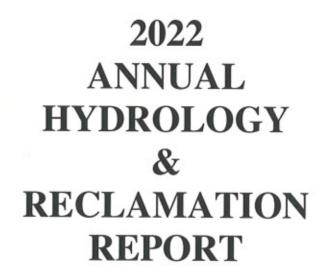
# COORS ENERGY COMPANY

PO Box 4030 Golden, CO 80402



Prepared for: COLORADO DIVISION OF RECLAMATION, MINING & SAFETY

PERMIT NO. C-1981-028

# TABLE OF CONTENTS

Vegetation Monitoring –	1
Water Quality Sampling First Semi-Annual Sampling - (4/30 & 5/1 sampling) Second Semi-Annual Sampling (9/27 & 28 sampling)	133
Surface Water Hydrology	245
Disposal Activities Data	248
Reclamation Report  CDRMS Report Form  Mass Balance	251 255 256
Revisions Summary for 2022	258

# VEGETATION MONITORING 2022

# 2022 Vegetation Monitoring Report Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 35, 43, and 44 Coors Energy Company Keenesburg Mine Keenesburg, Colorado



November 2022

Prepared by:



# TABLE OF CONTENTS

E	XECU	TIVE SUMMARY	1
1	IN	TRODUCTION	2
2		THODS	
	2.1	Sampling Design	
	2.2	Sample Timing	Δ
	2.3	Vegetation Cover	
	2.4	Herbaceous Production	4
	2.5	Species Composition	12
	2.6	Photographs	
	2.7	Species Identification and Nomenclature	12
3	RE	CLAMATION SUCCESS STANDARDS	12
	3.1	2022 Revegetation Success Standards	
4	202	1-2022 PRECIPITATION	13
5	202	2 PEST & DISEASE INSPECTIONS	14
6		SULTS	
	6.1	Phase III Reclamation Monitoring	
	6.1.	1 Reclamation Area 29	14
	6.1.		16
	6.1.	3 Reclamation Area 31	18
	6.2	Phase II Monitoring	20
	6.2.	1 Reclamation Area 25	20
	6.2.	2 Reclamation Area 34	21
	6.2.	3 Reclamation Area 35	23
	6.2.	4 Reclamation Area 43	25
	6.2.	5 Reclamation Area 44	26
	6.3	Interim Monitoring	28
	6.3.		28
	6.3.		30
7	DIS	CUSSION	32
	7.1	Vegetation Cover	32
	7.2	Herbaceous Production	
	7.3	Species Composition	
8	SU	MMARY	36
9		ERATURE CITED	

TABLES	
Table 1: Reclamation Areas Monitored in 2022	. 2
Table 2: Reclamation Area 29 Summary Statistics	15
Table 3: Reclamation Area 29 Species Composition	15
Table 4: Reclamation Area 29 Success Criteria	16
Table 5: Reclamation Area 30 Summary Statistics	17
Table 6: Reclamation Area 30 Species Composition	17
Table 7: Reclamation Area 30 Success Criteria	18
Table 8: Reclamation Area 31 Summary Statistics	19
Table 9: Reclamation Area 31 Species Composition	19
Table 10: Reclamation Area 31 Success Criteria	20
Table 11: Reclamation Area 25 Summary Statistics	20
Table 12: Reclamation Area 25 Species Composition	21
Table 13: Reclamation Area 25 Success Criteria	21
Table 14: Reclamation Area 34 Summary Statistics	22
Table 15: Reclamation Area 34 Species Composition	23
Table 16: Reclamation Area 34 Success Criteria	23
Table 17: Reclamation Area 35 Summary Statistics	24
Table 18: Reclamation Area 35 Species Composition	24
Table 19: Reclamation Area 35 Success Criteria	25
Table 20: Reclamation Area 43 Summary Statistics	25
Table 21: Reclamation Area 43 Species Composition	26
Table 22: Reclamation Area 43 Success Criteria	26
Table 23: Reclamation Area 44 Summary Statistics	27
Table 24: Reclamation Area 44 Species Composition	28
Table 25: Reclamation Area 44 Success Criteria	28
Table 26: Reclamation Area 32 Summary Statistics	29
Table 27: Reclamation Area 32 Species Composition	30
Table 28: Reclamation Area 32 Success Criteria	30
Table 29: Reclamation Area 33 Summary Statistics	31
Table 30: Reclamation Area 33 Species Composition	32
Table 31: Reclamation Area 33 Success Criteria	32
Table 32: Vegetation Cover Success Standard Comparison	33
Table 33: Herbaceous Production Success Standard Comparison	35
Table 34: Success Standard Summary	36

# FIGURES Figure 6: Sample Point Locations (Area 33) ......9 Figure 10: Absolute Cover by Life Form 2018 - 2022 - Phase III & Interim Areas...... 33 APPENDICES Appendix A: Vegetation Cover Data......38 Appendix C: Complete Species List......74 Appendix D: Precipitation Data 1993 – 2022......78

#### EXECUTIVE SUMMARY

Quantitative vegetation monitoring of Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 35, 43, and 44 at the Coors Energy Company (CEC) Keenesburg Mine was conducted in August 2022. Vegetation cover, herbaceous production, and species composition were evaluated. Comparisons were made between vegetation cover and herbaceous production means from the reclamation areas and predicted values calculated from the approved final revegetation success equations based on on-site precipitation from September 2021 to July 2022. The predictive equations for vegetation cover and herbaceous production were modified in Technical Revisions 43 and 46 to the Colorado Division of Reclamation Mining and Safety (DRMS) Mining and Reclamation Permit C-1981-028. The calculated final revegetation success vegetation cover standard value was 19.9%. The total herbaceous production standard was 11.0 g/m².

Reclamation Areas 29, 30, and 31 were evaluated based on the guidelines for Phase III bond release. Reclamation Area 30 has not yet received Phase II bond release but was reclaimed more than 10 years ago and is eligible for Phase III monitoring. All three areas met the Phase III vegetation cover, production, and diversity standards for the second year in a row and are now eligible for release.

Reclamation Areas 25, 34, 35, 43, and 44 were evaluated for Phase II bond release. Phase II areas are only subject to vegetation cover and diversity standards. None of these areas met the vegetation cover standard but all of them met the diversity standard.

Reclamation Areas 32 and 33 were evaluated using interim reclamation monitoring guidelines and were also compared to the Phase III bond release standards to measure their progress towards future release. Reclamation Areas 32 and 33 met both the production standards, Area 33 met the cover standard, but neither area met the species composition standard.

Quarterly inspections of the entire permitted area were conducted during 2022 to monitor for the presence and impacts of noxious weeds, pests, or disease to the revegetation. No pests or diseases were identified during these inspections. The primary noxious weed observed during these inspections was cheatgrass which is pervasive on the reclamation and is being aggressively treated by CEC.

#### 1 INTRODUCTION

Coors Energy Company (CEC) operated the Keenesburg Mine for coal extraction from 1980 to 1988 under Colorado Division of Reclamation Mining and Safety (DRMS) Mining and Reclamation Permit C-1981-028. After mining, CEC completed reclamation activities including backfilling, grading, topsoiling, and revegetation in accordance with their approved DRMS reclamation plan in 2020. Vegetation monitoring of reclaimed areas is required by DRMS. This report presents the results of annual reclamation monitoring conducted on August 15 – 25, 2022 by Habitat Management, Inc. (Habitat Management). Quantitative information in this report characterizes the vegetative condition of Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 35, 43, and 44. Vegetation sampling was performed in compliance with Colorado Mined Land Reclamation Board Surface Coal Mining Rules 2.04.10 and 4.15 and currently accepted methods for vegetation sampling.

The Keenesburg Mine is in Weld County, Colorado, approximately seven miles north of the town of Keenesburg and is accessed by Weld County Road 59. In 2002, the Keenesburg Mine assigned numerical designations to each reclamation area starting in the northeast corner of the permit area and continuing clockwise through the reclaimed areas. Newly reclaimed areas are assigned consecutive numbers as needed (Figure 1). Reclamation Areas monitored in 2022 are summarized in Table 1.

Table 1: Reclamation Areas Monitored in 2022

Reclamation		Seeding	<b>Bond Release</b>	Bond Release Monitoring Gu	Guidelines
Area	Acres	Date	Status	Cover	Production
25	12.6	2012	Phase I	Phase II	n/a
29*	8.8	2003 (2002*)	Phase II	Phase III	Phase III
30	9.7	2006	Phase I	Phase II/III	Phase III
31	11.9	2009	Phase II	Phase III	Phase III
32	5.5	2015	Phase II	Interim	Interim
33	12.5	2015	Phase II	Interim	Interim
34	6.9	2016	Phase I	Phase II	n/a
35	9.7	2019	Pending Phase I	Phase II	n/a
43	8.3	2019	Pending Phase I	Phase II	n/a
44	9.9	2019	Pending Phase I	Phase II	n/a

<sup>\*</sup> Includes the previously separated Reclamation Area 23.

Reclamation Areas 29, 30, and 31 were monitored using the guidelines for Phase III bond release. Reclamation Areas 25, 34, 35, 43 and 44 were monitored using the guidelines for Phase II bond release. Reclamation Areas 32 and 33 were monitored using the guidelines for interim vegetation monitoring. All these Reclamation Areas were last monitored in 2021.

#### 2 METHODS

The monitoring methods and revegetation standards used to evaluate these areas are those currently in effect under the Colorado Surface Coal Mining Reclamation Act (CRS 34-33-101) and the Keenesburg Mining and Reclamation Permit.

Figure 1: Keenesburg Mine Site Map



#### 2.1 Sampling Design

Thirty sample points were located prior to going into the field using mapping software to create a square grid overlaid on each Reclamation Area being sampled. The sample points were located at the intersection of each square created by the grid. The grid size was adjusted to create the appropriate number of sample locations within each Reclamation Area. Sample numbers (1-30) were randomly assigned to each generated sample point along with a randomly generated azimuth (Figures 2 – 8). A minimum of 15 vegetation cover samples were collected in Reclamation Areas 25, 29, 30, 31, 34, 35, 43, and 44 with additional samples collected, if necessary, to meet sample adequacy for non-noxious vegetation cover in any area. Ten cover samples were collected in Reclamation Areas 32 and 33 per CEC's interim reclamation monitoring guidelines. The maximum of 30 herbaceous production samples were collected from Reclamation Areas 29, 30, and 31 and 15 production samples were collected in Reclamation Areas 32 and 33.

#### 2.2 Sample Timing

Vegetation monitoring occurred on August 15-25, 2022 which was consistent with the timing of monitoring in previous years. Monitoring also coincided with maximum vegetation development of most plant species found in the reclaimed and adjacent native areas.

#### 2.3 Vegetation Cover

Point-intercept methods were used to collect vegetation and ground cover, as well as species composition data. Each 25-meter transect represents a single sampling unit. Two data points were recorded at one-meter intervals along each transect, 0.5 m to each side of and at a right angle to the transect. A laser bar was used to determine intercepts, with the beam projected vertically to the ground surface. Each point-intercept represented an absolute cover value of 2%.

"First-hit" point-intercepts (the first item that the laser beam intercepts) were recorded as either: live vegetation (by plant species), litter, rock, or bare ground. Litter includes all dead plant material. Subsequent "hits" on vegetation (prior to interception of the ground) were also recorded. Vegetation cover was reported in absolute percentages from the point-intercept data using all 50 first-hit observations for each sample point. Additional interceptions were used to calculate relative cover of individual plant species and life forms. The quantitative cover data also provided the basis for calculation of species composition and relative importance.

# 2.4 Herbaceous Production

Herbaceous production was sampled using 0.5-square meter circular plots. For samples where cover data was also collected, the plots were located adjacent to the start point to the right of the transect. Additional production samples were collected with the plot centered on the sample point.

All herbaceous non-noxious growth within each plot's vertical projection was clipped, separated by growth form, and placed in labeled paper bags. Current year's herbaceous growth of shrubs was collected in the same manner, but no woody tissue was harvested. The bags containing the clipped material were returned to the Habitat Management office and dried at 30 degrees Celsius until weights stabilized to within 0.1 gram. Herbaceous production was reported in grams per square meter.

