

# PERMIT CHANGE TRACKING FORM

<b>DATE RECEIVED</b>	11/9/94	<b>PERMIT NUMBER</b>	A-7/015/025
<b>Title of Proposal:</b>	Explosives Storage	<b>PERMIT CHANGE #</b>	949
<b>Description:</b>	Relocation	<b>PERMITTEE</b>	Co - Op Mining Co.
		<b>MINE NAME</b>	Beaulieu

<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"/> Request additional review copies prior to Division/Other Agency review. <input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.) <input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.	<b>DATE DUE</b>	<b>DATE DONE</b>	<b>RESULT</b>
			<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED Permit Change Classification <input type="checkbox"/> Significant Permit Revision <input type="checkbox"/> Permit Amendment <input type="checkbox"/> Incidental Boundary Change

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> Administrative _____						
<input type="checkbox"/> Biology _____						
<input checked="" type="checkbox"/> Engineering <u>JSS</u>	11/18	11/18	change is insignificant no written memo.			
<input type="checkbox"/> Geology _____						
<input type="checkbox"/> Soils _____						
<input type="checkbox"/> Hydrology _____						
<input type="checkbox"/> Bonding _____						
<input type="checkbox"/> AVS Check _____						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	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						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision) <input type="checkbox"/> Copies of permit change marked and ready for MRP. <input type="checkbox"/> Special Conditions/Stipulations written for approval. <input type="checkbox"/> TA and CHIA modified as required. <input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied. <input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee. <input type="checkbox"/> Copy of Approved Permit Change to File. <input type="checkbox"/> Copy of Approved Permit Change to Permittee. <input type="checkbox"/> Copies to Other Agencies and Price Field Office.
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# APPLICATION FOR PERMIT CHANGE

Title of Change:

Explosives Storage Relocation

Permit Number: ACT 1015 1025

Mine: Bear Canyon

Permittee: Co-Op Mining Co

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

Explosives Storage is being relocated to the area North of the Upper Storage Pad adjacent to Water Tank due to the restricted space on the Storage Pad as a result of Topsoil Storage

- |   |  |  |
|---|--|--|
| <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 type="checkbox"/> Yes            | <input checked="" 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 type="checkbox"/> Yes            | <input checked="" 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 type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 14. Does permit change require or include soil removal, storage or placement?  |
| <input type="checkbox"/> Yes            | <input checked="" 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 type="checkbox"/> Yes            | <input checked="" 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 type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?                                  |
| <input type="checkbox"/> Yes            | <input checked="" 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.

Wendell Owen Res Agent 11/8/94

Signed - Name - Position - Date

Subscribed and sworn to before me this 8th day of November, 1994.

Adrian Stone

Notary Public

My Commission Expires: \_\_\_\_\_, 19\_\_\_\_

Attest: STATE OF \_\_\_\_\_ COUNTY OF \_\_\_\_\_

Notary Public  
Munington, Utah  
My Commission Expires  
June 18, 1997  
State of Utah

Received by Oil, Gas & Mining

## RECEIVED

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ASSIGNED PERMIT CHANGE NUMBER



APPENDIXES

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LIST OF PLATES

Plate 9-1 Vegetation Map

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aggregata, Plains Pricklypear Opuntia polyacantha, Cheatgrass Bromus tectorum, and Bluebunch Wheatgrass Agropyron spicatum.

#### 9.3.3.5 Bare Cliffs and Talus

Vegetation is nonexistent or sparse and consists of a few grasses and forbs. Cliffs separate the Grassland vegetation type of the plateau from the more vegetated areas of the canyon bottoms.

#### 9.3.4 Shower House Pad Vegetation

In 1993, Co-Op will disturb additional area for constructing a shower house and employee parking area. The pre-disturbed vegetation data is described in Appendix 9-D. Sampling was performed in the fall of 1992. In the Spring of 1993, a reference area will be selected by a Co-Op staff member and a Division staff member. This area will be sampled during the peak of the growing season in 1993 and the data will be submitted to the Division as soon as the information is available.

