

Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Milven Betty Taylor Date: 05/01/01 Polygon # 003
 Allotment: Floodline Park Pasture:
 Location: GPS lat 37°07'N, 101°10'W long 109°00'1.428' Legal N/14 T35N R20W
 Aerial Photo: 1-1-5 Site Photos - Roll: 1 Number: 7,8
 Soil Map Unit/Component Name: USAEOL - Zwickert - Camp Springs Number: 138
 Range/Ecological Site Name: Canyon - SACT Desert Number: 403
 Slope: 3% Aspect: 330° Topographic Position: Basin Elevation: 5020'

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Very stony loam Parent material: SURCE
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:
 1 9-13" gypsum crystals 2 18"-SHALE 3 4

Evaluation Area Determination: Cany Springs Parent material: SHALE
 Surface texture: clay loam - stony

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:
 1 1-6 clay 2 6-18 gypsum 3 20-24 shale 4

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: burrows - small mammals
 Livestock Use: light to moderate cattle

Offsite influences on area and significance e.g. roads, chainings, fire: cross to roads, road
 Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	3	3	
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Comments								
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Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terrace formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	5	5	
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	3	3	
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	3		
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		4	
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2+

Comments	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2

Comments	Indicator Summary:					Soil/Site Stability	Hydrologic Function	Biotic Integrity
	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight			
		1	1	1	1	10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: <i>MILLER Barry TAYLOR</i>															Date: <i>05/01/01</i>					Polygon #: <i>403</i>					
Transect length: 30 m					Frames per transect: 20 @ 20x50 cm															Transect <i>1</i> of <i>2</i>					
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
GA	ANTE6	0	1	1	1	0	1	0	1	0	T	1	1	2	1	1	0	1	1	0	1485	7.4	95%	7	
G	HUSA	-	-	-	-	-	-	2	3	5											100	5.0	15%	0.8	
GA	CRGL13	-	-	-	-	-	-	T													0.5	0.0	5%	0.0	
GA	VUOC			T	T	T	0	1	2	0			T	T							285	1.9	45%	0.9	
FA	ERIC6	0	T	T	T	T								T			0	0	0	0	14	0.9	60	0.5	
FA	PLPAZ	T				T	T	T	T	T			T	T	T	T		T		T	60	0.3	60	0.2	
FA	IPPU4					T		T	T	T											1.5	0.1	15	0.0	
FA	DACU			T				T	T	T	T						T				3.0	0.2	30	0.1	
FA	STSA3										T										0.5	0.0	0	0.0	
FA	LAMA9	T		T	T	T				T	T	T		T	T	T		T		T	60	0.3	60	0.2	
F	CYPU			T						T	T						T			T	20	0.1	20	0.0	
FA	AFF	T																			0.5	0.0	0	0.0	
F	ALMA4					T															1.0	0.0	10	0.0	
F	CAFL							T													0.5	0.0	0	0.0	
FA	CEOR2																		0		3.5	0.2	10	0.0	
FA	MONU						T						T								2.0	0.1	20	0.0	
FA	AFF							T				T								T	1.5	0.1	20	0.0	
Bare soil without canopy		8	7	6	5	2	6	5	5	2	6	8	8	1	5	2	3	6	7	5	9	1060	53	100	53
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust		-	-	-	-	4	1	-	-	T	-	-	-	2	2	6	4	1	0	T	-	204	10.2	50	5.1
Moss		-	-	0	1	-	T	-	T	-	-	-	-	-	-	-	-	-	-	-	-	14	0.7	20	0.1
Lichen		-	-	-	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.0	0	0.0
Litter		0	0	2	1	1	1	3	3	5	T	T	T	4	T	1	1	0	1	2	0	2735	13.7	100	13.7
Wood		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basal Veg		T	T	0	1	1	0	0	1	1	-	T	0	1	0	1	0	T	T	2	T	101	5.0	95	4.8
Bare Soil		8	8	8	6	3	7	6	6	3	7	9	9	2	6	2	3	7	8	6	9	1.230	6.5	100	6.5
Gravel <3 in.		2	1	T	0	1	0	1	T	0	3	1	1	1	1	0	2	2	1	0	0	23	1.2	15	0.2
Cobble 3-10 in		-	1		1					0															
Stone 10-24 in.																									
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
0	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			

Soil Stability Evaluation						
Observer:						
Date:			Point Number:			
	Surface			One inch		
Location	Under canopy	Inter-space	Rating 1-6	Under canopy	Inter-space	Rating 1-6
10 ft.						
20 ft.						
30 ft.						
40 ft.						
50 ft.						
60 ft.						
70 ft.						
80 ft.						
90 ft.						
100 ft.						

Samples should be < 1/4 " diameter and < 1/8" thick
 "Surface" sample is taken at surface, below litter
 "One inch" sample is taken 3/4" to 1" below surface

Stability Class	Criteria for assignment to stability class
0	Soil is too unstable to sample (falls through sieve)
1	50% of structural integrity lost within 5 seconds of insertion in water
2	50% of structural integrity lost 5-30 seconds after insertion
3	50% of structural integrity lost 30 seconds to 5 min after insertion in water, or <10% of soil remains on sieve after 5 dipping cycles
4	10-25% of soil remains on sieve after 5 dipping cycles
5	25-75% of soil remains on sieve after 5 dipping cycles
6	75-100% of soil remains on sieve after 5 dipping cycles

Production Data Sheet

Observers: MILLER Berry TAYLOR Date: 05/01/01 Polygon #: 003
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 2

Growth form	0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	Correc- tion factor	Dry weight factor	Total dry weight	
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total			
Perennial Grasses	/	2	/	/	/	1	3	1	12	/	/	/	/	/	/	/	/	/	/	/	19	-	.45	8.55
Annual Grasses	1	/	3	4	3	2	1	6	2	-	1	/	/	2	/	1	/	3	/	/	36.5	1.02	.85	31.65
Perennial Forbs	/	/	T	/	/	-	/	/	/	/	/	/	/	/	/	/	/	/	/	/	.5	-	.4	.2
Annual Forbs	T	T	T	/	T	1	T	T	/	T	1	/	/	1	/	1	/	1	T	T	11	1.13	.3	3.73
Shrub	/	/	5	/	13	8	/	/	/	/	5	6	/	15	/	/	/	23	/	128	-	.35	44.8	

Correction factor = clip wt / test wt.

Total production in lb/ac = ^{4.16} 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	38.13	Perennial Forbs:																		
Annual Grasses	141.14	Shrubs:																		
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1/2 1/2

Production Data Sheet

Observers: MILLER BARRY TAYLOR Date: 05/01/01 Polygon #: 003
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 2

Growth form	0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	Total	Correc- tion factor	Dry weight factor	Total dry weight
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Perennial Grasses	/	2	/	/	/	1	3	1	12	-	/	/	/	/	/	/	/	/	/	/	19	-	.45	8.55
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Shrub	/	/	5	6	5	-	/	/	/	/	5	6	20	15	25	/	/	22	20	/	128	-	.35	44.8

Correction factor = clip wt / est wt.

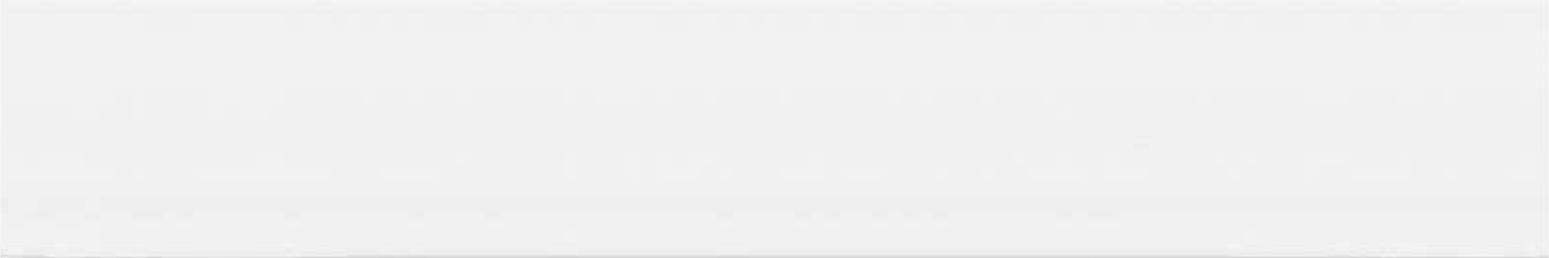
Total production in lb/ac = ^{4.16} 89.2 x total dry wt.

* Location for soil stability test

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4.2 1.2

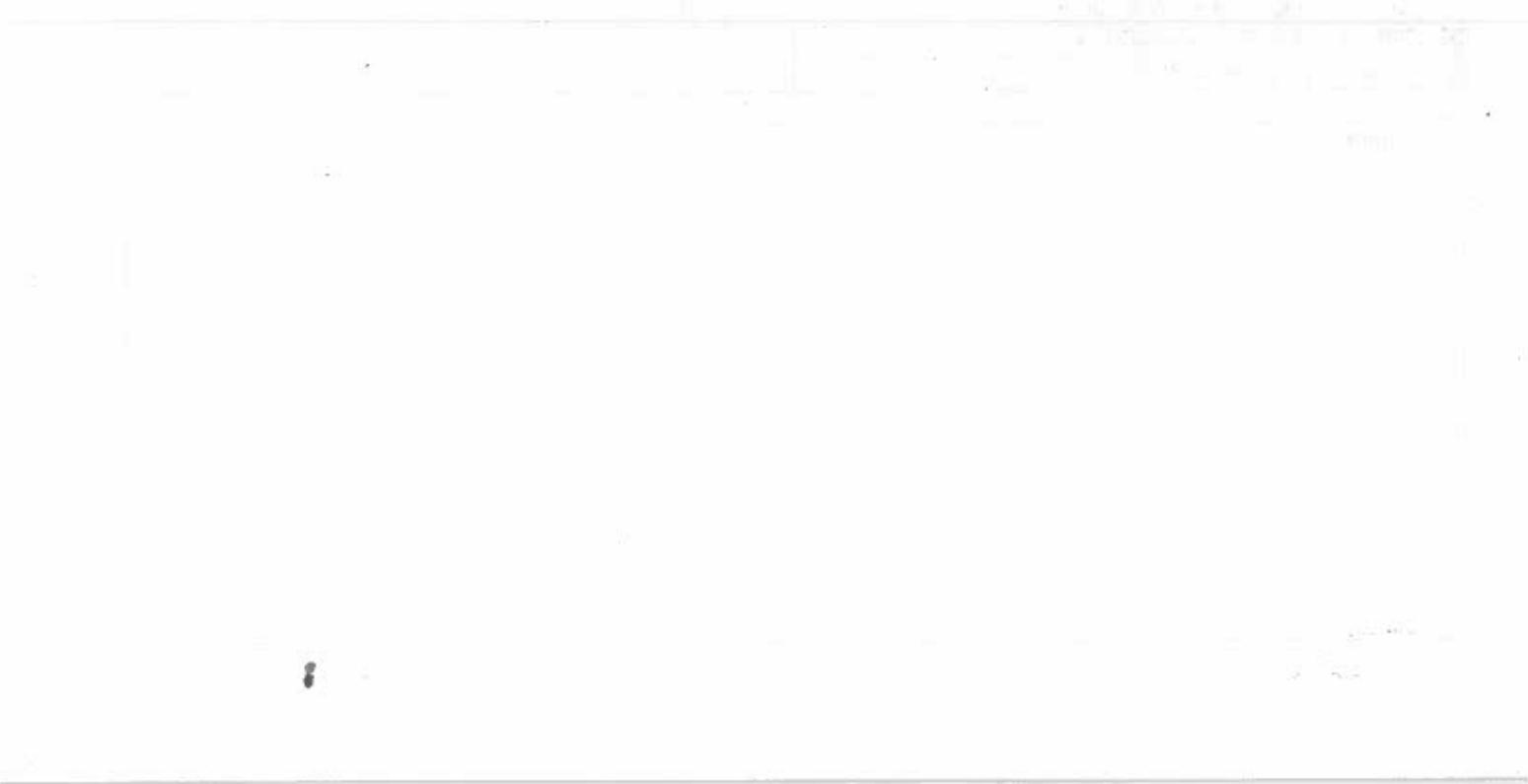
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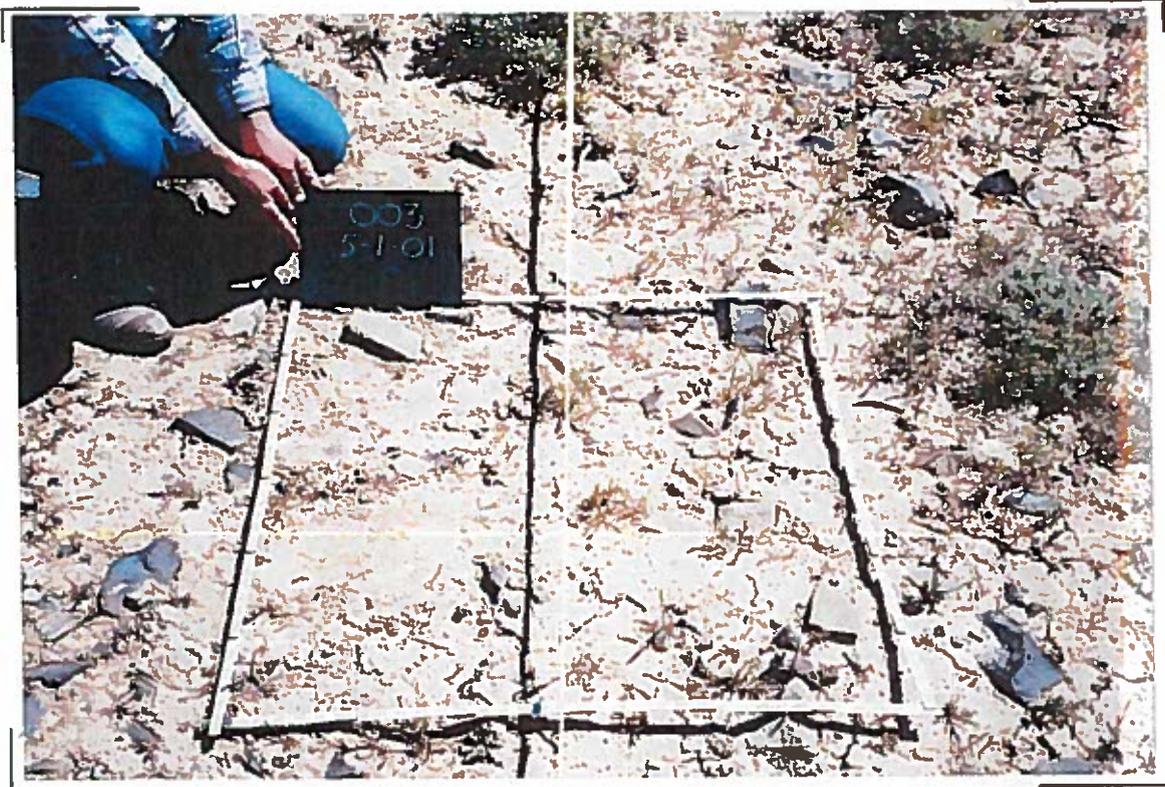
THE HISTORY OF THE
CITY OF BOSTON

The city of Boston, situated on a neck of land between the harbor and the bay, was first settled in 1630 by a group of Puritan settlers from England. The city grew rapidly and became one of the most important centers of commerce and industry in the New England region. In 1773, the city was the site of the Boston Tea Party, a significant event in the American Revolution. The city continued to grow and prosper throughout the 18th and 19th centuries, becoming a major center of education and culture. In 1822, the city was incorporated as the City of Boston, and it has since remained one of the most important and vibrant cities in the United States.

THE HISTORY OF THE
CITY OF BOSTON
BY
J. B. BOSTON



Allotment Flodine Park
Polygon # 003
Date 5 / 1 / 2001



**Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area**

Part 1. Area of Interest Documentation:

Observer(s): Stewart et al Date: 5/1/01 Polygon # 004
 Allotment: Florine Park Pasture:
 Location: GPS lat long _____ Legal S 1/4 T35N R20W NW 1/4
 Aerial Photo: 1-1-5 Site Photos - Roll: 1 Number: 9+10
 Soil Map Unit/Component Name: Sheppard Number: 122
 Range/Ecological Site Name: Desert Sand Number: 411
 Slope: 5% Aspect: 204° Topographic Position: dune Elevation: 5020-5030'

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Fine sand Parent material: sandstone

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	2	3	4
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Evaluation Area Determination:

Surface texture: Fine sand Parent material: sandstone

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	2	3	4
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Avg. annual PPT: Correx 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: very light

Livestock Use: light -> moderate cattle

Onsite influences on area and significance e.g. roads, chainings, fire: none

Benchmark used for comparison: Ecological Reference Area _____ (ERA number _____) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interact
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills, old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments

2. Water Flow Patterns

Extensive and numerous; unstable with active erosion; usually connected.

More numerous than expected; deposition and cut areas common; occasionally connected.

Nearly matches what is expected for the site; erosion is minor with some instability and deposition.

Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short

5	5		
---	---	--	--

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interfith
3. Pedestals and/or Terracettes	Abundant active pedestalling and numerous terracettes. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terracettes common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terracettes present.	Active pedestalling or terracette formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terracettes absent or uncommon.	5	5	
Comments								
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	2	2	
Comments	are bare areas expected here? - we're assuming the dune should be stabilized							
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
Comments	Extensive.	Common	Occasionally present	Infrequent and few.	Matches what is expected for the site.	2		
6. Wind-Scoured Blowouts, and/or Deposition Areas								
Comments								
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		2	
Comments	litter is piled up around shrubs - but discussion over what is expected							
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments	thin physical crust on the sand							

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			5

Comments	no crust expected on sand dune							
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability			

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section	Indicator Summary:				Soil/Site Stability	Hydrologic Function	Biotic Integrity
	1. Extreme	1	1	1	10	12	10
	2. Moderate to Extreme	3	4	5			
	3. Moderate	0	1	2			
	4. Slight to Moderate	5	5	5			
5. None to Slight	10	10	10				

Cover Frequency Data Sheet

Observers: Rohman + Haspels Date: 5/1/01 Polygon #: 004

Transect length: 30 m Frames per transect: 20 @ 20x50 cm Transect 1 of 1

meter for frame location 0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
G	ANTEG		0	1		1		T				0	T	T		0				0	0	36	1.8	50	1	
G	VUOR		0	0				T	T		T	T	T	T		0		T	0		T	T	17	0.8	70	1
G	ACHY		T	T				3			T	T											32	1.6	25	.5
G	ARPU9															T					1		10	0.5	10	0
F	UNK-A		T									T			T		T		T	T			3	0.2	30	0
Fa	PAPA2														T								.5	-	5	0
S	GUSAZ seedling				T									T				T	T		T	T	3	0.2	30	0
Fa	LUKI								T														.5	-	5	0
F	LYJU									T				T									1	-	10	0
Fa	I-PGU				T			0			T	T				T		0	T	T	T		10	0.5	45	0

Bare soil without canopy X A I A Z B 7 A A X G B Z A S A 9 A B C 143 71.6 100 72

Groundcover: (total groundcover should equal 100%)

Cyanbac. crust																										
Moss																										
Lichen																										
Litter		T	0	6	T	5	1	1	T	T	T	Z	1	8	0	1	0	1	0	1	4		32	16.2	100	16
Wood						0															0		6	0.3	20	0
Basal Veg		T	0	T	0			0	T	T	T	1	T	T	T	T	T	T	T	1	T		36	1.8	90	2
Bare Soil	X	A	4	A	5	9	9	A	A	X	7	9	Z	A	9	A	9	A	8	6			164	82.4	100	82
Gravel <3 in.																										
Cobble 3-10 in																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Rohman + Haspels Date: 5/1/01 Polygon #: 004
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	/	T	T	/	/	/	14	/	/	/	/	/	/	/	/	/	/	/	2	/	12 11 12	1.54	.60	11
Annual Grasses	/	T	4	/	3	/	/	/	/	/	1	/	/	/	/	1	/	1	1	1	10.5 14 17.5	.75	.60	7.9
Perennial Forbs	/	/	/	/	/	-	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	—		
Annual Forbs	/	T	/	T	/	/	T	T	T	T	T	/	/	/	/	T	/	/	/	/	1.5 1.5 3.5	1	.70	6
Shrub	/	/	15 23	/	17	/	/	/	/	/	3	4 8	21	/	2	/	/	/	/	1	19 31 75	.61	.65	30

Correction factor = clip wt / est wt.