Figure 2: Sample Point Locations (Area 25)

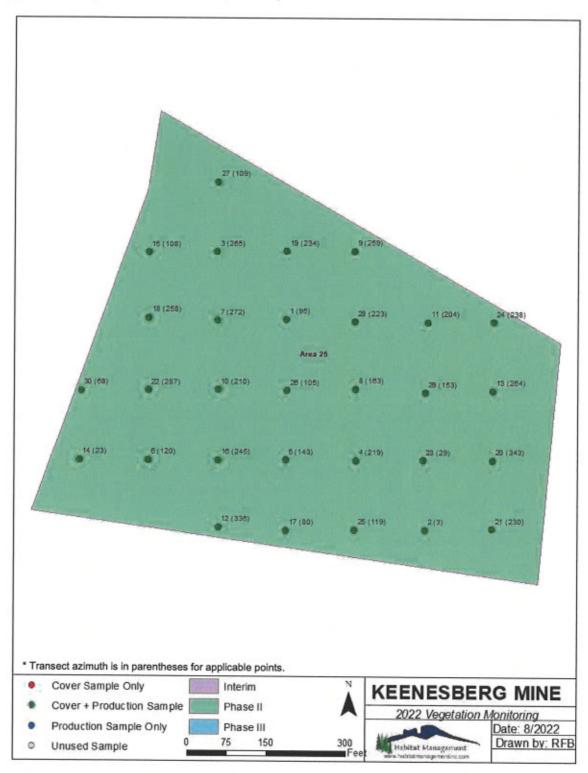


Figure 3: Sample Point Locations (Areas 29 & 30)

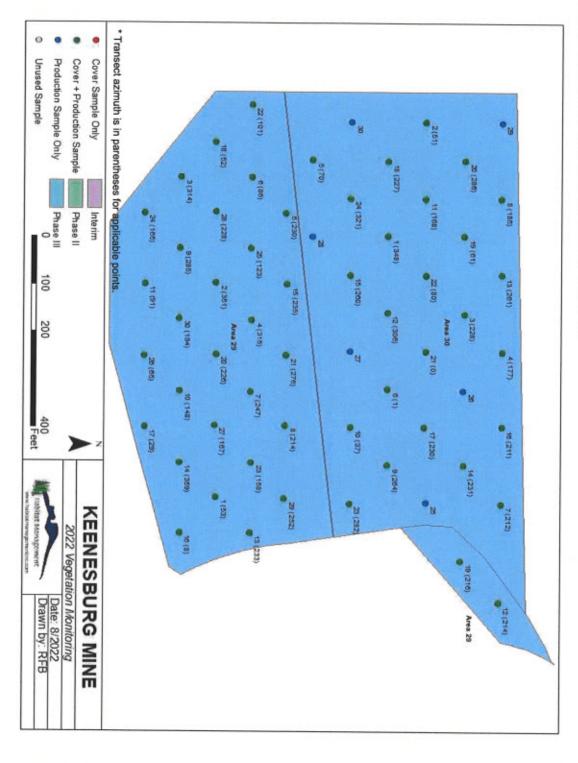


Figure 4: Sample Point Locations (Areas 31)

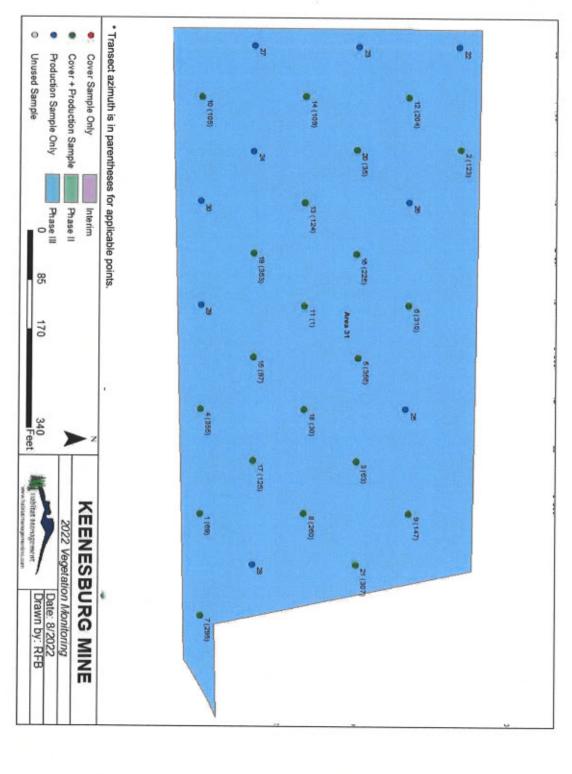


Figure 5: Sample Point Locations (Areas 32 & 35)

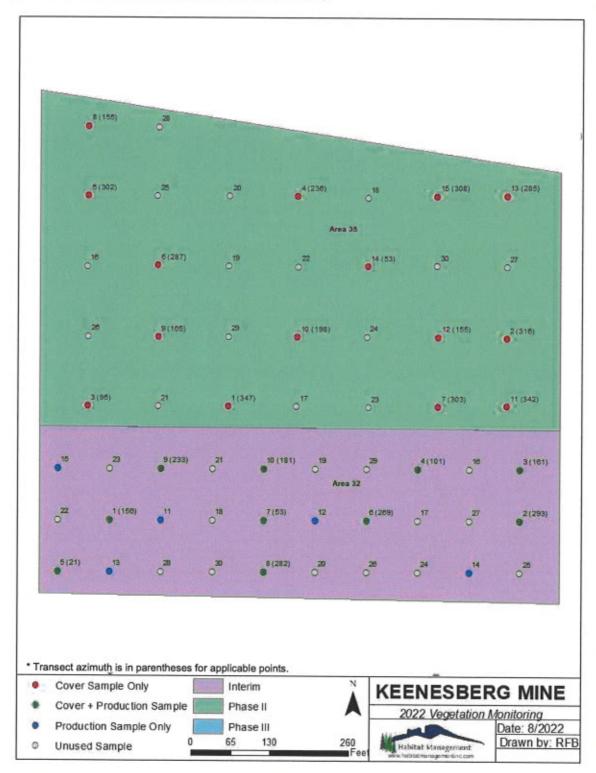


Figure 6: Sample Point Locations (Area 33)

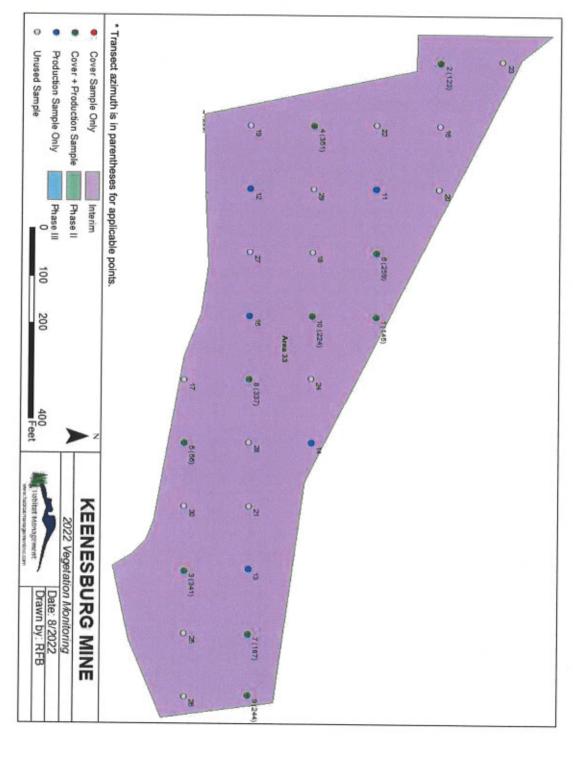


Figure 7: Sample Point Locations (Area 34)

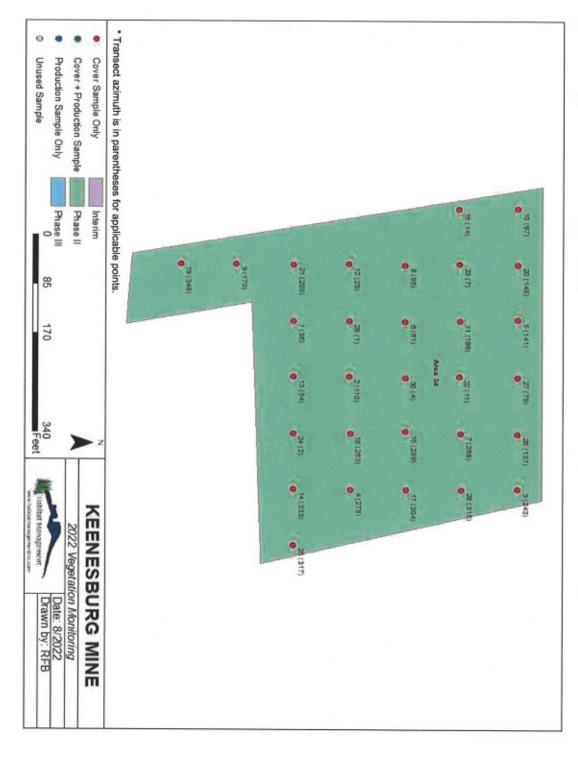
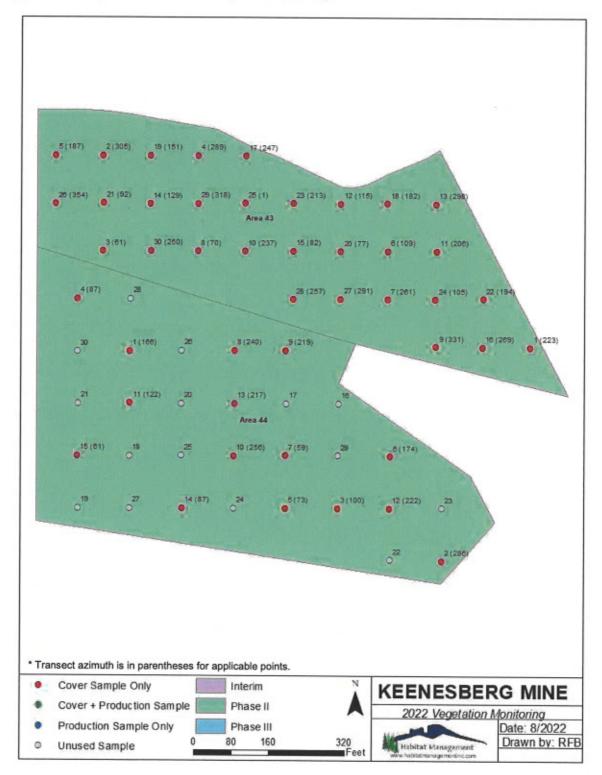


Figure 8: Sample Point Locations (Areas 43 & 44)



## 2.5 Species Composition

During cover sampling, all plant species occurring within one meter of either side of the cover sample transect were noted as present within each sample. These species are presented in the data tables for each Reclamation Area (Appendix A) as well as on the complete species list (Appendix C).

Species composition information for comparison to the final revegetation success criterion was derived from quantitative relative vegetation cover data. The total hits (first hits and subsequent hits) for each non-noxious species were used to calculate relative cover as a basis for evaluation of the importance of each encountered plant species and life form.

## 2.6 Photographs

A photograph was taken at the start point of each cover transect looking along the length of the transect. These photos are presented in Appendix E.

## 2.7 Species Identification and Nomenclature

Species that were not readily identified in the field were collected for later identification. Specimens were identified using floral keys including Weber and Wittmann (2001) and Wingate (1994). Nomenclature follows the NRCS Plants Database (2022).

#### 3 RECLAMATION SUCCESS STANDARDS

The Keenesburg Mine Reclamation Permit includes a species composition standard and predictive equations to determine the success standards for vegetation cover and herbaceous production. The equations for both cover and production were revised in 2012 with a Technical Revision to the permit (TR43) and the cover standard was revised again in 2014 with a Minor Revision (MR46) to the permit. Both the vegetation cover and herbaceous production equations use the previous year's precipitation (September – July) to predict the success standard for any given year. These equations are as follows, where x is equal to the cumulative September – July precipitation:

Vegetation Cover Standard = 
$$-0.0127x^3+0.2115x^2+2.1772x$$
  
Herbaceous Production Standard =  $0.4666x^{2.1405}$ 

To meet the reclamation standard specified in the permit, data are subjected to hypothesis testing as described in the DRMS Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (DRMS 2005). Per this guideline, Reclamation Areas meet the success standard if the dataset is not significantly different from 90% of the standard using a one-sample T-test with a one-tailed confidence interval of 90%. Noxious species cover or production is removed as well as annual vegetation cover or production in excess of 10% of the overall average for each Reclamation Area to derive the allowable vegetation cover or production value used for hypothesis testing per the DRMS Guideline Regarding Selected Coal Mine Bond Release Issues (DRMS 1995).

Species composition is considered an indicator of successful vegetation establishment and a diverse vegetation community. The species composition standard for the Keenesburg Mine was modified in 2020 with a Technical Revision to the permit (TR47). The revised standard requires that there be at least four perennial grass species, each of which comprise between 3% and 40%

relative cover. Any perennial grass species, native or introduced, that is not defined as a noxious species may be used in the calculation of species composition.

The Phase III bond release guidelines require that vegetation cover, herbaceous production, and species composition meet the standards for two years. Phase II bond release guidelines require vegetation cover to meet the standard and that four perennial grass species be present in the community to potentially meet the species composition standard in the future.

## 2022 Revegetation Success Standards

The following standards were calculated for vegetation cover and herbaceous production using the September 2021 through July 2022 precipitation (6.6 inches) in the permitted predictive equations.

