

MOUNTAIN COAL COMPANY

1995

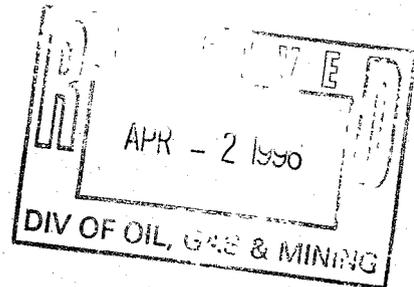
ANNUAL REPORT

HUNTINGTON CANYON NO. 4 MINE

COAL MINING AND RECLAMATION OPERATIONS FOR 1995

(Must be submitted to the Division by April 2, 1996)

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203
(801) 538-5340



Permittee: MOUNTAIN COAL COMPANY
Mine Name: HUNTINGTON CANYON No. 4 MINE
Mailing Address: P.O. Box 591, SOMERSET, COLO. 81434
Company Representative: PAIGE B. BEVILLE
Resident Agent: THE CORP TRUST Co., 1209 ORANGE ST., WILMINGTON, DE 19801
Permit Number: INA/015/004
MSHA ID Number: N/A
Date of Initial Permanent Program Permit: 01/30/80
Date of Permit Renewal: 04/30/95
Quantity of Coal Mined (tonnage) 1995: N/A

Attach Updated Mine Sequence Map(s) showing mine development through December 31, 1995.
(Same as Lease Royalty Payment Map and/or MSHA Progress Map)

All monitoring activities during the report period to be submitted with this report (including, but not limited to):

A. General

1. Discuss anomalies, missing data and monitoring changes made throughout the year.
2. Summarize any corrective actions and the results that may have occurred during the year.

**B. Water Monitoring Data:
Groundwater Summary**

1. Mine Discharge
 - a. Summarize the total annual discharge from mine water discharge points and

- breakdown on a monthly basis for each site.
 - b. Discuss the past five years of data comparing changes in discharge. (Include in the discussion elements encountered during the year such as mining rate, location of faults or large in-mine flows during the year.)
 - c. Discuss trends, if existent, and exceedence in water quality parameters. A correlation with flow could provide additional information.
 - 2. Springs
 - a. Are there seasonal trends/or changes in water quality for each quarter? Stiff diagrams provide a good aid in this determination.
 - b. Provide an analysis of changes in quantity of flow. Discuss any significant changes or trends. (An accumulation of long-term data, especially in graph form, is helpful for this discussion.)
 - 3. Surface Water
 - a. Include (discuss or tabulate) comparisons of upstream and downstream water quality and quantity for monitoring sites for each quarter. Include tributary quantity and quality information. Compare with mine water discharge, where applicable.
 - b. Discuss any subsidence occurring over underlying tributaries and streams (perennial or ephemeral), and results from monitoring of subsided areas.
- C. Summarized Water Monitoring Data
- 1. List of monitoring points and their locations and respective frequencies of monitoring (monthly, quarterly, etc.) as approved in the PAP;
 - 2. UPDES permit number, UPDES discharge points, and their locations (based on UTM coordinates, if possible).
 - 3. Summary of findings based on water monitoring during 1995; and
 - 4. Submit water monitoring as DOS-based files. Be specific about the format, submit data in one of the following formats only, i.e: Quattro Pro, Lotus, or ASCII.
- D. Precipitation or Other Climatological Data (please submit as DOS-based files: ASCII, Lotus, Quattro Pro, FoxPro, etc. -- Contact Ken Wyatt, if you have any questions).
- E. Subsidence Monitoring Report:
- 1. Brief description of monitoring system (monuments or aerial surveys, how monitoring is done, how frequently monitoring is done);
 - 2. List of all monitoring points (if any) and their locations and amount of displacement of each;
 - 3. Map showing either monitoring points (if any) or a representation of subsidence which has occurred; and
 - 4. Any owners and/or occupants of surface property and structures above the underground workings who were or will be mailed notification six months prior to mining (R645-301-525.300).
 - 5. Discussion of any proposed mining sequence changes and how that may affect the area of monitoring for the following year.
- F. Vegetation Data (test plots) or Revegetation Success Monitoring (includes interim and final):

1. Test plot monitoring data or implementation;
2. Quantitative results from interim or final seeding efforts;
3. If quantitative monitoring was not required, then at minimum, a qualitative description of the interim or final vegetation; and
4. Describe any seeding done on site during the current year.

G. Annual Impoundment Certification, (R645-301-514.312) which includes the following information:

1. Any appearances of instability;
2. Structural weakness or other hazardous conditions;
3. Depth and elevation of any impounded waters;
4. Existing storage capacity;
5. Any existing or required monitoring procedures and instrumentation; and
6. Any other aspects of the structure affecting stability.

Suggested Form Enclosed

H. Annual Overburden, Spoil, Refuse, Roof, Floor, and Mid-Seam Data. For Consistency and completeness, please submit data for this reporting requirement in the following manner:

1. Location of sample site, sample interval, and sample matrix (if roof or floor, then include lithologic unit and if coal, then thickness of seam at sample site);
2. Sampling technique employed in the field (i.e., grab sample, composite, depth segregated or specific procedure outlined in the permit by chapter and page) and preparation prior to analysis (i.e., sieved sample, ground sample, air dried, oven dried, etc.);
3. Laboratory analysis report sheet which includes:
 - i. Sample time and date;
 - ii. Date and time of lab analysis; and
 - iii. Analytical method(s) employed and references. Include the soil/spoil: water ratio.
4. Summary of findings based on monitoring.

I. A current copy of the annual report of officers submitted to the Department of Commerce and any changes in the ownership and control information required under R645-301-110.

J. Any Other Information Required to be Submitted as Specified in your Permit Application Package and Permit.

PERMIT



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

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

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

cc: H. Hagg

January 30, 1995

Paige Beville, Manager
Environmental, Health and Safety
ARCO Coal Company
555 Seventeenth Street
Denver, CO 80202

Re: Complete Renewal Application, Huntington #4 Mine, Mountain Coal Company,
ACT/015/004-95A, Folder #3, Emery County, Utah

Dear Ms. Beville:

The Division has determined that the permit renewal application for the Huntington #4 Mine is "complete and accurate", as defined by the policy directive for permit renewal, effective January 12, 1994, with the submittal of the current bond and liability insurance. Please submit the affidavit of publication after the notice has run for four consecutive week.

If you have any questions, please call me.

Sincerely,

A handwritten signature in cursive script, reading "Pamela Grubaugh-Littig".

Pamela Grubaugh-Littig
Permit Coordinator

cc: Daron Haddock

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Emery,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Emery County Progress, a weekly newspaper of general circulation, published at Castle Dale, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 10th day of January, 1995 and that the last publication of such notice was in the issue of such newspaper dated the 31st day of January, 1995.

Kevin Ashby

Kevin Ashby - Publisher

Subscribed and sworn to before me this 31st day of January, 1995.

Linda Thayne

Notary Public My commission expires January 10, 1999 Residing at Price, Utah

Publication fee, \$160.00

**PUBLIC NOTICE FOR PERMIT RENEWAL
HUNTINGTON CANYON NO. 4 MINES
MOUNTAIN COAL CO.
P.O. BOX 591
SOMERSET, COLORADO 81434**

Mountain Coal Company, P.O. Box 591, Somerset, Colorado 81434, a wholly owned subsidiary of Atlantic Richfield Company, has filed with the Utah Division of Oil, Gas and Mining an application for renewal of its Mining and Reclamation Plan Permit for its Huntington Canyon No. 4 Mine. The Huntington Canyon No. 4 Mine was located in Mill Fork Canyon, approximately 10 road miles northwest of Huntington, Utah. The permit area is described as follows:

- Township 16 South Range 7 East, SLBM, Utah
- Section 16: All
- Section 8: SW $\frac{1}{4}$
- Section 8: S $\frac{1}{2}$ SE $\frac{1}{4}$
- Section 9: S $\frac{1}{2}$ SW $\frac{1}{4}$
- Section 9: SW $\frac{1}{4}$ SE $\frac{1}{4}$
- Section 17: E $\frac{1}{4}$

The Huntington Canyon No. 4 Mine was permanently reclaimed in September 1985, and was granted Phase I bond release in November 1986.

The application was filed, and this notice is being published to comply with the Surface Mining Control and Reclamation Act of 1977 and State and Federal regulations promulgated pursuant to said act.

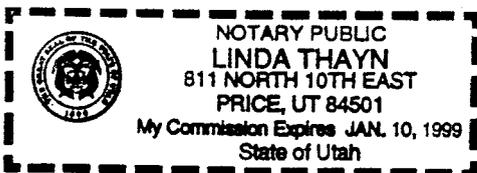
The Huntington Canyon No. 4 Mine is located on "Rilda Canyon, Utah", U.S. Geological Survey 7.5-minute quadrangle map.

The application is available for public inspection at the:

- Recorder's Office
- Emery County Courthouse
- Castle Dale, Utah 84513
- Mining and Reclamation Plan
- Huntington Canyon No. 4 Mine
- Permit Application

Written comments, objections, or requests for informal conferences on the application may be submitted to: State of Utah Department of Natural Resources, Division of Oil, Gas and Mining, 355 West North Temple, #3 Triad Center Suite 350, Salt Lake City, Utah 84180-1203.

Published in the Emery County Progress January 10, 17, 24 and 31, 1995.





BLACKHAWK ENGINEERING, CO.

Rt. 1, Box 146-H5 - Helper, Utah 84526 - Telephone (801) 637-2422

December 30, 1994

Mr. Darron Haddock
Permit Supervisor
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Request for Permit Renewal
Mountain Coal Co.
Huntington Canyon No. 4 Mine
INA/015/004
Emery County, Utah

Dear Mr. Haddock:

Pursuant to R645-303-232, Mountain Coal Co. is herein submitting a request for renewal of the permit for the Huntington Canyon No. 4 Mine. The permit will expire on 04/30/95.

Enclosed is a copy of the liability insurance policy, performance bond, and proposed newspaper notice. The notice will be run in the local paper once per week for four consecutive weeks, and proof of publication will be submitted to the Division as required by R645-300-121.100.

If you have and questions, or need any further information, please let me know.

Respectfully,

Dan W. Guy,
for Paige B. Beville

cc: Paige B. Beville, MCC
Scot Anderson
File

FEDERAL

PERMIT
ACT/015/004

September 12, 1991

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

This permit, ACT/015/004, is issued for the State of Utah by the Utah Division of Oil, Gas and Mining (Division) to:

Mountain Coal Company
P.O. Box 1378
Price, Utah 84501
(801) 637-5050

for the Huntington #4 Mine. A Surety Bond is filed with the Division in the amount of \$144,041, payable to the State of Utah, Division of Oil, Gas and Mining, and the Office of Surface Mining, Reclamation and Enforcement (OSM). The Division must receive a copy of this permit signed and dated by the permittee.

Sec. 1 STATUTES AND REGULATIONS - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.

Sec. 2 PERMIT AREA - The permittee is authorized to conduct underground coal mining activities on the following described lands within the permit area at the Huntington #4 Mine, situated in the State of Utah, Emery County, and located:

Township 16 South, Range 7 East, SLBM

Section 8: SW1/4, S1/2 SE1/4
Section 9: S1/2 SW1/4, SW1/4 SE1/4
Section 16: All
Section 17: E1/2

This legal description is for the permit area of the Huntington #4 Mine. The permittee is authorized to conduct underground coal mining activities and related surface activities on the foregoing described property subject to the conditions of all applicable conditions, laws and regulations.

- Sec. 3 COMPLIANCE** - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.
- Sec. 4 PERMIT TERM** - This permit becomes effective on September 12, 1991, and expires on April 30, 1995.
- Sec. 5 ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the prior written approval of the Division Director. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13{e} and R614-303-300.
- Sec. 6 RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the Division, including but not limited to inspectors, and representatives of the Office of Surface Mining Reclamation and Enforcement (OSM), without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:
- (a) have the rights of entry provided for in 30 CFR 840.12, R614-400-220, 30 CFR 842.13 and R614-400-110;
 - (b) be accompanied by private persons for the purpose of conducting an inspection in accordance with R614-400-100 and R614-400-200 when the inspection is in response to an alleged violation reported to the Division by the private person.
- Sec. 7 SCOPE OF OPERATIONS** - The permittee shall conduct underground coal mining activities only on those lands specifically designated as within the permit area on the maps submitted in the approved plan and approved for the term of the permit and which are subject to the performance bond.
- Sec. 8 ENVIRONMENTAL IMPACTS** - The permittee shall take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of the permit, including, but not limited to:
- (a) Any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance;
 - (b) immediate implementation of measures necessary to comply; and

- (c) warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

Sec. 9 CONDUCT OF OPERATIONS - The permittee shall conduct its operations:

- (a) in accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
- (b) utilizing methods specified as conditions of the permit by the Division in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 10 EXISTING STRUCTURES - As applicable, the permittee will comply with R614-301 and R614-302 for compliance, modification, or abandonment of existing structures.

Sec. 11 RECLAMATION FEE PAYMENTS - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.

Sec. 12 AUTHORIZED AGENT - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.

Sec. 13 COMPLIANCE WITH OTHER LAWS - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq,) and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.

Sec. 14 PERMIT RENEWAL - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 15 CULTURAL RESOURCES - If during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify the Division. The Division, after coordination with OSM, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by Division within the time frame specified - Division.

Sec. 16 APPEALS - The permittee shall have the right to appeal as provided for under R614-300-200.

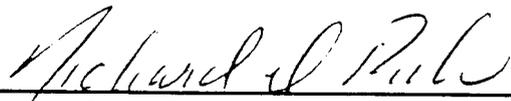
The above conditions (Secs. 1-16) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of the Division and the permittee at any time to adjust to changed conditions or to correct an oversight. The Division may amend these conditions at any time without the consent of the permittee in order to make them consistent with any federal or state statutes and any regulations.

THE STATE OF UTAH

By: 

Date: 9-12-91

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.


**Authorized Representative of
the Permittee**

Date: 10/15/91

FEDERAL

Permit Number ACT/015/004

April 30, 1990

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

This permit (five-year renewal), ACT/015/004, is issued for the state of Utah by the Utah Division of Oil, Gas and Mining (DOGM) to:

Beaver Creek Coal Company
P. O. Box 1378
Price, Utah 84501
(801) 637-5050

for the Huntington #4 Mine. A performance bond is filed with the DOGM in the amount of \$144,041.00, payable to the state of Utah, Division of Oil, Gas and Mining, and the Office of Surface Mining, Reclamation and Enforcement (OSMRE). DOGM must receive a copy of this permit signed and dated by the permittee.

- Sec. 1 STATUTES AND REGULATIONS** - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.
- Sec. 2 PERMIT AREA** - The permittee is authorized to conduct reclamation activities on the following described lands (as shown on the map appended as Attachment A) within the permit area at the Huntington #4 Mine, situated in the state of Utah, Emery County, and located:

This legal description is for the permit area (as shown on Attachment B) of the Huntington #4 Mine. The permittee is authorized to conduct underground coal mining activities connected with mining on the foregoing described property subject to the conditions of the leases, the approved mining plan, including all conditions and all other applicable conditions, laws and regulations.

Sec. 3 **PERMIT TERM** - This revised permit becomes effective on April 30, 1990, and expires on April 30, 1995.

Sec. 4 **ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned, or sold without the approval of the Director, DOGM. Transfer, assignment, or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13[e] and UMC 788.17-.19.

Sec. 5 **RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the DOGM, including but not limited to inspectors, and representatives of OSMRE, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:

A. have the rights of entry provided for in 30 CFR 840.12, UMC 840.12, 30 CFR 842.13 and UMC 842.13; and

B. be accompanied by private persons for the purpose of conducting an inspection in accordance with UMC 842.12 and 30 CFR 842, when the inspection is in response to an alleged violation reported by the private person.

Sec. 6 **SCOPE OF OPERATIONS** - The permittee shall conduct reclamation activities only on those lands specifically designated as within the permit area on the maps submitted in the reclamation plan and permit application and approved for the term of the permit and which are subject to the performance bond.

Sec. 7 **ENVIRONMENTAL IMPACTS** - The permittee shall minimize any adverse impact to the environment or public health and safety through but not limited to:

A. accelerated monitoring to determine the nature and extent of noncompliance and the results of the noncompliance;

- B. immediate implementation of measures necessary to comply; and
- C. warning, as soon as possible after learning of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

Sec. 9 CONDUCT OF OPERATIONS - The permittee shall conduct its operations:

- A. in accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
- B. utilizing methods specified as conditions of the permit by DOGM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 10 AUTHORIZED AGENT - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.

Sec. 11 COMPLIANCE WITH OTHER LAWS - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq), and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.

Sec. 12 PERMIT RENEWAL - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 13 CULTURAL RESOURCES - If during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed, and shall notify DOGM. DOGM, after coordination with OSMRE, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by DOGM within the time frame specified by DOGM.

Sec. 14 **APPEALS** - The permittee shall have the right to appeal as provided for under UMC 787.

Sec. 15 **SPECIAL CONDITIONS** - There are no special conditions associated with this permitting action.

The above conditions (Secs. 1-15) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of DOGM and the permittee at any time to adjust to changed conditions or to correct an oversight. DOGM may amend these conditions at any time without the consent of the permittee in order to make them consistent with any new federal or state statutes and any new regulations.

THE STATE OF UTAH

By: *Deanne P. Nelson*
Date: 4-30-90

I certify that I have read, understand, and accept the requirements of this permit and any special conditions attached.

Richard J. The L
Authorized Representative of
the Permittee
Date: 5-24-90

APPROVED AS TO FORM:

By: *Deane H. Filayson*
Assistant Attorney General
Date: _____

AMENDMENTS



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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

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

November 3, 1995

Paige B. Beville, Manager
Environmental, Health & Safety
Mountain Coal Company
ARCO Coal Company
555 17th Street, Room 2170
Denver, CO 80202

Re: Water Monitoring Amendment, Huntington Canyon #4 Mine, Mountain Coal Company, ACT/015/004-95C, Folder #2, Emery County, Utah

Dear Ms. Beville:

The above noted amendment is approved, effective November 1, 1995. Enclosed is a copy of the amendment for incorporation into the permit. The amendment changes the water sampling frequency to a bi-annual sampling. The permittee must make every reasonable effort to schedule water sampling when flows are expected at the water monitoring points.

Sincerely,

A handwritten signature in cursive script that reads "Susan M. White".

Susan M. White
Sr. Reclamation Biologist

Enclosure

cc: Dan W. Guy
FOURMINE.95C



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

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

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

October 11, 1995

FIELD(001)

Re: Water Monitoring Amendment, Huntington Canyon #4 Mine, Mountain Coal Company, ACT/015/004-95C, Folder #2, Emery County, Utah

Dear Mr. FIELD(002):

Enclosed is a copy of Mountain Coal Company's permit modification (Amendment 95C) to change the water monitoring Station 4-7-W from a UPDES Discharge Point to a regular monitoring station.

The Division anticipates approving this permit change on October 31, 1995. If you have any questions or need additional information, please contact me or Joseph C. Helfrich, Permit Supervisor, at your earliest convenience.

Sincerely,

A handwritten signature in cursive script that reads "Susan M. White".

Susan M. White
Sr. Reclamation Biologist

Enclosure
cc: Dan W. Guy
Paige Beville
TRANLTR.95C



**James Fulton, Chief
Denver Field Division
Office of Surface Mining
Reclamation and Enforcement
Western Regional Coordinating Center
1999 Broadway Ste 3320
Denver, CO 80202-5733**

**Janette S. Kaiser, Forest Supervisor (2 Copies)
U.S. Forest Service
Manti-LaSal National Forest
599 West Price River Road
Price, UT 84501**

**Mark Page, Regional Engineer
Utah Division of Water Rights
Southeastern Regional Office
453 South Carbon Avenue
P. O. Box 718
Price, UT 84501-0718
(Carbon and Emery County Mines)**

**Dave Ariotti, District Engineer
Southeastern Utah Health Dept.
28 South 100 East
P. O. Box 800
Price, UT 84501**

**Bill Bates, Habitat Manager
Utah Division of Wildlife Resources
455 West Railroad Avenue
Price, UT 84501**

**Division of Oil, Gas and Mining
Price Field Office
451 East 400 North
Price, UT 84501-2699**

Division/SLO

Permittee

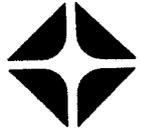
PERMIT CHANGE TRACKING FORM

- Significant Permit Revision
- Permit Amendment
- Incidental Boundary Change

DATE RECEIVED <i>10/10/95</i>	By: <i>SW</i> (Initial)	PERMIT NUMBER	ACT/015/004			
Title of Proposal: <i>Water Monitoring Amendment</i>	PERMIT CHANGE #	<i>95C</i>				
Description: <i>Change 4 PDES points to regular monitoring point</i>	PERMITTEE	MOUNTAIN COAL COMPANY				
	MINE NAME	HUNTINGTON CANYON #4 MINE				
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION <input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee. <input type="checkbox"/> Responses Received. <input type="checkbox"/> Notice of Affidavit of Publication. (If change is a Significant Revision.)	DATE DUE	DATE DONE	RESULT			
	<i>10/31/95</i>		<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED			
	COMMENTS					
REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW	FINAL REVIEW AND FINDINGS		
DOGM REVIEWER	DUE	DONE	DUE	DONE		
<input checked="" type="checkbox"/> Lead <i>SW</i>	<i>10/31</i>	<i>10/31</i>				
<input type="checkbox"/> TA (See Attached) _____						
<input type="checkbox"/> Reviewers _____						
<input type="checkbox"/> Administrative (AVS) _____						
<input type="checkbox"/> Biology _____						
<input type="checkbox"/> Engineering _____						
<input type="checkbox"/> Geology _____						
<input type="checkbox"/> Soils _____						
<input checked="" type="checkbox"/> Hydrology _____	<i>10/31</i>					
COORDINATED REVIEWS	SENT	DUE	RECEIVED	SENT	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History (SHPO)						
<input type="checkbox"/> State Trust Lands						
<input type="checkbox"/> Public Notice / Comment / Hearing Complete. (If the permit change is a Significant Revision)			<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date.			
<input type="checkbox"/> Copies of permit change marked and ready for MRP.			<input type="checkbox"/> Permit Change Denied.			
Special Conditions/Stipulations written for approval.			<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.			
<input type="checkbox"/> TA and CHIA modified as required.			<input type="checkbox"/> Copy of Approved Permit Change to File.			
<input type="checkbox"/> Permit Change Approval Form ready for approval.			<input type="checkbox"/> Copy of Approved Permit Change to Permittee.			
			<input type="checkbox"/> Copies to Other Agencies and Price Field Office.			

Mountain Coal Company

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



October 2, 1995

Susan White
Reclamation Specialist
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Water Monitoring Amendment
Huntington Canyon No.4 Mine
INA/015/004
Emery County, Utah

Dear Susan:

Enclosed are 10 copies of a proposed water monitoring amendment for the Huntington Canyon No.4 Mine. The proposal is to change Station 4-7-W from a UPDES Discharge Point to a regular monitoring station.

The sediment pond has been removed, and the UPDES Discharge Permit has been cancelled effective August 30, 1995. A copy of the cancellation letter is enclosed.

If you have any questions or need any further information, please contact me.

Respectfully,

Dan W. Guy

for

Paige B. Beville

cc: Scot Anderson
Paige Beville
File

APPLICATION FOR PERMIT CHANGE

Title of Change: *WATER MONITORING AMENDMENT*

Permit Number: *INA10151004*

Mine: *Huntington Cyn. No. 4*

Permittee: *Mountain Coal Co.*

Description, include reason for change and timing required to implement:
Elimination of pond /UPDES Discharge.

- Yes No 1. Change in the size of the Permit Area? _____ acres increase decrease.
- Yes No 2. Change in the size of the Disturbed Area? _____ acres increase decrease.
- Yes No 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
- Yes No 4. Will permit change include operations in hydrologic basins other than currently approved?
- Yes No 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes No 6. Does permit change require or include public notice publication?
- Yes No 7. Permit change as a result of a Violation? Violation # _____
- Yes No 8. Permit change as a result of a Division Order? D.O.# _____
- Yes No 9. Permit change as a result of other laws or regulations? Explain: *Removal of Pond /UPDES Permit*
- Yes No 10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
- Yes No 11. Does the permit change affect the surface landowner or change the post mining land use?
- Yes No 12. Does permit change require or include collection and reporting of any baseline information?
- Yes No 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
- Yes No 14. Does permit change require or include soil removal, storage or placement?
- Yes No 15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
- Yes No 16. Does permit change require or include construction, modification, or removal of surface facilities?
- Yes No 17. Does permit change require or include water monitoring, sediment or drainage control measures?
- Yes No 18. Does permit change require or include certified designs, maps, or calculations?
- Yes No 19. Does permit change require or include underground design or mine sequence and timing?
- Yes No 20. Does permit change require or include subsidence control or monitoring?
- Yes No 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
- Yes No 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
- Yes No 23. Is this permit change coal exploration activity inside outside of the permit area?

Attach ¹⁰ complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

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

Jan W. Luyfa Price B. Berille 10/2/95
Signed - Name - Position - Date

Received by Oil, Gas & Mining

Subscribed and sworn to before me this 2 day of OCT, 19 95.
Dana Ballard
Notary Public
My Commission Expires: 9-27, 19 97
Attest: STATE OF _____
COUNTY OF _____



DANA BALLARD
NOTARY PUBLIC - STATE OF UTAH
865 EAST 2800 SOUTH
PRICE, UTAH 84501
COMM. EXP. 9-27-97

ASSIGNED PERMIT CHANGE NUMBER



State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

- original to Saige
- copy to Dan G
- MCC - Utah file

Michael O. Leavitt
Governor

Dianne R. Nielson, Ph.D.
Executive Director

Don A. Ostler, P.E.
Director

288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870
(801) 538-6146 Voice
(801) 538-6016 Fax
(801) 536-4414 T.D.D.

Water Quality Board
Keith W. Welch
Chairman

Lynn F. Pett
Vice Chairman

R. Rex Ausburn, P.E.

David S. Bowles

Patricia S. Briggs

Nan Bunker

Leonard Ferguson

Dianne R. Nielson, Ph.D.

Joe C. Nielson

K.C. Shaw

Leroy H. Wullstein, Ph.D.

Don A. Ostler, P.E.

Executive Secretary

August 30, 1995

Dan W. Guy
Mountain Coal Company
P.O. Box 591
Somerset, CO 81434

Dear Mr. Guy:

Subject: UPDES Permits No. UTG040014 - Gordon Creek and UTG040015 - Huntington Canyon

Your recent letter states that you have discontinued two of your discharges into waters of the State and that the above referenced permits to discharge are no longer needed. Therefore, on the basis of your request, your discharge permits will be removed from our active files and will be considered as no longer in effect.

If you plan to have any future discharge into waters of the State, please submit an application for a permit to our office at least 180 days before the date the discharge is to begin. If you have any questions, please contact Steven McNeal at (801) 538-6075.

Sincerely,

Donald A. Hilden, Ph.D., Manager
Permits and Compliance Section

KC/kc

cc: Judy Kobus-Fisk, U.S. EPA Region VIII
Claron D. Bjork, Southeastern Utah District Health Dept.
Dave Ariotti, District Engineer





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

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

355 West North Temple
 3 Triad Center, Suite 350
 Salt Lake City, Utah 84100-1200
 801-538 5340
 801-359 3940 (Fax)
 801-538-5318 (TDD)

August 15, 1995

Paige B. Beville, Manager
 Environmental, Health & Safety
 Mountain Coal Company
 555 17th Street, Room 2170
 Denver, CO 80202

Re: Sediment Pond Removal, Mountain Coal Company, Huntington Canyon No. 4 Mine
August 15, 1995, ACT/015/004, Folder #3, Emery County, Utah

PAID
 Dear Ms. Beville:

The above-noted amendment is approved, effective August 15, 1995. Enclosed is a copy of the amendment for incorporation into the permit.

Sincerely,

Joe Helfrich
 Permit Supervisor

Is
 Enclosure
 cc: Paige B. Beville

Post-It™ brand fax transmittal memo 7671		# of pages	2
To	DAN GU'S - THANKS	From	JOE HELFRICH
Co.	FOR YOUR PATIENCE	Co.	
Dept.		Phone #	538-5340
Fax #	801-637-2431	Fax #	359-3940

H: APPROVAL



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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

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

August 8, 1995

FIELD(001)

Re: Sediment Pond Removal, Mountain Coal Company, Huntington Canyon Mo. 4 Mine, ACT/015/004-95B, Folder #2, Emery County, Utah

Dear Mr. **FIELD(002)**:

Enclosed is a copy of Mountain Coal's resubmitted plans for removal of the Sediment Pond (95B) for the Huntington Canyon #4 Mine. This proposal should replace the previous submittal for pond removal dated July 5, 1995. The pond removal is a part of preparing for final bond release for this site.

The Division anticipates approving this permit change on August 10, 1995. If you have any questions or need additional information, please contact me or Joseph C. Helfrich, Permit Supervisor, at your earliest convenience.

Sincerely,

A handwritten signature in cursive script that reads "Susan M. White for".

Susan M. White
Senior Reclamation Biologist

Enclosure

cc: P. Beville, Mountain Coal

Dan Guy
FOURPD.95B

James Fulton, Chief
Denver Field Division
Office of Surface Mining
Reclamation and Enforcement
1999 Broadway, Ste. 3320
Denver, CO 80202-5733

Art Abbs, Acting Director (Letter)
Office of Surface Mining
Reclamation and Enforcement
505 Marquette N.W., Ste. 1200
Albuquerque, NM 87102

Janette S. Kaiser, Forest Supervisor (2 copies)
U. S. Forest Service
Manti-LaSal National Forest
599 West Price River Road
Price, UT 84501

Mark Page, Regional Engineer
Utah Division of Water Rights
Southeastern Regional Office
453 S. Carbon Avenue
P. O. Box 718
Price, UT 84501-0718

Brent Bradford, Deputy Director
Office of the Executive Director
Department of Environmental Quality
168 North 1950 West
P. O. Box 148810
Salt Lake City, UT 84114-4810

Robert Valentine, Director
Utah Division of Wildlife Resources
1596 West North Temple
Salt Lake City, UT 84116

Price Field Office (1 official copy)
Division of Oil, Gas and Mining

* Distributed only for new areas (surface or surfaces) involved in permitting actions, otherwise the "new" copies are review copies.

Mountain Coal Company

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



July 28, 1995

Susan White
Reclamation Specialist
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Proposed Sediment Pond Removal
Mountain Coal Co.
Huntington Canyon No. 4 Mine
INA/015/004
Emery County, Utah

Dear Susan:

Mountain Coal Co. is herein resubmitting 8 copies of the proposed plan for final removal of the Sediment Pond at the Huntington Canyon No. 4 Mine, for your approval. These plans represent changes suggested by the Division hydrologist and have been discussed with the U.S. Forest Service.

This proposal should replace that submitted on 06/20/95, and should be added at the end of Volume 2. I have also enclosed the required Permit Change Forms with this submittal.

As you know, the Phase II Bond Release for this mine is approved, conditional to removal of the Sediment Pond. We are prepared to start on this project immediately upon approval.

If you have and questions, or need any further information, please let me know.

Respectfully,

Dan W. Guy,
for Paige B. Beville

cc: Paige B. Beville - MCC
Scot Anderson - Arco
Jeff Defreest - U.S.F.S.
File

APPLICATION FOR PERMIT CHANGE

Title of Change: PROPOSED SEDIMENT POND REMOVAL

Permit Number: INA1 015100A

Mine: Huntington Cyn. No. 4

Permittee: Mountain Coal Co.

Description, include reason for change and timing required to implement:

REQUIRED FOR PHASE II BOND RELEASE.

- | | | |
|-----------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 2. Change in the size of the Disturbed Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 4. Will permit change include operations in hydrologic basins other than currently approved? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 6. Does permit change require or include public notice publication? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 7. Permit change as a result of a Violation? Violation # _____ |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 8. Permit change as a result of a Division Order? D.O.# _____ |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 9. Permit change as a result of other laws or regulations? Explain: _____ |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 10. Does permit change require or include ownership, control, right-of-entry, or compliance information? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 11. Does the permit change affect the surface landowner or change the post mining land use? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 12. Does permit change require or include collection and reporting of any baseline information? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 14. Does permit change require or include soil removal, storage or placement? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 15. Does permit change require or include vegetation monitoring, removal or revegetation activities? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 16. Does permit change require or include construction, modification, or removal of surface facilities? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 17. Does permit change require or include water monitoring, sediment or drainage control measures? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 18. Does permit change require or include certified designs, maps, or calculations? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 19. Does permit change require or include underground design or mine sequence and timing? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 20. Does permit change require or include subsidence control or monitoring? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 23. Is this permit change coal exploration activity <input type="checkbox"/> inside <input type="checkbox"/> outside of the permit area? |

Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

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

Dana Ballard for Paige B. Beville 7/28/95
Signed - Name - Position - Date

Subscribed and sworn to before me this 28 day of JULY, 19 95
Dana Ballard
Notary Public

My Commission Expires: 9-27- 19 97
Attest: STATE OF UTAH
COUNTY OF CARLISLE



DANA BALLARD
NOTARY PUBLIC - STATE of UTAH
865 EAST 2800 SOUTH
PRICE, UTAH 84501
COMM. EXP. 9-27-97

Received by Oil, Gas & Mining

ASSIGNED PERMIT CHANGE NUMBER

OTHER PERMITS

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



01/18/96

Mr. Jeffrey DeFreest
District Geologist
U.S. Forest Service
Supervisors Office
599 West Price River Drive
Price, Utah 84501

Re: Request to Cancel
Special Use Permits
Huntington Canyon No. 4 Mine
INA/015/004
Emery County, Utah

Dear Mr. DeFreest:

Mountain Coal Co. is herein requesting the cancellation of the remaining 2 Special Use Permits for the Huntington Canyon No. 4 Mine, located in Mill Fork Canyon. One permit was for 0.225 acres for the Sedimentation Pond, issued 9/82. The other permit was for 0.7 for the water quality monitoring (flume), issued 11/81.

The sediment pond and flume were both removed, regraded and reseeded in the Fall of 1995. Your memo of 09/18/95 to Pam Grubaugh - Littig indicated your acceptance of the work performed prior to seeding. The seeding and mulching has been completed according to the plan. The Utah Division of Oil, Gas and Mining has subsequently granted Phase II Bond Release on this property.

I have enclosed copies of both Special Use Permits for your reference. If you have any questions, or need any further information, please let me know.

Respectfully,

Dan W. Guy,

for

Paige B. Beville

cc: Susan White - UDOGM
Paige Beville - MCC
Scot Anderson - ARCO
File

SPECIAL USE PERMIT

Act of June 4, 1897

This permit is revocable and nontransferable
(Ref. FSM 2710)

Act of October 21, 1976 (P.L. 94-579)

a. Record no. (1-2) <u>70</u>	b. Region (3-4) <u>04</u>	c. Forest (5-6) <u>10</u>
d. District (7-8) <u>03</u>	e. User number (9-12) <u>4087</u>	f. Kind of use (13-15) <u>72/912</u>
g. State (16-17) <u>49</u>	h. County (18-20) <u>015</u>	k. Card no. (21) <u>1</u>

Permission is hereby granted to Beaver Creek Coal Company
of P.O. Box A.U. - 1109 South Carbon Avenue, Price, Utah 84501
hereinafter called the permittee, to use subject to the conditions set out below, the following described lands
or improvements:

NE 1/4, NW 1/4, Section 21, T16S., R7E., SLBM

This permit covers 0.225 acres and/or ----- miles and is issued for the purpose of:
Maintenance of two (2) sediment ponds for the Swisher #4 mine. Ponds were
constructed under permit to Swisher.

1. Construction or occupancy and use under this permit shall begin within 1 months, and
construction, if any, shall be completed within ----- months, from the date of the permit. This
use shall be actually exercised at least 300 days each year, unless otherwise authorized
in writing.

2. In consideration for this use, the permittee shall pay to the Forest Service, U.S. Department of
Agriculture, the sum of Twenty-Five Dollars (\$ 25.00) for the period
from January 1 1982, to December 31, 1982, and thereafter
annually on January 1
Twenty-Five Dollars (\$ 25.00) :
Provided, however, Charges for this use may be made or readjusted whenever necessary to place the
charges on a basis commensurate with the value of use authorized by this permit.

3. This permit is accepted subject to the conditions set forth herein, and to conditions 18 to
36 attached hereto and made a part of this permit.

PERMITTEE	NAME OF PERMITTEE <u>Beaver Creek Coal Company</u>	SIGNATURE OF AUTHORIZED OFFICER <u>Thomas H. Barker</u>	DATE <u>3 Sept. 82</u>
ISSUING OFFICER	NAME AND SIGNATURE <u>Ross E. Butler</u>	TITLE <u>Acting Forest Supervisor</u>	DATE <u>9/8/82</u>

1982 fees paid under name of
Swisher Coal Company.

(CONTINUED ON REVERSE)

4. Development plans: layout (plans); construction, reconstruction, or alteration of improvements; or revision of layout or construction plans for this area must be approved in advance and in writing by the forest supervisor. Trees or shrubbery on the permitted area may be removed or destroyed only after the forest officer in charge has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the permittee as follows: Merchantable timber at appraised value; young-growth timber below merchantable size at current damage appraisal value; *provided* that the Forest Service reserves the right to dispose of the merchantable timber to others than the permittee at no stumpage cost to the permittee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the forest officer in charge.

5. The permittee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the forest officer in charge.

6. This permit is subject to all valid claims.

7. The permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit.

8. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a written permit from the forest officer in charge or his authorized agent.

9. The permittee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this permit or of any law or regulation applicable to the National Forests by the permittee, or by any agents or employees of the permittee acting within the scope of their agency or employment.

10. The permittee shall fully repair all damage, other than ordinary wear and tear, to national forest roads and trails caused by the permittee in the exercise of the privilege granted by this permit.

11. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise herefrom unless it is made with a corporation for its general benefit.

12. Upon abandonment, termination, revocation, or cancellation of this permit, the permittee shall remove within a reasonable time all structures and improvements except those owned by the United States, and shall restore the site, unless otherwise agreed upon in writing or in this permit. If the permittee fails to remove all such structures or improvements within a reasonable period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and restoration of the site.

13. This permit is not transferable. If the permittee through voluntary sale or transfer, or through enforcement of contract, foreclosure, tax sale, or other valid legal proceeding shall cease to be the owner of the physical improvements other than those owned by the United States situated on the land described in this permit and is unable to furnish adequate proof of ability to redeem or otherwise reestablish title to said improvements, this permit shall be subject to cancellation. But if the person to whom title to said improvements shall have been transferred in either manner provided is qualified as a permittee and is willing that his future occupancy of the premises shall be subject to such new conditions and stipulations as existing or prospective circumstances may warrant, his continued occupancy of the premises may be authorized by permit to him if, in the opinion of the issuing officer or his successor, issuance of a permit is desirable and in the public interest.

14. In case of change of address, the permittee shall immediately notify the forest supervisor.

15. The temporary use and occupancy of the premises and improvements herein described may be sublet by the permittee to third parties only with the prior written approval of the forest supervisor but the permittee shall continue to be responsible for compliance with all conditions of this permit by persons to whom such premises may be sublet.

16. This permit may be terminated upon breach of any of the conditions herein or at the discretion of the regional forester or the Chief, Forest Service.

17. In the event of any conflict between any of the preceding printed clauses or any provisions thereof and any of the following clauses or any provisions thereof, the following clauses will control.

18. (A-13) - A late payment charge in addition to the regular fees shall be made for failure to meet the fee payment due date or any of the dates specified for submission of statements required for fee calculation. The late payment charge shall be \$15, or an amount calculated by applying the current rate prescribed by Treasury Fiscal Requirements Manual Bulletins to the overdue amount for each 30-day period or fraction thereof that the payment is overdue, whichever is greater. If the due date falls on a non-workday, the late payment charge will not apply until the end of the next workday.
19. (B-2) - During the performance of this permit, the permittee agrees:
- a. In connection with the performance of work under this permit, including construction, maintenance, and operation of the facility, the permittee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
 - b. The permittee and his employees shall not discriminate by segregation or otherwise against any person on the basis of race, color, religion, sex, or national origin by curtailing or refusing to furnish accommodations, facilities, services, or use privileges offered to the public generally.
 - c. The permittee shall include and require compliance with the above nondiscrimination provisions in any subcontract made with respect to the operations under this permit.
20. (B-8) - The permittee shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of National Forest lands under this permit.
21. (C-9) - No storage or transportation of water on the National Forest lands covered by this permit shall be made until the facilities have been constructed in accordance with the approved plans and specifications, the permittee has submitted certification thereof by a registered professional engineer, and the permittee has received written approval from the Forest Service.
22. (C-12) - The Environmental Assessment previously furnished is made a part of the permit.
23. (D-3) - The permittee shall protect the scenic esthetic values of the area under this permit, and the adjacent land, as far as possible with the authorized use, during construction, operation, and maintenance of the improvements.
24. (D-4) - The permittee shall take reasonable precautions to protect, in place, all public land survey monuments, private property corners, and Forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall see that they are reestablished or referenced in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specifications of the county surveyor, or (3) the specifications of the Forest Service.

Further, the permittee shall cause such official survey records as are affected to be amended as provided by law.

25. (D-7) - The permittee shall be responsible for the prevention and control of soil erosion and gulying on the area covered by this permit and lands adjacent thereto, and shall provide preventive measures as required by the Forest Service.
26. (E-4) - Unless sooner terminated or revoked by the Regional Forester, in accordance with the provisions of the permit, this permit shall expire and become void on December 31, 1999, but a new permit to occupy and use the same National Forest land may be granted provided the permittee will comply with the then existing laws and regulations governing the occupancy and use of National Forest lands and shall have notified the Forest Supervisor not less than six months prior to said date that such new permit is desired.
27. (X-4) - This permit is issued on the condition that the permittee has secured, or will secure, the consent of any person having valid claim to the land.
28. (X-5) - The land herein described is subject to certain rights reserved by or outstanding in parties other than the United States, and nothing herein shall abridge said rights or authorize prevention or obstruction of the reasonable exercise thereof.
29. (X-6) - This permit is subject to the rights and privileges granted in mineral, oil, or gas leases covering this land which have been issued by an authorized agency of the United States, and this permit does not authorize the prevention of obstruction of the reasonable exercise of the rights and privileges granted by said mineral, oil, or gas leases.
30. (X-17) - If, during excavation work, items of substantial archeological or paleontological value are discovered, or a known deposit of such items is disturbed, the permittee will cease excavation in the area so affected. He will then notify the Forest Service and will not resume excavation until written approval is given.
31. (X-19) - The permittee agrees to permit the free and unrestricted access to and upon the premises at all times for all lawful and proper purposes not inconsistent with the intent of the permit or with the reasonable exercise and enjoyment by the permittee of the privileges thereof.
32. (X-27) - This permit covers use of land only for flooding. It is specifically understood that the shoreline touching the National Forest land and the land above the shoreline and above the normal spillway-crest water level shall remain under the jurisdiction of the Forest Service. The Forest Service reserves the right to use and permit use of the land under permit: Provided, That such use does not interfere with the purpose for which this permit is granted.

33. (X-67) - The permittee further agrees that the Forest Service representative may inspect the structures at any time and if not satisfied with the then-existing protection to control soil erosion on the dams and in and below the spillways to streambed, upon written notice thereof, the permittee shall take action to provide protection to control soil erosion. If the Forest Service is not satisfied with any safety, operation, maintenance, or other feature or physical condition of the structures and appurtenances, upon written notice thereof, the permittee shall comply with a request to correct, adjust, or change same.
34. (X-68) - Rental equipment shall not be placed on National Forest land prior to actual use or be allowed to remain on National Forest land subsequent to actual use, but shall be stored at or removed to private land: Provided, That this will not preclude storage on National Forest land under permit for equipment storage.
35. (X-81) - This permit confers no right to the use of water by the permittee.
36. Approval is also subject to the list of conditions shown under item 7 of the application (copy of Swisher application attached).