4.46
Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
PG	49	Perennial Forbs: —
AG	35	Shrubs: OLFI
PF		Soil Stability Rating Form
AG	27	Criteria for assignment to stability class
SHRUB	13	0 Soil is too unstable to sample (falls through sieve)
		1 50% of structural integrity lost within 5 seconds of insertion in water
		2 50% of structural integrity lost 5-30 seconds after insertion
		3 <10% of soil remains on sieve after 5 dipping cycles
		4 10-25% of soil remains on sieve after 5 dipping cycles
		5 25-75% of soil remains on sieve after 5 dipping cycles
		6 75-100% of soil remains on sieve after 5 dipping cycles
		Location Under canopy Inter-space
		1m
		6m
		11m
		16m
		20m
Total Production	245	Samples should be < 1/4" diameter and < 1/8" thick loose sand - done

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers:

Date:

Polygon number:

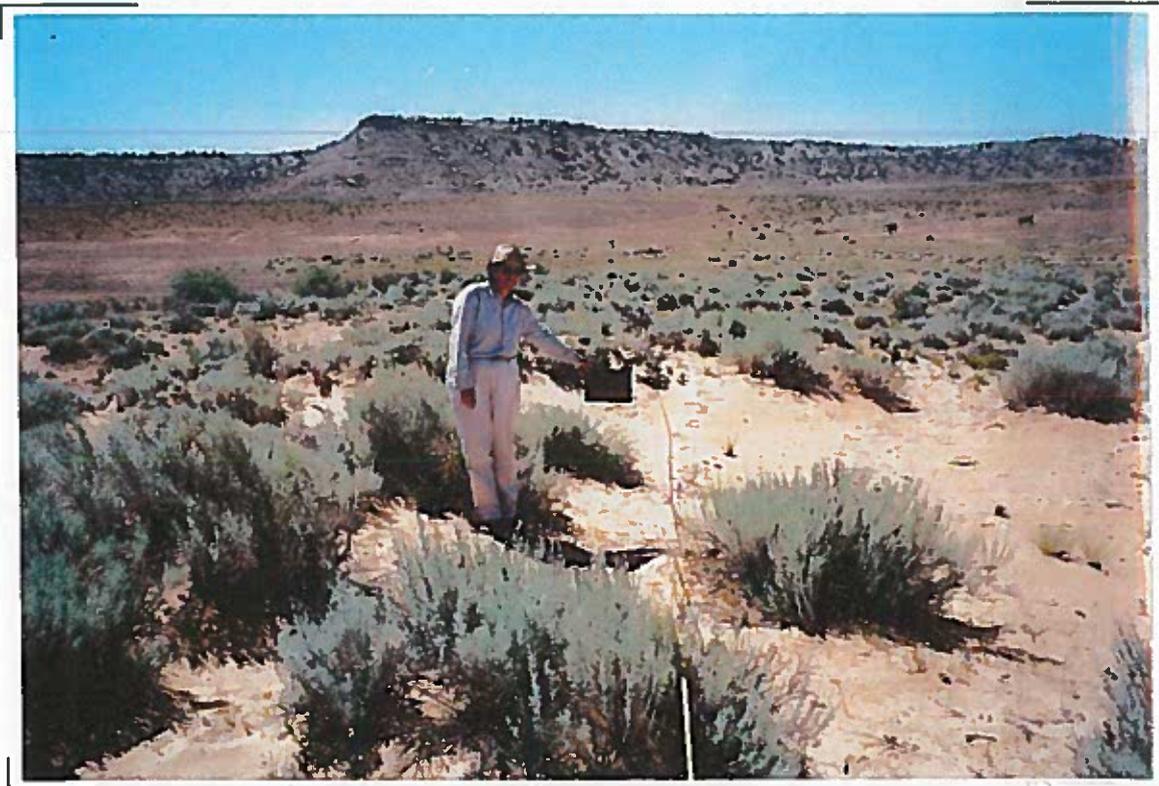
Functional/Structural Groups			Species List for Functional/Structural Group		
Name	Potential*	Actual	potential	Plant names	actual
Trees - deciduous					
Trees - evergreen					
Tall shrubs >20 in - sprouting	S	—	rabbitbrush		
Tall shrubs >20 in - non-sprouting	D	SD-D	(four-wing saltbush) sardoa	(sandsage), Four-wing	
Dwarf shrubs <20 in - sprouting					
Dwarf shrubs <20 in - non-sprouting	M	M	broom snake weed	broom snake weed	
Cactus					
Cool Season Bunchgrasses	S	T-M	Indian rice grass	Indian rice	
Warm Season Bunchgrasses	D	T-M	(sand dropseed) alkali sorata	three awn, Muhlenbergia pungen	
Cool Season Rhizomatous Grasses					
Warm Season Rhizomatous Grasses	S	—	galleta		
Annual Grasses		M		cheat grass	
Forbs - annual		T			
Forbs - perennial	T	T	aster, epurge evening primrose, sunflower	Lpompia, purple, evening primrose, Haplopus trifol.	
Forbs - Nitrogen fixing					
Noxious weeds					
Biological crusts - lichens					
Biological crusts - mosses					
Biological crusts - cyanobacteria					

D - Dominant = 40 to 100% composition	* Potential based on ecological/range site description or ecological reference area Actual is for the area of evaluation
S - Subdominant = 10 to 40% composition	
M - Minor = 2 to 5% composition	
T - Trace = <2% composition	

Comments:

CANM Rangeland Health Evaluation Photos

Allotment Flodine Park
Polygon # 004
Date 5 / 1 / 2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): MILNER ROYMAN Date: 05/02/01 Polygon # 005
 Allotment: Flopline Park Pasture:
 Location: GPS lat 37°19.247' long 109°02.036' Legal S 3 T 35 R 20 W NE QTR
 Aerial Photo: 1-1-5 Site Photos - Roll: 1 Number: 11-12
 Soil Map Unit/Component Name: MACK Number: 70
 Range/Ecological Site Name: ALAKLI FLAT Number: 414
 Slope: 1% Aspect: 322° Topographic Position: TERRACE Elevation: 4920
 Range/Ecological site description, soil survey, and/or ecological reference area:
 Surface texture: Fine Sandy loam Parent material: SANDSTONE
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 13-18 CALCIUM 2 18-35 STRONG CALCIUM 3 33-60 LESS CALCIUM 4
 Evaluation Area Determination:
 Surface texture: STRONG LOAM Parent material: SANDSTONE
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 CALCIUM 15" 2 STRONG CALCIUM 27" 3 30" - 50" NEARLY PURE CA 4 55" OR DECREASE
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet
 Wildlife Use: SCYRAT
 Livestock Use: CATTLE - heavy
 Offsite influences on area and significance e.g. roads, channings, fire: ROAD
 Benchmark used for comparison: Ecological Reference Area _____ (ERA number _____) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	5

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5	5	
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled, exposed plant roots are common.	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	5	5	
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	2	2	
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	4		
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		5	
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	4	4	4
Comments								

DOWNWATE COVER ANNUAL GRASSES & FORBS

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interactivity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3

Comments						Soil/Site Stability	Hydrologic Function	Biotic Interactivity
18. Biological Crusts	Found only in protected areas; very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section	Comments							
	<i>CRUSTS NOT SEEN OR SIGN</i>							
	Indicator Summary:					Soil/Site Stability	Hydrologic Function	Biotic Interactivity
	1. Extreme							2
	2. Moderate to Extreme					1	2	(2)
	3. Moderate						2	2
4. Slight to Moderate					3	(2)	2	
5. None to Slight					(5)	6	1	
					10	12	10	

NEW

Cover Frequency Data Sheet

Observers: <u>MILLER</u> <u>ROTHMAN</u>		Date: <u>05/03/01</u>															Polygon #: <u>005</u>									
Transect length: 30 m		Frames per transect: 20 @ 20x50 cm															Transect <u>1</u> of <u>1</u>									
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	SCC	ACC	Freq	CFI	
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20					
Gp	HWA		2			1	-	-			-				2			0	3	2	1	113	5.6	135	2	
Gp	SPA1	1		1					1	0	0					T						36.5	1.8	30	0.5	
Gp	VUOC	0	0	1	1	1	0	0	1	0	1	1	0	0	T	1	1	1	0	T	0	118	5.9	100	6	
Gp	ANTEG	1	2	2	3	1	1	0		3	3	2	1	2	3	3	2	3	2	2	3	392	19.6	95	19	
Fa	ER016	3	4	4	4	5	3	2	6	1	2	2	2	1	2	2	2	1	1	4	2	530	26.5	100	26	
Fa	LAMA9								T													.5	=	.05	-	
Fa	HSNU4				T	T		T	T	-	T	0		1		T					T	16.5	0.8	45	0.4	
Fp	G10P				T																	1	0	-	-	
Fp	DEPI	T				T	0	0	T	T		T	1	0	T			T	T	T	0	T	27	1.4	75	1
Fa	IPPU4										T					T						1	-	-	-	
Fa	unk. Asteroid											T										.5	<	.05	-	
Bare soil without canopy		3	2	4	3	2	3	T	1	4	5	7	7	7	4	5	1	2	3	7	5	750.5	37.5	100	38	
Groundcover: (total groundcover should equal 100%)																										
Cyanbac. crust		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Moss		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lichen		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Litter		6	6	5	6	8	6	7	8	5	4	2	2	2	5	4	8	7	6	2	5	1020	51	100	51	
Wood		-	-	-	-	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	1.6	10	0.2	
Basal Veg		0	1	0	0	1	0	T	T	T	T	T	T	T	0	T	0	0	T	0	0	51.5	2.6	100	2.8	
Bare Soil		4	3	5	4	3	4	0	2	5	6	8	8	8	5	6	2	3	4	8	5	933	46.6	100	47	
Gravel <3 in.			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	12	0.6	95	0.6	
Cobble 3-10 in.																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
2	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
3	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
4	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
5	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
6	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
7	45.1 - 55% cover	50.0%			

Line Intercept

Observers: MILLER ROTHMAN

Date: 6/5/02/01

Polygon #: 005

Line Length: 30 m

Transect 1 of 1

Species Codes:

	GUSA-2			ATCO			GUSA2		
	From	To	Inter	From	To	Inter	From	To	Inter
	458	465	(7)	719	733	14	2497	2530	(33)
	564	567	(3)	785	791	6	2170	2185	(15)
	698	703	(5)	166	1625	15			
	710	733	(23)	2200	2281	(81)			
	930	946	(16)						
	959	980	(23)						
	1002	1020	(18)						
	1062	1083	(21)						
	1105	1111	(6)						
	1222	1254	(12)						
	1248	1241	(13)						
	1285	1301	(16)						
	1331	1340	(9)						
	1343	1356	(13)						
	1657	1688	(31)						
	1721	1732	(11)						
	1737	1753	(16)						
	1764	1772	(8)						
	1856	1970	54						
	1933	1965	32						
	2115	2137	(22)						
	2190	2203	13						
	2405	2421	(16)						
Total Intercept			35						99
% Cover			(81)						(337)

Circle intercept values that are standing dead material

Production Data Sheet

Observers: MILLER ROITMAN Date: 05/02/01 Polygon #: 005
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	1*	2	3	4	CLIP	6*	CLIP	8	CLIP	10	CLIP	12	13	14	15	CLIP	17	18	CLIP	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	T	1	1		T	-	-	-	T		-	-			T		T		2		6.5	.54	.45	2.9
Annual Grasses	1	2	3		3	4		10	3		4		4		7		1		1		42	.74	.95	40
Perennial Forbs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual Forbs	2	2	3		9	2		8	8		5		5		3		6		3		53	.76	.85	45.2
Shrub				1	5	4	2			3	T				T		T				6.5	.56	.35	2.2

Correction factor = clip wt / est wt.

Total production in lb/ac = $\frac{446}{20} \times$ total dry wt.

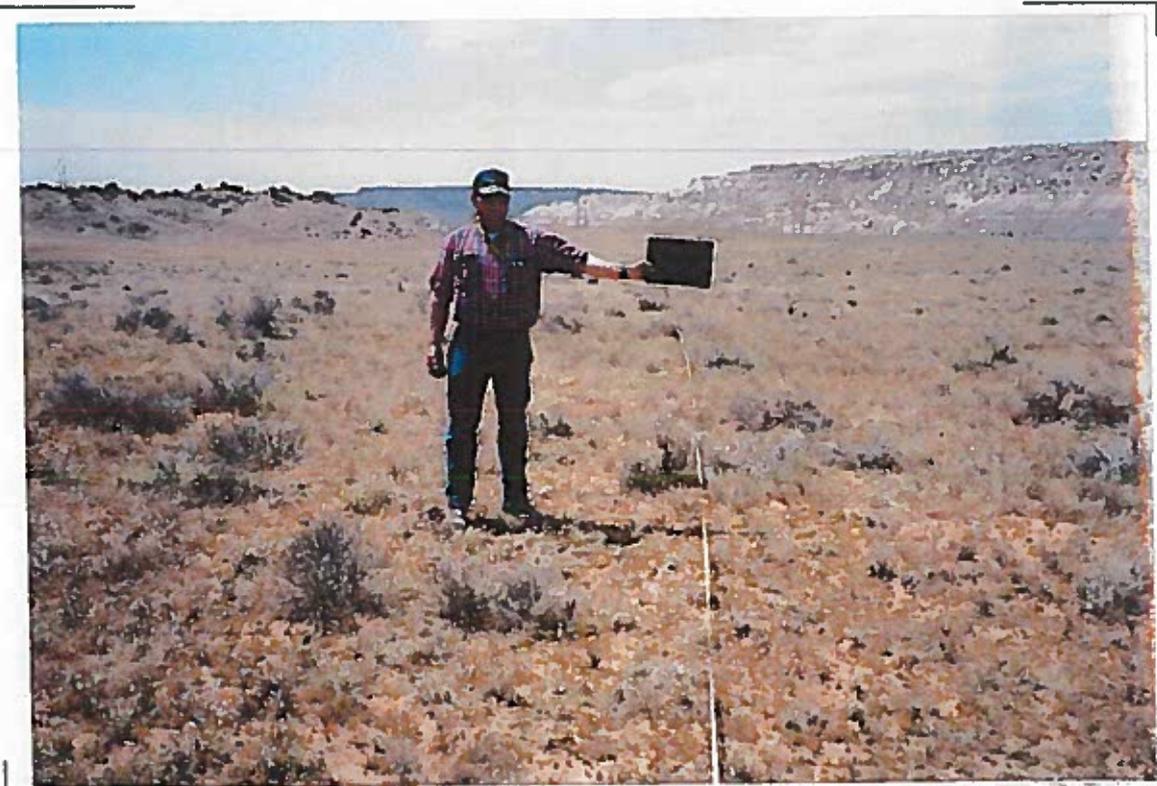
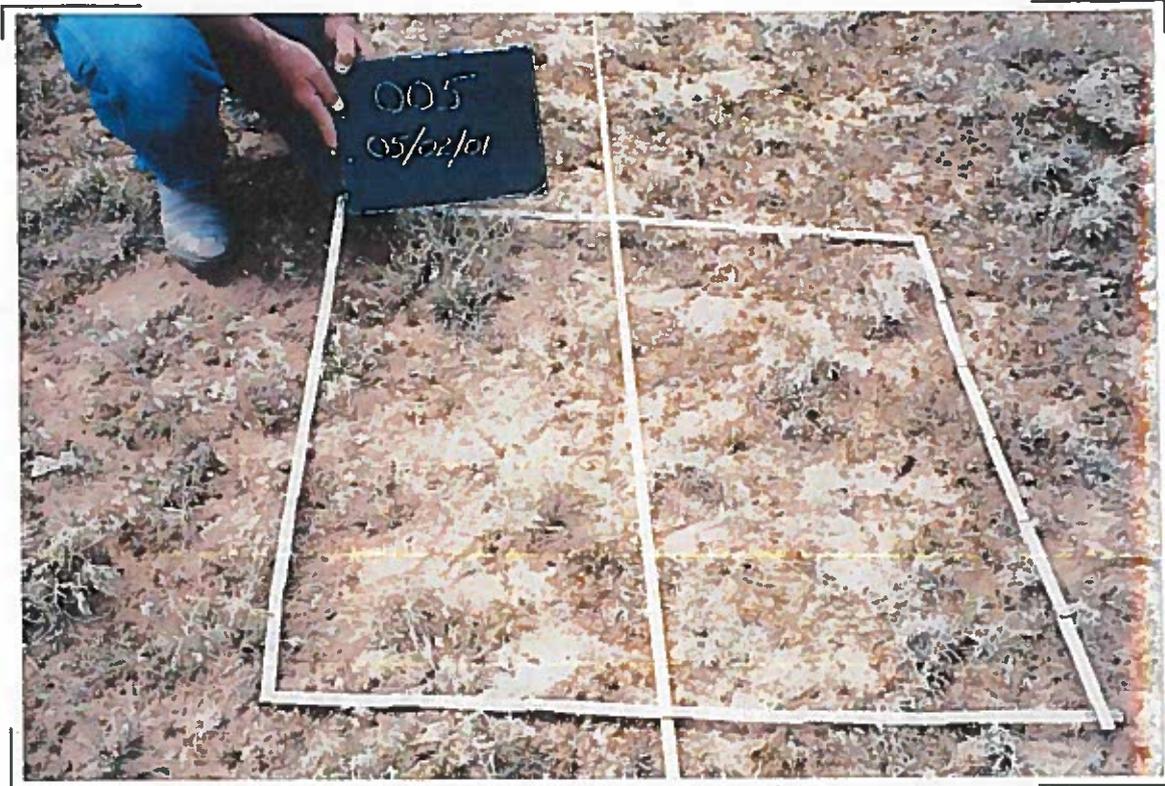
* Location for soil stability test

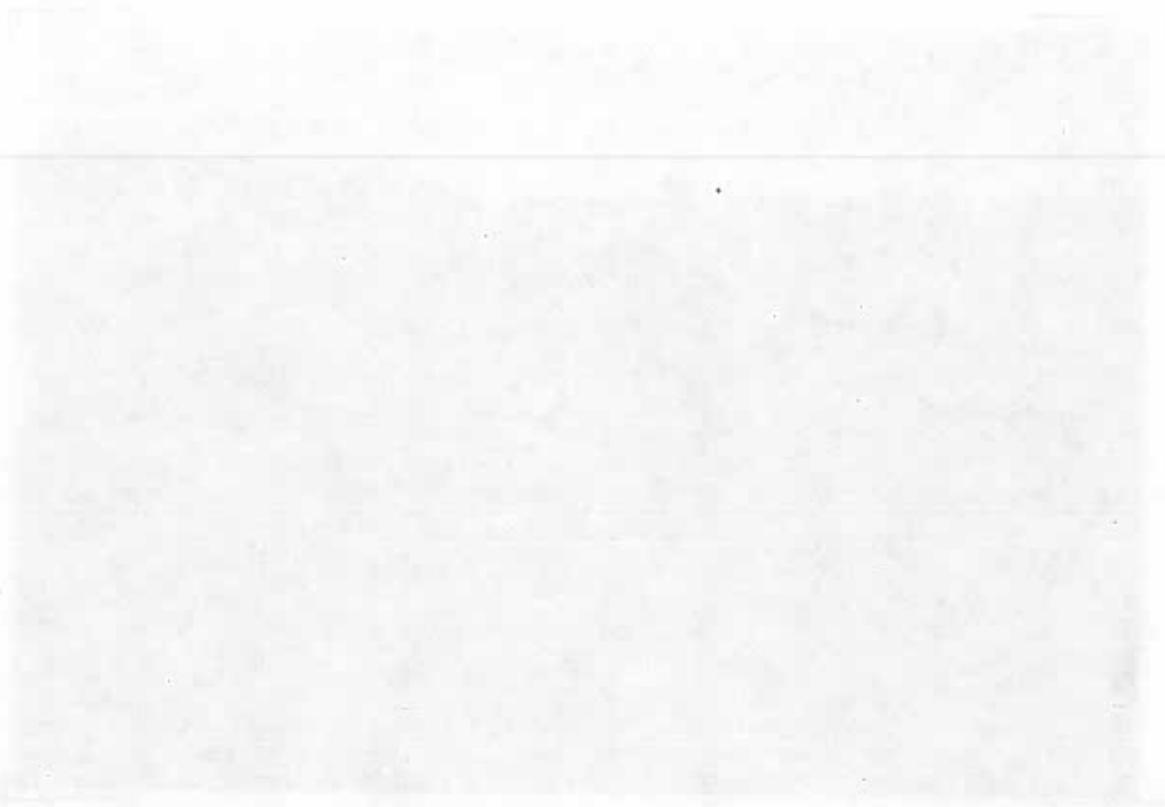
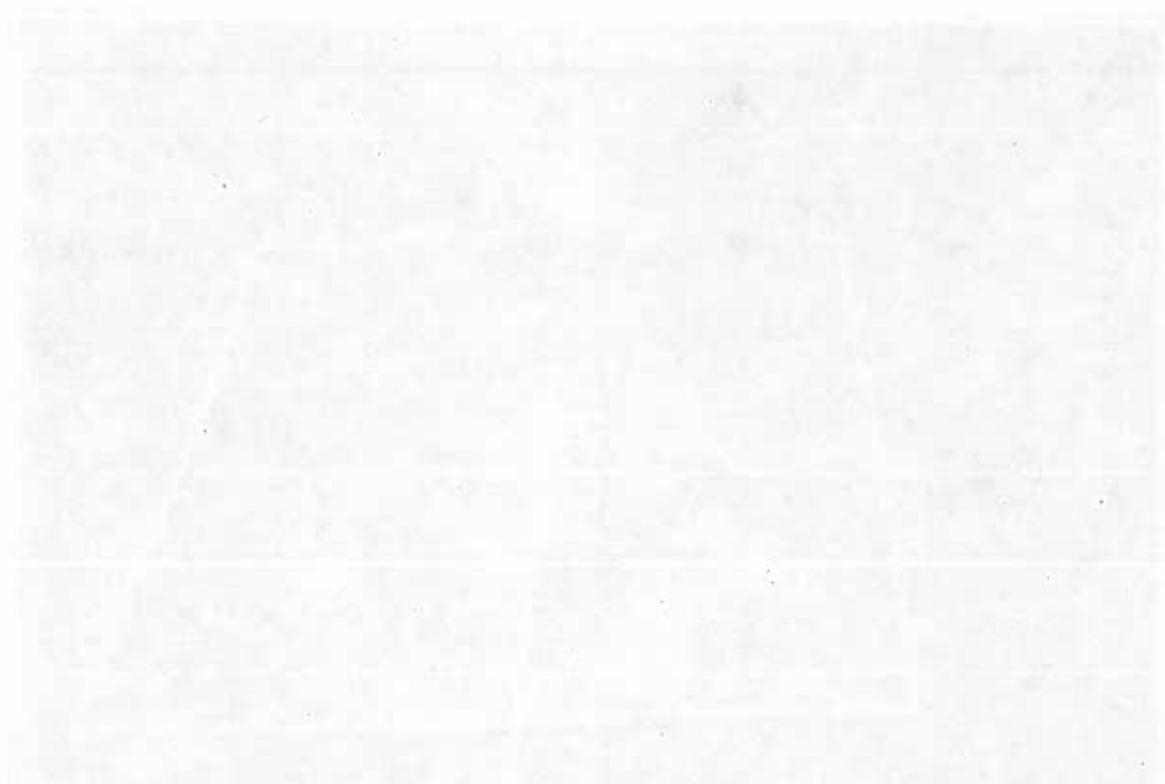
Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
PG	13	Perennial Forbs:																		
AG	179	Shrubs:																		
AF	202	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td><10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
Soil Stability Rating Form																				
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S	10																			
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Location	Under canopy	Inter-space																		
1m	5	3																		
6m	6	1																		
11m	3	2																		
16m	5	2																		
20m	5	1																		
Total Production	404	Samples should be < 1/4" diameter and < 1/8" thick Under Canopy 5 AUG Litter 1st 2 AUG																		

4.8

CANM Rangeland Health Evaluation Photos

Allotment _____
Polygon # 005
Date 5 / 2 / 2001





Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioth Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			4

Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2

Indicator Summary:	Soil/Site Stability	Hydrologic Function	Bioth Integrity
	1. Extreme	1	6
2. Moderate to Extreme	(5)	(1)	2
3. Moderate		1	2
4. Slight to Moderate	4	4	1
5. None to Slight	10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

NEU

Cover Frequency Data Sheet

Observers: HASPELS, BERRY															Date: 5/26/01					Polygon #: 606					
Transect length: 30 m					Frames per transect: 20 @ 20x50 cm															Transect 1 of 1					
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
G ₀	ANTELO	0	T	T	0	1	4	0	4	3	0	1	4	0	1	0	0	1	2	1	0	245	12.2	100	12
G ₀	VUNC					T	T		T	0		0	0					T				11	0.6	35	0
F ₀	ERCL6	0	0	0	0	0	T	0	0	0	1		0	1	1	0	0	1	1	1	1	103	5.2	95	5
F ₀	PLPAZ					T		T	T	T		T	T					T				3	.2	35	-
F ₀	ASNU 4						T															.5	-	5	-
F ₀	DEPI						T	1									T		0			14	.7	20	-
F ₀	LAMA 9							T												T		1	-	10	-
F ₀	UNK. GILIA									T		T										1	-	10	-
F ₀	G10P									T												.5	-	5	-
S	GUSA7 serotinus							T		T		T								T		2	0.1	20	-
Bare soil without canopy		6	4	6	6	4	3	6	5	1	5	6	2	6	4	6	6	7	7	8	5	7030	51.5	100	52
Groundcover: (total groundcover should equal 100%)																						20	1	5	-
Cyanbac. crust																						2			
Moss																									
Lichen																									
Litter		1	2	0	0	1	3	3	3	3	0	3	4	1	3	0	1	2	3	1	1	0	0	0	0
Wood																						362	18.1	100	18
Basal Veg		T	T	T	T	0	0	0	T	T	T	0	T	T	T	T	T	T	T	T	T	20	1	0	0
Bare Soil		6	4	6	6	4	5	7	6	1	5	6	2	6	4	6	6	7	7	8	5	1070	53.5	100	54
Gravel <3 in.		2	4	3	2	2	0	T	0	1	3	0	0	3	3	3	3	T	0	1	4	366	18.3	100	18
Cobble 3-10 in		1		1	2	3	1		0	1	2	0			0	1	0	0				135	6.8	65	5
Stone 10-24 in.																						50	2.5	10	0
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	B	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: HASPELS BERRY Date: 5/2/01 Polygon #: 006
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Grasses	1 1	T T	T T	T 1	1 1	8 4	1 1	9 6	1 1	1 1	5 5	2 2	1 1	T 1	1 1	2 1	1 1	1 1	T T	T T	23.5 21	1.1	.95	40.9
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	T T	T T	T T	T T	1 2	1 2	1 1	T T	T T	T T	1 1	1 1	1 1	T T	1 1	2 2	1 1	2 1	1 1	T T	4.5 5.5	.82	.85	11
Shrub	/	/	/	/	1 1	3 2	1 2	9 T	5 5	1 1	2 1	3 3	12 12	1.4	.35	6.1								
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			