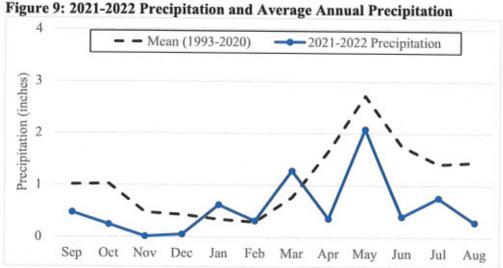
- 1. Vegetation Cover Standard = 19.9% (90% Standard = 17.9%)
- Herbaceous Production Standard = 11.0 g/m² (90% Standard = 9.9 g/m²)

#### 2021-2022 PRECIPITATION

The climate of the mine and surrounding area is typical of the region and characterized by cold winters and hot, dry summers. Average precipitation is generally lowest during the late fall and winter (October through March) and peaks in April through June (Figure 9).

The Keenesburg Mine Reclamation Permit specifies the use of onsite precipitation from September to July for calculating the vegetation cover and herbaceous production standards. CEC collected precipitation data at the mine from 1984 through August 2020 using a manual rain gauge checked daily by on-site personnel. In January 2021, a solar-powered NOAH IV Total Precipitation Measurement System was installed in the reclamation with a cellular connection to measure precipitation in the absence of on-site personnel.

Total cumulative precipitation for the period from September 2021 – July 2022 was 6.6 inches. This represents 55% of the average precipitation for the same period (1993-2020). The pattern and timing of the precipitation was generally consistent with the average (Figure 9). However, the September-December 2021 precipitation was only 26% of average and summer June-July 2022 was only 37% of average. All data from 1993 - 2022 are presented in Appendix D.



#### 5 2022 PEST & DISEASE INSPECTIONS

Habitat Management was contracted to completed quarterly pest and disease inspections at the Keenesburg Mine in 2022. The first three inspections were completed on March 28<sup>th</sup>, June 3<sup>rd</sup>, August 31<sup>st</sup>, and the reports from each inspection are included in Appendix F. The 4<sup>th</sup> quarter inspection has not yet been completed as of this report; however, it will be completed before the end of the quarter.

#### 6 RESULTS

Vegetation cover, species composition, and herbaceous production results for each Reclamation Area are summarized below. Results for Reclamation Areas monitored for Phase III bond release (Areas 29, 30, and 31) are presented first followed by those areas monitored for Phase II bond release (Areas 25, 34, 35, 43, and 44) and then those areas monitored for interim evaluation (Areas 32 and 33).

Complete vegetation cover and herbaceous production data for each Reclamation Area are presented in Appendix A and Appendix B, respectively. A complete species list for all Reclamation Areas is presented in Appendix C.

#### 6.1 Phase III Reclamation Monitoring

Reclamation Areas 29, 30, and 31 were monitored for Phase III bond release.

#### 6.1.1 Reclamation Area 29

Reclamation Area 29 is an 8.1-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in 2003. Per approval from DRMS, Reclamation Area 23 was combined with Reclamation Area 29 in 2019. Reclamation Area 23 is a 0.7-acre parcel, formerly part of the B Pit mining area, which was graded to blend into the reclaimed mining and operational areas to the east resulting in an almost flat, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2002. The total area included in the Reclamation Area 29 sampling was 8.8 acres.

Total vegetation cover averaged 44.5% (Table 2) which was a substantial increase from the 38.3% cover observed in 2021. Non-noxious vegetation cover was 43.9% up from 35.9% observed in 2021. However, allowable vegetation cover was only 18.9% down from 29.1% in 2021 due to an average excess annual cover of 25.1%. Area 29 met sample adequacy for non-noxious cover with 15 samples; however, due to an error in the formula used in the field a total of 30 samples were collected.

Total non-noxious herbaceous production averaged 100.8 g/m<sup>2</sup> in 2022 (Table 2) which is a substantial increase from the 70.4 g/m<sup>2</sup> production observed in 2021. Annual species accounted for 71.7% of the relative production so the average allowable herbaceous production was only 45.7 g/m<sup>2</sup> down from 53.8 g/m<sup>2</sup> in 2021.

Seventeen species contributed to the cover data and another 13 species were encountered along the transects (Table 3). Of the 30 species recorded, 24 were native or desirable. There were 12 grasses, 16 forbs, and two woody species including 17 perennial species and 13 annual species.

Table 2: Reclamation Area 29 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	81.8	1.7
Total Vegetation Cover	44.5	2.3
Non-Noxious Vegetation Cover	43.9	2.4
Allowable Vegetation Cover	18.9	2.4
Grass Cover	14.3	1.5
Forb Cover	29.7	2.8
Woody Cover	0.4	0.2
Perennial Cover	14.5	1.5
Annual Cover	30.0	2.8
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	33.8	3.7
Forb Cover	65.2	3.6
Woody Cover	1.0	0.5
Perennial Cover	35.7	3.6
Annual Cover	64.3	3.6
Herbaceous Production Statistics (	$(g/m^2)$	
Total Production	100.8	11.4
Allowable Production	45.7	10.0
Perennial Production	28.6	6.0
Annual Production	72.3	12.2

Table 3: Reclamation Area 29 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	7	10
Annual	1	2
Native	7	11
Introduced	1	1
Cool Season	1	1
Warm Season	6	9
Total	8	12
Forbs		
Perennial	2	5
Annual	5	11
Native	4	11
Introduced	3	5
Total	7	16
Woody Species		
Perennial	2	2
Total Species	17	30

The only species observed on all 30 transects was Russian thistle (Salsola tragus) which contributed 60.0% of the overall relative cover. Cheatgrass (Bromus tectorum) which contributed 57.0% of the overall relative cover in 2020, and 6.6% in 2021, only contributed 1.2% in 2022. With cheatgrass removed, four perennial grass species contributed more than 3% of the relative cover including (in decreasing order): sand dropseed (Sporobolus cryptandrus), prairie sandreed (Calamovilfa longifolia), sand bluestem (Andropogon hallii), and blue grama (Bouteloua gracilis). One other forb species, common sunflower (Helianthus annuus), also contributed more than 3% of the relative cover.

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 4). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. Thus, the Phase III bond release success criteria were met.

Table 4: Reclamation Area 29 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	18.9	19.9	17.9	Yes
Allowable Production (g/m <sup>2</sup> )	45.7	11.0	9.9	Yes
Species Composition (perennial grass)	4	4		Yes

#### 6.1.2 Reclamation Area 30

Reclamation Area 30 is a 9.7-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2006. This Reclamation Area has previously received Phase I bond release but has not received Phase II release.

Total vegetation cover averaged 33.0% (Table 5) which was a slight decrease from the 36.8% cover observed in 2021. However, non-noxious vegetation cover was 31.5% up from 30.5% observed in 2021. Allowable vegetation cover was only 18.7% down from 27.5% in 2021 due to an average excess annual cover of 12.9%. Area 30 met sample adequacy for non-noxious cover with 20 samples; however, due to an error in the formula used in the field a total of 24 samples were collected.

Total non-noxious herbaceous production averaged  $59.2 \text{ g/m}^2$  (Table 5) which is a slight increase from the  $50.5 \text{ g/m}^2$  production in 2021. Annual species accounted for 33.5% of the relative production. Thus, the average allowable herbaceous production was only  $33.2 \text{ g/m}^2$ .

Sixteen species contributed to the cover data and another 13 species were encountered along the transects (Table 6). Of the 29 species recorded, 23 were native or desirable. There were 13 grasses, 13 forbs, and three woody species including 16 perennial species and 13 annual species.

**Table 5: Reclamation Area 30 Summary Statistics** 

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	82.5	1.6
Total Vegetation Cover	33.0	2.3
Non-Noxious Vegetation Cover	31.5	2.2
Allowable Vegetation Cover	18.7	2.2
Grass Cover	17.3	1.3
Forb Cover	15.8	2.4
Woody Cover	0.0	0.0
Perennial Cover	15.5	1.3
Annual Cover	17.5	2.5
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	57.4	4.6
Forb Cover	42.6	4.6
Woody Cover	0.0	0.0
Perennial Cover	56.8	4.6
Annual Cover	43.2	4.6
Herbaceous Production Statistics	$(g/m^2)$	
Total Production	59.2	5.7
Allowable Production	33.2	5.3
Perennial Production	25.7	3.3
Annual Production	33.5	6.3

Table 6: Reclamation Area 30 Species Composition

Life Form	Cover Data	Dussant
Graminoids	Data	Present
Perennial	8	10
Annual	3	3
Native	10	12
Introduced	1	1
Cool Season	1	3
Warm Season	7	7
Total	11	13
Forbs		
Perennial	1	3
Annual	4	10
Native	3	8
Introduced	2	5
Total	5	13
Woody Species		
Perennial	0	3
Total Species	16	29

Sand dropseed, Russian thistle, and Canadian horseweed (*Conyza canadensis*) were present along all 24 transects. Sand bluestem contributed to the cover on 22 transects while sand dropseed and Russian thistle each contributed to the cover on 21 of them. Together these three species contributed 81.3% of the overall relative cover. Cheatgrass only contributed 4.1% of the relative cover down from 16.6% in 2021 and 48.1% in 2020. With cheatgrass removed, six species contributed more than 3% of the relative cover including (in decreasing order): Russian thistle, sand bluestem, sand dropseed, redroot amaranth (*Amaranthus retroflexus*), prairie sandreed, and blue grama.

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 7). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. With these results, both the Phase II and Phase III bond release success criteria were met.

Table 7: Reclamation Area 30	Success	Criteria
------------------------------	---------	----------

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	18.7	19.9	17.9	Yes
Allowable Production (g/m <sup>2</sup> )	33.2	11.0	9.9	Yes
Species Composition (perennial grass)	4	4		Yes

#### 6.1.3 Reclamation Area 31

Reclamation Area 31 is an 11.9-acre parcel that was also part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in the fall of 2009.

Total vegetation cover averaged 27.4% (Table 8) which was a decrease from the 38.0% cover observed in 2021, but there was no noxious species cover unlike previous years. There was substantial annual cover, so allowable vegetation cover was 22.6%. Area 31 met sample adequacy for non-noxious cover with the minimum 15 samples; however, due to an error in the formula used in the field a total of 21 samples were collected.

Total non-noxious herbaceous production averaged 46.3 g/m $^2$  (Table 8) which was substantially less than the 63.3 g/m $^2$  production observed in 2021. Annual species accounted for 34.7% of the relative production. Thus, the average allowable herbaceous production was only 34.9 g/m $^2$ .

Fourteen species contributed to the cover data and 16 more species were encountered along the transects (Table 9). Of the 30 species recorded, 24 were native or desirable. There were 13 grasses, 14 forbs, and three woody species including 17 perennial species and 13 annual species.

Prairie sandreed was present on all 21 transects and contributed to the cover on 20 transects, comprising 47.1% of the total relative cover. Cheatgrass was present on eight transects and did not contribute to the cover data. A total of seven species contributed more than 3% of the relative cover including (in decreasing order): prairie sandreed, Russian thistle, sand dropseed, sand bluestem, redroot amaranth, blue grama, and alkali sacaton (Sporobolus airoides).

**Table 8: Reclamation Area 31 Summary Statistics** 

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	74.8	2.4
Total Vegetation Cover	27.4	1.3
Non-Noxious Vegetation Cover	27.4	1.3
Allowable Vegetation Cover	22.6	1.3
Grass Cover	19.3	1.5
Forb Cover	7.9	1.2
Woody Cover	0.2	0.1
Perennial Cover	19.8	1.5
Annual Cover	7.6	1.2
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	70.8	4.3
Forb Cover	28.7	4.3
Woody Cover	0.5	0.4
Perennial Cover	72.5	4.2
Annual Cover	27.5	4.2
Herbaceous Production Statistics (	$(g/m^2)$	
Total Production	46.3	6.1
Allowable Production	34.9	6.1
Perennial Production	30.3	4.7
Annual Production	16.1	5.0

Table 9: Reclamation Area 31 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	7	10
Annual	1	3
Native	8	12
Introduced	0	1
Cool Season	0	3
Warm Season	7	7
Total	8	13
Forbs		
Perennial	2	4
Annual	3	10
Native	4	9
Introduced	1	5
Total	5	14
Woody Species		
Perennial	1	3
Total Species	14	30

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 10). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. Thus, the Phase III bond release success criteria were met.

Table 10: Reclamation Area 31 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	22.6	19.9	17.9	Yes
Allowable Production (g/m <sup>2</sup> )	34.9	11.0	9.9	Yes
Species Composition (perennial grass)	4	4		Yes

## 6.2 Phase II Monitoring

Reclamation Areas 25, 34, 35, 43, and 44 were monitored for Phase II bond release.

#### 6.2.1 Reclamation Area 25

Reclamation Area 25 is a 12.6-acre parcel east of the long-term spoil area. This area was graded to blend into the reclaimed areas resulting in a gentle, southwest-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 1995, but it was repeated in 2002 and 2012 due to insufficient vegetation cover.

