

1996

Report of Findings

Revegetation Monitoring Studies

Conda Quarry

City of Boulder Open Space

Boulder, CO

Prepared for:

City of Boulder Open Space Dept.

66 So. Cherryvale Rd.

Boulder, CO 80303

Prepared by:

ESCO Associates, Inc.

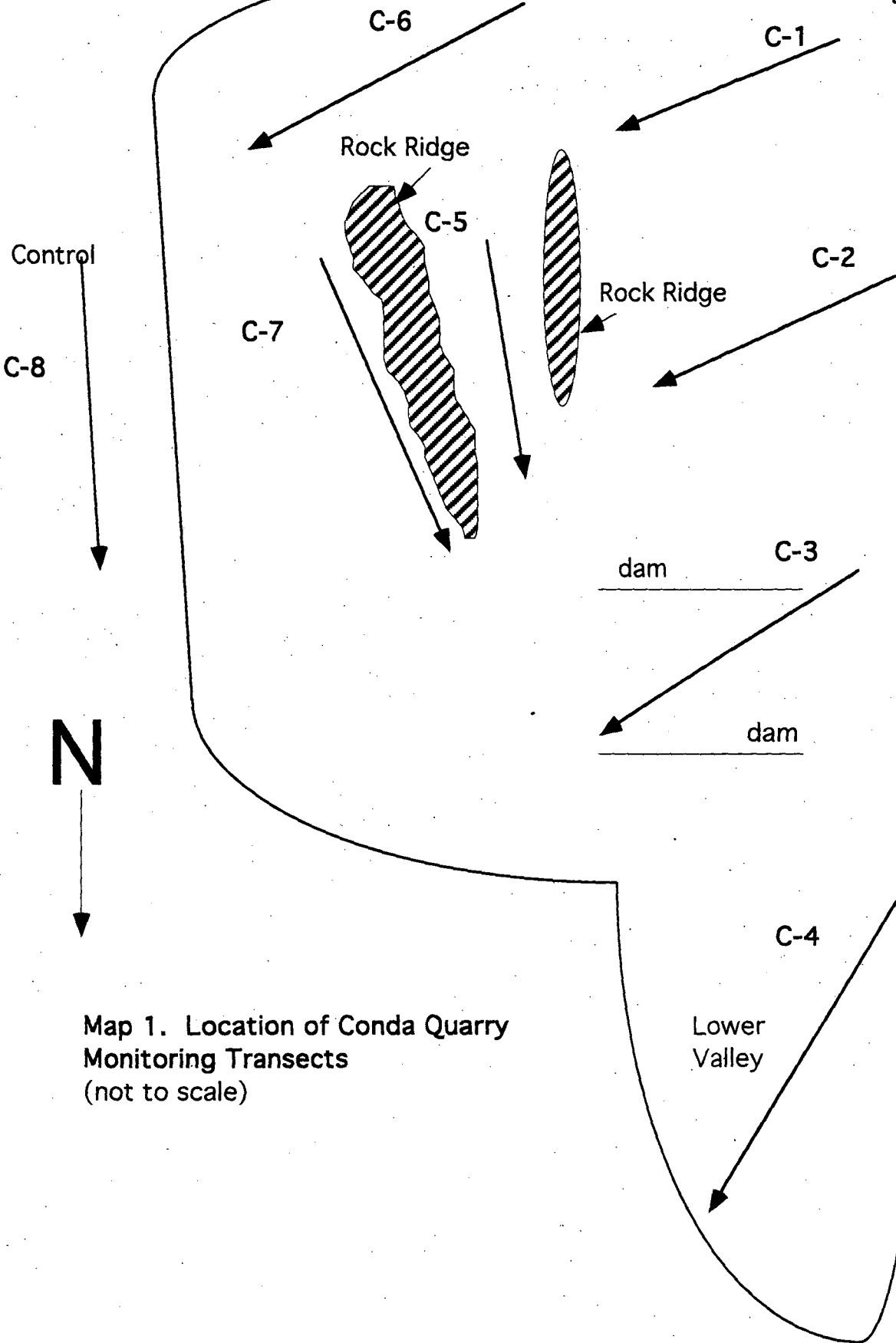
P.O. Box 18775

Boulder, CO 80308

May 1998

Talus Slope

Highwall
Remnant



Map 1. Location of Conda Quarry
Monitoring Transects
(not to scale)