4.46

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																			
Perennial Grasses		Perennial Forbs:																			
Annual Grasses	182	Shrubs:																			
Perennial Forbs		Soil Stability Rating Form																			
Annual Forbs	50	Criteria for assignment to stability class																			
Shrubs	29	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Rating</th> <th>Criteria for assignment to stability class</th> </tr> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>< 10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </table>	Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	< 10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles			
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6	75-100% of soil remains on sieve after 5 dipping cycles																				
Total Production	259	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6" style="font-size: small;">Samples should be < 1/4" diameter and < 1/8" thick</th> </tr> <tr> <td>1m</td> <td>2</td> <td>4</td> </tr> <tr> <td>6m</td> <td>5</td> <td>6</td> </tr> <tr> <td>11m</td> <td>5</td> <td>2</td> </tr> <tr> <td>16m</td> <td>3</td> <td>3</td> </tr> <tr> <td>20m</td> <td>3</td> <td>5</td> </tr> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick	1m	2	4	6m	5	6	11m	5	2	16m	3	3	20m	3	5
Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick																		
1m	2	4																			
6m	5	6																			
11m	5	2																			
16m	3	3																			
20m	3	5																			

518 / 3.6 515 / 34.0

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers:

Date:

Polygon number:

Functional/Structural Groups

Species List for Functional/Structural Group

Name Potential* Actual Potential Actual

Trees - deciduous

Trees - evergreen

Tall shrubs >20 in - sprouting

Tall shrubs >20 in - non-sprouting

Dwarf shrubs <20 in - sprouting

Dwarf shrubs <20 in - non-sprouting

Cactus

Cool Season Bunchgrasses

Warm Season Bunchgrasses

Cool Season Rhizomatous Grasses

Warm Season Rhizomatous Grasses

Annual Grasses

Forbs - annual

Forbs - perennial

Forbs - Nitrogen fixing

Noxious weeds

Biological crusts - lichens

Biological crusts - mosses

Biological crusts - cyanobacteria

Comments:

T - Trace = <2% composition

M - Minor = 2 to 5% composition

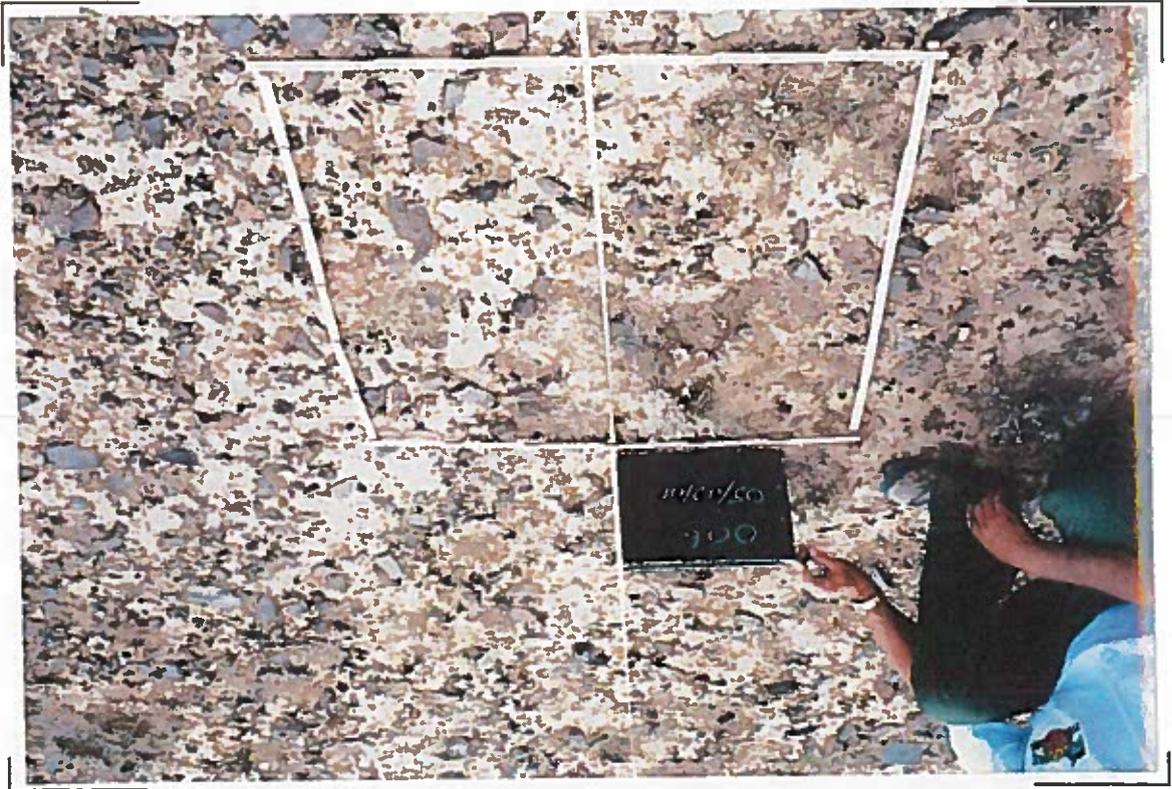
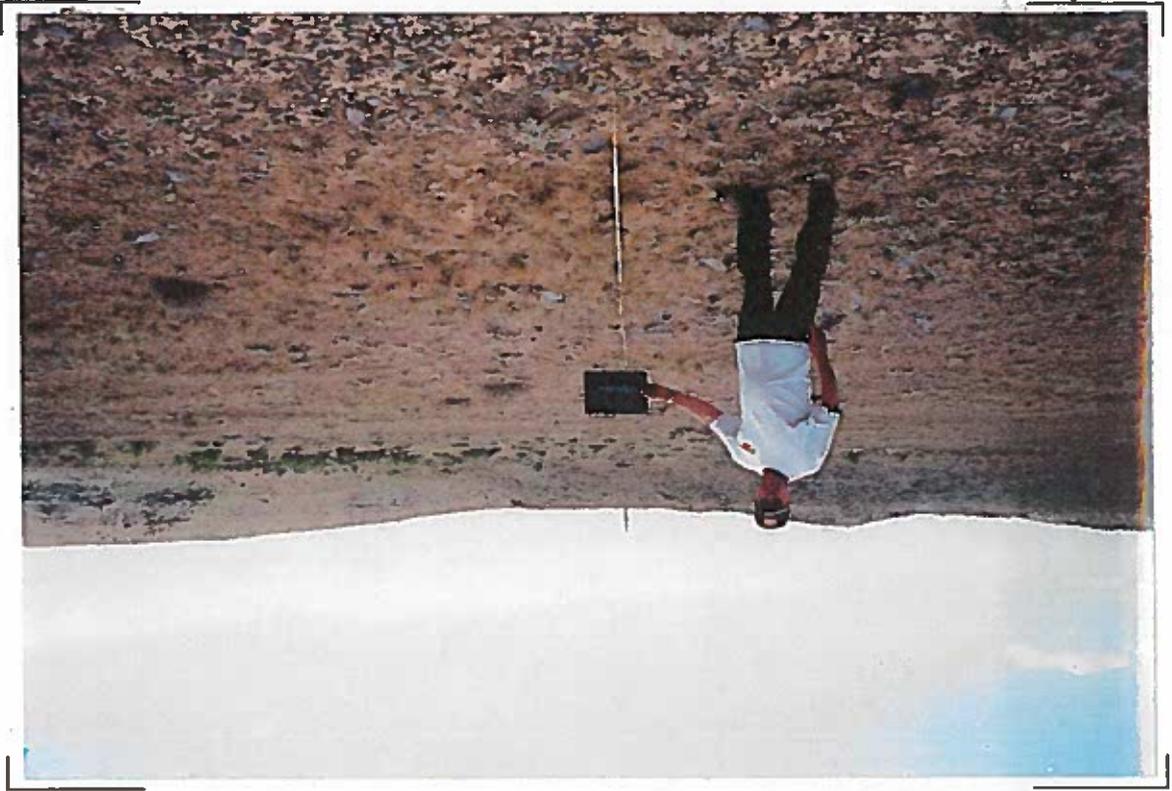
S - Subdominant = 10 to 40% composition

D - Dominant = 40 to 100% composition

* Potential based on ecological/range site description or

ecological reference area

Actual is for the area of evaluation



Allotment #

Date

006

5/2/2001

CANM Rangeland Health Evaluation Photos

Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): MILLER Date: 05/07/01 Polygon # 007 T-1

Allotment: FLODINE PARK Pasture:

Location: GPS lat 39° 18.468' long 109° 01.291' Legal AWS // T 35N R 20W

Aerial Photo: 1-1-5 Site Photos - Roll: 1 Number: 15-16

Soil Map Unit/Component Name: BARCOE - Zwickel - Clay Springs Number: 138

Rangel/Ecological Site Name: CLAY SPRINGS Number: 403

Slope: 2% Aspect: 101° Topographic Position: Basin Elevation: 5046'

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Clay Loam Parent material: SHALE (MORRISON)

Depth: Very shallow <10" Shallow 10-20" X Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	<u>CLAY 9-18</u>	2	<u>MORRISON SHALE 20"</u>	3		4	
---	------------------	---	---------------------------	---	--	---	--

Evaluation Area Determination:

Surface texture: Clay Loam Parent material: SHALE (MORRISON)

Depth: Very shallow <10" Shallow 10-20" X Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	<u>CLAY 16-20"</u>	2	<u>MORRISON SHALE 20"</u>	3		4	
---	--------------------	---	---------------------------	---	--	---	--

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: LIGHT

Livestock Use: LIGHT

Offsite influences on area and significance e.g. roads, chainings, fire: RISUE

Benchmark used for comparison: Ecological Reference Area _____ (ERA number _____) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Blot Integ
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	
2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5	5	
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf.
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	1	1	1
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Biotic Interf.
1. Extreme						2	2	2
2. Moderate to Extreme						2	3	5
3. Moderate						1	4	1
4. Slight to Moderate						5	5	1
5. None to Slight						10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

NEW

Cover Frequency Data Sheet

Observers: M. L. L. L. H. S. P. L. L. Date: 05/07/01 Polygon #: 007

Transect length: 30 m Frames per transect: 20 @ 20x50 cm Transect 1 of 1

meter for frame location	0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	20 frames % ±			
LF Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	Freq	CFI
G ANTE6	T	1	1	0	0	1	4	1	1	1	2	T	1	2	3	2	2	0	1	4	280	14.0	100	14
F ₂ TOAN	T	T	0	T		T	T	T	T	T		T		T	T	-		T	T	9.5	.5	70	-	
F ₂ LAMA9		0		T	0					0	T			T			-	T	T	11.5	.6	40	-	
F ₂ PLPA2									T	T	T		T	T					T	3.5	0.2	35	-	
F ₂ ERC16										T				0	T	T	T		T	5.5	0.3	30	-	
F ₂ MIAPI										0	T							T	T	T	5	0.2	75	-
F ₂ CYPUL2	0					T															3.5	0.2	10	-
FA DEPI																			0		3	0.2	.5	-
FA AHEF			0						T					T							4	0.2	15	-
FA HEAN3			T	T		T		T													2	0.1	20	-
GA CAGL13				T			T			T			0	0	T						8	0.4	30	-

Bare soil without canopy: 6 7 6 5 8 4 6 4 5 5 5 7 3 5 3 2 2 6 6 6 10 10 50.5 100 50

Groundcover: (total groundcover should equal 100%)

Cyanbac. crust	-	-	-	-	T	-	0	2	-	-	-	-	-	T	1	T	-	-	T	-	35	1.8	35	1
Moss	-	-	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-
Lichen	-	-	-	-	T	-	T	0	-	-	-	-	-	-	T	-	-	T	-	-	5	0.2	25	-
Litter	0	1	1	T	1	1	1	1	T	1	0	1	3	1	2	2	0	1	2	2	220	11	100	11
Wood	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	3	0.2	5	-
Basal Veg	T	0	T	T	T	0	T	T	T	T	0	T	0	1	T	T	T	T	0	0	25	1.2	100	1
Bare Soil	7	8	7	6	9	5	7	5	6	6	6	9	4	6	4	3	3	6	6	6	1190	59.5	100	60
Gravel <3 in.	3	1	2	4	0	4	2	2	2	2	4	0	3	2	2	5	7	3	1	2	516	25.8	100	26
Cobble 3-10 in	0	-				0		0	0	1			0	1	0				1		48	2.4	45	1
Stone 10-24 in.									2												20	1	5	
Boulder >24 in.																								
Bedrock																								

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	B	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Line Intercept

Observers: M. L. L. S. H. H. P. E. L. S. Date: 05/07/01 Polygon #: 007

Line Length: 30 m Transect 1 of 1

Species Codes:

		ATGA																				
From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter		
184	189	5																				
204	267	3																				
495	501	6																				
650	663	13																				
700	713	13																				
1002	1004	2																				
1658	1659	1																				
1825	1835	10																				
2052	2460	8																				
2686	2699	13																				
Total Intercept																						
(10) 107%																						
% Cover 5.57%																						

Circle Intercept values that are standing dead material

Production Data Sheet

Observers: HASPELS MILLER Date: 5-7-01 Polygon #: 007
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight	
	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W					
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
Annual Grasses	T/2	2	1	T	1	T/2	5	3	2	2	T	2	3	2	5	3	1	1	3	4	21/32	.95	.45	17.53	
Perennial Forbs	1	/	/	/	/	/	/	/	/	T	T	/	/	/	/	/	/	/	1	T	1	3.5	1	.4	1.4
Annual Forbs	T/2	1	1	T	1	T	T	T	1	1	T	1	1	1	1	T	T	T	T	T	5/55	14	.91	.5	6.37
Shrub	/	/	/	/	/	/	/	/	/	/	5/5	1	9	/	/	/	/	/	T	1	1/5	15.5	1	.35	5.42

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

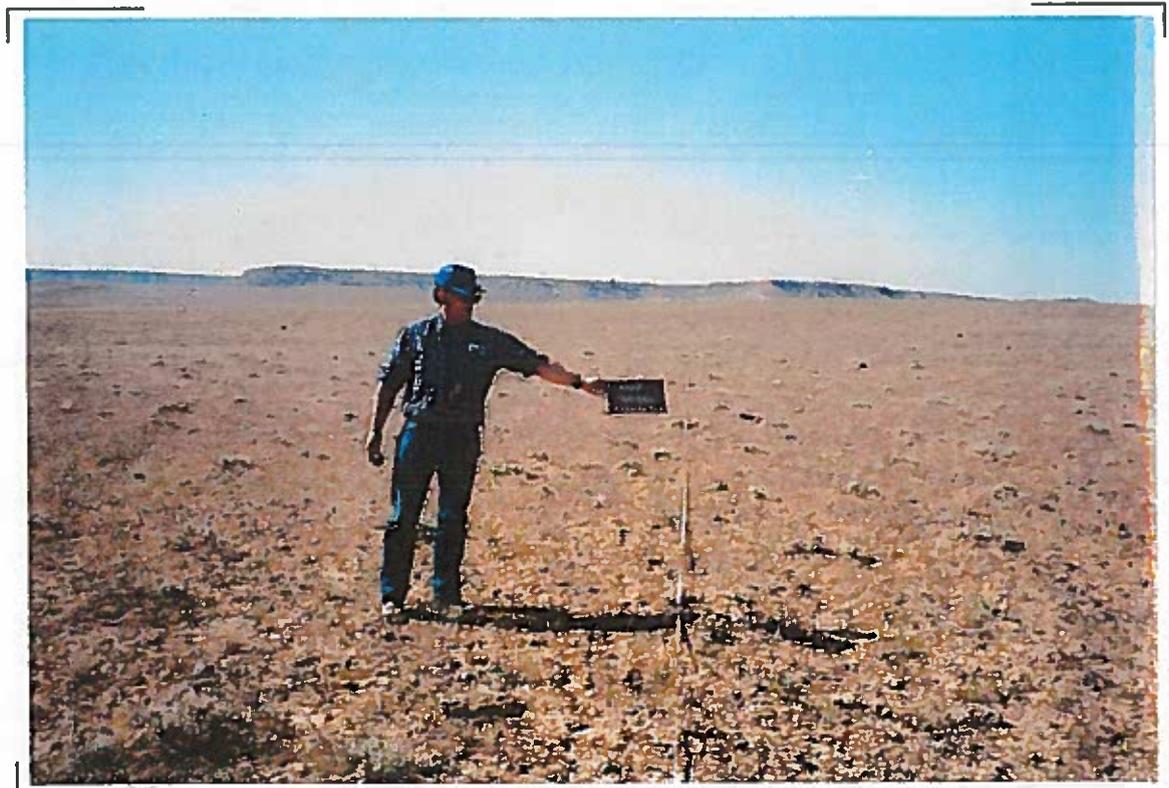
* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																								
Per Grass	—	Perennial Forbs:																								
Ann Grass	78.18	Shrubs:																								
Per Forbs	6.24	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th style="width: 90%;">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>< 10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-50% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	< 10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-50% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles						
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Shrubs	24.2																									
Total Production	137.03	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Location</th> <th style="width: 20%;">Under canopy</th> <th style="width: 20%;">Inter-space</th> <th style="width: 45%;">Samples should be < 1/4" diameter and < 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td style="text-align: center;">4</td> <td style="text-align: center;">4</td> <td></td> </tr> <tr> <td>6m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td></td> </tr> <tr> <td>11m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> <td></td> </tr> <tr> <td>16m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td>20m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">5</td> <td></td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick	1m	4	4		6m	5	6		11m	6	4		16m	6	3		20m	5	5	
	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick																						
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	6m	5	6																							
	11m	6	4																							
16m	6	3																								
20m	5	5																								

x 5.2 4.4

CANM Rangeland Health Evaluation Photos

Allotment FLODINE PARK
Polygon # 007
Date 5/7/2001



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Handwritten text block, possibly a paragraph or list of notes.

Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Rahman + Berry Date: 5/7/01 Polygon # 008
 Allotment: Flodine Park Pasture:

Location: GPS lat 37° 18.707' long 109° 01.288' Legal S11N° T35N R 20W

Aerial Photo: 1-1-5 Site Photos - Roll: Number: 70

Soil Map Unit/Component Name: Mack Number: 414

Range/Ecological Site Name: Alkali Flat Topographic Position: alluvial fan Elevation: 5075'

Slope: 4% Aspect: 186°

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: fin sandy loam Parent material: sandstone

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth: 1 18-25" - calcic horizon 2 3 210" 4

Evaluation Area Determination: Parent material: sandstone

Surface texture: medium loamy sand

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" X Deep >40"

List diagnostic horizons in profile and depth: THIS DOES NOT MATCH MACK ← 1-20" almost pure sand *

1 1-20" - almost pure sand 2 20" - decomposing bedrock 3 30" bedrock 4

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: none observed

Livestock Use: very heavy

Offsite influences on area and significance e.g. roads, chinnings, fire: none

Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf.
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments	Extensive and numerous; unsuitable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common, occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	3	3	
2. Water Flow Patterns								

* Discussed w/ Doug Ramsey - felt I best to leave as a Mack.

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function	Biotic Integ.
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled, exposed plant roots are common.	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	3	3	
Comments								
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	2	2	
Comments								
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Neckpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	4	4	
Comments	more gullies than expected - evidence of past high water flow - now healing							
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	5		
Comments								
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		4	
Comments	lower litter than expected - less movement than expected							
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
9. Soil Surface Loss or Degradation ^y	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	4	1	4
Comments	high deposition area with low plant frequency							
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		2	
Comments								
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	5	5	5
Comments								
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			1
Comments	dominance dramatically altered - trace perennial grasses, dominant annual grasses							
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			2
Comments								
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		2	2
Comments								
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			1
Comments								
16. Invasive Plants	Dominant the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			1
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interest
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2

Comments								
18. Biological Crisis	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	3	3	3
Comments								

Indicator Summary:	1. Extreme	Soil/Site Stability	Hydrologic Function	Biotic Interest
	2. Moderate to Extreme	1	3	(2)
	3. Moderate	(4)	(4)	3
	4. Slight to Moderate	2	3	1
	5. None to Slight	3	2	1
	10	10	10	

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: <u>BERRY</u>															Date: _____					Polygon #: _____								
Transect length: 30 m			Frames per transect: 20 @ 20x50 cm												Transect / of /													
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	SCC	ACC	% Freq	CFI			
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20							
Gp	HJA	1	0	T	-	2	0	T	1	1	1	2	2	-	0	-	1	0				1	133	6.65	0.75	5.0		
Gp	VUOC ANTEG	1	T	-	-	T	-	-	T	-	-	T	-	0	-	-	T				T	16	0.8	0.4	0.32			
		1	0	T	0	1	2	4	0	0	0	0	2	1	T	5	1	T				T	95	9.8	1.0	9.8		
Fa	PLPA2	T	T	T	T	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	1	0.25	0.0
	ERIC6	T	2	3	2	3	2	3	2	2	3	2	3	3	3	3	2	3	3	2				5	2	0.95	21.8	
	G10P	T				T	-	-	-	-	-	-	-	-	T	-	-	-	-	-	-	-	-	5	1	0.15	1.0	
	DEPI								0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	0.05	0.0	
	AAFF									T	-	-	-	-	-	-	-	-	-	-	-	-	-		1	0	0.05	0.0
	LEDE																				T	T		10		0.1	0.0	
Bare soil without canopy		7	4	3	5	4	4	2	5	4	5	2	5	3	2	3	1	5	7	3	1	7	50	37.5	1.0	37.5		
Groundcover: (total groundcover should equal 100%)																												
Cyanbac. crust																												
Moss																												
Lichen																												
Litter		1	4	5	3	3	4	7	3	5	4	4	4	1	5	3	4	3	2	4	8	7	7	38.5			38.5	
Wood		-	-	1	0	-	0	-	-	-	-	-	-	-	-	-	-	0	T	0	0	25.5	1.3	0.35			0.4	
Basal Veg			0	0	1	0	0	0	0	0	0	0	0	T	0	0		1	0	0	1	71.5	3.6	1.0			3.6	
Bare Soil		7	4	3	5	5	4	2	5	4	5	3	5	4	2		2	5	7	3	1				40	1		
Gravel <3 in.		0	1	1	1	1	1	0	1	T	0	3	1	5	3	3	4	0	0	2	T	28	14.3	1.0			14.3	
Cobble 3-10 in.																												
Stone 10-24 in.																												
Boulder >24 in.																												
Bedrock																												

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
0	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	Δ	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Rohman Date: 5/7/01 Polygon #: 008
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of

VERY DRY - very few green plants remaining

Growth form	0	1½	3	4½	6	7½	9	10½	12	13½	15	16½	18	19½	21	22½	24	25½	27	28½	Total	Correc- tion factor	Dry weight factor	Total dry weight
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*				
Perennial Grasses	2	/	/	/	5	/	/	/	1	/	3	/	/	/	/	/	T	/	/	/	11	1.21	.45	11.16
Annual Grasses	1	/	T	/	1	/	2	/	T	/	T	/	1	/	2	/	T	/	T	/	12	.79	.85	13.77
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	2	/	T	/	T	/	T	/	1	/	T	/	2	/	1	/	T	/	1	/	16	1.06	.5	8.48
Shrub	/	/	/	/	T	/	/	/	/	/	/	/	/	/	/	/	2	/	/	6	8.5	-	.5	25.5

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	49.77	Perennial Forbs:																		
Annual Grasses	61.40	Shrubs:																		
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6	75-100% of soil remains on sieve after 5 dipping cycles																			
Annual Forbs	37.82																			
Shrubs	113.73																			
	?																			
Total Production	262.72																			

Location	Under canopy	Inter-space
1m	6	4
6m	4	2
11m	6	4
16m	5	3
20m	6	3

(5) (3)