AMENDMENT FOR SPECIAL USE PERMIT Ref: FSM 2714	a. Record no. (1-2) 70	b. Record (3-4) 04	c. Forest (5-6) 10
	d. District (7-8) 03	e. User number (9-12) 4083	f. Kind of use (13-15) 612
THIS AMENDMENT IS ATTACHED TO AND MADE A PART OF THE <input checked="" type="checkbox"/> TERM <input type="checkbox"/> ANNUAL PERMIT	g. State (16-17) 49	h. County (18-20) 015	i. Card no. (21) 1

For Experimental - Demonstration issued to _____
Arco Coal Company (KIND OF PERMIT)
 _____, on 11/10/81
 _____ (NAME OF PERMITTEE) (DATE OF PERMIT)

which is hereby amended as follows: Clause No. 2.

Increases the minimum annual fee to \$25.00.

This Amendment is accepted subject to the conditions set forth herein, and to conditions _____ to
 _____ attached hereto and made a part of this Amendment.

PERMITTEE	NAME OF PERMITTEE Arco Coal Company	SIGNATURE OF AUTHORIZED OFFICER TITLE	DATE
ISSUING OFFICER	NAME AND SIGNATURE <i>Thomas E. Butler</i>	TITLE Acting Forest Supervisor	DATE 8/31/82

a. Record no. (1-2)	b. Region (3-4)	c. Forest (5-6)
70	04	10
d. District (7-8)	e. User number (9-12)	f. Kind of use (13-15)
03	4083	612
g. State (16-17)	h. County (18-20)	k. Card no. (21)
49	015	1

SPECIAL USE PERMIT

Act of June 4, 1897

This permit is revocable and nontransferable
(Ref. FSM 2710)

Act of October 21, 1976 (P.L. 94-579)

Permission is hereby granted to Arco Coal Company

of P.O. Box 5300 - Denver, Colorado 80217

hereinafter called the permittee, to use subject to the conditions set out below (the following described lands or improvements:

Little Bear Canyon Site: NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 9, T16S., R7E., Parshall flume with single stage sediment sampler to be located just downstream from Little Bear Spring stabilized with concrete riprap.

Upper Mill Fork Site: SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 18, T16S., R7E., Parshall flume with single stage sediment sampler.

Lower Mill Fork Site: NW $\frac{1}{4}$ NW $\frac{1}{4}$, Section 22, T16S., R7E., Sharp-crested V-notch weir with single stage sediment sampler.)

Location of above sites shown on attached map

This permit covers .7 acres and/or - - miles and is issued for the purpose of: Operation of a streamflow and water quality monitoring network in the area of the Beaver Creek Coal Company's Huntington Canyon No. 4 Mine. The network is designed to assess the effects of possible subsidence and surface disturbance resulting from mining operations.

1. Construction or occupancy and use under this permit shall begin within 1 months, and construction, if any, shall be completed within 2 months, from the date of the permit. This use shall be actually exercised at least 365 days each year, unless otherwise authorized in writing.

2. In consideration for this use, the permittee shall pay to the Forest Service, U.S. Department of Agriculture, the sum of Ten Dollars (\$ 10.00) for the period from November 10 19 81, to December 31, 19 81, and thereafter annually on January 1

Ten Dollars (\$ 10.00) :
Provided, however, Charges for this use may be made or readjusted whenever necessary to place the charges on a basis commensurate with the value of use authorized by this permit.

3. This permit is accepted subject to the conditions set forth herein, and to conditions 18 to 25 attached hereto and made a part of this permit.

PERMITTEE	NAME OF PERMITTEE	SIGNATURE OF AUTHORIZED OFFICER	DATE
	ARCO COAL COMPANY	<i>Don M. [Signature]</i>	11/10/81
ISSUING OFFICER	NAME AND SIGNATURE	TITLE	DATE
	<i>Rose E. Butcher</i>	Acting Forest Supervisor	11/10/81

4. Development plans; lay-out plans; construction, reconstruction, or alteration of improvements; or revision of layout or construction plans for this area must be approved in advance and in writing by the forest supervisor. Trees or shrubbery on the permitted area may be removed or destroyed only after the forest officer in charge has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the permittee as follows: Merchantable timber at appraised value; young-growth timber below merchantable size at current damage appraisal value; *provided* that the Forest Service reserves the right to dispose of the merchantable timber to others than the permittee at no stumpage cost to the permittee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the forest officer in charge.

5. The permittee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the forest officer in charge.

6. This permit is subject to all valid claims.

7. The permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit.

8. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a written permit from the forest officer in charge or his authorized agent.

9. The permittee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this permit or of any law or regulation applicable to the National Forests by the permittee, or by any agents or employees of the permittee acting within the scope of their agency or employment.

10. The permittee shall fully repair all damage, other than ordinary wear and tear, to national forest roads and trails caused by the permittee in the exercise of the privilege granted by this permit.

11. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise herefrom unless it is made with a corporation for its general benefit.

12. Upon abandonment, termination, revocation, or cancellation of this permit, the permittee shall remove within a reasonable time all structures and improvements except those owned by the United States, and shall restore the site, unless otherwise agreed upon in writing or in this permit. If the permittee fails to remove all such structures or improvements within a reasonable period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and restoration of the site.

13. This permit is not transferable. If the permittee through voluntary sale or transfer, or through enforcement of contract, foreclosure, tax sale, or other valid legal proceeding shall cease to be the owner of the physical improvements other than those owned by the United States situated on the land described in this permit and is unable to furnish adequate proof of ability to redeem or otherwise reestablish title to said improvements, this permit shall be subject to cancellation. But if the person to whom title to said improvements shall have been transferred in either manner provided is qualified as a permittee and is willing that his future occupancy of the premises shall be subject to such new conditions and stipulations as existing or prospective circumstances may warrant, his continued occupancy of the premises may be authorized by permit to him if, in the opinion of the issuing officer or his successor, issuance of a permit is desirable and in the public interest.

14. In case of change of address, the permittee shall immediately notify the forest supervisor.

15. The temporary use and occupancy of the premises and improvements herein described may be sublet by the permittee to third parties only with the prior written approval of the forest supervisor but the permittee shall continue to be responsible for compliance with all conditions of this permit by persons to whom such premises may be sublet.

16. This permit may be terminated upon breach of any of the conditions herein or at the discretion of the regional forester or the Chief, Forest Service.

17. In the event of any conflict between any of the preceding printed clauses or any provisions thereof and any of the following clauses or any provisions thereof, the following clauses will control.

18. (A-13) - A late payment charge in addition to the regular fees shall be made for failure to meet the fee payment due date or any of the dates specified for submission of statements required for fee calculation. The late payment charge shall be \$15, or an amount calculated by applying the current rate prescribed by Treasury Fiscal Requirements Manual Bulletins to the overdue amount for each 30-day period or fraction thereof that the payment is overdue, whichever is greater. If the due date falls on a nonworkday, the late payment charge will not apply until the end of the next workday.
19. (B-8) - The permittee shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of National Forest lands under this permit.
20. (D-2) - No waste or byproducts shall be discharged if it contains any substances in concentrations which will result in substantial harm to fish and wildlife, or to human water supplies.

Storage facilities for materials capable of causing water pollution, if accidentally discharged, shall be located so as to prevent any spillage into waters, or channels leading into water, that would result in substantial harm to fish and wildlife or to human water supplies.

21. (D-3) - The permittee shall protect the scenic esthetic values of the area under this permit, and the adjacent land, as far as possible with the authorized use, during construction, operation, and maintenance of the improvements.
22. (D-4) - The permittee shall take reasonable precautions to protect, in place, all public land survey monuments, private property corners, and Forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges authorized by this permit, depending on the type of monument destroyed, the permittee shall see that they are reestablished or referenced in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," (2) the specifications of the county surveyor, or (3) the specifications of the Forest Service.
23. (E-4) - Unless sooner terminated or revoked by the Regional Forester, in accordance with the provisions of the permit this permit shall expire and become void on December 31, 1996, but a new permit to occupy and use the same National Forest land may be granted provided the permittee will comply with the then existing laws and regulations governing the occupancy and use of National Forest lands and shall have notified the Forest Supervisor not less than six months prior to said date that such new permit is desired.
24. (X-5) - The land herein described is subject to certain rights reserved by or outstanding in parties other than the United States, and nothing herein shall abridge said rights or authorize prevention or obstruction of the reasonable exercise thereof.

United States
Department of
Agriculture

Forest
Service

Manti-LaSal
National Forest

599 West Price River Dr.
Price, Utah 84501

Reply to: 2820
7730

Date: MAY 22, 1987

Atlantic Richfield Company
Anaconda Building
555 17th Street
Denver, Colorado 80217

Gentlemen:

The Performance Bond 8087 85 55 in the amount of \$8,500.00 for the Road Use Permit is no longer needed. Enclosed is a copy of this letter for your surety, Federal Insurance Company.

Sincerely,

A.J. Frandsen

A.J. FRANSEN
Acting Forest Supervisor

Enclosure

cc: Dan Guy - Beaver Creek Coal Company

Alan Kelly

U.S. DEPARTMENT OF AGRICULTURE
Forest Service

RECLAMATION PERFORMANCE BOND

(Minerals Operating Plan and/or Exploration Permit, Including Geothermal)

(Reference FSM 6506)

Bond 8087 85 55

INSTRUCTIONS: (1) This form is authorized for use whenever a Performance Bond is required in connection with National Forest Reclamation Activity. (2) The full legal name and business address of the Principal shall be inserted in the space designated 'Principal' on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished. (3) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. (4) Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the work 'Seal', and, if executed in Maine or New Hampshire, shall also affix an adhesive seal. (5) The name of each person signing this bond should be typed in the space provided.

Principal (Legal name and business address)

Atlantic Richfield Company
Anaconda Building
555 17th St.
Denver, CO 80217

Date Bond Executed

July 2, 1981

Type of Organization (X Appropriate Box)

Individual

Partnership

Joint Venture

Corporation

Surety(ies) (Name(s) and business address(es))

Federal Insurance Company
1385 S. Colo. Blvd. #616
Denver, CO 80222

State of Incorporation

Pennsylvania

PENAL SUM OF BOND

Million(s) \$	Thousand(s) \$	Hundred(s) \$
	8	500

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, and each of our heirs, executors, administrators, and successors, jointly and severally: Provided, That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum 'jointly and severally' as well as 'severally' only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

SCHEDULE OF OPERATING PLANS - REGION _____

Name of National Forest	Operating Plan Number	Date	Amount Allocated to Operating Plan (\$)	Amount of Allocated Restored (\$)	Date Restored	Unallocated Balance (\$)
Manti-La-Sal						

THE CONDITION OF THIS OBLIGATION IS SUCH, That whereas the Principal has an interest in the Operating Plans identified in the Schedule of Operating Plans above; and

WHEREAS, the Principal and Surety agree that, without notice of the surety, the coverage of this bond, in addition to the present operating plans of the Principal, shall extend to and include:

1. Any operating plan approved by the Forest Service and issued to the Principal in the Region or Forests named above, or later named in a rider, the coverage to become effective immediately upon approval by the Forest Service.
2. Any operating plan hereafter approved by the Forest Service in the Region or Forests named above, to become effective immediately upon approval by the Forest Service.
3. Any extension of the operating plan, such coverage to continue without interruption due to expiration of the operating plan.
4. Any modification of an operating plan, include obligations thereunder, whether made by agreement, suspension of operations, or otherwise; and

WHEREAS, the Principal and Surety hereby agree that notwithstanding the termination of any operating plan covered by this bond, the bond shall remain in full force and effect as to all remaining operating plans covered by this bond.

NOW, THEREFORE, if the Principal shall: Perform and fulfill all the reclamation provisions of all operating plans referred to in the Schedule of Operating Plans and shall also perform and fulfill all the reclamation provisions of any and all duly authorized modifications of said operating plans that may hereafter be made, then the above obligations are to be void; otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this reclamation bond and have affixed their seals on the date set forth above.

PRINCIPAL

Signature(s)	1. _____ (Seal)	2. _____ (Seal)	Corporate Seal
Name(s) and Titles (Typed)	1. _____	2. _____	

SURETY(IES)

Name and Address	Federal Insurance Company 1385 S Colo. Blvd. #616 Denver, CO 80222	State of Inc. N. J.	Liability Limit	Corporate Seal
Signature(s)	1. <i>Marjory Davis</i>	2. _____		
Name(s) and Titles (Typed)	1. Marjory Davis Attorney-in-Fact	2. _____		

Bond Premium	Rate Per Thousand \$ 3.75	Total \$ 31.87
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Remarks

POWER OF ATTORNEY

Know all Men by these Presents, That the FEDERAL INSURANCE COMPANY, 100 William Street, New York, New York, a New Jersey Corporation, has constituted and appointed, and does hereby constitute and appoint **Robert W. Whitman, Marjory Davis, Robert E. Duncan and Bruce Bonar of Denver, Colorado**-----

each its true and lawful Attorney-in-Fact to execute under such designation in its name and to affix its corporate seal to and deliver for and on its behalf as surety thereon or otherwise, bonds or obligations given or executed in the course of its business, and any instruments amending or altering the same, and consents to the modification or alteration of any instruments referred to in said bonds or obligations.

In Witness Whereof, the said FEDERAL INSURANCE COMPANY has, pursuant to its By-Laws, caused these presents to be signed by its Assistant Vice-President and Assistant Secretary and its corporate seal to be hereto affixed this **16th** day of **December** 19 **80**

FEDERAL INSURANCE COMPANY
By



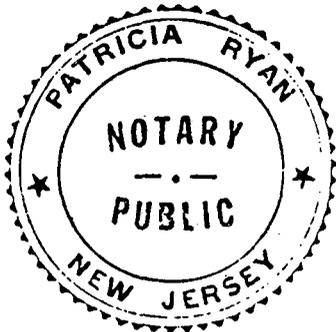
George McClellan
Assistant Vice-President

Richard D. O'Connor
Assistant Secretary

STATE OF NEW JERSEY }
County of Essex } ss:

On this **16th** day of **December** 19 **80**, before me personally came Richard D. O'Connor to me known and by me known to be Assistant Secretary of the FEDERAL INSURANCE COMPANY, the corporation described in and which executed the foregoing Power of Attorney, and the said Richard D. O'Connor being by me duly sworn, did depose and say that he is Assistant Secretary of the FEDERAL INSURANCE COMPANY and knows the corporate seal thereof; that the seal affixed to the foregoing Power of Attorney is such corporate seal and was thereto affixed by authority of the By-Laws of said Company, and that he signed said Power of Attorney as Assistant Secretary of said Company by like authority; and that he is acquainted with George McClellan and knows him to be the Assistant Vice-President of said Company, and that the signature of said George McClellan subscribed to said Power of Attorney is in the genuine handwriting of said George McClellan and was thereto subscribed by authority of said By-Laws and in deponent's presence.

Acknowledged and Sworn to before me
on the date above written.



Notary Public

PATRICIA RYAN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires December 11, 19

CITY OF SHORT HILLS }
County of Essex }

ss.

I, the undersigned, Assistant Secretary of the FEDERAL INSURANCE COMPANY, do hereby certify that the following is a true excerpt from the By-Laws of the said Company as adopted by its Board of Directors on March 11, 1953 and amended May 27, 1971 and that this By-Law is in full force and effect.

"ARTICLE XVIII.

Section 2. All bonds, undertakings, contracts and other instruments other than as above for and on behalf of the Company which it is authorized by law or its charter to execute, may and shall be executed in the name and on behalf of the Company either by the Chairman or the Vice-Chairman or the President or a Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations, except that any one or more officers or attorneys-in-fact designated in any resolution of the Board of Directors or the Executive Committee, or in any power of attorney executed as provided for in Section 3 below, may execute any such bond, undertaking or other obligation as provided in such resolution or power of attorney.

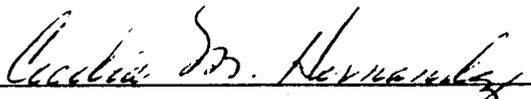
Section 3. All powers of attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman or the Vice-Chairman or the President or a Vice-President or an Assistant Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations."

And I further certify that I have compared the foregoing copy of the POWER OF ATTORNEY with the original thereof and the same is a correct and true copy of the whole of said original Power of Attorney and that said Power of Attorney has not been revoked.

And I further certify that said FEDERAL INSURANCE COMPANY is duly licensed to transact fidelity and surety business in each of the States of the United States of America, District of Columbia, Puerto Rico, and each of the Provinces of Canada with the exception of Prince Edward Island; and is also duly licensed to become sole surety on bonds, undertakings, etc., permitted or required by law.

Given under my hand and the seal of said Company at Short Hills, N.J., this 2nd day of

July, 19 81.


Assistant Secretary



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Robert L. Morgan
State Engineer

Southeastern Area
453 South Carbon Avenue
P.O. Box 718
Price, Utah 84501-0718
801-637-1303

October 27, 1995

Division of Oil, Gas & Mining
Attn: Susan White
355 West North Temple
3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

Re: Mountain Coal Company
Stream Channel Permit #95-93-10SA
Mill Fork Stream

Dear Susan:

At the request of Dan Guy, enclosed is a copy of the above-noted Permit Application, and the approval letter.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Mark P. Page'.

Mark P. Page
Regional Engineer

cc: Dan Guy - Blackhawk Engineering

Enclosures
MPP/mjk





State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

Robert L. Morgan
State Engineer

1636 West North Temple, Suite 220
Salt Lake City, UT 84116-3156
801-538-7240
801-538-7467 (Fax)

October 10, 1995

REG
RECEIVED

OCT 12 1995

Mountain Coal Company
Dan W. Guy
P.O. Box 591
Somerset, CO 81434

RE: Stream Channel Alteration Permit Number 95-93-10SA for installation of an outlet ditch and rip-rap apron to Mill Fork Creek, Emery County.
EXPIRATION DATE: October 10, 1996

Your application to Alter a Natural Stream Channel Number 95-93-10SA is hereby approved pursuant to the requirements of Section 73-3-29 of the Utah Code Annotated, 1953. This approval also constitutes compliance with Section 404 (e) of the Clean Water Act (33 USC 1344) pursuant to General Permit 040 issued to the State of Utah by the U.S. Army Corps of Engineers on October 15, 1987.

Work performed under this permit is subject to the following conditions:

1. The expiration date of this approved application is October 10, 1996. The expiration date may be extended, at the State Engineer's discretion, by submitting a written request outlining the need for the extension and the reasons for the delay in completing the proposed stream alteration.
2. A copy of this approved permit must be kept on-site at any time the work under this approved permit is in progress.
3. The project has been done and disturbed areas have been seeded. Vegetation should be monitored to assure it becomes established.
4. Within 30 days after the completion of this project, the State Engineer's office must be contacted for a compliance inspection. Failure to provide such notification would invalidate U.S. Army Corps of Engineers General Permit 040, thereby placing the applicant in violation of Section 404 of the Clean Water Act.

This Decision is subject to the provisions of Rule R655-6 of the Division of Water Rights and to Sections 63-46b-13 and 73-3-14 of the Utah Code Annotated, 1953 as amended, which provide for filing either a Request for Reconsideration with the State Engineer, or an appeal with the appropriate District Court. A Request for Reconsideration is not a prerequisite for a court appeal. A court appeal must be filed within 30 days after the date of this Decision, or if a Request for Reconsideration has been filed, within 30 days after the date the Request for Reconsideration is denied. A Request for Reconsideration is considered denied when no action is taken 20 days after the Request is filed.

RECEIVED

JOINT PERMIT APPLICATION FORM

U. S. ARMY CORPS OF ENGINEERS - FOR SECTIONS 404 AND 10
 UTAH STATE ENGINEER'S OFFICE - FOR NATURAL STREAM CHANNELS

AUG 25 1995

93 Area

PRICE

Application Number _____ / _____ 95-93-10
 (Assigned by:) _____ Corps _____ State Engineer

Applicant's Name (Last, First M.I.) <i>Mountain Coal Company</i>	Authorized Agent <i>DAN W. GUY</i>	Telephone Number and Area Code <i>(303) 929-5015</i>
---------------------------------------------------------------------	---------------------------------------	---------------------------------------------------------

Applicant's Address (Street, RFD, Box Number, City, State, Zip)
P.O. Box 591, Somerset, Colo. 81434

PROJECT LOCATION

Quarter Section(s) <i>NE 1/4 NW 1/4</i>	Section <i>21</i>	Township <i>16 SOUTH</i>	Range <i>7 East</i>	Base & Meridian <i>S.L.B. 5M.</i>
--------------------------------------------	----------------------	-----------------------------	------------------------	--------------------------------------

County <i>EMERY</i>	Watercourse to be altered <i>MILL FORK STREAM</i>	Check one: <input type="checkbox"/> Within city limits <input checked="" type="checkbox"/> Outside city limits List town or nearest town: <i>Huntington, Utah</i>
------------------------	------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------

Project location or address:
APPROXIMATELY 1.5 MILES UP MILL FORK CANYON

Brief description of project:
Installation of a 36" cmp culvert beneath the Forest Service road, and installation of a 15' long outlet ditch and rip-rap apron to Mill Fork Creek.

Purpose (justification) of project:
Removal of sediment ponds for Phase II Bond Release required by SMCRA regulations and the Utah Division of Oil, Gas and Mining. New culvert will carry drainage formerly diverted through sediment ponds.

Is this a single and complete project or is it part of a larger project, continuing project, or other related activities? If so, please describe the larger project or other related activities.
Required as a part of the final minesite reclamation. The ponds had been removed and the culvert started when it was realized a Stream Alteration Permit was required. Approval of this permit is requested under "Emergency Provisions" (p.10), for protection of the stream due to high probability of thunderstorms.

If project includes the discharge of dredged or fill material: *N/A*

Cubic yards of material:

Acreage or square footage of waters of the United States, including wetlands, affected by the project:

Source and type of fill material:



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Robert L. Morgan
State Engineer

Southeastern Area
453 South Carbon Avenue
P.O. Box 718
Price, Utah 84501-0718
801-637-1303

October 18, 1995

Mountain Coal Company
Attn: Paige B. Beville
P.O. Box 591
Somerset, Colorado 81434

Re: Compliance Inspection:
Stream Channel Alteration Permit No. 95-93-10SA
Installation of 36" culvert beneath Forest Service road, and
installation of outlet ditch and riprap apron into Mill Fork stream

Dear Ms. Beville:

On October 17, 1995, I made a Compliance Inspection for Stream Channel
Alteration Permit No. 95-93-10SA.

The inspection verified compliance with Section 404 of the Clean Water Act,
Section 73-3-29 of the Utah Code for Stream Channel Alterations, the specific
conditions of the approved permit, and subsequent correspondence. Therefore,
no additional work under this permit is required.

If you have any questions please feel free to contact me at (801) 637-1303, or
Greg Mladenka at (801) 538-7375.

Sincerely,

Mark P. Page
Regional Engineer

pc: Brooks Carter - Corps of Engineers
Bill Bradwisch - Aquatic Habitat Coordinator
Bob Freeman - U.S. Fish & Wildlife
Bob Mairley - EPA
Jim Dykman - State History
Carolyn Wright - State Planning
Bill Bates - Regional Wildlife Habitat Manager
Greg Mladenka - Division of Water Rights
Dan Guy - Blackhawk Engineering

MPP/mjk





State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Robert L. Morgan
State Engineer

Southeastern Area
453 South Carbon Avenue
P.O. Box 718
Price, Utah 84501-0718
801-637-1303

October 18, 1995

Division of Oil, Gas & Mining
Attn: Susan White
355 West North Temple
3 Triad Center Suite 350
Salt Lake City, Utah 84180-1203

Re: Mountain Coal Company
Stream Channel Permit #95-93-10SA
Mill Fork Stream

Dear Susan:

At the request of Dan Guy, enclosed is a copy of the compliance inspection letter relating to the above referenced permit application. The work that has been done is in compliance with the permit, and as stated in the letter, no further work is required.

If you have any questions concerning the enclosed, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Mark P. Page'.

Mark P. Page
Regional Engineer

cc: Dan Guy - Blackhawk Engineering

Enclosure
MPP/mjk





State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Robert L. Morgan
State Engineer

1636 West North Temple, Suite 220
Salt Lake City, UT 84116-3156
801-538-7240
801-538-7467 (Fax)

October 10, 1995

19/17
Original to Paige
- Copy to MCC-UT
file
- + D. Guy

Mountain Coal Company
Dan W. Guy
P.O. Box 591
Somerset, CO 81434

RE: Stream Channel Alteration Permit Number 95-93-10SA for installation of an outlet ditch and rip-rap apron to Mill Fork Creek, Emery County.
EXPIRATION DATE: October 10, 1996

Your application to Alter a Natural Stream Channel Number 95-93-10SA is hereby approved pursuant to the requirements of Section 73-3-29 of the Utah Code Annotated, 1953. This approval also constitutes compliance with Section 404 (e) of the Clean Water Act (33 USC 1344) pursuant to General Permit 040 issued to the State of Utah by the U.S. Army Corps of Engineers on October 15, 1987.

Work performed under this permit is subject to the following conditions:

1. The expiration date of this approved application is October 10, 1996. The expiration date may be extended, at the State Engineer's discretion, by submitting a written request outlining the need for the extension and the reasons for the delay in completing the proposed stream alteration.
2. A copy of this approved permit must be kept on-site at any time the work under this approved permit is in progress.
3. The project has been done and disturbed areas have been seeded. Vegetation should be monitored to assure it becomes established.
4. Within 30 days after the completion of this project, the State Engineer's office must be contacted for a compliance inspection. Failure to provide such notification would invalidate U.S. Army Corps of Engineers General Permit 040, thereby placing the applicant in violation of Section 404 of the Clean Water Act.

This Decision is subject to the provisions of Rule R655-6 of the Division of Water Rights and to Sections 63-46b-13 and 73-3-14 of the Utah Code Annotated, 1953 as amended, which provide for filing either a Request for Reconsideration with the State Engineer, or an appeal with the appropriate District Court. A Request for Reconsideration is not a prerequisite for a court appeal. A court appeal must be filed within 30 days after the date of this Decision, or if a Request for Reconsideration has been filed, within 30 days after the date the Request for Reconsideration is denied. A Request for Reconsideration is considered denied when no action is taken 20 days after the Request is filed.

Page 2
95-93-10SA
October 10, 1995

If you have any questions or need further clarification, please feel free to contact Greg Mladenka at 538-7375.

Sincerely,



Robert L. Morgan, P.E.
State Engineer

RLM/gm/jm

pc: Mike Schwin - Corps of Engineers
Bob Mairley - EPA
Field Supervisor - U.S. Fish & Wildlife
Jim Dykman - State History
Carolyn Wright - State Planning
Mark Page - Regional Engineer
Bill Bates - Regional Wildlife Habitat Manager
Bill Bradwisch - Aquatic Habitat Coordinator

JOINT PERMIT APPLICATION FORM

U. S. ARMY CORPS OF ENGINEERS - FOR SECTIONS 404 AND 10
UTAH STATE ENGINEER'S OFFICE - FOR NATURAL STREAM CHANNELS

Application Number _____ / _____
(Assigned by:) _____ Corps _____ State Engineer _____

Applicant's Name (Last, First M.I.) <i>Mountain Coal Company</i>	Authorized Agent <i>DAN W. Guy</i>	Telephone Number and Area Code <i>(303) 929-5015</i>
---------------------------------------------------------------------	---------------------------------------	---------------------------------------------------------

Applicant's Address (Street, RFD, Box Number, City, State, Zip)
P.O. Box 591, Somerset, Colo. 81434

PROJECT LOCATION

Quarter Section(s) <i>NE 1/4 NW 1/4</i>	Section <i>21</i>	Township <i>16 South</i>	Range <i>7 East</i>	Base & Meridian <i>S.L.B. & M.</i>
--------------------------------------------	----------------------	-----------------------------	------------------------	-------------------------------------------

County <i>EMERY</i>	Watercourse to be altered <i>MILL FORK STREAM</i>	Check one: <input type="checkbox"/> Within city limits <input checked="" type="checkbox"/> Outside city limits List town or nearest town: <i>Huntington, Utah</i>
------------------------	------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------

Project location or address:
APPROXIMATELY 1.5 MILES UP MILL FORK CANYON

Brief description of project:
Installation of a 36" CMP culvert beneath the Forest Service road, and installation of a 15' long outlet ditch and rip-rap apron to Mill Fork Creek.

Purpose (justification) of project:
Removal of sediment ponds for Phase II Bond Release required by SMCRA regulations and the Utah Division of Oil, Gas and Mining. New culvert will carry drainage formerly diverted through sediment ponds.

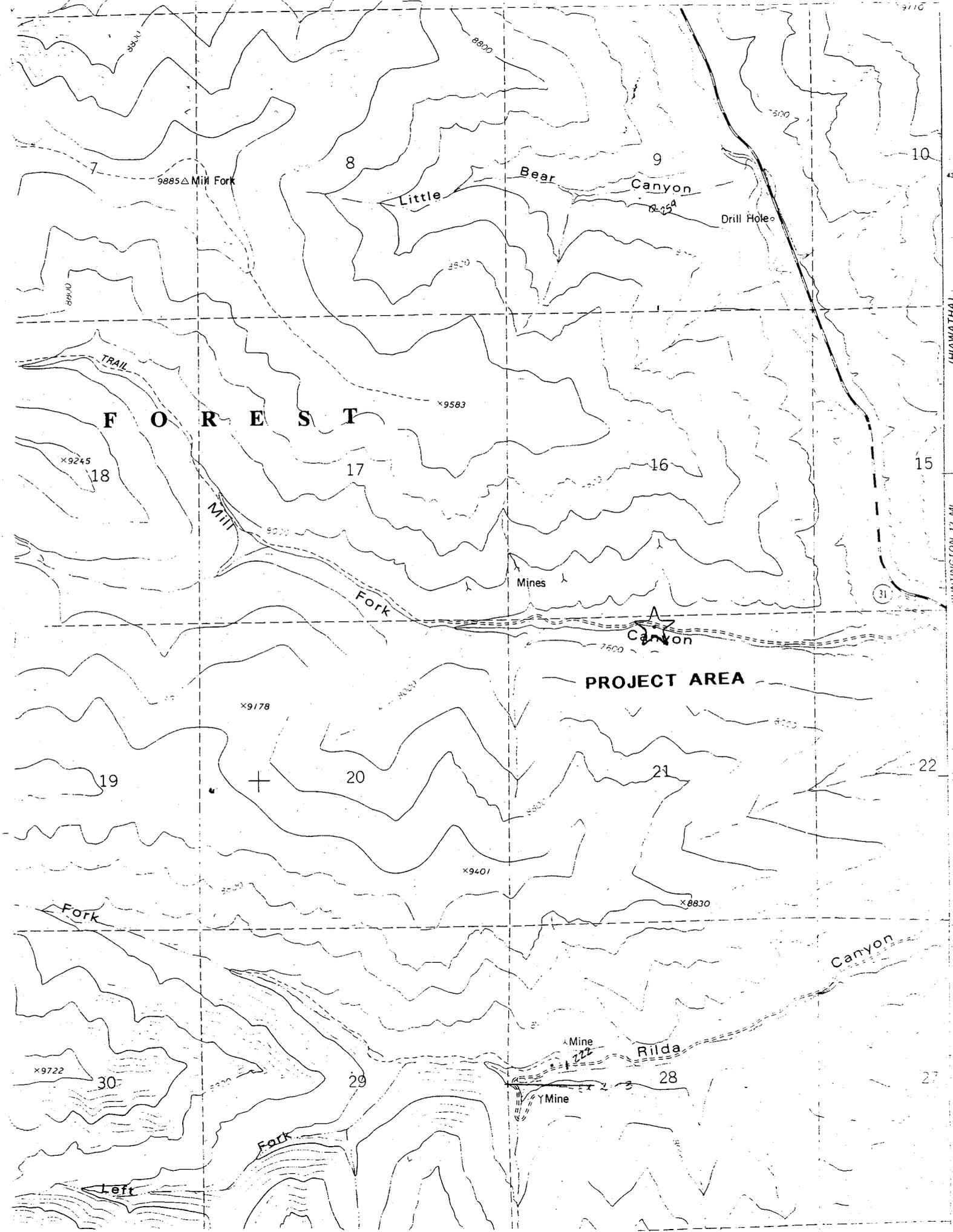
Is this a single and complete project or is it part of a larger project, continuing project, or other related activities? If so, please describe the larger project or other related activities.
Required as a part of the final minesite reclamation. The ponds had been removed and the culvert started when it was realized a Stream Alteration Permit was required. Approval of this permit is requested under "Emergency Provisions" (p.10), for protection of the stream due to high probability of thunderstorms.

If project includes the discharge of dredged or fill material: *N/A*

Cubic yards of material:

Acreage or square footage of waters of the United States, including wetlands, affected by the project:

Source and type of fill material:



F O R E S T

PROJECT AREA

Little Bear Canyon

9885 Δ Mill Fork

Drill Hole

Mines

Canyon

Mine

Rilda

Y Mine

18

17

16

15

19

20

21

22

30

29

28

27

9116

4966

(HIAWATHA)
3762 LINE

HUNTINGTON 12 MI

436

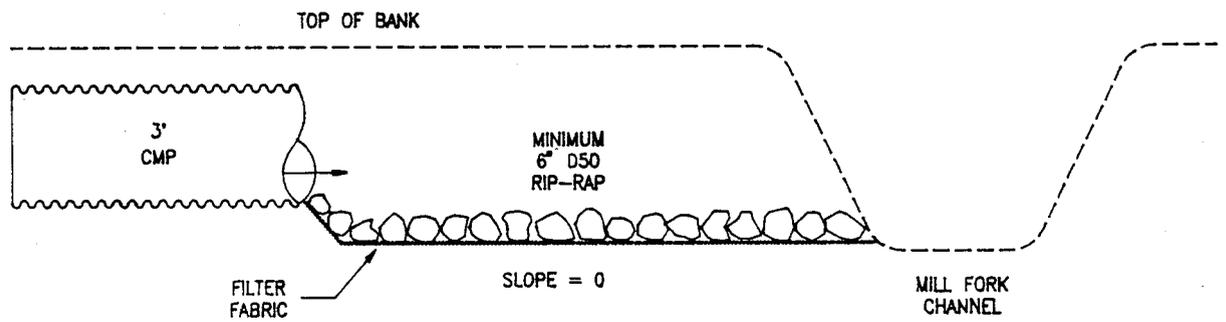
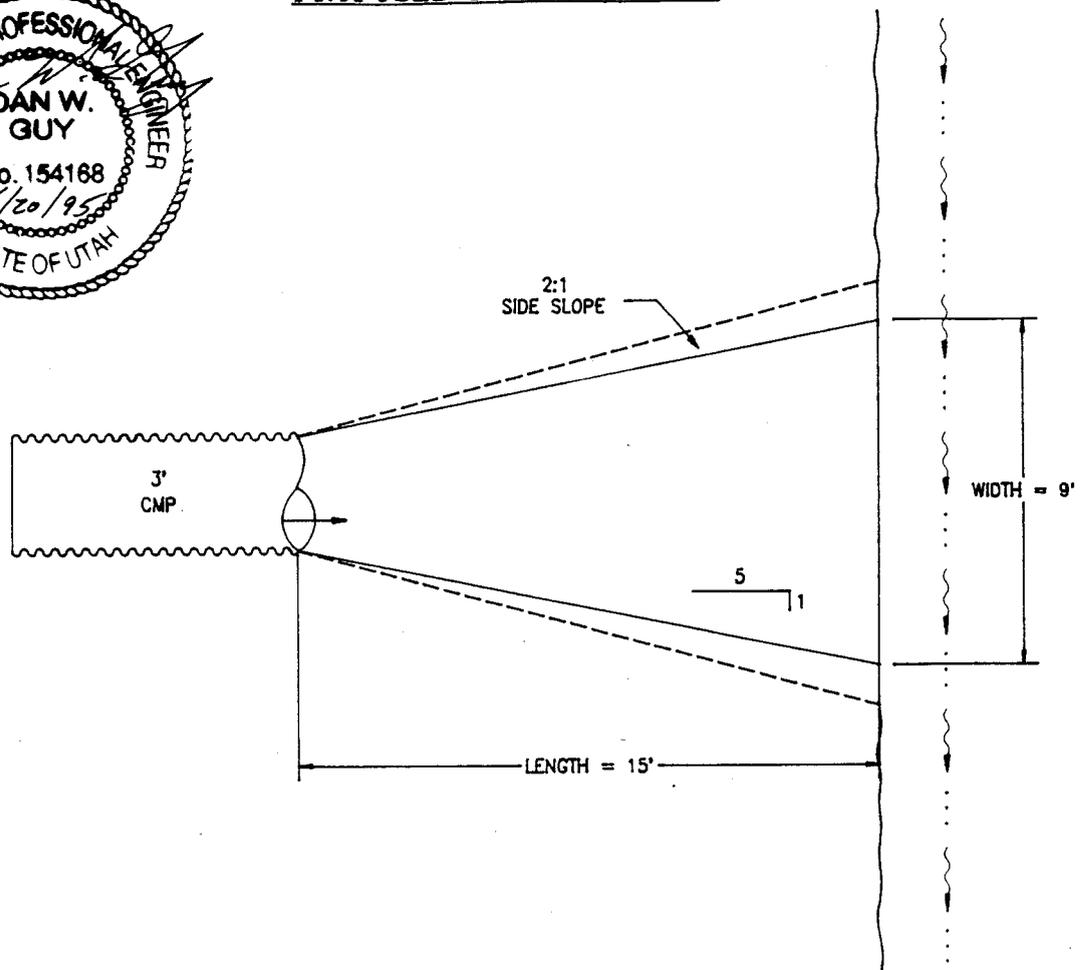
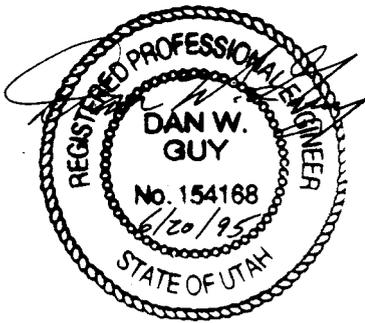
25

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Left

31

PROPOSED RIP-RAP APRON



* DESIGN BASED ON FIGURE 7-26, DESIGN OF OUTLET PROTECTION - MAXIMUM TAILWATER CONDITION,
"APPLIED HYDROLOGY AND SEDIMENTOLOGY FOR DISTURBED AREAS", BARFIELD, WARNER & HAAN, 1983.

JOINT PERMIT APPLICATION FORM

U. S. ARMY CORPS OF ENGINEERS - FOR SECTIONS 404 AND 10
UTAH STATE ENGINEER'S OFFICE - FOR NATURAL STREAM CHANNELS

Application Number _____ / _____
(Assigned by:) Corps State Engineer

Applicant's Name (Last, First M.I.) <i>Mountain Coal Company</i>	Authorized Agent <i>DAN W. Guy</i>	Telephone Number and Area Code <i>(303) 929-5015</i>
---------------------------------------------------------------------	---------------------------------------	---------------------------------------------------------

Applicant's Address (Street, RFD, Box Number, City, State, Zip)
P.O. Box 591, Somerset, Colo. 81434

PROJECT LOCATION

Quarter Section(s) <i>NE 1/4 NW 1/4</i>	Section <i>21</i>	Township <i>16 SOUTH</i>	Range <i>7 East</i>	Base & Meridian <i>S.L.B. & M.</i>
--------------------------------------------	----------------------	-----------------------------	------------------------	-------------------------------------------

County <i>EMERY</i>	Watercourse to be altered <i>MILL FORK STREAM</i>	Check one: <input type="checkbox"/> Within city limits <input checked="" type="checkbox"/> Outside city limits List town or nearest town: <i>Huntington, Utah</i>
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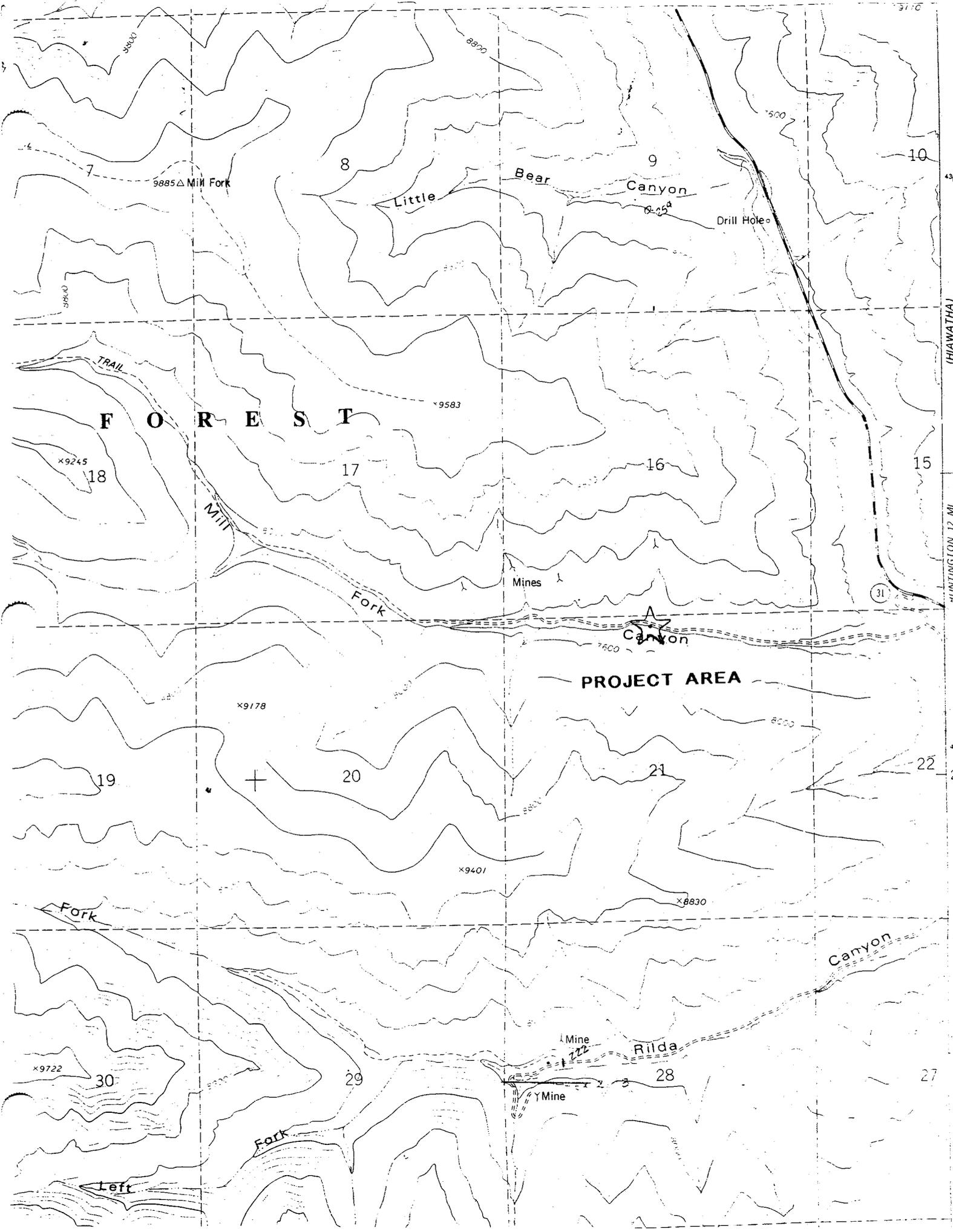
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F O R E S T

PROJECT AREA

Little Bear Canyon

Canyon

Canyon

Rilda

9885 Δ Mill Fork

Drill Hole

Mines

Mine

Y Mine

TRAIL

MILL

Fork

x9245

x9583

x9178

x9401

x8830

x9722

31.6

4961

(HIAWATHA)

HUNTINGTON 12 MI.