Total vegetation cover averaged 38.6% (Table 11) which was a decrease from the 45.9% cover observed in 2021 with no noxious species hit during cover sampling. However, substantial excess annual cover was recorded, and the allowable cover used for hypothesis testing was only 11.6%. Reclamation Area 25 met sample adequacy for non-noxious cover with the minimum 15 samples; however, due to an error in the formula used in the field the maximum number of 30 samples were collected.

Table 11: Reclamation Area 25 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	80.3	1.2
Total Vegetation Cover	38.6	1.6
Non-Noxious Vegetation Cover	38.6	1.6
Allowable Vegetation Cover	11.6	1.5
Grass Cover	6.9	1.1
Forb Cover	31.5	1.9
Woody Cover	0.1	0.1
Perennial Cover	7.4	1.1
Annual Cover	31.2	1.9
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	19.6	3.4
Forb Cover	80.1	3.4
Woody Cover	0.3	0.2
Perennial Cover	20.7	3.4
Annual Cover	79.3	3.4

Fifteen species contributed to the cover data and 18 more species were encountered along the transects (Table 12). Of the 33 species recorded, 27 were native or desirable. There were 16 grasses, 15 forbs, and two woody species including 23 perennial species and 10 annual species.

Table 12: Reclamation Area 25 Species Composition

Life Form	Cover Data	Present
Graminoids	Data	rresent
Perennial	8	14
Annual	0	2
Native	8	15
Introduced	0	1
Cool Season	2	5
Warm Season	6	9
Total	8	16
Forbs		
Perennial	2	7
Annual	4	8
Native	3	10
Introduced	3	5
Total	6	15
Woody Species		
Perennial	1	2
Total Species	15	33

The only species observed along all 30 transects were Russian thistle and prairie sandreed which comprised 76.9% and 13.6% of the relative cover, respectively. No other species contributed more than 3% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 13). Fourteen perennial grasses were observed along the transects which meets the Phase II bond release species composition standard. No production data were collected in the area in 2022.

Table 13: Reclamation Area 25 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	11.6	19.9	17.9	No
Allowable Production (g/m <sup>2</sup> )	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	14	4		Yes

#### 6.2.2 Reclamation Area 34

Reclamation Area 34 is a 6.9-acre parcel that was formerly part of Topsand Piles A and B. This area was graded to blend into the reclaimed mining and operational areas to the south resulting in an almost flat area. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in October 2016.

Total vegetation cover averaged 29.4% up from 33.3% in 2021 with no noxious species hit during cover sampling (Table 14). Annual species contributed a substantial amount of the relative cover resulting in an allowable vegetation cover of only 11.4%, down from 20.6% in 2021. Area 34 met sample adequacy for non-noxious cover with the 18 samples; however, due to an error in the formula used in the field the maximum number of 30 samples were collected.

Twenty species contributed to the cover data and 14 other species were encountered along the transects (Table 15). Of the 34 species recorded, 30 were native or desirable. There were 17 grasses, 14 forbs, and three woody species including 24 perennial species and 10 annual species.

The only species observed on all 30 transects were Russian thistle and common sunflower which combined to comprise 67.5% of the relative cover. Prairie sandreed and sand dropseed each contributed about 10% of the relative cover and the other 11.3% came from 16 species each contributing less than 2%. Cheatgrass was only observed on one transect and did not contribute to the cover data.

The allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 16). However, 16 perennial grasses were observed along the transects which does meet the Phase II bond release species composition standard.

Table 14: Reclamation Area 34 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	64.4	2.7
Total Vegetation Cover	29.4	1.8
Non-Noxious Vegetation Cover	29.4	1.8
Allowable Vegetation Cover	11.4	1.7
Grass Cover	7.7	1.0
Forb Cover	21.6	2.2
Woody Cover	0.1	0.1
Perennial Cover	8.2	1.1
Annual Cover	21.2	2.2
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	30.9	4.5
Forb Cover	68.9	4.6
Woody Cover	0.2	0.2
Perennial Cover	32.5	4.7
Annual Cover	67.5	4.7

Table 15: Reclamation Area 34 Species Composition

X 16 Y	Cover	
Life Form	Data	Present
Graminoids		
Perennial	11	16
Annual	0	1
Native	11	16
Introduced	0	1
Cool Season	4	6
Warm Season	7	10
Total	11	17
Forbs		
Perennial	2	5
Annual	6	9
Native	7	11
Introduced	1	3
Total	8	14
Woody Species		
Perennial	1	3
Total Species	20	34

Table 16: Reclamation Area 34 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	11.4	19.9	17.9	No
Allowable Production (g/m <sup>2</sup> )	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	16	4		Yes

#### 6.2.3 Reclamation Area 35

Reclamation Area 35 is a 9.7-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2020. This area was included in a 2021 Phase I bond release application that is under review by DRMS.

Total and non-noxious vegetation cover averaged 27.5% (Table 17). Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 7.7%. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Only eight species contributed to the cover data and six other species were encountered along the transects (Table 18). Of the 14 species recorded, 10 were native or desirable. There were five grasses and nine forbs including seven perennial species and seven annual species.

Table 17: Reclamation Area 35 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	52.7	3.4
Total Vegetation Cover	27.5	2.2
Non-Noxious Vegetation Cover	27.5	2.2
Allowable Vegetation Cover	7.7	2.0
Grass Cover	4.5	0.8
Forb Cover	22.9	1.9
Woody Cover	0.0	0.0
Perennial Cover	4.5	0.8
Annual Cover	22.9	1.9
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	16.3	2.5
Forb Cover	83.7	2.5
Woody Cover	7.0	1.2
Perennial Cover	16.3	2.5
Annual Cover	83.7	2.5

Table 18: Reclamation Area 35 Species Composition

	Cover	
Life Form	Data	Present
Graminoids		
Perennial	2	4
Annual	0	1
Native	2	5
Introduced	0	0
Cool Season	1	3
Warm Season	1	1
Total	2	5
Forbs		
Perennial	0	3
Annual	6	6
Native	2	5
Introduced	4	4
Total	6	9
Woody Species		
Perennial	0	0
Total Species	8	14

There were three dominant species observed along at least 14 of the 15 transects: Russian thistle, common sunflower and Indian ricegrass (*Achnatherum hymenoides*). These species comprised 61.0%, 15.5%, and 11.3%, respectively, of the relative cover. An additional 5.6% was contributed by sand dropseed and 5.2% by slender Russian thistle (*Salsola collina*). The remaining cover was three species each contributing less than 1% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 19). However, four perennial grasses were observed along the transects which meets the Phase II bond release species composition standard. No production data were collected in the area in 2022.

Table 19: Reclamation Area 35 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	7.7	19.9	17.9	No
Allowable Production (g/m <sup>2</sup> )	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	4	4		Yes

#### 6.2.4 Reclamation Area 43

Reclamation Area 43 is an 8.3-acre parcel that was formerly the northernmost part of the B Pit mining area. This area was monitored as part of Reclamation Area 44 in 2021 but was split off when the boundaries were adjusted in the spring of 2022. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2019. This area was included in a 2021 Phase I bond release application that is under review by DRMS.

Total vegetation cover averaged 18.6% (Table 20) and non-noxious vegetation cover was 18.5%. Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 13.2%. Area 43 met sample adequacy for non-noxious cover with 24 samples; however, due to an error in the formula used in the field the maximum of 30 samples were collected.

Table 20: Reclamation Area 43 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	70.8	2.1
Total Vegetation Cover	18.6	1.3
Non-Noxious Vegetation Cover	18.5	1.3
Allowable Vegetation Cover	13.2	1.2
Grass Cover	8.9	0.9
Forb Cover	9.7	1.2
Woody Cover	0.0	0.0
Perennial Cover	11.3	1.0
Annual Cover	7.3	1.1
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	51.4	4.8
Forb Cover	48.6	4.8
Woody Cover	0.0	0.0
Perennial Cover	64.7	4.7
Annual Cover	35.3	4.7

Eight species contributed to the cover data and 23 more species were encountered along the transects (Table 21). Of the 31 species recorded, 24 were native or desirable. There were 11 grasses, 18 forbs, and two woody species including 16 perennial species and 15 annual species.

Table 21: Reclamation Area 43 Species Composition

Life Form	Cover Data	Present
Graminoids	Data	Tresent
Perennial	1	8
Annual	1	3
Native	1	9
Introduced	1	2
Cool Season	0	3
Warm Season	1	5
Total	2	11
Forbs		
Perennial	2	6
Annual	4	12
Native	4	13
Introduced	2	5
Total	6	18
Woody Species		
Perennial	0	2
Total Species	8	31

The only species observed on all 30 transects were sand dropseed and common sunflower which contributed 47.2% and 31.9% of the overall relative cover, respectively. Other species contributing more than 3% of the relative cover were cuman ragweed (*Ambrosia psilostachya*) with 12.8% and Russian thistle with 4.6%.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 22). Eight perennial grasses were observed along the transects which meets the Phase II bond release species composition standard. No production data were collected in the area in 2022.

Table 22: Reclamation Area 43 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	13.2	19.9	17.9	No
Allowable Production (g/m <sup>2</sup> )	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	8	4		Yes

#### 6.2.5 Reclamation Area 44

Reclamation Area 44 is a 10-acre parcel that was formerly part of the B Pit mining area. The area monitored as Reclamation Area 44 in 2021 included this area along with what is now Area 43 and part of Area 37. Adjustments were made to the Reclamation Area boundaries in the spring of

2022 due to re-seeding of some areas. Reclamation Area 44 was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2019. This area was included in a 2021 Phase I bond release application that is under review by DRMS.

Total vegetation cover averaged 19.6% (Table 23) with no noxious species included in the cover data. Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 6.0%. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Ten species contributed to the cover data and 17 more species were encountered along the transects (Table 24). Of the 27 species recorded, 19 were native or desirable. There were eight grasses, 18 forbs, and one woody species including nine perennial species and 18 annual species.

There were three dominant species observed along all 15 transects. Russian thistle contributed 71.4% of the relative cover, sand dropseed contributed 9.5%, and Indian ricegrass contributed 3.5%. Common sunflower contributed 9.5% of the overall relative cover but was only observed on seven of the 15 transects.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 25). Four perennial grasses were observed along the transects which meets the Phase II bond release species composition standard. No production data were collected in the area in 2022.

Table 23: Reclamation Area 44 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	57.1	4.8
Total Vegetation Cover	19.6	2.3
Non-Noxious Vegetation Cover	19.6	2.3
Allowable Vegetation Cover	6.0	2.0
Grass Cover	2.8	0.8
Forb Cover	16.8	2.6
Woody Cover	0.0	0.0
Perennial Cover	2.8	0.8
Annual Cover	16.8	2.6
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	18.2	5.6
Forb Cover	81.8	5.6
Woody Cover	0.0	0.0
Perennial Cover	18.1	6.0
Annual Cover	81.9	6.0

Table 24: Reclamation Area 44 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	3	5
Annual	1	3
Native	4	7
Introduced	0	1
Cool Season	2	3
Warm Season	1	2
Total	4	8
Forbs		
Perennial	1	3
Annual	5	15
Native	2	11
Introduced	4	7
Total	6	18
Woody Species		
Perennial	0	1
Total Species	10	27

Table 25: Reclamation Area 44 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	6.0	19.9	17.9	No
Allowable Production (g/m²)	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	5	4		Yes

#### 6.3 Interim Monitoring

Reclamation Areas 32 and 33 were monitored under the interim evaluation guidelines. The interim monitoring guidelines call for the collection of 10 cover samples and 15 production samples which were not a statistically adequate sample sizes for hypothesis testing. However, to evaluate the progress of reclamation establishment on these sites, the data were compared to the Phase III standards anyway.

#### 6.3.1 Reclamation Area 32

Reclamation Area 32 is a 5.5-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2015.

Total vegetation cover averaged 20.2% (Table 26) which was a substantial decrease from the 45.6% cover observed in 2021. Non-noxious vegetation cover was 19.6% down from 43.4% in 2021. Excess annual cover was only 1.8% more that the allowable 10% to be used in final

hypothesis testing. Thus, the average allowable vegetation cover was 17.8% down from 36.1% in 2021.

Total non-noxious herbaceous production averaged 35.6 g/m $^2$  (Table 26) down from 67.5 g/m $^2$  in 2021. Annual species accounted for 26.4% of the relative production. Thus, the average allowable herbaceous production was only 29.8 g/m $^2$ .

Table 26: Reclamation Area 32 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	80.4	3.6
Total Vegetation Cover	20.2	2.1
Non-Noxious Vegetation Cover	19.6	2.2
Allowable Vegetation Cover	17.8	2.2
Grass Cover	16.2	2.9
Forb Cover	4.0	1.4
Woody Cover	0.0	0.0
Perennial Cover	15.8	3.0
Annual Cover	4.4	1.4
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	75.8	9.6
Forb Cover	24.2	9.6
Woody Cover	0.0	0.0
Perennial Cover	76.4	9.7
Annual Cover	23.6	9.7
Herbaceous Production Statistics (	$(g/m^2)$	
Total Production	35.6	4.1
Allowable Production	29.8	4.1
Perennial Production	26.2	2.9
Annual Production	9.4	4.6

Seven species contributed to the cover data and 11 other species were encountered along the transects (Table 27). Of the 18 species recorded, 15 were native or desirable. There were 11 grasses, six forbs, and one woody species including 11 perennial species and seven annual species.