Table 1. Cover Data – Reclaimed Transects, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE ANNUAL & BIENNIAL FORBS					
<i>Acroclasia albicaulis</i>	0.00	28.57	0.00	0.00	0.00
<i>Chenopodium fremontii</i>	0.00	14.29	0.00	0.00	0.00
<i>Chenopodium leptophyllum</i>	0.00	28.57	0.00	0.00	0.00
<i>Chenopodium spp.</i>	0.00	14.29	0.00	0.00	0.00
<i>Grindelia squarrosa</i>	0.43	100.00	1.15	0.57	1.37
<i>Helianthus annuus</i>	0.14	100.00	0.38	0.14	0.34
<i>Polygonum douglasii</i>	0.29	71.43	0.76	0.29	0.68
TOTAL NATIVE ANN. & BIEN. FORBS	0.9	100.0	2.3	1.0	2.4
INTRODUCED ANNUAL & BIENNIAL FORBS					
<i>Acosta diffusa</i>	5.00	100.00	13.36	5.71	13.70
<i>Chenopodium album</i>	0.00	28.57	0.00	0.00	0.00
<i>Cynoglossum officinale</i>	0.00	14.29	0.00	0.00	0.00
<i>Erodium cicutarium</i>	0.00	14.29	0.00	0.00	0.00
<i>Lactuca scariola</i>	0.00	42.86	0.00	0.00	0.00
<i>Medicago lupulina</i>	0.00	14.29	0.00	0.00	0.00
<i>Melilotus alba</i>	0.29	71.43	0.76	0.29	0.68
<i>Melilotus officinalis</i>	4.00	100.00	10.69	4.29	10.27
<i>Persicaria maculata</i>	0.14	14.29	0.38	0.14	0.34
<i>Polygonum arenastrum</i>	0.00	14.29	0.00	0.00	0.00
<i>Salsola australis</i>	0.43	100.00	1.15	0.57	1.37
<i>Thlaspi arvense</i>	0.00	14.29	0.00	0.00	0.00
<i>Tragopogon dubius ssp. major</i>	0.00	57.14	0.00	0.00	0.00
<i>Tribulus terrestris</i>	0.00	14.29	0.00	0.00	0.00
<i>Verbascum thapsus</i>	0.00	42.86	0.00	0.00	0.00
<i>Xanthium strumarium</i>	0.00	14.29	0.00	0.00	0.00
TOTAL INTRO. ANN. & BIEN. FORBS	9.9	100.0	26.3	11.0	26.4
NATIVE ANNUAL GRASSES					
<i>Panicum capillare</i>	0.00	42.86	0.00	0.00	0.00
TOTAL NATIVE ANN. GRASSES	0.0	42.9	0.0	0.0	0.0
INTRODUCED ANNUAL GRASSES					
<i>Avena fatua</i>	0.00	28.57	0.00	0.00	0.00
<i>Avena fatua var. sativa</i>	0.00	28.57	0.00	0.00	0.00
<i>Bromus japonicus</i>	0.14	57.14	0.38	0.14	0.34
<i>Triticum aestivum</i>	0.00	14.29	0.00	0.00	0.00
TOTAL INTRO. ANN. GRASSES	0.1	85.7	0.4	0.1	0.3
NATIVE PERENNIAL FORBS					
<i>Achillea lanulosa</i>	0.00	42.86	0.00	0.00	0.00
<i>Adenolinum lewisii</i>	0.00	14.29	0.00	0.00	0.00
<i>Ambrosia psilostachya var. coronopifolia</i>	7.29	100.00	19.47	7.86	18.84
<i>Aster laevis var. geyeri</i>	0.00	28.57	0.00	0.00	0.00
<i>Aster porteri</i>	0.00	42.86	0.00	0.00	0.00
<i>Heliomeris multiflora</i>	0.00	14.29	0.00	0.00	0.00
<i>Heterotheca fulcrata</i>	0.00	14.29	0.00	0.00	0.00
<i>Lupinus argenteus</i>	0.00	57.14	0.00	0.00	0.00
<i>Monarda fistulosa var. menthifolia</i>	0.00	57.14	0.00	0.00	0.00
<i>Oenothera villosa</i>	0.00	28.57	0.00	0.00	0.00
<i>Penstemon secundiflorus</i>	0.00	42.86	0.00	0.00	0.00
<i>Phacelia heterophylla</i>	0.00	42.86	0.00	0.00	0.00
<i>Ratibida columnifera</i>	0.00	42.86	0.00	0.00	0.00
<i>Rumex crispus</i>	0.00	42.86	0.00	0.00	0.00
<i>Virgulus novae-angliae</i>	0.00	28.57	0.00	0.00	0.00
TOTAL NATIVE PERENNIAL FORBS	7.3	100.0	19.5	7.9	18.8
INTRODUCED PERENNIAL FORBS					
<i>Breca arvensis</i>	0.14	85.71	0.38	0.14	0.34
<i>Cichorium intybus</i>	0.00	14.29	0.00	0.00	0.00
<i>Convolvulus arvensis</i>	0.14	100.00	0.38	0.14	0.34
<i>Verbena bracteata</i>	0.43	71.43	1.15	0.71	1.71
TOTAL INTRO. PERENNIAL FORBS	0.7	100.0	1.9	1.0	2.4

Table 1. Cover Data – Reclaimed Transects, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE PERENNIAL GRASSES (cool)					
<i>Elymus canadensis</i>	0.00	42.86	0.00	0.00	0.00
<i>Elymus lanceolatus</i> fm. <i>albicans</i>	0.00	14.29	0.00	0.00	0.00
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	1.14	85.71	3.05	1.29	3.08
<i>Elymus trachycaulus</i>	0.43	71.43	1.15	0.57	1.37
<i>Elymus virginicus</i>	0.00	14.29	0.00	0.00	0.00
<i>Hesperostipa comata</i>	0.00	57.14	0.00	0.00	0.00
<i>Nassella viridula</i>	0.00	14.29	0.00	0.00	0.00
<i>Pascopyrum smithii</i>	16.29	100.00	43.51	18.14	43.49
<i>Poa agassizensis</i>	0.00	28.57	0.00	0.00	0.00
TOTAL NATIVE PERENNIAL GRASSES (c)	17.9	100.0	47.7	20.0	47.9
INTRODUCED PERENNIAL GRASSES (cool)					
<i>Agropyron cristatum</i>	0.00	14.29	0.00	0.00	0.00
<i>Agrostis stolonifera</i>	0.00	14.29	0.00	0.00	0.00
<i>Bromopsis inermis</i>	0.00	28.57	0.00	0.00	0.00
<i>Dactylis glomerata</i>	0.00	14.29	0.00	0.00	0.00
<i>Echinochloa crus-galli</i>	0.14	14.29	0.38	0.14	0.34
<i>Festuca arundinacea</i>	0.14	71.43	0.38	0.14	0.34
<i>Setaria glauca</i>	0.00	14.29	0.00	0.00	0.00
<i>Thinopyrum intermedium</i>	0.29	14.29	0.76	0.29	0.68
TOTAL INTRO. PERENNIAL GRASSES (c)	0.6	85.7	1.5	0.6	1.4
NATIVE PERENNIAL GRASSES (warm)					
<i>Andropogon gerardii</i>	0.14	28.57	0.38	0.14	0.34
<i>Bouteloua curtipendula</i>	0.00	14.29	0.00	0.00	0.00
<i>Panicum virgatum</i>	0.00	14.29	0.00	0.00	0.00
<i>Schizachyrium scoparium</i>	0.00	28.57	0.00	0.00	0.00
TOTAL NATIVE PERENNIAL GRASSES (w)	0.1	57.1	0.4	0.1	0.3
NATIVE SHRUBS					
<i>Cercocarpus montanus</i>	0.00	14.29	0.00	0.00	0.00
<i>Rhus aromatica</i> ssp. <i>trilobata</i>	0.00	14.29	0.00	0.00	0.00
TOTAL NATIVE SHRUBS	0.0	14.3	0.0	0.0	0.0
Standing dead	1.00	57.14		1.14	
Litter	22.57	100.00		22.57	
Bare soil	35.00	100.00		35.00	
Rock	4.00	85.71		4.00	
TOTALS	100.0			104.4	
TOTAL VEGETATION COVER	37.4 (s=17.5)		100.0	41.7 (s=21.2)	100.0
GROUND COVER (Litter+Rock+Veg+St.Dead)	65.0			69.4	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 27.9 Std.Dev.= 6.2)					