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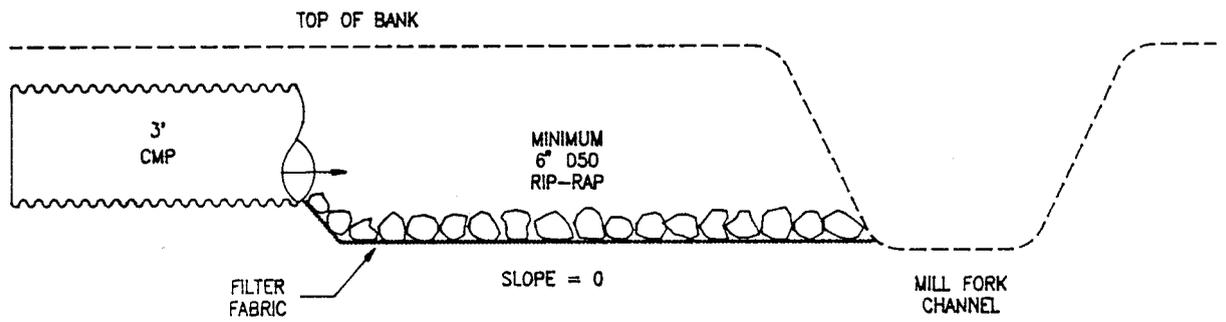
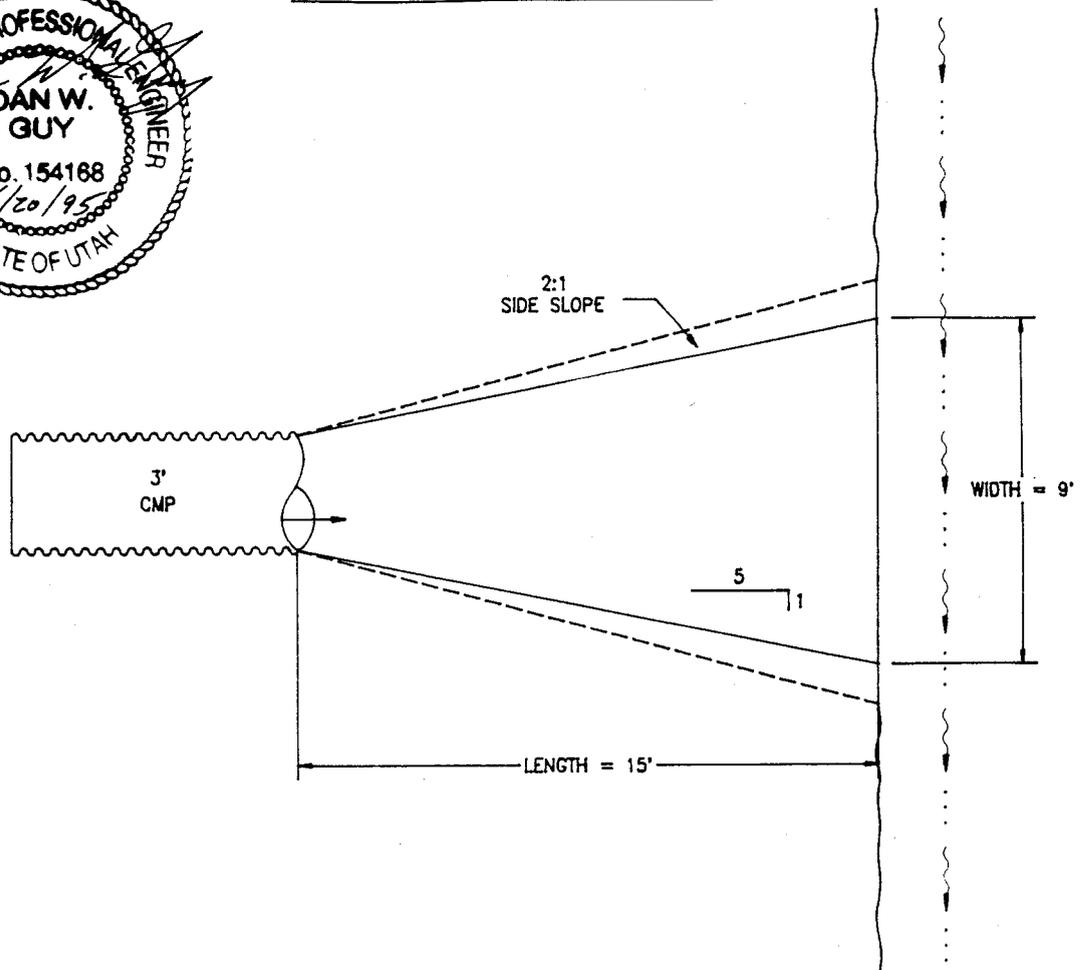
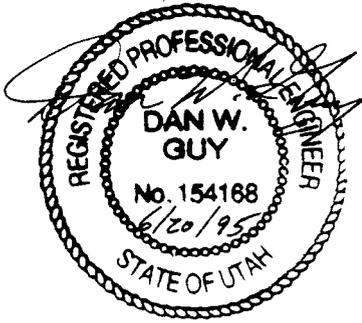
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PROPOSED RIP-RAP APRON



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"APPLIED HYDROLOGY AND SEDIMENTOLOGY FOR DISTURBED AREAS", BARFIELD, WARNER & HAAN, 1983.



State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

- original to Paige
- copy to Dan G.
- MCC - Utah file

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Don A. Ostler, P.E.
Director

288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870
(801) 538-6146 Voice
(801) 538-6016 Fax
(801) 536-4414 T.D.D.

Water Quality Board
Keith W. Welch
Chairman
Lynn F. Pett
Vice Chairman
R. Rex Ausburn, P.E.
David S. Bowles
Patricia S. Briggs
Nan Bunker
Leonard Ferguson
Dianne R. Nielson, Ph.D.
Joe C. Nielson
K.C. Shaw
Leroy H. Wullstein, Ph.D.
Don A. Ostler, P.E.
Executive Secretary

August 30, 1995

Dan W. Guy
Mountain Coal Company
P.O. Box 591
Somerset, CO 81434

Dear Mr. Guy:

Subject: UPDES Permits No. UTG040014 - Gordon Creek and UTG040015 - Huntington Canyon

Your recent letter states that you have discontinued two of your discharges into waters of the State and that the above referenced permits to discharge are no longer needed. Therefore, on the basis of your request, your discharge permits will be removed from our active files and will be considered as no longer in effect.

If you plan to have any future discharge into waters of the State, please submit an application for a permit to our office at least 180 days before the date the discharge is to begin. If you have any questions, please contact Steven McNeal at (801) 538-6075.

Sincerely,

Donald A. Hilden, Ph.D., Manager
Permits and Compliance Section

KC/kc

cc: Judy Kobus-Fisk, U.S. EPA Region VIII
Claron D. Bjork, Southeastern Utah District Health Dept.
Dave Ariotti, District Engineer



BOND



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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

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

cc: Dean Day
Pam Pope

February 19, 1996

Paige B. Beville, Manager
Environmental, Health and Safety
ARCO Coal Company
555 Seventeenth Street
Denver, Colorado 80202

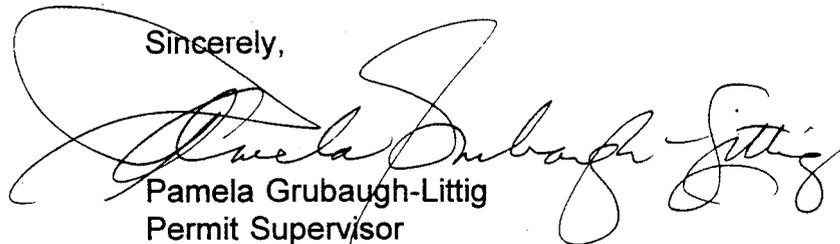
Re: Rider Accepted, Huntington #4 Mine, Mountain Coal Company, ACT/015/004,
Folder #4, Emery County, Utah

Dear Ms. Beville:

I am enclosing acknowledgement of the rider signed by the Division Director for reducing the bond from \$144,041.60 to \$46,734 at the Huntington #4 Mine as a result of the Phase II bond release.

If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig
Permit Supervisor

Enclosure

cc: Susan White



Reliance

RELIANCE SURETY COMPANY
Philadelphia, Pennsylvania

RELIANCE INSURANCE COMPANY
Philadelphia, Pennsylvania

Original superseded file
UNITED PACIFIC INSURANCE COMPANY
Philadelphia, Pennsylvania

RELIANCE NATIONAL INDEMNITY COMPANY
Philadelphia, Pennsylvania

Copy file #4

RIDER

To be attached to and form a part of

STATE #ACT/015/004

Type of Bond: THE MINED LANDS RECLAMATION ACT BOND

Bond No. U-630694

executed by MOUNTAIN COAL COMPANY

, as Principal,

and by UNITED PACIFIC INSURANCE COMPANY, as Surety,

in favor of STATE OF UTAH, DIVISION OF OIL, GAS AND MINING

and dated SEPT. 5, 1991

In consideration of the premium charged for the attached bond, it is hereby agreed to ~~change~~:

Decrease bond amount:

From: ONE HUNDRED FORTY-FOUR THOUSAND AND FORTY-ONE AND 60/100 ----- DOLLARS

(\$144,041.60)

To: FORTY-SIX THOUSAND SEVEN HUNDRED THIRTY-FOUR AND NO/100 ----- DOLLARS

(\$46,734.00)

The attached bond shall be subject to all its agreements, limitations and conditions except as herein expressly modified.

This rider is effective January 31, 1996

Signed and Sealed January 31, 1996

Principal MOUNTAIN COAL COMPANY

By: *Michael W. DeGanring*
Michael W. DeGanring, Vice President Title
UNITED PACIFIC INSURANCE

COMPANY

By: *Cassie J. Berrisford*
CASSIE J. BERRISFORD, Attorney-in-Fact

RIDER ACCEPTED (Please sign duplicate of this Rider and return to Surety)

By: *[Signature]*, Director
Date Feb 16, 1996

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5907

State of CALIFORNIA

County of LOS ANGELES

On January 31, 1996 before me, KATHY R. MAIR, NOTARY PUBLIC,
DATE NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC"

personally appeared CASSIE J. BERRISFORD,
NAME(S) OF SIGNER(S)

personally known to me - OR - proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Kathy R Mair
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- INDIVIDUAL
- CORPORATE OFFICER

TITLE OR TYPE OF DOCUMENT

- _____
TITLE(S)
- PARTNER(S) LIMITED
 - TRUSTEE(S) GENERAL
 - ATTORNEY-IN-FACT
 - GUARDIAN/CONSERVATOR
 - OTHER: _____

NUMBER OF PAGES

DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

DATE OF DOCUMENT

SIGNER(S) OTHER THAN NAMED ABOVE

RELIANCE SURETY COMPANY
UNITED PACIFIC INSURANCE COMPANY

RELIANCE INSURANCE COMPANY
RELIANCE NATIONAL INDEMNITY COMPANY

ADMINISTRATIVE OFFICE, PHILADELPHIA, PENNSYLVANIA

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that RELIANCE SURETY COMPANY is a corporation duly organized under the laws of the State of Delaware, and that RELIANCE INSURANCE COMPANY and UNITED PACIFIC INSURANCE COMPANY, are corporations duly organized under the laws of the Commonwealth of Pennsylvania and that RELIANCE NATIONAL INDEMNITY COMPANY is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called "the Companies") and that the Companies by virtue of signature and seals do hereby make, constitute and appoint Cassie J. Berrisford, of Los Angeles, California their true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver for and on their behalf, and as their act and deed any and all bonds and undertakings of suretyship and to bind the Companies thereby as fully and to the same extent as if such bonds and undertakings and other writings obligatory in the nature thereof were signed by an Executive Officer of the Companies and sealed and attested by one other of such officers, and hereby ratifies and confirms all that their said Attorney(s)-in-Fact may do in pursuance hereof.

This Power of Attorney is granted under and by the authority of Article VII of the By-Laws of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY which provisions are now in full force and effect, reading as follows:

ARTICLE VII - EXECUTION OF BONDS AND UNDERTAKINGS

1. The Board of Directors, the President, the Chairman of the Board, any Senior Vice President, any Vice President or Assistant Vice President or other officer designated by the Board of Directors shall have power and authority to (a) appoint Attorney(s)-in-Fact and to authorize them to execute on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and (b) to remove any such Attorney(s)-in-Fact at any time and revoke the power and authority given to them.

2. Attorney(s)-in-Fact shall have power and authority, subject to the terms and limitations of the Power of Attorney issued to them, to execute deliver on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof. The corporate seal is not necessary for the validity of any bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof.

3. Attorney(s)-in-Fact shall have power and authority to execute affidavits required to be attached to bonds, recognizances, contracts of indemnity or other conditional or obligatory undertakings and they shall also have power and authority to certify the financial statement of the Company and to copies of the By-Laws of the Company or any article or section thereof.

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the Executive and Finance Committees of the Boards of Directors of Reliance Insurance Company, United Pacific Insurance Company and Reliance National Indemnity Company by Unanimous Consent dated as of February 28, 1994 and by the Executive and Financial Committee of the Board of Directors of Reliance Surety Company by Unanimous Consent dated as of March 31, 1994.

"Resolved that the signatures of such directors and officers and the seal of the Company may be affixed to any such Power of Attorney or any certificates relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company and any such Power so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company, in the future with respect to any bond or undertaking to which it is attached."

WITNESS WHEREOF, the Companies have caused these presents to be signed and their corporate seals to be hereto affixed, this October 30, 1995.

RELIANCE SURETY COMPANY
RELIANCE INSURANCE COMPANY
UNITED PACIFIC INSURANCE COMPANY
RELIANCE NATIONAL INDEMNITY COMPANY

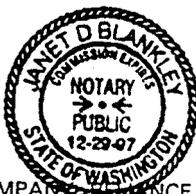


Lawrence W. Carlstrom

STATE OF Washington }
COUNTY OF King } ss.

On this, October 30, 1995, before me, Janet Blankley, personally appeared Lawrence W. Carlstrom, who acknowledged himself to be the Senior Vice President of the Reliance Surety Company, and the Vice President of Reliance Insurance Company, United Pacific Insurance Company, and Reliance National Indemnity Company and that as such, being authorized to do so, executed the foregoing instrument for the purpose therein contained by signing the name of the corporation by himself as its duly authorized officer.

In witness whereof, I hereunto set my hand and official seal.



Janet D. Blankley
Notary Public in and for the State of Washington
Residing at Puyallup

I, Robyn Layng, Assistant Secretary of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 31st day of January 19 96



Robyn Layng
Assistant Secretary

CERTIFICATE

I, Thomas F. Linn, a duly appointed Assistant Secretary of **MOUNTAIN COAL COMPANY**, a corporation organized under the laws of the State of Delaware, do hereby certify:

1. That Michael W. DeGenring is a duly appointed Vice President of **MOUNTAIN COAL COMPANY**.
2. That said Vice President of **MOUNTAIN COAL COMPANY** is currently a qualified and acting Vice President of **MOUNTAIN COAL COMPANY**.
3. That said Officer, in his capacity as an Officer of **MOUNTAIN COAL COMPANY**, is empowered to execute and deliver various documents and instruments in accordance with the following Resolution adopted by the Board of Directors of **MOUNTAIN COAL COMPANY** at its Meeting on September 18, 1995:

RESOLVED, That the Chairman, the President, any Vice President and the Treasurer be and they are hereby severally empowered to execute all contracts, documents, assignments, releases, proxies, powers of attorney with full and general or limited authority, with power of substitution, or any other instrument similar or dissimilar to the preceding, and other papers requiring execution in the name of the Company; and the Secretary and any Assistant Secretary are hereby authorized to affix the seal of the Company to such papers as require the seal. Each of such officers is hereby empowered to acknowledge and deliver any such instruments or papers a fully as if special authority had been granted in each particular case.

I further certify that the foregoing Resolution is still in full force and effect and has not been amended or rescinded.

WITNESS my hand and seal of this Company this ninth day of February, 1996.

[SEAL]



Thomas F. Linn
Assistant Secretary



Legal
355 Seventeenth Street
Denver, Colorado 80202
Telephone 303 293 7673
Fax 303 293 4098

Pamela J. Pope
Senior Paralegal

cc: Dan Dwy

February 12, 1996

Pamela Grubaugh-Littig
STATE OF UTAH
Dept., of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
Three Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Re: Phase II Bond Release -- Huntington #4 Mine -- Emery
County, Utah

Dear Ms. Littig:

Thank you for taking the time to speak with me today. Enclosed please find an originally executed original bond rider. Bond NO. U-630694 is reduced by \$97,307.60.

Please feel free to contact me with any questions or concerns.

Very truly yours,

PAMELA POPE
Senior Paralegal

xc: Paige Beville DAT/21



Reliance

RELIANCE SURETY COMPANY
Philadelphia, Pennsylvania

RELIANCE INSURANCE COMPANY
Philadelphia, Pennsylvania

UNITED PACIFIC INSURANCE COMPANY
Philadelphia, Pennsylvania

RELIANCE NATIONAL INDEMNITY COMPANY
Philadelphia, Pennsylvania

RIDER

STATE #ACT/015/004

To be attached to and form a part of

Type of Bond: THE MINED LANDS RECLAMATION ACT BOND

Bond No. U-630694

executed by MOUNTAIN COAL COMPANY, as Principal,

and by UNITED PACIFIC INSURANCE COMPANY, as Surety,

in favor of STATE OF UTAH, DIVISION OF OIL, GAS AND MINING

and dated SEPT. 5, 1991

In consideration of the premium charged for the attached bond, it is hereby agreed to ~~change~~:

Decrease bond amount:

From: ONE HUNDRED FORTY-FOUR THOUSAND AND FORTY-ONE AND 60/100 ----- DOLLARS
(\$144,041.60)

To: FORTY-SIX THOUSAND SEVEN HUNDRED THIRTY-FOUR AND NO/100 ----- DOLLARS
(\$46,734.00)

The attached bond shall be subject to all its agreements, limitations and conditions except as herein expressly modified.

This rider is effective January 31, 1996

Signed and Sealed January 31, 1996

Principal MOUNTAIN COAL COMPANY

By: *Michael W. DeGenring*
 Michael W. DeGenring, Vice President Title
UNITED PACIFIC INSURANCE

COMPANY

By: *Cassie J. Herrisford*
 CASSIE J. HERRISFORD, Attorney-in-Fact

RIDER ACCEPTED (Please sign duplicate of this Rider and return to Surety)

By:

Date:

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5907

State of CALIFORNIA

County of LOS ANGELES

On January 31, 1996 before me, KATHY R. MAIR, NOTARY PUBLIC
DATE NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC"

personally appeared CASSIE J. BERRISFORD
NAME(S) OF SIGNER(S)

personally known to me - **OR** - proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Kathy R Mair
SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

- INDIVIDUAL
- CORPORATE OFFICER

TITLE(S)

- PARTNER(S) LIMITED
- GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER: _____

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

DESCRIPTION OF ATTACHED DOCUMENT

TITLE OR TYPE OF DOCUMENT

NUMBER OF PAGES

DATE OF DOCUMENT

SIGNER(S) OTHER THAN NAMED ABOVE

RELiance SURETY COMPANY
UNITED PACIFIC INSURANCE COMPANY

RELiance INSURANCE COMPANY
RELiance NATIONAL INDEMNITY COMPANY

ADMINISTRATIVE OFFICE, PHILADELPHIA, PENNSYLVANIA

POWER OF ATTORNEY

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This Power of Attorney is granted under and by the authority of Article VII of the By-Laws of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY which provisions are now in full force and effect, reading as follows:

ARTICLE VII - EXECUTION OF BONDS AND UNDERTAKINGS

1. The Board of Directors, the President, the Chairman of the Board, any Senior Vice President, any Vice President or Assistant Vice President or other officer designated by the Board of Directors shall have power and authority to (a) appoint Attorney(s)-in-Fact and to authorize them to execute on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and (b) to remove any such Attorney(s)-in-Fact at any time and revoke the power and authority given to them.

2. Attorney(s)-in-Fact shall have power and authority, subject to the terms and limitations of the Power of Attorney issued to them, to execute deliver on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof. The corporate seal is not necessary for the validity of any bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof.

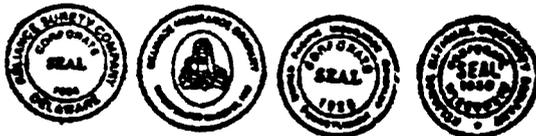
3. Attorney(s)-in-Fact shall have power and authority to execute affidavits required to be attached to bonds, recognizances, contracts of indemnity or other conditional or obligatory undertakings and they shall also have power and authority to certify the financial statement of the Company and to copies of the By-Laws of the Company or any article or section thereof.

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the Executive and Finance Committees of the Boards of Directors of Reliance Insurance Company, United Pacific Insurance Company and Reliance National Indemnity Company by Unanimous Consent dated as of February 28, 1994 and by the Executive and Financial Committee of the Board of Directors of Reliance Surety Company by Unanimous Consent dated as of March 31, 1994.

"Resolved that the signatures of such directors and officers and the seal of the Company may be affixed to any such Power of Attorney or any certificates relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company and any such Power so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company, in the future with respect to any bond or undertaking to which it is attached."

WITNESS WHEREOF, the Companies have caused these presents to be signed and their corporate seals to be hereto affixed, this October 30, 1995.

RELiance SURETY COMPANY
RELiance INSURANCE COMPANY
UNITED PACIFIC INSURANCE COMPANY
RELiance NATIONAL INDEMNITY COMPANY



Lawrence W. Carlstrom

Notary Public in and for the State of Washington
Residing at Puyallup

STATE OF Washington }
COUNTY OF King } ss.

On this, October 30, 1995, before me, Janet Blankley, personally appeared Lawrence W. Carlstrom, who acknowledged himself to be the Senior Vice President of the Reliance Surety Company, and the Vice President of Reliance Insurance Company, United Pacific Insurance Company, and Reliance National Indemnity Company and that as such, being authorized to do so, executed the foregoing instrument for the purpose therein contained by signing the name of the corporation by himself as its duly authorized officer.

In witness whereof, I hereunto set my hand and official seal.

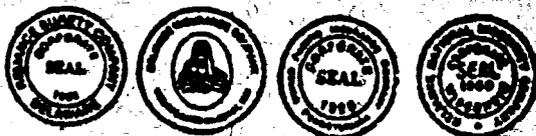


Janet D. Blankley

Notary Public in and for the State of Washington
Residing at Puyallup

I, Robyn Layng, Assistant Secretary of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 31st day of January 19 96



Robyn Layng

Assistant Secretary

CERTIFICATE

I, **Thomas F. Linn**, a duly appointed Assistant Secretary of **MOUNTAIN COAL COMPANY**, a corporation organized under the laws of the State of Delaware, do hereby certify:

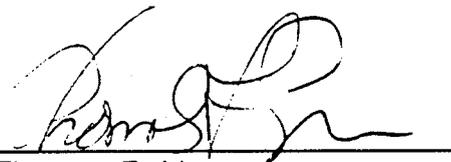
1. That Michael W. DeGenring is a duly appointed Vice President of **MOUNTAIN COAL COMPANY**.
2. That said Vice President of **MOUNTAIN COAL COMPANY** is currently a qualified and acting Vice President of **MOUNTAIN COAL COMPANY**.
3. That said Officer, in his capacity as an Officer of **MOUNTAIN COAL COMPANY**, is empowered to execute and deliver various documents and instruments in accordance with the following Resolution adopted by the Board of Directors of **MOUNTAIN COAL COMPANY** at its Meeting on September 18, 1995:

RESOLVED, That the Chairman, the President, any Vice President and the Treasurer be and they are hereby severally empowered to execute all contracts, documents, assignments, releases, proxies, powers of attorney with full and general or limited authority, with power of substitution, or any other instrument similar or dissimilar to the preceding, and other papers requiring execution in the name of the Company; and the Secretary and any Assistant Secretary are hereby authorized to affix the seal of the Company to such papers as require the seal. Each of such officers is hereby empowered to acknowledge and deliver any such instruments or papers a fully as if special authority had been granted in each particular case.

I further certify that the foregoing Resolution is still in full force and effect and has not been amended or rescinded.

WITNESS my hand and seal of this Company this ninth day of February, 1996.

[SEAL]



Thomas F. Linn
Assistant Secretary

STATE OF COLORADO)
) ss.
CITY & COUNTY OF DENVER)

I hereby certify that on this day before me, an officer duly authorized in the State, City and County aforesaid, to take acknowledgments, personally appeared Thomas F. Linn, known to me to be the Assistant Secretary of MOUNTAIN COAL COMPANY, a Delaware corporation, and to me known to be the person described in the foregoing instrument, and acknowledged before me that he executed the same.

Witness my hand and official seal in the City and County and State last aforesaid as of this ninth day of February, 1996.



J. Pope
Notary Public

Address: Denver, Colorado

My commission expires: June 21, 1999

JOHNSON & HIGGINS

INSURANCE BROKERS & AVERAGE ADJUSTERS
2029 CENTURY PARK EAST
LOS ANGELES CA 90067

(310) 552-8700

Date: January 31, 1996

TO: ARCO COAL COMPANY
ATTN: PAIGE BEVILLE
555 17th STREET
DAT2170
DENVER CO 80202

Company: United Pacific Insurance Company

Bond Number: U-630694

RE: Prin: Mountain Coal Company

Obl: State of Utah

Bond Amount: \$46,734. (reduced)

From: Sherry McFarland

Enclosed: Original rider (reducing bond from \$144,041.60 to \$46,734.00)
and a copy for your files.

CC: Lisa Chua (With Documentation)
United Pacific Ins. Co./Glendale

Julia Fisher
ARCO/ L.A.



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

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

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

March 20, 1995

cc: Dan Day

Paige Beville, Manager
Environmental, Health, and Safety
ARCO Coal Company
555 Seventeenth Street
Denver, Colorado 80202

Re: Phase II Bond Release Removal of Sedimentation Pond, Huntington #4 Mine,
Mountain Coal Company, ACT/015/004-93D, Folder #2, Emery County, Utah

Dear Ms. Beville:

The Division will concur with the Phase II bond release for the Huntington #4 Mine upon satisfactory removal of the sedimentation pond at this site. OSM has granted concurrence to the Phase II bond release. Plans for the removal of this pond must be approved by the Forest Service and the Division prior to removal.

The Division looks forward to working with you to attain Phase II bond release at this site this year. If you have any questions, please call me or Pamela Grubaugh-Littig.

Thank you for your continued cooperation.

Sincerely,

Lowell P. Braxton
Lowell P. Braxton
Associate Director, Mining

cc: Pamela Grubaugh-Littig
Daron Haddock

6/11 D. Day checked;
2 proposals re sediment
control plan to removal
of sediment pond. Will submit to
Forest Service for their approval.
Then we can remove pond &
get Phase II Bond release.



Mountain Coal Company

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



March 1, 1994

Mr. Lowell Braxton, Administrator
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Susan White

Re: Additional Notification Letters
Application for Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Mr. Braxton:

Enclosed are 2 additional letters of notification which were inadvertently omitted in our Partial Bond Release Submittal. The Madden/Hiatt families are listed as surface owners on the property description. The omission was pointed out by Susan White during her review of the application. The letters have been sent to the surface owners, as required.

If you have any questions, or need any further information please let me know.

Respectfully,

Dan W. Guy,
for
Kathleen G. Welt

cc: Kathy Welt - MCC
Susan White - DOGM
File

Mountain Coal Company

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



December 6, 1993

William Joseph Madden
c/o Nancy S. Madden
2900 Connecticut Avenue, NW
Apartment 332
Washington, D.C. 20008

Re: Notification of Application for
Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Mr. Madden:

Mountain Coal Company has completed Phase II of its approved reclamation plan at the Huntington Canyon No. 4 Mine. This is based upon the establishment of revegetation in accordance with the approved reclamation plan.

In accordance with the requirements of R645-301-880 of the Utah Coal Mining Reclamation Act, this letter will serve as notification that Mountain Coal Company intends to file an application with the Utah Division of Oil, Gas and Mining for partial release of the performance bond.

The original bond posted for this property was \$360,104.00, of which \$216,062.40 (60%) was released on November 10, 1986 upon approval of Phase I Bond Release. The present bond posted for the site is \$144,041.60. Mountain Coal Company is seeking release of an additional 30% of the original bond, or \$108,031.20.

If you have any questions, or need any further information please let me know.

Respectfully,

Dan W. Guy, P.E.
for
Kathleen G. Welt

cc: Kathy Welt - MCC
File

Mountain Coal Company

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



December 6, 1993

Marena Madden Hiatt
687 30th Street
Marathon, Florida 33050

Re: Notification of Application for
Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Ms. Hiatt:

Mountain Coal Company has completed Phase II of its approved reclamation plan at the Huntington Canyon No. 4 Mine. This is based upon the establishment of revegetation in accordance with the approved reclamation plan.

In accordance with the requirements of R645-301-880 of the Utah Coal Mining Reclamation Act, this letter will serve as notification that Mountain Coal Company intends to file an application with the Utah Division of Oil, Gas and Mining for partial release of the performance bond.

The original bond posted for this property was \$360,104.00, of which \$216,062.40 (60%) was released on November 10, 1986 upon approval of Phase I Bond Release. The present bond posted for the site is \$144,041.60. Mountain Coal Company is seeking release of an additional 30% of the original bond, or \$108,031.20.

If you have any questions, or need any further information please let me know.

Respectfully,

Dan W. Guy, P.E.
for
Kathleen G. Welt

cc: Kathy Welt - MCC
File

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Emery,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Emery County Progress, a weekly newspaper of general circulation, published at Castle Dale, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for Four (4) consecutive issues, and that the first publication was on the

21st day of September, 1993

and that the last publication of such notice was in the issue of such newspaper dated the

12th day of October, 1993

Kevin Ashby

Subscribed and sworn to before me this

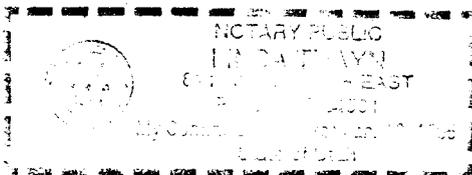
12th day of October, 1993

[Signature]
Notary Public

My Commission expires January 10, 1995

Residing at Price, Utah

Publication fee, \$ 176.00



PUBLIC NOTICE
Huntington Canyon No. 4 Mine
Permit #INA/015/004
Mountain Coal Company
P.O. Box 591
Somerset, Colorado 81434

Application for Partial Release of Performance Bond
Mountain Coal Company completed reclamation Phase I at its Huntington Canyon No. 4 Mine during the period of August 15, 1985 through September 30, 1986. The company has now completed reclamation Phase II, which is based on establishment of revegetation in accordance with the approved reclamation plan.

In accordance with the provisions of R645-301-880, of the Utah Coal Mining Rules, notice is hereby given to the general public that Mountain Coal Company is applying for partial release of the performance bond posted for this operation.

The original bond posted for this property was \$360,104.00, of which \$216,062.40 (60%) was released on November 10, 1986 upon approval of Phase I Bond Release. The present bond posted for this site is \$144,041.60. Mountain Coal Company is seeking release of an additional 30% of the original bond, or \$108,301.20.

The Huntington Canyon No. 4 Mine is located in Mill Fork Canyon, approximately 35 road miles southwest of Price, Utah. The following are the legal descriptions of the permit area:

- Township 16 South, Range 7 East, SLBM, Utah
- Sec. 8: SE 1/4, S 1/2, SE 1/4
- Sec. 9: S 1/2 SW 1/4, SW 1/4 SE 1/4
- Sec. 16: All of Section
- Sec. 17: EW 1/2

The permit area is located on the Rilda Canyon, Utah, U.S. Geological Survey 15 minute quadrangle map.

Federal Coal Leases were #U-33454 and #SL-064903.

The reclamation work was performed on approximately 37 acres of disturbed and affected area located on the following described lands

- Township 16 South, Range 7 East, SLBM, Utah
- Sec. 16: SW 1/4 SE 1/4
- Sec. 16: S 1/2 SW 1/4
- Sec. 17: SE 1/4 SE 1/4

The Division will now evaluate the proposal to determine whether it meets all the criteria of the Permanent Program Performance Standards according to the requirements of the Utah Coal Mining Rules.

Upon completion of the evaluation for said reclamation, a decision will be made as to approval or disapproval of the application. The reclamation plan is available for public review at: Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City Utah 84180-1203, and at the Emery County Courthouse, Castle Dale Utah 84513.

Written comments, objections, and requests for public hearing or informal conference on this proposal may be addressed to the Director of the Division: Mr. Jim Carter, Director, Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203, Attention: Mr. Lowell Braxton.

Published in the Emery County Progress September 21, 28, October and 12, 1993.

ORIGINAL

R I D E R

RIDER to be attached to and form a part of Bond Number U-630694

on behalf of BEAVER CREEK COAL COMPANY
(Name)

555 SEVENTEENTH STREET, DENVER, COLORADO 80202
(Address)

as Principal, and in favor of STATE OF UTAH, DIVISION OF OIL, GAS AND MINING

as Obligee, executed by UNITED PACIFIC INSURANCE COMPANY as Surety,
in the amount of ONE HUNDRED FORTY-FOUR THOUSAND FORTY-ONE
AND 60/100

Dollars (\$ 144,041.60) effective JULY 8, 19 88.

It is hereby understood and agreed that effective as of SEPTEMBER 5, 1991,
the said bond has been amended as follows:

- 1) The Principal's Name has been changed from: BEAVER CREEK COAL COMPANY
to: MOUNTAIN COAL COMPANY
- 2) Specific Language has been added:
"In the event the Cooperative Agreement between the DIVISION and OSM
is terminated, then the portion of the bond covering the Federal Lands
will be payable only to the United States, Department of Interior,
Office of Surface Mining."

Nothing herein contained shall vary, alter or extend any provisions or conditions
of the bond other than as above stated.

SIGNED, SEALED AND DATED this 5TH day of SEPTEMBER, 19 91.



MOUNTAIN COAL COMPANY
Principal

BY: Thomas H. Parker
Vice President

UNITED PACIFIC INSURANCE COMPANY
Surety

BY: Dorothy M. Ivanoff
DOROTHY M. IVANOFF
ATTORNEY-IN-FACT



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

November 10, 1986

Ms. Mary Cristaudo
Bonding Representative
Grant Hatch & Associates, Inc.
P. O. Box 11809
Salt Lake City, Utah 84147

Dear Ms. Cristaudo:

Re: Phase I Bond Release, Beaver Creek Coal Company,
Huntington #4 Mine, INA/015/004, Folder #5, Emery County,
Utah

The Division hereby approves the Phase I bond release of \$216,062.40, or 60 percent of the bond for the Huntington #4 Mine. This bond release is effective as of November 10, 1986.

Thank you for your cooperation.

Best regards,

A handwritten signature in cursive script that reads "Lowell P. Braxton".

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

PGL/djh
cc: D. Guy, BCCC
P. Grubaugh-Littig
J. Whitehead
8808R/9

PRINCIPAL

Bond No. U-630694

Signed and executed this 14th day of June, 1988:

By: Charles B Smith

TITLE: Vice President

State of Colorado)

) SS.

County of Denver)

The foregoing instrument was acknowledged before me by _____

Charles B. Smith, this 14th day of June, 1988.

Witness my hand and official seal.

William B. [Signature]
(Notary Public or other authorized officer)

My Commission Expires: Aug 29, 1991



SURETY

Signed and executed this 18TH day of MAY, 1988:

By: [Signature]
DANIEL ORTIZ

TITLE: ATTORNEY-IN-FACT

State of CALIFORNIA)

) SS.

County of LOS ANGELES)

The foregoing instrument was acknowledged before me by DANIEL ORTIZ,

ATTORNEY-IN-FACT, this 18TH day of MAY, 1988.

Witness my hand and official seal.

Cora V. Rodriguez
(Notary Public or other authorized officer)
CORA V. RODRIGUEZ

My Commission Expires: MARCH 24, 1989



RESIDENT AGENT FOR SERVICE

Resident Agent: _____ Date: _____
(Signature)

_____ Address: _____
(Printed Name)

Approved as to form and execution:

Attorney General
By: _____ Date: _____
Assistant

APPROVED: _____ Date: _____
Coordinator of Mined Land Development

Permit No. _____

RECORDED
JUN 17 1998

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

DIVISION OF
OIL, GAS & MINING

THE MINED LANDS RECLAMATION ACT
BOND

BOND NO. U-630694

Know all men by these presents, that we the undersigned, BEAVER CREEK COAL COMPANY

(State name and form of business organization of the Permit Applicant)

duly authorized to do business in the State of Utah, AS PRINCIPAL, and UNITED PACIFIC INSURANCE COMPANY

a corporation organized and existing under the laws of the State of Washington and duly authorized to do business in the State of Utah, AS SURETY, are held and firmly bound unto the STATE OF UTAH, DIVISION OF OIL, GAS, AND MINING, in the sum of ONE HUNDRED FORTY FOUR THOUSAND FORTY-ONE DOLLARS AND 60/100 DOLLARS (\$144,041.60), lawful money of the United States, to be paid to the State of Utah, Division of Oil, Gas, and Mining and the United States Department of the Interior, Office of Surface Mining, upon order of forfeiture by the State of Utah, Division of Oil, Gas, and Mining, for the payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the above named principal did on the 16th day of March, 1976, file with the Division of Oil, Gas, and Mining a "Notice of Intention to Commence Mining Operations" and a "Mining and Reclamation Plan", to secure authorization to engage in mining operations in the State of Utah, under the terms and provisions of the Mined Land Reclamation Act; that in said Notice the principal estimated that 1,320.46 acres of land will be affected by mining. Said land is described as follows:

All of Section 16	T16S, R7E	640 acres more or less
E/2 Section 17	T16S, R7E	320 acres more or less
SW/4 Section 8	T16S, R7E	160 acres more or less
S/2SE/4 Section 8	T16S, R7E	80 acres more or less
S/2S/2 less SE/4SE/4 Section 9	T16S, R7E	120 acres more or less

Pumping facility beginning at a point 555 feet west and 85 feet south of the NE corner of the NE/4, Section 21, thence 100 feet south, thence 200 feet west, thence 100 feet north, thence 200 feet east to point of beginning.

T16S, R7E 0.46 acres more or less

All above lands in Emery County, Utah

Now, therefore, the conditions of the obligation are such that, this bond shall remain in full force and effect until either released or forfeited pursuant to the provisions of the Utah Mined Land Reclamation Act and the Surface Mining Control and Reclamation Act of 1977 PL(95-87) and any rules and regulations adopted pursuant to said Acts.

(THIS BOND REPLACES FEDERAL INSURANCE COMPANY BOND NUMBER 8082-89-88)

UNITED PACIFIC INSURANCE COMPANY

HEAD OFFICE, FEDERAL WAY, WASHINGTON

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, That the UNITED PACIFIC INSURANCE COMPANY, a corporation duly organized under the laws of the State of Washington, does hereby make, constitute and appoint

DANIEL ORTIZ of LOS ANGELES, CALIFORNIA -----

as true and lawful Attorney-in-Fact, to make, execute, seal and deliver for and on his behalf, and as his act and deed

ANY AND ALL BONDS AND UNDERTAKINGS OF SURETYSHIP ----

and to bind the UNITED PACIFIC INSURANCE COMPANY thereby as fully and to the same extent as if such bonds and undertakings and other writings obligatory in the nature thereof were signed by an Executive Officer of the UNITED PACIFIC INSURANCE COMPANY and sealed and attested by one other of such officers, and hereby ratifies and confirms all that his said Attorney-in-Fact may do in pursuance hereof.

The Power of Attorney is granted under and by authority of Article VII of the By-Laws of UNITED PACIFIC INSURANCE COMPANY which became effective September 7, 1978, which provisions are now in full force and effect, reading as follows.

ARTICLE VII - EXECUTION OF BONDS AND UNDERTAKINGS

1. The Board of Directors, the President, the Chairman of the Board, any Senior Vice President, any Vice President or Assistant Vice President or other officer designated by the Board of Directors shall have power and authority to (a) appoint Attorneys-in-Fact and to authorize them to execute on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and (b) to remove any such Attorney-in-Fact at any time and revoke the power and authority given to him.

2. Attorneys-in-Fact shall have power and authority, subject to the terms and limitations of the power of attorney issued to them, to execute and deliver on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof. The corporate seal is not necessary for the validity of any bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof.

3. Attorneys-in-Fact shall have power and authority to execute affidavits required to be attached to bonds, recognizances, contracts of indemnity or other conditional or obligatory undertakings and they shall also have power and authority to certify the financial statement of the Company and to copies of the By Laws of the Company or any article or section thereof.

The power of attorney is signed and sealed by facsimile under and by authority of the following Resolution adopted by the Board of Directors of UNITED PACIFIC INSURANCE COMPANY at a meeting held on the 5th day of June, 1979, at which a quorum was present, and said Resolution has not been amended or repealed.

"Resolved, that the signatures of such directors and officers and the seal of the Company may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be void and binding upon the Company and any such power so executed and certified by facsimile signatures and facsimile seal shall be void and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the UNITED PACIFIC INSURANCE COMPANY has caused these presents to be signed by its Vice President, and its corporate seal to be hereto affixed, this 23rd day of June 1987



UNITED PACIFIC INSURANCE COMPANY

Charles B. Schmalz
Vice President

STATE OF Washington }
COUNTY OF King }

On this 23rd day of June 1987 personally appeared Charles B. Schmalz

to me known to be the Vice-President of the UNITED PACIFIC INSURANCE COMPANY, and acknowledged that he executed and attested the foregoing instrument and affixed the seal of said corporation thereto, and that Article VII, Section 1, 2, and 3 of the By-Laws of said Company, and the Resolution, set forth therein, are still in full force.

My Commission Expires:

May 15 1990



Pamela Young
Notary Public in and for State of Washington
Residing at Tacoma

I, Lawrence W. Carlstrom, Assistant Secretary of the UNITED PACIFIC INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney executed by said UNITED PACIFIC INSURANCE COMPANY, which is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company this 18TH day of MAY 1988



Assistant Secretary *Lawrence W. Carlstrom*
Lawrence W. Carlstrom

Mountain Coal Company
West Elk Mine
Post Office Box 591
Somerset, Colorado 81434
Telephone 303 929-5015
Fax 303 929-5595

RECEIVED

DEC 13 1993

DIVISION OF
OIL, GAS & MINING



December 8, 1993

Mr. Lowell Braxton, Administrator
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Application for Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Mr. Braxton,

Mountain Coal Company has completed Phase II of the approved reclamation plan for the Huntington Canyon No. 4 Mine. This is based upon the establishment of revegetation and sediment control in accordance with the approved reclamation plan, as verified in the attached 1993 Vegetation Monitoring Report and Sediment Production Evaluation.

In accordance with the provisions of R645-301-880, Mountain Coal Company is hereby applying for partial release of the performance bond. The original bond posted for this property was \$216,062.40, (60%) was released on November 10, 1986 upon approval of Phase I Bond Release. The present bond posted for this site is \$144,041.80. Mountain Coal Company is hereby applying for release of an additional 30% of the original bond, or \$108,031.20. This will leave an amount of \$36,010.40 to be held until final bond release. The disturbed area for this site was 12.29 acres, with an affected area of approximately 37 acres. The remaining bond would provide for approximately \$2,930.06/acre of disturbed area or \$973.25/acre of affected area.

Copies of letters for notification to land owners, agencies, and water companies in the area are enclosed. A copy of the newspaper advertisement placed prior to submittal of this application is enclosed. This advertisement ran for four consecutive weeks in the local area papers. Proof of publication is also enclosed.

Mountain Coal Company

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



March 1, 1994

Mr. Lowell Braxton, Administrator
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Susan White

Re: Additional Notification Letters
Application for Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Mr. Braxton:

Enclosed are 2 additional letters of notification which were inadvertently omitted in our Partial Bond Release Submittal. The Madden/Hiatt families are listed as surface owners on the property description. The omission was pointed out by Susan White during her review of the application. The letters have been sent to the surface owners, as required.

If you have any questions, or need any further information please let me know.