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#### 9.3.5 Tank Seam Access Road Vegetation

Co-Op proposes to construct an access road to the Tank Seam. Construction of the Road is described in Appendix 3-H. The pre-disturbed vegetation data, sampled in the fall of 1992, is described in Appendix 9-E. A reference area was selected for the Tank Seam portal pad and access road, and is shown on Plate 9-1. Appendix 9-A contains sampling data from the reference area and a comparison to the pre-disturbed vegetation on the Tank Seam access road and portal pad is included in Appendix 9-E.

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to the Tank Seam.

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**Appendix 9-D**

**Shower House Pad Vegetation**

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**INTRODUCTION**

The following pages are a copy of a report prepared by Patrick Collins, Ph.D., Biologist/Reclamation Specialist, of Mt. Nebo Scientific. The report presents an evaluation of the existing vegetation in the area of the shower house pad. The vegetation survey was performed in October, 1992.

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924

date

2-9-93

Prepared  
by

MT. NEBO SCIENTIFIC  
P.O. Box 337  
Springville, Utah 84663  
(801) 489-6937

for

CO-OP MINING COMPANY  
P.O. Box 1245  
Huntington, Utah 84528

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Report: Patrick Collins, Ph.D.

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Fieldwork: Patrick Collins  
P. Dean Collins

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December 1992

92H

date 2/9/93

VEGETATION OF THE PROPOSED SHOWERHOUSE AREA  
FOR THE CO-OP MINE

INTRODUCTION

Following are results from vegetation sampling of an area that is proposed for future disturbance by the CO-OP Mining Company. The data reported in this report will be used as baseline data that will ultimately be compared to a reference area scheduled to be sampled in 1993. The reference area will then be used as a standard for revegetation ~~success~~ <sup>at the time</sup> of final reclamation.

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General Site Description

The area described herein is the site of a proposed showerhouse to be constructed by the CO-OP Mining Company. Total area of the site was estimated to be 1.84 acres with a southeast exposure and slopes ranging between 1 and 5 degrees.

The vegetative community of the area could be described as a transition zone between the pinyon-juniper hillsides and the sagebrush/grass alluvial bottomlands. Soils are generally deep and well-drained. The area is also used extensively by deer and other wildlife.

## METHODS

Quantitative and qualitative data were taken from the proposed disturbed area. Sampling was accomplished on October 10, 1992.

### Cover and Composition

Vegetation sampling was conducted in an attempt to adequately describe the area proposed for future disturbance. Two - 200 ft. transects were arbitrarily placed within the area. Along these transects, points were placed at 10 ft intervals. At each 10 ft mark, random numbers between 1 and 15 (ft.) were then chosen to place the quadrats perpendicularly on each side of the transect line.

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Understory cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows A Utah Flora (Welch et al. 1987).

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### Woody Species Density

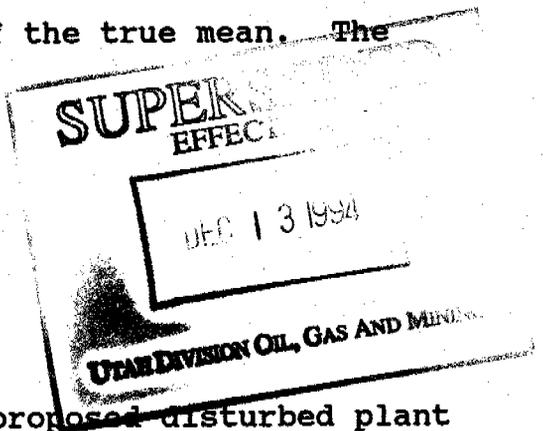
Density of woody plant species were recorded using the point quarter distance method (from Cottom and Curtis 1956) in the same areas described in the cover section above. In the point quarter method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual.

### Sample Adequacy

Sampling adequacy for cover and density was achieved by employing formulas from Snedocor and Cochran (1980), insuring that 80% of the samples were within 10% of the true mean. The formulas are shown on the summary tables.

### Photographs

Color photographs were taken of the proposed disturbed plant community and included in this report.



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Raw Data

Raw data from which the summary tables are based are included at the end of this report.

**RESULTS**

Proposed Disturbed Showerhouse Area

Total living cover of the proposed disturbed showerhouse area was estimated at 46.13%. Woody species and grasses dominated the area constituting 42.64% and 56.48%, respectively (Table 1). The most common shrub by cover and frequency was sagebrush (*Artemisia tridentata*). Most common grass by cover was needle-and-threadgrass (*Stipa comata*), whereas, the most frequently observed grass was Indian ricegrass (*Stipa hymenoides*) (Table 2). Forb species were seldom observed in the quadrats.