Table 1. Cover Data – Reclaimed Transects, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	Percent Foliar Cover*						
	----- SAMPLE NUMBER -----						
	1	2	3	4	5	6	7
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Acroclasia albicaulis</i>						P	P
<i>Chenopodium fremontii</i>							P
<i>Chenopodium leptophyllum</i>	P						P
<i>Chenopodium spp.</i>							P
<i>Grindelia squarrosa</i>	(1)	P	P	2	P	1	P
<i>Helianthus annuus</i>	P	P	P	P	P	P	1
<i>Polygonum douglasii</i>	P		2	P	P		P
TOTAL NATIVE ANN. & BIEN. FORBS	(1)	P	2	2	P	1	1
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Acosta diffusa</i>	13	9(1)	1	7(1)	2	3(3)	P
<i>Chenopodium album</i>			P		P		
<i>Cynoglossum officinale</i>			P				
<i>Erodium cicutarium</i>				P			
<i>Lactuca serriola</i>	P				P		P
<i>Medicago lupulina</i>	P						
<i>Melilotus alba</i>	1	P		1	P		P
<i>Melilotus officinalis</i>	3(2)	1	1	9	7	7	P
<i>Persicaria maculata</i>							1
<i>Polygonum arenastrum</i>							P
<i>Salsola australis</i>	P	P	1	(1)	P	P	2
<i>Thlaspi arvense</i>			P				
<i>Tragopogon dubius ssp. major</i>	P	P		P		P	
<i>Tribulus terrestris</i>							P
<i>Verbascum thapsus</i>	P	P				P	
<i>Xanthium strumarium</i>							P
TOTAL INTRO. ANN. & BIEN. FORBS	17(2)	10(1)	3	17(2)	9	10(3)	3
NATIVE ANNUAL GRASSES							
<i>Panicum capillare</i>			P		P		P
TOTAL NATIVE ANN. GRASSES	---	---	P	---	P	---	P
INTRODUCED ANNUAL GRASSES							
<i>Avena fatua</i>	P					P	
<i>Avena fatua var. sativa</i>			P		P		
<i>Bromus japonicus</i>		1	P			P	P
<i>Triticum aestivum</i>					P		
TOTAL INTRO. ANN. GRASSES	P	1	P	---	P	P	P
NATIVE PERENNIAL FORBS							
<i>Achillea lanulosa</i>	P					P	P
<i>Adenolinum lewisii</i>							P
<i>Ambrosia psilostachya var. coronopifolia</i>	2	3	13(1)	10(1)	19(1)	(1)	4
<i>Aster laevis var. geyeri</i>	P					P	
<i>Aster porteri</i>			P	P		P	
<i>Heliomeris multiflora</i>							P
<i>Heterotheca fulcrata</i>				P			
<i>Lupinus argenteus</i>	P	P		P			P
<i>Monarda fistulosa var. menthifolia</i>	P	P				P	P
<i>Oenothera villosa</i>	P	P					
<i>Penstemon secundiflorus</i>	P					P	P
<i>Phacelia heterophylla</i>	P	P				P	
<i>Ratibida columnifera</i>	P	P					P
<i>Rumex crispus</i>		P	P	P			
<i>Virgulus novae-angliae</i>			P	P			
TOTAL NATIVE PERENNIAL FORBS	2	3	13(1)	10(1)	19(1)	(1)	4
INTRODUCED PERENNIAL FORBS							
<i>Breca arvensis</i>	P	1		P	P	P	P
<i>Cichorium intybus</i>				P			
<i>Convolvulus arvensis</i>	1	P	P	P	P	P	P
<i>Verbena bracteata</i>	1(2)	P	2	P			P
TOTAL INTRO. PERENNIAL FORBS	2(2)	1	2	P	P	P	P

Table 1. Cover Data – Reclaimed Transects, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	Percent Foliar Cover*						
	----- SAMPLE NUMBER -----						
	1	2	3	4	5	6	7
NATIVE PERENNIAL GRASSES (cool)							
<i>Elymus canadensis</i>	P	P	P				
<i>Elymus lanceolatus</i> fm. <i>albicans</i>				P			
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	2(1)	2	P	P	P	4	
<i>Elymus trachycaulus</i>	2(1)	P		P		1	P
<i>Elymus virginicus</i>		P					
<i>Hesperostipa comata</i>	P	P		P			P
<i>Nassella viridula</i>							P
<i>Pascopyrum smithii</i>	33(6)	35(3)	3	21(1)	1	20(3)	1
<i>Poa agassizensis</i>	P					P	
TOTAL NATIVE PERENNIAL GRASSES (c)	37(8)	37(3)	3	21(1)	1	25(3)	1
INTRODUCED PERENNIAL GRASSES (cool)							
<i>Agropyron cristatum</i>				P			
<i>Agrostis stolonifera</i>			P				
<i>Bromopsis inermis</i>				P	P		
<i>Dactylis glomerata</i>						P	
<i>Echinochloa crus-galli</i>							1
<i>Festuca arundinacea</i>	P		P	P		1	P
<i>Setaria glauca</i>							P
<i>Thinopyrum intermedium</i>					2		
TOTAL INTRO. PERENNIAL GRASSES (c)	P	---	P	P	2	1	1
NATIVE PERENNIAL GRASSES (warm)							
<i>Andropogon gerardii</i>	1						P
<i>Bouteloua curtipendula</i>							P
<i>Panicum virgatum</i>							P
<i>Schizachyrium scoparium</i>		P			P		
TOTAL NATIVE PERENNIAL GRASSES (w)	1	P	---	---	P	---	P
NATIVE SHRUBS							
<i>Cercocarpus montanus</i>			P				
<i>Rhus aromatica</i> ssp. <i>trilobata</i>			P				
TOTAL NATIVE SHRUBS	---	---	P	---	---	---	---
Standing dead	1(1)	4	1	1			
Litter	30	29	21	23	30	22	3
Bare soil	10	10	46	24	31	40	84
Rock		5	9	2	8	1	3
TOTALS	100	100	100	100	100	100	100
TOTAL VEGETATION COVER	59(13)	52(4)	23(1)	50(4)	31(1)	37(7)	10
GROUND COVER (Litter+Rock+Veg+St.Dead)	90(14)	90(4)	54(1)	76(4)	69(1)	60(7)	16
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 27.9 Std.Dev.= 6.2)	33	26	25	27	20	25	39

