Dactylis glomeratus</i>	3.00	13.08	5.00	20
<i>Elymus hispidus</i>	2.00	6.20	10.00	20
<i>Elymus lanceolatus</i>	1.75	2.86	30.00	20
<i>Elymus smithii</i>	5.75	5.97	55.00	20
<i>Poa pratensis</i>	2.00	4.00	20.00	20

**TABLE 3:** Summary of total cover (A), composition (B), and woody species density (C) for the Mountain Brush Reference Area of Gordon Creek 2/7/8 mines (1997).

---

**A.**

<b>TOTAL COVER</b>	<b>% MEAN COVER</b>	<b>STANDARD DEVIATION</b>	<b>SAMPLE SIZE</b>
Total Living	43.67	10.95	30
Litter	12.67	4.23	30
Bareground	16.00	8.21	30
Rock	27.67	10.39	30

---

**B.**

<b>UNDERSTORY COMPOSITION</b>	<b>PERCENT</b>	<b>STANDARD DEVIATION</b>	<b>SAMPLE SIZE</b>
Shrubs	21.77	21.50	30
Forbs	12.57	14.66	30
Grasses	65.65	22.07	30

---

**C.**

<b>WOODY SPECIES DENSITY</b>	<b>NUMBER/ACRE</b>
<i>Amalanchier utahensis</i>	8.71
<i>Artemisia tridentata</i>	17.42
<i>Cercocarpus ledifolius</i>	618.55
<i>Chrysothamnus viscidiflorus</i>	52.25
<i>Eriogonum corymbosum</i>	609.84
<i>Gutierrezia sarothrae</i>	1097.71
<i>Purshia tridentata</i>	130.68
<i>Symphoricarpos oreophilus</i>	<u>43.56</u>
<b>TOTAL</b>	<u><b>2578.72</b></u>

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TABLE 4: Summary of living cover and frequency by species for the Mountain Brush Reference Area of Gordon Creek 2/7/8 mines (1997).

---

**UNDERSTORY COVER  
BY SPECIES**

	MEAN COVER	STANDARD DEVIATION	RELATIVE FREQUENCY	SAMPLE SIZE
<u>Trees &amp; Shrubs</u>				
<i>Artemisia tridentata</i>	0.67	3.59	3.33	30
<i>Cercocarpus montanus</i>	3.83	5.43	33.33	30
<i>Eriogonum corymbosum</i>	3.83	8.33	23.33	30
<i>Gutierrezia sarothrae</i>	1.17	2.11	23.33	30
<i>Purshia tridentata</i>	1.00	2.71	13.33	30
<i>Symphoricarpos oreophilus</i>	0.17	0.90	3.33	30
<u>Forbs</u>				
<i>Artemisia carruthii</i>	0.33	1.25	6.67	30
<i>Epilobium brachycarpum</i>	0.50	1.50	10.00	30
<i>Eriogonum jamesii</i>	1.50	5.65	6.67	30
<i>Hymenoxys richardsonii</i>	1.00	2.71	3.33	30
<i>Machaeranthera canescens</i>	0.67	2.81	6.67	30
<i>Machaeranthera grindelioides</i>	0.50	1.50	3.33	30
<i>Stanleya pinnata</i>	0.83	1.86	10.00	30
<u>Grasses</u>				
<i>Elymus salinus</i>	24.83	9.79	100.00	30
<i>Poa fendleriana</i>	2.50	1.25	20.00	30
<i>Stipa hymenoides</i>	0.33	1.25	6.67	30

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COLOR PHOTOGRAPHS



Sweets Pond



Reference Area

APPENDIX  
(Raw Data)

**BLACKHAWK**

Mines 2,7&amp;8

Sweets Pond

Exposure: Variable

Slope: 25 deg.