Respectfully,

Dan W. Guy,
for
Kathleen G. Welt

cc: Kathy Welt - MCC
Susan White - DOGM
File

Mountain Coal Company

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



December 6, 1993

William Joseph Madden
c/o Nancy S. Madden
2900 Connecticut Avenue, NW
Apartment 332
Washington, D.C. 20008

Re: Notification of Application for
Partial Bond Release
Huntington Canyon No. 4 Mine
INA/015/004, UT-004
Emery County, Utah

Dear Mr. Madden:

Mountain Coal Company has completed Phase II of its approved reclamation plan at the Huntington Canyon No. 4 Mine. This is based upon the establishment of revegetation in accordance with the approved reclamation plan.

In accordance with the requirements of R645-301-880 of the Utah Coal Mining Reclamation Act, this letter will serve as notification that Mountain Coal Company intends to file an application with the Utah Division of Oil, Gas and Mining for partial release of the performance bond.

The original bond posted for this property was \$360,104.00, of which \$216,062.40 (60%) was released on November 10, 1986 upon approval of Phase I Bond Release. The present bond posted for the site is \$144,041.60. Mountain Coal Company is seeking release of an additional 30% of the original bond, or \$108,031.20.

If you have any questions, or need any further information please let me know.

Respectfully,

Dan W. Guy, P.E.
for
Kathleen G. Welt

cc: Kathy Welt - MCC
File

LIABILITY INSURANCE

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)
12/11/95

PRODUCER
Johnson & Higgins of California
Casualty Department
2029 Century Park East
Los Angeles, CA 90067
(310) 551-4667
0659A-GL 500H

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	INDEMNITY INSURANCE COMPANY OF NORTH AMERICA
COMPANY B	
COMPANY C	
COMPANY D	

INSURED
ATLANTIC RICHFIELD COMPANY, ITS
SUBSIDIARIES AND SUBSIDIARIES
THEREOF AS NOW OR HEREINAFTER
CONSTITUTED
515 SOUTH FLOWER STREET
LOS ANGELES, CALIFORNIA 90071

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS																					
A	GENERAL LIABILITY	ISL G1 432156-0	01-01-96	01-01-99	<table border="1"> <tr><td>BODILY INJURY OCC</td><td>\$</td><td>N/A</td></tr> <tr><td>BODILY INJURY AGG</td><td>\$</td><td>N/A</td></tr> <tr><td>PROPERTY DAMAGE OCC</td><td>\$</td><td>N/A</td></tr> <tr><td>PROPERTY DAMAGE AGG</td><td>\$</td><td>N/A</td></tr> <tr><td>BI & PD COMBINED OCC</td><td>\$</td><td>500,000</td></tr> <tr><td>BI & PD COMBINED AGG</td><td>\$</td><td>*500,000</td></tr> <tr><td>PERSONAL INJURY AGG</td><td>\$</td><td>N/A</td></tr> </table>	BODILY INJURY OCC	\$	N/A	BODILY INJURY AGG	\$	N/A	PROPERTY DAMAGE OCC	\$	N/A	PROPERTY DAMAGE AGG	\$	N/A	BI & PD COMBINED OCC	\$	500,000	BI & PD COMBINED AGG	\$	*500,000	PERSONAL INJURY AGG	\$	N/A
BODILY INJURY OCC	\$	N/A																								
BODILY INJURY AGG	\$	N/A																								
PROPERTY DAMAGE OCC	\$	N/A																								
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BI & PD COMBINED OCC	\$	500,000																								
BI & PD COMBINED AGG	\$	*500,000																								
PERSONAL INJURY AGG	\$	N/A																								
	<input checked="" type="checkbox"/> COMPREHENSIVE FORM <input checked="" type="checkbox"/> PREMISES/OPERATIONS <input checked="" type="checkbox"/> UNDERGROUND EXPLOSION & COLLAPSE HAZARD <input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPER <input checked="" type="checkbox"/> CONTRACTUAL <input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS <input checked="" type="checkbox"/> BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> PERSONAL INJURY																									
	AUTOMOBILE LIABILITY				<table border="1"> <tr><td>BODILY INJURY (Per person)</td><td>\$</td><td></td></tr> <tr><td>BODILY INJURY (Per accident)</td><td>\$</td><td></td></tr> <tr><td>PROPERTY DAMAGE</td><td>\$</td><td></td></tr> <tr><td>BODILY INJURY & PROPERTY DAMAGE COMBINED</td><td>\$</td><td></td></tr> </table>	BODILY INJURY (Per person)	\$		BODILY INJURY (Per accident)	\$		PROPERTY DAMAGE	\$		BODILY INJURY & PROPERTY DAMAGE COMBINED	\$										
BODILY INJURY (Per person)	\$																									
BODILY INJURY (Per accident)	\$																									
PROPERTY DAMAGE	\$																									
BODILY INJURY & PROPERTY DAMAGE COMBINED	\$																									
	<input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS (Private Pass) <input type="checkbox"/> ALL OWNED AUTOS (Other than Private Passenger) <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS <input type="checkbox"/> GARAGE LIABILITY																									
	EXCESS LIABILITY				<table border="1"> <tr><td>EACH OCCURRENCE</td><td>\$</td><td></td></tr> <tr><td>AGGREGATE</td><td>\$</td><td></td></tr> <tr><td>STATUTORY LIMITS</td><td>\$</td><td></td></tr> </table>	EACH OCCURRENCE	\$		AGGREGATE	\$		STATUTORY LIMITS	\$													
EACH OCCURRENCE	\$																									
AGGREGATE	\$																									
STATUTORY LIMITS	\$																									
	<input type="checkbox"/> UMBRELLA FORM <input type="checkbox"/> OTHER THAN UMBRELLA FORM																									
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				<table border="1"> <tr><td>EACH ACCIDENT</td><td>\$</td><td></td></tr> <tr><td>DISEASE - POLICY LIMIT</td><td>\$</td><td></td></tr> <tr><td>DISEASE - EACH EMPLOYEE</td><td>\$</td><td></td></tr> </table>	EACH ACCIDENT	\$		DISEASE - POLICY LIMIT	\$		DISEASE - EACH EMPLOYEE	\$													
EACH ACCIDENT	\$																									
DISEASE - POLICY LIMIT	\$																									
DISEASE - EACH EMPLOYEE	\$																									
	<input type="checkbox"/> THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL <input type="checkbox"/> OTHER																									

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS (LIMITS MAY HAVE BEEN REDUCED BY PAID CLAIMS AND MAY HAVE DEDUCTIBLES OR RETENTIONS)

*COMPLETED PRODUCTS OPERATIONS. NAMED INSURED INCLUDES MOUNTAIN COAL COMPANY AND ARCO COAL COMPANY.
INCLUDES "XCU" COVERAGE. "HUNTINGTON CANYON #4 MINE INA/015/006".

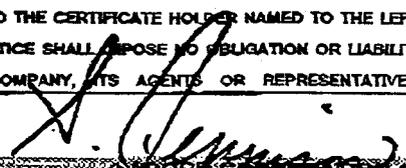
CERTIFICATE HOLDER

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
35 WEST NORTH TEMPLE
3 TRIAD CENTER, SUITE 350
SALT LAKE CITY, UTAH 84180-1203

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 45 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE



WATER MONITORING

Mountain Coal Company

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



January 29, 1996

*Ms. Pamela Grubaugh-Littig
Permit Supervisor
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203*

Dear Ms. Littig:

Enclosed are the results of the Mountain Coal Company Water Monitoring for the Fourth Quarter of 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

*Dan W. Guy for
Paige B. Beville, MCC*

DWG/db2

Enclosures

*cc: Paige B. Beville, MCC
File
WTRMON*

E.I.S. Hydrology
Field Measurements Form

Date 11/23/95

Station # H-3W

Company M. Coal

Time 10:20

Flow/Depth D

pH _____

Specific Conductivity _____

Water Temperature _____

Air Temperature _____

Dissolved Oxygen _____

Type: Spring ___ Stream ___ Well ___ Discharge ___ NPDES ___

Collection Point _____

Appearance of Water: Clear ___ Milky ___ Cloudy ___ Opaque ___

Quality Sample Taken: Yes ___ No X

Pump Reading _____

Comments _____

Field Monitor [Signature]

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: BCCC #4 Mine
 Station: 4-3W
 Location: Upper Mill Fork
 Type: E. Stream
 Frequency: Quarterly

Field Measurements	Date Sampled				Mean
	03/10/95	05/05/95	08/10/95	11/23/95	
Flow [gpm]	N/A	DRY	DRY	DRY	DRY
PH					
Sp. Cond. [ohms]					
Temp. [C]					
Diss. O [ppm]					

Lab. Meas. [mg/l]

TDS

TSS

Al CaCO3

Hd CaCO3

HCO3

CO3

Cl

SO4

Ca

Mg

K

Na

Cat/An

Fe

Mn

E.I.S. Hydrology
Field Measurements Form

Date 10/26/95

Station # 4-64407

Company M. Seal

Time 16:30

Flow/Depth 0

pH _____

Specific Conductivity _____

Water Temperature _____

Air Temperature _____

Dissolved Oxygen _____

Type: Spring ___ Stream ___ Well ___ Discharge ___ NPDES ___

Collection Point _____

Appearance of Water: Clear ___ Milky ___ Cloudy ___ Opaque ___

Quality Sample Taken: Yes ___ No

Pump Reading _____

Comments _____

Field Monitor [Signature]

When Sample or Measurements Not Taken:

Reason: 0

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

E.I.S. Hydrology
Field Measurements Form

Date 11/23/95

Station # 4-6W-7

Company M.H. Coal

Time 9:40

Flow/Depth - D

pH _____

Specific Conductivity _____

Water Temperature _____

Air Temperature _____

Dissolved Oxygen _____

Type: Spring___ Stream___ Well___ Discharge___ NPDES___

Collection Point _____

Appearance of Water: Clear___ Milky___ Cloudy___ Opaque___

Quality Sample Taken: Yes___ No___

Pump Reading _____

Comments Pond Removed - Direct To Creek

Field Monitor _____

When Sample or Measurements Not Taken:

Reason: _____

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

E.I.S. Hydrology
Field Measurements Form

Date 12/20/95

Station # FEW 27

Company M. Coal

Time 13:10

Flow/Depth 0

pH _____

Specific Conductivity _____

Water Temperature _____

Air Temperature _____

Dissolved Oxygen _____

Type: Spring Stream Well Discharge NPDES

Collection Point _____

Appearance of Water: Clear Milky Cloudy Opaque

Quality Sample Taken: Yes No

Pump Reading _____

Comments Flow in channel - to creek

Field Monitor [Signature]

When Sample or Measurements Not Taken:

Reason: _____

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: BCCC #4 Mine
 Station: 4-6W
 Location: Inflow to Sed. Pond
 Type: Surface Runoff
 Frequency: Monthly

Field Measurements	Date Sampled	01/10/95	02/27/95	03/10/95	04/27/95	05/05/95	06/26/95	07/19/95	08/10/95	09/11/95	10/26/95	11/23/95
--------------------	--------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

Flow [gpm]	N/A	N/A	N/A	DRY								
------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

PH

Sp.Con. [ohms]

Temp [C]

Diss. O. [ppm]

Lab. Meas. [mg/l]

TDS

TSS

O & G

CaCO3

Hd CaCO3

Ac CaCO3

HCO3

CO3

Cl

SO4

Ca

Mg

K

Na

Cat/An

Fe

E.I.S. Hydrology
Field Measurements Form

Date 4/23/95

Station # H-8W

Company M.H. Coak

Time 10:10

Flow/Depth D

pH _____

Specific Conductivity _____

Water Temperature _____

Air Temperature _____

Dissolved Oxygen _____

Type: Spring ___ Stream ___ Well ___ Discharge ___ NPDES ___

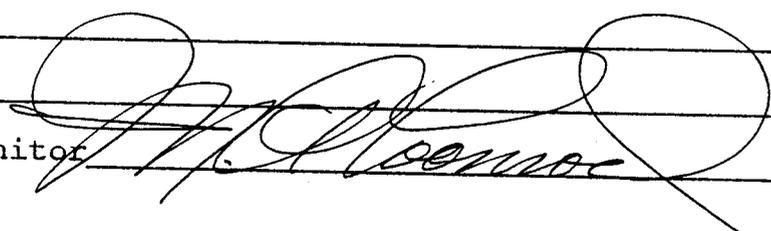
Collection Point _____

Appearance of Water: Clear ___ Milky ___ Cloudy ___ Opaque ___

Quality Sample Taken: Yes ___ No

Pump Reading _____

Comments _____

Field Monitor 

When Sample or Measurements Not Taken:

Reason: D

D = Dry F = Frozen N/A = Not Accessable N/R = Not Required

WATER MONITORING REPORT

Property: BCCC #4 Mine
 Station: 4-8W
 Location: Lower Mill Fork
 Type: Int. Stream
 Frequency: Quarterly

Field Measurements	Date Sampled				Mean
	03/14/95	05/05/95	08/10/95	11/23/95	
Flow [gpm]	DRY	DRY	57.20	DRY	57.20
PH			8.97		8.97
Sp. Cond. [ohms]			7.95		7.95
Temp. [C]			8.00		8.00
Diss. O [ppm]			7.80		7.80

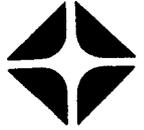
Lab. Meas. [mg/l]

TDS	409.00	409.00
TSS	<1	<1
Al CaCO3	286.00	286.00
Hd CaCO3	370.00	370.00
HCO3	349.00	349.00
CO3	0.00	0.00
Cl	17.00	17.00
SO4	92.00	92.00
Ca	60.00	60.00
Mg	54.00	54.00
K	2.00	2.00
Na	14.00	14.00
Cat/An	0.37	0.37
Fe	<0.05	<0.05
Mn	<0.02	<0.02
Oil & Grease	<1	<1

U.P.D.E.S. DISCHARGE DATA

Mountain Coal Company

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



February 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Dear Mr. Hilden:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of January 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

Dan W. Guy for
Paige B. Beville, MCC

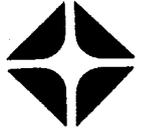
Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



February 28, 1995

*Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203*

Dear Ms. Littig:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of January 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

*Dan W. Guy for
Paige B. Beville, MCC*

Enclosures

DWG/db

*cc: Donna Franklin, E.P.A.
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

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



February 28, 1995

*Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405*

Dear Ms. Franklin:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of January 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

*Dan W. Guy for
Paige B. Beville, MCC*

Enclosures

DWG/db

*cc: Pamela Grubaugh-Littig, UDOGM
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

PERMITTEE NAME: MOLLAINE COAL COMPANY
 ADDRESS: P.O. BOX 591 SOMERSET CO. 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)
 (7-16) (17-19)

UTG040015 PERMIT NUMBER
 001 A DISCHARGE NUMBER

MINOR Form Approved. OMB No. 2040-0004
 F - FINAL WITHIN FOREST OVER BOUNDARY

FACILITY: #4 MINE
 LOCATION: HUNTINGTON CANYON

MONITORING PERIOD
 FROM YEAR 95 MC 01 DAY 01 TO YEAR 95 MO 01 DAY 31
 (20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

*** NO DISCHARGE ***
 NOTE: Read instructions before completing this form.

ATTN: KATHLEEN WELT

PARAMETER (32-37)	SAMPLE MEASUREMENT / PERMIT REQUIREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45)			UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE (54-61)	MAXIMUM (54-61)	UNITS	MINIMUM (54-61)	AVERAGE (54-61)	MAXIMUM (54-61)				
FLOW RATE				(07)	*****	*****	*****				
00056 1 0 0 EFFLUENT GROSS VALUE		REPORT 30DA AVG	REPORT DAILY MX	GPD	*****	*****	*****	****	ONCE/GRAB MONTH		
PH		*****	*****			*****		(12)			
00400 1 0 0 EFFLUENT GROSS VALUE		*****	*****	****	6.5 DAILY MN	*****	9.0 DAILY MX	SU	TWICE/GRAB MONTH		
SOLIDS, TOTAL SUSPENDED		*****	*****		*****			(19)			
00530 1 0 0 EFFLUENT GROSS VALUE		*****	*****	****	*****	25 30DA AVG	70 DAILY MX	MG/L	ONCE/GRAB MONTH		
SOLIDS, SETTLEABLE		*****	*****		*****	*****		(25)			
00545 1 0 0 EFFLUENT GROSS VALUE		*****	*****	****	*****	*****	0.5 DAILY MX	ML/L	ONCE/GRAB MONTH		
OIL AND GREASE FROM EXTR-GRAY METH		*****	*****		*****	*****		(19)			
00556 1 0 0 EFFLUENT GROSS VALUE		*****	*****	****	*****	*****	10 DAILY MX	MG/L	ONCE/GRAB MONTH		
IRON, TOTAL (AS FE)		*****	*****		*****	*****		(19)			
01045 1 0 0 EFFLUENT GROSS VALUE		*****	*****	****	*****	*****	2.0 DAILY MX	MG/L	ONCE/GRAB MONTH		
SOLIDS, TOTAL DISSOLVED		*****		(26)	*****	*****		(19)			
70295 1 0 0 EFFLUENT GROSS VALUE		*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	MG/L	ONCE/GRAB MONTH		

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
 Kathleen Welt
 Environmental Supervisor
 TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years)

Kathleen Welt
 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: 801 637-2422
 DATE: 95 02 28
 AREA CODE: NUMBER: YEAR: MO: DAY:

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
 TDS IS LIMITED TO ONE TON PER DAY FROM ALL OUTFALLS. DURING PRECIPITATION EVENTS SETTLEABLE SOLIDS SHALL BE LIMITED INSTEAD OF TSS. REPORT "DOES NOT APPLY" IN APPROPRIATE ROW.

Mountain Coal Company

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



March 28, 1995

Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405

Dear Ms. Franklin:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of February 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

A handwritten signature in cursive script, appearing to read "Dan W. Guy". The signature is written in black ink and is positioned above the typed name.

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Pamela Grubaugh-Littig, UDOGM
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



March 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

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If you have any questions or need any additional information, please contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Dan W. Guy". The signature is fluid and cursive, with a large initial "D" and "G".

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



March 28, 1995

Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Ms. Littig:

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Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

PERMITTEE NAME/ ADDRESS (Include Facility Name/ n if different) **MOL. AIN COAL COMPANY**
 ADDRESS **P.O. BOX 591**
SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)
 (17-19)

UTG040015 PERMIT NUMBER
001 A DISCHARGE NUMBER

MINOR
 Form Approved. OMB No. 2040-0004
F - FINAL WITHIN FOREST SERVICE BOUNDARY

FACILITY ***4 MINE**
 LOCATION **HUNTINGTON CANYON**
 ATTN: **KATHLEEN WELT**

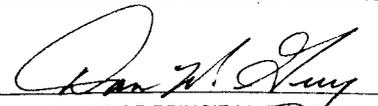
MONITORING PERIOD
 FROM YEAR **95** MC **02** DAY **01** TO YEAR **95** MO **02** DAY **28**
 (20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

*** NO DISCHARGE ***
 NOTE: Read instructions before completing this form.

PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45) (46-53) (54-61)				NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
FLOW RATE				(07)	*****	*****	*****				
00056 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 300A AVG	REPORT DAILY MX	GPD	*****	*****	*****	****		ONCE/GRAB MONTH	
PH	SAMPLE MEASUREMENT	*****	*****			*****	(12)				
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	6.5 DAILY MN	*****	9.0 DAILY MX	SU		TWICE/GRAB MONTH	
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	*****	*****		*****		(19)				
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	25 300A AVG	70 DAILY MX	MG/L		ONCE/GRAB MONTH	
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	*****	*****		*****	*****	(25)				
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	0.5 DAILY MX	ML/L		ONCE/GRAB MONTH	
OIL AND GREASE FROM EXTR-GRAY METH	SAMPLE MEASUREMENT	*****	*****		*****	*****	(19)				
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	10 DAILY MX	MG/L		ONCE/GRAB MONTH	
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	*****	*****		*****	*****	(19)				
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	2.0 DAILY MX	MG/L		ONCE/GRAB MONTH	
SOLIDS, TOTAL DISSOLVED	SAMPLE MEASUREMENT	*****		(26)	*****	*****	(19)				
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	MG/L		ONCE/GRAB MONTH	

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Kathleen Welt
 Environmental Supervisor
 TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.)


 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE **801 637-2422**
 DATE **95 03 28**
 AREA CODE NUMBER YEAR MO DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
TDS IS LIMITED TO ONE TON PER DAY FROM ALL OUTFALLS. DURING PRECIPITATION EVENTS SETTLEABLE SOLIDS SHALL BE LIMITED INSTEAD OF TSS. REPORT "DOES NOT APPLY" IN APPROPRIATE ROW.



Mountain Coal Company

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

April 28, 1995

*Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203*

Dear Ms. Littig:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of March 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

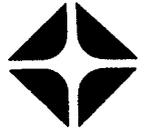
Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

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



April 28, 1995

*Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405*

Dear Ms. Franklin:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of March 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Dan W. Guy". The signature is fluid and cursive, written over the typed name.

*Dan W. Guy for
Paige B. Beville, MCC*

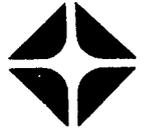
Enclosures

DWG/db

*cc: Pamela Grubaugh-Littig, UDOGM
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

Mountain Coal Company

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



April 28, 1995

*Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870*

Dear Mr. Hilden:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of March 1995.

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*Dan W. Guy for
Paige B. Beville, MCC*

Enclosures

DWG/db

*cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File*

PERMITTEE NAME AND ADDRESS (Include Facility Name/Location if different)
 NAME MOU. IN COAL COMPANY
 ADDRESS P.O. BOX 591
SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
 DISCHARGE MONITORING REPORT (DMR)

UTG040015
 PERMIT NUMBER

001 A
 DISCHARGE NUMBER

MINOR

Form Approved.
 OMB No. 2040-0004

FACILITY No. 4 MINE
 LOCATION Huntington Cyn.

MONITORING PERIOD							
YEAR	MO	DAY	TO	YEAR	MO	DAY	
95	03	01		95	03	31	
(20-21)		(22-23)		(24-25)		(26-27)	
		(28-29)		(30-31)			

F - FINAL WITHIN FOREST SVC BOUNDARY

*** NO DISCHARGE ***
 NOTE: Read instructions before completing this form.

ATTN: KATHLEEN WELT

PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM			
FLOW RATE				(07)	*****	*****	*****			
00056 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	GPD	*****	*****	*****	***	ONCE/ MONTH	HEASRD
PH	SAMPLE MEASUREMENT	*****	*****					(12)		
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	6.5 DAILY MN	*****	9.0 DAILY MX	SU	TWICE/ MONTH	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	*****	*****		*****			(19)		
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	25 30DA AVG	70 DAILY MX	MG/L	ONCE/ MONTH	GRAB
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	*****	*****		*****	***		(25)		
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	0.5 DAILY MX	ML/L	ONCE/ MONTH	GRAB
OIL AND GREASE	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
FREON EXTR-GRAV METH	PERMIT REQUIREMENT	*****	*****	***	*****	*****	10 DAILY MX	MG/L	ONCE/ MONTH	GRAB
00556 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
IRON, TOTAL (AS FE)	PERMIT REQUIREMENT	*****	*****	***	*****	*****	1.0 DAILY MX	MG/L	ONCE/ MONTH	GRAB
01045 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	(26)	*****	*****		(19)		
SOLIDS, TOTAL DISSOLVED	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	MG/L	ONCE/ MONTH	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
 Kathleen Welt
 Environmental Supervisor
 TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT, SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.)

Kathleen Welt
 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE 801 637-2422
 DATE 95 04 28
 AREA CODE NUMBER YEAR MO DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
 TDS IS LIMITED TO ONE TON PER DAY FROM ALL OUTFALLS. DURING PRECIPITATION EVENTS SETTLEABLE SOLIDS SHALL BE LIMITED INSTEAD OF TSS. REPORT "DOES NOT APPLY" IN APPROPRIATE ROW.

Mountain Coal Company

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



May 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Dear Mr. Hilden:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of April 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

A handwritten signature in cursive script that reads "Dan W. Guy".

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



May 28, 1995

*Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203*

Dear Ms. Littig:

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Respectfully,

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Paige B. Beville, MCC*

Enclosures

DWG/db

*cc: Donna Franklin, E.P.A.
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

Mountain Coal Company

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



May 28, 1995

*Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405*

Dear Ms. Franklin:

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Enclosures

DWG/db

*cc: Pamela Grubaugh-Littig, UDOGM
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

PERMITTEE NAME: MOLLAINE COAL COMPANY
 ADDRESS: P.O. BOX 591 SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)

UTG040015
 PERMIT NUMBER

001 A
 DISCHARGE NUMBER

MINOR

Form Approved. OMB No. 2040-0004

FACILITY: *4 MINE
 LOCATION: HUNTINGTON CANYON

MONITORING PERIOD						
YEAR	MC	DAY	TO	YEAR	MO	DAY
95	04	01	TO	95	04	30
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

F - FINAL WITHIN FOREST OR OPEN BOUNDARY

*** NO DISCHARGE ***
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ATTN: KATHLEEN WELT

PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE (54-61)	MAXIMUM (54-61)	UNITS (54-61)	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)			
FLOW RATE				(07)	*****	*****	*****			
00056 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	GPD	*****	*****	*****	***	ONCE / GRAB MONTH	
PH	SAMPLE MEASUREMENT	*****	*****			*****		(12)		
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	6.5 DAILY MM	*****	9.0 DAILY MX	SU	TWICE / GRAB MONTH	
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	*****	*****		*****			(19)		
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	25 30DA AVG	70 DAILY MX	MG/L	ONCE / GRAB MONTH	
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	*****	*****		*****	*****		(25)		
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	0.5 DAILY MX	ML/L	ONCE / GRAB MONTH	
OIL AND GREASE FROM EXTR-GRAY METH	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	10 DAILY MX	MG/L	ONCE / GRAB MONTH	
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	2.0 DAILY MX	MG/L	ONCE / GRAB MONTH	
SOLIDS, TOTAL DISSOLVED	SAMPLE MEASUREMENT	*****		(26)	*****	*****		(19)		
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	MG/L	ONCE / GRAB MONTH	

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
 Kathleen Welt
 Environmental Supervisor
 TYPED OR PRINTED

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[Signature]
 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: 801 637-2422
 DATE: 95 05 28
 AREA CODE: 801 NUMBER: 637-2422 YEAR: 95 MO: 05 DAY: 28

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
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Mountain Coal Company

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



June 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Dear Mr. Hilden:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of May, 1995.

If you have any questions or need any additional information, please contact me.

Respectfully,

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



June 28, 1995

*Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203*

Dear Ms. Littig:

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Enclosures

DWG/db

*cc: Donna Franklin, E.P.A.
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Paige B. Beville, Mountain Coal Co.
File*

Mountain Coal Company

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



June 28, 1995

Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405

Dear Ms. Franklin:

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Enclosures

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cc: Pamela Grubaugh-Littig, UDOGM
Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

PERMITTEE NAME ADDRESS (Include Facility Name/Location if different)
MOHAWK COAL COMPANY
 ADDRESS **P.O. BOX 591**
SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)

UTG040015
 PERMIT NUMBER

001 A
 DISCHARGE NUMBER

MINOR

Form Approved. OMB No. 2040-0004

FACILITY **#4 MINE**
 LOCATION **HUNTINGTON CANYON**

MONITORING PERIOD						
YEAR	MC	DAY	TO	YEAR	MO	DAY
95	05	01		95	05	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

F - FINAL WITHIN FOREST OVER BOUNDARY

***** NO DISCHARGE XI *****

NOTE: Read instructions before completing this form.

ATTN: **KATHLEEN WELT**

PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
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00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	6.5 DAILY MN	*****	9.0 DAILY MX	****	TWICE / GRAB MONTH	
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	*****	*****		*****			(19)		
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	25 30DA AVG	70 DAILY MX	****	ONCE / GRAB MONTH	
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	*****	*****		*****	*****		(25)		
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	0.5 DAILY MX	****	ONCE / GRAB MONTH	
OIL AND GREASE FROM EXTR-GRAB METH	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	10 DAILY MX	****	ONCE / GRAB MONTH	
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	2.0 DAILY MX	****	ONCE / GRAB MONTH	
SOLIDS, TOTAL DISSOLVED	SAMPLE MEASUREMENT	*****		(26)	*****	*****		(19)		
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	****	ONCE / GRAB MONTH	

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Kathleen Welt
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 TYPED OR PRINTED

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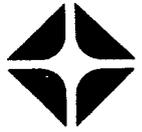
TELEPHONE **801 637-2422**
 DATE **95 06 28**
 AREA CODE NUMBER YEAR MO DAY

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Somerset, Colorado 81434
Telephone 303 929-5015



July 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Dear Mr. Hilden:

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This letter will also serve as a request to deactivate Permit Numbers UTG040014 and UTG040015 for the Gordon Creek 3/6 Mines and Huntington Canyon No. 4 Mine, respectively. The Gordon Creek No. 3/6 Mine has been granted Phase II Bond Release by the Utah Division of Oil Gas and Mining, and although the ponds will remain, they will be used strictly for stock and wildlife watering and no longer used as sediment control. The Huntington Canyon No. 4 Mine has also been granted Phase II Bond Release contingent upon removal of the ponds. The ponds are expected to be totally removed by the end of August. Mr. Steve McNeil of the Utah Division of Water Quality suggested this request be made with the submittal of the June 1995 reports.

If you have any questions or need any additional information, please contact me.

Respectfully,

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

Mountain Coal Company

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



July 28, 1995

Ms. Pamela Grubaugh-Littig
Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Ms. Littig:

Enclosed please find Quarterly Discharge Monitoring Reports for Mountain Coal Company's UPDES Permit Numbers UTG040004, UTG040005, UTG040014, and UTG040015. These reports cover the month of June, 1995.

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File

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July 28, 1995

Ms. Donna Franklin
U.S.E.P.A., Region VIII
999 18th Street
Denver Place - Suite 500 WM-C
Denver, Colorado 80202-2405

Dear Ms. Franklin:

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Enclosures

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Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

PERMITTEE NAME MOUNTAIN COAL COMPANY
 ADDRESS P.O. BOX 591
SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)
 (2-16) (17-19)

UTG040015
 PERMIT NUMBER

001 A
 DISCHARGE NUMBER

MINOR

Form Approved.

F - FINAL OMB No. 2040-0004
 WITHIN FOREST SERVICE BOUNDARY

FACILITY Huntington Cyn. No. 4
 LOCATION _____

MONITORING PERIOD						
YEAR	MO	DAY	TO	YEAR	MO	DAY
95	06	01		95	06	30
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

*** NO DISCHARGE ***
 NOTE: Read instructions before completing this form.

ATTN: KATHLEEN WELT

PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53) (54-61)			(4 Card Only) QUALITY OR CONCENTRATION (38-45) (46-53) (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM			
FLOW RATE		No	Discharge	(07)	*****	*****	*****			
00056 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	GPD	*****	*****	*****	***	ONCE/ MONTH	MEASRD
PH		*****	*****			*****		(12)		
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	6.5 DAILY MN	*****	9.0 DAILY MX	SU	TWICE/ MONTH	GRAB
SOLIDS, TOTAL SUSPENDED		*****	*****		*****			(19)		
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	25 30DA AVG	70 DAILY MX	MG/L	ONCE/ MONTH	GRAB
SOLIDS, SETTLEABLE		*****	*****		*****	*****		(25)		
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	0.5 DAILY MX	ML/L	ONCE/ MONTH	GRAB
OIL AND GREASE FREON EXTR-GRAY METH		*****	*****		*****	*****		(19)		
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	10 DAILY MX	MG/L	ONCE/ MONTH	GRAB
IRON, TOTAL (AS FE)		*****	*****		*****	*****		(19)		
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	2.0 DAILY MX	MG/L	ONCE/ MONTH	GRAB
SOLIDS, TOTAL DISSOLVED		*****		(26)	*****	*****		(19)		
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LBS/DY	*****	*****	REPORT DAILY MX	MG/L	ONCE/ MONTH	GRAB
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN, AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE		
Kathleen Welt Environmental Supervisor						801 637-2422		95 07 28		
TYPED OR PRINTED						SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		AREA CODE	NUMBER	YEAR

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
 TDS IS LIMITED TO ONE TON PER DAY FROM ALL OUTFALLS. DURING PRECIPITATION EVENTS SETTLEABLE SOLIDS SHALL BE LIMITED INSTEAD OF TSS. REPORT "DOES NOT APPLY" IN APPROPRIATE ROW.

Mountain Coal Company

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



August 28, 1995

Mr. Donald A Hilden, PH.D., Chief
Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Dear Mr. Hilden:

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If you have any questions or need any additional information, please contact me.

Respectfully,

Dan W. Guy for
Paige B. Beville, MCC

Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

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Denver Place - Suite 500 WM-C
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Respectfully,

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Utah Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

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Enclosures

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Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File

PERMITTEE NAME/ ADDRESS (Include Facility Name/ if different) ADDRESS P.O. BOX 591 SOMERSET CO 81434

NATIONAL POLL DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR) (17-19) MINOR
 UT6040015 PERMIT NUMBER
 001 A DISCHARGE NUMBER

Form Approved. OMB No. 2040-0004
 F - FINAL WITHIN FOREST OR WOODLAND BOUNDARY

FACILITY #4 MINE LOCATION HUNTINGTON CANYON

MONITORING PERIOD FROM YEAR MC DAY TO YEAR MO DAY
 95 07 01 TO 95 09 31
 (20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

*** NO DISCHARGE ***
 NOTE: Read instructions before completing this form.

ATTN: KATHLEEN WELT

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		AVERAGE (54-61)	MAXIMUM	UNITS	MINIMUM (46-53)	AVERAGE (54-61)	MAXIMUM			
FLOW RATE				(07)	*****	*****	*****			
00056 1 0 0 EFFLUENT GROSS VALUE PH	PERMIT REQUIREMENT	REPORT 300A AVG	REPORT DAILY MX	GPD	*****	*****	*****	***	ONCE / GRAB MONTH	
00400 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****			*****	(12)			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	6.5 DAILY MN	*****	9.0 DAILY MX	SU	TWICE / GRAB MONTH	
00530 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****		*****	25 300A AVG	70 DAILY MX	MG/L	ONCE / GRAB MONTH	
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	0.5 DAILY MX	ML/L	ONCE / GRAB MONTH	
00556 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****		*****	*****	10 DAILY MX	MG/L	ONCE / GRAB MONTH	
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	***	*****	*****	2.0 DAILY MX	MG/L	ONCE / GRAB MONTH	
70295 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****		(26)	*****	*****		(19)		
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S/DY	*****	*****	REPORT DAILY MX	MG/L	ONCE / GRAB MONTH	

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
 Kathleen Welt
 Environmental Supervisor
 TYPED OR PRINTED

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 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE 801 637-2422
 DATE 95 08 28
 AREA CODE NUMBER YEAR MO DAY

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Mountain Coal Company
West Elk Mine
Post Office Box 591
Somerset, Colorado 81434
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September 28, 1995

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Permits and Compliance Section
Department of Environmental Quality
Division of Water Quality
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Paige B. Beville, MCC

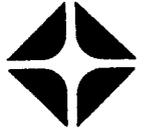
Enclosures

DWG/db

cc: Donna Franklin, E.P.A.
Pamela Grubaugh-Littig, UDOGM
Paige B. Beville, Mountain Coal Co.
File

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Paige B. Beville, Mountain Coal Co.
File*

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September 28, 1995

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Enclosures

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Donald Hilden, D.E.Q.
Paige B. Beville, Mountain Coal Co.
File*

PERMITTEE NAME ADDRESS (Include Facility Name/Address if different)
MOHAWK COAL COMPANY
P.O. BOX 591
SOMERSET CO 81434

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MONITORING REPORT (DMR)
 (7-16) (17-19)

UTG040015
 PERMIT NUMBER

001 A
 DISCHARGE NUMBER

MINOR

Form Approved. OMB No. 2040-0004

FACILITY **#4 MINE**
 LOCATION **HUNTINGTON CANYON**
 ATTN: **KATHLEEN WELT**

MONITORING PERIOD							
YEAR	MC	DAY	TO	YEAR	MO	DAY	
95	08	01	TO	95	08	31	
(20-21)		(22-23)		(24-25)		(26-27) (28-29) (30-31)	

F - FINAL WITHIN FOREST OR OPEN BOUNDARY

*** NO DISCHARGE **XI** ***
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PARAMETER (32-37)	SAMPLE MEASUREMENT	(3 Card Only) QUANTITY OR LOADING (46-53)			(4 Card Only) QUALITY OR CONCENTRATION (38-45)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE (54-55)	MAXIMUM (56-57)	UNITS (58-59)	MINIMUM (38-39)	AVERAGE (40-41)	MAXIMUM (42-43)			
FLOW RATE				(07)	*****	*****	*****			
00056 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	GPD	*****	*****	*****	****	ONCE / GRAB MONTH	
PH	SAMPLE MEASUREMENT	*****	*****			*****	(12)			
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	6.5 DAILY MN	*****	9.0 DAILY MX	SU	TWICE / GRAB MONTH	
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	*****	*****		*****			(19)		
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	25 30DA AVG	70 DAILY MX	MG/L	ONCE / GRAB MONTH	
SOLIDS, SETTLEABLE	SAMPLE MEASUREMENT	*****	*****		*****	*****		(25)		
00545 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	0.5 DAILY MX	ML/L	ONCE / GRAB MONTH	
OIL AND GREASE FROM EXTR-GRAV METH	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
00556 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	10 DAILY MX	MG/L	ONCE / GRAB MONTH	
IRON, TOTAL (AS FE)	SAMPLE MEASUREMENT	*****	*****		*****	*****		(19)		
01045 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	****	*****	*****	2.0 DAILY MX	MG/L	ONCE / GRAB MONTH	
SOLIDS, TOTAL DISSOLVED	SAMPLE MEASUREMENT	*****		(26)	*****	*****		(19)		
70295 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	2000 DAILY MX	LB S / DAY	*****	*****	REPORT DAILY MX	MG/L	ONCE / GRAB MONTH	

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
Kathleen Welt
Environmental Supervisor
 TYPED OR PRINTED

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[Signature]
 SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE **801 637-2422**
 DATE **95 09 28**
 AREA CODE NUMBER YEAR MO DAY

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E.I.S Hydrology
Pond Inspection Report

POND: #4

LOCATION: Mill Fork

<u>ITEM</u>	<u>REMARKS</u>
(1) Potential Safety Hazards	<u>Sand was removed during the</u>
(2) Slope Stability	<u>last week of August - September</u> <u>of completion</u>
(3) Erosion	
(4) Construction and Maintenance Performance Standards	
(5) Recommendations/Comments	

I have performed the above inspection on this pond and do hereby certify it to be a true and accurate representation of the pond at this time.

[Signature]
Inspector
9/9/95
Date

E.I.S Hydrology
Pond Inspection Report

POND: AF

LOCATION: Millfork

ITEM	REMARKS
(1) Potential Safety Hazards	<u>None</u>
(2) Slope Stability	<u>Good</u>
(3) Erosion	<u>None</u>
(4) Construction and Maintenance Performance Standards	<u>Good</u>
(5) Recommendations/Comments	<u>Open all @ 30% Lower all - Dry - No Discharge</u>

I have performed the above inspection on this pond and do hereby certify it to be a true and accurate representation of the pond at this time.

[Signature]
Inspector

Date 8/3/95

E.I.S Hydrology
Pond Inspection Report

POND: # 4

LOCATION: Mill Fork

ITEM	REMARKS
(1) Potential Safety Hazards	<u>Not observable -</u>
(2) Slope Stability	
(3) Erosion	<u>Small spots - 1/2</u>
(4) Construction and Maintenance Performance Standards	<u>none above bridge</u>
(5) Recommendations/Comments	

I have performed the above inspection on this pond and do hereby certify it to be a true and accurate representation of the pond at this time.

[Signature]
Inspector

3/14/95
Date

SUBSIDENCE SURVEY



ENVIRONMENTAL INDUSTRIAL SERVICES

4855 N. Spring Glen Rd., Spring Glen, UT 84526 - Telephone (801) 472-3814 - FAX (801) 472-8780

JANUARY 5, 1996

TO: BLACKHAWK ENGINEERING

ATTN: DAN GUY, P.E.

RE: SUBSIDENCE INVENTORY OF MILLFORK CANYON; NO. 4 MINE

Dear Mr. Guy:

On 8/11/95, Teneal Jensen, Randy Bohn and Sam Trujillo inventoried the surface area above the No. 4 Mine. The purpose of this inventory was to locate any and all evidence of subsidence or potential subsidence. Three springs that originate on the ridge above the mine were also checked relative to their flow.

An eight hour ground search yielded no apparent subsidence or evidence of diminished flow to any of the springs.

If I can be of further assistance, please contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read 'M.A. Coonrod'. The signature is fluid and cursive, with a large initial 'M' and 'A'.

M.A. Coonrod

VEGETATION MONITORING

UNITED STATES
DEPARTMENT OF
AGRICULTURE

NATURAL RESOURCES
CONSERVATION
SERVICE

PRICE FIELD OFFICE
350 NORTH 400 EAST
PRICE, UTAH 84501

October 25, 1995

Dan Guy
Blackhawk Engineering Co.
Rt. #1 Box 146-H5
Helper, Utah 84526

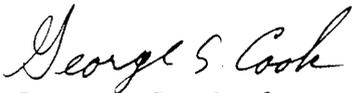
Dear Dan:

This letter is in reference to the vegetation reference areas I visited on October 13, 1995 and October 16, 1995 to determine production and condition.

The method used to determine herbage production and site condition was an ocular estimate.

<u>MINE SITE</u>	<u>REFERENCE AREA</u>	<u>PRODUCTION</u>	<u>SITE CONDITION</u>
Swisher Mine	Douglas Fir	2000	good (late seral)
Mine 3 and 6	Sage Grass	1400	good (late seral)
Mine 3 and 6	Oak	1800	good (late seral)
Mill Fork Canyon	Pinyon, Juniper & Curl Leaf Mt. Mahogany	800	good (late seral)

The production figures are based on air dry herbage per acre.



George S. Cook
Range Conservationist

***VEGETATION MONITORING:
RECLAIMED & REFERENCE AREAS
OF THE HUNTINGTON NO. 4 MINE***

1995



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

Route 1, Box 146-H5

Helper, Utah 84526

December 1995

TABLE OF CONTENTS

SCOPE	1
INTRODUCTION	1
General Site Description	1
METHODS	2
Transect & Quadrat Placement	3
Cover and Composition	4
Frequency	5
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**VEGETATION MONITORING:
RECLAIMED & REFERENCE AREAS
OF THE HUNTINGTON NO. 4 MINE**

1995

SCOPE

Similar to the data recorded in 1993 and 1994, the following report has been prepared to assess the current condition of the vegetation of reclaimed areas at the Huntington No. 4 Mine. The vegetation of the reclaimed areas were compared with undisturbed reference areas that were used as standards for revegetation success.

INTRODUCTION

General Site Description

The study area for the Huntington No. 4 Mine was located in Huntington Canyon, Emery County, Utah. The elevation of the area ranged between 7,300 ft and 8,000 ft above sea level. Vegetation types adjacent to the mine area varied from pinyon-juniper

and mountain brushland on the drier sites, to associated conifers and riparian areas in the more moist regions. The reclaimed areas of the mine site were on the relatively drier sites with primarily south and southwestern exposures.

The reclaimed areas consisted principally of access roads, portal areas, pads and regraded slopes. The largest surface areas that were reclaimed were the access roads of the mine site.

Quantitative sampling was conducted in the area by *MT. NEBO SCIENTIFIC, INC.* in 1989, 1990, 1993, 1994 and 1995. Qualitative information was assessed in 1991. No vegetation sampling was conducted in 1992. With a few exceptions, sample areas and methodologies in years' 1993, 1994 and 1995 were virtually identical. This should facilitate comparisons between years.

METHODS

The State of Utah, Division of Oil, Gas and Mining (DOGGM) provided guidelines for some of the sample methodologies used in this report. After reviewing the 1993 report DOGGM made a few additional recommendations for the 1994 sample year. The 1995 sample procedures also followed these recommendations.