*P=Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

Table 2. Cover Data – Control Transect, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	COVER (%)	RELATIVE VEGETATION COVER (%)	RELATIVE VEGETATION COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover* -- SAMPLE NUMBER --
					8
NATIVE ANNUAL & BIENNIAL FORBS					
<i>Erysimum asperum</i>	0.00	0.00	0.00	0.00	P
<i>Frasera speciosa</i>	0.00	0.00	0.00	0.00	P
<i>Grindelia squarrosa</i>	1.00	1.56	1.00	1.20	1
TOTAL NATIVE ANN. & BIEN. FORBS	1.0	1.6	1.0	1.2	1
INTRODUCED ANNUAL & BIENNIAL FORBS					
<i>Alyssum desertorum</i>	0.00	0.00	0.00	0.00	P
<i>Descurainia</i> spp.	0.00	0.00	0.00	0.00	P
<i>Lactuca serriola</i>	0.00	0.00	0.00	0.00	P
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	P
<i>Neolepia campestre</i>	1.00	1.56	1.00	1.20	1
<i>Tragopogon dubius</i> ssp. major	0.00	0.00	0.00	0.00	P
TOTAL INTRO. ANN. & BIEN. FORBS	1.0	1.6	1.0	1.2	1
INTRODUCED ANNUAL GRASSES					
<i>Bromus japonicus</i>	4.00	6.25	5.00	6.02	4(1)
TOTAL INTRO. ANN. GRASSES	4.0	6.3	5.0	6.0	4(1)
NATIVE PERENNIAL FORBS					
<i>Achillea lanulosa</i>	1.00	1.56	3.00	3.61	1(2)
<i>Amerosedum lanceolatum</i>	0.00	0.00	0.00	0.00	P
<i>Anemone</i> spp.	0.00	0.00	0.00	0.00	P
<i>Antennaria rosea</i>	0.00	0.00	0.00	0.00	P
<i>Artemisia frigida</i>	0.00	0.00	0.00	0.00	P
<i>Artemisia ludoviciana</i>	0.00	0.00	0.00	0.00	P
<i>Aster laevis</i> var. <i>geyeri</i>	0.00	0.00	0.00	0.00	P
<i>Aster porteri</i>	0.00	0.00	0.00	0.00	P
<i>Calochortus gunnisonii</i>	0.00	0.00	0.00	0.00	P
<i>Comandra umbellata</i> ssp. <i>pallida</i>	4.00	6.25	5.00	6.02	4(1)
<i>Drymocallis fissa</i>	5.00	7.81	10.00	12.05	5(5)
<i>Eriogonum flavum</i> var. <i>flavum</i>	0.00	0.00	0.00	0.00	P
<i>Geranium viscosissimum</i> ssp. <i>nervosum</i>	0.00	0.00	0.00	0.00	P
<i>Helianthus pumilus</i>	0.00	0.00	0.00	0.00	P
<i>Heliomeris multiflora</i>	0.00	0.00	0.00	0.00	P
<i>Heterotheca fulcrata</i>	0.00	0.00	0.00	0.00	P
<i>Lathyrus leucanthus</i>	1.00	1.56	1.00	1.20	1
<i>Liatris punctata</i>	0.00	0.00	0.00	0.00	P
<i>Monarda fistulosa</i> var. <i>menthifolia</i>	0.00	0.00	0.00	0.00	P
<i>Oligoneuron rigidum</i>	0.00	0.00	0.00	0.00	P
<i>Penstemon angustifolius</i>	0.00	0.00	0.00	0.00	P
<i>Penstemon secundiflorus</i>	0.00	0.00	0.00	0.00	P
<i>Phlox longifolia</i>	0.00	0.00	0.00	0.00	P
<i>Psoralidium tenuiflorum</i>	0.00	0.00	0.00	0.00	P
<i>Senecio integerrimus</i>	0.00	0.00	0.00	0.00	P
<i>Thermopsis divaricarpa</i>	2.00	3.13	2.00	2.41	2
<i>Virgulus falcatus</i>	0.00	0.00	0.00	0.00	P
TOTAL NATIVE PERENNIAL FORBS	13.0	20.3	21.0	25.3	13(8)
INTRODUCED PERENNIAL FORBS					
<i>Hypericum perforatum</i>	0.00	0.00	0.00	0.00	P
TOTAL INTRO. PERENNIAL FORBS	0.0	0.0	0.0	0.0	P
NATIVE PERENNIAL GRASSES (cool)					
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	6.00	9.38	6.00	7.23	6
<i>Elymus longifolius</i>	1.00	1.56	1.00	1.20	1
<i>Hesperostipa comata</i>	1.00	1.56	1.00	1.20	1
<i>Koeleria macrantha</i>	0.00	0.00	0.00	0.00	P
<i>Nassella viridula</i>	0.00	0.00	0.00	0.00	P
<i>Poa agassizensis</i>	13.00	20.31	21.00	25.30	13(8)
<i>Poa compressa</i>	10.00	15.63	11.00	13.25	10(1)
TOTAL NATIVE PERENNIAL GRASSES (c)	31.0	48.4	40.0	48.2	31(9)

Table 2. Cover Data – Control Transect, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	COVER (%)	RELATIVE VEGETATION COVER (%)	COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover* -- SAMPLE NUMBER --
					8
NATIVE PERENNIAL GRASSES (warm)					
<i>Andropogon gerardii</i>	3.00	4.69	4.00	4.82	3(1)
<i>Muhlenbergia montana</i>	1.00	1.56	1.00	1.20	1
<i>Schizachyrium scoparium</i>	0.00	0.00	0.00	0.00	P
<i>Sporobolus heterolepis</i>	0.00	0.00	0.00	0.00	P
TOTAL NATIVE PERENNIAL GRASSES (w)	4.0	6.3	5.0	6.0	4(1)
NATIVE SHRUBS					
<i>Padus virginiana ssp. melanocarpa</i>	2.00	3.13	2.00	2.41	2
<i>Rosa sayi</i>	2.00	3.13	2.00	2.41	2
<i>Symphoricarpos occidentalis</i>	1.00	1.56	1.00	1.20	1
<i>Yucca glauca</i>	1.00	1.56	1.00	1.20	1
TOTAL NATIVE SHRUBS	6.0	9.4	6.0	7.2	6
NATIVE TREES					
<i>Pinus ponderosa ssp. scopulorum</i>	4.00	6.25	4.00	4.82	4
<i>Pseudotsuga menziesii</i>	0.00	0.00	0.00	0.00	P
TOTAL NATIVE TREES	4.0	6.3	4.0	4.8	4
SUCCULENT					
<i>Opuntia macrorhiza</i>	0.00	0.00	0.00	0.00	P
TOTAL SUCCULENT	0.0	0.0	0.0	0.0	P
Litter	34.00		34.00		34
Rock	2.00		2.00		2
TOTALS	100.0		119.0		100
TOTAL VEGETATION COVER	64.0 (s=0.0)	100.0	83.0 (s=0.0)	100.0	64(19)
GROUND COVER (Litter+Rock+Veg+St.Dead)	100.0		119.0		100(19)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 56.0 Std.Dev.= 0.0)					56