Sample Date: 14 Aug 1997

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**TREES & SHRUBS**

Chrysothamnus nauseosus	25.00	25.00	20.00	0.00	15.00	30.00	25.00	20.00
-------------------------	-------	-------	-------	------	-------	-------	-------	-------

**FORBS**

Cirsium sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-------------	------	------	------	------	------	------	------	------

Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----------------	------	------	------	------	------	------	------	------

Machaeranthera canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
--------------------------	------	------	------	------	------	------	------	------

**GRASSES**

Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---------------------	------	------	------	------	------	------	------	------

Bromus inermis	20.00	15.00	30.00	0.00	5.00	20.00	30.00	15.00
----------------	-------	-------	-------	------	------	-------	-------	-------

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-----------------	------	------	------	------	------	------	------	------

Dactylis glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---------------------	------	------	------	------	------	------	------	------

Elymus hispidus	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
-----------------	------	------	------	-------	------	------	------	------

Elymus lanceolatus	0.00	5.00	0.00	5.00	5.00	0.00	0.00	10.00
--------------------	------	------	------	------	------	------	------	-------

Elymus smithii	0.00	10.00	0.00	15.00	10.00	20.00	10.00	5.00
----------------	------	-------	------	-------	-------	-------	-------	------

Poa pratensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---------------	------	------	------	------	------	------	------	------

**COVER**

Total Living Cover	45.00	55.00	50.00	35.00	35.00	70.00	65.00	50.00
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Litter	10.00	10.00	25.00	20.00	20.00	15.00	25.00	25.00
--------	-------	-------	-------	-------	-------	-------	-------	-------

Bareground	20.00	25.00	10.00	25.00	20.00	10.00	5.00	20.00
------------	-------	-------	-------	-------	-------	-------	------	-------

Rock	25.00	10.00	15.00	20.00	25.00	5.00	5.00	5.00
------	-------	-------	-------	-------	-------	------	------	------

**% COMPOSITION**

Shrubs	55.56	45.45	40.00	0.00	42.86	42.86	38.46	40.00
--------	-------	-------	-------	------	-------	-------	-------	-------

Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-------	------	------	------	------	------	------	------	------

Grasses	44.44	54.55	60.00	100.00	57.14	57.14	61.54	60.00
---------	-------	-------	-------	--------	-------	-------	-------	-------

9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	5.00	10.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00
40.00	45.00	0.00	35.00	30.00	10.00	55.00	35.00	70.00	40.00	45.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	10.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	10.00	10.00	10.00	5.00	0.00	0.00	0.00	10.00	0.00
0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	10.00
55.00	60.00	45.00	45.00	65.00	75.00	65.00	55.00	70.00	70.00	70.00
30.00	30.00	10.00	30.00	20.00	10.00	20.00	30.00	10.00	20.00	25.00
10.00	5.00	25.00	20.00	10.00	10.00	10.00	10.00	15.00	5.00	3.00
5.00	5.00	20.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.00
0.00	0.00	0.00	0.00	0.00	0.00	15.38	0.00	0.00	0.00	0.00
18.18	8.33	22.22	0.00	23.08	0.00	0.00	9.09	0.00	14.29	0.00
81.82	91.67	77.78	100.00	76.92	100.00	84.62	90.91	100.00	85.71	100.00

BLACKHAWK  
 Mines 2,7&8  
 Sweets Pond  
 Exposure: Variable  
 Slope: 25 deg.  
 Sample Date: 14 Aug 1997

20.00	Mean	SDev	Freq	
<hr/>				
0.00	8.50	11.08	40.00	TREES & SHRUBS Chrysothamnus nauseosus
0.00	0.75	2.38	10.00	FORBS Circium sp.
0.00	0.50	2.18	5.00	Kochia scoparia
0.00	1.50	3.20	20.00	Machaeranthera canescens
0.00	0.75	3.27	5.00	GRASSES Agropyron cristatum
60.00	30.00	19.10	90.00	Bromus inermis
0.00	1.00	3.00	10.00	Bromus tectorum
0.00	3.00	13.08	5.00	Dactylis glomeratus
0.00	2.00	6.20	10.00	Elymus hispidus
0.00	1.75	2.86	30.00	Elymus lanceolatus
0.00	5.75	5.97	55.00	Elymus smithii
10.00	2.00	4.00	20.00	Poa pratensis
<hr/>				
70.00	57.50	11.99		COVER Total Living Cover
25.00	20.50	7.23		Litter
2.00	13.00	7.44		Bareground
3.00	9.00	7.31		Rock
<hr/>				
0.00	16.03	20.74		% COMPOSITION Shrubs
0.00	4.76	7.94		Forbs
100.00	79.21	18.46		Grasses

**BLACKHAWK**

Mines 2,7&8

Reference Area

Exposure: SSE

Slope: 33 deg.