5
 $\sqrt[5]{\frac{27}{25}}$
 $\frac{21}{21}$

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: Rohman Berry + Stewart

Date: 5/7/01

Polygon number: 008

Functional/Structural Groups			Species List for Functional/Structural Group		
Name	Potential*	Actual	potential	Plant names	actual
Trees - deciduous					
Trees - evergreen					
Tall shrubs >20 in - sprouting					
Tall shrubs >20 in - non-sprouting	S	T	greasewood	sagebrush	greasewood
Dwarf shrubs <20 in - sprouting					
Dwarf shrubs <20 in - non-sprouting	S	M	shadscale	green molly	shadscale snakeweed
Cactus					
Cool Season Bunchgrasses	S	T	indian rice	three-awn	three-awn
Warm Season Bunchgrasses	D	T	alkali sacaton	sand dune	alkali sacaton
Cool Season Rhizomatous Grasses					
Warm Season Rhizomatous Grasses	S	M	galleta		galleta
Annual Grasses	T	D		chertgrass	six-week fescue
Forbs - annual	T	D	indian white		filaree
Forbs - perennial	M	T	globemallow	seepweed	cabchortus
Forbs - Nitrogen fixing					
Noxious weeds					
Biological crusts - lichens					
Biological crusts - mosses		M			
Biological crusts - cyanobacteria					

spiny sag
squirre

D - Dominant = 40 to 100% composition
S - Subdominant = 10 to 40% composition
M - Minor = 2 to 5% composition
T - Trace = <2% composition

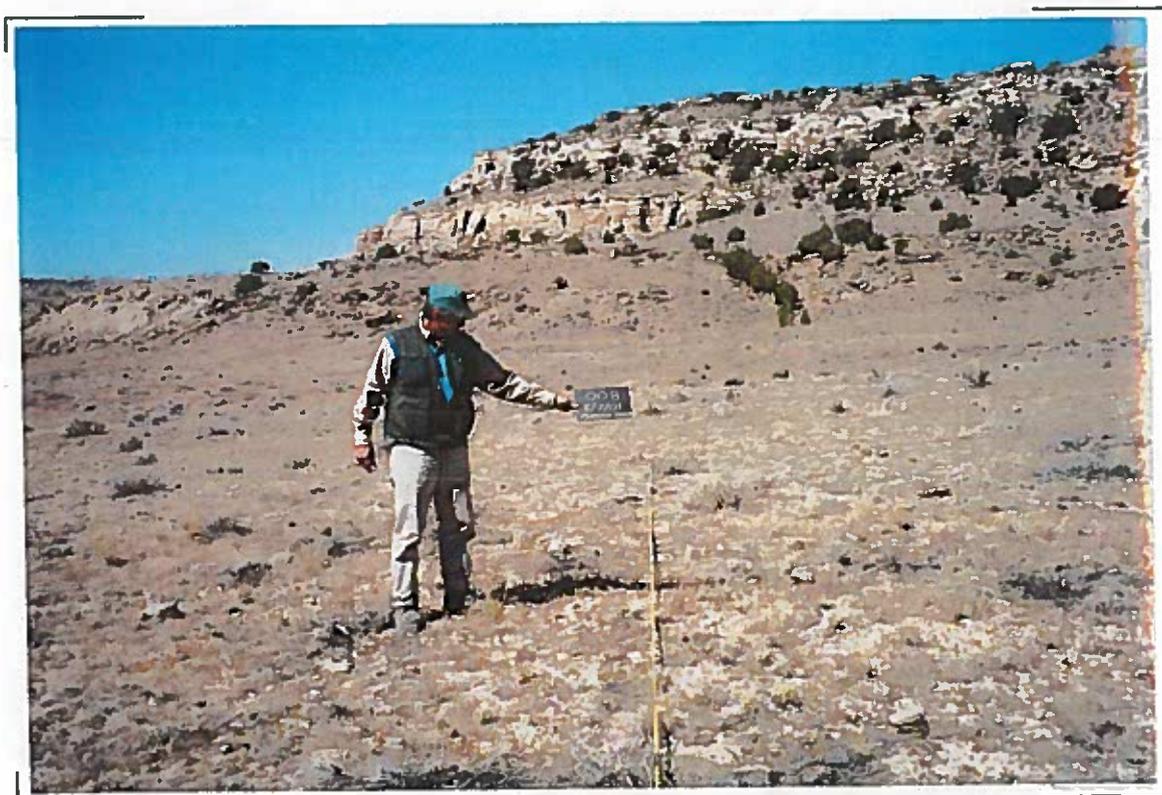
* Potential based on ecological/range site description or ecological reference area
 Actual is for the area of evaluation

Comments:

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CANM Rangeland Health Evaluation Photos

Allotment FLODYNE PARK
Polygon # 008
Date 5/7/2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): BERRY Date: 5/9/01 Polygon # 011
 Allotment: Flodine Park Pasture:
 Location: GPS lat 37° 17.678' long 108° 59.457' Legal S18T35NR 19W35NWQTR
 Aerial Photo: 1-2-6 Site Photos - Roll: 1 Number: 21 & 22
 Soil Map Unit/Component Name: MACK Number: 70
 Range/Ecological Site Name: ALAKLI FLAT Number: 414
 Slope: 2% Aspect: 307 Topographic Position: Presc top Elevation: 5,100
 Range/Ecological site description, soil survey, and/or ecological reference area:
 Surface texture: FINE SANDY LOAM Parent material: SANDSTONE
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 0'-6" FINE SANDY LOAM 2 6'-18" COARSE GRAINED SANDY CLAY 3 18" SANDY CLAY 4 18"-60" SANDY CLAY LOAM
 Evaluation Area Determination: 5 Parent material: SANDSTONE
 Surface texture: FINE SANDY LOAM
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 0'-13" CALIC HOAIZOY AT 31" 2 5" + NO RED ROCK 3 5" 4
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet
 Wildlife Use: SLIGHT
 Livestock Use: MODERATE
 Offsite influences on area and significance e.g. roads, chainings, fire: ROAD THIRD AREA
 Benchmark used for comparison: Ecological Reference Area ✓ (ERA number) or Site/Soil Description and/or experience ✓

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf.
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments	2. Water Flow Patterns
Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.
Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short
Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf.
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	4	4	4
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		4	
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.	5	5	5
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			3
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.		3	3
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			3
16. Invasive Plants	Dominate the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			1

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio Inlet
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2

Comments	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio Inlet
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	4	4	4

Comments	Indicator Summary:	Soil/Site Stability	Hydrologic Function	Bio Inlet
	1. Extreme			1
	2. Moderate to Extreme			2
	3. Moderate		1	3
	4. Slight to Moderate	3	2	1
	5. None to Slight	10	12	1

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: MILLER Date: 5/9/01 Polygon #: 011
 Transect length: 30 m Frames per transect: 20 @ 20x50 cm Transect 1 of

meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	SCC	ACC	% Freq	CFI
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
Ga	ANTEC	4	3	6	3	2	2	3	2	6	3	1	4	5	4	8	5	6	7	6	5	850	425	1.0	42.5
Ga	VUOC	T	2	2	T	3	2	1	T	T	T	T	T	0	T	0	T	T	0	T		115	5.8	1.0	5.8
G	HIJA	1	0	T	-	1	-	2	T	1	-	T	-	T	-	T	-	0	T	-		59	3.0	0.6	1.8
Fa	ASNU4														T							0.5	0.0	0.0	0.0
Fa	ERIC6	0	T	3	T	0	0	0	T	0	0	0	T	2	0	2	0	T	3	1	1	1445	7.5	1.0	7.5
Fa	CEORZ	0	T	T	-	T	T	0	T	T	T	T	-	-	T	T	T	0	T	T		16.0	0.8	0.85	0.7
Fa	PLPA2	T	-	T	-	T	-	T	-	T	-	-	-	T	-	T	T	T	0	T		5.0	0.2	0.5	0.1
Fa	DEPI		T	-	0	-	T													T		4.0	0.2	0.15	0.0
Fa	DRCU													T						T		1.0	0.0	0.1	0.0

Bare soil without canopy 2 3 0 0 5 7 2 5 1 3 1 7 3 6 1 5 6 1 2 3 693 34.6 1.0 34.6

Groundcover: (total groundcover should equal 100%)

Cyanbac. crust	-	-	T	-	-	-	-	-	-	-	-	-	T	-	-	-	-	-	-	-	-	10	0.0	0.1	0.0
Moss	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lichen	-	-	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.0	0.0	0.0
Litter	7	6	9	3	4	2	7	4	9	6	8	2	6	3	8	4	3	8	7	6		1083	54.1	1.0	54.1
Wood	-	-	-	-	-	-	-	-	-	-	-	-	0	T	-	-	-	-	-	-	-	3.5	0.2	0.1	0.0
Basal Veg	0	0	0	0	0	0	0	0	0	0	0	0	T	T	T	0	T	T	0	0	0	425	2.1	1.0	2.1
Bare Soil	3	4	1	7	6	8	3	6	2	4	2	8	4	7	2	6	7	2	3	4		890	44.5	1.0	44.5
Gravel <3 in.	T	-	T	T	T	T	T	T	-	T	T	T	T	T	T	-	T	T	T	T		8.5	0.4	0.85	0.3
Cobble 3-10 in.																									
Stone 10-24 in.																									
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: BERRY Date: 5/9/01 Polygon #: 011
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	1 2	3	2 3	4	7 T	T	3	1	4	3 4	2	T	T	T	T	T	T	T	T	T	13.0 14.5	.69	.45	8.85
Annual Grasses	6 6	4	10	5	3	3	4	5	10	8	2	6	6	6	14	8	10	11	11	12	102 80	1.27	.60	109.2
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	1 T	T	T	T	1 T	T	T	T	T	T	T	T	T	T	1 T	T	T	T	T	T	11.5	—	.5	5.75
Shrub	/	/	/	1	/	/	/	/	/	/	/	/	/	/	11 13	/	/	/	4 4	4	15 17	.88	.5	9.68

Correction factor = clip wt / est wt. Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	39.47	Perennial Forbs:
Annual Grasses	489.39	Shrubs:
Perennial Forbs	~~~~~	
Annual Forbs	25.64	
Shrubs	43.17	
Total Production	597.67	

Soil Stability Rating Form	
Rating	Criteria for assignment to stability class
0	Soil is too unstable to sample (falls through sieve)
1	50% of structural integrity lost within 5 seconds of insertion in water
2	50% of structural integrity lost 5-30 seconds after insertion
3	30% of soil remains on sieve after 5 dipping cycles
4	10-25% of soil remains on sieve after 5 dipping cycles
5	25-75% of soil remains on sieve after 5 dipping cycles
6	75-100% of soil remains on sieve after 5 dipping cycles

Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick
1m	5	1	
6m	5	1	
11m	3	1	
16m	5	2	
20m	3	1	

T 4.2 12

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: BERRY

Date: 5/9/01

Polygon number: 011

Functional/Structural Groups			Species List for Functional/Structural Group	
Name	Potential*	Actual	POTENTIAL Plant names	ACTUAL
Trees - deciduous	-	-	-	-
Trees - evergreen	-	-	-	-
Tall shrubs >20 in - sprouting				
Tall shrubs >20 in - non-sprouting	S	M	{ SAUPL, ANTR3, ATCO, SETRH, KOAM }	{ SAUPL, SETR4 }
Dwarf shrubs <20 in - sprouting				
Dwarf shrubs <20 in - non-sprouting				
Cactus	-	S	-	GUSA?
Cool Season Bunchgrasses	S	T	Achy. HEC026, ARPUG	-
Warm Season Bunchgrasses	S	T	SPAL, SPER	SPAI
Cool Season Rhizomitous Grasses				
Warm Season Rhizomitous Grasses	S	M	HJA	HITA
Annual Grasses	M	D	VUOC	VUOC, ANTEG
Forbs - annual	S	T	SPCO, PLPA2	SPCO, PLPA2
Forbs - perennial				
Forbs - Nitrogen fixing				
Noxious weeds				
Biological crusts - lichens				
Biological crusts - mosses				
Biological crusts - cyanobacteria				

D - Dominant = 40 to 100% composition	* Potential based on ecological/range site description or ecological reference area Actual is for the area of evaluation
S - Subdominant = 10 to 40% composition	
M - Minor = 2 to 5% composition	
T - Trace = <2% composition	

Comments:

Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Rohman + Haspel's Date: 5/9/01 Polygon # 12

Allotment: Fladline Park Pasture:

Location: GPS lat 37° 17.634" long 108° 59.574" Legal/E/S 13 T35N R20W Number: 3+4

Aerial Photo: 1-2-6 Site Photos - Roll: 2 Number: 101

Soil Map Unit/Component Name: Recapture Sandy loam Number: 413

Range/Ecological Site Name: Alkal Bottom Topographic Position: alluvial fan Elevation: 5105'

Slope: 2% Aspect: 47°

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: sandy loam Parent material: sandstone and shale

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth:

1 0-20 carbonates " 2 calcic horizon 20-60 " 3 sodic horizon 20-26" 4

Evaluation Area Determination: Parent material: sandstone

Surface texture: sandy loam Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth:

1 calcic horizon - / 2 " 2 sandy - 28" 3 ended at 38" - too soft to remove 4

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: minimal

Livestock Use: moderate

Offsite influences on area and significance e.g. roads, channings, fire: none observed

Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Blot Index
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments

2. Water Flow Patterns Extensive and numerous; unstable with active erosion; usually connected. More numerous than expected; deposition and cut areas common; occasionally connected. Nearly matches what is expected for the site; erosion is minor with some instability and deposition. Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short. Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.

Comments vary hummocky 2 2

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil Site Stability	Hydrologic Function	I
3. Pedestals and/or Terracettes	Abundant active pedestalling and numerous terracettes. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terracettes common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terracettes present.	Active pedestalling or terracette formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terracettes absent or uncommon.	3	3	1
Comments								
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	1	1	1
Comments	Numerous sodic slicks - some quite large - some areas of crust high chest across cover							
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	2	2	2
Comments	Extensive.							
6. Wind-Scoured Blowouts, and/or Deposition Areas		Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	1		
Comments	extensive hummock and basin topography - higher areas tend to have crust							
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		3	
Comments								
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	2	2	2
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	BI Intc
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	4	4	4
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	BI Intc
1. Extreme						2	2	2
2. Moderate to Extreme						4	3	3
3. Moderate						1	1	2
4. Slight to Moderate						2	2	1
5. None to Slight						10	12	

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: HASPELS, ROHMAN		Date: 5/9/01																		Polygon #: 012						
Transect length: 30 m		Frames per transect: 20 @ 20x50 cm																		Transect 1 of 2						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5					
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
G	HJA	1	0													0						11		0.15	0.1	
	ANTEG	2	3	5	2	2	6	1	1	3	2	3	5	3	2	7	8	6	5	3	3	720	36	1.0	36.0	
	VUOC	0	1	T	0	0	0				T	T	T	T	0	1	0	T				415	2.1	0.75	1.6	
F	ERC16	1	T	T	0	1	0	1		0	1	2	1	2	2	0	1	0	0	1	0	152	7.6	75	7.2	
F	PUPA2	T	0	0	0	0	T	T			0	0	0	T	0	0	0	0	T	T	0	29	2.0	0.9	1.8	
	LAMA9	T			T			0	T	T		T	T	T		T	T		T	0	T	11.5	0.6	0.65	0.4	
Fa	IFOR2				T		0	0	T					0		T	T		T	0	T	15	0.8	0.5	0.4	
Fa	IED				T									T				T	T		T	2.5	0.1	0.25	0.0	
Fa	MAAF							1	0	0	T	T	T									17.5	0.9	0.3	0.3	
Fa	DRCH										T											0.5	0.0	0.0		
Fa	MONU											T										0.5	0.0	0.0	0.0	
Bare soil without canopy		6	6	2	3	5	0	8	8	9	8	1	1	3	6	2	1	2	4	7	8	903	45.2	1.0	45.2	
Groundcover: (total groundcover should equal 100%)																										
Cyanbac. crust		0	1	7	6	3	5	0					8	7	2	2	5	3	2	5	T	0	561.5	28.5	0.85	24.2
Moss		T	0	0	T	1	0							T		T	0	1	4	0		77	3.8	0.6	2.3	
Lichen		-	T	T	T	T	0	T					T	T	T					T		7.5	0.4	0.5	0.2	
Litter		2	3	1	1	1	4	1	T	1	0	0	2	4	1	3	5	2	1	2	1	356.5	17.8	1.0	17.6	
Wood		-																								
Basal Veg		0	T	T	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T		20	1.0	1.0	1.0	
Bare Soil		7	6	2	3	5	0	8	8	9	8	1	1	3	6	2	1	2	4	7	8	913	45.6	1.0	45.6	
Gravel <3 in.		0	T	T	0	0	T	0	2	0	2	1	0	1	1	0			T	0	1	116	5.8	.95	5.5	
Cobble 3-10 in.																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
2	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
3	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
4	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
5	25.1 - 35% cover	30.0%	10	95.1 - 99% cover	97.0%
6	35.1 - 45% cover	40.0%	11	99.1 - 100% cover	99.5%
7	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Rahman + Haspels Date: 5/9/01 Polygon #: 12
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 2

Growth form	0m	3m		6m		9		12		15		18		21		24		27		Correc- tion factor	Dry weight factor	Total dry weight		
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19				20*	Total
Perennial Grasses	4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	—	.45	2.7
Annual Grasses	5	/	9	/	6	/	3	/	5	/	4	/	6	/	9	/	9	/	7	7	63 60	1.05	.60	73.7
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	1	/	T	/	T	/	2	/	T	/	1	/	1	/	2	/	1	/	1	1	10.5 8.5	1.24	.5	10.54
Shrub	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	3	/	/	/	9	—	.5	4.5

Correction factor = clip wt / test wt.

Total production in lb/ac = 89.2 x total dry wt.

*** Location for soil stability test**

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:
Perennial Grasses	3.12	Perennial Forbs:
Annual Grasses	328.75	Shrubs:
Perennial Forbs	~~~~~	
Annual Forbs	47.01	
Shrubs	20.07	
		Soil Stability Rating Form
		Criteria for assignment to stability class:
		0 Soil is too unstable to sample (falls through sieve)
		1 50% of structural integrity lost within 5 seconds of insertion in water
		2 50% of structural integrity lost 5-30 seconds after insertion
		3 25% of soil remains on sieve after 5 dipping cycles
		4 10-25% of soil remains on sieve after 5 dipping cycles
		5 25-75% of soil remains on sieve after 5 dipping cycles
		6 75-100% of soil remains on sieve after 5 dipping cycles
		Location Under canopy Inter-space
		1m 5 2
		6m 6 5
		11m 6 2
		16m 6 5
		20m 5 1
Total Production	398.95	Samples should be < 1/4 " diameter and < 1/8" thick

5.6 3.0

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: Rohman + Haspels

Date: 5/9/01

Polygon number: 012

Alkali Bottom

Functional/Structural Groups			Species List for Functional/Structural Group		
Name	Potential*	Actual	potential	Plant names	actual
Trees - deciduous					
Trees - evergreen					
Tall shrubs >20 in - sprouting					
Tall shrubs >20 in - non-sprouting	S	T	grease ^{sagebrush} wood	willbush, sand woffberry	
Dwarf shrubs <20 in - sprouting				nap sage	
Dwarf shrubs <20 in - non-sprouting	M	M	shadscale	shadscale, ^{spiny sagebrush} sand dropseed	
Cactus		T	prickly pear		
Cool Season Bunchgrasses	S	O	sandberg ^{livegrasses, squirreltail}		
Warm Season Bunchgrasses	D	T	Alkali Sacaton, sand dropseed		
Cool Season Rhizomatous Grasses	M				
Warm Season Rhizomatous Grasses	M	T-M	galleta, ^{altgrass}	galleta	
Annual Grasses		D		cheatgrass	
Forbs - annual		S		Filaree, hornheads, Plantago	
Forbs - perennial	M	O	^{avenue, primrose} globemallow buckwheat		
Forbs - Nitrogen fixing					
Noxious weeds					
Biological crusts - lichens	S	S		mostly cyanobacteria	
Biological crusts - mosses					
Biological crusts - cyanobacteria					

D - Dominant = 40 to 100% composition
 S - Subdominant = 10 to 40% composition
 M - Minor = 2 to 5% composition
 T - Trace = <2% composition

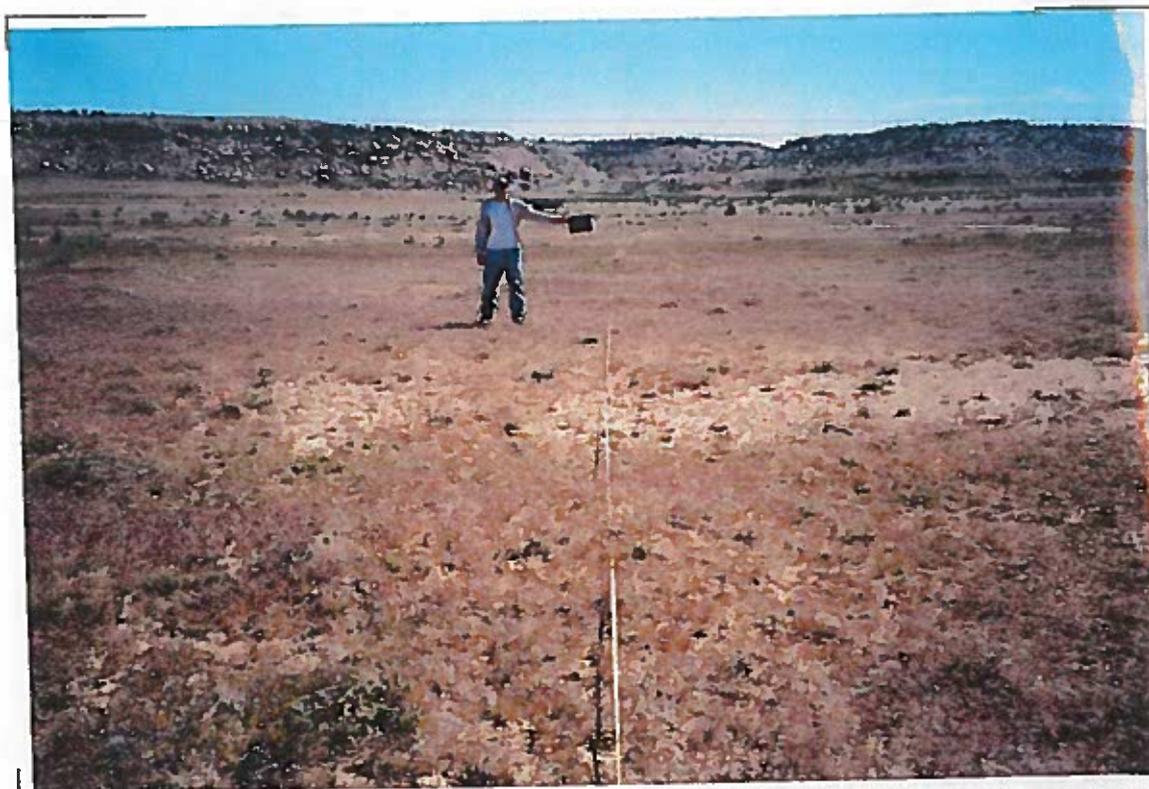
* Potential based on ecological/range site description or ecological reference area
 Actual is for the area of evaluation

Comments:

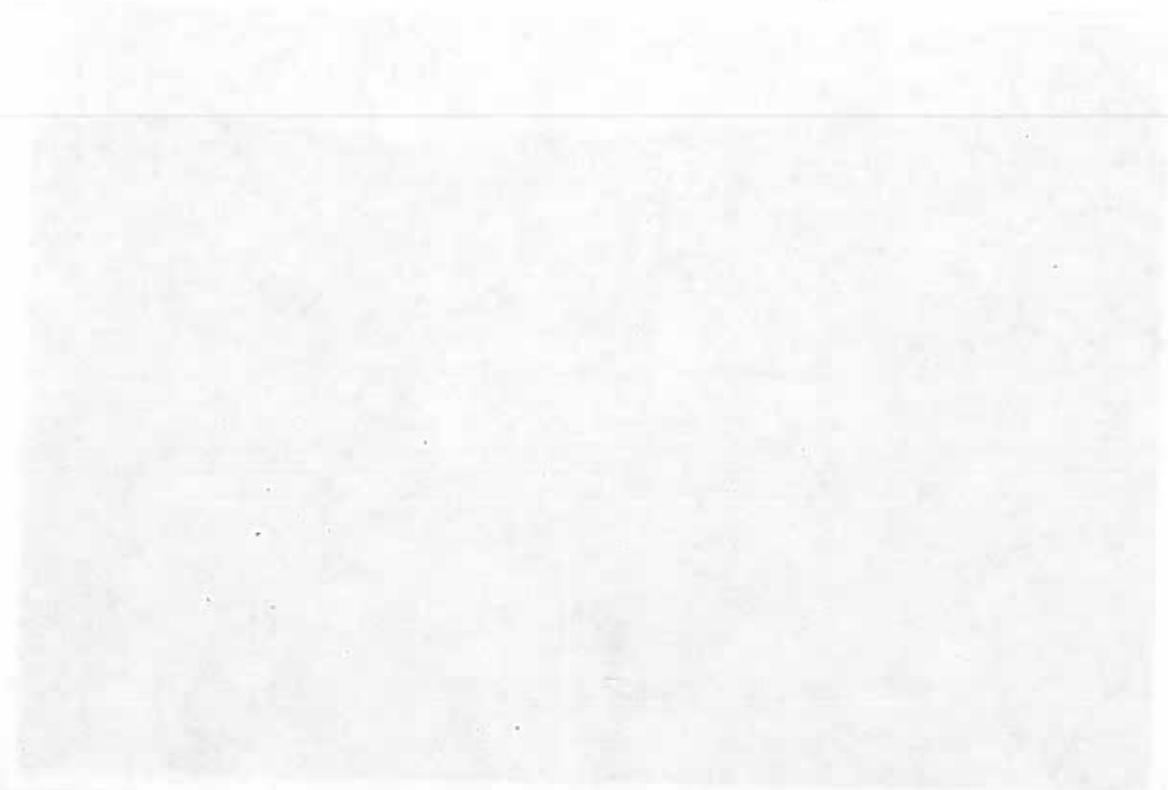
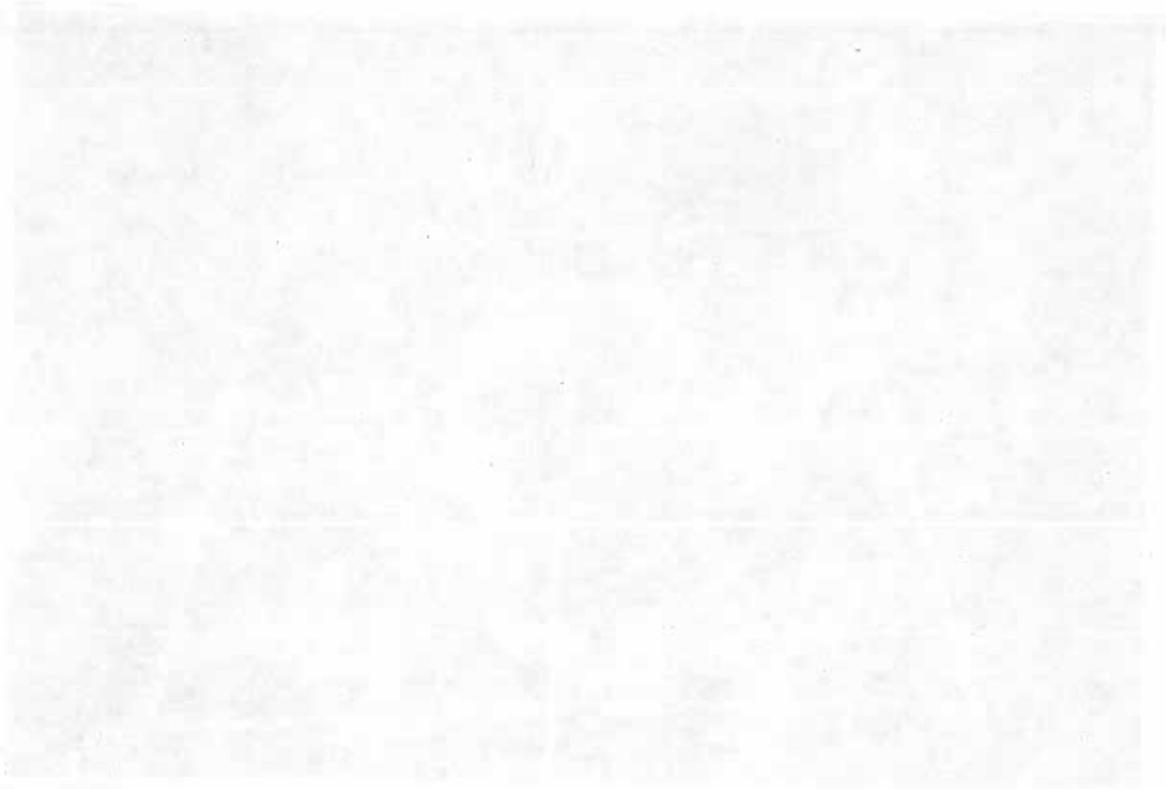
CANM Rangeland Health Evaluation Photos

Allotment
Polygon #
Date

~~HAMILTON MESA~~ *Flodine*
012
5/9 1 / 2001



~~SECRET~~
Flabine



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): MILLER, BEAVER Date: 05/14/11 Polygon # 015
 Allotment: Floding Park Pasture:
 Location: GPS lat 37° 18.084' long 109° 00.725' Legal S 12 T 35 N R 26 W
 Aerial Photo: 1-1-5 Site Photos - Roll: 2 Number: 1-2
 Soil Map Unit/Component Name: CLAY SANDS Number: 22
 Range/Ecological Site Name: SALT DESERT BIRCHES Number: 406
 Slope: 25-70 Aspect: 295° Topographic Position: Basin Elevation: 5062'

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: CLAYEY LOAM Parent material: MORRISON SHALE RESIDUUM

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	0-9" <u>CLAY LOAM</u>	2	9-18" <u>reddish gray clay</u>	3	18" <u>slightly weathered Morrison Sand</u>	4	
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Evaluation Area Determination: CLAYEY LOAM Parent material: MORRISON SHALE RESIDUUM

Surface texture: CLAYEY LOAM Parent material: MORRISON SHALE RESIDUUM

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

1	0-14" <u>CLAYEY LOAM</u>	2	14-19" <u>MORRISON RESIDUUM</u>	3	19" <u>CLAYEY LOAM</u>	4	27" <u>Badrock</u>
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Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: SEIGNAT

Livestock Use: SEIGNAT

Offsite influences on area and significance e.g. roads, chainings, fire:

Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bit Inte
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	<u>5</u>	<u>5</u>	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	<u>4</u>	<u>4</u>	
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Comments

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio/Intert
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.			
Comments								
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.			
Comments								
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.			
Comments								
6. Wind-Scoured Blowouts and/or Deposition Areas	Extensive.	Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.			
Comments								
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.			
Comments								
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.			
Comments								

5-5

2-2

4-4

3

3

2-2-2

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crisis	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Biotic Integrity
1. Extreme						4	5	(6) ³
2. Moderate to Extreme						(1)	(2)	—
3. Moderate						2	2	—
4. Slight to Moderate						3	3	1
5. None to Slight						10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: Mullen Beary Date: 05/14/01 Polygon #: 015

Transect length: 30 m Frames per transect: 20 @ 20x50 cm Transect 1 of 1

meter for frame location 0.0 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5 15.0 16.5 18.0 19.5 21.0 22.5 24.0 25.5 27.0 28.5

LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
GA	ANTEC	0	0	0	T	0	T						T	T		0	T	0	T	T	0	25	1.2	0.75	0.9
GA	VUOC	T	-																			0.5	0.0	0.0	0
GA	CRGL13						T	T		T												1.5	0.1	0.15	0.0
G	HISA															2	1	1			0	43	2.2	0.2	0.4
Fr	TOAN	1	-	0		0	0		T	0		0	0	0	1		1			T		5.2	2.6	0.15	1.7
FA	PLAA2	1	1	1	0	T	0	0			T	T	T	T	1	T	1	1	T	1	2	102.5	5.1	0.9	4.6
FA	ERC16	2	2	3	3	1	1		0	T	0	0	0	0	0	T	T	0		T	T	140.5	7.0	0.85	6.0
F	ALMAH			0	T	T	T		T	0	1	1	T						T			29	1.4	0.5	0.7
Fr	IPPU4				T		T									T						1.5	0.1	0.15	0.0
FA	GIOP								T	T												1.0	0.0	0.1	0.0
FA	DRCU																		T		T	1.0	0.0	0.1	0.0
FA	DEPI																				T	0.5	0.0	0.0	0.0

Bare soil without canopy 0 1 2 0 0 2 1 0 2 3 3 3 2 2 6 3 0 2 1 1 355 17.8 1.0 17.8

Groundcover: (total groundcover should equal 100%)

Cyanbac. crust	1	T	T	1	-	-	-	-	-	-	-	-	-	-	-	0	T	-	-	T		25	1.2	0.35	1.42
Moss	0	0	T	0	-	-	-	-	-	-	-	-	T	-	-	T	6	-	-	1		80.5	4.0	1.4	1.6
Lichen	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T	T	-	-	-		1.5	0.1	0.15	0
Litter	1	0	1	T	0	0	T	T	T	T	0	0	T	1	1	0	T	T	1			82	4.1	1.0	4.1
Wood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Basal Veg	0	T	T	1	T	T	T	T	T	0	T	T	T	1	0	T	T	T	0			39	2.0	1.0	2.0
Bare Soil	1	2	3	1	1	2	2	1	3	4	3	4	3	3	7	3	1	3	1	1		490	24.5	1.0	24.5
Gravel <3 in.	6	5	6	3	8	7	7	8	7	5	6	2	5	4	T	3	0	2	7	1		89.5	4.7	1.0	4.7
Cobble 3-10 in.	1	3	T	3	1	7	1	1	-	1	1	4	2	3	2	3	1	2	2	2		370.5	18.5	0.95	17.6
Stone 10-24 in.																		2	3	1		90	4.5	0.15	0.7
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
1	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
2	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
3	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
4	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
5	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
6	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
7	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Berry, Miller Date: 05/14/01 Polygon #: 015
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12	13.5	15	16.5	18	19.5	21	22.5	24	25.5	27	28.5	Total	Correc- tion factor	Dry weight factor	Total dry weight	
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*					
Perennial Grasses	/	/	/	/	/	/	/	/	/	/	/	/	/	/	4	5	2	4	/	/	3	14	1.11	.6	9.32
Annual Grasses	1	T	T	/	F	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	10.5	-	.85	8.92	
Perennial Forbs	/	/	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	5.5	-	.9	4.95	
Annual Forbs	2	T	2	T	T	1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	13.5	-	.5	6.75	
Shrub	/	/	1	2	T	/	/	/	/	/	4	3	/	/	/	/	1	1	/	/	9.5	1.22	.5	4.57	

Correction factor = clip wt / est wt. Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																												
Perennial Grasses	41.58	Perennial Forbs:																												
Annual Grasses	39.81	Shrubs:																												
Perennial Forbs	22.08	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th style="width: 90%;">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>≤10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	≤10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles										
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Annual Forbs	30.10																													
Shrubs	20.40																													
Total Production	153.97	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Location</th> <th style="width: 20%;">Under canopy</th> <th style="width: 20%;">Inter-space</th> <th style="width: 45%;">Samples should be < 1/4 " diameter and < 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td>0</td> <td>4</td> <td></td> </tr> <tr> <td>6m</td> <td>3</td> <td>1</td> <td></td> </tr> <tr> <td>11m</td> <td>0</td> <td>5</td> <td></td> </tr> <tr> <td>16m</td> <td>5</td> <td>3</td> <td></td> </tr> <tr> <td>20m</td> <td>5</td> <td>2</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">X</td> <td style="text-align: center;">2.6</td> <td style="text-align: center;">3</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick	1m	0	4		6m	3	1		11m	0	5		16m	5	3		20m	5	2		X		2.6	3
Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick																											
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11m	0	5																												
16m	5	3																												
20m	5	2																												
X		2.6	3																											

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: M. Allen Kelly Date: 05/14/01

Polygon number: 015

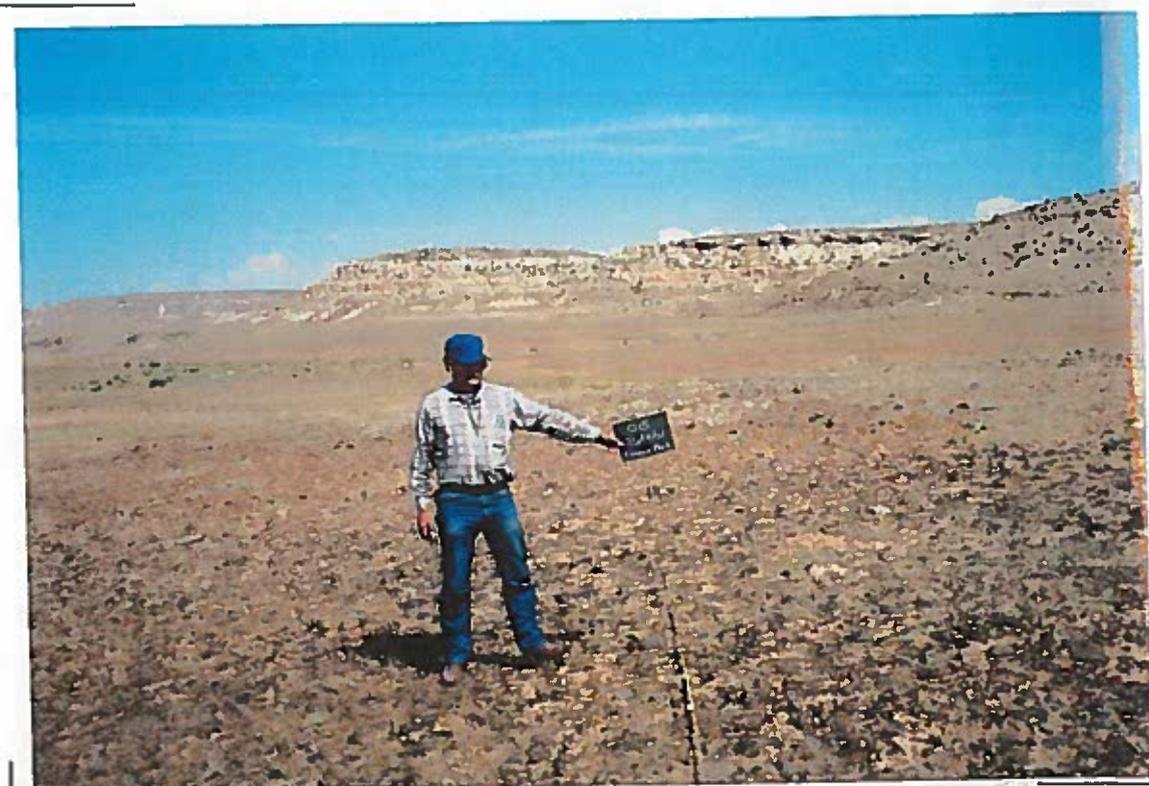
Saltdesert Breaks - 406

Functional/Structural Group Name	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous	M	—	Utah Juniper	
Trees - evergreen	M	T	Rabbitbrush	
Shrubs - sprouting	M	M	Shadscale	
Shrubs - non-sprouting	D	—	Foothrng, Winterfat, Sage	
Shrubs - non-sprouting	M	—		
Shrubs - invasive				
Cool Season Bunchgrasses	M-S	T	Salina wildrye, Ricegrass, Squirreltail	
Warm Season Bunchgrasses	S	—	Needle&thread, Sandburg, Threeawn	
Warm Season Rhizomatous Grasses	D	S	Galleta	
Cool Season Rhizomatous	M	—	Westernwheat	
Annual Grasses		S		NOTE
Forbs - annual				
Forbs - perennial	M	T	Onion, Phlox, Primrose, Princesplume, Globeamallow, Sego, Cymopteris, Larkspur	
Forbs - Nitrogen fixing			Locoweed	
Noxious weeds				
Biological crusts	S	M	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition			* Potential based on ecological/range site description or ecological reference area	
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition			Actual is for the area of evaluation	
T - Trace = <2% composition				

Comments: Potential annual production should be 200 pounds/acre in an average year

CANM Rangeland Health Evaluation Photos

Allotment FLODYNE PARK
Polygon # 015
Date 5/14 1 /2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Rohman + Haspels Date: 5/11/01 Polygon # 016
 Allotment: Flodine Park Pasture:
 Location: GPS lat 37° 17.455' long 109° 1.020' Legal S14 T35NR 20W
 Aerial Photo: 1-1-6 Site Photos - Roll: 2 Number: 8+9
 Soil Map Unit/Component Name: Shepard Fine Sand Number: 122
 Range/Ecological Site Name: Desert Sand Number: 411
 Slope: 4% Aspect: 326° Topographic Position: top of stabilized sand dune Elevation: 5080'

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Fine sand Parent material: aeolion - sandstone
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" ✓
 List diagnostic horizons in profile and depth:
 1 depth to carbonates 0-10" 2 3
 Evaluation Area Determination: 3 4

Surface texture:

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" ✓
 Parent material: aeolion / sandstone

List diagnostic horizons in profile and depth:

1 CaCO₃ threads - 34" 2 light calcic horizon - 50" 3 ~58" - decrease in CaCO₃ 4 ended in sand at 62"

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: minimal = prairie dog burrows

Livestock Use: moderate

Offsite influences on area and significance e.g. roads, chainings, fire: cattle pond on NE edge

Benchmark used for comparison: Ecological Reference Area _____ (ERA number _____) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interact
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	4	4	
------------------------	--	---	--	---	--	---	---	--

Comments

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interit
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	4	4	
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	2	2	
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common.	Occasionally present	Infrequent and few.	Matches what is expected for the site.	3		
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		4	
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			4

Comments								
16. Biological Crisis	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
Comments								

Indicator Summary:	Soil/Site Stability	Hydrologic Function	Biotic Integrity
1. Extreme			
2. Moderate to Extreme	2	2	2
3. Moderate	3	3	3
4. Slight to Moderate	2	4	1
5. None to Slight	3	3	1
	10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: <u>HASPELS ROHMAN</u>															Date: <u>5/4/01</u>					Polygon #: <u>016</u>																			
Transect length: <u>30 m</u>			Frames per transect: <u>20 @ 20x50 cm</u>															Transect <u>1</u> of <u>1</u>																					
meter for frame location																				0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI														
G	SPCR	3		0					3	T	3	1						T	1			104	5.2	0.4	2.1														
G	ANTEG	3	3	5	3	3	1	1	2	3	1	2	2	4	6	3	3	4	2	4	4	59	295	1.0	215														
G	VUOC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	67	3.4	1.0	3.4														
G	ACHY				2			1									1				T	45	2.0	0.2	0.4														
G	ARCU9		3			2			1		T	T				TT						62	3.1	0.35	1.1														
F	unk. Astrocary	1	0				0				0	0	0		0	1			T	T		39	2.0	0.5	1.0														
F	CRCR3	T	T			T	T	T	T			T						T	0		T	75	0.4	1.5	0.2														
F	PLPA2			T							T	0			T							45	0.2	0.2	0.1														
F	ERIC6		T	T		1	0		1	2	2	1	2	0	1	1	0	1				21	6.4	0.7	4.5														
F	SPPA2					1						0		0				1				26	1.3	0.2	0.3														
G	HIJA							0	0											5		5	2	0.5	0.4														
F	ANFE							T								T	T	T				20	0.1	0.2	0.0														
F	IPGU				T	T	T				T	T	T	0		0	0		T	T	0	1	0.9	0.6	0.5														
F	LYJU										T											0.5	0.0	0.05	0.0														
F	unk B																		T			0.5	0.0	0.05	0.0														
Bare soil without canopy		1	3	4	0	2	8	4	4	6	3	6	6	2	T	5	6	4	6	2	4	7	2.9	39.2	1.0	38.2													
Groundcover: (total groundcover should equal 100%)																																							
Cyanbac. crust																																							
Moss																																							
Lichen																																							
Litter		8	6	6	9	8	1	5	4	4	5	4	4	7	9	5	4	6	4	8	4	1	110	55.5	1.0	55.5													
Wood					0	0		T							0			T				10	0.5	0.25	0.1														
Basal Veg		0	0	T	0	0	T	0	1	T	0	T	T	T	0	T	T	0	T	0	T	42	2.1	1.0	2.1														
Bare Soil		2	4	4	0	2	9	5	5	6	5	6	6	3	0	5	6	4	6	2	6	8	43.3	1.0	43.3														
Gravel <3 in.																T						0.5	0.0	0.5	0.0														
Cobble 3-10 in.																																							
Stone 10-24 in.																																							
Boulder >24 in.																																							
Bedrock																																							

* gravel in = 15
150 g. flake

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Rohman + Haspel Date: 5/14/01 Polygon #: 016
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	0	3	6	9	12	15	18	21	24	27	Total	Correc- tion factor	Dry weight factor	Total dry weight										
	1*	2	3	4	5	6*	7	8	9	10					11*	12	13	14	15	16*	17	18	19	20*
Perennial Grasses	10 5	25 T	3 T	4 3	5 20	6 6	7 43	8 T	9 10	10 4	11 1	12 T	13 T	14 3	15 T	16 T	17 T	18 1	19 32	20 T	154.5	1.01	.45	70.22
Annual Grasses	9 6	6 8	10 15	9 8	9 3	6 6	8 5	8 9	6 5	11 3	11 12	12 12	9 8	9 5	9 7	9 5	9 8	9 8	9 8	9 8	141	1.1	.60	93.06
Perennial Forbs	1 1	T T	T T	T T	T 8	T T	T T	T T	T T	T 1	T T	T T	T T	T T	T 5	T 6	T 4	T 4	T T	T 1	22.5	1.22	.55	15.10
Annual Forbs	T T	T T	1 1	4 5	2 2	1 1	3 3	3 3	3 3	2 2	T T	T T	1 1	2 2	T T	2 2	1 1	T T	T T	32	.89	.5	14.24	
Shrub	T T	T T	T T	22 T	T 2	3 3	T T	T T	T T	T T	2 2	2 2	2 2	4 4	4 4	4 4	4 4	4 4	4 4	4 4	60.5	.79	.5	26.27

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	313.18	Perennial Forbs:																		
Annual Grasses	415.05	Shrubs:																		
Perennial Forbs	67.33	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td><10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
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6	75-100% of soil remains on sieve after 5 dipping cycles																			
Annual Forbs	63.51																			
Shrubs	117.15																			
Total Production	976.22	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td>5</td> <td>3</td> </tr> <tr> <td>6m</td> <td>4</td> <td>2</td> </tr> <tr> <td>11m</td> <td>5</td> <td>1</td> </tr> <tr> <td>16m</td> <td>5</td> <td>1</td> </tr> <tr> <td>20m</td> <td>5</td> <td>3</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	1m	5	3	6m	4	2	11m	5	1	16m	5	1	20m	5	3
Location	Under canopy	Inter-space																		
1m	5	3																		
6m	4	2																		
11m	5	1																		
16m	5	1																		
20m	5	3																		

4 (4.8) (2)

Rangeland Health Assessment - Canyons of the Ancients National Monument
Functional/Structural Group Worksheet