*P=Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

Table 3. Frequency Data – Transect 1, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----- SAMPLE NUMBER -----										
		1	2	3	4	5	6	7	8	9	10	
NATIVE ANNUAL & BIENNIAL FORBS												
<i>Chenopodium leptophyllum</i>	10.00											P
<i>Grindelia squarrosa</i>	10.00		P									
<i>Helianthus annuus</i>	20.00							P				P
<i>Polygonum douglasii</i>	20.00	P										P
TOTAL NATIVE ANN. & BIEN. FORBS	50.0	P	P	---	---	---	---	P	---	---	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS												
<i>Acosta diffusa</i>	60.00	P	P		P	P	P	P				
<i>Lactuca serriola</i>	10.00						P					
<i>Medicago lupulina</i>	20.00		P							P		
<i>Melilotus officinalis</i>	70.00	P	P			P	P	P			P	P
<i>Salsola australis</i>	50.00		P					P			P	P
<i>Verbascum thapsus</i>	10.00				P							
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	P	---	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES												
<i>Avena fatua</i>	10.00				P							
TOTAL INTRO. ANN. GRASSES	10.0	---	---	---	P	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS												
<i>Achillea lanulosa</i>	10.00				P							
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	100.00	P	P	P	P	P	P	P	P	P	P	P
<i>Aster laevis</i> var. <i>geyeri</i>	20.00				P					P		
<i>Lupinus argenteus</i>	10.00		P									
<i>Monarda fistulosa</i> var. <i>menthifolia</i>	40.00	P	P					P				P
<i>Penstemon secundiflorus</i>	20.00					P	P					
<i>Phacelia heterophylla</i>	10.00				P							
<i>Ratibida columnifera</i>	30.00		P			P						P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS												
<i>Breera arvensis</i>	10.00									P		
<i>Convolvulus arvensis</i>	20.00				P	P						
<i>Verbena bracteata</i>	50.00	P	P	P	P							P
TOTAL INTRO. PERENNIAL FORBS	70.0	P	P	P	P	P	---	---	---	P	---	P
NATIVE PERENNIAL GRASSES (cool)												
<i>Elymus canadensis</i>	10.00						P					
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	90.00	P	P	P	P	P	P	P	P	P	P	
<i>Elymus trachycaulus</i>	40.00			P		P	P					P
<i>Hesperostipa comata</i>	40.00			P	P		P				P	
<i>Pascopyrum smithii</i>	90.00	P		P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)												
<i>Festuca arundinacea</i>	10.00									P		
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	---	---	---	---	---	---	---	P	---	---
NATIVE PERENNIAL GRASSES (warm)												
<i>Andropogon gerardii</i>	10.00				P							
TOTAL NATIVE PERENNIAL GRASSES (w)	10.0	---	---	---	P	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/5 sq.m.) (AVERAGE= 9.0 Std.Dev.= 2.8)		8	11	6	14	10	12	5	7	8	9	

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 4. Frequency Data – Transect 2, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----- SAMPLE NUMBER -----									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	10.00					P					
<i>Helianthus annuus</i>	30.00	P	P						P		
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	P	---	---	P	---	P	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Acosta diffusa</i>	50.00		P	P		P		P		P	
<i>Melilotus alba</i>	10.00	P									
<i>Melilotus officinalis</i>	70.00	P		P	P	P		P	P		P
<i>Salsola australis</i>	10.00										P
<i>Tragopogon dubius ssp. major</i>	10.00										P
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL FORBS											
<i>Ambrosia psilostachya var. coronopifolia</i>	90.00	P		P	P	P	P	P	P	P	P
<i>Monarda fistulosa var. menthifolia</i>	10.00										P
<i>Oenothera villosa</i>	10.00								P		
<i>Ratibida columnifera</i>	20.00		P		P						
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
<i>Breea arvensis</i>	10.00		P								
<i>Convolvulus arvensis</i>	10.00	P									
<i>Verbena bracteata</i>	20.00				P					P	
TOTAL INTRO. PERENNIAL FORBS	40.0	P	P	---	P	---	---	---	P	---	---
NATIVE PERENNIAL GRASSES (cool)											
<i>Elymus lanceolatus fm. dasystachya</i>	70.00		P		P	P		P	P	P	P
<i>Elymus trachycaulus</i>	10.00	P									
<i>Elymus virginicus</i>	10.00	P									
<i>Hesperostipa comata</i>	20.00		P					P			
<i>Pascopyrum smithii</i>	90.00		P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
<i>Schizachyrium scoparium</i>	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	10.0	---	---	---	---	---	---	---	---	---	P
SPECIES DENSITY (# of species/5 sq.m.)											
(AVERAGE= 5.7 Std.Dev.= 1.3)											
		7	7	4	6	6	3	6	6	5	7

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 5. Frequency Data – Transect 3, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE*									
		SAMPLE NUMBER									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	20.00				P				P		
<i>Helianthus annuus</i>	60.00	P		P		P	P	P		P	
<i>Orthocarpus luteus</i>	10.00								P		
<i>Polygonum douglasii</i>	10.00									P	
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	---	P	P	P	P	P	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Acosta diffusa</i>	30.00		P		P				P		
<i>Chenopodium album</i>	20.00	P									P
<i>Cynoglossum officinale</i>	10.00					P					
<i>Mellilotus officinalis</i>	70.00	P		P	P	P	P	P		P	
<i>Salsola australis</i>	40.00	P					P		P		P
<i>Thlaspi arvense</i>	10.00		P								
TOTAL INTRO. ANN. & BIEN. FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES											
<i>Avena fatua</i> var. <i>sativa</i>	10.00										P
<i>Bromus japonicus</i>	10.00				P						
TOTAL INTRO. ANN. GRASSES	20.0	---	---	---	P	---	---	---	---	P	---
NATIVE PERENNIAL FORBS											
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	100.00	P	P	P	P	P	P	P	P	P	P
<i>Rumex crispus</i>	10.00			P							
<i>Virgulus novae-angliae</i>	10.00								P		
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
<i>Convolvulus arvensis</i>	10.00			P							
<i>Verbena bracteata</i>	10.00				P						
TOTAL INTRO. PERENNIAL FORBS	20.0	---	---	P	P	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	20.00	P		P							
<i>Pascopyrum smithii</i>	90.00		P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
<i>Agrostis stolonifera</i>	10.00										P
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	---	---	---	---	---	---	---	---	P
SPECIES DENSITY (# of species/5 sq.m.) (AVERAGE= 5.6 Std.Dev.= 1.2)		6	4	7	7	5	5	4	7	6	5