Sample Date: 14 Aug 1997

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>TREES &amp; SHRUBS</b>								
<i>Artemisia tridentata</i>	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
<i>Cercocarpus montanus</i>	5.00	10.00	10.00	5.00	15.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	5.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Purshia tridentata</i>	0.00	0.00	0.00	5.00	10.00	0.00	0.00	0.00
<i>Symphoricarpos oreophilus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<b>FORBS</b>								
<i>Artemisia carruthii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Epilobium brachycarpum</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Eriogonum jamesii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Hymenoxys richardsonii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Machaeranthera canescens</i>	0.00	0.00	15.00	0.00	0.00	0.00	0.00	5.00
<i>Macharanthera grindelioides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stanleya pinnata</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<b>GRASSES</b>								
<i>Elymus salinus</i>	35.00	40.00	20.00	35.00	15.00	15.00	35.00	15.00
<i>Poa fendleriana</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<b>COVER</b>								
Total Living Cover	40.00	55.00	60.00	50.00	45.00	40.00	35.00	30.00
Litter	10.00	10.00	10.00	20.00	10.00	20.00	15.00	10.00
Bareground	35.00	10.00	5.00	25.00	15.00	15.00	25.00	5.00
Rock	15.00	25.00	25.00	5.00	30.00	25.00	25.00	55.00
<b>% COMPOSITION</b>								
Shrubs	12.50	27.27	41.67	20.00	55.56	50.00	0.00	16.67
Forbs	0.00	0.00	25.00	10.00	0.00	12.50	0.00	16.67
Grasses	87.50	72.73	33.33	70.00	44.44	37.50	100.00	66.67

9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00	10.00	0.00	15.00
0.00	0.00	0.00	0.00	25.00	0.00	5.00	0.00	0.00	35.00	10.00
5.00	0.00	0.00	5.00	0.00	0.00	5.00	0.00	5.00	5.00	5.00
0.00	10.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	30.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
30.00	20.00	35.00	15.00	5.00	30.00	20.00	35.00	20.00	25.00	25.00
0.00	20.00	0.00	0.00	15.00	0.00	10.00	10.00	5.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.00	55.00	35.00	50.00	50.00	45.00	55.00	55.00	45.00	65.00	55.00
5.00	10.00	5.00	10.00	15.00	15.00	15.00	5.00	10.00	15.00	10.00
10.00	5.00	20.00	10.00	20.00	10.00	10.00	10.00	20.00	10.00	15.00
40.00	30.00	40.00	30.00	15.00	30.00	20.00	30.00	25.00	10.00	20.00
11.11	27.27	0.00	10.00	50.00	11.11	18.18	9.09	33.33	61.54	54.55
11.11	0.00	0.00	60.00	10.00	22.22	27.27	9.09	11.11	0.00	0.00
77.78	72.73	100.00	30.00	40.00	66.67	54.55	81.82	55.56	38.46	45.45

20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	5.00	15.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	5.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00
5.00	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
20.00	40.00	35.00	30.00	25.00	10.00	10.00	30.00	40.00	20.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	45.00	40.00	30.00	40.00	25.00	30.00	30.00	45.00	30.00	25.00
10.00	15.00	10.00	10.00	15.00	15.00	20.00	15.00	20.00	15.00	15.00
10.00	15.00	5.00	35.00	20.00	30.00	15.00	20.00	15.00	25.00	15.00
20.00	25.00	45.00	25.00	25.00	30.00	35.00	35.00	20.00	30.00	45.00
58.33	0.00	12.50	0.00	12.50	60.00	0.00	0.00	0.00	0.00	0.00
8.33	11.11	0.00	0.00	25.00	0.00	33.33	0.00	11.11	33.33	40.00
33.33	88.89	87.50	100.00	62.50	40.00	66.67	100.00	88.89	66.67	60.00

BLACKHAWK  
 Mines 2,7&8  
 Reference Area  
 Exposure: SSE  
 Slope: 33 deg.  
 Sample Date: 14 Aug 1997