Quantitative and qualitative data were taken on the vegetation of the reclaimed and reference areas at the Huntington No. 4 Mine. Sampling was conducted from August 15-18, 1995. Similar to the 1993 and 1994 sample years, to simplify discussions about each area the reclaimed sites were divided into major areas -- the *Lower Reclaimed Areas*, the *Upper Reclaimed Access Road Areas*, and the *Riparian Areas*. Each of those areas consisted of several disturbance types (i.e. roads, pads, portals, regraded slopes, etc.). Data summaries, however, have been presented separately and combined in the *Lower Reclaimed Areas* due to heterogeneity of these areas. Since all the *Upper Reclaimed Access Road Areas* were so similar in basic physiognomy, the data were combined for the summary tables. Reporting the data by this method was an attempt to provide information on small, localized areas, yet also provide the average success of larger areas and the entire mine site.

As previously mentioned with few exceptions, sample areas and methodologies in 1995 were virtually identical to the 1993 and 1994 sampling. This was done as a means to simplify comparisons between years.

Transect and Quadrat Placement

Transect lines for sampling were placed randomly throughout the reclaimed areas resulting in several sample sites in the *Lower Reclaimed Areas* and the *Upper Reclaimed Access Road Areas* (see Sample Map). Random/regular placement of sampling quadrats were designed to provide unbiased accuracy of the data compiled.

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.

All reclaimed areas were seeded with the same seed mix (with the possible exception of the riparian area) on a variety of slopes, exposures, soil conditions and water relationships, etc. Vegetation sampling methodologies between reclaimed areas and the reference areas were consistent.

Placement of the quadrats in the riparian areas were somewhat constrained by the size of the sample areas. The stream side area that was disturbed was only about 35 ft long. The quadrats were placed every other meter along the stream side for the entire length of the reclaimed and reference areas. The *Riparian Reference Area* was considered to be the undisturbed streamside vegetation 100 ft upstream and 100 ft downstream of the reclaimed area.

Cover and Composition

Cover estimates were made using ocular methods with meter square quadrats. Species composition was also assessed from the quadrat data. 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).

Frequency

Frequency of a given species was the relative number of times that it occurred in the square meter quadrats.

Woody Species Density

Density of woody plant species of the reclaimed and reference areas were made using belt transects. These 5 ft by 50 ft belts were placed randomly throughout the study areas. 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.

Production

Total annual biomass production was estimated by clipping, drying and weighing current annual growth. Herbaceous and woody species were summarized separately. "Double sampling" using four quadrats (three for the riparian areas) were estimated around the clipped plots.

Sample Adequacy & Statistical Comparisons

Sampling adequacy for cover and woody species density was achieved using

formulas from Snedocor and Cochran (1980), insuring that 80% of the samples were within 10% of the true mean for the shrub communities of the area. The following formula was used:

$$nmin = \left[\frac{1.28 (s)}{x (.1)} \right]^2$$

where,

nmin = minimum adequate sample
s = standard deviation
x = sample mean
.1 = confidence interval

Student's t-tests were also employed to compare the reclaimed disturbance and reference areas of all sites for cover, density, and productivity. All sample means, standard deviations, and sample sizes were included in this report to enable the reviewers to apply further statistical tests if desired.

Diversity

Diversity was measured by several methods. First, the relative cover by species was used for diversity comparisons. This was calculated by dividing the cover of a given species by the total sum cover times 100, or

$$Relative\ Cover = \frac{Cover\ by\ Species}{Summation\ of\ Total\ Cover} \times 100$$

For another comparison, the average number of vascular species per meter square quadrat was obtained by summing the frequency of all species in an area and dividing by 100. Still another diversity measurement was species richness or simply the total number of species encountered in the quadrats for each area. Finally, total diversity was measured by using the MacArthur and Wilson's (1967) formula where the proportion of the sum frequency of each species of an area was calculated. The proportion of each species was squared and the values for all species in the area were summed. This index integrates the number of species encountered and the degree to which frequency of occurrence is equitably distributed among those species. The formula is given below:

$$\text{Total Diversity} = \frac{1}{\sum P_i^2}$$

where,

P_i = the proportion of the sum frequency for a community contributed by the i^{th} species.

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 spreadsheets and have also been included in the Appendix.

RESULTS

The Lower Reclaimed Areas (Areas A-E, separated)

When the *Lower Reclaimed Areas* were summarized separately, results of each area were similar but had some variability due to basic physiognomic changes. Area "A" had a mean cover of 44.50% and was dominated by grasses that comprised 55.88% of the living cover (Table 1). Dominant plant species by cover and frequency shown on Table 2 were cicer milkvetch (*Astragalus cicer*) and thickspike wheatgrass (*Elymus lanceolatus*). Woody species density was estimated as 1,677 individuals per acre (Table 3). Total annual biomass production was measured to be 668.65 pounds per acre (Table 4).

Area "B" had a living cover of 55.00% and was again dominated by grasses (Table 5). Similar species dominated this site but it had greater occurrences of rubber rabbitbrush (*Chrysothamnus nauseosus*), crested wheatgrass (*Agropyron cristatum*)

and Indian ricegrass (*Stipa hymenoides*). For cover and frequency by species, refer to Table 6. Woody species per acre was recorded as 3,550 individuals per acre (Table 7), whereas, annual biomass production was 880.69 pounds per acre (Table 8).

Area "C" data showed the area to have 34.38% total living cover (Table 9) which was dominated by similar species as was mentioned above but with a somewhat greater representation of forb species (Tables 9 & 10). Woody species density was similar to Area "A" and was estimated to be 1,437 individuals per acre with rubber rabbitbrush easily outnumbering the other woody species (Table 11). Total annual production was somewhat higher than the areas above, estimated to be 517.96 pounds per acre (Table 12).

Area "D" had living cover results at 53.57%, but forbs were more common than grasses to dominant the cover (Table 13). Similar plant species were common (Table 14). Woody species density in this area were estimated at 1,336 individuals per acre (Table 15). Total annual production was also higher than the previous reported data at 532.65 pounds per acre (Table 16).

Total living cover was highest of the five areas in "Area E" of the *Lower Reclaimed Areas*. It was estimated to be 58.13% (Table 17). Production was also one of the higher figures at 746.44 pounds per acre (Table 20). Dominant plant species also changed when compared to the other areas. There was less rubber rabbitbrush and more smooth brome grass (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*),

and bluebunch wheatgrass (*Elymus spicatus*). For a list of the species by cover and frequency, refer to Table 18. Woody species density was consistent with most of the previous mentioned areas, estimated as 1,423 individuals per acre (Table 19).

The Lower Reclaimed Areas (Areas A-E, combined)

As one would expect due to the similarity of the results reported above for each separate area, results of the Areas A-E combined were also similar. The total mean cover of these areas combined was 47.33% (Table 21). Grasses dominated the living cover comprising nearly half of the living cover. Dominant plant species by cover and frequencies in descending order were cicer milkvetch, rubber rabbitbrush, thickspike wheatgrass, and bluebunch wheatgrass (Table 22).

Woody species density of the combined data of the *Lower Reclaimed Areas* was 1,941 individuals per acre (Table 23). Total biomass production was measured to be 689.60 pounds per acre, most of which were herbaceous species (Table 24).

Upper Reclaimed Access Road Areas

Total living cover of the *Upper Reclaimed Access Road Areas* was estimated to be 48.33%. Grasses once again dominated comprising 46.45% of the living cover, followed by forbs at 35.47% (Table 25). Dominant plant species of the area were similar to the aforementioned summaries. These species were cicer milkvetch, rubber

rabbitbrush, bluebunch wheatgrass, and thickspike wheatgrass (Table 26). Indian ricegrass and crested wheatgrass were also important components of the composition in this area.

Total woody species density was 2,552 individuals per acre with rubber rabbitbrush the most common shrub by far (Table 27). Total annual biomass production was 828.35 pounds per acre (Table 28).

Reference Area

The sample results for living understory cover of the *Reference Area* was 25.00% (Table 29). Because this area was a mature pinyon-juniper community, overstory cover was also an important component of the total cover. Overstory cover was estimated at 6.13%. If one combines the overstory and understory cover to represent "total living cover" the results has a mean of 31.13%, with a standard deviation of 14.89. Consistent with the reclaimed areas, grasses were the dominant lifeform but forbs were much less common (Table 29). The most common plant species by cover and frequency were Salina wildrye (*Elymus salinus*), pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). For cover and frequency results by species refer to Table 30.

Woody species density was much less in this area when compared to the reclaimed area. Total number of individuals per acre was 430 (Table 31) with the most

common species being mountain mahogany (*Cercocarpus ledifolius*) and pinyon pine (*Pinus edulis*). Total annual biomass production was estimated to be 208.36 pounds per acre, about one-third of what the reclaimed areas were (Table 32).

Reclaimed Riparian Area

Total living understory cover of the *Reclaimed Riparian* area was 68.00%, whereas overstory cover was 2.00%. Grasses comprised of 45.04% of the total ground cover, followed by woody species and forbs (Table 33). Dominant plant species by cover and frequency were willow (*Salix lutea*), orchardgrass (*Dactylis glomeratus*), horsetail (*Equisetum arvense*), and redtop (*Agrostis stolonifera*). For cover by species refer to Table 34. Total woody species density was 2,352 individuals per acre, with willow comprising the majority of it (Table 35). Total annual biomass production was calculated to be 270.38 pounds per acre, most of it from herbaceous species (Table 36).

Riparian Reference Area

Total living understory cover of the *Riparian Reference Area* was 64.00%, with grasses and forbs comprising the majority of it (Table 37). Overstory cover was estimated at 7.00%. Many of the most common species in this area were similar to those of the reclaimed riparian area. These species, shown on Table 38 were orchardgrass, willow, and redtop. Woody species density was estimated at 1,461

individuals per acre (Table 39), somewhat lower than the reclaimed riparian area. Results from production measurements indicated this area to be 463.66 pounds per acre (Table 40), which was somewhat more than the reclaimed area.

DISCUSSION

Cover

Figure 1 graphically shows the cover differences for the reclaimed and reference areas. Total living cover for each of the areas in the *Lower Reclaimed Areas (A-E)* were all greater than the Reference Area. Student's t-test were employed as a statistical comparison between the means of *Lower Reclaimed Areas A-E (combined)*. Results indicated that the living cover of Areas A-E were significantly greater than that of the Reference Area ($t = 4.723$, Table 41).

Statistical tests comparing the total living cover of the *Upper Reclaimed Access Road Areas* with the *Reference Area* also suggest a significantly greater cover in the reclaimed area ($t = 5.0$, Table 41).

When cover was compared between the *Reclaimed Riparian Area* and the *Riparian Reference Area*, results suggested no significant difference ($t = -0.168$, Table

41, Figure 5).

Composition

Composition, or the relative number of woody species, forbs and grasses was different when one compares the reclaimed areas to the Pinyon-Juniper *Reference Area*. Figure 2 illustrates the comparison. The difference was the reclaimed areas have much better representation of forb species when compared to the Pinyon-Juniper *Reference Area* that heavily favors grasses. Composition of the *Reclaimed Riparian Area* was similar to its *Reference Area* (Figure 6).

Density

Figure 3 shows each area's total number of woody plants per acre. Woody species density was also much greater in the *Lower Reclaimed Areas* and *Upper Reclaimed Access Road Area* when compared to the *Reference Area* ($t = 8.013$; $t = 13.276$, respectively, Table 41). The density of the *Reclaimed Riparian Area* was also significantly greater than the *Riparian Reference Area* ($t = 3.203$, Table 41). Figure 7 shows this graph comparison.

Production

Production, or total annual biomass, was also much higher in the reclaimed

areas when compared to the *Reference Area*. The *Lower Reclaimed Areas* (A-E combined) had 3 times the amount of production, whereas, the *Upper Reclaimed Road Areas* had nearly 4 times the production when compared to the *Reference Area*. These differences were statistically significant (Table 41). The differences are shown graphically on Figure 4.

The *Reclaimed Riparian Area*, however, had less annual production when compared to its *Riparian Reference Area* (Table 41, Figure 8). The results in the riparian areas may be somewhat less reliable because the areas were so small which consequently resulted in small sample sizes.

Diversity

Part of the success criteria for reclaimed lands as a result of SMCRA (Surface Mining Control and Reclamation Act) is that the final plant communities have "diverse, effective and permanent vegetative cover". Perhaps the most controversial is what constitutes a "diverse" vegetation.

Although habitat diversity can be subject to interpretation, it is an important goal for final vegetation especially when wildlife habitat is one of the primary postmining land-uses. Diversity of habitat can result from soils, revegetation techniques, species mixtures, erosion control measures, micro-environments, solar exposure, and so on. Vegetation diversity can range from plant species diversity, foliage height diversity,

openings and shape ratios, edge contrasts, or special features i.e. snags and downed dead-fall. Habitat diversity can also be measured by several parameters but many investigators use diversity indices as a measurement for these plant communities. However, many argue that these indices do not reflect the true biotic diversity of the habitat because they do not provide a measure of the *spatial* configurations of the plant species and communities.

Diversity Using Cover Data

Because there are many ways to explore a diverse vegetative cover, this report will attempt to address diversity of the revegetated areas by several approaches. First, a straightforward method outlined by S.L. Emrich (Colorado Mined Land Reclamation Division) utilizes cover data. In this method each plant species is ranked by relative importance and listed by lifeform, total cover, and relative cover. These variables are later compared with the reference area that have been chosen as a standard for revegetation success. This does not mean that the same species must become established on the reclaimed land, but rather the community characters are compared. In this method the combined relative importance of a set number of species established on the reclaimed land should not exceed 75% relative importance, whereas, a maximum dominance of 40% relative importance is set for each species. This insures that the goal is to establish several species that will complement each other in the utilization of the resources.

Table 42 shows the necessary data (including frequency) for the: 1) *Lower*

Reclaimed Areas (A-E), 2) Upper Reclaimed Areas (Access Road), 3) Pinyon-Juniper Reference Area, 4) Reclaimed Riparian Area, and 5) Riparian Reference Area. These data show 6 species in the Lower Reclaimed Areas with a relative cover of 5.00% or greater (4 grass, 1 shrub, 1 forb). Six species in the Upper Reclaimed Area also had a relative cover greater than 5.00% (4 grass, 1 shrub, 1 forb). No single species had a maximum dominance greater than 40.00%. The Pinyon-Juniper Reference Area had only 2 species with greater than 5.00% relative cover (1 tree, 1 grass) and did exceed 40.00% with Salina wildrye, thus not meeting standards set for diversity. These data suggest the reclaimed areas are diverse by the relative importance of several species. The Reclaimed Riparian Area and the Riparian Reference Area met both standards, although the Reclaimed Riparian Area had 7 species with greater than 5.00% relative cover compared to 4 in the Reference Area.

Diversity Indices

Diversity indices were also used to address diversity of the reclaimed and

reference areas at the

Huntington No. 4 Mine.

TABLE 43: Diversity at the Huntington No. 4 Mine

AREA	MEAN NO. SPP./M ²	RICHNESS	TOTAL DIVERSITY*
Lower Reclaimed (A-E)	5.00	24.00	11.53
Upper Reclaimed (Rd.)	4.35	14.00	8.47
PJ Reference	1.58	6.00	2.57
Reclaimed Riparian	4.80	10.00	7.78
Riparian Reference	4.30	18.00	11.21

* $1/\sum p_i^2$

The indices used were 1)

the average number of

species per meter square,

2) richness, and 3) total

diversity. As one can

observe, all three indices

had a greater value in the *Upper and Lower Reclaimed Areas* when compared with the *Pinyon Juniper Reference Area* (Table 43). Results were variable but similar when the *Reclaimed Riparian Area* was compared to the *Riparian Reference Area*.

Spacial Diversity

Spacial diversity or the configurations of the vegetation by openings, edges or structural changes can also be important for wildlife habitat. These variables were not measured quantitatively, but the photographs included in this report suggest diversity in these aspects also. Furthermore, when one examines the raw data there is often much diversity of vegetation within and between each transect line, also suggesting habitat diversity.

SUMMARY

The reclaimed areas of the Huntington No. 4 Mine were compared with reference areas that were used as success standards for final revegetation. To summarize the results of this report, the reclaimed areas almost without exception performed significantly better for cover, frequency, woody species density, productivity and diversity.

TABLE 1: Total cover and composition summary for the reclaimed areas of the Huntington No. 4 Mine (Area "A", see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	44.50	11.28	10
Litter	17.50	14.87	10
Bareground	20.50	10.83	10
Rock	17.50	9.29	10
 COMPOSITION			
Shrubs	5.83	9.90	10
Forbs	38.29	22.96	10
Grasses	55.88	22.00	10

TABLE 2: Species cover and frequency summary for the reclaimed areas of the Huntington No. 4 Mine (Area "A", see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	1.00	3.00	10	10.00
<i>Gutierrezia sarothrae</i>	0.50	1.50	10	10.00
<i>Pinus ponderosa</i>	1.00	3.00	10	10.00
FORBS				
<i>Astragalus cicer</i>	12.00	13.45	10	70.00
<i>Astragalus</i> sp.	1.00	2.00	10	20.00
<i>Machaeranthera canescens</i>	1.00	2.00	10	20.00
<i>Melilotus officinalis</i>	1.50	3.20	10	20.00
<i>Penstemon pachyphillus</i>	1.50	3.20	10	20.00
GRASSES				
<i>Agropyron cristatum</i>	1.50	3.20	10	40.00
<i>Bromus carinatus</i>	1.00	2.00	10	70.00
<i>Dactytilis glomeratus</i>	1.50	2.29	10	30.00
<i>Elymus lanceolatus</i>	7.50	11.67	10	50.00
<i>Elymus spicatus</i>	1.50	3.20	10	60.00

TABLE 3: Woody species densities of the reclaimed areas of the Huntington No. 4 Mine (Area "A", see Sample Map).

	NUMBER/ACRE
<i>Cercocarpus ledifolius</i>	87.12
<i>Chrysothamnus nauseosus</i>	1154.34
<i>Eriogonum corymbosum</i>	43.56
<i>Gutierrezia sarothrae</i>	370.26
<i>Purshia tridentata</i>	<u>21.78</u>
TOTAL	<u>1677.06</u>

TABLE 4: Dry weight annual production for the reclaimed areas of the Huntington No. 4 Mine (Area "A", see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	633.80	219.15	10.(50)
Woody Spp.	34.85	82.15	10.(50)
TOTAL PRODUCTION	668.65	229.88	10.(50)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 5: Total cover and composition summary for the reclaimed areas of the Huntington No. 4 Mine (Area "B", see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	55.00	9.49	10
Litter	8.50	5.94	10
Bareground	22.50	8.14	10
Rock	14.00	10.20	10
COMPOSITION			
Shrubs	26.10	16.21	10
Forbs	28.80	18.86	10
Grasses	45.10	12.54	10

TABLE 6: Species cover and frequency summary for the reclaimed areas of the Huntington No. 4 Mine (Area "B", see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	13.00	9.54	10	90.00
<i>Eriogonum corymbosum</i>	0.50	1.50	10	10.00
<i>Gutierrezia sarothrae</i>	0.50	1.50	10	10.00
FORBS				
<i>Astragalus cicer</i>	13.50	11.63	10	80.00
<i>Penstemon palmeri</i>	2.00	3.32	10	30.00
<i>Machaeranthera canescens</i>	1.00	3.00	10	10.00
GRASSES				
<i>Agropyron cristatum</i>	5.50	6.10	10	60.00
<i>Bromus carinatus</i>	0.50	1.50	10	10.00
<i>Elymus spicatus</i>	5.00	6.71	10	40.00
<i>Elymus lanceolatus</i>	6.00	4.90	10	70.00
<i>Stipa hymenoides</i>	7.50	3.35	10	90.00

TABLE 7: Woody species densities of the reclaimed areas of the Huntington No. 4 Mine (Area "B", see Sample Map).

	NUMBER/ACRE
<i>Ceratoides lanata</i>	43.56
<i>Chrysothamnus nauseosus</i>	2918.52
<i>Eriogonum corymbosum</i>	522.72
<i>Pinus ponderosa</i>	43.56
<i>Purshia tridentata</i>	<u>21.78</u>
TOTAL	<u>3550.14</u>

TABLE 8: Dry weight annual production for the reclaimed areas of the Huntington No. 4 Mine (Area "B", see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	599.87	321.68	10.(50)
Woody Spp.	280.82	250.12	10.(50)
TOTAL PRODUCTION	880.69	340.82	10.(50)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 9: Total cover and composition summary for the reclaimed areas of the Huntington No. 4 Mine (Area "C", see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	34.38	9.16	8
Litter	5.63	1.65	8
Bareground	23.13	18.70	8
Rock	36.88	14.56	8
COMPOSITION			
Shrubs	11.74	10.28	8
Forbs	38.59	18.41	8
Grasses	49.68	20.51	8

TABLE 10: Species cover and frequency summary for the reclaimed areas of the Huntington No. 4 Mine (Area "C", see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	4.13	4.08	8	62.50
FORBS				
<i>Astragalus cicer</i>	5.63	9.82	8	37.50
<i>Iva axillaris</i>	0.25	0.66	8	12.50
<i>Macharathera canescens</i>	1.25	2.17	8	25.00
<i>Malcomia africana</i>	1.25	3.31	8	10.00
<i>Medicago sativa</i>	2.13	2.80	8	37.50
<i>Melilotus officinalis</i>	0.63	1.65	8	12.50
<i>Penstemon pachyphyllus</i>	0.63	1.65	8	12.50
<i>Penstemon palmeri</i>	2.50	5.00	8	25.00
GRASSES				
<i>Agropyron cristatum</i>	2.25	2.33	8	50.00
<i>Bromus carinatus</i>	0.63	1.65	8	12.50
<i>Bromus inermis</i>	0.63	1.65	8	12.50
<i>Elymus spicatus</i>	0.63	1.65	8	12.50
<i>Elymus lanceolatus</i>	8.75	4.84	8	87.50
<i>Stipa hymenoides</i>	3.13	3.48	8	50.00

TABLE 11: Woody species densities of the reclaimed areas of the Huntington No. 4 Mine (Area "C", see Sample Map).

	NUMBER/ACRE
<i>Cercocarpus ledifolius</i>	21.78
<i>Chrysothamnus nauseosus</i>	1197.90
<i>Eriogonum corymbosum</i>	174.24
<i>Gutierrezia sarothrae</i>	<u>43.56</u>
TOTAL	<u>1437.48</u>

TABLE 12: Dry weight annual production for the reclaimed areas of the Huntington No. 4 Mine (Area "C", see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	439.38	187.14	8.(40)
Woody Spp.	78.58	74.66	8.(40)
TOTAL PRODUCTION	517.96	135.42	8.(40)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 13: Total cover and composition summary for the reclaimed areas of the Huntington No. 4 Mine (Area "D", see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	43.57	6.39	7
Litter	7.14	2.47	7
Bareground	20.71	15.68	7
Rock	28.57	15.97	7
COMPOSITION			
Shrubs	18.48	12.21	7
Forbs	45.12	7.32	7
Grasses	36.39	13.14	7

TABLE 14: Species cover and frequency summary for the reclaimed areas of the Huntington No. 4 Mine (Area "D", see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	7.86	4.52	7	85.71
FORBS				
<i>Artemisia ludoviciana</i>	0.71	1.75	7	14.29
<i>Astragalus cicer</i>	10.71	7.28	7	85.71
<i>Machaeranthera canescens</i>	2.14	3.64	7	28.57
<i>Medicago sativa</i>	2.14	2.47	7	42.86
<i>Melilotus officinalis</i>	1.43	3.50	7	14.29
<i>Penstemon pachyphyllus</i>	0.71	1.75	7	14.29
<i>Penstemon palmeri</i>	2.14	3.64	7	28.57
GRASSES				
<i>Agropyron cristatum</i>	2.14	2.47	7	42.86
<i>Elymus spicatus</i>	2.86	3.64	7	42.86
<i>Elymus lanceolatus</i>	3.57	3.50	7	57.14
<i>Poa pratensis</i>	1.43	2.26	7	28.57
<i>Stipa hymenoides</i>	3.57	3.50	7	57.14

TABLE 15: Woody species densities of the reclaimed areas of the Huntington No. 4 Mine (Area "D", see Sample Map).

	NUMBER/ACRE
<i>Chrysothamnus nauseosus</i>	<u>1335.84</u>
TOTAL	<u>1335.84</u>

TABLE 16: Dry weight annual production for the reclaimed areas of the Huntington No. 4 Mine (Area "D", see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	422.89	168.66	7.(35)
Woody Spp.	109.76	67.27	7.(35)
TOTAL PRODUCTION	532.65	189.06	7.(35)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 17: Total cover and composition summary for the reclaimed areas of the Huntington No. 4 Mine (Area "E", see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	58.13	7.47	8
Litter	14.38	9.50	8
Bareground	13.13	8.64	8
Rock	14.38	11.02	8
COMPOSITION			
Shrubs	10.75	13.68	8
Forbs	34.82	19.63	8
Grasses	54.42	22.09	8

TABLE 18: Species cover and frequency summary for the reclaimed areas of the Huntington No. 4 Mine (Area "E", see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	4.38	4.64	8	50.00
<i>Cercocarpus ledifolius</i>	1.25	3.31	8	12.50
FORBS				
<i>Astragalus cicer</i>	17.50	14.14	8	87.50
<i>Cynoglossum officinale</i>	0.63	1.65	8	12.50
<i>Machaeranthera canescens</i>	0.63	1.65	8	12.50
<i>Medicago sativa</i>	1.25	3.31	8	12.50
<i>Melilotus officinalis</i>	0.63	1.65	8	12.50
<i>Penstemon pachyphyllus</i>	0.63	1.65	8	12.50
GRASSES				
<i>Agropyron cristatum</i>	5.00	4.33	8	62.50
<i>Bromus carinatus</i>	0.63	1.65	8	12.50
<i>Bromus inermis</i>	8.75	11.66	8	62.50
<i>Dactytilis glomeratus</i>	3.75	4.84	8	37.50
<i>Elymus lanceolatus</i>	4.38	3.90	8	62.50
<i>Elymus hispidus</i>	1.25	2.17	8	25.00
<i>Elymus spicatus</i>	6.25	4.15	8	75.00
<i>Poa pratensis</i>	1.25	3.31	8	12.50

TABLE 19: Woody species densities of the reclaimed areas of the Huntington No. 4 Mine (Area "E", see Sample Map).

	NUMBER/ACRE
<i>Brickelia microphylla</i>	29.04
<i>Chrysothamnus nauseosus</i>	1190.64
<i>Chrysothamnus viscidiflorus</i>	29.04
<i>Pinus ponderosa</i>	29.04
<i>Purshia tridentata</i>	29.04
<i>Rosa woodsii</i>	<u>116.16</u>
TOTAL	<u>1422.96</u>

TABLE 20: Dry weight annual production for the reclaimed areas of the Huntington No. 4 Mine (Area "E", see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	655.66	167.86	8.(40)
Woody Spp.	108.78	151.17	8.(40)
TOTAL PRODUCTION	764.44	174.90	8.(40)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 21: Total cover and composition summary for the combined reclaimed areas of the Huntington No. 4 Mine (Areas A-E, see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	47.33	16.26	43
Litter	10.93	9.96	43
Bareground	20.12	13.18	43
Rock	21.63	15.20	43
COMPOSITION			
Shrubs	14.67	14.79	43
Forbs	36.47	19.34	43
Grasses	48.85	19.74	43

TABLE 22: Species cover and frequency summary for the combined reclaimed areas of the Huntington No. 4 Mine (Areas A-E, see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	6.12	7.25	43	58.14
<i>Cercocarpus ledifolius</i>	0.23	1.51	43	2.33
<i>Eriogonum corymbosum</i>	0.12	0.75	43	2.33
<i>Gutierrezia sarothrae</i>	0.23	1.05	43	4.65
<i>Pinus ponderosa</i>	0.23	1.51	43	2.33
FORBS				
<i>Astragalus cicer</i>	11.98	12.30	43	72.09
<i>Astragalus</i> sp.	0.23	1.05	43	4.65
<i>Cynoglossum officinale</i>	0.12	0.75	43	2.33
<i>Iva axillaris</i>	0.04	0.30	43	2.33
<i>Machaeranthera canescens</i>	1.16	2.61	43	18.60
<i>Malcomia africana</i>	0.23	1.51	43	2.33
<i>Medicago sativa</i>	0.98	2.33	43	16.28
<i>Melilotus officinalis</i>	0.81	2.39	43	11.63
<i>Penstemon palmeri</i>	1.28	3.25	43	16.28
<i>Penstemon pachyphyllus</i>	0.70	2.04	43	11.63
GRASSES				
<i>Agropyron cristatum</i>	3.56	4.35	43	51.16
<i>Bromus carinatus</i>	1.86	3.24	43	27.91
<i>Bromus inermis</i>	1.86	6.10	43	16.28
<i>Dactytilis glomeratus</i>	1.05	2.76	43	13.95
<i>Elymus hispidus</i>	0.23	1.05	43	4.65
<i>Elymus lanceolatus</i>	6.16	7.06	43	65.12
<i>Elymus spicatus</i>	4.77	6.38	43	46.51
<i>Poa pratensis</i>	0.47	1.81	43	6.98
<i>Stipa hymenoides</i>	2.91	3.92	43	39.53

TABLE 23: Woody species densities of the combined reclaimed areas of the Huntington No. 4 Mine (Areas A-E, see Sample Map).

	NUMBER/ACRE
<i>Brickelia microphylla</i>	4.86
<i>Cercocarpus ledifolius</i>	33.88
<i>Chrysothamnus nauseosus</i>	1592.36
<i>Chrysothamnus viscidiflorus</i>	4.86
<i>Gutierrezia sarothrae</i>	91.96
<i>Eriogonum corymbosum</i>	164.56
<i>Pinus ponderosa</i>	14.52
<i>Purshia tridentata</i>	14.52
<i>Rosa woodsii</i>	<u>19.36</u>
TOTAL	<u>1940.84</u>
	(1017.77)*

* Number in parenthesis represents the standard deviation.

TABLE 24: Dry weight annual production for the combined reclaimed areas of the Huntington No. 4 Mine (Areas A-E, see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	562.33	246.96	43.(215)
Woody Spp.	127.27	175.20	43.(215)
TOTAL PRODUCTION	689.60	271.96	43.(215)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 25: Total cover and composition summary for the upper reclaimed areas of the Huntington No. 4 Mine (Revegetated Road Areas, see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	48.33	13.12	30
Litter	8.83	4.95	30
Bareground	20.33	11.69	30
Rock	22.50	13.95	30
 COMPOSITION			
Shrubs	18.08	20.55	30
Forbs	35.47	26.99	30
Grasses	46.45	19.30	30

TABLE 26: Species cover and frequency summary for the upper reclaimed areas of the Huntington No. 4 Mine (Revegetated Road Areas, see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Chrysothamnus nauseosus</i>	7.50	10.55	30	50.00
<i>Cercocarpus ledifolius</i>	1.00	2.71	30	15.33
<i>Mahonia repens</i>	0.50	2.69	30	3.33
FORBS				
<i>Artemisia ludoviciana</i>	0.17	0.90	30	3.33
<i>Astragalus cicer</i>	14.90	13.46	30	80.00
<i>Penstemon pachyphullus</i>	1.73	2.97	30	30.00
<i>Penstemon palmeri</i>	0.17	0.90	30	3.33
<i>Salsola pestifer</i>	0.10	0.54	30	3.33
GRASSES				
<i>Agropyron cristatum</i>	5.00	5.63	30	60.00
<i>Bromus inermis</i>	0.83	2.27	30	13.33
<i>Bromus carinatus</i>	1.67	3.73	30	20.00
<i>Elymus lanceolatus</i>	4.50	5.22	30	50.00
<i>Elymus spicatus</i>	6.83	7.17	30	63.33
<i>Stipa hymenoides</i>	3.43	4.85	30	40.00

TABLE 27: Woody species densities of the upper reclaimed areas of the Huntington No. 4 Mine (Revegetated Road Areas, see Sample Map).

	NUMBER/ACRE
<i>Amalanchier utahensis</i>	2.90
<i>Artemisia frigida</i>	2.90
<i>Artemisia tridentata</i>	5.80
<i>Ceratoides ledifolius</i>	127.60
<i>Chrysothamnus nauseosus</i>	2354.80
<i>Chrysothamnus viscidiflorus</i>	11.60
<i>Gutierrezia sarothrae</i>	26.10
<i>Eriogonum corymbosum</i>	2.90
<i>Pinus ponderosa</i>	2.90
<i>Purshia tridentata</i>	<u>14.50</u>
TOTAL	<u>2552.00</u>
	(863.42)*

* Number in parenthesis represents the standard deviation.

TABLE 28: Dry weight annual production of the upper reclaimed areas of the Huntington No. 4 Mine (Revegetated Road Areas, see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	632.78	444.94	30.(150)
Woody Spp.	195.58	199.63	30.(150)
TOTAL PRODUCTION	828.35	429.54	30.(150)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 29: Total cover and composition summary for the Pinyon-Juniper Reference Area of the Huntington No. 4 Mine (see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Overstory	6.13	11.75	40
Understory	25.02	8.73	40
Combined*	31.13	14.89	40
Litter	20.38	18.21	40
Bareground	14.13	8.72	40
Rock	40.50	20.85	40
COMPOSITION			
Shrubs	18.23	25.83	40
Forbs	1.25	5.45	40
Grasses	80.52	26.72	40

* Overstory and understory cover combined (shows total living cover).

TABLE 30: Species cover and frequency summary for the Pinyon-Juniper Reference Area of the Huntington No. 4 Mine (see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Cercocarpus ledifolius</i>	0.88	2.71	40	12.50
<i>Juniperus osteosperma</i>	1.13	4.94	40	7.50
<i>Pinus edulis</i>	3.05	5.92	40	25.00
FORBS				
<i>Descurania pinnata</i>	0.38	1.73	40	5.00
GRASSES				
<i>Elymus salinus</i>	18.50	9.89	40	92.50
<i>Stipa hymenoides</i>	1.08	2.71	40	15.00

TABLE 31: Woody species densities of the Pinyon-Juniper Reference Area of the Huntington No. 4 Mine (see Sample Map).

	NUMBER/ACRE
<i>Cercocarpus ledifolius</i>	191.73
<i>Gutierrezia sarothrae</i>	46.48
<i>Juniperus osteosperma</i>	29.05
<i>Pinus edulis</i>	<u>162.68</u>
TOTAL	<u>429.94</u>
	(184.03)*

* Number in parenthesis represents the standard deviation.

TABLE 32: Dry weight annual production of the Pinyon-Juniper Reference Area of the Huntington No. 4 Mine (see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	103.95	64.72	50.(250)
Woody Spp.	104.41	193.54	50.(250)
TOTAL PRODUCTION	208.36	193.43	50.(250)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 33: Total cover and composition summary for the reclaimed riparian area of the Huntington No. 4 Mine (see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Overstory	2.00	4.00	5
Understory	68.00	5.10	5
Combined*	70.00	7.07	5
Litter	7.00	2.45	5
Bareground	8.00	2.45	5
Rock	17.00	5.10	5
COMPOSITION			
Shrubs	31.65	13.81	5
Forbs	23.31	21.34	5
Grasses	45.04	27.59	5

* Overstory and understory cover combined (shows total living cover).

TABLE 34: Species cover and frequency summary for the riparian area of the Huntington No. 4 Mine (see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Salix lutea</i>	22.00	10.30	5	100.00
FORBS				
<i>Cirsium sp.</i>	1.00	2.00	5	20.00
<i>Equisetum arvensis</i>	8.80	13.18	5	40.00
<i>Geranium richardsonii</i>	2.20	3.92	5	40.00
<i>Medicago sativa</i>	3.60	3.72	5	60.00
<i>Taraxicum officinale</i>	0.40	0.80	5	20.00
GRASSES				
<i>Agrostis stolonifera</i>	8.00	11.66	5	40.00
<i>Dactylis glomeratus</i>	13.00	10.77	5	80.00
<i>Phleum alpinum</i>	5.00	4.47	5	60.00
<i>Poa secunda</i>	4.00	8.00	5	20.00

TABLE 35: Woody species densities of the reclaimed riparian area of the Huntington No. 4 Mine (see Sample Map).

	NUMBER/ACRE
<i>Cornus sericea</i>	
<i>Picea engelmannii</i>	174.24
<i>Populus tremuloides</i>	348.48
<i>Rosa woodsii</i>	87.12
<i>Salix lutea</i>	<u>1742.40</u>
TOTAL	<u>3339.60</u>
	(435.60)*

* Number in parenthesis represents the standard deviation.

TABLE 36: Dry weight annual production of the riparian area of the Huntington No. 4 Mine (see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	174.00	71.83	5.(25)
Woody Spp.	96.37	73.51	5.(25)
TOTAL PRODUCTION	270.38	141.08	5.(25)

* Sample size shows the number of sample locations. The number of estimates recorded including "double sampling" is shown in parentheses.

TABLE 37: Total cover and composition summary for the riparian reference area of the Huntington No. 4 Mine (see Sample Map).

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Overstory	7.00	6.78	10
Understory	64.00	8.31	10
Combined*	71.00	12.21	10
Litter	10.40	9.37	10
Bareground	17.40	13.41	10
Rock	8.20	11.25	10
COMPOSITION			
Shrubs	19.95	10.41	10
Forbs	36.67	26.16	10
Grasses	43.38	30.81	10

* Overstory and understory cover combined (shows total living cover).

TABLE 38: Species cover and frequency summary for the riparian reference area of the Huntington No. 4 Mine (see Sample Map).

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
<i>Abies concolor</i>	0.50	1.50	10	10.00
<i>Cornus sericea</i>	0.50	1.50	10	10.00
<i>Juniperus scopulorum</i>	1.00	2.00	10	20.00
<i>Picea engelmannii</i>	1.00	3.00	10	10.00
<i>Populus tremuloides</i>	0.50	1.50	10	10.00
<i>Rosa woodsii</i>	3.00	6.40	10	20.00
<i>Salix lutea</i>	6.50	13.43	10	20.00
FORBS				
<i>Cirsium</i> sp.	1.00	2.00	10	20.00
<i>Equisetum arvense</i>	19.00	20.47	10	80.00
<i>Geranium richardsonii</i>	2.00	3.32	10	30.00
<i>Nasturtium officinale</i>	1.00	3.00	10	10.00
<i>Ranunculus cymbalaria</i>	0.50	1.50	10	10.00
<i>Taraxicum officinale</i>	1.50	2.29	10	30.00
GRASSES				
<i>Agrostis stolonifera</i>	14.50	16.65	10	60.00
<i>Bromus inermis</i>	2.00	6.00	10	10.00
<i>Catabrosa aquatica</i>	2.00	4.00	10	20.00
<i>Dactylis glomeratus</i>	6.50	10.01	10	40.00
<i>Juncus</i> sp.	1.00	2.00	10	20.00

TABLE 39: Woody species densities of the riparian reference area of the Huntington No. 4 Mine (see Sample Map).

	NUMBER/ACRE
<i>Abies concolor</i>	43.56
<i>Cornus stolonifera</i>	174.24
<i>Juniperus scopulorum</i>	43.56
<i>Picea engelmannii</i>	43.56
<i>Populus tremuloides</i>	392.04
<i>Rosa woodsii</i>	261.36
<i>Salix lutea</i>	<u>522.72</u>
TOTAL	<u>1481.04</u>
	(261.36)*

* Number in parenthesis represents the standard deviation.

TABLE 40: Dry weight annual production of the riparian reference area of the Huntington No. 4 Mine (see Sample Map).

LIFEFORM	LBS/ ACRE	STANDARD DEVIATION	SAMPLE* SIZE
Herbaceous	339.62	145.04	10.(50)
Woody Spp.	124.03	133.94	10.(50)
TOTAL PRODUCTION	463.66	165.66	10.(50)

TABLE 41: Statistical summary sheet for the reclaimed areas and reference areas at the Huntington No. 4 Mine.

LOWER RECLAIMED AREAS (A-E Combined)				
Living Cover*	x=47.33	s=16.26	n=43	nMin=19
Density	x=1940.84	s=1017.77	n=36	nMin=45
Production	x=689.60	s=271.96	n=43(215)	nMin=25
REFERENCE AREA				
Living Cover*	x=31.13	s=14.89	n=40	nMin=37
Density	x=429.94	s=184.03	n=30	nMin=30
Production	x=208.36	s=193.43	n=50(250)	nMin=141
STATISTICAL ANALYSES				
Living Cover	t=4.723	df=81	SL=p<.005	
Density	t=8.013	df=64	SL=p<.005	
Production	t=9.931	df=91	SL=p<.005	

UPPER RECLAIMED ACCESS ROAD AREAS				
Living Cover	x=48.33	s=13.12	n=30	nMin=12
Density	x=2552.00	s=863.42	n=60	nMin=19
Production	x=828.35	s=429.54	n=30(150)	nMin=44
REFERENCE AREA				
Living Cover*	x=31.13	s=14.89	n=40	nMin=37
Density	x=429.94	s=184.03	n=30	nMin=30
Production	x=208.36	s=193.43	n=50(250)	nMin=141
STATISTICAL ANALYSES				
Living Cover	t=5.029	df=68	SL=p<.005	
Density	t=13.276	df=88	SL=p<.005	
Production	t=8.846	df=78	SL=p<.005	

x = sample mean, s = sample standard deviation, n = sample size, nMin = minimum adequate sample, NS = nonsignificant, (number in parenthesis is sample number with double sampling employed), t = Student's t-value, df = degrees of freedom, SL = significance level
 * represents understory and overstory cover combined.

TABLE 41: (Continued)

RECLAIMED RIPARIAN AREA				
Living Cover	x=70.00	s=7.07	n=5	nMin=2
Density	x=2352.24	s=435.60	n=2	nMin=6
Production	x=270.38	s=141.08	n=5(25)	nMin=45
RIPARIAN REFERENCE AREA				
Living Cover*	x=71.00	s=12.21	n=10	nMin=5
Density	x=1481.04	s=261.36	n=4	nMin=5
Production	x=463.66	s=165.66	n=10(50)	nMin=21
STATISTICAL ANALYSES				
Living Cover	t=-0.168	df=13	SL=NS	
Density	t=3.203	df=4	SL=p<.005	
Production	t=-2.226	df=13	SL=p<.05	

x = sample mean, s = sample standard deviation, n = sample size, nMin = minimum adequate sample, NS = nonsignificant, (number in parenthesis is sample number with double sampling employed), t = Student's t-value, df = degrees of freedom, SL = significance level
 * represents understory and overstory cover combined.