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 6. Frequency Data – Transect 4, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----- SAMPLE NUMBER -----									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	40.00		P	P			P				P
<i>Helianthus annuus</i>	20.00								P	P	
<i>Polygonum douglasii</i>	10.00							P			
TOTAL NATIVE ANN. & BIEN. FORBS	70.0	---	P	P	---	---	P	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Acosta diffusa</i>	50.00			P	P		P				P
<i>Erodium cicutarium</i>	10.00								P		
<i>Melilotus alba</i>	20.00					P		P			
<i>Melilotus officinalis</i>	60.00	P		P	P		P			P	P
<i>Salsola australis</i>	20.00			P			P				
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	---	P	P	P	P	P	P	P	P
NATIVE PERENNIAL FORBS											
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	70.00				P	P	P	P	P	P	P
<i>Aster porteri</i>	10.00					P					
<i>Heterotheca fulcrata</i>	10.00					P					
<i>Virgulus novae-angliae</i>	10.00		P								
TOTAL NATIVE PERENNIAL FORBS	80.0	---	P	---	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
<i>Breea arvensis</i>	10.00										P
<i>Convolvulus arvensis</i>	40.00	P	P						P		P
<i>Verbena bracteata</i>	50.00		P	P		P	P	P			
TOTAL INTRO. PERENNIAL FORBS	80.0	P	P	P	---	P	P	P	P	---	P
NATIVE PERENNIAL GRASSES (cool)											
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	60.00	P		P	P	P				P	P
<i>Elymus trachycaulus</i>	10.00		P								
<i>Hesperostipa comata</i>	10.00	P									
<i>Pascopyrum smithii</i>	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
<i>Agropyron cristatum</i>	10.00		P								
<i>Bromopsis inermis</i>	10.00		P								
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	P	---	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/5 sq.m.) (AVERAGE= 6.3 Std.Dev.= 1.3)		5	8	7	5	7	7	5	5	6	8

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 7. Frequency Data – Transect 5, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----- SAMPLE NUMBER -----									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	50.00	P	P	P	P		P				
<i>Helianthus annuus</i>	70.00	P	P	P			P	P	P	P	
<i>Polygonum douglasii</i>	40.00	P			P	P					P
TOTAL NATIVE ANN. & BIEN. FORBS	90.0	P	P	P	P	P	P	P	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Acosta diffusa</i>	30.00			P	P	P					
<i>Chenopodium album</i>	10.00	P									
<i>Melilotus officinalis</i>	90.00	P	P	P	P	P	P	P	P	P	
<i>Salsola australis</i>	30.00	P		P	P						
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	P	P	P	P	P	P	P	P	---
NATIVE ANNUAL GRASSES											
<i>Panicum capillare</i>	10.00	P									
TOTAL NATIVE ANN. GRASSES	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
<i>Convolvulus arvensis</i>	10.00										P
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)											
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	10.00	P									
<i>Pascopyrum smithii</i>	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
<i>Bromopsis inermis</i>	20.00			P	P						
<i>Thinopyrum intermedium</i>	30.00	P			P	P					
TOTAL INTRO. PERENNIAL GRASSES (c)	40.0	P	---	P	P	P	---	---	---	---	---
NATIVE PERENNIAL GRASSES (warm)											
<i>Bouteloua curtipendula</i>	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	10.0	---	---	---	---	---	---	---	---	---	P
SPECIES DENSITY (# of species/5 sq.m.)											
(AVERAGE= 6.1 Std.Dev.= 2.5)		11	5	8	9	6	5	4	4	6	3

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 8. Frequency Data – Transect 6, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----- SAMPLE NUMBER -----									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	40.00		P				P		P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	---	P	---	---	---	P	---	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Acosta diffusa</i>	60.00		P	P		P	P			P	P
<i>Melilotus officinalis</i>	90.00	P	P	P	P	P	P	P	P	P	P
<i>Salsola australis</i>	40.00			P		P				P	P
<i>Tragopogon dubius</i> ssp. <i>major</i>	30.00						P	P	P		
TOTAL INTRO. ANN. & BIEN. FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES											
<i>Bromus japonicus</i>	10.00	P									
TOTAL INTRO. ANN. GRASSES	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
<i>Achillea lanulosa</i>	20.00				P	P					
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	70.00	P	P	P	P	P	P		P		
<i>Aster laevis</i> var. <i>geyeri</i>	20.00							P	P		
<i>Aster porteri</i>	10.00						P				
<i>Monarda fistulosa</i> var. <i>menthifolia</i>	10.00										P
<i>Penstemon secundiflorus</i>	10.00									P	
<i>Phacelia heterophylla</i>	20.00	P				P					
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
<i>Breca arvensis</i>	10.00	P									
<i>Convolvulus arvensis</i>	10.00	P									
TOTAL INTRO. PERENNIAL FORBS	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	70.00	P	P		P	P		P	P		P
<i>Elymus trachycaulus</i>	10.00						P				
<i>Pascopyrum smithii</i>	80.00			P	P	P	P	P	P	P	P
<i>Poa agassizensis</i>	20.00				P	P					
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
<i>Dactylis glomerata</i>	10.00						P				
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	---	---	---	---	P	---	---	---	---
SPECIES DENSITY (# of species/5 sq.m.) (AVERAGE= 6.4 Std.Dev.= 1.6)		7	5	5	6	9	9	5	7	6	5