The only species contributing to cover in all 10 transects were prairie sandreed and blue grama which contributed 59.5% and 19.0%, respectively, of the overall relative cover. Russian thistle also contributed 16.4% of the relative cover even though it was only observed on nine transects. Cheatgrass was observed on seven transects but contributed only 2.6% of the total relative cover down from 4.7% in 2021.

Sample adequacy would have required 25 cover samples and 30 production samples. While the allowable herbaceous production calculated from the samples collected exceeded the technical standard, the allowable cover did not (Table 28). However, given the sample mean and standard deviation, the allowable cover would have passed hypothesis testing if there had been an adequate sample size. Only one perennial grass species contributed greater than 3% and less than

40% of the non-noxious relative cover and a second species contributed more than 40% of the relative cover.

Table 27: Reclamation Area 32 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	4	9
Annual	1	2
Native	4	10
Introduced	1	1
Cool Season	0	2
Warm Season	4	7
Total	5	11
Forbs		
Perennial	1	1
Annual	1	5
Native	1	4
Introduced	1	2
Total	2	6
Woody Species		
Perennial	0	1
Total Species	7	18

Table 28: Reclamation Area 32 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	17.8	19.9	17.9	No
Allowable Production (g/m <sup>2</sup> )	29.8	11.0	9.9	Yes
Species Composition (perennial grass)	1	4		No

### 6.3.2 Reclamation Area 33

Reclamation Area 33 is a 12.5-acre parcel that was formerly part of the Long-Term Spoil Area. This area was graded to blend into the reclaimed mining and operational areas to the west resulting in an almost flat, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2015.

Total vegetation cover averaged 20.0% (Table 29) down from 53.6% in 2021. Area 33 was the only area with no noxious or excess annual cover; thus, the total vegetation cover was used for hypothesis testing.

Total non-noxious herbaceous production averaged 20.4 g/m $^2$  (Table 29) down from 88.0 g/m $^2$  in 2021. Annual species accounted for only 2.0% of the relative production; thus, the average allowable herbaceous production was the same as the total production.

Table 29: Reclamation Area 33 Summary Statistics

Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	89.2	2.9
Total Vegetation Cover	20.0	1.9
Non-Noxious Vegetation Cover	20.0	1.9
Allowable Vegetation Cover	20.0	1.9
Grass Cover	20.0	1.9
Forb Cover	0.0	0.0
Woody Cover	0.0	0.0
Perennial Cover	20.0	1.9
Annual Cover	0.0	0.0
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	100.0	0.0
Forb Cover	0.0	0.0
Woody Cover	4.5	1.0
Perennial Cover	100.0	0.0
Annual Cover	0.0	0.0
Herbaceous Production Statistics (	$(g/m^2)$	
Total Production	20.4	2.1
Allowable Production	20.4	2.1
Perennial Production	19.9	2.2
Annual Production	0.4	0.2

Seven species contributed to the cover data and 10 other species were encountered along the transects (Table 30). Of the 17 species recorded, 13 were native or desirable. There were 12 grasses and five forbs including 12 perennial species and five annual species.

The only species contributing to cover in all 10 transects were prairie sandreed and blue grama which contributed 66.1% and 21.7%, respectively, of the overall relative cover. Sand dropseed contributed 3.5% of the relative cover and was present on eight transects. Cheatgrass was only observed on six transects and did not contribute to the cover data. This was a substantial improvement from 2021 when it contributed 24.1% of the total relative cover and was present on all 10 transects.

Sample adequacy would have required 18 cover samples and 30 production samples. Both the allowable cover and allowable herbaceous production calculated from the samples collected exceeded the technical standard (Table 31). Only two perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover and a third species contributed more than 40% of the relative cover.

Table 30: Reclamation Area 33 Species Composition

	Cover	
Life Form	Data	Present
Graminoids		
Perennial	7	10
Annual	0	2
Native	7	11
Introduced	0	1
Cool Season	2	3
Warm Season	5	7
Total	7	12
Forbs		
Perennial	0	2
Annual	0	3
Native	0	2
Introduced	0	3
Total	0	5
Woody Species		
Perennial	0	0
Total Species	7	17

Table 31: Reclamation Area 33 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	20.0	19.9	17.9	Yes
Allowable Production (g/m²)	20.4	11.0	9.9	Yes
Species Composition (perennial grass)	2	4		No

### 7 DISCUSSION

Reclamation Areas 25, 29, 30, 31, 32, 33, and 34 have been monitored every year since at least 2018. Reclamation Areas 35, 43, and 44 were monitored for the first time in 2022.

### 7.1 Vegetation Cover

Based on the results of the quantitative sampling, five of the 10 Reclamation Areas had allowable vegetation cover that passed the success standard (Table 32). This included all the Phase III and interim monitoring areas. The Phase II Reclamation Areas (25, 34, 35, 43, and 44) all would have passed using the total non-noxious cover if there had not been excess annual cover. Most of the Phase II areas (Reclamation Areas 34, 35, 43, and 44) are recently reclaimed and would be expected to have more annual cover. Typically, it takes several years for the perennial vegetation to establish and begin to displace the early seral annual species. Reclamation Area 25, while older reclamation, was treated with a pre-emergent herbicide in 2020 to control the cheatgrass. This treatment effectively treated the cheatgrass, but this left substantial bare areas for the invasion of other annual species. It may take a few years for the perennial grasses to fill in.

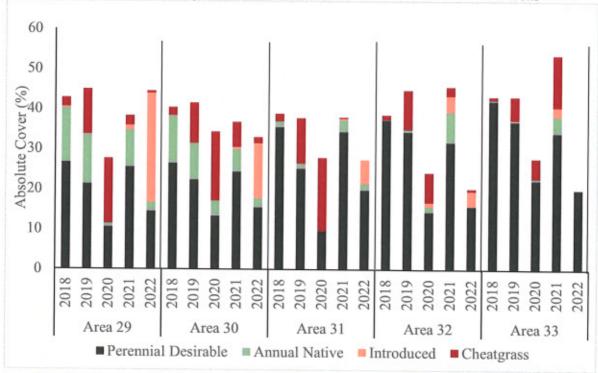
Table 32: Vegetation Cover Success Standard Comparison

		Phase I Ionitori			Phase	II Mor	iitoring		1969	erim itoring
	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Vegetation Cover	29	30	31	25	34	35	43	44	32	33
Average Vegetation Cover	44.5	33.0	27.4	38.6	29.4	27.5	18.6	19.6	20.2	20.0
Average Non-Noxious Cover	43.9	31.5	27.4	38.6	29.4	27.5	18.5	19.6	19.6	20.0
Average Allowable Cover	18.9	18.7	22.6	11.6	11.4	7.7	13.2	6.0	17.8	20.0
N	30	24	21	30	30	15	30	15	10	10
Nmin (non-noxious)	15	20	8	9	18	17	24	38	25	18
Stdev Allowable Cover	13.1	10.8	6.0	8.1	9.2	7.9	6.8	7.9	7.1	6.1
Standard					19	9.9				
90% of Standard					17	7.9				
T (one-tail, α=0.9)	1.311	1.319	1.325	1.311	1.311	1.345	1.311	1.345	1.383	1.383
Standard Passed?	Yes	Yes	Yes	No	No	No	No	No	No*	Yes*

<sup>\*</sup> Only sampled to the minimum sample size

Desirable vegetation cover decreased from 2021 to 2022 in all Phase III and interim monitoring areas after a substantial increase from 2020 to 2021 (Figure 10). However, in most areas (all except Area 33) the 2022 desirable cover was still greater than it was in 2020. In Area 33 as well as the two Phase II monitoring areas (Figure 11), the 2022 desirable cover was lower than it has been since before 2018.

Figure 10: Absolute Cover by Life Form 2018 - 2022 - Phase III & Interim Areas



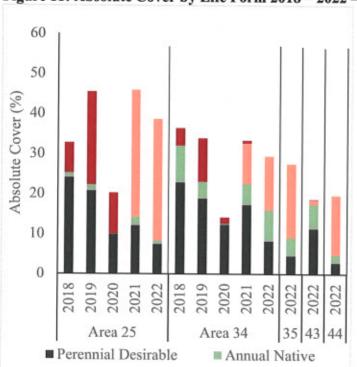


Figure 11: Absolute Cover by Life Form 2018 - 2022 - Phase II Areas

The 11 months preceding vegetation monitoring (September – July) were the second driest since CEC started collecting precipitation data in 1993 and the driest since 2002. The past three years have all been at least 30% drier than average. The reduced precipitation has also reduced the cover standard; thus, the more developed Reclamation Areas have still been able to pass the standard. The drought has particularly impacted the areas only seeded in 2019 or 2020 (Areas 35, 43, and 44) because this was only the second or third growing season for these areas. While the vegetation cover was expected to be lower in the newer reclamation, the prolonged drought when they were first establishing may impact their development in the future.

### 7.2 Herbaceous Production

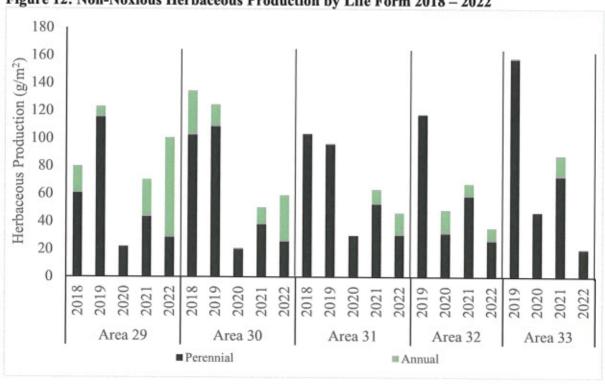
Based on the results of the herbaceous production sampling, all Reclamation Areas passed the calculated production success standard (Table 33). Overall, non-noxious herbaceous production increased from 2021 to 2022 in Areas 29 and 30 and decreased in all other areas (Figure 12). When excess annual production was removed, allowable herbaceous production decreased in all areas. However, continued drought conditions resulted in a reduced production standard as well.

Table 33: Herbaceous Production Success Standard Comparison

		Phase II Ionitori			erim toring
Herbaceous Production	Area 29	Area 30	Area 31	Area 32	Area 33
Average Total Production	100.8	59.2	46.3	35.6	20.4
Average Allowable Production	45.7	33.2	34.9	29.8	20.4
N	30	30	30	15	15
Nmin (non-noxious)	65	48	88	72	60
Stdev Allowable Production	54.8	29.3	33.2	22.5	11.7
Standard			11.0		
90% of Standard			9.9		
T (one-tail, α=0.9)	1.311	1.311	1.311	1.345	1.345
Standard Passed?	Yes	Yes	Yes	Yes*	Yes*

<sup>\*</sup> Only sampled to the minimum sample size

Figure 12: Non-Noxious Herbaceous Production by Life Form 2018 - 2022



### 7.3 Species Composition

The Phase III species composition bond release standard requires that four perennial grass species each contribute a minimum of 3% and a maximum of 40% of the relative non-noxious vegetation cover. All the reclamation areas monitored for Phase III release met this standard. The species composition standard for Phase II bond release is that a sufficient number of species be present to meet the future Phase III bond release cover requirements. All five of the reclamation

areas monitored for Phase II release exhibited at least four perennial grasses in the data. The two areas monitored using the interim monitoring methods each exhibited at least nine perennial grass species, but neither one has yet met the Phase III standard.

### 8 SUMMARY

Quantitative monitoring revealed that Reclamation Areas 29, 30, and 31 all met the revegetation success standards for Phase III bond release (Table 34). This was the second year that these areas have met the standard, so they are eligible for release. Reclamation Area 30 also met the standard for Phase II bond release. Reclamation Areas 25, 34, 35, 43, and 44 were monitored under the Phase II bond release guidelines, but none of the areas met the vegetation cover standard. They did all meet the Phase II species composition standard. Both Reclamation Areas 32 and 33 were monitored under the interim monitoring program and both met the herbaceous production standards. Area 33 also met the vegetation cover standard but neither area met the species composition standards. All Phase II and interim reclamation areas will require additional sampling in 2023.

Table 34: Success Standard Summary

		Phase II onitori				Phase I onitori			100000000000000000000000000000000000000	rim toring
Reclamation Standard	Area 29	Area 30	Area 31	Area 25	Area 34	Area 35	Area 43	Area 44	Area 32	Area 33
Vegetation Cover	Yes	Yes	Yes	No	No	No	No	No	No*	Yes*
Herbaceous Production	Yes	Yes	Yes	n/a	n/a	n/a	n/a	n/a	Yes*	Yes*
Species Composition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Eligible for Release	Yes	Yes	Yes	No	No	No	No	No	n/a	n/a

<sup>\*</sup> Only sampled to the minimum sample size

### 9 LITERATURE CITED

Colorado Division of Reclamation Mining and Safety (DRMS). 1995. Guideline Regarding Selected Coal Mine Bond Release Issues (DRMS 1995). http://mining.state.co.us/Programs/Coal/RulesRegs/Documents/BondReleaseGuidelines.p df [Accessed October 2016].