Woody species density was also calculated in the area. Big sagebrush was also clearly the most important species by density, comprising nearly 85% of the total 1,960 individuals per acre on the site (Table 3).

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**TABLE 1:** Total cover and composition summary for the proposed disturbed showerhouse area of the CO-OP Mine.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Living Cover*	46.13	9.97	40
Litter	18.60	12.92	40
Bareground	23.20	15.28	40
Rock	12.08	13.14	40
<b>COMPOSITION</b>			
Shrubs	42.64	26.63	40
Forbs	0.88	4.17	40
Grasses	56.48	26.20	40

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\* Sample was measured using the formula below:

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

where,

x = sample mean,

s = standard deviation,

nMin = minimum samples required to insure 80% accuracy within 10% of the true mean.

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**TABLE 2: Species cover and frequency summary for the proposed disturbed showerhouse area of the CO-OP Mine.**

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
<b>SHRUBS</b>				
<i>Artemisia tridentata</i>	11.25	9.92	40	70.00
<i>Brickelia microphylla</i>	0.13	0.78	40	2.50
<i>Chrysothamnus nauseosus</i>	0.38	1.73	40	5.00
<i>Juniperus osteosperma</i>	5.25	13.27	40	20.00
<i>Opuntia polyacantha</i>	0.50	1.87	40	7.50
<i>Pinus edulis</i>	2.00	7.97	40	10.00
<b>FORBS</b>				
<i>Lepidium montanum</i>	0.13	0.78	40	2.50
<i>Sphaeralcea grossulariaefolia</i>	.25	1.56	40	2.50
<b>GRASSES</b>				
<i>Bouteloua gracilis</i>	1.00	6.24	40	2.50
<i>Elymus spicatus</i>	0.63	3.90	40	2.50
<i>Elymus salinus</i>	1.63	5.74	40	15.00
<i>Stipa comata</i>	14.75	15.29	40	65.00
<i>Stipa hymenoides</i>	8.25	9.12	40	70.00

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**TABLE 3: Woody species densities for the proposed disturbed showerhouse area of the CO-OP Mine.**

	NUMBER/ACRE
<i>Artemisia tridentata</i>	1,649.99
<i>Brickelia microphylla</i>	16.34
<i>Echinocereus triglochidiatus</i>	16.34
<i>Gutierrezia sarothae</i>	16.34
<i>Juniperus osteosperma</i>	130.69
<i>Opuntia polyacantha</i>	65.35
<i>Pinus edulis</i>	65.35
	-----
<b>TOTAL</b>	<b><u>1,960.40*</u></b>

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\* Sample was measured using the formula below:

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

where,

- x = sample mean,
- s = standard deviation,
- nMin = minimum samples required to insure 80% accuracy within 10% of the true mean.

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9D-10

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PROPOSED DISTURBED SHOWERHOUSE AREA



B.C.

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**RAW DATA SHEETS**

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CD-OP MINE

Prop. Dist. Showerhouse

Exposure: S

Slope: 2 - 4 deg

Sample Date: 10 Oct 1992

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	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia tridentata	0.00	0.00	15.00	10.00	15.00	10.00	30.00	15.00	25.00	5.00
Juniperus osteosperma	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
Brickellia microphylla	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opuntia polyacantha	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Sphaeralcea grossulariaef	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lepidium montanum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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GRASSES

Stipa comata	30.00	30.00	25.00	10.00	25.00	35.00	15.00	30.00	40.00	0.00
Stipa hymenoides	0.00	10.00	5.00	10.00	5.00	5.00	5.00	0.00	0.00	10.00
Elymus salinus	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Bouteloua gracilis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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COVER

Total Living Cover	30.00	40.00	45.00	35.00	50.00	50.00	50.00	45.00	65.00	40.00
Litter	10.00	20.00	10.00	25.00	10.00	10.00	20.00	20.00	20.00	10.00
Bareground	50.00	35.00	40.00	35.00	35.00	15.00	10.00	15.00	5.00	25.00
Rock	10.00	5.00	5.00	5.00	5.00	25.00	20.00	20.00	10.00	25.00

% COMPOSITION

Shrubs	0.00	0.00	33.33	42.86	30.00	20.00	60.00	33.33	38.46	75.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	100.00	100.00	66.67	57.14	70.00	80.00	40.00	66.67	61.54	25.00

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B.C.