*P=Present within 1m X 5m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 9. Density and Frequency Data – Transect 7, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	AVERAGE DENSITY #	FREQ. (%)	RELATIVE VEGETATION DENSITY (%)
NATIVE ANNUAL & BIENNIAL FORBS			
<i>Acroclasia albicaulis</i>	0.30	30.00	0.43
<i>Chenopodium fremontii</i>	0.10	10.00	0.14
<i>Chenopodium leptophyllum</i>	0.40	10.00	0.58
<i>Chenopodium spp.</i>	0.50	30.00	0.72
<i>Grindelia squarrosa</i>	0.10	10.00	0.14
<i>Helianthus annuus</i>	1.10	60.00	1.59
<i>Polygonum douglasii</i>	0.10	10.00	0.14
TOTAL NATIVE ANN. & BIEN. FORBS	2.6	90.0	3.8
INTRODUCED ANNUAL & BIENNIAL FORBS			
<i>Acosta diffusa</i>	0.30	20.00	0.43
<i>Lactuca serriola</i>	0.10	10.00	0.14
<i>Melilotus alba</i>	0.10	10.00	0.14
<i>Melilotus officinalis</i>	0.90	60.00	1.30
<i>Persicaria maculata</i>	0.30	20.00	0.43
<i>Polygonum arenastrum</i>	0.90	50.00	1.30
<i>Salsola australis</i>	0.90	50.00	1.30
<i>Tribulus terrestris</i>	0.10	10.00	0.14
TOTAL INTRO. ANN. & BIEN. FORBS	3.6	90.0	5.2
INTRODUCED ANNUAL GRASSES			
<i>Bromus japonicus</i>	0.20	20.00	0.29
TOTAL INTRO. ANN. GRASSES	0.2	20.0	0.3
NATIVE PERENNIAL FORBS			
<i>Achillea lanulosa</i>	0.30	20.00	0.43
<i>Adenolinum lewisii</i>	3.30	90.00	4.78
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	10.90	100.00	15.77
<i>Heliomeris multiflora</i>	0.10	10.00	0.14
<i>Lupinus argenteus</i>	0.70	50.00	1.01
<i>Monarda fistulosa</i> var. <i>menthifolia</i>	1.70	70.00	2.46
<i>Penstemon secundiflorus</i>	0.10	10.00	0.14
<i>Ratibida columnifera</i>	0.40	30.00	0.58
TOTAL NATIVE PERENNIAL FORBS	17.5	100.0	25.3
INTRODUCED PERENNIAL FORBS			
<i>Breca arvensis</i>	0.10	10.00	0.14
<i>Convolvulus arvensis</i>	0.30	30.00	0.43
<i>Verbena bracteata</i>	0.20	20.00	0.29
TOTAL INTRO. PERENNIAL FORBS	0.6	50.0	0.9
NATIVE PERENNIAL GRASSES (cool)			
<i>Elymus trachycaulus</i>	1.60	70.00	2.32
<i>Hesperostipa comata</i>	8.20	90.00	11.87
<i>Nassella viridula</i>	1.10	30.00	1.59
<i>Pascopyrum smithii</i>	20.00	100.00	28.94
TOTAL NATIVE PERENNIAL GRASSES (c)	30.9	100.0	44.7
INTRODUCED PERENNIAL GRASSES (cool)			
<i>Echinochloa crus-galli</i>	0.60	50.00	0.87
<i>Setaria glauca</i>	0.10	10.00	0.14
TOTAL INTRO. PERENNIAL GRASSES (c)	0.7	50.0	1.0
NATIVE PERENNIAL GRASSES (warm)			
<i>Andropogon gerardii</i>	5.40	90.00	7.81
<i>Bouteloua curtipendula</i>	0.10	10.00	0.14
<i>Panicum virgatum</i>	7.50	80.00	10.85
TOTAL NATIVE PERENNIAL GRASSES (w)	13.0	90.0	18.8
TOTAL DENSITY	69.1		
	Std.Dev. = 27.8		
SPECIES DENSITY (# of species/100 sq.m.)			
(AVERAGE = 13.8 Std.Dev. = 3.3)			

Table 9. Density and Frequency Data – Transect 7, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	Number of individuals									
	----- SAMPLE NUMBER -----									
	1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS										
<i>Acroclasia albicaulis</i>				1	1				1	
<i>Chenopodium fremontii</i>				1						
<i>Chenopodium leptophyllum</i>	4									
<i>Chenopodium spp.</i>				2			1	2		
<i>Grindelia squarrosa</i>				1						
<i>Helianthus annuus</i>	5	2	1		1	1		1		
<i>Polygonum douglasii</i>	1									
TOTAL NATIVE ANN. & BIEN. FORBS	10	2	1	5	2	1	1	3	1	---
INTRODUCED ANNUAL & BIENNIAL FORBS										
<i>Acosta diffusa</i>			1				2			
<i>Lactuca serriola</i>	1									
<i>Melilotus alba</i>					1					
<i>Melilotus officinalis</i>	1	1	1				1		4	1
<i>Persicaria maculata</i>	2				1					
<i>Polygonum arenastrum</i>		2	2	3				1	1	
<i>Salsola australis</i>	2			1	2			1	3	
<i>Tribulus terrestris</i>								1		
TOTAL INTRO. ANN. & BIEN. FORBS	6	3	4	4	4	---	3	3	8	1
INTRODUCED ANNUAL GRASSES										
<i>Bromus japonicus</i>				1				1		
TOTAL INTRO. ANN. GRASSES	---	---	---	1	---	---	---	1	---	---
NATIVE PERENNIAL FORBS										
<i>Achillea lanulosa</i>				1				2		
<i>Adenolinum lewisii</i>		5	2	4	3	5	2	5	6	1
<i>Ambrosia psilostachya var. coronopifolia</i>	28	26	11	12	4	1	6	5	11	5
<i>Heliomeris multiflora</i>		1								
<i>Lupinus argenteus</i>				2	1	2	1		1	
<i>Monarda fistulosa var. menthifolia</i>		5	3	5	1	1		1	1	
<i>Penstemon secundiflorus</i>						1				
<i>Ratibida columnifera</i>		2	1	1						
TOTAL NATIVE PERENNIAL FORBS	28	39	17	25	9	10	9	13	19	6
INTRODUCED PERENNIAL FORBS										
<i>Breea arvensis</i>								1		
<i>Convolvulus arvensis</i>		1					1		1	
<i>Verbena bracteata</i>			1				1			
TOTAL INTRO. PERENNIAL FORBS	---	1	1	---	---	---	2	1	1	---
NATIVE PERENNIAL GRASSES (cool)										
<i>Elymus trachycaulus</i>		2	1	4		1		1	2	5
<i>Hesperostipa comata</i>		4	7	37	8	7	7	6	1	5
<i>Nassella viridula</i>		7		2						2
<i>Pascopyrum smithii</i>	7	10	42	32	6	11	10	5	23	54
TOTAL NATIVE PERENNIAL GRASSES (c)	7	23	50	75	14	19	17	12	26	66
INTRODUCED PERENNIAL GRASSES (cool)										
<i>Echinochloa crus-galli</i>		2	1	1	1		1			
<i>Setaria glauca</i>		1								
TOTAL INTRO. PERENNIAL GRASSES (c)	---	3	1	1	1	---	1	---	---	---
NATIVE PERENNIAL GRASSES (warm)										
<i>Andropogon gerardii</i>		7	13	4	7	5	3	4	4	7
<i>Bouteloua curtipendula</i>										1
<i>Panicum virgatum</i>			5	14	16	9	5	11	9	6
TOTAL NATIVE PERENNIAL GRASSES (w)	---	7	18	18	23	14	8	15	13	14
TOTAL DENSITY	51	78	92	129	53	44	41	48	68	87
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 13.8 Std.Dev.= 3.3)	9	16	15	20	14	11	13	16	14	10