Colorado Division of Reclamation Mining and Safety (DRMS). 2005. Regulations of the Colorado Mined Land Reclamation Board for Coal Mining, Effective August 30, 1980, revised September 14, 2005. https://mining.state.co.us/SiteCollectionDocuments/CoalRegulations91405.pdf [Accessed October 2019].

USDA, NRCS. 2022. The PLANTS Database. National Plant Data Team, Greensboro, NC. http://plants.usda.gov [Accessed August 2022].

### Keenesburg Mine 2022 Vegetation Monitoring Report

Weber, W. A. and R. C. Wittmann. 2001. Colorado Flora Easter Slope: Third Edition. University Press of Colorado, Boulder, CO.

Wingate, J. L. 2021. Colorado Grasses with Illustrated Keys. Wingate Consulting, Denver, CO.

### Keenesburg Mine 2022 Vegetation Monitoring Report

Appendix A: Vegetation Cover Data

Reclamation Area 25 Vegetation Cover Data

Subtotal	Salsola tragus	Lactuca sernola	Bassia scoparia	Ambrosia artemisiifolia	Forbs: Annual & Biennial Introduced	Subtotal	Helianthus annuas	Croton texensis	Argemone polyanthemos	Amaranthus retroflexus	Forbs: Annual & Biennial Native	Total Grass Cover	Subtotal	Sporobolus cryptandrus	Sorghastrum nutans	Schizachyrium scoparium	Panicum virgatum	Calamovilfa longifolia	Bouteloua gracitis	Bouteloua curtipendula	Aristida purpurea	Andropogon halfii	Grass: Perennial Desirable (Warm)	Subtotal	Thinopyrum intermedium	Pascopyrum smithii	Elymus trachycaulus	Bromus inermis	Achnatherum hymenoides	Grass: Perennial Desirable (Cool)	Subtotal	Bromus tectorum	Grass: Annual Introduced	Subtotal	Munroa squarrosa	Grass: Annual Native	Scientific Name	
	prickly Russian thistle	prickly lettuce	burningbush	annual ragweed	d Introduced		common sunflower	Texas croton	crested pricklypoppy	redroot amaranth	d Native			sand dropseed	Indiangrass	little bluestern	switchgrass	prairie sandreed	blue grama	sideoats grama	purple threeawn	sand bluestem	ble (Warm)		intermediate wheatgrass	western wheatgrass	slender wheatgrass	smooth brome	Indian ricegrass	ble (Cool)		cheatgrass	d		false buffalograss		Common Name	
16 1	16 1		ס			P	P					0 0	ď	D				P			78.5	P		р					ъ		p	p					1st 2nd	_
18	150	P				P	P		ъ			1 0	1	-				ъ	ъ		6	P		p					ď								id 1st 2md	2
=	=		P									4 0	4					4							r				1					_			181	ω
14	13	1	Þ			-	-	P	P			3 0	w	p				3			7	ď		p		ъ								p	р		2nd 1st 2	4
17	17		ъ			P	ъ			P		2	2	B				2				1		p	H				p								2nd 1st :	5
112	12	9				P	Ð		1000	P			D	P				Ð			3	p			_				1						-		2nd 1st	6
10	10		P							1		0 1	1					1				p			_				+		p	p		o o	D		2nd 1st	7
9	9	3				P	P		P	1			s	2				2	D		3	-		U	_		_	-	p		+	+		+			2nd lst	00
20	20		9			P	P			1		3 1	2 1	1 p			U	p ·	Ð		D	-		-					-			+		+	+		2nd lst	9
7	7	P							_	1		9 0	6	D				6				1		9				-	Ð		+	+		+	+		2nd 1st	
16	16		P			1	1	,	Ð	+		0 2	2		_			2				0		+	-	_	_	_	+			+		+	+		nd 1st	10
21	21	_	_	-			_			+	-	0 4	w	U			_	2		_	_	+		-	-			D	+		+	+		+	+		nd lst	=
16	16	b	b			4	4			+		0 7	7				_	US.	_			2		9	_	_			D		+	+		+	+	$\rightarrow$	ig.	12
12	12	_	_	+		p		_		o o	-	0 4	4	Ð	_	_		4	_	_	_	+	,	9	_	_	_	,			+	+		+	+		2nd 1st	3
1 2	1 2		Ð	+		D			U	+	-	0 14	14		0			13	_	_	- 0	-	-	,		_	_	_	+		+	+		+	+	_	2nd 1st	4
14	14			+		g		,	Ð ,	9		1 4	4	0	•	0		4		_	_	+		3	_	_	_	4	,		9 1	,		+	+		2nd lst	12
19	19	_	_	+		+		_	_	+	-	0 3			2			_	_	_		4		+	_				1		1	1		+	1		2nd lst	16
	=		_	$\downarrow$		9	71	_	_	,	-	0	-			_								1		_	_				1	1		1			ž.	17
1	_					-	_	_	-			0		_				2				1														_	lst 2nd	∞

# Reclamation Area 25 Vegetation Cover Data (continued)

Allowable Vegetation Cover	Total Ground Cover	Non-Noxious vegetation Cover	No. Novine Vontable Control	Total Vacatation Cover	Total Hits	Bare Ground	Litter	Rock	Total Shrub Cover	Subtotal	Opuntia phaeacantha tulip pricklypear	Artemisia filifolia sand sagebrush	Subshrubs/Shrubs/Succulents: Perennial Native	Total Forb Cover	Subtotal	Convolvulus arversis field bindweed	Forbs: Perennial Introduced	Subtotal	Rumex venosus veiny dock	Physalis hispida prairie groundcherry	Physalis hispida prairie groundcherry	Mentzelia nuda bractless blazingstar	Asclepias speciosa showy milkweed	Ambrosia psilostachya Cuman ragweed	Forbs: Perennial Native	Scientific Name Common Name	
12.7	86	40 2			50	7	23		0 0					20 1	-	H		4	4	_				P	2000	18 1	_
12.7	70	ŧ	-	_	SO	15	15		1	-	· o	_		18	H	H										2nd 1st	_
	H	3	-	_	0 50	10	25	-	0 0			-		0 11	H	-		H	H	_	_	_	_	-		2nd 1st	
2.7	80	-	9	9	0				0					0											No.	2nd	,
10.7	72	38 0			0 08	14	17		1 0	1		_		15 0												4 1st 2nd	
10.7	82	38 2		1	50	9	23		0 0	р	P			17 1	Г		SHARE								Section.	1st 2nd	
0.0	84	24	24	2	ŝ	00	30		0			┪	10000	12					_					1		n o	
0.0	70	0 22	0 22	_	ŝ	15	24	+	0 0			$\dashv$	200	0 10				Н	_			_		┨		2nd 1st	
	H	0 28	0 28	_	9	10	26	-	0	-	_	4	100	0 9				р	_	_		_	_	p		7 2nd 1st	_
0.7	80	6	0	ŀ				_	0			_		0										Ĭ	200000	2nd	
14.7	82	42 0	42 0		ŝ	9	20		0 0					20 0												9 lst 2nd	
0.0	78	26 0	26 0	ı	ŝ	=	26		0 0			٦	NO.	7										1		× -	
10.7	74	38	38	-	+	13	18	+	0	+		1		0 17		٦		9	_	_		_		ų		2nd 1st 3	
	H	0 50	0 50	_	-	(A	20	-	0	+	_	+		0 21	D	p		+	_	_	_		_	4	2151	2nd lst	$\dashv$
22.7	90	0 54	0 54	-	+	_	_	-	0 0	4		4		0					L				_	4		12	
26.7	88	0	0	c	1	6		- 1	0					20 0				D						a		13 1st 2nd	
4.7	88	32 2	32 2		S	0	28	- 1	0 0					12 1				a		U						14 1st 2nd	
4.7	92	32	32		-	4	30	- 1	0	-	U	1	21	2		1		1						1		×	1
8.7	78	2 36	2 36	-	+	=	21	-	0 0	+		1	-	0 14		1		+			_	_		+	_	n n	$\exists$
		0 44	0 44	_	+	11	13	-	0	+		+	-	0 19	+	-		+	_	_	_	_		4		16 1 1	4
16.7	74	0	0	٥	,				0			1		0		4		1								17 2nd	
6.7	74	34 2	34 2	-		72	20	- 1	0 0					1												18 1st 2nd	

Non-Noxious Annual Cover 31.2
Excess Annual Cover 27.3

Reclamation Area 25 Vegetation Cover Data (continued)