TABLE 42: Lifeform, cover and frequency comparisons for each area sampled at the Huntington No. 4. Mine

Reclaimed Lower Areas (A-E Combined)

<u>SPECIES</u>	<u>Lifeform</u>	<u>%Cover</u>	<u>Relative Cover</u>	<u>Frequency</u>
<i>Astragalus cicer</i>	Forb	11.98	25.31	72.09
<i>Elymus lanceolatus</i>	Grass	6.16	13.01	65.12
<i>Chrysothamnus nauseosus</i>	Shrub	6.12	12.93	58.14
<i>Elymus spicatus</i>	Grass	4.77	10.08	46.51
<i>Agropyron cristatum</i>	Grass	3.56	7.52	51.16
<i>Stipa hymenoides</i>	Grass	2.91	6.13	39.53
<i>Bromus carinatus</i>	Grass	1.86	3.93	27.91
<i>Bromus inermis</i>	Grass	1.86	3.93	16.28
<i>Penstemon palmeri</i>	Forb	1.28	3.80	16.28
<i>Machaeranthera canescens</i>	Forb	1.16	2.45	18.60
<i>Dacytylis glomeratus</i>	Grass	1.05	2.22	13.95
<i>Medicago sativa</i>	Forb	0.98	2.07	16.28
<i>Mellilotus officinalis</i>	Forb	0.81	1.71	11.63
<i>Penstemon pachyphyllus</i>	Forb	0.70	1.48	11.63
<i>Poa pratensis</i>	Forb	0.47	0.99	6.98
<i>Malcomia africana</i>	Forb	0.23	0.49	2.33
<i>Astragalus sp.</i>	Forb	0.23	0.49	4.65
<i>Pinus ponderosa</i>	Tree	0.23	0.49	2.33
<i>Gutierrezia sarothrae</i>	Shrub	0.23	0.49	4.65
<i>Elymus hispidus</i>	Grass	0.23	0.49	4.65
<i>Cercocarpus ledifolius</i>	Shrub	0.23	0.49	2.33
<i>Eriogonum corymbosum</i>	Shrub	0.12	0.25	2.33
<i>Cynoglossum officinale</i>	Forb	0.12	0.25	2.33
<i>Iva axillaris</i>	<u>Forb</u>	<u>0.04</u>	<u>0.08</u>	<u>2.33</u>
Totals		47.33	100.00	500.02

Reclaimed Upper Access Road Areas

<i>Astragalus cicer</i>	Forb	14.90	30.83	80.00
<i>Chrysothamnus nauseosus</i>	Shrub	7.50	15.52	50.00
<i>Elymus spicatus</i>	Grass	6.83	14.13	63.33
<i>Agropyron cristatum</i>	Grass	5.00	10.35	60.00
<i>Elymus lanceolatus</i>	Grass	4.50	9.31	50.00
<i>Stipa hymenoides</i>	Grass	3.43	7.10	40.00
<i>Penstemon pachyphyllus</i>	Forb	1.73	3.58	30.00
<i>Bromus carinatus</i>	Grass	1.67	3.46	20.00
<i>Cercocarpus ledifolius</i>	Shrub	1.00	2.07	15.33
<i>Bromus inermis</i>	Grass	0.83	1.72	13.33
<i>Mahonia repens</i>	Shrub	0.50	1.03	3.33
<i>Artemisia ludoviciana</i>	Forb	0.17	0.35	3.33
<i>Penstemon palmeri</i>	Forb	0.17	0.35	3.33
<i>Salsola pestifer</i>	<u>Forb</u>	<u>0.10</u>	<u>0.21</u>	<u>3.33</u>
Totals		48.33	100.00	435.31

Reference Area

<i>Elymus salinus</i>	Grass	18.50	73.84	92.50
<i>Pinus edulis</i>	Tree	3.05	12.19	25.00
<i>Juniperus osteosperma</i>	Tree	1.13	4.52	7.50
<i>Stipa hymenoides</i>	Grass	1.08	4.32	15.00
<i>Cercocarpus ledifolius</i>	Shrub	0.88	3.52	12.50
<i>Descurania pinnata</i>	<u>Forb</u>	<u>0.38</u>	<u>1.52</u>	<u>5.00</u>
Totals		25.02	100.00	157.50

TABLE 42: (continued)

Reclaimed Riparian Area				
<u>SPECIES</u>	<u>Lifeform</u>	<u>Cover</u>	<u>Relative Cover</u>	<u>Frequency</u>
<i>Salix lutea</i>	Shrub	22.00	32.35	100.00
<i>Dactylis glomeratus</i>	Grass	13.00	19.12	80.00
<i>Equisetum arvensis</i>	Forb	8.80	12.94	40.00
<i>Agrostis stolonifera</i>	Grass	8.00	11.76	40.00
<i>Phleum alpinum</i>	Grass	5.00	7.35	60.00
<i>Poa secunda</i>	Grass	4.00	5.88	20.00
<i>Medicago sativa</i>	Forb	3.60	5.29	60.00
<i>Geranium richardsonii</i>	Forb	2.20	3.24	40.00
<i>Cirsium</i> sp.	Forb	1.00	1.47	20.00
<i>Taraxicum officinale</i>	Forb	0.40	0.59	20.00
Totals		68.00	100.00	480.00
Riparian Reference Area				
<i>Equisetum arvense</i>	Forb	19.00	29.69	80.00
<i>Agrostis stolonifera</i>	Grass	14.50	22.66	60.00
<i>Dactylis glomeratus</i>	Grass	6.50	10.16	40.00
<i>Salix lutea</i>	Shrub	6.50	10.16	20.00
<i>Rosa woodsii</i>	Shrub	3.00	4.69	20.00
<i>Catabrosa aquatica</i>	Grass	2.00	3.13	20.00
<i>Bromus inermis</i>	Grass	2.00	3.13	10.00
<i>Geranium richardsonii</i>	Forb	2.00	3.13	30.00
<i>Taraxicum officinale</i>	Forb	1.50	2.34	30.00
<i>Cirsium</i> sp.	Forb	1.00	1.56	20.00
<i>Nasturtium officinale</i>	Forb	1.00	1.56	10.00
<i>Picea engelmannii</i>	Tree	1.00	1.56	10.00
<i>Juniperus scopulorum</i>	Tree	1.00	1.56	20.00
<i>Juncus</i> sp.	Gramin.	1.00	1.56	20.00
<i>Ranunculus cymbalaria</i>	Forb	0.50	0.78	10.00
<i>Populus tremuloides</i>	Tree	0.50	0.78	10.00
<i>Cornus sericea</i>	Tree	0.50	0.78	10.00
<i>Abies concolor</i>	Tree	0.50	0.78	10.00
Total		64.00	100.00	430.00

LITERATURE CITED

MacArthur, R.H., and E.O. Wilson. 1967. The theory of island biogeography. Princeton University Press, Princeton, New Jersey.

Snedecor, G.W. and W.G. Cochran. 1980. Statistical methods. The Iowa State University Press, Ames, Iowa.

Welsh, S.L., N.D. Atwood, S. Goodrich and L.C. Higgins. 1993. A Utah flora. Print Services, Brigham Young University, Provo, Utah.

COLOR PHOTOGRAPHS



Photo 1: Habitat Diversity (1 of 2)



Photo 2: Habitat Diversity (2 of 2)



Photo 3: Lower Area "A"



Photo 4: Lower Area "B"



Photo 5: Lower Area "C"



Photo 6: Lower Area "D"



Photo 7: Lower Area "E"



Photo 8: Upper Area Road (1 of 4)



Photo 9: Upper Area Road (2 of 4)



Photo 10: Upper Area Road (3 of 4)

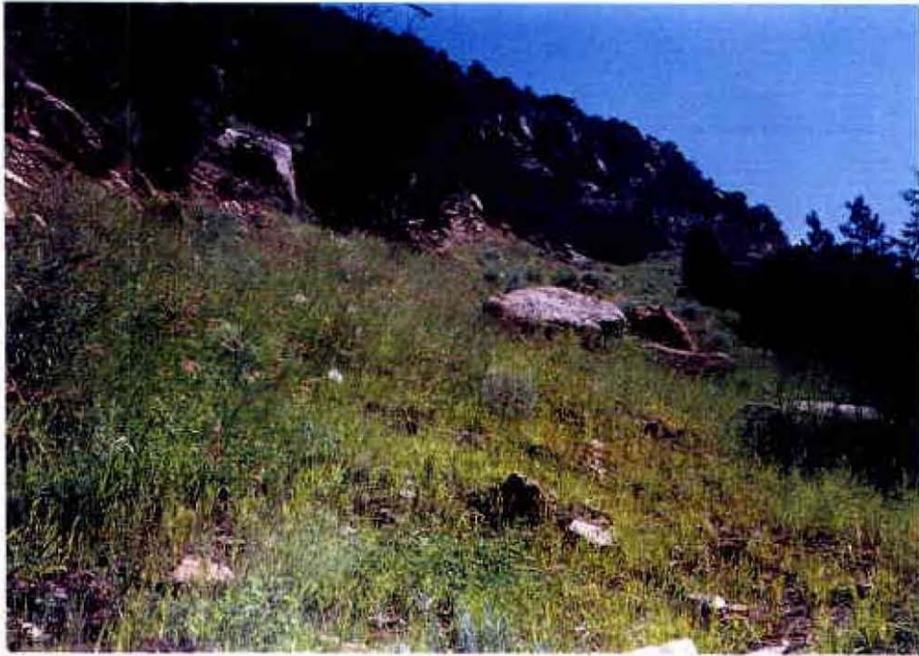


Photo 11: Upper Area Road (4 of 4)



Photo 12: Pinyon-Juniper Reference Area (1 of 3)



Photo 13: Pinyon-Juniper Reference Area (2 of 3)



Photo 14: Pinyon-Juniper Reference Area (3 of 3)



Photo 15: Reclaimed Riparian Area

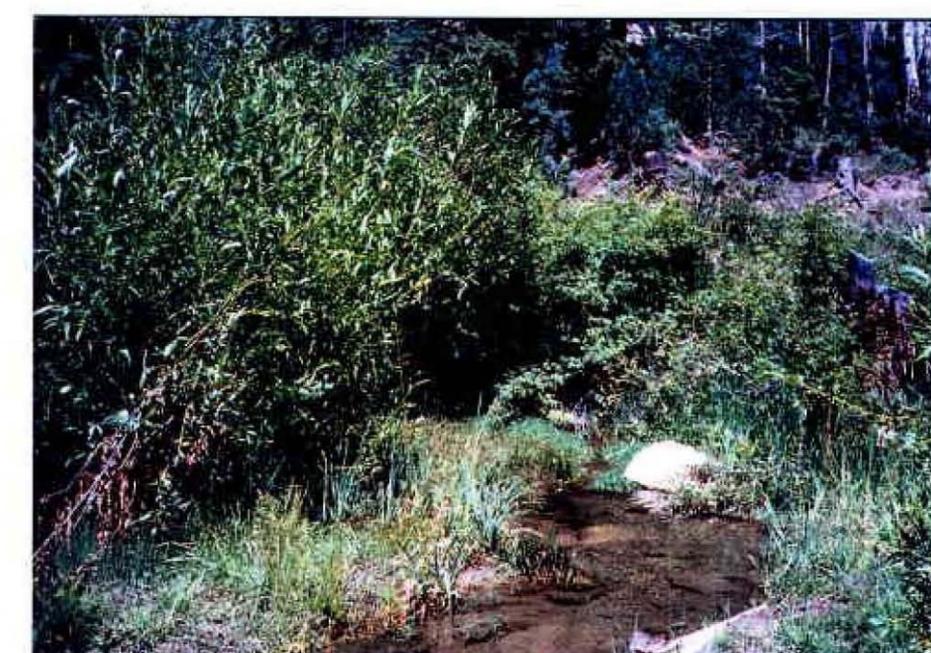
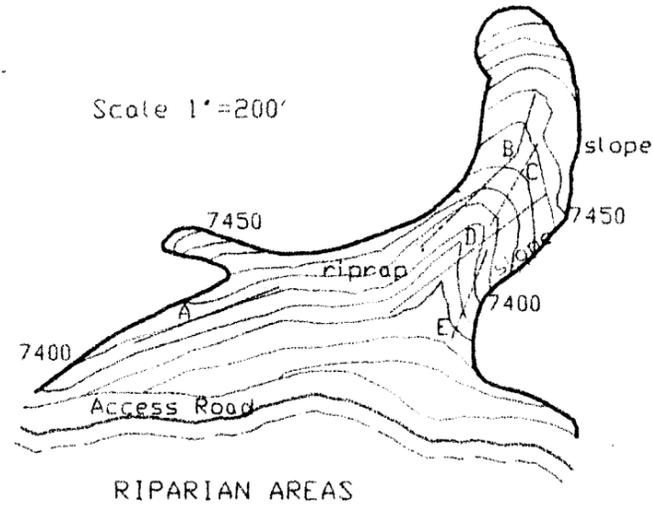


Photo 16: Riparian Reference Area

SAMPLE MAP

LOWER RECLAIMED AREAS

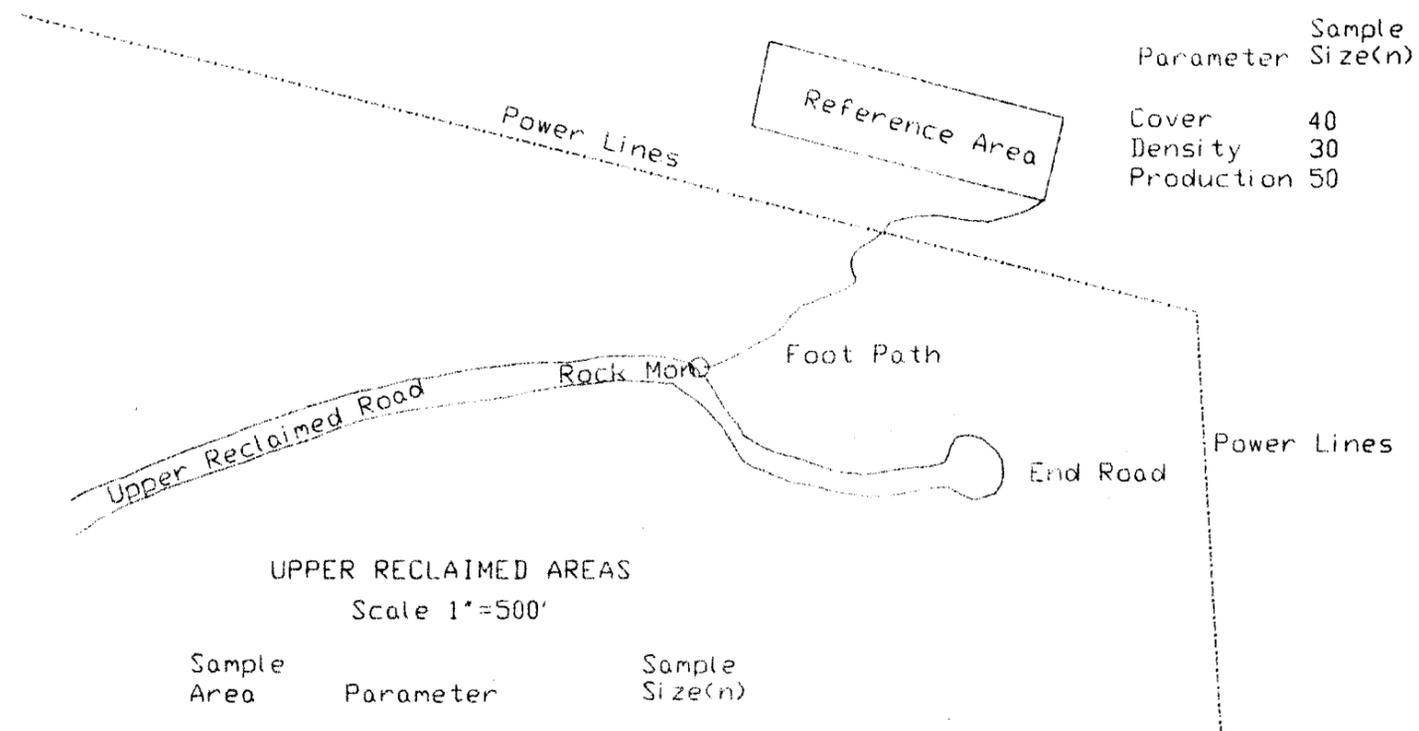


Sample Area	Parameter	Sample Size(n)
A	Cover	10
	Density	8
	Production	10
B	Cover	10
	Density	8
	Production	10
C	Cover	8
	Density	8
	Production	8
D	Cover	7
	Density	6
	Production	7
E	Cover	8
	Density	6
	Production	8
Comb.	Cover	43
	Density	36
	Production	43

RIPARIAN REFERENCE		RECLAIMED RIPARIAN	
Parameter	Sample Size (n)	Parameter	Sample Size (n)
Cover	10	Cover	5
Density	4	Density	2
Production	10	Production	5

REFERENCE AREA LOCATION MAP

Scale 1"=200'



Parameter	Sample Size(n)
Cover	40
Density	30
Production	50

UPPER RECLAIMED AREAS

Scale 1"=500'

Sample Area	Parameter	Sample Size(n)
Road	Cover	30
	Density	60
	Production	30

UPPER RECLAIMED ROAD AREAS



HUNTINGTON NO. 4 MINE SAMPLE LOCATION MAP 1995	
 MT NEBO SCIENTIFIC RESEARCH AND CONSULTING	
DRAWN S. LEWIS CHECKED P. COLLINS DATE 9-25-95 SCALE varies	HUNT4.DWG

FIGURES

**Fig. 1: Total Living Cover
Reclaimed vs. Reference (1995)**

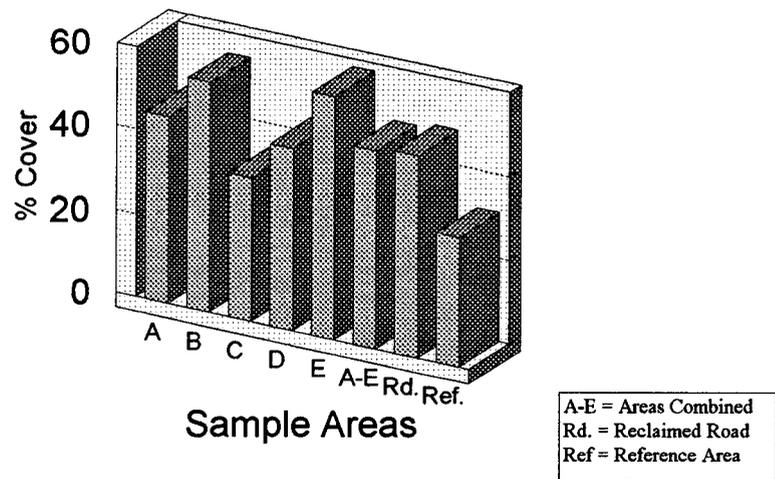


Fig. 2: Composition
 Reclaimed vs. Reference (1995)

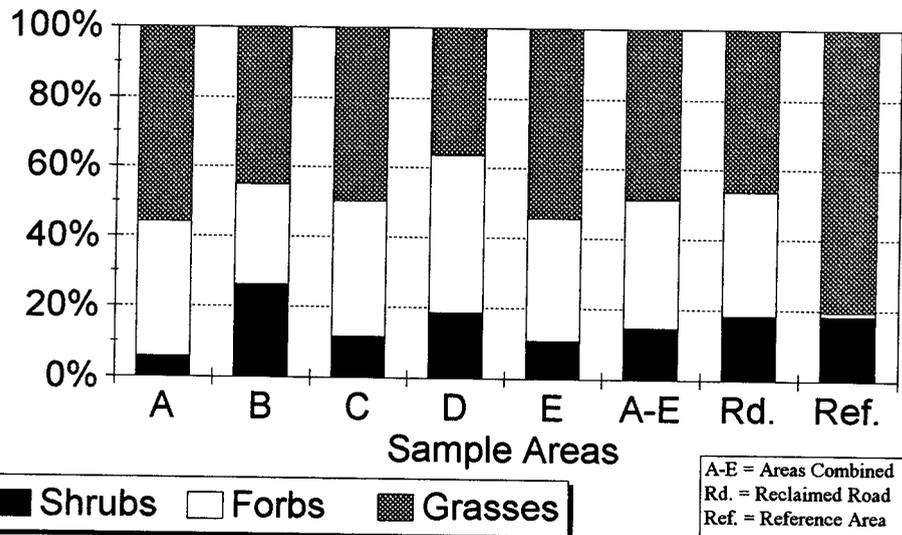
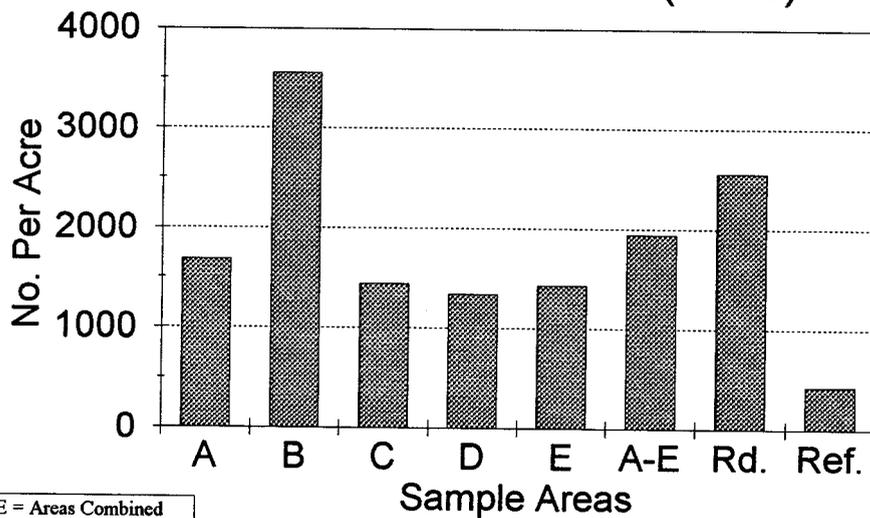


Fig. 3: Woody Species Density
Reclaimed vs. Reference (1995)



**Fig. 4: Annual Production
Reclaimed vs. Reference (1995)**

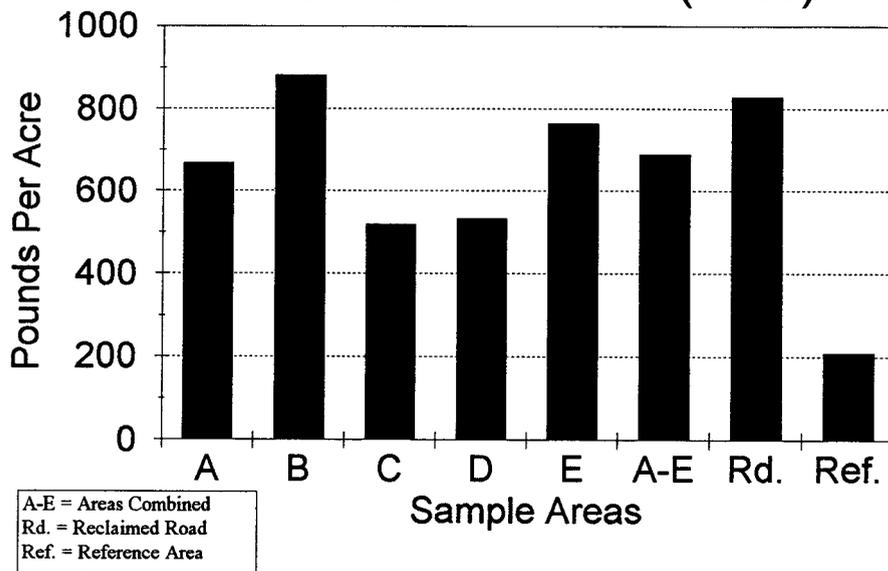
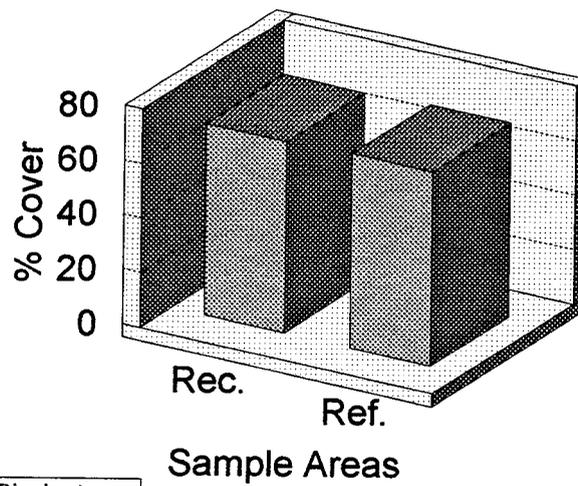


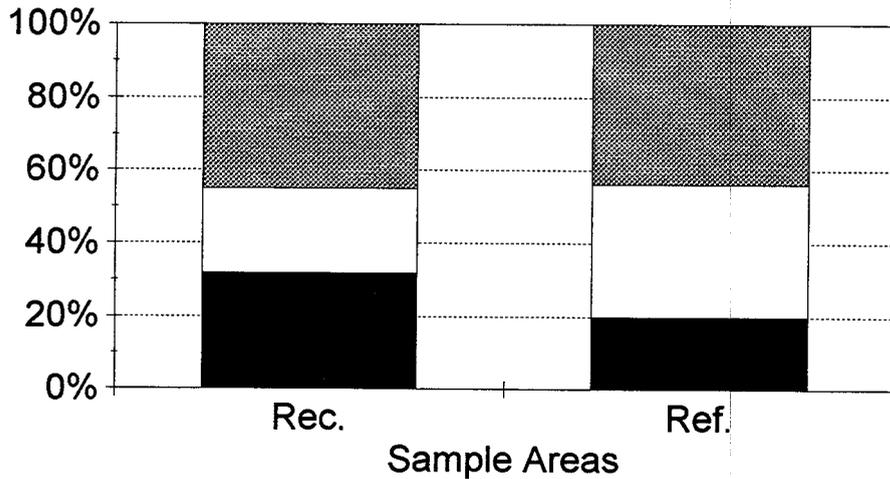
Fig. 5: Total Living Cover
Reclaimed Riparian vs. Reference -1995



Rec. = Reclaimed Riparian Area
Ref. = Riparian Reference Area

Fig. 6: Composition

Reclaimed Riparian vs. Reference -1995



■ Shrubs □ Forbs ▨ Grasses

Rec. = Reclaimed Riparian Area
Ref. = Riparian Reference Area

Fig. 7: Woody Species Density
Reclaimed Riparian vs. Reference -1995

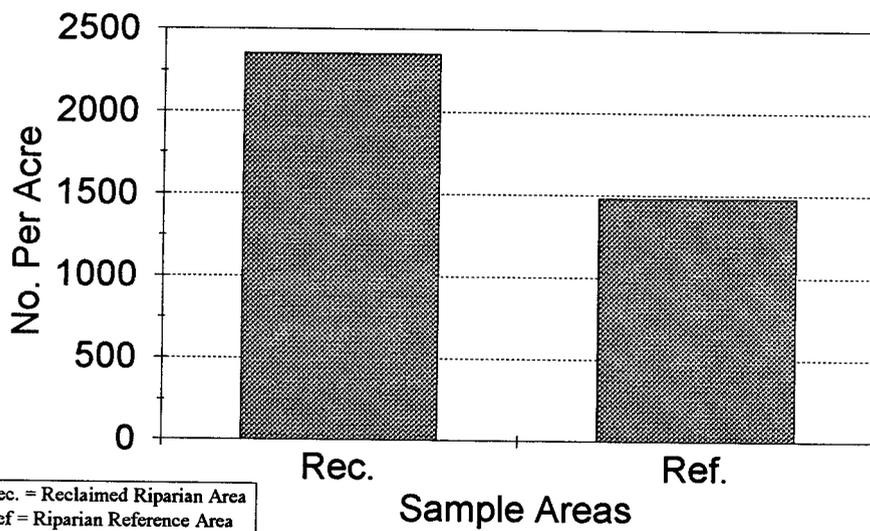
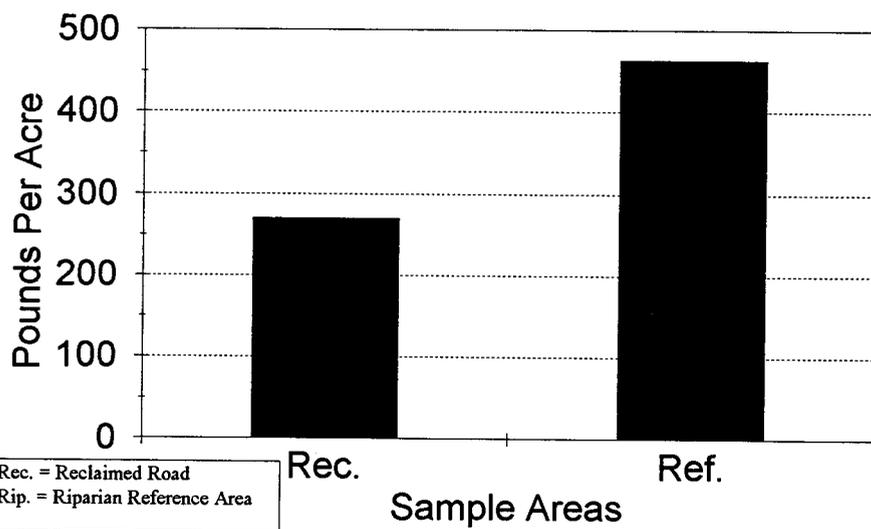


Fig. 8: Annual Production
Reclaimed Riparian vs. Reference -1995



APPENDIX A:
RAW DATA
(Cover, Composition, Frequency)

BEAVERCREEK/BLACKHAWK

Huntington #4

Reveg Lower Pads, Slopes etc.

A - Lower Area South (1-10)

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1995

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
TREES & SHRUBS										
Gutierrezia sarothrae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Pinus ponderosa	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00

FORBS										
Machaeranthera canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00
Astragalus cicer	0.00	10.00	45.00	5.00	0.00	5.00	25.00	15.00	15.00	0.00
Melilotus officinalis	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus sp.	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00
Penstemon pachyphyllus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00

GRASSES										
Elymus spicatus	0.00	5.00	0.00	20.00	0.00	5.00	0.00	25.00	15.00	10.00
Elymus carinatus	10.00	10.00	0.00	10.00	10.00	5.00	5.00	0.00	0.00	5.00
Agropyron cristatum	0.00	0.00	0.00	5.00	5.00	0.00	0.00	10.00	0.00	5.00
Dactylis glomeratus	5.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	5.00	10.00	0.00	40.00	10.00	10.00	0.00	0.00	0.00

COVER										
Total Living Cover	25.00	35.00	50.00	40.00	60.00	40.00	40.00	50.00	45.00	40.00
Litter	10.00	25.00	5.00	50.00	25.00	35.00	5.00	5.00	5.00	10.00
Bareground	30.00	20.00	15.00	5.00	10.00	15.00	45.00	15.00	25.00	25.00
Rock	35.00	20.00	20.00	5.00	5.00	10.00	10.00	20.00	25.00	25.00

% COMPOSITION										
Shrubs	0.00	0.00	0.00	0.00	0.00	25.00	0.00	8.33	0.00	25.00
Forbs	40.00	42.86	75.00	12.50	0.00	25.00	62.50	33.33	66.67	25.00
Grasses	60.00	57.14	25.00	87.50	100.00	50.00	37.50	58.33	33.33	50.00

BEAVERCREEK/BLACKHAWK
 Huntington #4
 Reveg Lower Pads, Slopes etc.
 A - Lower Area South (1-10)
 Exposure: Variable
 Slope: Variable
 Sample Date: 15 Aug 1995

Mean	SDev	Freq	

			TREES & SHRUBS
0.50	1.50	10.00	Gutierrezia sarothrae
1.00	3.00	10.00	Chrysothamnus nauseosus
1.00	3.00	10.00	Pinus ponderosa
			FORBS
1.00	2.00	20.00	Machaeranthera canescens
12.00	13.45	70.00	Astragalus cicer
1.50	3.20	20.00	Melilotus officinalis
1.00	2.00	20.00	Astragalus sp.
1.50	3.20	20.00	Penstemon pachyphyllus
			GRASSES
1.50	3.20	60.00	Elymus spicatus
1.00	2.00	70.00	Bromus carinatus
1.50	3.20	40.00	Agropyron cristatum
1.50	2.29	30.00	Dactylis glomeratus
7.50	11.67	50.00	Elymus lanceolatus

Mean	SDev	Freq	

			COVER
44.50	11.28		Total Living Cover
17.50	14.87		Litter
20.50	10.83		Bareground
17.50	9.29		Rock

Mean	SDev	Freq	

			% COMPOSITION
5.83	9.90		Shrubs
38.29	22.96		Forbs
55.88	22.00		Grasses

BEAVERCREEK/BLACKHAWK

Huntington #4

Reveg Lower Pads, Slopes etc.

B - Lower Area North (11-20)

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1995 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

TREES & SHRUBS

<i>Chrysothamnus nauseosus</i>	10.00	5.00	25.00	0.00	20.00	10.00	5.00	20.00	30.00	5.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Astragalus cicer</i>	30.00	5.00	5.00	15.00	0.00	30.00	20.00	10.00	0.00	10.00
<i>Penstemon palmeri</i>	5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Machaeranthera canescens</i>	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Poa hymenoides</i>	10.00	10.00	10.00	5.00	0.00	10.00	10.00	5.00	10.00	5.00
<i>Elymus spicatus</i>	0.00	10.00	0.00	10.00	20.00	0.00	10.00	0.00	0.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	5.00	20.00	10.00	0.00	5.00	5.00	10.00
<i>Elymus lanceolatus</i>	5.00	0.00	0.00	5.00	0.00	10.00	5.00	15.00	10.00	10.00
<i>Bromus carinatus</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	65.00	35.00	50.00	55.00	60.00	70.00	60.00	55.00	55.00	45.00
Litter	5.00	5.00	10.00	5.00	10.00	10.00	5.00	5.00	25.00	5.00
Bareground	20.00	20.00	20.00	35.00	25.00	15.00	15.00	30.00	10.00	35.00
Rock	10.00	40.00	20.00	5.00	5.00	5.00	20.00	10.00	10.00	15.00

% COMPOSITION

Shrubs	15.38	28.57	50.00	9.09	33.33	14.29	8.33	36.36	54.55	11.11
Forbs	53.85	14.29	30.00	45.45	0.00	42.86	50.00	18.18	0.00	33.33
Grasses	30.77	57.14	20.00	45.45	66.67	42.86	41.67	45.45	45.45	55.56

BEAVERCREEK/BLACKHAWK
 Huntington #4
 Reveg Lower Pads, Slopes etc.
 B - Lower Area North (11-20)
 Exposure: Variable
 Slope: Variable
 Sample Date: 15 Aug 1995

Mean	SDev	Freq	
<hr/>			
			TREES & SHRUBS
13.00	9.54	90.00	Chrysothamnus nauseosus
0.50	1.50	10.00	Gutierrezia sarothrae
0.50	1.50	10.00	Eriogonum corymbosum
			FORBS
13.50	11.63	80.00	Astragalus cicer
2.00	3.32	30.00	Penstemon palmeri
1.00	3.00	10.00	Machaeranthera canescens
			GRASSES
7.50	3.35	90.00	Stipa hymenoides
5.00	6.71	40.00	Elymus spicatus
5.50	6.10	60.00	Agropyron cristatum
6.00	4.90	70.00	Elymus lanceolatus
0.50	1.50	10.00	Bromus carinatus
			COVER
55.00	9.49		Total Living Cover
8.50	5.94		Litter
22.50	8.14		Bareground
14.00	10.20		Rock
<hr/>			
			% COMPOSITION
26.10	16.21		Shrubs
28.80	18.86		Forbs
45.10	12.54		Grasses

BEAVERCREEK/BLACKHAWK

Huntington #4

Reveg Lower Pads, Slopes etc.

C - Lower Area Slopes (21-28)

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1995

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	Mean	SDev	Freq
TREES & SHRUBS											
<i>Chrysothamnus nauseosus</i>	5.00	5.00	13.00	0.00	5.00	0.00	5.00	0.00	4.13	4.08	62.50
FORBS											
<i>Melilotus officinalis</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
<i>Astragalus cicer</i>	5.00	0.00	0.00	0.00	0.00	0.00	10.00	30.00	5.63	9.82	37.50
<i>Malcomia africana</i>	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	1.25	3.31	10.00
<i>Iva axillaris</i>	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.25	0.66	12.50
<i>Penstemon palmeri</i>	0.00	0.00	5.00	15.00	0.00	0.00	0.00	0.00	2.50	5.00	25.00
<i>Penstemon pachyphyllus</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
<i>Medicago sativa</i>	5.00	7.00	5.00	0.00	0.00	0.00	0.00	0.00	2.13	3.80	37.50
<i>Machaeranthera canescens</i>	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	3.17	25.00
GRASSES											
<i>Ipa hymenoides</i>	5.00	5.00	5.00	10.00	0.00	0.00	0.00	0.00	3.13	3.48	50.00
<i>Elymus spicatus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
<i>Agropyron cristatum</i>	5.00	3.00	5.00	0.00	0.00	5.00	0.00	0.00	2.25	2.33	50.00
<i>Bromus carinatus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
<i>Elymus lanceolatus</i>	5.00	5.00	0.00	10.00	10.00	15.00	10.00	15.00	8.75	4.84	37.50
<i>Bromus inermis</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
COVER											
Total Living Cover	40.00	40.00	45.00	35.00	25.00	20.00	25.00	45.00	34.38	9.16	
Litter	5.00	5.00	5.00	10.00	5.00	5.00	5.00	5.00	5.63	1.65	
Bareground	5.00	30.00	10.00	10.00	10.00	45.00	60.00	15.00	23.13	18.70	
Rock	50.00	25.00	40.00	45.00	60.00	30.00	10.00	35.00	36.88	14.56	
% COMPOSITION											
Shrubs	12.50	12.50	28.89	0.00	20.00	0.00	20.00	0.00	11.74	10.28	
Forbs	37.50	55.00	26.67	42.86	40.00	0.00	40.00	66.67	38.59	18.41	
Grasses	50.00	32.50	44.44	57.14	40.00	100.00	40.00	33.33	49.68	20.51	

BEAVERCREEK/BLACKHAWK

Huntington #4

Reveg Lower Pads, Slopes etc.

D - Below Slopes (29-35)

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1995

1.00 2.00 3.00 4.00 5.00 5.00 7.00 Mean SDev Freq

TREES & SHRUBS

Chrysothamnus nauseosus 10.00 10.00 5.00 10.00 5.00 15.00 0.00 7.85 4.52 85.71

FORBS

Penstemon palmeri 5.00 10.00 0.00 0.00 0.00 0.00 0.00 2.14 3.64 28.57

Astragalus cicer 15.00 10.00 5.00 10.00 25.00 0.00 10.00 10.71 7.28 85.71

Melilotus officinalis 0.00 0.00 0.00 0.00 0.00 10.00 0.00 1.43 3.50 14.29

Machaeranthera canescens 0.00 0.00 0.00 5.00 0.00 0.00 10.00 2.14 3.64 28.57

Artemisia ludoviciana 0.00 0.00 0.00 5.00 0.00 0.00 0.00 0.71 1.75 14.29

Penstemon sachyphyllus 0.00 0.00 0.00 5.00 0.00 0.00 0.00 0.71 1.75 14.29

Medicago sativa 0.00 0.00 5.00 0.00 0.00 5.00 0.00 1.43 2.25 28.57

Medicago sativa 0.00 5.00 0.00 0.00 0.00 0.00 0.00 0.71 1.75 14.29

GRASSES

Poa hymenoides 5.00 5.00 0.00 0.00 10.00 0.00 5.00 3.57 3.50 57.14

Elymus spicatus 0.00 5.00 5.00 0.00 0.00 0.00 10.00 2.86 3.64 42.86

Agropyron cristatum 5.00 0.00 5.00 0.00 5.00 0.00 0.00 2.14 2.47 42.86

Elymus lanceolatus 5.00 0.00 5.00 10.00 0.00 0.00 5.00 3.57 3.50 57.14

Poa pratensis 0.00 0.00 0.00 5.00 5.00 0.00 0.00 1.43 2.25 28.57

Bromus carinatus 0.00 5.00 0.00 0.00 0.00 5.00 0.00 1.43 2.25 28.57

Bromus inermis 0.00 0.00 5.00 0.00 0.00 0.00 0.00 0.71 1.75 14.29

COVER

Total Living Cover 45.00 50.00 35.00 50.00 50.00 35.00 40.00 43.57 5.39

Litter 5.00 10.00 5.00 5.00 10.00 10.00 5.00 7.14 2.47

Bareground 35.00 25.00 15.00 5.00 10.00 5.00 50.00 20.71 15.68

Rock 15.00 15.00 45.00 40.00 30.00 50.00 5.00 28.57 15.97

* COMPOSITION

Shrubs 22.22 20.00 14.29 20.00 10.00 42.86 0.00 18.48 12.21

Forbs 44.44 50.00 28.57 50.00 50.00 42.86 50.00 45.12 7.32

Grasses 33.33 30.00 57.14 30.00 40.00 14.29 50.00 36.39 13.14

BEAVERCREEK/BLACKHAWK

Huntington #4

Reveg Lower Pads, Slopes etc.