Observer: Rahman + Haspela Date: 5/14/01

Polygon number: 016

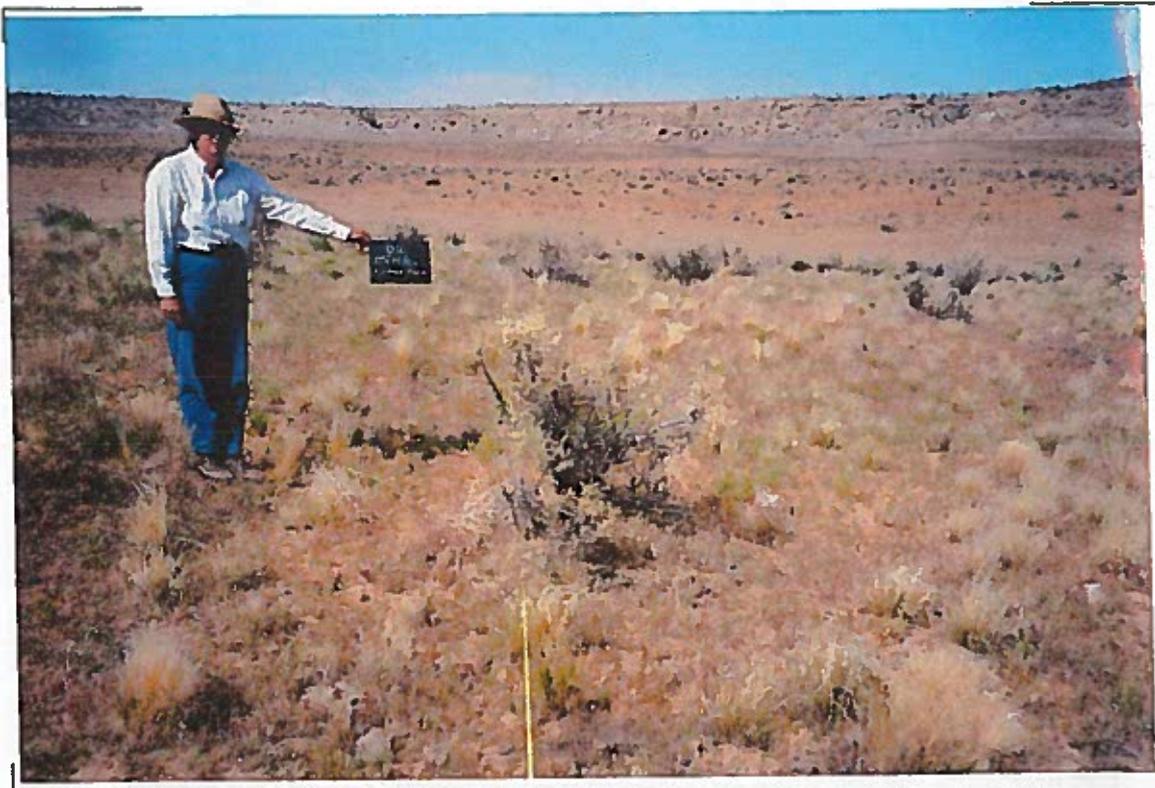
Desert Sand - 411

Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous				
Trees - evergreen				<i>C. muscousus</i> and <i>C. viscidiflorus</i>
Shrubs - sprouting	M	T	(Rabbitbrush)	
Shrubs - non-sprouting	S	S	(Foutwing)	
Shrubs - non-sprouting	M	T	Sand sage, wolfberry, sagebrush	shadscale, winterfat
Shrubs - invasive	T	M	Snakeweed	
Cool Season Bunchgrasses	S	M	Ricegrass, Needle & thread, NM feathergrass (Threawn)	
Warm Season Bunchgrasses	D	S	Sand dropseed, Alkali sacaton	
Warm Season Rhizomatous Grasses	S	T-M	(Galleta)	
Cool Season Rhizomatous		D		
Annual Grasses				
Forbs - annual	T	T	Annual sunflower	cheatgrass, six weeks fescue
Forbs - perennial				
Forbs - Nitrogen fixing	M	T	Sandaster, fendler spurge (evening primrose), hairy goldenaster	globe mallow, sand verbena
Noxious weeds				foxcow
Biological crusts	T-M	T	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition			* Potential based on ecological/range site description or ecological reference area	
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition			Actual is for the area of evaluation	
T - Trace = <2% composition				

Comments: Potential annual production should be 500 pounds/acre in an average year

CANM Rangeland Health Evaluation Photos

Allotment FLODYNE PARK
Polygon # 016
Date 5/14/2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Derry Miller Date: 05/17/01 Polygon # 022
 Allotment: Flodine Park Pasture:
 Location: GPS lat 37° 14' 08.0" long 109° 02.599' Legal S15 T35NR 20W N400R
 Aerial Photo: 1-1-5 Site Photos - Roll: 2 Number: 9-10
 Soil Map Unit/Component Name: MacK Number: 70
 Range/Ecological Site Name: Alkali Flat Number: 414
 Slope: 3% Aspect: 290° Topographic Position: Wet top Elevation: 5240
 Range/Ecological site description, soil survey, and/or ecological reference area:
 Surface texture: FINE SANDY LOAM Parent material: ALLUVIUM & COLLIAN SS
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" ✓
 List diagnostic horizons in profile and depth:
1 0" - 13 FINE SANDY LOAM 2 13" - 33" SPURRY CLAY LOAM 3 33" - 60" LIGHT GRAY SANDY A 4 CLAY LOAM
 Evaluation Area Determination:
 Surface texture: FINE SANDY LOAM Parent material: ALLUVIUM & COLLIAN SS
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" ✓
 List diagnostic horizons in profile and depth:
1 0-11 FINE SANDY LOAM 2 11-20 CALIC 3 20 CALIC HORZON 4 41" Redrock
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet
 Wildlife Use: LIGHT
 Livestock Use: Moderate to Heavy
 Offsite influences on area and significance e.g. roads, chainings, fire: road
 Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	
2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5	5	
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			3

Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	1	1	1

Indicator Summary:	Soil/Site Stability			Hydrologic Function			Biotic Integrity		
	1. Extreme	1		1		1		1	
	2. Moderate to Extreme								
	3. Moderate	3		5		4			
	4. Slight to Moderate	6							
	5. None to Slight	10		12		10			

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: <i>Berry, Miller</i>															Date: <i>5/17/01</i>					Polygon #: <i>022</i>						
Transect length: <i>30 m</i>					Frames per transect: <i>20 @ 20x50 cm</i>															Transect <i>1</i> of <i>1</i>						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5					
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
<i>JT</i>	<i>ACHV</i>									<i>1</i>	<i>1</i>							<i>1</i>	<i>1</i>		<i>2</i>	<i>160</i>	<i>3</i>	<i>0.25</i>	<i>0.8</i>	
	<i>HIJA</i>	<i>1</i>				<i>1</i>				<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>0</i>	<i>2</i>	<i>1</i>	<i>1</i>			<i>T</i>		<i>1235</i>	<i>6.2</i>	<i>0.55</i>	<i>3.4</i>	
	<i>SPCR</i>																									
<i>Na</i>	<i>ANTE6</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>T</i>	<i>T</i>	<i>0</i>	<i>1</i>	<i>1525</i>	<i>7.</i>	<i>10</i>	<i>7.6</i>		
	<i>NUOC</i>			<i>T</i>							<i>0</i>				<i>0</i>	<i>T</i>		<i>T</i>	<i>T</i>	<i>0</i>	<i>11</i>	<i>0.6</i>	<i>0.5</i>	<i>0.2</i>		
	<i>CRGL13</i>										<i>0</i>										<i>3</i>	<i>0.2</i>	<i>0.05</i>	<i>-</i>		
<i>Fa</i>	<i>DEPI</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>0</i>		<i>1</i>		<i>1</i>	<i>0</i>			<i>T</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>		<i>0</i>	<i>575</i>		<i>0</i>	<i>1.2</i>		
	<i>ERCE6</i>	<i>T</i>	<i>2</i>	<i>1</i>	<i>3</i>	<i>0</i>	<i>1</i>	<i>T</i>		<i>T</i>	<i>T</i>		<i>0</i>	<i>T</i>	<i>0</i>			<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>1145</i>	<i>7</i>	<i>8</i>	<i>4.6</i>	
	<i>GTOP</i>		<i>T</i>			<i>1</i>	<i>0</i>	<i>T</i>	<i>T</i>		<i>T</i>	<i>0</i>		<i>T</i>	<i>T</i>		<i>0</i>	<i>T</i>	<i>T</i>	<i>0</i>	<i>T</i>	<i>295</i>	<i>1.5</i>	<i>7</i>	<i>1.1</i>	
	<i>CR1R3</i>										<i>1</i>	<i>0</i>								<i>T</i>		<i>135</i>	<i>0.7</i>	<i>5</i>	<i>0.1</i>	
Bare soil without canopy		<i>1</i>	<i>5</i>	<i>4</i>	<i>5</i>	<i>4</i>	<i>2</i>	<i>6</i>	<i>1</i>	<i>3</i>	<i>8</i>	<i>1</i>	<i>4</i>	<i>8</i>	<i>7</i>	<i>7</i>	<i>7</i>	<i>3</i>	<i>3</i>	<i>7</i>	<i>4</i>	<i>960</i>	<i>4.8</i>	<i>1</i>		
Groundcover: (total groundcover should equal 100%)																										
Cyanbac. crust																										
Moss						<i>1</i>																	<i>1.0</i>	<i>0.0</i>		
Lichen																										
Litter		<i>2</i>	<i>4</i>	<i>6</i>	<i>5</i>	<i>5</i>	<i>8</i>	<i>4</i>	<i>2</i>	<i>5</i>	<i>2</i>	<i>7</i>	<i>4</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>6</i>	<i>6</i>	<i>3</i>	<i>5</i>	<i>800</i>	<i>40</i>	<i>1</i>		
Wood									<i>2</i>	<i>1</i>		<i>1</i>						<i>0</i>				<i>43</i>	<i>2.2</i>		<i>4</i>	
Basal Veg		<i>T</i>	<i>0</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>		<i>5</i>	<i>0</i>	<i>T</i>	<i>1</i>	<i>T</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>T</i>	<i>0</i>	<i>29</i>	<i>4.4</i>	<i>1</i>		
Bare Soil		<i>8</i>	<i>6</i>	<i>4</i>	<i>5</i>	<i>4</i>	<i>2</i>	<i>6</i>	<i>1</i>	<i>4</i>	<i>8</i>	<i>2</i>	<i>5</i>	<i>9</i>	<i>8</i>	<i>8</i>	<i>8</i>	<i>3</i>	<i>4</i>	<i>7</i>	<i>5</i>	<i>1070</i>	<i>53.5</i>	<i>1</i>		
Gravel <3 in.		<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>				<i>T</i>					<i>T</i>	<i>T</i>	<i>0</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>8.5</i>	<i>0.4</i>	<i>1.6</i>	<i>0</i>	
Cobble 3-10 in.																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Code	Range	Mid-point	Code	Range	Mid-point
<i>T</i>	0 - 1.0% cover	0.5%	<i>6</i>	55.1 - 65% cover	60.0%
<i>0</i>	1.1 - 5.0% cover	3.0%	<i>7</i>	65.1 - 75% cover	70.0%
<i>1</i>	5.1 - 15% cover	10.0%	<i>8</i>	75.1 - 85% cover	80.0%
<i>2</i>	15.1 - 25% cover	20.0%	<i>9</i>	85.1 - 95% cover	90.0%
<i>3</i>	25.1 - 35% cover	30.0%	<i>A</i>	95.1 - 99% cover	97.0%
<i>4</i>	35.1 - 45% cover	40.0%	<i>X</i>	99.1 - 100% cover	99.5%
<i>5</i>	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Berry, Miller Date: 5/17/01 Polygon #: 022
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	0	1.5	3	4.5	6	7.5	9	10.5	12	13.5	15	16.5	18	19.5	21	22.5	24.0	W	Total	Correc- tion factor	Dry weight factor	Total dry weight			
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17						18	19	20*
Perennial Grasses	2 1	3			2				4	3	6	2	1	6	4	4	3	4	T	9	25 20	54.5	1.25	.8	54.5
Annual Grasses	1 1	2	2	T	2	2	2	T	1	T	T	2	T	1	2	T	1	T	1	3	8 7	25.5	1.14	.85	24.71
Perennial Forbs									3												3		-	.4	1.2
Annual Forbs	1 2	2	2	1	1	1	2	T	T	2	3	2	T	T	T	1	3	T	1	T	7.5 7.5	26.5	1	.85	22.52
Shrub	T			1				4	5	1	5		1	T				6	1		65.5 50.5	115.5	1.30	.50	75.09

Correction factor = clip wt / est wt.

Total production in lb/ac = ^{21.46} 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																			
Perennial Grasses	243.07	Perennial Forbs:																			
Annual Grasses	110.20	Shrubs:																			
Perennial Forbs	5.35	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td><10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles	
Soil Stability Rating Form																					
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6	75-100% of soil remains on sieve after 5 dipping cycles																				
Annual Forbs	100.46																				
Shrubs	344.83																				
Total Production	803.91	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> <th rowspan="6" style="font-size: small;">Samples should be < 1/4 " diameter and < 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>6m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick	1m	5	3	6m	5	2	11m	3	3	16m	5	2	20m	5	2
Location	Under canopy	Inter-space	Samples should be < 1/4 " diameter and < 1/8" thick																		
1m	5	3																			
6m	5	2																			
11m	3	3																			
16m	5	2																			
20m	5	2																			

5 | 23
 | 46

5 | 12
 | 2.4

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: *Berry, Miller* Date: *5/17/01*

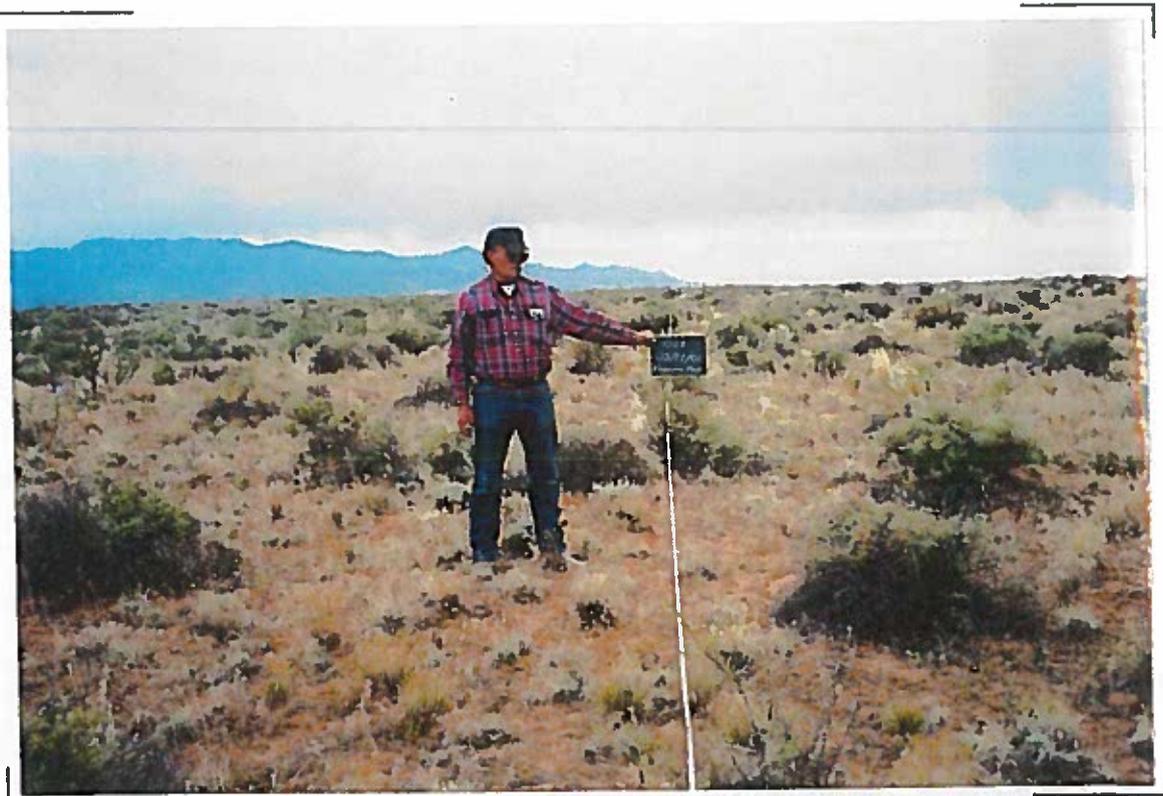
Polygon number: *022*
Alkali Flat - 414

Functional/Structural Group	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous				
Trees - evergreen				
Shrubs - sprouting				
Shrubs - non-sprouting	S	T	Greasewood, Shadscale	
Shrubs - non-sprouting	NI	S	Fourwing, Winterfat, Sage, Greenmolly, Spiny hopsage	<i>white berry (Quercus Thicket)</i>
Shrubs - invasive	NI	S	Snakeweed	
Cool Season Bunchgrasses	S	M	Squirreltail, Needlethread, Indian rice, Three-awn	
Warm Season Bunchgrasses	D	M	Alkali sacaton, Sand dropseed,	
Warm Season Rhizomatous Grasses	S	S	Galleta)	
Annual Grasses	T	F	Sixweeks fescue	
Forbs - annual	T	F	Indianwheat, Pepperweed	
Forbs - perennial	NI	M	Globemallow, Cymopters	<i>Sppa</i>
Forbs - Nitrogen fixing				
Noxious weeds				
Biological crusts	S	T	Cyanobacteria, Lichens, Moss	
D - Dominant = 40 to 100% composition			* Potential based on ecological/range site description or ecological reference area	
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition			Actual is for the area of evaluation	
T - Trace = <2% composition				

Comments: Potential annual production should be 650 - 800 pounds/acre in an average year

CANM Rangeland Health Evaluation Photos

Allotment FIODYNE PARK
Polygon # 022
Date 5/17 1 / 2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Rohman Stoner + Haspels Date: 5/17/01 Polygon # 023
 Allotment: Florence Park Pasture:
 Location: GPS lat 37°17.894' long 109°02.592' Legal: BWS 10 T35N R 20W Number: 15+16
 Aerial Photo: 1-1-5 Site Photos - Roll: 2 Number: 31
 Soil Map Unit/Component Name: Farb Number: 409
 Range/Ecological Site Name: Shallow Desert Topographic Position: mesa rim Elevation: 5305'
 Slope: 4% Aspect: 230°
 Range/Ecological site description, soil survey, and/or ecological reference area:
 Surface texture: sandy loam Parent material: sandstone
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 0-3" calcic 2 3-13" C1 3
 Evaluation Area Determination: Parent material: sandstone
 Surface texture: Fine sandy loam
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"
 List diagnostic horizons in profile and depth:
 1 1/2" color change → darker 2 14"-decomposing bedrock 3 1/6" calcic horizon 4 20"-bedrock
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet
 Wildlife Use: light
 Livestock Use: light → moderate
 Offsite influences on area and significance e.g. roads, chainings, fire: minor two-track road
 Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience

calcs deposited on
gravel from 0" down

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biological Integrity
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5	5	
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/site Stability	Hydrologic Function	Biot Inter
3. Pedestals and/or Terraces	Abundant active pedestalling and numerous terraces. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terraces common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terraces present.	Active pedestalling or terracing formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terraces absent or uncommon.	5	5	
Comments								
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	3	3	
Comments								
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
Comments								
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	3		
Comments								
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		4	
Comments								
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	4	4	4
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioti Integr
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			5
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	3	3	3
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Bioti Integr
1. Extreme								
2. Moderate to Extreme						3	5	2
3. Moderate								
4. Slight to Moderate						5	5	3
5. None to Slight						10	12	10

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Cover Frequency Data Sheet

Observers: Rohman + Haspeis										Date: 5/17/01										Polygon #: 023						
Transect length: 30 m		Frames per transect: 20 @ 20x50 cm																		Transect 1 of 1						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5					
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
GP	HISA		2		1	T	1				1		0	1	0			0	T	1	0	83	4.2	0.6	2.5	
	ACHY	T		T	1	0		T			T		1	1				0				35	1.9	0.45	0.9	
	HENES						T	1	0	1												255	1.2	0.2	0.2	
GA	ANTE6	1	0	T	0	6	T	0		0	0	0	0	0	1	0	0	0	1	0	0	73	3.6	0.95	3.4	
	VUOC	0	0	T	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	68.5	3.4	0.95	3.2	
FP																										
FA	AMA9	0	T		0						0				0	0	T	T	0	1	T	30	1.5	0.55	0.8	
	DEPI	0				T					0	T			0	0	T		T	1	0	27	1.4	0.5	7	
	CRCK3	0	0								0	0		T	T		0	T	T	0	1	30	1.5	0.55		
	MPAZ	T			T	T					0	T	T	T	T		T		T	T	0	11	0.6	0.6	4	
	GIOP		0	T	T								T						T	T	0	4.5	0.2	0.2		
	IPGU		T		0	T	0	0			T	T							T	0	T	0	18	0.9	0.55	0
	EMOZ									T	T		0	T					T	T	T	6	0.3	0.5	0.1	
	Vnk Gula										T											0.0	0.0	0.05	0.0	
	STLO4											T										0.0	0.0	0.05	0.0	
EN	ASCA9?		T	T																0		3	0.2	0.05	0.0	
Bare soil without canopy		4	6	9	1	6	4	6	8	6	3	7	1	1	7	4	1	3	4	2	5	89.7	44.9	1	44.9	
Groundcover: (total groundcover should equal 100%)																										
Cyanbac. crust					0	0	T		0	0	T	T	T	1	1	0	T		0	T		41	2.0	0.7	1.4	
Moss		T			3	T	T	0			2	T	0	T	T	1	1	0	T	T	T	82.5	4.2	0.5	3.4	
Lichen					0	T								1	T							4.5	0.2	0.2	0.0	
Litter		6	4	0	4	3	4	1	0	2	2	3	8	9	2	4	6	5	6	6	3	766	37.3	1.0	37.3	
Wood											1											0.0	0.0	0.05	0.0	
Basal Veg		T	0	T	0	T	0	T	T	T	T	1	0	T	T	T	0	T	T	T	T	3.2	1.6	1.0	1.6	
Bare Soil		4	6	9	2	7	5	8	8	7	4	7	1	1	7	4	2	4	4	3	6	1,007	50	1.0	50.0	
Gravel <3 in.		0	0	1	0	T	0	1	0	1	0	T	T	0	0	0	0	0	0	0	0	73.9	3.7	1.0	3.7	
Cobble 3-10 in.																										
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock																										

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: HASPELS, R. MANN Date: 5/17/01 Polygon #: 023
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	W		W		W		W		W		W		W		W		W		Total	Correc- tion factor	Dry weight factor	Total dry weight		
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19				20*	
Perennial Grasses	/	/	3	T	3	3	2	1	T	3	5	4	6	8	1	3	4	T	3	2	22 22	1	.55	24.47
Annual Grasses	2	2	3	T	3	1	T	T	T	1	3	1	1	1	1	T	3	1	1	2	7 9.5	.95	.85	23.01
Perennial Forbs	/	/	T	T	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	1	—		
Annual Forbs	3	3	1	T	2	1	T	/	T	3	2	1	T	1	1	2	1	1	5	3	13.5 17.5	1.08	.5	14.58
Shrub	/	/	T	T	/	2	/	/	/	/	/	48	85	55	T	8	8	/	/	/	73 63	1.48	.5	85.84
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	116			

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	109.16	Perennial Forbs:																		
Annual Grasses	102.62	Shrubs:																		
Perennial Forbs	~	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th style="width: 90%;">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td>< 10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	< 10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
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Annual Forbs	65.03																			
Shrubs	382.85																			
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> </tr> <tr> <td>6m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">5</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	1m	4	3	6m	5	3	11m	6	4	16m	4	2	20m	6	5
Location	Under canopy	Inter-space																		
1m	4	3																		
6m	5	3																		
11m	6	4																		
16m	4	2																		
20m	6	5																		
Total Production	659.66	Samples should be < 1/4" diameter and < 1/8" thick																		

5.0 34

#023

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: R. Johnson / M. Smith / Shovel