Sanarrosa false buffalograss  Signarrosa false buffalograss  Signarrosa false buffalograss  Signarrosa false buffalograss  Includin ricegrass  From in an in	Scientific Name	c Name Common Name 15 2	19	14 2	1 2	1 2	2	1		, CX	60		2	2	fe)			2 5	Average Absolute	
Samura   Salatroduced	ass: Annual Native	Common Name	Ist 2nd	lst 2nd	d lst 2nd	ñ	14	2nd 1st	2nd 1st	24	st 2nd	1st 2nd	Ĭ,	d 1st 2nd	H H	12	2nd 1st	2nd 1st All	2nd 1st	2nd 1st All
Intertorum cheatgrass p p p p p p p p p p p p p p p p p p	Munroa squarrosa	false buffalograss	1	1	1	1	1	+	+	1		ı	1	1	1	н	0	0	п	0
Annual Introduced	Subtotal		1		1	1	+	+	+	4			1	1	_	T	0 0		0	0.0
lectorum cheatgrass p p p p p p p p p p p p p p p p p p	Grass: Annual Introduced	d																		0.0
Peternmial Destrable (Cool)  Peternmial Destrable (Cool)  Indian ricegrass incrimis smooth brome size smooth brome size smooth brome size smooth brome size wheatgrass with minerinedium intermediate wheatgrass with minerinedium western wheatgrass with minerinedium intermediate wheatgrass with minerinedium western wheatgrass with minerinedium western wheatgrass with minerinedium western wheatgrass with minerinedium western wheatgrass in minerinedium intermediate wheatgrass is grown as curripendum intermediate wheatgrass is grown as curripendum intermediate wheatgrass is grown as contrable (Warm)  Peternmial Destrable (W	Bromus tectorum	cheatgrass	p					1	p		۱		9	9	-	1	0	0 0	- 1	0
Perennial Desirable (Cool)  return hymenoides Indian ricegrass rum smithii western wheatgrass rum smithii western wheatgrass rum smithii western wheatgrass rum purpurea gon haliii sand bhestern purpurea gon haliii sand breeawn gon haliii bhestern gon haliii sand breeawn gon haliii bhestern gon haliii sand breeawn gon haliii breeawn gon haliii sand breeawn gon haliii sand breeawn gon haliii breeawn gon hali	Subtotal		p						p				D	0	- 1		0	- 1	0	0.0
erum hymenoides Indian ricegrass smooth brome rachycaulas slender wheatgrass un intermediam intermediam intermediate wheatgrass un intermediam intermediam intermediam intermediate wheatgrass purple threeawm a curripendial sideouts grama gracifis a curripendial sideouts grama garacifis prairie sandreedd prize sundreedd	Grass: Perennial Desirab	de (Cool)												1	8					
internisis strooch brome rachycatilus slender wheatgrass um intermediam intermediate wheatgrass um int	Achnatherum hymenoides	Indian ricegrass		ď		1	p	y	_	4			۳	٠	- 1	1	-	- 1	- 1	2 0.1
rachycaulus slender wheatgrass unn intermedian western wheatgrass program intermedian intermediate wheatgrass program program program intermediate wheatgrass program program program program program intermediate wheatgrass program	Bromus inermis	smooth brome							_	_				,			0		0	0
rum snithii western wheatgrass	Elymus trachycaulus	slender wheatgrass						_		_							_			01
un intermedium         intermediate wheatgrass         p	Pascopyrum smithii	western wheatgrass						_		_							0		0 .	0 00
P   Perennial Desirable (Warm)	Thinopyrum intermedium	intermediate wheatgrass				Г				L				_			0	0 0	0	0.0
Perennial Destrable (Warm)	Subtotal			P			9	p	_				Р		p	p	p 2	2	2 3	2 3 0.1
P   Purpurea   Purpurea   P   P   P   P   P   P   P   P   P	Grass: Perennial Desirab	de (Warm)																		
purpured purpor unceawn sideoats grama a curripendula sideoats grama blue grama a gracilis blue grama a gracilis blue grama a gracilis blue grama grama switchgrass prime sandreed p p p p p 6 1 7 1 1 p 2 2 p p p p p p p p p p p p p p p p p	Andropogon hallii	sand bluestem			4		-	$\dashv$	$\dashv$	4			P		-	1 p		15	15 15	15 15 1.0
a gracilis  blue grama  prairie sandreed  p p p p p p p p p p p p p p p p p p	Soutelous curtipendula	sideoats grama			9		,								,	_			0 0	0 0 0 0.0
lifa longifolia         prairie sandreed         p         p         p         6         1         7         1         p         2         2         p         p         p         6         1         7         1         p         2         2         p         p         p         sand dropseed         p         1         p	Boutelous gracilis	blue grama		2	2 .		9 7		_	_				7				us e	us e	us c
vrigatum         switchgrass         1         p	Calamovilfa longifolia	prairie sandreed	P	ъ	ď	6 1	7	1	ъ			Þ	ъ	s	_	1 2	_	74	74 81	74 81 4.9
virum scoparium         litile bluestem         1         p	Panicum virgatum	switchgrass					_			_				ď			_	_	1 1	1 1 0.1
Indiangrass	Schizachyrium scoparium	little bluestern						_	_	_				D			0		0	0 0.0
P   P   P   P   P   P   P   P   P   P	orgnastrum nutans	Indiangrass							_	_	_						2	2 2	2	2 0.1
Authorization   Authorizatio	Subtotal		0	ω,	6	6	90	-	9			3 70	-	,	_	3 0	2 0	1 p	2 0	1 2 102 110 68
Innual & Biennial Native     p     p     p     p       hus retroflexus     redroot amaranth     p     p     p     p       ne polyanthemos     crested pricklypoppy     p     p     p     p     p       xensis     Texas croton     p	Total Grass Cover					6 1	00	-					1 0		6	-	1 2 0 104	1 2 0 104	1 2 0 104 113	1 2 0 104 113
hus retroflexus redroot amaranth  e polyanthemos crested pricklypoppy  xensis Texas croton  s annuals common sunflower p p p p p 3 p 3 p  Innual & Biennial Introduced  artemisifolia annual ragweed  oparia burningbush  prickly ktuse  prickly Russian thistle  22 23 17 12 2 17 13 19 15 18 27	Forbs: Annual & Biennial	Native									6									
p p p p p 3 p 3 p 3 p 3 p 3 p 3 p 3 p 3	Amaranthus retroflexus	redroot amaranth				Ъ	ď	1	g	4	4			-	۳	P		0	0	0 0
xxensis Texas croton  s annuas common sunflower p p p p 3 p 3 p  maual & Biennial Introduced  artemisifolia annual ragweed oparia burningbush oparia prickly lettuce prickly Russian thistle 22 23 17 12 2 17 13 19 15 18 27	Argemone polyanthemos	crested pricklypoppy			ъ		ש								ъ,	θ,	0		0 0	0 0 0.0
Innual & Biennial Introduced         p         p         p         p         p         p         p         3         p         3           I artemisifolia         annual ragweed         p	Croton texensis	Texas croton			3										,	_		0	0 0	0 0 0.0
Innual & Biennial Introduced  p p p p p 3 p 3 artemisifolia annual ragweed oparia burningbush prickly lettuce prickly Russian thistle 22 23 17 12 2 17 13 19 15 18	Helianthus annuus	common sunflower	P	Р	р		p	(L)	ъ	_		3	Ð		2	2	U	p 14	p 14 14	p 14 14 0.9
Instruction of the control of the co	Subtotal		P	P	Р	p	P	3	p	_		3	p		2		Ð	p 14	p 14 14	p 14 14 0.9
t artemisifolia annual ragweed  oparia burningbush p p 1 p 1 p  serriola prickly lettuce prickly Russian thistle 22 23 17 12 2 17 13 19 15 18	orbs: Annual & Biennial	Introduced																		
oparia         burningbush         p         p         1         p         l         p           serriola         prickly lettuce         p         p         1         p	Ambrosia artemisiifolia	annual ragweed				٦	1	1	+	+	4				۳	B	0	0	0	0 0
serriola prickly lettuce p p prickly Russian thistle 22 23 17 12 2 17 13 19 15 18	sin scoparia	burningbush	ъ	ש	1				P	_		ъ	P		9 '	ъ.			2 2	2 2 0.1
agus prickly Russian thistle 22 23 17 12 2 17 13 19 15 18 27	actuca serriola	prickly lettuce			P							ъ					1	1	1 1	1 1 0.1
	Subtotal	prickly Russan thatle	3 23	23	17		+	133	19	15		-	27	-	ľ	0 14	14 451	14	14 451 457	14 451 457 30.1

# Reclamation Area 25 Vegetation Cover Data (continued)

Allowable V	Lotal Ground Cover	Non-Noxiou	Total Vegetation Cover	TOTAL MISS	Total City	Bose Council	Litter	Rock	Total Shrub Cover	Subtotal	Opuna pracacama	Oruntia phagaga	Syson meons	C. halanda A	Total Forb Cover	Subtotal	Convolvulus arvensis	Forbs: Pere	Subtotal	Kumex venosus	A myouno mop	Physalis hisnida	Physalis hisraida	Mentzelia nuda	Asciepas speciosa	Ambrosia psilostachya	Forbs: Perc	Scientific Name		
Howable Vegetation Cover	d Cover	Non-Noxious Vegetation Cover	ation Cover						Cover	1	acamaa	IOIE	naanc/son ms	The Action	OVET		arvensis	Forbs: Perennial Introduced		strs	ALGO:	-	d	di	eciosa	ilostachya	Forbs: Perennial Native	ame		
yer		Cover									ниф рискурсаг	sand sageonish	Suosimuos/Succusents: rerennia Native				field bindweed	uced		verny dock	prana groundingry	promise decompositions	prairie eroundeherre	bractless blazingstar	showy mikweed	Cuman ragweed		Common Name	!	
16.7	74	44 0			П	-	15		0 0		İ			н	27 0												-	1st 2nd	19	
24.7	88	52 0			1		180		0 0		T			10	77 0					İ								d 1st 2nd	20	1
20.7	84	48 0	48 0	8	o		18		0 0	T	t			0.1	19 0				P			7	1			Ъ		id 1st 2nd	21	1
8.7	78	36 6	36 6	-	+	: !	21		0 0	l	t			1 14 4	17			Name of		t								ñ	22	1
22.7	84	50 2	50	_	×		17		0	r	t			1.1	17				H	H						-		2nd 1st	23	1
6.7	82	34	2 34	1 50	9	, !	24		0 0	-	H			OT O	4					-			_	_	_			2nd 1st	24	1
12.7	76	0 40	0 40	0 50	12		100		0 0		H			O IN	4				p	-		_	_	1	D		100	2nd 1st	25	1
7 10.7	92	0 38	0 38	0 50	4		27		0 0	-	H	_		0 10	4					-	_	_		_	_			2nd 1st	26	1
7 14.7	70	4 42	4 42	2 50	15		14		0 0	P	ø			17 0	4	+		200			_	_	_	_	_	-	100	2nd 1st	0.55	$\frac{1}{1}$
6000 6000	0 82	0 56	0 56	0 50	9		1	-	0 0	_	L			17 0	4	+			p	P	_	_	_	_	_			2nd 1st	27	1
28.7 1	H	0 38	0 38	0 50	=		20	-	0 0	P	P			0 13	4	+	-	200		L	_	_	. 7	3	_	P		2nd 1st	28	
10.7	78	2 32	2 32	1 50	-	3		-	0 0		L			0 14	,	-	4	20000			_							2nd	29	
4.7	78	0	0	0				1	0		L	_		0		1	_	The state of										1st 2nd	30	
				500 1515	296 296			0	2 2	2 2	0	2 2		473 479		1	0	STATE OF	5 5	4 4	0 0	_			0	0 0		lst All	Total Hits	
11.6	80.3	38.6	38.6	100.0	19.7	1.14	41.7	0.0	0.1	0.1	0.0	0.1	Total Control Control	31.5	Ī	00	0.0		0.3	0.3	0.0	0.1	0.0	00	0.0	0.0		Cover (%)	Absolute	
			100.0						0.3	0.3	0.0	0.3		80.6	0.0	00	0.0		0.8	0.7	0.0	0.2	0.0	20	0.0	0.0	Control of the last of the las	Cover (%)	Average	
			100.0						0.3	0.3	0.0	0.3		80.6	0.0	000	0.0		0.8	0.7	0.0	0.2	0.0	00	0.0	0.0	The second	Cover (%)	Non-Noxious Relative	

Non-Noxious Annual Cover 31.2 Excess Annual Cover 27.3

### Reclamation Area 29 Vegetation Cover Data

Subtotal	Tragopogon dubius	Sakola tragus	Lactuca serriola	bassa scopana	Daniel Land	Ambrosia artemisiifolia	Forbs: Annual & Biennial Introduced	Subtotal	Helianthus annuus	Conyza canadensis	Chenopodium sp.	Chenopodium leptophyllum	Argemone polyanthemos	Amaranthus retroflexus	Forbs: Annual & Biennial Native	Total Grass Cover	Suptotal	Sporobolis cryptandrus	operocons savases	Sporoholis airoidae	Sorphastrum nutans	Schizachyrium scoparium	Panicum virgatum	Calamovilfa longifolia	Bouteloua gracilis	Boutelous curtipendula	Andropogon hallii	Grass: Perennial Desirable (Warm)	Subtotal	Pascopyrum smithii	Grass: Perennial Desirable (Cool)	Subtotal	Bromus tectorum	Grass: Annual Introduced	Subtotal	Vulpia octoflora	Grass: Annual Native	Scientific Name
	yellow salsify	prickly Russian thistle	prickly lettuce	burningbush	0	annual ragweed	Introduced		common sunflower	Canadian horseweed	goosefoot	narrowleaf goosefoot	crested pricklypoppy	redroot amaranth	Native			sand dropseed	alkan sacaton	allrali cacaton	Indianorace	little bluestern	switchgrass	praine sandreed	blue grama	sideoats grama	sand bluestem	ole (Warm)		western wheatgrass	ole (Cool)		cheatgrass	d		sixweeks fescue		Common Name
7		7	P					p	P	P						9 0	9	t					Us	w	Þ		1					P	9					1 1
17		17	ъ			1		2	2	Ð						12	12	v					,	U	6		6		H			9	ъ	H	H	Н		-
1 4	L	-	_		_	4			L	_	_		_	_		-	-	L	_	_	_		_	_	-	_	_		L			L	L	L	L			2 2
*		4				1		P	P							22 1	22 1	-		P	,			12	p 1	P	9		Р	P		P	P					1 3
20		20	Þ			1		2	2	Ð				٦		s	s	4							-		1					P	D			Н		_
13	Ļ	13	_	_	_	4				_	_	_	_			2	2	-	_	_			_	_	_	_	4					L				Ц		4 4
ω		w							_	D				۵		2 1	_	P	ъ			,	3		p 1		P					-	-		p	P		- 5
17		17	P					3	w	D				p		6 0	6	3							w													1 6
00		00	D			1		-		U		U				10 1	10	-					3	در	2		4					p	p		р	p		1 7
15		14	-			t		9	g .	U				v		8	8	00							U		7		0	9						+		- 00
2 35	-	2 35	9	_	_	+		-		9	_	_	_	_		-	-	-	_	_	_	_	_	_		_	4		4	4			Ц		Ц	4		
2		5 2	•			ı			-					٦		4 1	4 1		P	_			,	_	2		١			1		٦	٥			1		9
4		4	U			1		-	-					p 1		8 0	7	2					7	3	2		w		1	1		-	-		Ð	Ð		1 10
200		18				İ		,	9 7	Ð			-	0			w				þ		- ,	· ·	9		,		1	1		9	p		9	D		2   11
×		6		2		t	-	,			_		~	9		11	10	w		_	_						7		+	+		-	-		+	+		1
2	5	13	9		P	ł		-	- 7	3		-	9	+		2 5	_	_	_		_			- ,	_		,		+	+		0	,		+	+		12
4	_		_		_	1		4			_			4	-	0						_					1		1	1			_					13
^		S		B				- -	- 7	3			*	1	-	14 0	14	2			P			07	3	,	"			1	Ì	7	•			1		. 14
25		30 1	3					2 6	9 7	3						4	4	-				h	י נ	, ,	- 7	7	,		1	1	-	-	•		1	1		15
=	_	= -	3		_	t		٠,		,	_	7	, ,	,	-	0 6	S	2	_	_	_	- 1	יי כ		- "	9 7	,		+	+		_	-		+	+		-
1						1		-						-		0																						16
5		7 7	3 7	3			1	4	2			*	1 6	٦	81	5 0	is.	w								**	,				1	3	1					17
		7	,			1	-	- -	- "	3			7	,	-			2	_		_	_			- 7	,	+		+	+		+	+		+	+	1	-
1					_											-	-	-																			Į,	, 18