E - Lowest Area (36-43)

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1995

	1.00	2.00	3.00	4.00	5.00	5.00	7.00	8.00	Mean	SDev	Freq
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TREES & SHRUBS

Chrysothamnus nauseosus	0.00	0.00	0.00	10.00	5.00	10.00	0.00	10.00	4.38	4.84	50.00
Cercocarpus ledifolius	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	1.25	3.31	12.50

FORBS

Machaeranthera canescens	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
Medicago sativa	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	1.25	3.31	12.50
Melilotus officinalis	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
Astragalus cicer	40.00	20.00	5.00	10.00	40.00	15.00	0.00	10.00	17.50	14.14	87.50
Cynoglossum officinale	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
Penstemon pachyphyllus	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.63	1.65	12.50

GRASSES

Elymus lanceolatus	0.00	10.00	0.00	5.00	5.00	5.00	10.00	0.00	4.38	3.90	62.50
Dactylis glomeratus	0.00	10.00	0.00	0.00	0.00	10.00	0.00	10.00	3.75	4.84	37.50
Poa pratensis	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	1.25	3.31	12.50
Agropyron cristatum	5.00	0.00	10.00	0.00	5.00	10.00	0.00	10.00	5.00	4.33	62.50
Bromus carinatus	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.65	12.50
Elymus hispidus	0.00	5.00	0.00	0.00	5.00	0.00	0.00	0.00	1.25	2.17	25.00
Elymus spicatus	10.00	10.00	10.00	5.00	10.00	5.00	0.00	0.00	6.25	4.15	75.00
Bromus inermis	5.00	0.00	20.00	5.00	0.00	0.00	35.00	5.00	8.75	11.66	62.50

COVER

Total Living Cover	65.00	60.00	60.00	50.00	70.00	60.00	55.00	45.00	58.13	7.47
Litter	10.00	10.00	20.00	5.00	5.00	20.00	35.00	10.00	14.38	9.50
Bareground	15.00	25.00	5.00	5.00	20.00	5.00	5.00	25.00	13.13	8.54
Rock	10.00	5.00	15.00	40.00	5.00	15.00	5.00	20.00	14.38	11.02

% COMPOSITION

Shrubs	0.00	0.00	0.00	40.00	7.14	16.67	0.00	22.22	10.75	13.68
Forbs	69.23	33.33	33.33	30.00	57.14	33.33	0.00	22.22	34.82	19.63
Grasses	30.77	66.67	66.67	30.00	35.71	50.00	100.00	55.56	54.42	22.09

BEAVERCREEK/BLACKHAWK

Huntington #4

Sites A thru E Combined

Exposure: Variable

Slope: Variable

Sample Date: 15 Aug 1955

A = 1 thru 10

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
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TREES & SHRUBS

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Cercocarpus ledifolius</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Pinus ponderosa</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00

FORBS

<i>Penstemon palmeri</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Astragalus cicer</i>	0.00	10.00	45.00	5.00	0.00	5.00	25.00	15.00	15.00	0.00
<i>Melilotus officinalis</i>	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Cynoglossum officinale</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Machaeranthera canescens</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00
<i>Penstemon pachyphyllus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00
<i>Astragalus</i> sp.	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00
<i>Alomia africana</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>A. axillaris</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Medicago sativa</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa hyemencides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus setosus</i>	0.00	5.00	0.00	20.00	0.00	5.00	0.00	25.00	15.00	10.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	5.00	5.00	0.00	0.00	10.00	0.00	5.00
<i>Bromus carinatus</i>	10.00	10.00	0.00	10.00	10.00	5.00	5.00	0.00	0.00	5.00
<i>Elymus lanceolatus</i>	0.00	5.00	10.00	0.00	40.00	10.00	10.00	0.00	0.00	0.00
<i>Dactyloctenium aegyptium</i>	5.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus hispidus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus inermis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	25.00	35.00	60.00	40.00	60.00	40.00	40.00	60.00	45.00	40.00
Litter	10.00	25.00	5.00	50.00	25.00	35.00	5.00	5.00	5.00	10.00
Bareground	30.00	20.00	15.00	5.00	10.00	15.00	45.00	15.00	25.00	25.00
Rock	35.00	20.00	20.00	5.00	5.00	10.00	10.00	20.00	25.00	25.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	25.00	0.00	8.33	0.00	25.00
Forbs	40.00	42.86	75.00	12.50	0.00	25.00	62.50	33.33	66.67	25.00
Grasses	60.00	57.14	25.00	87.50	100.00	50.00	37.50	58.33	33.33	50.00

B = 11 thru 20					D = 21 thru 25							
11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00
10.00	5.00	25.00	0.00	20.00	10.00	5.00	20.00	30.00	5.00	5.00	5.00	13.00
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	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	0.00	0.00	0.00
5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	5.00
30.00	5.00	5.00	15.00	0.00	30.00	30.00	10.00	0.00	10.00	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	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	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	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	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	2.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	7.00	5.00
10.00	10.00	10.00	5.00	0.00	10.00	10.00	5.00	10.00	5.00	5.00	5.00	5.00
0.00	10.00	0.00	10.00	20.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	5.00	20.00	10.00	0.00	5.00	5.00	10.00	5.00	3.00	5.00
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
5.00	0.00	0.00	5.00	0.00	10.00	5.00	15.00	10.00	10.00	5.00	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	5.00	0.00	0.00
55.00	35.00	50.00	55.00	50.00	70.00	50.00	55.00	55.00	45.00	40.00	40.00	45.00
5.00	5.00	10.00	5.00	10.00	10.00	5.00	5.00	25.00	5.00	5.00	5.00	5.00
20.00	20.00	20.00	35.00	25.00	15.00	15.00	30.00	10.00	35.00	5.00	30.00	10.00
10.00	40.00	20.00	5.00	5.00	5.00	20.00	10.00	10.00	15.00	50.00	25.00	40.00
15.38	28.57	50.00	9.09	33.33	14.29	8.33	36.36	54.55	11.11	12.50	12.50	28.89
53.85	14.29	30.00	45.45	0.00	42.86	50.00	18.18	0.00	33.33	37.50	55.00	26.67
30.77	57.14	20.00	45.45	66.67	42.86	41.67	45.45	45.45	55.56	50.00	32.50	44.44

D = 29 thru 35

24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00
0.00	5.00	0.00	5.00	0.00	10.00	10.00	5.00	10.00	5.00	15.00	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
15.00	0.00	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	10.00	30.00	15.00	10.00	5.00	10.00	25.00	0.00	10.00	40.00
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	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	5.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	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	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	5.00	0.00	0.00	5.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	10.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00	10.00	10.00
0.00	0.00	5.00	0.00	0.00	5.00	0.00	5.00	0.00	5.00	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	5.00	0.00	0.00
10.00	10.00	15.00	10.00	15.00	5.00	0.00	5.00	10.00	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	0.00	5.00	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	5.00	0.00	0.00	0.00	0.00	5.00
35.00	25.00	20.00	25.00	45.00	45.00	50.00	35.00	45.00	50.00	35.00	40.00	65.00
10.00	5.00	5.00	5.00	5.00	5.00	10.00	5.00	5.00	10.00	10.00	5.00	10.00
10.00	10.00	45.00	60.00	15.00	35.00	25.00	15.00	5.00	10.00	5.00	50.00	15.00
45.00	60.00	30.00	10.00	35.00	15.00	15.00	45.00	45.00	30.00	50.00	5.00	10.00
0.00	20.00	0.00	20.00	0.00	22.22	20.00	14.29	22.22	10.00	42.86	0.00	0.00
42.86	40.00	0.00	40.00	66.67	44.44	50.00	28.57	44.44	50.00	42.86	50.00	69.23
57.14	40.00	100.00	40.00	33.33	33.33	30.00	57.14	33.33	40.00	14.29	50.00	30.77

BEAVERCREEK/BLACKHAWK
 Huntington #4
 Sites A thru E Combined
 Exposure: Variable
 Slope: Variable
 Sample Date: 15 Aug 1995

E = 36 thru 43

37.00	38.00	39.00	40.00	41.00	42.00	43.00	Mean	SDev	Freq	
										TREES & SHRUBS
0.00	0.00	10.00	5.00	10.00	0.00	10.00	6.12	7.25	58.14	Chrysothamnus nauseosus
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.05	4.65	Sutierrezia sarothrae
0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.23	1.51	2.33	Cercocarpus ledifolius
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.75	2.33	Eriogonum corymbosum
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.51	2.33	Pinus ponderosa
										FORBS
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	3.25	16.28	Penstemon palmeri
20.00	5.00	10.00	40.00	15.00	0.00	10.00	11.98	12.30	72.09	Astragalus cicer
0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.81	2.39	11.63	Melilotus officinalis
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.75	2.33	Cynoglossum officinale
0.00	5.00	0.00	0.00	0.00	0.00	0.00	1.16	2.61	18.60	Machaeranthera canescens
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.70	2.04	11.63	Penstemon pachyphyllus
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.05	4.65	Astragalus sp.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.51	2.33	Malcomia africana
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.30	2.33	Iva axillaris
0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.98	2.33	16.28	Medicago sativa
										GRASSES
0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.91	3.92	39.53	Stipa hymenoides
10.00	10.00	5.00	10.00	5.00	0.00	0.00	4.77	6.38	46.51	Elymus spicatus
0.00	10.00	0.00	5.00	10.00	0.00	10.00	3.56	4.35	51.16	Agropyron cristatum
5.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86	3.24	27.91	Bromus carinatus
10.00	0.00	5.00	5.00	5.00	10.00	0.00	6.16	7.06	65.12	Elymus lanceolatus
10.00	0.00	0.00	0.00	10.00	0.00	10.00	1.05	2.76	13.95	Dactylis glomeratus
0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.47	1.81	6.98	Poa pratensis
5.00	0.00	0.00	5.00	0.00	0.00	0.00	0.23	1.05	4.65	Elymus hispidus
0.00	20.00	5.00	0.00	0.00	35.00	5.00	1.86	6.10	16.28	Bromus inermis
										COVER
60.00	60.00	50.00	70.00	60.00	55.00	45.00	47.33	16.26		Total Living Cover
10.00	20.00	5.00	5.00	20.00	35.00	10.00	10.93	9.96		Litter
25.00	5.00	5.00	20.00	5.00	5.00	25.00	20.12	13.18		Bareground
5.00	15.00	40.00	5.00	15.00	5.00	20.00	21.63	15.20		Rock
										% COMPOSITION
0.00	0.00	40.00	7.14	16.67	0.00	22.22	14.67	14.79		Shrubs
33.33	33.33	30.00	57.14	33.33	0.00	22.22	36.47	19.34		Forbs
66.67	66.67	30.00	35.71	50.00	100.00	55.56	48.85	19.74		Grasses

BEAVERCREEK/BLACKHAWK

Huntington #4

Reclaimed Road

Exposure: Variable

Slope: Variable

Sample Date: 17 Aug 1995

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

TREES & SHRUBS

<i>Chrysothamnus nauseosus</i>	40.00	25.00	10.00	10.00	25.00	0.00	5.00	0.00	0.00	0.00
<i>Cercocarpus ledifolius</i>	0.00	5.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
<i>Mahonia repens</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00

FORBS

PEPAL	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Penstemon pachyphyllus</i>	0.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Astragalus cicer</i>	0.00	0.00	5.00	5.00	0.00	0.00	5.00	45.00	10.00	15.00
<i>Artemisia ludoviciana</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
<i>Salsola pestifer</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	5.00	0.00
<i>Bromus inermis</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus carinatus</i>	0.00	15.00	10.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
<i>Agropyron cristatum</i>	5.00	0.00	0.00	0.00	10.00	5.00	0.00	5.00	5.00	25.00
<i>Elymus lanceolatus</i>	5.00	15.00	0.00	0.00	0.00	10.00	10.00	0.00	5.00	15.00
<i>Elymus spicatus</i>	10.00	0.00	10.00	20.00	5.00	25.00	10.00	5.00	0.00	0.00

COVER

Total Living Cover	65.00	65.00	40.00	40.00	40.00	55.00	40.00	55.00	50.00	50.00
Litter	10.00	5.00	10.00	20.00	10.00	5.00	10.00	10.00	5.00	10.00
Bareground	10.00	5.00	20.00	10.00	30.00	20.00	45.00	20.00	25.00	25.00
Rock	15.00	25.00	30.00	30.00	20.00	20.00	5.00	15.00	20.00	15.00

% COMPOSITION

Shrubs	61.54	46.15	25.00	25.00	62.50	0.00	37.50	0.00	30.00	0.00
Forbs	0.00	7.69	25.00	25.00	0.00	9.09	12.50	81.82	30.00	30.00
Grasses	38.46	46.15	50.00	50.00	37.50	90.91	50.00	18.18	40.00	70.00

11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00
0.00	15.00	20.00	0.00	5.00	5.00	0.00	0.00	5.00	30.00	0.00	0.00	15.00
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
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	2.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00
32.00	15.00	15.00	45.00	5.00	10.00	35.00	0.00	10.00	5.00	10.00	25.00	15.00
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
3.00	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	10.00	0.00	5.00	15.00	0.00	0.00	3.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00
0.00	10.00	15.00	5.00	5.00	20.00	0.00	5.00	0.00	5.00	10.00	5.00	5.00
5.00	0.00	15.00	0.00	0.00	0.00	10.00	0.00	0.00	5.00	0.00	10.00	5.00
5.00	15.00	0.00	0.00	0.00	23.00	5.00	17.00	10.00	10.00	5.00	0.00	5.00
50.00	65.00	65.00	60.00	30.00	60.00	55.00	25.00	35.00	55.00	35.00	40.00	55.00
5.00	5.00	10.00	5.00	5.00	25.00	10.00	20.00	5.00	5.00	10.00	10.00	5.00
40.00	20.00	15.00	15.00	25.00	5.00	5.00	30.00	35.00	20.00	10.00	45.00	35.00
5.00	10.00	10.00	20.00	40.00	10.00	30.00	25.00	25.00	20.00	45.00	5.00	5.00
0.00	23.08	30.77	0.00	16.67	8.33	0.00	0.00	28.57	54.55	0.00	0.00	27.27
70.00	23.08	23.08	75.00	16.67	20.00	63.64	0.00	28.57	9.09	42.86	62.50	36.36
30.00	53.85	46.15	25.00	66.67	71.67	36.36	100.00	42.86	36.36	57.14	37.50	36.36

BEAVERCREEK/BLACKHAWK
 Huntington #4
 Reclaimed Road
 Exposure: Variable
 Slope: Variable
 Sample Date: 17 Aug 1995

24.00	25.00	26.00	27.00	28.00	29.00	30.00	Mean	SDev	Freq	
<hr/>										
										TRACES & SHRUBS
10.00	0.00	0.00	5.00	0.00	0.00	0.00	7.50	10.55	50.00	Chrysopsisnaeus nauseosus
0.00	0.00	0.00	10.00	0.00	0.00	0.00	1.00	2.71	13.33	Cercocarpus ledifolius
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	2.69	3.33	Hattonia repens
										FORBS
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33	PEPAL
0.00	0.00	5.00	0.00	0.00	10.00	10.00	1.73	2.97	30.00	Penstemon sachsphyllus
25.00	40.00	20.00	0.00	25.00	20.00	10.00	14.90	13.46	80.00	Astragalus cicer
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33	Artemisia ludoviciana
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.54	3.33	Salsola pestifer
										GRASSES
10.00	0.00	0.00	15.00	0.00	10.00	10.00	3.43	4.85	40.00	Stipa hymenoides
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	2.27	13.33	Bromus inermis
0.00	0.00	0.00	0.00	10.00	0.00	0.00	1.67	3.73	20.00	Bromus carinatus
0.00	10.00	0.00	0.00	5.00	0.00	0.00	5.00	5.63	60.00	Agropyron cristatum
5.00	10.00	0.00	0.00	10.00	0.00	0.00	4.50	5.22	50.00	Elymus lanceolatus
5.00	10.00	0.00	0.00	0.00	10.00	0.00	6.83	7.17	63.33	Elymus spicatus
										COVER
65.00	70.00	25.00	30.00	50.00	50.00	30.00	48.33	13.12		Total Living Cover
10.00	5.00	5.00	5.00	10.00	10.00	5.00	8.83	4.95		Litter
20.00	5.00	20.00	25.00	5.00	20.00	5.00	20.33	11.69		Bareground
5.00	20.00	50.00	40.00	35.00	20.00	60.00	22.50	13.95		Rock
<hr/>										
										% COMPOSITION
15.38	0.00	0.00	50.00	0.00	0.00	0.00	18.08	20.55		Shrubs
38.46	57.14	100.00	0.00	50.00	60.00	66.67	35.47	26.99		Forbs
46.15	42.86	0.00	50.00	50.00	40.00	33.33	46.45	19.30		Grasses

BEAVERCREEK/BLACKHAWK

Huntington #4

Reference Area

Exposure: SSW

Slope: 34 deg.

Sample Date: 16 Aug 1995 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

TREES & SHRUBS

Pinus edulis	0.00	0.00	0.00	0.00	0.00	10.00	7.00	0.00	0.00	0.00
Cercocarpus ledifolius	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Juniperus osteosperma	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Descurainia sinuata	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
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GRASSES

<i>mus salinus</i>	35.00	30.00	30.00	0.00	20.00	5.00	0.00	15.00	15.00	20.00
<i>Setaria pycnantha</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00

COVER

OverStory	0.00	0.00	0.00	5.00	30.00	50.00	30.00	0.00	0.00	0.00
Understory	35.00	30.00	30.00	35.00	20.00	20.00	15.00	15.00	15.00	30.00
Litter	10.00	20.00	30.00	20.00	70.00	70.00	40.00	10.00	10.00	5.00
Bareground	10.00	5.00	30.00	5.00	5.00	5.00	5.00	20.00	20.00	25.00
Rock	45.00	45.00	10.00	40.00	5.00	5.00	40.00	55.00	55.00	40.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	85.71	0.00	50.00	46.67	0.00	0.00	16.67
Forbs	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
Grasses	100.00	100.00	100.00	14.29	100.00	25.00	53.33	100.00	100.00	83.33

11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00
0.00	0.00	10.00	15.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	10.00	0.00
0.00	15.00	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	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
35.00	15.00	25.00	10.00	15.00	10.00	10.00	10.00	20.00	25.00	10.00	25.00	20.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
10.00	40.00	20.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	10.00	0.00
35.00	30.00	35.00	25.00	20.00	10.00	10.00	35.00	30.00	25.00	10.00	35.00	20.00
5.00	60.00	50.00	5.00	5.00	5.00	15.00	5.00	5.00	25.00	5.00	25.00	60.00
10.00	5.00	10.00	10.00	5.00	20.00	5.00	20.00	10.00	20.00	20.00	15.00	10.00
50.00	5.00	5.00	60.00	70.00	65.00	70.00	40.00	55.00	30.00	65.00	25.00	10.00
0.00	50.00	28.57	60.00	0.00	0.00	0.00	42.86	33.33	0.00	0.00	28.57	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
100.00	50.00	71.43	40.00	100.00	100.00	100.00	57.14	66.67	100.00	100.00	71.43	100.00

24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00
10.00	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	5.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	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	0.00	0.00	0.00	0.00	0.00
25.00	25.00	25.00	35.00	30.00	10.00	25.00	15.00	20.00	15.00	25.00	40.00	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	10.00
10.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	30.00	30.00	35.00	40.00	20.00	25.00	20.00	20.00	15.00	25.00	40.00	20.00
25.00	5.00	25.00	10.00	25.00	15.00	20.00	25.00	20.00	5.00	15.00	10.00	25.00
10.00	15.00	20.00	10.00	20.00	5.00	5.00	35.00	5.00	10.00	20.00	20.00	20.00
30.00	50.00	25.00	45.00	15.00	50.00	50.00	20.00	55.00	70.00	40.00	30.00	35.00
28.57	16.67	16.67	0.00	0.00	50.00	0.00	25.00	0.00	0.00	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
71.43	83.33	83.33	100.00	75.00	50.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00

BEAVERDREEK/BLACKHAWK
 Huntington #4
 Reference Area
 Exposure: SSW
 Slope: 34 deg.
 Sample Date: 16 Aug 1995

37.00	38.00	39.00	40.00	Mean	SDev	Freq	
<hr/>							TRACES & SHRUBS
25.00	0.00	0.00	15.00	3.05	5.92	25.00	Pinus edulis
0.00	0.00	0.00	0.00	0.88	2.71	12.50	Cercocarpus ledifolius
0.00	0.00	0.00	0.00	1.13	4.94	7.50	Juniperus osteosperma
 							FORBS
0.00	0.00	0.00	0.00	0.38	1.73	5.00	Descurainia pinnata
 							GRASSES
0.00	15.00	10.00	15.00	18.50	9.89	92.50	Elymus salinus
0.00	0.00	0.00	0.00	1.08	2.71	15.00	Stipa hymenoides
<hr/>							COVER
10.00	0.00	0.00	10.00	6.13	11.75		Overstory
25.00	15.00	10.00	30.00	25.00	8.73		Understory
20.00	5.00	5.00	5.00	20.38	18.21		Litter
35.00	5.00	10.00	30.00	14.13	8.72		Background
20.00	75.00	75.00	35.00	40.50	20.85		Rock
<hr/>							% COMPOSITION
100.00	0.00	0.00	50.00	18.23	25.83		Shrubs
0.00	0.00	0.00	0.00	1.25	5.45		Forbs
0.00	100.00	100.00	50.00	80.52	26.72		Grasses

BEAVERCREEK/BLACKHAWK

Huntington #4

Reclaimed Riparian

Exposure: E

Slope: 2 deg

Sample Date: 18 Aug 1995

	1.00	2.00	3.00	4.00	5.00	Mean	SDev	Freq
<hr/>								
TREES & SHRUBS								
Salix lutea	10.00	25.00	35.00	10.00	30.00	22.00	10.30	100.00
<hr/>								
FORBS								
Medicago officinalis	10.00	5.00	0.00	0.00	3.00	3.50	3.72	60.00
Cirsium sp.	5.00	0.00	0.00	0.00	0.00	1.00	2.00	20.00
Taraxicum officinale	0.00	0.00	0.00	0.00	2.00	0.40	0.80	20.00
Geranium richardsonii	0.00	0.00	10.00	0.00	1.00	2.20	3.92	40.00
Equisetum arvensis	10.00	0.00	0.00	0.00	34.00	8.80	13.18	40.00
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GRASSES								
Dactylis glomeratus	30.00	20.00	5.00	10.00	0.00	13.00	10.77	80.00
Poa secunda	0.00	20.00	0.00	0.00	0.00	4.00	8.00	20.00
Phleum alpinum	0.00	5.00	10.00	10.00	0.00	5.00	4.47	60.00
Agrostis stolonifera	0.00	0.00	10.00	30.00	0.00	8.00	11.66	40.00
<hr/>								
COVER								
Overstory	0.00	0.00	0.00	0.00	10.00	2.00	4.00	
Understory	65.00	75.00	70.00	60.00	70.00	68.00	5.10	
Litter	5.00	5.00	5.00	10.00	10.00	7.00	2.45	
Bareground	5.00	5.00	10.00	10.00	10.00	8.00	2.45	
Rock	25.00	15.00	15.00	20.00	10.00	17.00	5.10	
<hr/>								
% COMPOSITION								
Shrubs	15.38	33.33	50.00	16.67	42.86	31.65	13.81	
Forbs	38.46	6.67	14.29	0.00	57.14	23.31	21.34	
Grasses	46.15	60.00	35.71	83.33	0.00	45.04	27.59	

BEAVERCREEK/BLACKHAWK

Huntington #4

Riparian Reference Area

Exposure: E

1 thru 5 Upstream

6 thru 10 Downstream

Slope: 2 deg

Sample Date: 18 Aug 1955

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

TREES & SHRUBS

<i>Juniperus scopulorum</i>	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Picea engelmannii</i>	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Rosa woodsii</i>	0.00	0.00	20.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
<i>Cornus stolonifera</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Abies concolor</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Populus tremuloides</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Salix lutea</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	40.00

FORBS

<i>Cirsium</i> sp.	0.00	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
<i>Equisetum arvense</i>	50.00	55.00	25.00	10.00	15.00	10.00	5.00	0.00	0.00	10.00
<i>Geranium richardsonii</i>	0.00	5.00	0.00	0.00	0.00	5.00	10.00	0.00	0.00	0.00
<i>Taraxicum officinale</i>	0.00	0.00	5.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00
<i>Nasturtium officinale</i>	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Ranunculus cymbalaria</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00

GRASSES

<i>Dactylis glomerata</i>	0.00	0.00	0.00	0.00	0.00	30.00	5.00	20.00	10.00	0.00
<i>Juncus</i> sp.	0.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus inermis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
<i>Catabrosa aquatica</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	10.00
<i>Agrostis stolonifera</i>	0.00	0.00	10.00	30.00	45.00	5.00	40.00	15.00	0.00	0.00

COVER

Overstory	10.00	10.00	15.00	10.00	20.00	5.00	0.00	0.00	0.00	0.00
Understory	75.00	75.00	70.00	55.00	65.00	50.00	70.00	55.00	65.00	60.00
Litter	20.00	5.00	28.00	5.00	1.00	5.00	5.00	5.00	25.00	5.00
Bareground	2.00	19.00	1.00	39.00	33.00	10.00	20.00	35.00	5.00	10.00
Rock	3.00	1.00	1.00	1.00	1.00	35.00	5.00	5.00	5.00	25.00
Over + Understory	85.00	85.00	85.00	65.00	85.00	55.00	70.00	55.00	65.00	60.00

% COMPOSITION

Shrubs	20.00	13.33	42.86	0.00	0.00	0.00	0.00	18.18	38.46	66.67
Forbs	80.00	86.67	42.86	36.36	23.08	30.00	35.71	0.00	15.38	16.67
Grasses	0.00	0.00	14.29	63.64	76.92	70.00	64.29	81.82	46.15	16.67

BEAVERCREEK/BLACKHAWK
 Huntington #4
 Riparian Reference Area
 Exposure: E
 Slope: 2 deg
 Sample Date: 18 Aug 1995

Mean	SDev	Freq	
<hr/>			
TREES & SHRUBS			
1.00	2.00	20.00	Juniperus scopulorum
1.00	3.00	10.00	Picea engelmannii
3.00	6.40	20.00	Rosa woodsii
0.50	1.50	10.00	Cornus stolonifera
0.50	1.50	10.00	Abies concolor
0.50	1.50	10.00	Populus tremuloides
6.50	13.43	20.00	Salix lutea
FORBS			
1.00	2.00	20.00	Cirsium sp.
19.00	20.47	20.00	Equisetum arvense
2.00	3.32	30.00	Geranium richardsonii
1.50	2.29	30.00	Taraxicum officinale
1.00	3.00	10.00	Nasturtium officinale
0.50	1.50	10.00	Ranunculus cymbalaria
GRASSES			
6.50	10.01	40.00	Dactylis glomeratus
1.00	2.00	20.00	Juncus sp.
2.00	6.00	10.00	Bromus inermis
2.00	4.00	20.00	Catabrosa aquatica
14.50	16.65	60.00	Agrostis stolonifera
<hr/>			
COVER			
7.00	6.78		Overstory
64.00	8.31		Understory
10.40	9.37		Litter
17.40	13.41		Bareground
8.20	11.25		Rock
71.00	12.21		
<hr/>			
% COMPOSITION			
19.95	21.65		Shrubs
36.67	26.16		Forbs
43.38	30.81		Grasses

APPENDIX B:

***RAW DATA
(Production)***

BLACKHAWK HUNTINGTON 4

LOWER RECLAIM

PRODUCTION

8-15-95

AREA-A	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	11.00	0.50	22.00	0.05	196.31	0.00	0.50	0.00	0.00	0.00	196.31	1.00
2.00	17.00	0.50	34.00	0.07	303.39	0.00	0.50	0.00	0.00	0.00	303.39	1.25
3.00	45.00	0.35	128.57	0.28	1147.28	0.00	0.50	0.00	0.00	0.00	1147.28	0.25
4.00	29.00	0.50	58.00	0.13	517.55	0.00	0.50	0.00	0.00	0.00	517.55	0.80
5.00	50.00	0.50	100.00	0.22	892.33	0.00	0.50	0.00	0.00	0.00	892.33	0.70
6.00	26.00	0.50	52.00	0.11	464.01	13.00	0.50	26.00	0.06	232.01	696.02	1.25
7.00	28.00	0.50	56.00	0.12	499.71	0.00	0.50	0.00	0.00	0.00	499.71	1.00
8.00	43.00	0.50	86.00	0.19	767.41	4.00	0.50	8.00	0.02	71.39	838.79	1.00
9.00	36.00	0.50	72.00	0.16	642.48	0.00	0.50	0.00	0.00	0.00	642.48	1.00
10.00	31.00	0.50	62.00	0.14	553.25	0.00	0.50	0.00	0.00	0.00	553.25	0.70

AREA-B	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	66.00	0.40	165.00	0.36	1472.35	6.00	0.50	12.00	0.03	107.08	1579.43	1.00
2.00	24.00	0.50	48.00	0.11	428.32	9.00	0.50	18.00	0.04	160.62	588.94	0.60
3.00	25.00	0.50	50.00	0.11	446.17	22.00	0.50	44.00	0.10	392.63	838.79	0.75
4.00	46.00	0.40	115.00	0.25	1026.18	2.00	0.50	4.00	0.01	35.69	1061.88	0.50
5.00	15.00	0.50	30.00	0.07	267.70	19.00	0.50	38.00	0.08	339.09	606.79	0.85
6.00	25.00	0.50	50.00	0.11	446.17	5.00	0.50	10.00	0.02	89.23	535.40	0.60
7.00	52.00	0.50	104.00	0.23	928.03	1.00	0.50	2.00	0.00	17.85	945.87	0.50
8.00	47.00	0.50	94.00	0.21	838.79	27.00	0.50	54.00	0.12	481.86	1320.65	0.60
9.00	8.00	0.50	16.00	0.04	142.77	43.00	0.50	86.00	0.19	767.41	910.18	1.50
10.00	45.00	0.50	90.00	0.20	803.10	14.00	0.50	28.00	0.06	249.85	1052.95	1.20

AREA-C	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	14.00	0.50	28.00	0.06	249.85	7.00	0.50	14.00	0.03	124.93	374.78	1.50
2.00	21.00	0.50	42.00	0.09	374.78	2.00	0.50	4.00	0.01	35.69	410.47	1.20
3.00	12.00	0.50	24.00	0.05	214.16	12.00	0.50	24.00	0.05	214.16	428.32	1.00
4.00	44.00	0.50	88.00	0.19	785.25	0.00	0.50	0.00	0.00	0.00	785.25	1.00
5.00	14.00	0.50	28.00	0.06	249.85	5.00	0.50	10.00	0.02	89.23	339.09	0.50
6.00	17.00	0.50	34.00	0.07	303.39	0.00	0.50	0.00	0.00	0.00	303.39	1.00
7.00	17.00	0.50	34.00	0.07	303.39	2.00	0.50	4.00	0.01	35.69	339.09	1.50

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
196.31	0.00	196.31	1.00	196.31	0.00	196.31	1.00	196.31	0.00	196.31	1.00	196.31
379.24	0.00	379.24	1.00	303.39	0.00	303.39	1.00	303.39	0.00	303.39	1.00	303.39
286.82	0.00	286.82	0.30	344.19	0.00	344.19	1.00	1147.28	0.00	1147.28	0.70	803.10
414.04	0.00	414.04	1.40	724.57	0.00	724.57	2.00	1035.11	0.00	1035.11	1.00	517.55
624.63	0.00	624.63	1.00	892.33	0.00	892.33	1.00	892.33	0.00	892.33	1.00	892.33
580.02	290.01	870.02	0.80	371.21	185.61	556.82	0.30	139.20	69.60	208.81	2.50	1160.03
499.71	0.00	499.71	2.50	1249.27	0.00	1249.27	3.00	1499.12	0.00	1499.12	1.00	499.71
767.41	71.39	838.79	1.50	1151.11	107.08	1258.19	1.00	767.41	71.39	838.79	0.90	690.67
642.48	0.00	642.48	1.00	642.48	0.00	642.48	2.00	1284.96	0.00	1284.96	1.40	899.47
387.27	0.00	387.27	1.00	553.25	0.00	553.25	1.00	553.25	0.00	553.25	1.30	719.22

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
1472.35	107.08	1579.43	1.00	1472.35	107.08	1579.43	0.50	736.17	53.54	789.71	0.70	1030.84
256.99	96.37	353.36	1.00	428.32	160.62	588.94	1.00	428.32	160.62	588.94	2.50	1070.80
334.62	294.47	629.09	1.00	446.17	392.63	838.79	1.00	446.17	392.63	838.79	1.25	557.71
513.09	17.85	530.94	0.30	307.85	10.71	318.56	0.25	256.55	8.92	265.47	0.50	513.09
227.54	288.22	515.77	0.80	214.16	271.27	485.43	1.25	334.62	423.86	758.48	1.20	321.24
267.70	53.54	321.24	1.00	446.17	89.23	535.40	1.00	446.17	89.23	535.40	0.75	334.62
464.01	8.92	472.94	0.75	696.02	13.38	709.40	0.25	232.01	4.46	236.47	0.50	464.01
503.28	289.12	792.39	1.00	838.79	481.86	1320.65	1.00	838.79	481.86	1320.65	1.75	1467.89
214.16	1151.11	1365.27	0.85	121.36	652.30	773.65	1.00	142.77	767.41	910.18	1.20	171.33
963.72	299.82	1263.54	1.00	803.10	249.85	1052.95	2.00	1606.20	499.71	2105.91	1.00	803.10

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
374.78	187.39	562.17	0.50	124.93	62.46	187.39	1.00	249.85	124.93	374.78	1.00	249.85
449.74	42.83	492.57	1.20	449.74	42.83	492.57	1.00	374.78	35.69	410.47	2.00	749.56
214.16	214.16	428.32	1.00	214.16	214.16	428.32	1.20	256.99	256.99	513.98	1.20	256.99
785.25	0.00	785.25	0.50	392.63	0.00	392.63	1.00	785.25	0.00	785.25	1.00	785.25
124.93	44.62	169.54	1.00	249.85	89.23	339.09	1.00	249.85	89.23	339.09	1.00	249.85
303.39	0.00	303.39	2.00	606.79	0.00	606.79	2.00	606.79	0.00	606.79	4.00	1213.57
455.09	53.54	508.63	1.00	303.39	35.69	339.09	5.00	1516.97	178.47	1695.43	1.00	303.39

Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
0.00	196.31	196.31	0.00	0.00	0.00	196.31	0.00
0.00	303.39	318.56	30.34	0.00	0.00	318.56	30.34
0.00	803.10	745.74	373.53	0.00	0.00	745.74	373.53
0.00	517.55	641.77	221.04	0.00	0.00	641.77	221.04
0.00	892.33	838.79	107.08	0.00	0.00	838.79	107.08
580.02	1740.05	542.90	340.85	271.45	170.43	814.34	511.28
0.00	499.71	849.50	435.63	0.00	0.00	849.50	435.63
64.25	754.91	828.80	163.87	77.10	15.24	905.90	179.12
0.00	899.47	822.37	251.80	0.00	0.00	822.37	251.80
0.00	719.22	553.25	104.97	0.00	0.00	553.25	104.97
Tot Mean	Tot Std						
Herb=	Herb=	Wood=	Herb=	Total=	Total=		
633.80	219.15	34.85	82.15	668.65	229.88		

Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
74.96	1105.60	1236.77	303.18	89.95	22.05	1326.72	325.22
401.55	1472.35	522.55	282.04	195.96	105.77	718.51	387.81
490.78	1048.49	446.17	70.55	392.63	62.08	838.79	132.62
17.85	530.94	523.35	272.28	18.20	9.47	541.56	281.75
406.90	728.14	273.05	48.33	345.87	61.22	618.92	109.56
66.92	401.55	388.16	74.12	77.63	14.82	465.80	88.95
8.92	472.94	556.82	236.60	10.71	4.55	567.52	241.15
843.25	2311.14	897.51	313.40	515.59	180.04	1413.10	493.44
920.89	1092.22	158.48	32.05	851.82	172.28	1010.30	204.33
249.85	1052.95	995.84	311.45	309.82	96.90	1305.66	408.35
Tot Mean	Tot Std						
Herb=	Herb=	Wood=	Herb=	Total=	Total=		
599.87	321.68	280.82	250.12	880.69	340.82		

Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
124.93	374.78	249.85	79.01	124.93	39.51	374.78	118.52
71.39	820.95	479.72	139.02	45.69	13.24	525.41	152.26
256.99	513.98	231.29	20.98	231.29	20.98	462.59	41.97
0.00	785.25	706.73	157.05	0.00	0.00	706.73	157.05
89.23	339.09	224.87	49.97	80.31	17.85	305.18	67.82
0.00	1213.57	606.79	332.35	0.00	0.00	606.79	332.35
35.69	339.09	576.45	473.92	67.82	55.75	644.26	529.67
Tot Mean	Tot Std						
Herb=	Herb=	Wood=	Herb=	Total=	Total=		
439.38	187.14	78.58	74.66	517.96	135.42		

AREA-D	Wt Herb g/m2	Proportion	Tot. Herb g/m	Tot. Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot. wood g/m	Tot. Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	34.00	0.50	68.00	0.15	606.79	7.00	0.50	14.00	0.03	124.93	731.71	0.75
2.00	32.00	0.50	64.00	0.14	571.09	12.00	0.50	24.00	0.05	214.16	785.25	1.00
3.00	21.00	0.50	42.00	0.09	374.78	2.00	0.50	4.00	0.01	35.69	410.47	1.00
4.00	30.00	0.50	60.00	0.13	535.40	5.00	0.50	10.00	0.02	89.23	624.63	0.75
5.00	33.00	0.50	66.00	0.15	588.94	10.00	0.50	20.00	0.04	178.47	767.41	0.75
6.00	7.00	0.50	14.00	0.03	124.93	15.00	0.50	30.00	0.07	267.70	392.63	0.30
7.00	19.00	0.50	38.00	0.08	339.09	0.00	0.50	0.00	0.00	0.00	339.09	1.00

AREA-E	Wt Herb g/m2	Proportion	Tot. Herb g/m	Tot. Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot. wood g/m	Tot. Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	53.00	0.50	106.00	0.23	945.87	0.00	0.50	0.00	0.00	0.00	945.87	0.75
2.00	60.00	0.50	120.00	0.26	1070.80	0.00	0.50	0.00	0.00	0.00	1070.80	0.50
3.00	38.00	0.50	76.00	0.17	678.17	0.00	0.50	0.00	0.00	0.00	678.17	0.70
4.00	28.00	0.50	56.00	0.12	499.71	26.00	0.50	52.00	0.11	464.01	963.72	1.00
5.00	37.00	0.25	148.00	0.33	1320.65	4.00	0.50	8.00	0.02	71.39	1392.04	0.75
6.00	35.00	0.50	70.00	0.15	624.63	13.00	0.50	26.00	0.06	232.01	856.64	0.75
7.00	28.00	0.50	56.00	0.12	499.71	0.00	0.50	0.00	0.00	0.00	499.71	1.00
8.00	19.00	0.50	38.00	0.08	339.09	5.00	0.50	10.00	0.02	89.23	428.32	1.50

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
455.09	93.69	548.78	1.00	606.79	124.93	731.71	1.50	910.18	187.39	1097.57	1.00	606.79
571.09	214.16	785.25	1.00	571.09	214.16	785.25	1.00	571.09	214.16	785.25	0.50	285.55
374.78	35.69	410.47	1.00	374.78	35.69	410.47	1.00	374.78	35.69	410.47	1.00	374.78
401.55	66.92	468.47	1.00	535.40	89.23	624.63	0.75	401.55	66.92	468.47	1.00	535.40
441.70	133.85	575.55	1.00	588.94	178.47	767.41	0.80	471.15	142.77	613.92	1.00	588.94
37.48	80.31	117.79	0.30	37.48	80.31	117.79	0.50	62.46	133.85	196.31	1.00	124.93
339.09	0.00	339.09	1.00	339.09	0.00	339.09	1.00	339.09	0.00	339.09	1.00	339.09

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
709.40	0.00	709.40	0.80	756.70	0.00	756.70	1.00	945.87	0.00	945.87	1.00	945.87
535.40	0.00	535.40	0.50	535.40	0.00	535.40	1.00	1070.80	0.00	1070.80	0.50	535.40
474.72	0.00	474.72	1.00	678.17	0.00	678.17	1.00	678.17	0.00	678.17	1.00	678.17
499.71	464.01	963.72	1.00	499.71	464.01	963.72	1.25	624.63	580.02	1204.65	0.50	249.85
990.49	53.54	1044.03	0.70	924.46	49.97	974.43	0.50	660.33	35.69	696.02	0.50	660.33
468.47	174.00	642.48	0.75	468.47	174.00	642.48	1.50	936.95	348.01	1284.96	1.50	936.95
499.71	0.00	499.71	1.00	499.71	0.00	499.71	1.00	499.71	0.00	499.71	0.50	249.85
508.63	133.85	642.48	1.50	508.63	133.85	642.48	2.00	678.17	178.47	856.64	1.00	339.09

d Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
124.93	731.71	637.13	148.63	131.17	30.60	768.30	179.23
107.08	392.63	513.98	114.22	192.74	42.83	706.73	157.05
35.69	410.47	374.78	0.00	35.69	0.00	410.47	0.00
89.23	624.63	481.86	65.57	80.31	10.93	562.17	76.50
178.47	767.41	535.93	65.58	162.40	19.87	698.34	85.45
267.70	392.63	77.45	39.82	165.97	85.33	243.43	125.15
0.00	339.09	339.09	0.00	0.00	0.00	339.09	0.00
Tot Mean		Tot Std		Tot Mean	Tot Std	Tot Mean	Tot Std
Herb=		Herb=		Wood=	Herb=	Total=	Total=
		422.89	168.66	109.76	67.27	532.65	189.06

d Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
0.00	945.87	860.74	105.33	0.00	0.00	860.74	105.33
0.00	535.40	749.56	262.29	0.00	0.00	749.56	262.29
0.00	678.17	637.48	81.38	0.00	0.00	637.48	81.38
232.01	481.86	474.72	122.40	440.81	113.66	915.53	236.06
35.69	696.02	911.25	244.94	49.26	13.24	960.51	258.18
348.01	1284.96	687.10	211.82	255.21	78.68	942.30	290.50
0.00	249.85	449.74	99.94	0.00	0.00	449.74	99.94
89.23	428.32	474.72	126.87	124.93	33.39	599.65	160.26
Tot Mean		Tot Std		Tot Mean	Tot Std	Tot Mean	Tot Std
Herb=		Herb=		Wood=	Herb=	Total=	Total=
		655.66	167.86	108.78	151.17	764.44	174.90

BLACKHAWK HUNTINGTON 4

LOWER RECLAIM A-E (combined) PRODUCTION

8-15-95

*AREA	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m	Wood lbs/Ac	Tot. lbs/Ac
A 1.00	11.00	0.50	22.00	0.05	196.31	0.00	0.50	0.00	0.00	0.00	196.31
2.00	17.00	0.50	34.00	0.07	303.39	0.00	0.50	0.00	0.00	0.00	303.39
3.00	45.00	0.35	128.57	0.28	1147.28	0.00	0.50	0.00	0.00	0.00	1147.28
4.00	29.00	0.50	58.00	0.13	517.55	0.00	0.50	0.00	0.00	0.00	517.55
5.00	50.00	0.50	100.00	0.22	892.33	0.00	0.50	0.00	0.00	0.00	892.33
6.00	26.00	0.50	52.00	0.11	464.01	13.00	0.50	26.00	0.06	232.01	696.02
7.00	28.00	0.50	56.00	0.12	499.71	0.00	0.50	0.00	0.00	0.00	499.71
8.00	43.00	0.50	86.00	0.19	767.41	4.00	0.50	8.00	0.02	71.39	838.79
9.00	36.00	0.50	72.00	0.16	642.48	0.00	0.50	0.00	0.00	0.00	642.48
10.00	31.00	0.50	62.00	0.14	553.25	0.00	0.50	0.00	0.00	0.00	553.25
Area B 1.00	66.00	0.40	165.00	0.36	1472.35	6.00	0.50	12.00	0.03	107.08	1579.43
2.00	24.00	0.50	48.00	0.11	428.32	9.00	0.50	18.00	0.04	160.62	588.94
3.00	25.00	0.50	50.00	0.11	446.17	22.00	0.50	44.00	0.10	392.63	838.79
4.00	46.00	0.40	115.00	0.25	1026.18	2.00	0.50	4.00	0.01	35.69	1061.88
5.00	15.00	0.50	30.00	0.07	267.70	19.00	0.50	38.00	0.08	339.09	606.79
6.00	25.00	0.50	50.00	0.11	446.17	5.00	0.50	10.00	0.02	89.23	535.40
7.00	52.00	0.50	104.00	0.23	928.03	1.00	0.50	2.00	0.00	17.85	945.87
8.00	47.00	0.50	94.00	0.21	838.79	27.00	0.50	54.00	0.12	481.86	1320.65
9.00	8.00	0.50	16.00	0.04	142.77	43.00	0.50	86.00	0.19	767.41	910.18
10.00	45.00	0.50	90.00	0.20	803.10	14.00	0.50	28.00	0.06	249.85	1052.95
Area C 1.00	14.00	0.50	28.00	0.06	249.85	7.00	0.50	14.00	0.03	124.93	374.78
2.00	21.00	0.50	42.00	0.09	374.78	2.00	0.50	4.00	0.01	35.69	410.47
3.00	12.00	0.50	24.00	0.05	214.16	12.00	0.50	24.00	0.05	214.16	428.32
4.00	44.00	0.50	88.00	0.19	785.25	0.00	0.50	0.00	0.00	0.00	785.25
5.00	14.00	0.50	28.00	0.06	249.85	5.00	0.50	10.00	0.02	89.23	339.09
6.00	17.00	0.50	34.00	0.07	303.39	0.00	0.50	0.00	0.00	0.00	303.39
7.00	17.00	0.50	34.00	0.07	303.39	2.00	0.50	4.00	0.01	35.69	339.09
Area D 1.00	34.00	0.50	68.00	0.15	606.79	7.00	0.50	14.00	0.03	124.93	731.71
2.00	32.00	0.50	64.00	0.14	571.09	12.00	0.50	24.00	0.05	214.16	785.25
3.00	21.00	0.50	42.00	0.09	374.78	2.00	0.50	4.00	0.01	35.69	410.47
4.00	30.00	0.50	60.00	0.13	535.40	5.00	0.50	10.00	0.02	89.23	624.63
5.00	33.00	0.50	66.00	0.15	588.94	10.00	0.50	20.00	0.04	178.47	767.41
6.00	7.00	0.50	14.00	0.03	124.93	15.00	0.50	30.00	0.07	267.70	392.63
7.00	19.00	0.50	38.00	0.08	339.09	0.00	0.50	0.00	0.00	0.00	339.09
Area E 1.00	53.00	0.50	106.00	0.23	945.87	0.00	0.50	0.00	0.00	0.00	945.87
2.00	60.00	0.50	120.00	0.26	1070.80	0.00	0.50	0.00	0.00	0.00	1070.80
3.00	38.00	0.50	76.00	0.17	678.17	0.00	0.50	0.00	0.00	0.00	678.17
4.00	28.00	0.50	56.00	0.12	499.71	26.00	0.50	52.00	0.11	464.01	963.72
5.00	37.00	0.25	148.00	0.33	1320.65	4.00	0.50	8.00	0.02	71.39	1392.04
6.00	35.00	0.50	70.00	0.15	624.63	13.00	0.50	26.00	0.06	232.01	856.64
7.00	28.00	0.50	56.00	0.12	499.71	0.00	0.50	0.00	0.00	0.00	499.71
8.00	19.00	0.50	38.00	0.08	339.09	5.00	0.50	10.00	0.02	89.23	428.32