9D-14

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 12/30/92

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**SUPERSEDED**

**EFFECTIVE:**

0.00 0.00  
 1 3 1994

UTAH DIVISION OIL, GAS AND MINING

30.00 5.00 35.00 20.00 0.00 5.00 0.00 5.00 0.00 25.00 0.00 0.00  
 10.00 5.00 0.00 10.00 25.00 0.00 5.00 25.00 30.00 20.00 10.00 40.00  
 5.00 0.00 0.00 0.00 0.00 5.00 5.00 0.00 0.00 0.00 35.00 0.00  
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

65.00 50.00 55.00 50.00 40.00 50.00 35.00 40.00 50.00 55.00 50.00 40.00  
 29.00 10.00 20.00 45.00 10.00 40.00 5.00 10.00 10.00 35.00 5.00 5.00  
 5.00 30.00 24.00 3.00 45.00 5.00 5.00 45.00 39.00 5.00 25.00 35.00  
 1.00 10.00 1.00 2.00 5.00 5.00 55.00 5.00 1.00 5.00 20.00 20.00

30.77 70.00 36.36 40.00 37.50 80.00 71.43 0.00 40.00 18.18 10.00 0.00  
 0.00 10.00 0.00 0.00 0.00 0.00 0.00 25.00 0.00 0.00 0.00 0.00  
 69.23 20.00 63.64 60.00 62.50 20.00 28.57 75.00 60.00 81.82 90.00 100.00

B.C.

9D-15

Approved, Division of Oil, Gas & Mining

RDH

date 2/9/93

CD-OP MINE  
 Prop. Dist. Showerhouse  
 Exposure: S  
 Slope: 2 - 4 deg  
 Sample Date: 10 Oct 1992

35.00 36.00 37.00 38.00 39.00 40.00 Mean SDev Freq

0.00	0.00	0.00	0.00	25.00	5.00	2.00	7.97	16.00
0.00	0.00	0.00	0.00	0.00	0.00	11.25	9.92	70.00
30.00	65.00	5.00	0.00	0.00	0.00	5.25	13.27	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.78	2.50
0.00	0.00	10.00	5.00	0.00	0.00	0.50	1.87	7.50
0.00	0.00	0.00	0.00	5.00	10.00	0.38	1.73	5.00

TREES & SHRUBS  
 Pinus edulis  
 Artemisia tridentata  
 Juniperus osteosperma  
 Brickellia microphylla  
 Opuntia polyacantha  
 Chrysothamnus nauseosus

**SUPERSEDED**

FORBS EFFECTIVE:

0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.78	2.50
0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.56	2.50

Sphaeralcea grossulariaefol  
 Lepidium montanum

13 1994

UTAH DIVISION OIL, GAS AND MINING

0.00	0.00	0.00	5.00	0.00	0.00	14.75	15.29	65.00
5.00	0.00	20.00	0.00	5.00	0.00	8.25	9.12	70.00
0.00	0.00	0.00	0.00	0.00	0.00	1.63	5.74	15.00
0.00	0.00	0.00	40.00	0.00	0.00	1.00	6.24	2.50
0.00	0.00	0.00	0.00	0.00	25.00	0.63	3.90	2.50

GRASSES  
 Stipa comata  
 Stipa hymenoides  
 Elymus salinus  
 Bouteloua gracilis  
 Elymus spicatus

35.00	65.00	35.00	50.00	35.00	40.00	46.13	9.97
45.00	25.00	10.00	3.00	5.00	5.00	18.60	12.92
15.00	5.00	30.00	35.00	35.00	45.00	23.20	15.28
5.00	5.00	25.00	10.00	25.00	10.00	12.08	13.14

COVER  
 Total Living Cover  
 Litter  
 Bareground  
 Rock

85.71	100.00	42.86	10.00	85.71	37.50	42.64	26.63
0.00	0.00	0.00	0.00	0.00	0.00	0.88	4.17
14.29	0.00	57.14	90.00	14.29	62.50	56.48	26.20

% COMPOSITION  
 Shrubs  
 Forbs  
 Grasses

AMENDMENT TO

Approved Mining & Reclamation Plan  
 Approved, Division of Oil, Gas & Mining  
 12/30/92

Co-Op Mining Company  
Bear Canyon Mine

DIRECTIVE:

Probable Hydrologic  
Consequences  
April 30, 1993

Appendix 7-J  
April 30, 1993

March, 1992 (Co-Op Mining Company, 1992a). Present total mine inflow is approximately 500 gpm. Of this total, 200 gpm is used in the mining operations, and 300 gpm is discharged to Bear Canyon Creek.