*P=Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

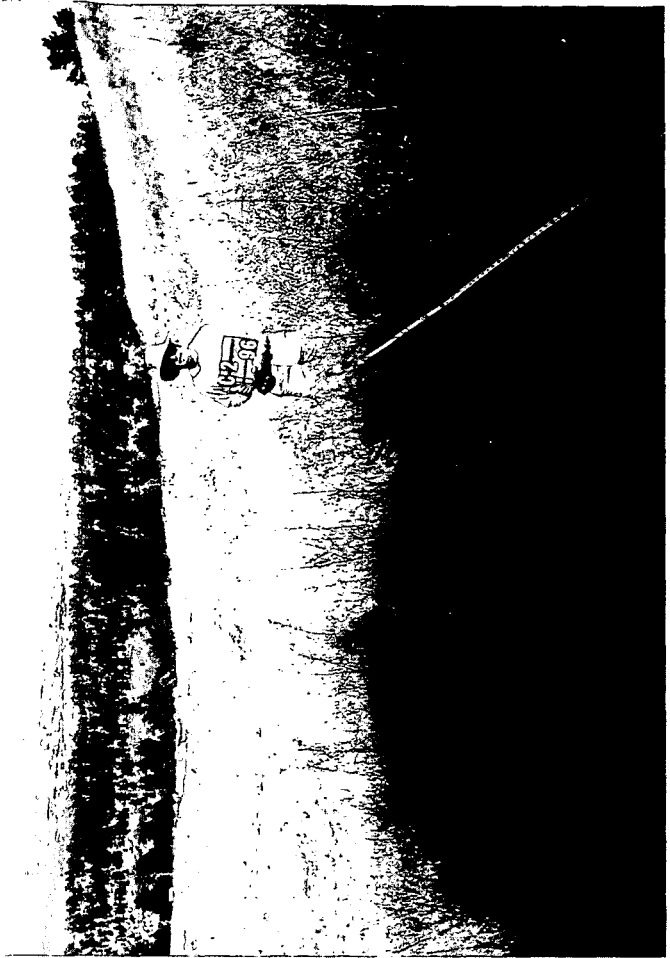
Table 10. Frequency Data – Control Transect, Conda Mine, Boulder City Open Space, CO – 1996

PLANT SPECIES	FREQUENCY (%)	PRESENCE*									
		----- SAMPLE NUMBER -----									
		1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
<i>Grindelia squarrosa</i>	10.00										P
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	---	---	---	---	---	---	---	---	---	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
<i>Alyssum desertorum</i>	20.00							P	P		
<i>Lactuca serriola</i>	10.00							P			
<i>Neolepia campestre</i>	10.00	P									
<i>Tragopogon dubius</i> ssp. <i>major</i>	30.00							P	P		P
TOTAL INTRO. ANN. & BIEN. FORBS	40.0	P	---	---	---	---	---	P	P	---	P
INTRODUCED ANNUAL GRASSES											
<i>Bromus japonicus</i>	30.00							P	P	P	
TOTAL INTRO. ANN. GRASSES	30.0	---	---	---	---	---	---	P	P	P	---
NATIVE PERENNIAL FORBS											
<i>Achillea lanulosa</i>	40.00	P		P				P		P	
<i>Anemone</i> spp.	10.00			P							
<i>Antennaria rosea</i>	10.00										P
<i>Artemisia frigida</i>	20.00	P			P						
<i>Artemisia ludoviciana</i>	40.00						P	P	P		P
<i>Aster laevis</i> var. <i>geyeri</i>	20.00	P			P						
<i>Aster porteri</i>	80.00	P	P	P	P		P	P	P		P
<i>Calochortus gunnisonii</i>	10.00				P						
<i>Comandra umbellata</i> ssp. <i>pallida</i>	90.00	P	P	P	P	P	P		P	P	P
<i>Drymocallis fissa</i>	90.00	P	P	P	P	P	P	P		P	P
<i>Eriogonum flavum</i> var. <i>flavum</i>	30.00						P			P	P
<i>Geranium viscosissimum</i> ssp. <i>nervosum</i>	10.00				P						
<i>Heliomeris multiflora</i>	30.00							P		P	P
<i>Heterotheca fulcrata</i>	10.00				P						
<i>Lathyrus leucanthus</i>	50.00		P		P	P	P			P	
<i>Liatris punctata</i>	40.00				P			P	P		P
<i>Oligoneuron rigidum</i>	30.00		P	P							P
<i>Penstemon angustifolius</i>	20.00	P									P
<i>Penstemon secundiflorus</i>	10.00				P						
<i>Phlox longifolia</i>	20.00				P						P
<i>Virgulus falcatus</i>	30.00	P						P		P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	90.00	P	P	P	P		P	P	P	P	P
<i>Elymus longifolius</i>	20.00			P			P				
<i>Hesperostipa comata</i>	30.00			P	P			P			
<i>Koeleria macrantha</i>	30.00			P				P			P
<i>Nassella viridula</i>	40.00	P	P					P	P		
<i>Poa agassizensis</i>	90.00	P	P	P		P	P	P	P	P	P
<i>Poa compressa</i>	50.00		P	P	P		P				P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
<i>Andropogon gerardii</i>	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE SHRUBS											
<i>Padus virginiana</i> ssp. <i>melanocarpa</i>	40.00						P	P		P	P
<i>Rosa sayi</i>	70.00				P	P	P	P	P	P	P
<i>Symphoricarpos occidentalis</i>	30.00					P			P	P	
<i>Yucca glauca</i>	10.00					P					
TOTAL NATIVE SHRUBS	70.0	---	---	---	P	P	P	P	P	P	P
NATIVE TREES											
<i>Pseudotsuga menziesii</i>	10.00	P									
TOTAL NATIVE TREES	10.0	P	---	---	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/5 sq.m.) (AVERAGE = 13.2 Std.Dev. = 3.5)		13	9	12	16	7	15	16	12	13	19

*P=Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.



Photograph 1. Conda Mine Reclamation '96, Sample 1.



Photograph 2. Conda Mine Reclamation '96, Sample 2.



Photograph 3. Conda Mine Reclamation '96, Sample 3.



Photograph 4. Conda Mine Reclamation '96, Sample 4.



Photograph 5. Conda Mine Reclamation '96, Sample 5.



Photograph 6. Conda Mine Reclamation '96, Sample 6.



Photograph 7. Conda Mine Reclamation '96, Sample 7.



Photograph 8. Conda Mine Reference Transect '96, Sample 8.