Mean	SDev	Freq	
<b>TREES &amp; SHRUBS</b>			
0.67	3.59	3.33	<i>Artemisia tridentata</i>
3.83	5.43	33.33	<i>Cercocarpus montanus</i>
3.83	8.33	23.33	<i>Eriogonum corymbosum</i>
1.17	2.11	23.33	<i>Gutierrezia sarothrae</i>
1.00	2.71	13.33	<i>Purshia tridentata</i>
0.17	0.90	3.33	<i>Symphoricarpos oreophilus</i>
<b>FORBS</b>			
0.33	1.25	6.67	<i>Artemisia carruthii</i>
0.50	1.50	10.00	<i>Epilobium brachycarpum</i>
1.50	5.65	6.67	<i>Eriogonum jamesii</i>
1.00	2.71	3.33	<i>Hymenoxys richardsonii</i>
0.67	2.81	6.67	<i>Machaeranthera canescens</i>
0.50	1.50	3.33	<i>Macharanthera grindelioides</i>
0.83	1.86	10.00	<i>Stanleya pinnata</i>
<b>GRASSES</b>			
24.83	9.79	100.00	<i>Elymus salinus</i>
2.50	5.12	20.00	<i>Poa fendleriana</i>
0.33	1.25	6.67	<i>Stipa hymenoides</i>

<b>COVER</b>		
43.67	10.95	Total Living Cover
12.67	4.23	Litter
16.00	8.21	Bareground
27.67	10.39	Rock
<b>% COMPOSITION</b>		
21.77	21.50	Shrubs
12.57	14.66	Forbs
65.65	22.07	Grasses

## **APPENDIX C**

Legal, Financial, Compliance and Related Information

Annual Report of Officers  
as submitted to the Utah Department of Commerce  
and other changes in ownership and control information  
as required under R645-301-110.

### **CONTENTS**

No Change

# **APPENDIX D**

Mine Maps

as required under R645-301-525.270.

## **CONTENTS**

Gordon Creek No. 2 Mine

Gordon Creek No. 7 Mine

Gordon Creek No. 8 Mine

**LEGEND**

- INTAKE AIR
- RETURN AIR
- PRIMARY ESCAPEWAY
- SECONDARY ESCAPEWAY
- BELTLINE
- STOPPING
- STOPPING W/ MAN DOOR
- EQUIPMENT DOOR
- SEAL
- OVERCAST
- DRILL HOLE
- OUTCROP
- REGULATOR
- BOX CHECK
- FAULT
- LEASE BOUNDARY

- NOTES**
1. ELEVATIONS SHOWN ARE MEAN SEA LEVEL.
  2. THE AVE. DEPTH OF THE CASTLEGATE "A" SEAM IS 24 FT.
  3. BENCH ARE TO BE SET POINTS ABOVE THE AVE.
  4. BENCH ARE TO BE SET TO READ 1000 FT. OF THE AVE.
  5. Average subsidence height for all subsidence is approximately 7.2 ft.

SUBSIDENCE MONITORING STATION

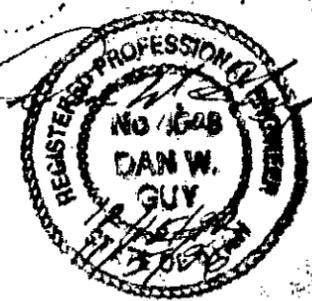
SUBSIDENCE HOLE REPAIRED 1988

COLUMBO FEE

CASTLEGATE "A" OUTCROP

FEDERAL LEASE U-53159  
COLUMBO FEE

FEDERAL LEASE U-53159



**MOUNTAIN COAL COMPANY**

GORDON CREEK NO. 7 MINE MAP  
CASTLEGATE "A" SEAM  
CARBON COUNTY, UTAH

NE 1/4 Sec 7, T40N, R10E, S10E

SCALE: 1"=500' DATE: 8/1/88 DRAWN BY: R. Jay Merrick

REV. 12-15-92

PLATE 3-5

# APPENDIX E

Other Information

in accordance with the requirements of R645-301 and R645-302.

## CONTENTS

N/A