This increase in mine inflow is attributed to interception of perched aquifers by mining. Tritium analyses were performed on samples from four groundwater monitoring points (Birch Springs, Big Bear Springs, a North Mains roof dripper, and floor water) in order to define the relative ages of the groundwater in the permit and adjacent areas. Tritium values for Birch Springs (1.12 TU), North Mains (1.0 TU) and the Second East Bleeders floor sump (1.73 TU) (Plate 2, EarthFax Engineering, 1992) are within the same order of magnitude, whereas the value for Big Bear Springs (17.4 TU) is an order of magnitude greater, suggesting that the source of Big Bear Springs is different from that of the mine inflow and Birch Springs.

According to Thiros and Cordy (1991), prior to above-ground nuclear weapons tests conducted from 1953 to 1969, the natural tritium concentration in precipitation was 8.7 TU. Assuming a half-life of 12.26 years, tritium levels in groundwater stored since 1952 would now be 0.95 TU, thus, water collected from SBC-9 (North Mains) sample is likely 100% pre-bomb groundwater (water stored since before 1952). Waters from SBC-5 (Birch Spring) and SBC-10 (floor water) are probably mixtures rich in stored pre-bomb groundwater, with a slight amount of post-bomb water.

There are three possible explanations for the relatively high concentration of tritium in the SBC-4 (Big Bear Springs) water: 1) The groundwater could be freshly recharged; current tritium concentrations in freshly fallen rain water in Utah range between 10 and 20 TU (Thiros, 1992); 2) it could be stored post-bomb water which originally had a very high concentration of tritium which has since decayed; or 3) water from Big Bear Springs could be a mixture of pre-bomb and post-bomb waters.

Because tritium concentrations in rainwater were greater than 1000 TU during periods of active above-ground testing (Fritz and Fontes, 1980), the age of water from Big Bear Spring

# FABIAN & CLENDENIN

A PROFESSIONAL CORPORATION  
ATTORNEYS AT LAW

TWELFTH FLOOR  
215 SOUTH STATE STREET  
P.O. BOX 510210  
SALT LAKE CITY, UTAH 84151  
TELEPHONE (801) 531-8900  
FACSIMILE (801) 596-2814

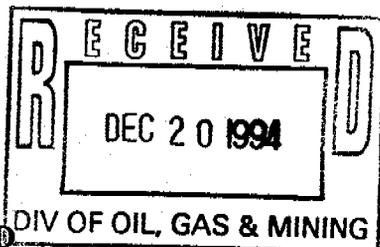
OF COUNSEL  
PETER W. BILLINGS, SR.  
RALPH H. MILLER

NEVADA OFFICE  
2835 SOUTH JONES BLVD., SUITE 5  
LAS VEGAS, NEVADA 89102  
TELEPHONE (702) 367-4545  
FACSIMILE (702) 252-5014

GEORGE D. MELLING, JR.  
WARREN PATTEN  
M. BYRON FISHER  
STANFORD B. OWEN  
WILLIAM H. ADAMS  
ANTHONY L. RAMPTON  
PETER W. BILLINGS, JR.  
THOMAS CHRISTENSEN, JR.  
DENISE A. DRAGOO  
JAY B. BELL  
DANIEL W. ANDERSON  
GARY E. JUBBER  
ROSEMARY J. BELESS  
ANNA W. DRAKE  
W. CULLEN BATTLE  
KEVIN N. ANDERSON†  
RANDY K. JOHNSON