Date: 5-17-01

Polygon number: 23

Shallow Desert - 409

Functional/Structural Group	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T		Utah Juniper	
Trees - sprouting				
Shrubs - non-sprouting	S	5	Epithema Big Sage (Shadscale)	rabbit brush - a few
Shrubs - non-sprouting	M	T	Yucca, Cliffrose, Prickly pear, Skunkbush, Snakeweed	Pinon's sage wolfberry
Shrubs - invasive	T			
Cool Season Bunchgrasses	D	D	New Mex. Feathergrass, Ricegrass, Salina wildrye	
Cool Season Bunchgrasses	S		Squirreltail, threeawn	
Warm Season Bunchgrasses				
Warm Season Rhizomatous Grasses	S	M	Galleta	
Cool Season Rhizomatous				
Annual Grasses				
Forbs - annual				
Forbs - perennial	M		Phlox, Princessplume, Globemallow, Cymopters.	
Forbs - Nitrogen fixing	T		Locoweed	
Noxious weeds				
Biological crusts	S	M	Cyanobacteria, Lichens, Moss	

D - Dominant = 40 to 100% composition

S - Subdominant = 10 to 40% composition

M - Minor = 2 to 5% composition

T - Trace = <2% composition

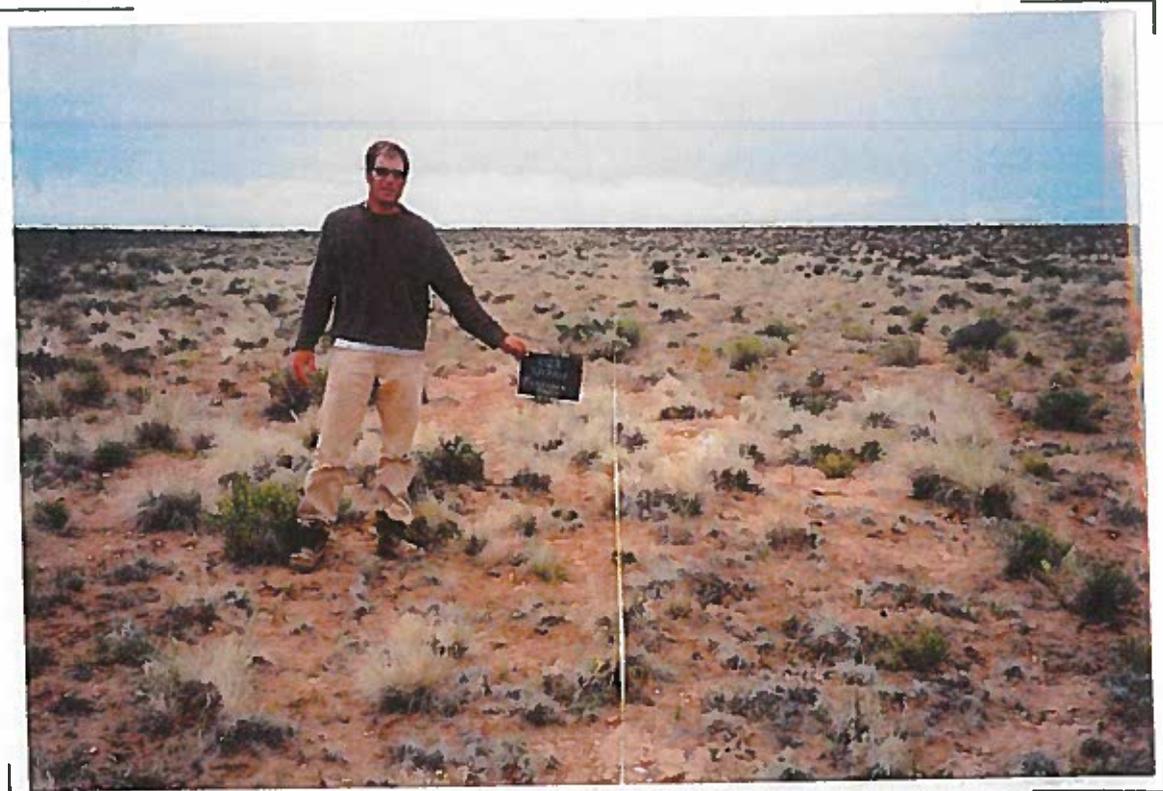
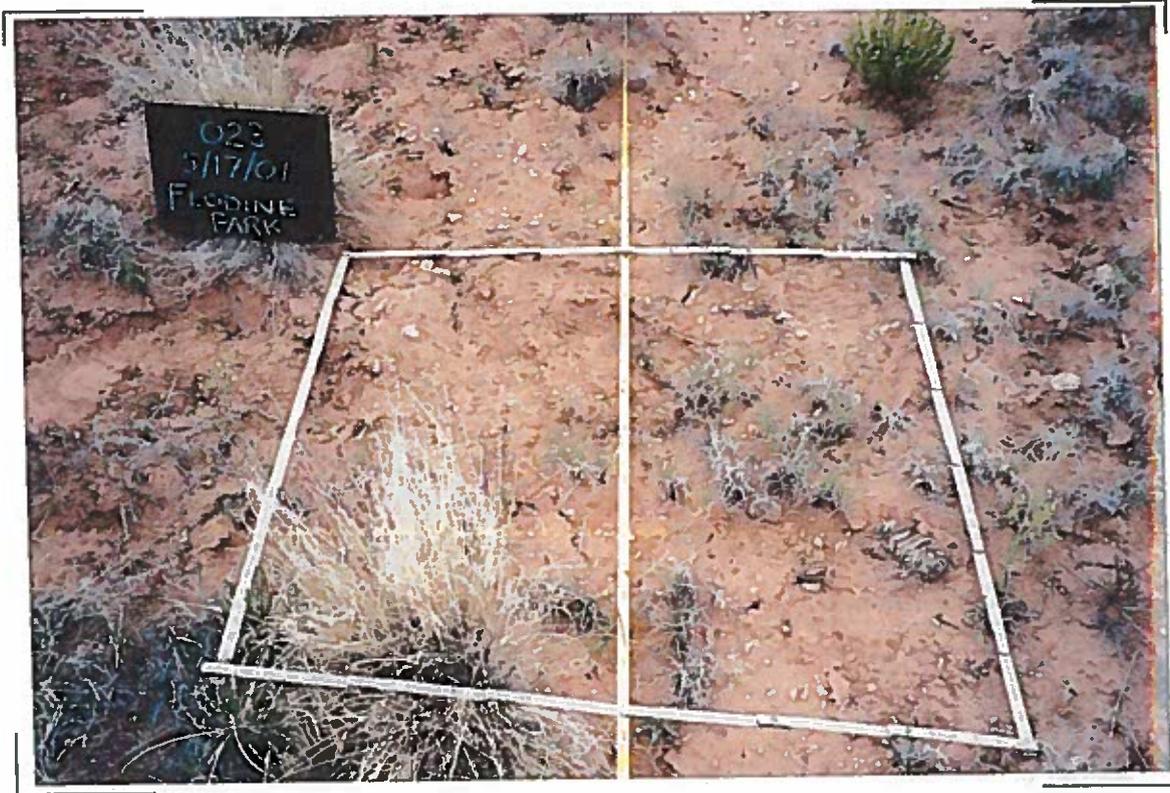
* Potential based on ecological/range site description or ecological reference area

Actual is for the area of evaluation

Comments: Potential annual production should be 400 pounds/acre in an average year

CANM Rangeland Health Evaluation Photos

Allotment FLOODINE PARK
Polygon # 023
Date 5/17 / 2001



THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
5408 SOUTH DICKENS STREET
CHICAGO, ILLINOIS 60637

THE UNIVERSITY OF CHICAGO
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Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): Stoner & Stewart Date: 5/17/01 Polygon # 24
 Allotment: Flooded Park Pasture:
 Location: GPS lat 37° 17.912' long 109° 02.629' Legal S10 T35NR 20W
 Aerial Photo: 1-1-5 Site Photos - Roll: 2 Number: 16, 17
 Soil Map Unit/Component Name: Farb Number: 31
 Rangel/Ecological Site Name: Shallow desert Number: 409
 Slope: 4% Aspect: 262° Topographic Position: mesa edge Elevation: 5300

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Sandy loam Parent material: Sand stone

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:
 1 0-3" calic 2 C1 horizon 3"-13" 3 _____ 4 _____

Evaluation Area Determination:
 Surface texture: Sandy loam Parent material: _____

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:
 1 calic @ 4" 2 Banner @ 9" 3 _____ 4 _____

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet _____

Wildlife Use: _____

Livestock Use: Light

Offsite influences on area and significance e.g. roads, chailings, fire: _____

Benchmark used for comparison: Ecological Reference Area _____ (ERA number _____) or Site/Soil Description and/or experience X

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Blot Inter
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	5	5	
------------------------	--	---	--	---	--	---	---	--

Comments								
----------	--	--	--	--	--	--	--	--

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio/Interc
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			4
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	3	3	3
Comments								
Indicator Summary:						Soil/Site Stability	Hydrologic Function	Bio/Interc
1. Extreme								
2. Moderate to Extreme								
3. Moderate						2	2	2
4. Slight to Moderate						3	(5)	(2)
5. None to Slight						(5) ₁₀	5 ₁₂	2 ₁₀

Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section

Production Data Sheet

Observers: Stewart - Stoner Date: 5-17-01 Polygon #: 24
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
Perennial Grasses	T	5 3	3 4			4 4			6 4			T	T	9 6		3 4			8 5	6	38 31 45	1.23	.85	47.05
Annual Grasses	T		1 T	T	T	T	T	T	2 2	1	T	1	1	2 2	T	1	2	1	2	1	6 6.5 18.5	.92	.95	16.17
Perennial Forbs	T	T				T						T	T								3	—	.70	2.1
Annual Forbs	T	T	T	T	T	1 T			2 2	T	T	1	T	1 1	T	1	T		1	1	5.5 5.5 13.5	1	.75	10.12
Shrub					T						T	T							60 40		60.5 40.5 42.5	1.49	.65	41.16

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																				
Perennial Grasses	209.83	Perennial Forbs:																				
Annual Grasses	72.11	Shrubs:																				
Perennial Forbs	9.37	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th style="width: 90%;">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td><10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles		
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5	25-75% of soil remains on sieve after 5 dipping cycles																					
6	75-100% of soil remains on sieve after 5 dipping cycles																					
Annual Forbs	45.16																					
Shrubs	183.58																					
Total Production	520.05	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Location</th> <th style="width: 20%;">Under canopy</th> <th style="width: 20%;">Inter-space</th> <th style="width: 45%;">Samples should be < 1/4" diameter and < 1/8" thick</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td rowspan="5"></td> </tr> <tr> <td>6m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">5</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">5</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick	1m	5	3		6m	6	4	11m	6	5	16m	5	3	20m	6	5
Location	Under canopy	Inter-space	Samples should be < 1/4" diameter and < 1/8" thick																			
1m	5	3																				
6m	6	4																				
11m	6	5																				
16m	5	3																				
20m	6	5																				

Annual grasses - Dry
 Annual forbs - almost dry

5.6 4.0

Rangeland Health Assessment - Canyons of the Ancients National Monument

Functional/Structural Group Worksheet

Observers: Stevens / Stover Date: 5-17-01

Shallow Desert - 409

Polycron number: 27

Functional/Structural Group Name	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T		<u>Utah Juniper</u>	
Trees - evergreen				<u>rabbit brush</u>
Shrubs - sprouting				<u>Badlow's sage</u>
Shrubs - non-sprouting	S	S	<u>Ephedra</u> , <u>Big Sage</u> , <u>Shadscale</u>	
Shrubs - non-sprouting	M	T	<u>Yucca</u> , <u>Chilrose</u> , <u>Prickly pear</u> , <u>Skunkbush</u>	
Shrubs - invasive	T	T	<u>Snakeweed</u>	
Cool Season Bunchgrasses	D	D	<u>New Mex. Feathergrass</u> , <u>Ricegrass</u> , <u>Salina wildrye</u>	
Cool Season Bunchgrasses	S		<u>Squirreltail</u> , <u>threawn</u>	
Warm Season Bunchgrasses				
Warm Season Rhizomatous Grasses	S	M	<u>Gallera</u>	
Cool Season Rhizomatous				
Annual Grasses		M		<u>Cheat</u>
Forbs - annual		T		<u>GLOP</u> , <u>IPPOR</u> , <u>IPPUR</u> , <u>ERIC</u> , <u>LAMAQ</u>
Forbs - perennial	M	T	<u>Phlox</u> , <u>Princesplume</u> , <u>Globemallow</u> , <u>Cymopteris</u>	
Forbs - Nitrogen fixing	T		<u>Locoweed</u>	
Noxious weeds				
Biological crusts	S	M	<u>Cyanobacteria</u> , <u>Lichens</u> , <u>Moss</u>	
D - Dominant = 40 to 100% composition				
S - Subdominant = 10 to 40% composition				
M - Minor = 2 to 5% composition				
T - Trace = <2% composition				
* Potential based on ecological/range site description of ecological reference area				
Actual is for the area of evaluation				

Comments: Potential annual production should be 400 pounds/acre in an average year

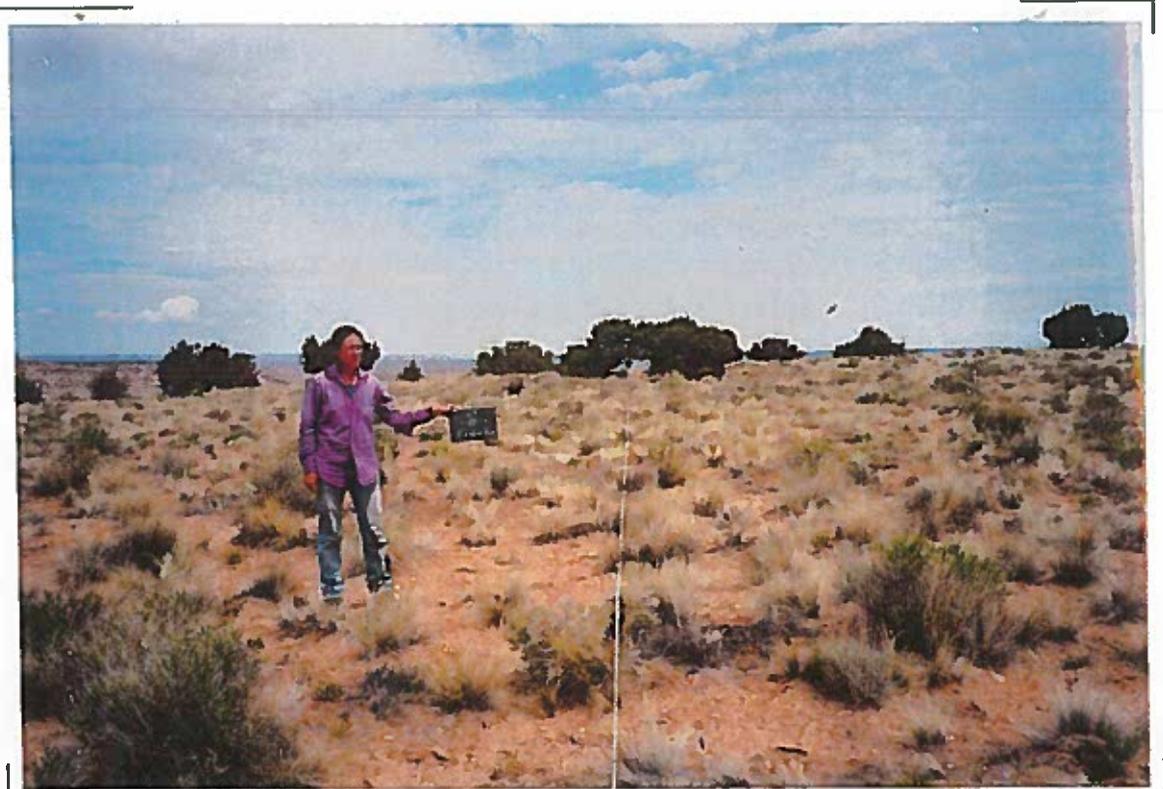
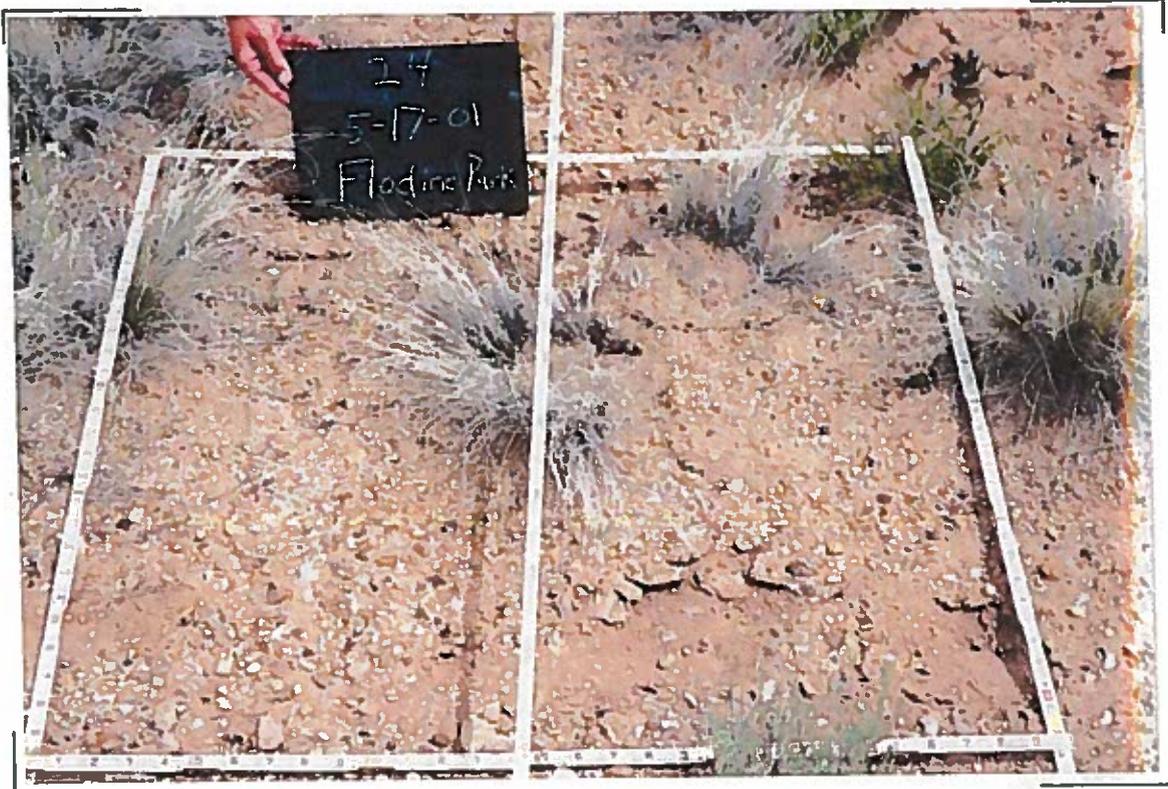
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CANM Rangeland Health Evaluation Photos

Allotment FLODENE PARK
Polygon # 024
Date 5/17/2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): BERRY, Miller / HASTELS, ROHM, SWINER Date: 5/17/01 Polygon # 025
 Allotment: FORDYNE Flodine Park Pasture: _____
 Location: GPS lat 37° 17.77' long 109° 02.669' Legal 15S 35W 20th NW 4TR
 Aerial Photo: 1-15 Site Photos - Roll: 2 (412) Number: 11812 (19+20)
 Soil Map Unit/Component Name: FARB Number: 31
 Range/Ecological Site Name: Shallow Desert Number: 409
 Slope: 4% Aspect: 250° Topographic Position: Pass top Elevation: 5,303

Range/Ecological site description, soil survey, and/or ecological reference area:

Surface texture: Sandy loam Parent material: SAND STMS

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

- | | | | | | | | |
|---|----------------------|---|-------------------------|---|--|---|--|
| 1 | <u>5-20" Bedrock</u> | 2 | <u>0-5" carbonate s</u> | 3 | | 4 | |
|---|----------------------|---|-------------------------|---|--|---|--|

Evaluation Area Determination:

Surface texture: Sandy loam Parent material: SAND STMS

Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40"

List diagnostic horizons in profile and depth:

- | | | | | | | | |
|---|------------------|---|--|---|--|---|--|
| 1 | <u>0-4" Rock</u> | 2 | | 3 | | 4 | |
|---|------------------|---|--|---|--|---|--|

Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet

Wildlife Use: light

Livestock Use: Moderate

Offsite influences on area and significance e.g. roads, chainings, fire: two-track nearby

Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interf.
1. Rills Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills, old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5		

2. Water Flow Patterns

Extensive and numerous; unstable with active erosion; usually connected.

More numerous than expected; deposition and cut areas common; occasionally connected.

Nearly matches what is expected for the site; erosion is minor with some instability and deposition.

Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short

Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.