Prop. a	a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac
1.00	196.31	0.00	196.31	1.00	196.31	0.00	196.31	1.00	196.31	0.00	196.31
1.25	379.24	0.00	379.24	1.00	303.39	0.00	303.39	1.00	303.39	0.00	303.39
0.25	286.82	0.00	286.82	0.30	344.19	0.00	344.19	1.00	1147.28	0.00	1147.28
0.80	414.04	0.00	414.04	1.40	724.57	0.00	724.57	2.00	1035.11	0.00	1035.11
0.70	624.63	0.00	624.63	1.00	892.33	0.00	892.33	1.00	892.33	0.00	892.33
1.25	580.02	290.01	870.02	0.80	371.21	185.61	556.82	0.30	139.20	69.60	208.81
1.00	499.71	0.00	499.71	2.50	1249.27	0.00	1249.27	3.00	1499.12	0.00	1499.12
1.00	767.41	71.39	838.79	1.50	1151.11	107.08	1258.19	1.00	767.41	71.39	838.79
1.00	642.48	0.00	642.48	1.00	642.48	0.00	642.48	2.00	1284.96	0.00	1284.96
0.70	387.27	0.00	387.27	1.00	553.25	0.00	553.25	1.00	553.25	0.00	553.25
1.00	1472.35	107.08	1579.43	1.00	1472.35	107.08	1579.43	0.50	736.17	53.54	789.71
0.60	256.99	96.37	353.36	1.00	428.32	160.62	588.94	1.00	428.32	160.62	588.94
0.75	334.62	294.47	629.09	1.00	446.17	392.63	838.79	1.00	446.17	392.63	838.79
0.50	513.09	17.85	530.94	0.30	307.85	10.71	318.56	0.25	256.55	8.92	265.47
0.85	227.54	288.22	515.77	0.80	214.16	271.27	485.43	1.25	334.62	423.86	758.48
0.60	267.70	53.54	321.24	1.00	446.17	89.23	535.40	1.00	446.17	89.23	535.40
0.50	464.01	8.92	472.94	0.75	696.02	13.38	709.40	0.25	232.01	4.46	236.47
0.60	503.28	289.12	792.39	1.00	838.79	481.86	1320.65	1.00	838.79	481.86	1320.65
1.50	214.16	1151.11	1365.27	0.85	121.36	652.30	773.65	1.00	142.77	767.41	910.18
1.20	963.72	299.82	1263.54	1.00	803.10	249.85	1052.95	2.00	1606.20	499.71	2105.91
1.50	374.78	187.39	562.17	0.50	124.93	62.46	187.39	1.00	249.85	124.93	374.78
1.20	449.74	42.83	492.57	1.20	449.74	42.83	492.57	1.00	374.78	35.69	410.47
1.00	214.16	214.16	428.32	1.00	214.16	214.16	428.32	1.20	256.99	256.99	513.98
1.00	785.25	0.00	785.25	0.50	392.63	0.00	392.63	1.00	785.25	0.00	785.25
0.50	124.93	44.62	169.54	1.00	249.85	89.23	339.09	1.00	249.85	89.23	339.09
1.00	303.39	0.00	303.39	2.00	606.79	0.00	606.79	2.00	606.79	0.00	606.79
1.50	455.09	53.54	508.63	1.00	303.39	35.69	339.09	5.00	1516.97	178.47	1695.43
0.75	455.09	93.69	548.78	1.00	606.79	124.93	731.71	1.50	910.18	187.39	1097.57
1.00	571.09	214.16	785.25	1.00	571.09	214.16	785.25	1.00	571.09	214.16	785.25
1.00	374.78	35.69	410.47	1.00	374.78	35.69	410.47	1.00	374.78	35.69	410.47
0.75	401.55	66.92	468.47	1.00	535.40	89.23	624.63	0.75	401.55	66.92	468.47
0.75	441.70	133.85	575.55	1.00	588.94	178.47	767.41	0.80	471.15	142.77	613.92
0.30	37.48	80.31	117.79	0.30	37.48	80.31	117.79	0.50	62.46	133.85	196.31
1.00	339.09	0.00	339.09	1.00	339.09	0.00	339.09	1.00	339.09	0.00	339.09
0.75	709.40	0.00	709.40	0.80	756.70	0.00	756.70	1.00	945.87	0.00	945.87
0.50	535.40	0.00	535.40	0.50	535.40	0.00	535.40	1.00	1070.80	0.00	1070.80
0.70	474.72	0.00	474.72	1.00	678.17	0.00	678.17	1.00	678.17	0.00	678.17
1.00	499.71	464.01	963.72	1.00	499.71	464.01	963.72	1.25	624.63	580.02	1204.65
0.75	990.49	53.54	1044.03	0.70	924.46	49.97	974.43	0.50	660.33	35.69	696.02
0.75	468.47	174.00	642.48	0.75	468.47	174.00	642.48	1.50	936.95	348.01	1284.96
1.00	499.71	0.00	499.71	1.00	499.71	0.00	499.71	1.00	499.71	0.00	499.71
1.50	508.63	133.85	642.48	1.50	508.63	133.85	642.48	2.00	678.17	178.47	856.64

Prop. d	d Herb.lbs/Ac	d Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
1.00	196.31	0.00	196.31	196.31	0.00	0.00	0.00	196.31	0.00
1.00	303.39	0.00	303.39	318.56	30.34	0.00	0.00	318.56	30.34
0.70	803.10	0.00	803.10	745.74	373.53	0.00	0.00	745.74	373.53
1.00	517.55	0.00	517.55	641.77	221.04	0.00	0.00	641.77	221.04
1.00	892.33	0.00	892.33	838.79	107.08	0.00	0.00	838.79	107.08
2.50	1160.03	580.02	1740.05	542.90	340.85	271.45	170.43	814.34	511.28
1.00	499.71	0.00	499.71	849.50	435.63	0.00	0.00	849.50	435.63
0.90	690.67	64.25	754.91	828.80	163.87	77.10	15.24	905.90	179.12
1.40	899.47	0.00	899.47	822.37	251.80	0.00	0.00	822.37	251.80
1.30	719.22	0.00	719.22	553.25	104.97	0.00	0.00	553.25	104.97
0.70	1030.64	74.96	1105.60	1236.77	303.18	89.95	22.05	1326.72	325.22
2.50	1070.80	401.55	1472.35	522.55	282.04	195.96	105.77	718.51	387.81
1.25	557.71	490.78	1048.49	446.17	70.55	392.63	62.08	838.79	132.62
0.50	513.09	17.85	530.94	523.35	272.28	18.20	9.47	541.56	281.75
1.20	321.24	406.90	728.14	273.05	48.33	345.87	61.22	618.92	109.56
0.75	334.62	66.92	401.55	388.16	74.12	77.63	14.82	465.80	88.95
0.50	464.01	8.92	472.94	556.82	236.60	10.71	4.55	567.52	241.15
1.75	1467.89	843.25	2311.14	897.51	313.40	515.59	180.04	1413.10	493.44
1.20	171.33	920.89	1092.22	158.48	32.05	851.82	172.28	1010.30	204.33
1.00	803.10	249.85	1052.95	995.84	311.45	309.82	96.90	1305.66	408.35
1.00	249.85	124.93	374.78	249.85	79.01	124.93	39.51	374.78	118.52
2.00	749.56	71.39	820.95	479.72	139.02	45.69	13.24	525.41	152.26
1.20	256.99	256.99	513.98	231.29	20.98	231.29	20.98	462.59	41.97
1.00	785.25	0.00	785.25	706.73	157.05	0.00	0.00	706.73	157.05
1.00	249.85	89.23	339.09	224.87	49.97	80.31	17.85	305.18	67.82
1.00	1213.57	0.00	1213.57	606.79	332.35	0.00	0.00	606.79	332.35
1.00	303.39	35.69	339.09	576.45	473.92	67.82	55.75	644.26	529.67
1.00	606.79	124.93	731.71	637.13	148.63	131.17	30.60	768.30	179.23
0.50	285.55	107.08	392.63	513.98	114.22	192.74	42.83	706.73	157.05
1.00	374.78	35.69	410.47	374.78	0.00	35.69	0.00	410.47	0.00
1.00	535.40	89.23	624.63	481.86	65.57	80.31	10.93	562.17	76.50
1.00	588.94	178.47	767.41	535.93	65.58	162.40	19.87	698.34	85.45
1.00	124.93	267.70	392.63	77.45	39.82	165.97	85.33	243.43	125.15
1.00	339.09	0.00	339.09	339.09	0.00	0.00	0.00	339.09	0.00
1.00	945.87	0.00	945.87	860.74	105.33	0.00	0.00	860.74	105.33
0.50	535.40	0.00	535.40	749.56	262.29	0.00	0.00	749.56	262.29
1.00	678.17	0.00	678.17	637.48	81.38	0.00	0.00	637.48	81.38
0.50	249.85	232.01	481.86	474.72	122.40	440.81	113.66	915.53	236.06
0.50	660.33	35.69	696.02	911.25	244.94	49.26	13.24	960.51	258.18
1.50	936.95	348.01	1284.96	687.10	211.82	255.21	78.68	942.30	290.50
0.50	249.85	0.00	249.85	449.74	99.94	0.00	0.00	449.74	99.94
1.00	339.09	89.23	428.32	474.72	126.87	124.93	33.39	599.65	160.26
				Tot Mean	Tot Std	Tot Mean	Tot Std	Tot Mean	Tot Std
				Herb=	Herb=	Wood=	Herb=	Total=	Total=
				562.33	246.96	127.27	175.20	689.60	271.96

BLACKHAWK HUNTINGTON 4

RECLAIMED RD.

PRODUCTION

8-17-95

AREA	Wt Herb g/m2	Proportion	Tot. Herb g/m	Tot. Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot. wood g/m	Tot. Wood lbs/m2	Wood lbs/Ac	Tot. lbs/Ac	Prop. a
00	17.00	0.50	34.00	0.07	303.39	23.00	0.50	46.00	0.10	410.47	713.87	0.50
2.00	25.00	0.50	50.00	0.11	446.17	18.00	0.50	36.00	0.08	321.24	767.41	1.00
3.00	9.00	0.50	18.00	0.04	160.62	28.00	0.50	56.00	0.12	499.71	660.33	1.00
4.00	14.00	0.50	28.00	0.06	249.85	13.00	0.50	26.00	0.06	232.01	481.86	0.80
5.00	1.00	0.50	2.00	0.00	17.85	30.00	0.50	60.00	0.13	535.40	553.25	1.00
6.00	40.00	0.50	80.00	0.18	713.87	0.00	0.50	0.00	0.00	0.00	713.87	0.75
7.00	17.00	0.50	34.00	0.07	303.39	12.00	0.50	24.00	0.05	214.16	517.55	0.40
8.00	36.00	0.50	72.00	0.16	642.48	0.00	0.50	0.00	0.00	0.00	642.48	0.75
9.00	36.00	0.50	72.00	0.16	642.48	2.00	0.50	4.00	0.01	35.69	678.17	1.50
10.00	43.00	0.50	86.00	0.19	767.41	0.00	0.50	0.00	0.00	0.00	767.41	1.00
11.00	52.00	0.50	104.00	0.23	928.03	0.00	0.50	0.00	0.00	0.00	928.03	1.50
12.00	38.00	0.25	152.00	0.34	1356.35	25.00	0.50	50.00	0.11	446.17	1802.51	1.00
13.00	40.00	0.50	80.00	0.18	713.87	44.00	0.50	88.00	0.19	785.25	1499.12	1.25
14.00	47.00	0.25	188.00	0.41	1677.59	4.00	0.50	8.00	0.02	71.39	1748.97	0.70
15.00	13.00	0.50	26.00	0.06	232.01	10.00	0.50	20.00	0.04	178.47	410.47	1.00
16.00	43.00	0.50	86.00	0.19	767.41	6.00	1.00	6.00	0.01	53.54	820.95	1.25
17.00	62.00	0.50	124.00	0.27	1106.49	0.00	0.50	0.00	0.00	0.00	1106.49	0.85
18.00	24.00	1.00	24.00	0.05	214.16	0.00	0.50	0.00	0.00	0.00	214.16	0.80
19.00	14.00	0.50	28.00	0.06	249.85	7.00	0.50	14.00	0.03	124.93	374.78	1.00
20.00	18.00	0.50	36.00	0.08	321.24	26.00	0.50	52.00	0.11	464.01	785.25	0.85
21.00	13.00	0.50	26.00	0.06	232.01	0.00	0.50	0.00	0.00	0.00	232.01	2.00
22.00	47.00	0.50	94.00	0.21	838.79	0.00	0.50	0.00	0.00	0.00	838.79	1.00
23.00	26.00	0.50	52.00	0.11	464.01	13.00	0.50	26.00	0.06	232.01	696.02	0.50
24.00	41.00	0.25	164.00	0.36	1463.43	14.00	0.50	28.00	0.06	249.85	1713.28	1.50
25.00	49.00	0.25	196.00	0.43	1748.97	0.00	0.50	0.00	0.00	0.00	1748.97	1.00
00	22.00	0.50	44.00	0.10	392.63	0.00	0.50	0.00	0.00	0.00	392.63	1.00
00	1.00	0.50	2.00	0.00	17.85	8.00	0.50	16.00	0.04	142.77	160.62	1.00
28.00	23.00	0.25	92.00	0.20	820.95	23.00	0.50	46.00	0.10	410.47	1231.42	1.00
29.00	29.00	0.50	58.00	0.13	517.55	29.00	0.50	58.00	0.13	517.55	1035.11	1.00
30.00	19.00	0.50	38.00	0.08	339.09	19.00	0.50	38.00	0.08	339.09	678.17	1.00

Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
151.70	205.24	356.93	1.00	303.39	410.47	713.87	1.25	379.24	513.09	892.33	0.75	227.54
446.17	321.24	767.41	1.00	446.17	321.24	767.41	1.00	446.17	321.24	767.41	0.80	356.93
160.62	499.71	660.33	1.00	160.62	499.71	660.33	0.50	80.31	249.85	330.16	0.80	128.50
199.88	185.61	385.49	0.75	187.39	174.00	361.39	1.00	249.85	232.01	481.86	0.80	199.88
17.85	535.40	553.25	0.25	4.46	133.85	138.31	0.25	4.46	133.85	138.31	1.00	17.85
535.40	0.00	535.40	1.00	713.87	0.00	713.87	1.50	1070.80	0.00	1070.80	0.30	214.16
121.36	85.66	207.02	1.50	455.09	321.24	776.33	1.25	379.24	267.70	646.94	1.00	303.39
481.86	0.00	481.86	0.80	513.98	0.00	513.98	0.80	513.98	0.00	513.98	1.00	642.48
963.72	53.54	1017.26	1.00	642.48	35.69	678.17	2.00	1284.96	71.39	1356.35	1.00	642.48
767.41	0.00	767.41	1.00	767.41	0.00	767.41	1.00	767.41	0.00	767.41	4.00	3069.62
1392.04	0.00	1392.04	1.50	1392.04	0.00	1392.04	1.00	928.03	0.00	928.03	1.00	928.03
1356.35	446.17	1802.51	0.50	678.17	223.08	901.26	0.75	1017.26	334.62	1351.88	0.10	135.63
892.33	981.57	1873.90	1.25	892.33	981.57	1873.90	1.00	713.87	785.25	1499.12	0.50	356.93
1174.31	49.97	1224.28	1.00	1677.59	71.39	1748.97	1.00	1677.59	71.39	1748.97	1.50	2516.38
232.01	178.47	410.47	1.20	278.41	214.16	492.57	2.50	580.02	446.17	1026.18	1.50	348.01
959.26	66.92	1026.18	1.25	959.26	66.92	1026.18	2.00	1534.81	107.08	1641.89	0.50	383.70
940.52	0.00	940.52	0.60	663.90	0.00	663.90	1.00	1106.49	0.00	1106.49	1.50	1659.74
171.33	0.00	171.33	1.20	256.99	0.00	256.99	2.00	428.32	0.00	428.32	0.50	107.08
249.85	124.93	374.78	1.00	249.85	124.93	374.78	0.50	124.93	62.46	187.39	1.00	249.85
273.05	394.41	667.46	1.00	321.24	464.01	785.25	1.00	321.24	464.01	785.25	1.00	321.24
464.01	0.00	464.01	2.00	464.01	0.00	464.01	1.00	232.01	0.00	232.01	1.20	278.41
838.79	0.00	838.79	1.00	838.79	0.00	838.79	1.00	838.79	0.00	838.79	1.00	838.79
232.01	116.00	348.01	1.00	464.01	232.01	696.02	0.50	232.01	116.00	348.01	1.00	464.01
2195.14	374.78	2569.92	1.00	1463.43	249.85	1713.28	0.75	1097.57	187.39	1284.96	0.50	731.71
1748.97	0.00	1748.97	1.00	1748.97	0.00	1748.97	1.00	1748.97	0.00	1748.97	0.30	524.69
392.63	0.00	392.63	1.50	588.94	0.00	588.94	2.00	785.25	0.00	785.25	1.00	392.63
17.85	142.77	160.62	1.00	17.85	142.77	160.62	1.00	17.85	142.77	160.62	1.00	17.85
820.95	410.47	1231.42	1.00	820.95	410.47	1231.42	1.70	1395.61	697.80	2093.41	0.80	656.76
517.55	517.55	1035.11	1.00	517.55	517.55	1035.11	1.00	517.55	517.55	1035.11	1.00	517.55
339.09	339.09	678.17	1.00	339.09	339.09	678.17	1.00	339.09	339.09	678.17	1.00	339.09

d Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
307.85	535.40	273.05	77.35	369.43	104.65	642.48	182.00
256.99	613.92	428.32	35.69	308.39	25.70	736.71	61.39
399.77	528.26	138.13	31.47	429.75	97.92	567.88	129.40
185.61	385.49	217.37	26.91	201.85	24.99	419.22	51.90
535.40	553.25	12.49	6.56	374.78	196.72	387.27	203.28
0.00	214.16	649.62	278.68	0.00	0.00	649.62	278.68
214.16	517.55	312.49	110.89	220.58	78.28	533.08	189.17
0.00	642.48	558.96	69.20	0.00	0.00	558.96	69.20
35.69	678.17	835.22	256.99	46.40	14.28	881.62	271.27
0.00	3069.62	1227.85	920.89	0.00	0.00	1227.85	920.89
0.00	928.03	1113.63	227.32	0.00	0.00	1113.63	227.32
44.62	180.25	908.75	461.16	298.93	151.70	1207.68	612.85
392.63	749.56	713.87	195.50	785.25	215.05	1499.12	410.55
107.08	2623.46	1744.69	432.28	74.24	18.40	1818.93	450.68
267.70	615.71	334.09	130.09	256.99	100.07	591.08	230.16
26.77	410.47	920.89	372.01	64.25	25.95	985.14	397.97
0.00	1659.74	1095.43	325.24	0.00	0.00	1095.43	325.24
0.00	107.08	235.58	108.36	0.00	0.00	235.58	108.36
124.93	374.78	224.87	49.97	112.43	24.99	337.30	74.96
464.01	785.25	311.60	19.27	450.09	27.84	761.70	47.12
0.00	278.41	334.09	107.43	0.00	0.00	334.09	107.43
0.00	838.79	838.79	0.00	0.00	0.00	838.79	0.00
232.01	696.02	371.21	113.66	185.61	56.83	556.82	170.49
124.93	856.64	1390.25	485.36	237.36	82.87	1627.61	568.23
0.00	524.69	1504.12	489.71	0.00	0.00	1504.12	489.71
0.00	392.63	510.41	157.05	0.00	0.00	510.41	157.05
142.77	160.62	17.85	0.00	142.77	0.00	160.62	0.00
328.38	985.14	903.04	254.36	451.52	127.18	1354.56	381.54
517.55	1035.11	517.55	0.00	517.55	0.00	1035.11	0.00
339.09	678.17	339.09	0.00	339.09	0.00	678.17	0.00
Tot Mean	Tot Std						
Herb=	Herb=	Wood=	Herb=	Total=	Total=		
632.78	444.94	195.58	199.63	828.35	429.54		

BLACKHAWK HUNTINGTON 4

REFERENCE AREA

PRODUCTION

8-16-95

AREA	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tot. lbs/Ac	Prop. a
1.00	11.00	0.50	22.00	0.05	196.31	0.00	0.50	0.00	0.00	0.00	196.31	0.50
2.00	16.00	0.50	32.00	0.07	285.55	0.00	0.50	0.00	0.00	0.00	285.55	1.70
3.00	10.00	0.50	20.00	0.04	178.47	0.00	0.50	0.00	0.00	0.00	178.47	0.75
4.00	1.00	0.50	2.00	0.00	17.85	0.00	0.50	0.00	0.00	0.00	17.85	1.00
5.00	7.00	0.50	14.00	0.03	124.93	0.00	0.50	0.00	0.00	0.00	124.93	0.35
6.00	7.00	0.50	14.00	0.03	124.93	8.00	0.50	16.00	0.04	142.77	267.70	1.00
7.00	2.00	0.50	4.00	0.01	35.69	21.00	0.50	42.00	0.09	374.78	410.47	2.00
8.00	3.00	0.50	6.00	0.01	53.54	0.00	0.50	0.00	0.00	0.00	53.54	1.00
9.00	5.00	0.50	10.00	0.02	89.23	0.00	0.50	0.00	0.00	0.00	89.23	1.00
10.00	4.00	0.50	8.00	0.02	71.39	3.00	0.50	6.00	0.01	53.54	124.93	0.20
11.00	12.00	0.50	24.00	0.05	214.16	0.00	0.50	0.00	0.00	0.00	214.16	0.50
12.00	7.00	0.50	14.00	0.03	124.93	14.00	0.50	28.00	0.06	249.85	374.78	1.00
13.00	7.00	0.50	14.00	0.03	124.93	19.00	0.50	38.00	0.08	339.09	464.01	0.50
14.00	2.00	0.50	4.00	0.01	35.69	14.00	0.50	28.00	0.06	249.85	285.55	1.00
15.00	3.00	0.50	6.00	0.01	53.54	0.00	0.50	0.00	0.00	0.00	53.54	1.00
16.00	1.00	0.50	2.00	0.00	17.85	0.00	0.50	0.00	0.00	0.00	17.85	3.00
17.00	3.00	0.50	6.00	0.01	53.54	0.00	0.50	0.00	0.00	0.00	53.54	1.00
18.00	0.00	0.50	0.00	0.00	0.00	21.00	0.50	42.00	0.09	374.78	374.78	0.20
19.00	7.00	0.50	14.00	0.03	124.93	16.00	0.50	32.00	0.07	285.55	410.47	1.00
20.00	5.00	0.50	10.00	0.02	89.23	0.00	0.50	0.00	0.00	0.00	89.23	1.00
21.00	3.00	0.50	6.00	0.01	53.54	0.00	0.50	0.00	0.00	0.00	53.54	3.00
22.00	5.00	0.50	10.00	0.02	89.23	24.00	0.50	48.00	0.11	428.32	517.55	0.50
23.00	1.00	0.50	2.00	0.00	17.85	0.00	0.50	0.00	0.00	0.00	17.85	1.00
24.00	4.00	0.50	8.00	0.02	71.39	9.00	0.50	18.00	0.04	160.62	232.01	2.00
25.00	10.00	0.50	20.00	0.04	178.47	4.00	0.50	8.00	0.02	71.39	249.85	0.10
26.00	10.00	0.50	20.00	0.04	178.47	0.00	0.50	0.00	0.00	0.00	178.47	1.00
27.00	12.00	0.50	24.00	0.05	214.16	0.00	0.50	0.00	0.00	0.00	214.16	0.50
28.00	6.00	0.50	12.00	0.03	107.08	0.00	0.50	0.00	0.00	0.00	107.08	0.50
29.00	1.00	0.50	2.00	0.00	17.85	3.00	0.50	6.00	0.01	53.54	71.39	1.00
30.00	13.00	0.50	26.00	0.06	232.01	0.00	0.50	0.00	0.00	0.00	232.01	0.50
31.00	5.00	0.50	10.00	0.02	89.23	0.00	0.50	0.00	0.00	0.00	89.23	1.00
32.00	4.00	0.50	8.00	0.02	71.39	0.00	0.50	0.00	0.00	0.00	71.39	1.00
33.00	6.00	0.50	12.00	0.03	107.08	0.00	0.50	0.00	0.00	0.00	107.08	2.00
34.00	10.00	0.50	20.00	0.04	178.47	0.00	0.50	0.00	0.00	0.00	178.47	0.10
35.00	11.00	0.50	22.00	0.05	196.31	0.00	0.50	0.00	0.00	0.00	196.31	0.25
36.00	6.00	0.50	12.00	0.03	107.08	0.00	0.50	0.00	0.00	0.00	107.08	1.00
37.00	2.00	0.50	4.00	0.01	35.69	0.00	0.50	0.00	0.00	0.00	35.69	4.00
38.00	0.00	0.50	0.00	0.00	0.00	24.00	0.50	48.00	0.11	428.32	428.32	1.00
39.00	0.00	0.50	0.00	0.00	0.00	25.00	0.50	50.00	0.11	446.17	446.17	1.00
40.00	10.00	0.50	20.00	0.04	178.47	0.00	0.50	0.00	0.00	0.00	178.47	1.00
41.00	3.00	0.50	6.00	0.01	53.54	0.00	0.50	0.00	0.00	0.00	53.54	2.00
42.00	1.00	0.50	2.00	0.00	17.85	0.00	0.50	0.00	0.00	0.00	17.85	3.00
43.00	2.00	0.50	4.00	0.01	35.69	0.00	0.50	0.00	0.00	0.00	35.69	1.00
44.00	17.00	0.50	34.00	0.07	303.39	0.00	0.50	0.00	0.00	0.00	303.39	0.50
45.00	5.00	0.50	10.00	0.02	89.23	12.00	0.50	24.00	0.05	214.16	303.39	2.00
46.00	4.00	0.50	8.00	0.02	71.39	32.00	0.50	64.00	0.14	571.09	642.48	1.00
47.00	4.00	0.50	8.00	0.02	71.39	0.00	0.50	0.00	0.00	0.00	71.39	0.50
48.00	5.00	0.50	10.00	0.02	89.23	0.00	0.50	0.00	0.00	0.00	89.23	1.00
49.00	4.00	0.50	8.00	0.02	71.39	0.00	0.50	0.00	0.00	0.00	71.39	1.00
50.00	9.00	0.50	18.00	0.04	160.62	0.00	0.50	0.00	0.00	0.00	160.62	0.25

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Prop. d	d Herb.lbs/Ac
98.16	0.00	98.16	0.10	19.63	0.00	19.63	0.10	19.63	0.00	19.63	0.75	147.23
485.43	0.00	485.43	0.35	99.94	0.00	99.94	1.50	428.32	0.00	428.32	0.75	214.16
133.85	0.00	133.85	1.00	178.47	0.00	178.47	1.25	223.08	0.00	223.08	1.00	178.47
17.85	0.00	17.85	1.00	17.85	0.00	17.85	1.00	17.85	0.00	17.85	0.15	2.68
43.72	0.00	43.72	0.35	43.72	0.00	43.72	1.00	124.93	0.00	124.93	1.50	187.39
124.93	142.77	267.70	1.00	124.93	142.77	267.70	2.00	249.85	285.55	535.40	0.50	62.46
71.39	749.56	820.95	0.70	24.99	262.35	287.33	1.00	35.69	374.78	410.47	2.00	71.39
53.54	0.00	53.54	3.00	160.62	0.00	160.62	1.00	53.54	0.00	53.54	0.75	40.15
89.23	0.00	89.23	0.50	44.62	0.00	44.62	1.00	89.23	0.00	89.23	3.00	267.70
14.28	10.71	24.99	3.00	214.16	160.62	374.78	0.50	35.69	26.77	62.46	1.00	71.39
107.08	0.00	107.08	2.00	428.32	0.00	428.32	3.00	642.48	0.00	642.48	1.50	321.24
124.93	249.85	374.78	0.50	62.46	124.93	187.39	1.00	124.93	249.85	374.78	0.75	93.69
62.46	169.54	232.01	1.00	124.93	339.09	464.01	1.00	124.93	339.09	464.01	1.00	124.93
35.69	249.85	285.55	1.00	35.69	249.85	285.55	0.50	17.85	124.93	142.77	4.00	142.77
53.54	0.00	53.54	4.00	214.16	0.00	214.16	3.00	160.62	0.00	160.62	2.00	107.08
53.54	0.00	53.54	4.00	71.39	0.00	71.39	3.00	53.54	0.00	53.54	5.00	89.23
53.54	0.00	53.54	2.00	107.08	0.00	107.08	1.00	53.54	0.00	53.54	1.00	53.54
0.00	74.96	74.96	1.00	0.00	374.78	374.78	1.00	0.00	374.78	374.78	0.70	0.00
124.93	285.55	410.47	1.00	124.93	285.55	410.47	0.50	62.46	142.77	205.24	4.00	499.71
89.23	0.00	89.23	2.00	178.47	0.00	178.47	0.50	44.62	0.00	44.62	1.00	89.23
160.62	0.00	160.62	3.00	160.62	0.00	160.62	0.50	26.77	0.00	26.77	3.00	160.62
44.62	214.16	258.78	0.50	44.62	214.16	258.78	2.00	178.47	856.64	1035.11	2.00	178.47
17.85	0.00	17.85	2.00	35.69	0.00	35.69	2.00	35.69	0.00	35.69	1.00	17.85
142.77	321.24	464.01	1.00	71.39	160.62	232.01	0.70	49.97	112.43	162.40	0.10	7.14
17.85	7.14	24.99	3.00	535.40	214.16	749.56	1.00	178.47	71.39	249.85	0.25	44.62
178.47	0.00	178.47	0.70	124.93	0.00	124.93	0.25	44.62	0.00	44.62	0.50	89.23
107.08	0.00	107.08	0.50	107.08	0.00	107.08	0.30	64.25	0.00	64.25	0.50	107.08
53.54	0.00	53.54	1.00	107.08	0.00	107.08	1.00	107.08	0.00	107.08	0.50	53.54
17.85	53.54	71.39	2.00	35.69	107.08	142.77	1.00	17.85	53.54	71.39	1.50	26.77
116.00	0.00	116.00	1.00	232.01	0.00	232.01	0.30	69.60	0.00	69.60	1.00	232.01
89.23	0.00	89.23	1.00	89.23	0.00	89.23	0.50	44.62	0.00	44.62	1.00	89.23
71.39	0.00	71.39	1.50	107.08	0.00	107.08	2.00	142.77	0.00	142.77	2.00	142.77
214.16	0.00	214.16	1.00	107.08	0.00	107.08	1.00	107.08	0.00	107.08	1.00	107.08
17.85	0.00	17.85	1.00	178.47	0.00	178.47	0.50	89.23	0.00	89.23	1.70	303.39
49.08	0.00	49.08	0.25	49.08	0.00	49.08	0.50	98.16	0.00	98.16	0.35	68.71
107.08	0.00	107.08	1.00	107.08	0.00	107.08	1.50	160.62	0.00	160.62	0.25	26.77
142.77	0.00	142.77	2.00	71.39	0.00	71.39	1.00	35.69	0.00	35.69	1.00	35.69
0.00	428.32	428.32	2.00	0.00	856.64	856.64	0.25	0.00	107.08	107.08	1.00	0.00
0.00	446.17	446.17	1.00	0.00	446.17	446.17	1.00	0.00	446.17	446.17	0.35	0.00
178.47	0.00	178.47	0.50	89.23	0.00	89.23	1.00	178.47	0.00	178.47	0.50	89.23
107.08	0.00	107.08	1.50	80.31	0.00	80.31	4.00	214.16	0.00	214.16	2.00	107.08
53.54	0.00	53.54	6.00	107.08	0.00	107.08	10.00	178.47	0.00	178.47	5.00	89.23
35.69	0.00	35.69	1.00	35.69	0.00	35.69	2.00	71.39	0.00	71.39	3.00	107.08
151.70	0.00	151.70	0.50	151.70	0.00	151.70	0.50	151.70	0.00	151.70	0.10	30.34
178.47	428.32	606.79	3.00	267.70	642.48	910.18	1.00	89.23	214.16	303.39	0.50	44.62
71.39	571.09	642.48	2.00	142.77	1142.19	1284.96	3.00	214.16	1713.28	1927.44	1.00	71.39
35.69	0.00	35.69	0.25	17.85	0.00	17.85	1.00	71.39	0.00	71.39	0.70	49.97
89.23	0.00	89.23	2.00	178.47	0.00	178.47	3.00	267.70	0.00	267.70	1.00	89.23
71.39	0.00	71.39	1.00	71.39	0.00	71.39	1.00	71.39	0.00	71.39	1.00	71.39
40.15	0.00	40.15	0.50	80.31	0.00	80.31	0.50	80.31	0.00	80.31	0.10	16.06

d Wood lbs/Ac	d Tot lbs/Ac	Mean Herb	Std Herb	Mean Wood	Std Wood	Mean Tot	Std Tot
0.00	147.23	96.19	69.79	0.00	0.00	96.19	69.79
0.00	214.16	302.68	140.30	0.00	0.00	302.68	140.30
0.00	178.47	178.47	28.22	0.00	0.00	178.47	28.22
0.00	2.68	14.81	6.07	0.00	0.00	14.81	6.07
0.00	187.39	104.94	54.94	0.00	0.00	104.94	54.94
71.39	133.85	137.42	61.20	157.05	69.94	294.47	131.15
749.56	820.95	47.83	19.63	502.20	206.09	550.03	225.72
0.00	40.15	72.28	44.47	0.00	0.00	72.28	44.47
0.00	267.70	116.00	77.79	0.00	0.00	116.00	77.79
53.54	124.93	81.38	69.89	61.04	52.41	142.42	122.30
0.00	321.24	342.66	184.23	0.00	0.00	342.66	184.23
187.39	281.08	106.19	24.99	212.38	49.97	318.56	74.96
339.09	464.01	112.43	24.99	305.18	67.82	417.61	92.80
999.41	1142.19	53.54	45.15	374.78	316.04	428.32	361.19
0.00	107.08	117.79	62.44	0.00	0.00	117.79	62.44
0.00	89.23	57.11	23.68	0.00	0.00	57.11	23.68
0.00	53.54	64.25	21.42	0.00	0.00	64.25	21.42
262.35	262.35	0.00	0.00	292.33	117.08	292.33	117.08
1142.19	1641.89	187.39	158.02	428.32	361.19	615.71	519.21
0.00	89.23	98.16	43.72	0.00	0.00	98.16	43.72
0.00	160.62	112.43	59.62	0.00	0.00	112.43	59.62
856.64	1035.11	107.08	60.52	513.98	290.50	621.06	351.02
0.00	17.85	24.99	8.74	0.00	0.00	24.99	8.74
16.06	23.20	68.53	43.91	154.20	98.80	222.73	142.72
17.85	62.46	190.96	184.57	76.38	73.83	267.34	258.40
0.00	89.23	123.14	51.85	0.00	0.00	123.14	51.85
0.00	107.08	119.93	49.95	0.00	0.00	119.93	49.95
0.00	53.54	85.66	26.23	0.00	0.00	85.66	26.23
80.31	107.08	23.20	7.14	69.60	21.42	92.80	28.55
0.00	232.01	176.32	69.76	0.00	0.00	176.32	69.76
0.00	89.23	80.31	17.85	0.00	0.00	80.31	17.85
0.00	142.77	107.08	31.93	0.00	0.00	107.08	31.93
0.00	107.08	128.50	42.83	0.00	0.00	128.50	42.83
0.00	303.39	153.48	96.17	0.00	0.00	153.48	96.17
0.00	68.71	92.27	55.04	0.00	0.00	92.27	55.04
0.00	26.77	101.73	42.83	0.00	0.00	101.73	42.83
0.00	35.69	64.25	41.63	0.00	0.00	64.25	41.63
428.32	428.32	0.00	0.00	449.74	238.48	449.74	238.48
156.16	156.16	0.00	0.00	388.16	116.00	388.16	116.00
0.00	89.23	142.77	43.72	0.00	0.00	142.77	43.72
0.00	107.08	112.43	54.60	0.00	0.00	112.43	54.60
0.00	89.23	89.23	54.13	0.00	0.00	89.23	54.13
0.00	107.08	57.11	28.55	0.00	0.00	57.11	28.55
0.00	30.34	157.76	86.67	0.00	0.00	157.76	86.67
107.08	151.70	133.85	79.81	321.24	191.55	455.09	271.36
571.09	642.48	114.22	57.11	913.75	456.87	1027.97	513.98
0.00	49.97	49.26	20.74	0.00	0.00	49.26	20.74
0.00	89.23	142.77	71.39	0.00	0.00	142.77	71.39
0.00	71.39	71.39	0.00	0.00	0.00	71.39	0.00
0.00	16.06	75.49	49.14	0.00	0.00	75.49	49.14
Tot Mean	Tot Std						
Herb=	Herb=	Wood=	Herb=	Total=	Total=		
103.95	64.72	104.41	193.54	208.36	193.43		

BLACKHAWK HUNTINGTON 4

RIPARIAN REFERENCE

PRODUCTION

8-18-95

AREA	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	24.00	0.50	48.00	0.11	428.32	6.00	0.50	12.00	0.03	107.08	535.40	1.00
2.00	17.00	0.50	34.00	0.07	303.39	5.00	0.50	10.00	0.02	89.23	392.63	1.00
3.00	24.00	0.50	48.00	0.11	428.32	10.00	0.50	20.00	0.04	178.47	606.79	1.00
4.00	17.00	0.50	34.00	0.07	303.39	15.00	0.30	50.00	0.11	446.17	749.56	1.00
5.00	37.00	0.50	74.00	0.16	660.33	0.00	0.50	0.00	0.00	0.00	660.33	1.00
6.00	20.00	0.50	40.00	0.09	356.93	0.00	0.50	0.00	0.00	0.00	356.93	1.00
7.00	22.00	0.50	44.00	0.10	392.63	0.00	0.50	0.00	0.00	0.00	392.63	0.50
8.00	10.00	0.50	20.00	0.04	178.47	1.00	0.50	2.00	0.00	17.85	196.31	1.00
9.00	22.00	0.50	44.00	0.10	392.63	10.00	0.50	20.00	0.04	178.47	571.09	1.00
10.00	3.00	0.50	6.00	0.01	53.54	13.00	0.50	26.00	0.06	232.01	285.55	1.00

BLACKHAWK HUNTINGTON 4

RECLAIMED RIPARIAN

PRODUCTION

8-18-95

AREA	Wt Herb g/m2	Proportion	Tot.Herb g/m	Tot.Herb lbs/m2	Herb lbs/Ac	Wt wood g/m2	Proportion	Tot.wood g/m	Tot.Wood lbs/m2	Wood lbs/Ac	Tol. lbs/Ac	Prop. a
1.00	9.00	0.50	18.00	0.04	160.62	3.00	0.50	6.00	0.01	53.54	214.16	1.00
2.00	13.00	0.50	26.00	0.06	232.01	9.00	0.50	18.00	0.04	160.62	392.63	1.00
3.00	12.00	0.50	24.00	0.05	214.16	9.00	0.50	18.00	0.04	160.62	374.78	1.00
4.00	4.00	0.50	8.00	0.02	71.39	3.00	0.50	6.00	0.01	53.54	124.93	2.00
5.00	8.00	0.50	16.00	0.04	142.77	0.00	0.50	0.00	0.00	0.00	142.77	0.75

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Mean Herb	Std Herb
428.32	107.08	535.40	1.00	428.32	107.08	535.40	1.00	428.32	107.08	535.40	428.32	0.00
303.39	89.23	392.63	1.00	303.39	89.23	392.63	1.00	303.39	89.23	392.63	303.39	0.00
428.32	178.47	606.79	1.00	428.32	178.47	606.79	1.00	428.32	178.47	606.79	428.32	0.00
303.39	446.17	749.56	1.00	303.39	446.17	749.56	1.00	303.39	446.17	749.56	303.39	0.00
660.33	0.00	660.33	1.00	660.33	0.00	660.33	0.80	528.26	0.00	528.26	627.31	57.19
356.93	0.00	356.93	1.00	356.93	0.00	356.93	1.00	356.93	0.00	356.93	356.93	0.00
196.31	0.00	196.31	1.00	392.63	0.00	392.63	1.00	392.63	0.00	392.63	343.55	85.01
178.47	17.85	196.31	1.00	178.47	17.85	196.31	1.00	178.47	17.85	196.31	178.47	0.00
392.63	178.47	571.09	1.00	392.63	178.47	571.09	0.80	314.10	142.77	456.87	373.00	34.00
53.54	232.01	285.55	1.00	53.54	232.01	285.55	1.00	53.54	232.01	285.55	53.54	0.00
											Tot Mean	Tot Std
											Herb=	Herb=
											339.62	145.04

a Herb.lbs/Ac	a Wood lbs/Ac	a Tot lbs/Ac	Prop. b	b Herb.lbs/Ac	b Wood lbs/Ac	b Tot lbs/Ac	Prop. c	c Herb.lbs/Ac	c Wood lbs/Ac	c Tot lbs/Ac	Mean Herb	Std Herb
160.62	53.54	214.16	1.00	160.62	53.54	214.16	1.00	160.62	53.54	214.16	160.62	0.00
232.01	160.62	392.63	1.00	232.01	160.62	392.63	2.00	464.01	321.24	785.25	290.01	100.46
214.16	160.62	374.78	1.00	214.16	160.62	374.78	1.00	214.16	160.62	374.78	214.16	0.00
142.77	107.08	249.85	1.00	71.39	53.54	124.93	1.00	71.39	53.54	124.93	89.23	30.91
107.08	0.00	107.08	0.75	107.08	0.00	107.08	0.75	107.08	0.00	107.08	116.00	15.46
											Tot Mean	Tot Std
											Herb=	Herb=
											174.00	71.83

Mean Wood	Std Wood	Mean Tot	Std Tot
107.08	0.00	535.40	0.00
89.23	0.00	392.63	0.00
178.47	0.00	606.79	0.00
446.17	0.00	749.56	0.00
0.00	0.00	627.31	57.19
0.00	0.00	356.93	0.00
0.00	0.00	343.55	85.01
17.85	0.00	196.31	0.00
169.54	15.46	542.54	49.46
232.01	0.00	285.55	0.00
Tot Mean	Tot Std	Tot Mean	Tot Std
Wood=	Herb=	Total=	Total=
124.03	133.94	463.66	165.66

Mean Wood	Std Wood	Mean Tot	Std Tot
53.54	0.00	214.16	0.00
200.77	69.55	490.78	170.01
180.62	0.00	374.78	0.00
66.92	23.18	156.16	54.09
0.00	0.00	116.00	15.46
Mean	Tot Std	Tot Mean	Tot Std
=	Herb=	Total=	Total=
96.37	73.51	270.38	141.08

***ANNUAL IMPOUNDMENT
CERTIFICATIONS***

(POND ELIMINATED / RECLAIMED IN FALL 1995)

MOUNTAIN COAL COMPANY
1994 ANNUAL POND INSPECTION REPORT

POND: SED. POND

LOCATION: HUNT. CYN. NO. 4

IMPOUNDMENTS

(1) Stability	<u>Slopes Stable.</u>
	<u>Vegetated.</u>
(2) Structural Weakness/Erosion	<u>None Noted.</u>
(3) Potential Safety Hazards	<u>None Noted.</u>
(4) Depth of Impounded Water	<u>N/A - Dry.</u>
(5) Existing Storage Capacity	<u>0.962 Ac. Ft.</u>
(6) Monitoring Procedures	<u>Quarterly Inspection.</u>
	<u>U.P.D.E.S. Discharge.</u>

SEDIMENT PONDS ONLY

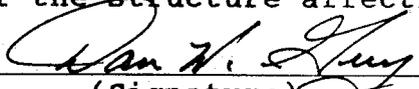
(7) Sediment Accumulation (Elev.)	<u>89.1 (U)</u>	<u>77.3 (L)</u>
(8) Sediment Cleanout Level (Elev.)	<u>92.2 (U)</u>	<u>81.6 (L)</u>
(9) Principle Spillway (Elev.)	<u>93.2 (U)</u>	<u>84.6 (L)</u>
(10) Emergency Spillway (Elev.)	<u>98.0 (U)</u>	<u>84.6 (L)</u>
(11) Existing Sediment Capacity (To Cleanout)	<u>0.136 (U)</u>	<u>0.337 (L)</u>

GENERAL

(12) Comments/Recommendations	<u>Pond Cleaned 11/92.</u>
	<u>Re-Surveyed 5/93.</u>
	<u>No Discharge/Dry.</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)

11-10-94
(Date)