NORMAN J. YOUNKER  
MICHELE MITCHELL†  
JOHN E. S. ROBSON†  
DOUGLAS B. CANNON  
DOUGLAS J. PAYNE  
ROBERT PALMER REES  
DIANE H. BANKS  
P. BRUCE BADGER  
JOHN (JACK) D. RAY  
CRAIG T. JACOBSEN  
BRUCE D. REEMSNYDER  
BROCK R. BELNAP  
DOUGLAS R. BREWER  
CRAIG E. HUGHES  
JULIE FORTUNA  
ELAYNE WELLS HARMER

†ALSO MEMBER NEVADA BAR



**HAND DELIVERED** December 20, 1994

Pamela Grubaugh-Littig  
UTAH DIVISION OF OIL, GAS & MINING  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

949

RE: ~~Nonsignificant Permit~~ Amendment for Crandall Canyon Mine, Permit  
No. ACT/015/032 #2

Dear Pam:

On behalf of Genwal Coal Company, Inc. ("Genwal"), we appreciated the opportunity to meet with Jim Carter, Lowell Braxton and you regarding the pending sale of Nevada Electric Investment Company's ("NEICO's") interest in the Crandall Canyon Mine to Andalex Resources, Inc. ("Andalex"). As we discussed, Genwal proposes to designate GENWAL Resources, Inc. ("GENWAL"), as operator of the Crandall Canyon Mine pending approval of the transfer, assignment and sale of NEICO's permit rights under ACT/015/032. GENWAL is a Utah corporation formed by Andalex to operate the Crandall Canyon Mine.

Enclosed is an Application for Designation of Operator ("Application") which is submitted as a nonsignificant permit amendment for Permit No. ACT/015/032. Upon the Division of Oil, Gas & Mining's ("Division's") approval, the text of Chapter 1 of the Mining & Reclamation Plan will be revised to incorporate this information. In connection with the review of this application, it is our understanding that you will also conduct a check of the Applicant Violator System regarding the entities identified in the Application.

Currently, NEICO is proposing to sell to Andalex its entire undivided fifty percent (50%) interest in the Crandall Canyon Mine project effective as of January 1, 1995. The closing for this matter is scheduled for January 6, 1995. Prior to closing, GENWAL has agreed to submit an application for transfer, assignment and sale of permit rights associated with ACT/015/032. NEICO's sale of permit rights to Andalex is subject to and

LAW OFFICES OF  
**FABIAN & CLENDENIN**  
A PROFESSIONAL CORPORATION

Pamela Grubaugh-Littig  
December 20, 1994  
Page 2

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conditioned upon the Division's approval of the application for transfer, assignment and sale of Permit No. ACT/015/032.

Please let me know if you need anything further regarding this matter.

Very truly yours,



Denise A. Dragoo

DAD:jmc:47387

Enclosure

cc: James Carter  
Lowell Braxton  
Richard Hinckley, Esq. (with enclosure)  
John Kirkham, Esq. (with enclosure)  
Ron Rencher, Esq. (with enclosure)  
Jay Marshall (with enclosure)  
Mike Glasson (with enclosure)



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 22, 1994

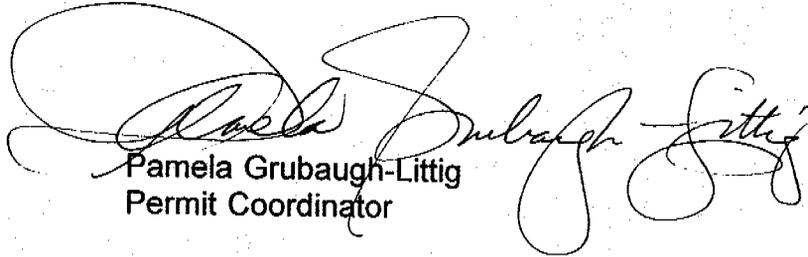
Mr. Wendell Owen  
Co-Op Mining Company  
P.O. Box 1245  
Huntington, UT 84528

Re: Explosives Storage Relocation, Bear Canyon Mine, Co-Op Mining Company,  
ACT/015/025-94G, Folder #3, Emery County, Utah

Dear Mr. Owen:

The above-noted amendment is approved. Please submit three finalized copies of this permit change by December 22, 1994.