5	5			
---	---	--	--	--

Comments

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Integrity
9. Soil Surface Loss of Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site.	4	4	4
Comments								
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff.	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are equal to that expected for the site. Plant cover (distribution and amount) adequate for site protection.		4	
Comments								
11. Compaction Layer (below soil surface).	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	None to minimal; not restrictive to water movement and root penetration.		5	5
Comments								
12. Functional/Structural Groups	Number of F/S groups greatly reduced; and/or relative dominance of F/S groups has been dramatically altered; and/or number of species within F/S groups dramatically reduced.	Number of F/S groups reduced; and/or one dominant group and/or one or more subdominant groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced; and/or one or more subdominant F/S groups replaced by F/S groups not expected for the site; and/or number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced; and/or relative dominance of F/S groups has been modified from that expected for the site; and/or number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.			4
Comments								
13. Plant mortality/Decadence	Dead and/or decadent plants are common.	Dead and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and decadence matches that expected for the site.			4
Comments								
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.			3
Comments								
15. Annual Production	Less than 20% of potential production	20 to 40% of potential production	40 to 60% of potential production	60 to 80% of potential production	Exceeds 80% of potential production			4
Comments								
16. Invasive Plants	Dominates the site	Common throughout the site.	Scattered throughout the site.	Present primarily on disturbed sites.	Rarely present on the site.			3
Comments								

INSECT GNUS ON SAME SHRUBS

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biotic Interactivity
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			4
Comments								
18. Biological Crusts	Found only in protected areas, very limited suite of functional groups.	Largely absent, occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	3	3	3
Comments								
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:		
						Soil/Site Stability	Hydrologic Function	Biotic Interactivity
1. Extreme								
2. Moderate to Extreme								
3. Moderate						1	2	3
4. Slight to Moderate						4	5	2
5. None to Slight						5	10	10

Cover Frequency Data Sheet

Observers: <u>HAFELS STONER, COHMAN</u>		Date: <u>5/21</u>																		Polygon #: <u>025</u>						
Transect length: <u>30 m</u>		Frames per transect: <u>20 @ 20x50 cm</u>																		Transect <u>1</u> of <u>1</u>						
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5					
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI	
Ga	ANTE16	0	T	T		T	T	T	0	0	T	T	0		0		T	T	0	0	T	26	13	0.85	1.1	
Ga	VUOC	0	0	T		T	0		0	T	T	0	0		T	T	T		T	0	T	25	5	1.3	1.0	
G	HENE5	4	3	1	6	4	1	1		3	1			1	1	3	0	7	1	0	5	426	21.3	0.85	18.1	
Fa	DEPI	T			T			T				T	1		T	T				T	13	5	0.7	1.4	0.3	
Fa	LEDE	T						T	T											T	2	0	0.1	2	0.0	
F	CYPU2	0	T							0												6	5	0.3	1.15	0.0
Fa	LAMAG		T	T			T	0	T		T	T										6	0	0.3	0.5	0.1
Fa	GIOP		T		T	T	0		0	T	T	T			T			T	0			13	0	0.6	1.55	0.3
F	ORFL3			3												T		2				50	5	2.5	0.15	3.8
Fa	PLPA2						T													T		1	0	0.0	0.1	0.0
F	ASCA9						T													T		1	0	0.0	0.1	0.0
F	ERIC6					0			T													2	5	0.2	0.1	0.0
Fa	CRCR3							T	T											T		1	5	0.1	0.15	0.0
Fa	TRCU								T													1	5	0.0	0.65	0.0
F	TEIV										T											0	5	0.0	0.85	0.0
F	PHLO2															0						0	0	0.15	0.25	0.0
Fa	SIAN2																			T		0	5	0.0	0.85	0.0
S	GUSA2				T	T	T				T											2	0	0.1	0.2	0.0
Bare soil without canopy		1	3	1	0	1	6	1	T	0	1	3	0	1	1	0	1	0	2			24	55	12.3	0.85	11.7
Groundcover: (total groundcover should equal 100%)																										
Cyanbac. crust		0	1		0	1	0	1	0	0	T	1	0	0	0	0	0	T	T	0		7	4	3.7	0.9	3.3
Moss		1	4	T	0	0	T	T	2		T	0			0			T	T	T		8	5	4.3	0.7	3.0
Lichen								0										T				3	5	0.2	0.1	0.0
Litter		6	1	0	4	3	0	1	4	8	0	0	3	0	1	2	0	5	9	5	1	54	0	27.4	1.0	27.4
Wood																										
Basal Veg		0	0	1	1	1	T	T	T	1	T	T	T		0	0	T	1	T	T	0	1	5	3.5	0.75	3.3
Bare Soil		2	2	4	1	1	1	6	1	0	1	1	3	0	1	1	0	1	0	2	3	3	22	16.1	1.0	16.1
Gravel <3 in.		1	0	5	3	3	8	2	3	0	8	7	3	8	7	5	8	2	1	3	5	4	26	41.7	1.0	41.3
Cobble 3-10 in			1		0	1	0				T		1	1	0							1	5	3.0	0.85	1.4
Stone 10-24 in.																										
Boulder >24 in.																										
Bedrock											1	0					1	1	1			4	3	2.2	0.25	0.6

Code	Range	Mid-point	Code	Range	Mid-point
0	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
1	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
2	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
3	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
4	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
5	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
6	45.1 - 55% cover	50.0%			

Production Data Sheet

Observers: Rohman, Haspels + Stoner Date: 5/21/01 Polygon #: 25
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	*0	1	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*	Total	Correc- tion factor	Dry weight factor	Total dry weight
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*					
Perennial Grasses	22	/	/	/	24	/	/	1	/	/	2	/	/	1	/	1	/	/	T	/	11	51.5 49.5	1.04	.60	83.62
Annual Grasses	2	/	/	T	/	/	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	4 3	1.33	.85	11.30
Perennial Forbs	T	/	1	34	/	/	T	/	/	T	T	/	/	/	/	1	/	32	T	/	1	1 1	1	.55	22.82
Annual Forbs	T	/	T	T	T	T	1	1	1	T	T	T	1	/	T	T	T	T	T	T	T	3.5 3.5	1	.75	8.25
Shrub	/	/	/	14	/	/	T	/	/	3	/	/	/	/	/	/	/	/	/	/	17.5 16.5	37.5	1.06	.5	19.87

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																		
Perennial Grasses	382.93	Perennial Forbs:																		
Annual Grasses	50.42	Shrubs:																		
Perennial Forbs	101.80	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th>Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td>50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td>50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td><10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td>10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td>25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td>75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> </tbody> </table>	Soil Stability Rating Form		Rating	Criteria for assignment to stability class	0	Soil is too unstable to sample (falls through sieve)	1	50% of structural integrity lost within 5 seconds of insertion in water	2	50% of structural integrity lost 5-30 seconds after insertion	3	<10% of soil remains on sieve after 5 dipping cycles	4	10-25% of soil remains on sieve after 5 dipping cycles	5	25-75% of soil remains on sieve after 5 dipping cycles	6	75-100% of soil remains on sieve after 5 dipping cycles
Soil Stability Rating Form																				
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Annual Forbs	36.79																			
Shrubs	88.64																			
Total Production	660.58	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Location</th> <th>Under canopy</th> <th>Inter-space</th> </tr> </thead> <tbody> <tr> <td>1m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> </tr> <tr> <td>6m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Location	Under canopy	Inter-space	1m	6	4	6m	6	4	11m	3	3	16m	5	3	20m	3	2
Location	Under canopy	Inter-space																		
1m	6	4																		
6m	6	4																		
11m	3	3																		
16m	5	3																		
20m	3	2																		

(B) (3.2)
4.6

Rangeland Health Assessment - Canyons of the Ancients National Monument
Functional/Structural Group Worksheet

Observers: Rakwana, Hoesels, Starr Date: 5-21-01 Polygon number: 025

Shallow Desert - 409

Functional/Structural Group	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - evergreen	T	T	Utah Juniper	
Trees - evergreen				<i>Chrysothamnus arvensis</i>
Shrubs - sprouting		T		<i>Artemisia biopolaris</i>
Shrubs - non-sprouting	S	S	(<i>Ephedra</i> , <i>Big Sage</i> , (<i>Shadscale</i>))	<i>Eriogonum ovalifolium</i> , <i>Leptochloa purpurea</i>
Shrubs - non-sprouting	NI		(<i>Yucca</i> , <i>Cliffrose</i> , <i>Prickly pear</i> (<i>Skunkbush</i>))	
Shrubs - invasive	T		(<i>Snakeweed</i>)	
Cool Season Bunchgrasses	D	D	(<i>New Mex. Feathergrass</i> , (<i>Ricegrass</i>), <i>Salina</i> wildrye)	mostly New Mexico Feathergrass
Cool Season Bunchgrasses	S		<i>Squirreltail</i> , <i>threeawn</i>	
Warm Season Rhizomatous Grasses	S		<i>Galleta</i>	
Cool Season Rhizomatous				
Annual Grasses		T		<i>Chert wildrye</i>
Forbs - annual		T		<i>Glycyrrhiza leypoldii</i> , <i>Carpula maritima</i>
Forbs - perennial	NI	T	(<i>Phlox</i>), <i>Princesplume</i> , <i>Globemallow</i> , (<i>Cymopterus</i>)	<i>Calochortus</i> , <i>Cassia</i> , <i>horrea</i> , <i>Oreocarya</i>
Forbs - Nitrogen fixing	T	T	(<i>Locoweed</i>)	
Noxious weeds				
Biological crusts	S	T	(<i>Cyanobacteria</i> , <i>Lichen</i> , <i>Moss</i>)	mostly moss & bacteria

D - Dominant = 40 to 100% composition
 S - Subdominant = 10 to 40% composition
 NI - Minor = 2 to 5% composition
 T - Trace = <2% composition

* Potential based on ecological/range site description or ecological reference area

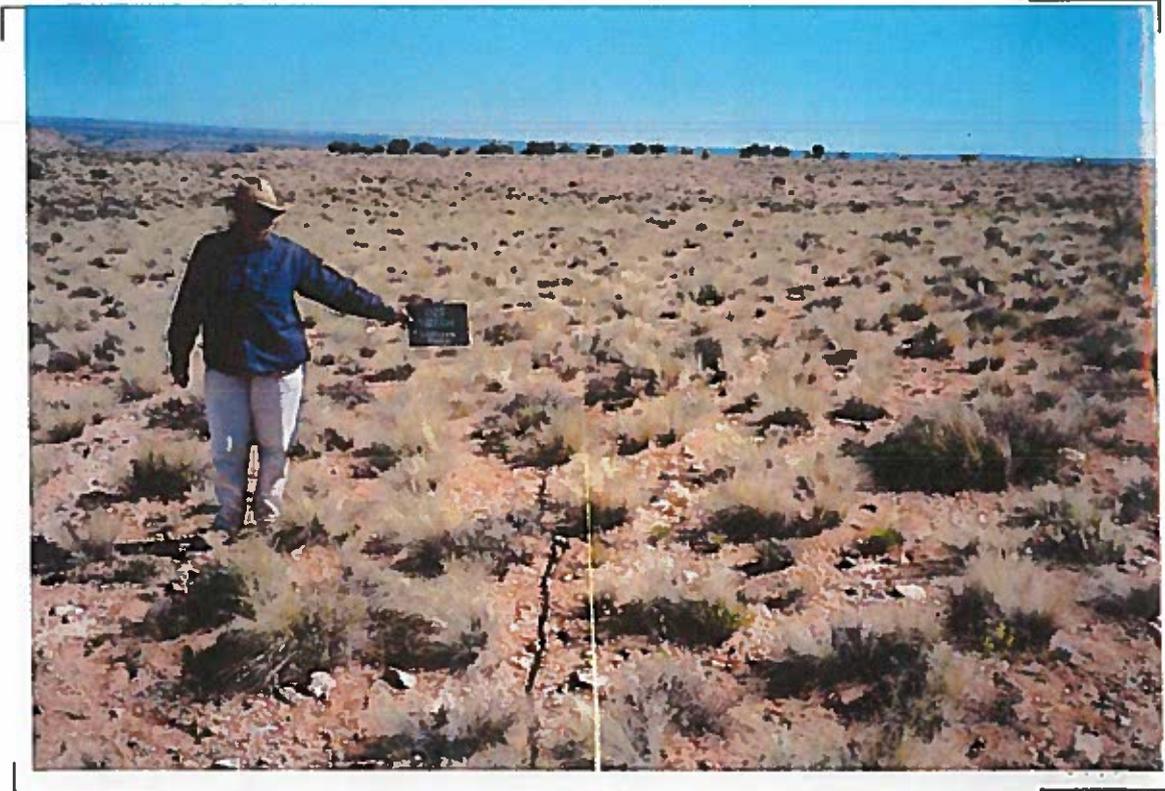
Actual is for the area of evaluation

Comments: Potential annual production should be 400 pounds/acre in an average year

pertains ^{to} area of polygon with dominant New Mexico
 Yucca & skunkbush only
 Feathergrass

CANM Rangeland Health Evaluation Photos

Allotment FLODYNE PARK
Polygon # 025
Date 5/21 / 2001



Canyons of the Ancients National Monument
Rangeland Health Evaluation Summary Worksheet - Evaluation Area

Part 1. Area of Interest Documentation:

Observer(s): HASRELS SINGER ECKHARTMAN Date: 5/21/01 Polygon # 028
 Allotment: FLODINE PARK Pasture:
 Location: GPS lat N37°17.493' long W109°02.4549' Legal S15 T35N R20W SW ¼
 Aerial Photo: 1-1-5 Site Photos - Roll: 2 Number: 21422
 Soil Map Unit/Component Name: MACK Number: 70
 Range/Ecological Site Name: ALGA; F19+ Number: 414
 Slope: 0 Aspect: 196° Topographic Position: Mesa Top Elevation: 5310'

Range/Ecological site description, soil survey, and/or ecological reference area:
 Surface texture: FINE SANDY LOAM Parent material: sandstone
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" Deep >40" X

List diagnostic horizons in profile and depth:
 1 13-18" calcareous carbonates 2 18" + calc im in zone 3
 Evaluation Area Determination: Parent material: sandstone
 Surface texture: FINE SANDY LOAM
 Depth: Very shallow <10" Shallow 10-20" Moderate 20-40" X Deep >40"
 List diagnostic horizons in profile and depth:
 1 6" some calcim 2 18" calcic horizon 3 Redrock 33" 4
 Avg. annual PPT: Cortez 13", Hovenweep 11" Recent Weather (last 2 years): Drought 2000 Normal 2001 Wet
 Wildlife Use: MINIMAL
 Livestock Use: MATURE - HEAVY
 Offsite influences on area and significance e.g. roads, chainings, fire: ROAD, DRILL PAD
 Benchmark used for comparison: Ecological Reference Area (ERA number) or Site/Soil Description and/or experience

Part 2. Indicator Rating:

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bio-Integ
1. Rills	Rill formation is severe and well defined throughout most of the area	Rill formation is moderately active and well defined throughout most of the area	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills, old rills have blunted or muted features.	Current or past formation of rills as expected for the site	5	5	

Comments	2. Water Flow Patterns	Extensive and numerous; unstable with active erosion; usually connected.	More numerous than expected; deposition and cut areas common; occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability and deposition.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are subtle and short	Matches what is expected for the site; minimal evidence of past or current soil deposition or erosion.	4	4	
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Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Biol Inter
3. Pedestals and/or Terracettes	Abundant active pedestalling and numerous terracettes. Many rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terracettes common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terracettes present.	Active pedestalling or terracette formation is rare; some evidence of past pedestal formation especially in water flow patterns and/or on exposed slopes.	Current or past evidence of pedestalled plants or rocks as expected for the site. Terracettes absent or uncommon.	2	2	
4. Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderately to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Amount and size of bare areas nearly to totally match that expected for the site.	3	3	
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Moderate to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon with vegetation stabilizing the bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	Drainages are represented as natural stable channels; no signs of erosion with vegetation common.	5	5	
6. Wind-Scoured Blowouts, and/or Deposition Areas	Extensive.	Common.	Occasionally present.	Infrequent and few.	Matches what is expected for the site.	2		
7. Litter Movement	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to moderately more than expected for the site with only small size classes of litter being displaced.	Matches that expected for the site with a fairly uniform distributing of litter.		4	
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Significantly reduced in at least half of the plant canopy interspaces, or moderately reduced throughout the site.	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Matches that expected for the site. Surface soil is stabilized by organic matter decomposition products and/or a biological crust.	3	3	3
Comments								

Indicator:	1. Extreme	2. Moderate to Extreme	3. Moderate	4. Slight to Moderate	5. None to Slight	Soil/Site Stability	Hydrologic Function	Bioh Intergr
17. Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not limited relative to recent climatic conditions.			2
Comments								
18. Biological Crusts	Found only in protected areas; very limited suite of functional groups.	Largely absent; occurring mostly in protected areas.	In protected areas and with a minor component in interspaces	Evident throughout the site but continuity is broken	Largely intact and nearly matches site capability	2	2	2
Comments								
Attribute Summary: Circle the number that best fits the "preponderance of evidence" for each of the three attributes relative to the distribution of indicator ratings in the indicator summary section						Indicator Summary:		
						Soil/Site Stability	Hydrologic Function	Bioh Intergr
1. Extreme						4	3	5
2. Moderate to Extreme						(2)	(3)	(4)
3. Moderate							2	
4. Slight to Moderate						4	4	1
5. None to Slight						10	12	10

Cover Frequency Data Sheet

Observers: <u>Stoner, Haspels, Rohman</u>															Date: <u>5/21/01</u>					Polygon #: <u>028</u>					
Transect length: 30 m					Frames per transect: 20 @ 20x50 cm										Transect <u>1</u> of <u>1</u>										
meter for frame location		0.0	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5				
LF	Species code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	ACC	% Freq	CFI
Gp	HIJA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	T	0	69.5	3.5	0.8	2.8	
↓	ACHY				T	0	1														13.5	0.7	0.15	0.1	
↓	SPAI																	T			0.5	0.0	0.5	0.0	
Gn	ANTEG	0	1	0	1	0	0	1	2	0	0	0	0	2	0	1	2	3	0	0	1	17.3	8.6	1.0	8.6
↓	VUOC	T	T	T	T	0	T	0	0	0	T	0	0	0	0	0	0	1	T	0	0	41.5	2.5	1.0	2.5
Ep																									
Fa	ASNU					T													T		1.0	0.0	0.1	0	
↓	PLPA2								T												0.5	0.0	0.05	0.0	
↓	GIOP	T		T					T	T	T				T	T	T				4.5	0.2	0.9	0.2	
↓	DEPI	0	1	T	0		0	0	T		T	0		0	0	0			T	T	39.5	2.0	0.75	1.5	
↓	CRCR2		0	0																	6.0	0.3	0.1	0.0	
↓	LAMA9		T								T			T	0			T	T	5.5	0.3	0.3	0.1		
↓	ERIC6		1	1		4	0		0	T	5	0			1	3	4	3	3	3	28.7	14.4	0.7	10.1	
↓	AAFF		T																		0.5	0.0	0.25	0.0	
↓	UNK Composite			T																	0.5	0.0	0.05	0	
↓	EPG IPPAZ					T	T														1.0	0.0	0.1	0	
S	BUSAR					T		T							T						1.5	0.0	0.15	0.0	
Bare soil without canopy		1	1	6	-	4	0	4	2	4	4	5	3	6	6	5	3	2	7	5	6	74.3	37.2	0.95	35.3
Groundcover: (total groundcover should equal 100%)																									
Cyanbac. crust		0	T	T				0													7.0	0.4	0.2	0.1	
Moss		2						T						T							2.1	1.0	0.15	0.2	
Lichen																									
Litter		7	9	4	9	6	9	4	8	6	6	5	7	4	4	5	7	7	3	5	4	119.0	59.5	1.0	59.5
Wood			0																		3.0	0.15	0.05	0.0	
Basal Veg		0	T	T	1	T	T	0	T	T	T	T	T	T	0	0	0	T	T	T	32	1.6	1.0	1.6	
Bare Soil		1	1	6		4	1	5	2	4	4	5	3	6	6	5	3	3	7	5	6	77.0	38.9	0.95	36.6
Gravel <3 in.			T	T		T	T	T				T							T	T	4.0	0.2	0.4	0.1	
Cobble 3-10 in.																									
Stone 10-24 in.																									
Boulder >24 in.																									
Bedrock																									

Code	Range	Mid-point	Code	Range	Mid-point
T	0 - 1.0% cover	0.5%	6	55.1 - 65% cover	60.0%
0	1.1 - 5.0% cover	3.0%	7	65.1 - 75% cover	70.0%
1	5.1 - 15% cover	10.0%	8	75.1 - 85% cover	80.0%
2	15.1 - 25% cover	20.0%	9	85.1 - 95% cover	90.0%
3	25.1 - 35% cover	30.0%	A	95.1 - 99% cover	97.0%
4	35.1 - 45% cover	40.0%	X	99.1 - 100% cover	99.5%
5	45.1 - 55% cover	50.0%			

Line Intercept

Observers: HANSRELS, ROTHMAN, STONGER

Date: 5/21/01 Polygon #: 028

Line Length: 30 m Transect 1 of 1

Species Codes:

	ATGR3			GUSA2			LYPA			XR1A2		
	From	To	Inter	From	To	Inter	From	To	Inter	From	To	Inter
7-1	99	155	56	1082	1105	23	1750	1868	58			
	166	217	51	1560	1574	14						
	438	505	66	2198	2203	5						
	707	773	66	2402	2416	14						
	918	939	21	2917	2952	5						
7-2	261	295	34	301	313	12	246	240	34	208	230	22
	1230	1275	45	330	345	15	895	970	75			
	1921	1990	69				1190	1250	60			
	2110	2155	35				1340	1395	45			
	2575	2610	35				1840	1900	60			
							2425	2502	77			
							2619	2670	51			
Total			392									
Intercept			86									
% Cover			6.5%				1.5%		15.9%			3%

Circle intercept values that are standing dead material

ACSH/eng/MS

Production Data Sheet

Observers: WASPELS, ROHMAN, STONER Date: 5/21/01 Polygon #: 028
 Transect length: 30 meters Frames per transect: 20 @ 20x50 cm Transect 1 of 1

Growth form	W			W			W			W			W			W			W		Total	Correc- tion factor	Dry weight factor	Total dry weight
	1*	2	3	4	5	6*	7	8	9	10	11*	12	13	14	15	16*	17	18	19	20*				
Perennial Grasses	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	2.5 3 15	.83	.80	9.96
Annual Grasses	T	T	T	T	T	T	T	T	T	T	T	2	2	1	2	2	1	2	T	2	6.5 7 23	.93	.95	20.32
Perennial Forbs	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
Annual Forbs	T	T	T	T	T	T	T	T	T	2	/	/	T	T	1	2	1	1	2	2	6.5 5.5 17	1.18	.85	17.05
Shrub	T	T	4	2	T	12	6	T	/	/	/	/	T	/	2	/	/	/	/	/	16 8 12.5	2	.5	12.5

Correction factor = clip wt / est wt.

Total production in lb/ac = 89.2 x total dry wt.

* Location for soil stability test

Growth form	Pounds per acre dry weight	List the dominant species clipped for these growth forms:																																													
Perennial Grasses	44.42	Perennial Forbs:																																													
Annual Grasses	95.40	Shrubs:																																													
Perennial Forbs	~	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Soil Stability Rating Form</th> </tr> <tr> <th style="width: 10%;">Rating</th> <th colspan="2" style="text-align: center;">Criteria for assignment to stability class</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Soil is too unstable to sample (falls through sieve)</td> </tr> <tr> <td>1</td> <td colspan="2">50% of structural integrity lost within 5 seconds of insertion in water</td> </tr> <tr> <td>2</td> <td colspan="2">50% of structural integrity lost 5-30 seconds after insertion</td> </tr> <tr> <td>3</td> <td colspan="2">10% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>4</td> <td colspan="2">10-25% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>5</td> <td colspan="2">25-75% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>6</td> <td colspan="2">75-100% of soil remains on sieve after 5 dipping cycles</td> </tr> <tr> <td>Location</td> <td>Under canopy</td> <td>Inter-space</td> </tr> <tr> <td>1m</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>6m</td> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> </tr> <tr> <td>11m</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td>16m</td> <td style="text-align: center;">6</td> <td style="text-align: center;">3</td> </tr> <tr> <td>20m</td> <td style="text-align: center;">4</td> <td style="text-align: center;">3</td> </tr> </tbody> </table> <p style="font-size: small;">Samples should be < 1/4 " diameter and < 1/8" thick</p>	Soil Stability Rating Form			Rating	Criteria for assignment to stability class		0	Soil is too unstable to sample (falls through sieve)		1	50% of structural integrity lost within 5 seconds of insertion in water		2	50% of structural integrity lost 5-30 seconds after insertion		3	10% of soil remains on sieve after 5 dipping cycles		4	10-25% of soil remains on sieve after 5 dipping cycles		5	25-75% of soil remains on sieve after 5 dipping cycles		6	75-100% of soil remains on sieve after 5 dipping cycles		Location	Under canopy	Inter-space	1m	5	3	6m	4	3	11m	3	3	16m	6	3	20m	4	3
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6m	4	3																																													
11m	3	3																																													
16m	6	3																																													
20m	4	3																																													
Annual Forbs	76.05																																														
Shrubs	55.75																																														
Total Production	215.87																																														

(44)

(3)

Rangeland Health Assessment - Canyons of the Ancients National Monument
Functional/Structural Group Worksheet

Observers: Roberta/Hezekiah Date: 5-22-01 Polygon number: 28 Alkali Flat - 414

Functional/Structural Groups	Potential*	Actual	Species List for Functional/Structural Group Plant names - Potential	Species List for Functional/Structural Group Plant names - Actual
Trees - deciduous		T		SAOS
Trees - evergreen				
Shrubs - sprouting				
Shrubs - non-sprouting	S		Greasewood, Shadscale	
Shrubs - non-sprouting	NI	D	Fourwing, Winterfat Sage, Greenmolly, Spiny hopsage	LYPA, OPAC <u>opuntia</u>
Shrubs - Invasive	NI	M	Snakeweed	
Cool Season Bunchgrasses	S	T	Squirreltail, Needle&thread, Indian rice , Three-awn	
Warm Season Bunchgrasses	D	T	Alkali sacaton, Sand dropseed	
Warm Season Rhizomatous Grasses	S	M	Galleta	
Annual Grasses	T	S	Sixweeks fescue	AUTEB
Forbs - annual	T	M	Indian leaf Pepperweed	ENCL, DEPI
Forbs - perennial	NI	T	Globemallow, Cymopterus	
Forbs - Nitrogen fixing				
Noxious weeds				
Biological crusts	S	T	Cyanobacteria, Lichens, Moss	CITRO, MOSS

* Potential based on ecological/range site description or ecological reference area

Actual is for the area of evaluation

D - Dominant = 40 to 100% composition

S - Subdominant = 10 to 40% composition

M - Minor = 2 to 5% composition

T - Trace = <2% composition

Comments: Potential annual production should be 650 - 800 pounds/acre in an average year
ricegrass hiding in shrubs

CANM Rangeland Health Evaluation Photos

Allotment FLODYNE PARK
Polygon # 028
Date 5/21 / 2001