Sincerely,

  
Pamela Grubaugh-Littig  
Permit Coordinator

cc: Daron Haddock





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

Michael O. Leavitt  
Governor

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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)

December 13, 1994

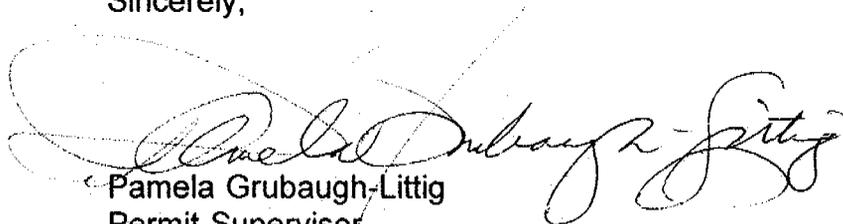
Thomas E. Ehmett, Acting Director  
Office of Surface Mining  
Reclamation and Enforcement  
505 Marquette N.W., Ste. 1200  
Albuquerque, NM 87102

Re: Updated Pages and Plates, Bear Canyon Mine, Co-Op Mining Company,  
ACT/015/025-94E, 94G, and 94H, Folder #2, Emery County, Utah

Dear Mr. Ehmett:

Enclosed please find the updated pages and plates for the above-noted approved amendments, Mine Water Flow Update, 94E - approved October 19, 1994, Explosives Storage Relocation, 94G - approved November 22, 1994, and Shower House Pad Vegetation and Reference Area, 94H - approved November 30, 1994.

Sincerely,

  
Pamela Grubaugh-Littig  
Permit Supervisor

Enclosure

cc: Price Field Office





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

Michael O. Leavitt  
Governor

Ted Stewart  
Executive Director

James W. Carter  
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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 22, 1994

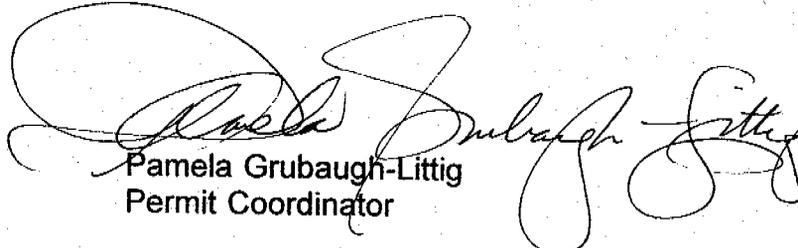
Mr. Wendell Owen  
Co-Op Mining Company  
P.O. Box 1245  
Huntington, UT 84528

Re: Explosives Storage Relocation, Bear Canyon Mine, Co-Op Mining Company,  
ACT/015/025-94G, Folder #3, Emery County, Utah

Dear Mr. Owen:

The above-noted amendment is approved. Please submit three finalized copies of this permit change by December 22, 1994.

Sincerely,



Pamela Grubaugh-Littig  
Permit Coordinator

cc: Daron Haddock



*Perm File # 3 Copy to Amendment file*

**PERMIT AMENDMENT APPROVAL**

File Folder #3

Title: <i>Explosive Storage</i>	PERMIT NUMBER: <i>015/025</i>
Description:	PERMIT CHANGE #: <i>946</i>
	MINE: <i>Bear Canyon</i>
	PERMITTEE: <i>Co Op Mining</i>

**WRITTEN FINDINGS FOR PERMIT APPLICATION APPROVAL**

YES, NO or N/A

1.	The application is complete and accurate and the applicant has complied with all the requirements of the State Program.	<i>Yes</i>
2.	The proposed permit area is not within an area under study or administrative proceedings under a petition, filed pursuant to R645-103-400 or 30 CFR 769, to have an area designated as unsuitable for coal mining and reclamation operations, unless:	<i>Yes</i>
A.	The applicant has demonstrated that before January 4, 1977, substantial legal and financial commitments were made in relation to the operation covered by the permit application, or	<i>Yes</i>
B.	The applicant has demonstrated that the proposed permit area is not within an area designated as unsuitable for mining pursuant to R645-103-300 and R645-103-400 or 30 CFR 769 or subject to the prohibitions or limitations of R645-103-230.	<i>Yes</i>
3.	For coal mining and reclamation operations where the private mineral estate to be mined has been severed from the private surface estate, the applicant has submitted to the Division the documentation required under R645-301-114.200.	<i>Yes</i>
4.	The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.	<i>Yes</i>
5.	The operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.).	<i>Yes</i>
6.	The Division has taken into account the effect of the proposed permitting action on properties listed on and eligible for listing on the National Register of Historic Places. This finding may be supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources, or a documented decision that the Division has determined that no additional protection measures are necessary.	<i>Yes</i>
7.	The Applicant has demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application.	<i>Yes</i>
8.	The Applicant has demonstrated that any existing structure will comply with the applicable performance standards of R645-301 and R645-302.	<i>Yes</i>
9.	The Applicant has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870.	<i>Yes</i>
10.	The Applicant has satisfied the applicable requirements of R645-302.	<i>NA</i>
11.	The Applicant has, if applicable, satisfied the requirements for approval of a long-term, intensive agricultural postmining land use, in accordance with the requirements of R645-301-353.400.	<i>NA</i>

**SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT AMENDMENT APPROVAL**

YES NO

1.	Are there any variances associated with this permit amendment approval? If yes, attach.		<i>X</i>
2.	Are there any special conditions associated with this permit amendment approval? If yes, attach. <i>Need to subm. + copies.</i>		<i>X</i>
3.	Are there any stipulations associated with this permit amendment approval? If yes, attach.		<i>X</i>

The Division hereby grants approval for Permit Amendment to the Existing Permit by incorporation of the proposed changes described herein and effective the date signed below. All other terms and conditions of the Existing Permit shall be maintained and in effect except as superseded by this Permit Amendment.

Signed *Dawn R Haddock*  
 Division of Oil, Gas and Mining

*11/18/94*  
 RECEIVED DATE

# CO-OP MINING COMPANY

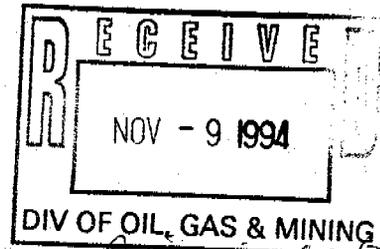
P.O. Box 1245  
Huntington, Utah 84528



(801) 381-5238  
Coal Sales (801) 381-5777

November 8, 1994

Pamela Grubaugh-Littig  
Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203



Ms. Grubaugh-Littig,

Re: Explosives Storage Relocation, Bear Canyon Mine, ACT/015/025,  
Emery County, Utah

Enclosed are three DRAFT copies of Plate 2-4C showing a proposed relocation of the designated explosives storage area. Upon approval, finalized copies of Plate 2-4C will be submitted to the Division.

If you have any questions, please call Charles Reynolds at (801) 687-2450.

Thank You,

*Wendell Owen*  
Wendell Owen,  
Resident Agent

Enclosure(s)  
cr



**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

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

July 27, 1995

**FIELD(001)**

Re: Tipple Structure Modification and Water Tank Addition, Bear Canyon Mine, Co-Op Mining Company, ACT/015/025-95G, Folder #2, Emery County, Utah

Dear Mr. FIELD(002):

Enclosed is a copy of Co-Op Mining Company's permit modification for Tipple Structure Modification and Water Tank Addition (Amendment 95G) for the Bear Canyon Mine.

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

Sincerely,

Joe Helfrich  
Permit Supervisor

blb  
Enclosure  
tranam.ltrz

**GENERAL MINE ADDRESS LIST FOR MAILING**

**CO-OP MINING COMPANY**

**BEAR CANYON MINE**

**ACT/015/025**

**(6) (Co-Op will update DEQ, DWR & Water Rights in Price)  
(1 Letter)**

**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**

**Mark Page, Regional Engineer  
Utah Division of Water Rights  
Southeastern Regional Office  
453 S. Carbon Avenue  
P. O. Box 718  
Price, UT 84501-0718  
(Co-Op will update Price, Water Rights copy)**

**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  
(Co-Op will update Price, DEQ copy)**

**Robert Valentine, Director  
Utah Division of Wildlife Resources  
1596 West North Temple  
Salt Lake City, UT 84116  
(Co-Op will update Price, DWR copy)**

**Max J. Evans, Director (only new areas)  
Utah Division of State History  
300 Rio Grande  
Salt Lake City, UT 84101**

**Price Field Office (1 official copy)  
Division of Oil, Gas and Mining  
451 East 400 North  
Price, UT 84501-2699**

**Division/SLO - (1 official copy)**

**Permittee (1 official copy)**

**Draft (1 copy)**

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