# Reclamation Area 29 Vegetation Cover Data (continued)

	Allowable Vegetation Cover	Total Ground Cover	Non-Noxious Vegetation Cover	Total Achermon Cover	Total Victoria	Total Hite	Bare Ground	Litter	Rock	Total Shrub Cover	Subtotal	Opuntia phaeacantha	Artemisia filifolia	Subshrubs/Shrubs/Succ	Total Forb Cover	Subtotal	Symphyotrichum falcatum	Physalis hispida	Mentzelia nuda	Physalis hispida	Ambrosia psilostachya	Forbs: Perennial Native	Scientific Name	
	over		n Cover									tulip pricklypear	sand sagebrush	Subshrubs/Shrubs/Succulents: Perennial Native			white prairie aster	prairie groundcherry	bractless blazingstar	prairie groundcherry	Cuman ragweed	e	Common Name	
1	6.9	86	32			П	7	27	- 0	0	p	v			7	9	T				ъ		-	_
1		H	0	-	_	+	_	_	_	0	L	L	_		0 1	H	L						ы	_
1	36.9	86	62 4		1	1	7	12		0 0	٦	P		1000	19								-	2
ł		Н	52	-	_	+	4	20	-	0	H	H			4	H	H	_	_	_	-		2	_
ı	26.9	92	2 2		1	.[		0		0				200	0								2	(L)
ı	2	Ī.,	54	24	ě	1	10	13		0	H	H			22	H	t				$\exists$		-	
ı	28.9	80	4			1				0				100	0								2	4
I	4.9	68	30	32	S	3	5	18		0		Г		200	14	Г	Г						-	
ı	9		2	_	_	1				0					0								ы	Ch
ı	26.9	78	52		ĕ	1	=	12	-	0				200	20								-	6
ŀ	9	L	0	-	_	+	_	2.0	_	0			_		0						_		ы	
ı	14.9	78	40	0		1	=	19			-	-		1000	9								-	7
ł		H	2 46	2 46	_		0	17		0 0	-	H	$\dashv$		0 15	H	H		_	_	$\dashv$		13	_
ı	20.9	82	, ,	000		П		7		0					5 3									00
t	5		80	80	-	+	,,	7		0	p	Н	Ţ		36		H	_			┪		_	
ı	54.9	94	6	6	u.	н				0					5 2								12	9
İ	0	7	24	26	g	ŧ	7	23	T	0		Г	╛		s	p	Т				U		-	
į	0.0	70	2	2	-	1				0					-								ы	0
	20.9	86	46	46	ĕ	-	1	20		2	2		2		18	p				-	ē	100	-	_
	9		0	0	0	4	_		4	0			4		0						_		ы	_
	10.9	92	36	38		1	4	27		0			- 1		00								-	12
t		H	4 38	4 38	-	0	_	2	+	0 0		Ð	$\dashv$	8	0		_			_	_		19	
l	12.9	84	8 0	0 8		н	~	ω	1	0	٦	0	- 1		14 0	٦				9	۱			13
ì			40	40	_	+	a	23	+	0	+	_	┪			9	D	_	_	_	+		_	
I	14.9	94				П				0			- 1		0						-			14
į	4	5	72	72	S	u	ن	=	1	0	9	,	ū		32						7		-	
	46.9	94	2	2	Ŀ					0					-								N	15
000	8 9	84	34	36	50	×	0	24	Т	0	9	U	П		12						7		-	_
			2 4	2 '	-	+			-	0	4		4		-	4					4		ы	16
	18 9	72	44	44		4	: :	4	- 1	0	9		۱ ۳		17								-	17
		_	0 44	0 44	-	₩		2	-	0		-	_	-	0	4	_	_	_	_	4		12	
The same	18 0	84	4 2	4 2	50 1	0	0 !	0	- 1	2 0	2		2		17 0								-	18
					1	1			- 1		- 1		- 1			- 1					- 1		-	- 1

25.1	Excess Annual Cover
29.5	Non-Noxious Annual Cover

# Reclamation Area 29 Vegetation Cover Data (continued)

Sporobolas crypfandras sand dropseed Subtotal Total Grass Cover Forbs: Annual & Biennial Native Annaranthus retroflexus redroof amara Argemone polyanthemos crested prickly Chenopodium leptophyllam narrowleaf go Chenopodium sp. Conyza canadensis Canadian hors Helianthus annuas common sunfu Subtotal Forbs: Annual & Biennial Introduced Ambrosia artemisifolia annual ragwee Bassia scoparia prickly lettuce Sakola tragus yellow sakify Tragopogon dubius yellow sakify	yptandrus yptandrus yptandrus Cover al & Biennial eetroflexus lyanthemos leptophyllum s.sp. lenss lenss nuus al & Biennial muss nuus al & Biennial emisäfolia ia	ptandrus ptandrus over l & Biennial troflexus authemos ptophyflum p. p. msis uus tisäfolia	ptandrus ptandrus l & Biennial l & Biennial roflexus authemos ptophydum p. p. lassifosia	us arones us cryptandrus us cryptandrus us cryptandrus us retroflexus to polyanthemos dium leptophyllum dium sp. anadensis ts annuus ts annuus ts annuus ts annuus	us cryptandrus us cryptandrus us cryptandrus us cover unual & Biennial has retroflexus ue polyanthemos dium leptophyllam dium sp. anadensis us annuus us annuus	us cryptandrus  rass Cover  rass Cover  lunual & Biennial  hus retroflexus  to polyanthemos  dium leptophyllum  dium sp.  anadensis  s annuas  s annuas	us cryptandrus us cryptandrus rass Cover tannual & Biennial hus retroflexus to polyanthemos dium leptophyllum dium sp. anadensis s annuus	ndrus er er Biennial flexus themos ophyllum s	drus  drus  gr  Biennial  Biexus  lexus  phyflum	drus Biennial Biennial exus emos phyflum	drus r Biennial Biennos exus emos	drus r Biennial Bernial	drus r Biennial	drus r Biennial	drus	drus	drus				ar min			olia		ndula	Andropogon hallii sand bi	Grass: Perennial Desirable (Warm)	Subtotal	Pascopyrum smithii wester	Grass: Perennial Desirable (Cool)	Subtotal	Bromus tectorum cheatgrass	Grass: Annual Introduced	Subtotal	ctoflora	Grass: Annual Native	Scientific Name Comn	
Introduced Introduced annual ragweed burningbush prickly lettuce prickly Russian thistle yellow salsify	inced ragweed gbush lettuce Russian thistle	luced ragweed sbush lettuce	on sunflower luced ragweed sbush	on suntiower luced	nced	on sunitower	on sunflower	on sunflower		Canadian horseweed	oot	narrowleaf goosefoot	crested pricklypoppy	redroot amaranth	2			ropseed	sacaton	grass	urne ourestern	grass	Oppose mente	rearin sandreed	rama	sideoats grama	sand bluestern	m)		western wheatgrass	ol)		grass			sixweeks fescue		Common Name	The state of the s
	-	6		P				D		P				P		12 0	10	9				-	-	**	3	,	9					2	2					1 2	10
		12	-					D	P	P						9 1	9 1	2			P		0	7	,													1 20	3
ľ		21	Ð					2 1	2	ъ			d	p 1		6 0	s	w				-		۲	,	,	-					1	-					1 41	2
		16	-			İ	1	,	Ð				- 48	p		00	00	w					Ų	n "c	,	٦	,											2 1 22	,
		4	_			ı	1	3		ש		_				0 9	9	t	_	_	_	1		۰ ۳	,	,	3		+	1			_			H		-	┨
	1 27	z			_		,	2	_	p				1		0 6	s	P		_		_	-	- 70	,	4	-		-	-			_			H		2 -	┨
		16	_		_	H	,	2	2	9	_	_	_	+		0 3	u	P		P		_	_	,	-		3		+	+		p	q		-			24	-
	-	00 '	0	_	_	H		, ,	0	_	_	_		ď		0 3	3		_		_		_	P	_				4	4					4	Ц		2	-
		-	_	_	_			1			_	_				0			_					_					_									26	1
		12	0				,	١	2 .	9				B		7 0	7	-	ъ			2		-	•													27	1
		10 1	J				1	اد	N *	9	ď					8 1	8 1	4 1					P	-		U	1											1 28	,
	3	= 7	ø				ŀ	-	-					D		2 0	1	P			ď			Þ			1		1	1		-	-		1			- 29	
	1	13					-	-	י נ	ø				-		5 0	(A	-						4			t		†	1		1	1		1			1 30	1
		-	A 1	2	0		33	3 5	20	0	0	0	0	4			206	56	0	-	0	17	53	28		2			-	1	,	00	00		0	0		2	1
•	9	41	h	2	0		3/	3 8	5	0	0	0	0	7		228	219	62	0	-	0	17	2	32	0	2			-	-	,	×	00		٥	٥		Total Hits	
9.0	000	26.8	0.3	0.1	0.0		2.2	3 5	1.0	0.0	0.0	0.0	0.0	0.3		14.3	13.7	3.7	0.0	0.1	0.0	Ξ	3.5	1.9	0.0	5.4		0.1	01	2	919	0.5	0.5		0.0	0.0		Absolute Cover (%)	
0.0	000	503	0.7	0.3	0.0		5.5	3	A 6.	0.0	0.0	0.0	0.0	1.0		32.9	31.6	8.9	0.0	0.1	0.0	2.5	7.8	4.6	0.0	7.6		0.1	0 0		1.0	13	12	4.4	00	0.0	(10)	Relative	
W.W	0.00	800	0 0	0.0	0.0		5.4	4.4	4 0	0.0	0.0	0.0	0.0	10		33.3	32.0	9.1	0.0	0.1	0.0	2.5	7.9	4.7	0.0	7.7		0.1	0.1		1.6	13	13	0.0	0.0	00	(10)	Relative	

Reclamation Area 29 Vegetation Cover Data (continued)

Scientific Name	Common Name	19	. 20		21	z,	. 23	-	24	25	26		27	28	. 29	, "	30	To	=		Relative	Relative
Ender Proposid Notice			ŀ	ŀ	Į.				ŀ	ŀ	ŀ	-	,		ŀ			191	All	Cover (%)	Cover (%)	Cover (%)
Forbs: Perennial Native	The second second second second				September 1		200		0000	SALES NO.					100			100				( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )
Ambrosia psilostachya	Cuman ragweed		٦	-			1	+			1	+	_	1	٠	4	1		٥	0.0	0.0	0.0
Physalis hispida	prairie groundcherry			_			_	_				_						2	2	0.1	0.3	
Mentzelia nuda	bractless blazingstar			_				_				100		9				0	0	0.0	00	00
Physalis hispida	prairie groundcherry			_				_			2	_				_		2	2	0 :	0.3	
Symphyotrichum falcatum	white prairie aster			_				_				_						0	0	0.0	00	
Subtotal							-	+			2			9	,	_		4	4	0.3	9.0	
Total Forb Cover		6 0	13	0 23	3 1	17 1	6	0 24	0	19 0	10	1 15	0	12 1	12	0	14 0	446	4	29.7	66.2	67.0
Subshrubs/Shrubs/Succulents: Perennial Native	nts: Perennial Native	September 1	1000			STORY OF THE PERSON										-			-			
Artemisia filifolia	sand sagebrush		٦	$\dashv$			1	$\dashv$	_		1	$\dashv$	4	١	-	4	١	u,	5	0.3	0.7	0.7
Opuntia phaeacantha	tulip pricklypear			_			Đ	_		D		0			U			_	_	0.1	0.1	0.1
Subtotal	25			_			p	Н		D		9			-	4		6	6	0.4	0.9	0.9
Total Shrub Cover		0 0	0	0 0	0	0 0	0	0 0	0	0 0	0	0	0	0 0	-	0	0 0	6	6	0.4	0.9	0.9
Rock				-				+			1	+	4		1	4	- 1	2	2	0.1		
Litter		28	24	=		12	23	17		20	20	10	_	22	23	_	CA.	558		37.2		
Bare Ground		4	4	10		13	12	w		00	17	18		00	12	_	16	273		18.2		
Total Hits		50 0	50	1 50	-	50 1	50	0 50	0	50 0	50	1 50	0	50 2	SO.	0	50 0	-		100.0		
Total Vegetation Cover		36 0	44	2 58	2	50 2	30	0 60	0	44 0	26	2 44	0	40 4	30	0 38	8	1		44.5	100.0	101.2
Non-Noxious Vegetation Cover	over	32 0	44	2 56	2	50 2	30	0 60	0	44 0	26	2 44	0	40 4	28	0 38	8	1		43.9		
Total Ground Cover		92	92	Н	80	74	76	-	94	84	66		64	84	76	-	8	7		81.8		
Allowable Vegetation Cover		6.9	18.9		30.9	24.9	4.9		34.9	18.9	0.9		0 8	14.9	29		129			0.61		

Non-Noxious Armual Cover 29.5 Excess Armual Cover 25.1

				1	+	-	4				1	1	1	1	+	4	4				1
		_	2	. د	_	_	^	7	1	0	0	5	:			5	:	;		;	
Scientific Name	Common Name	- 2	1 2	- ,	-	-	2		2	- 6	1 ,	- 1	- :	2 1 14	-	, ,	, 4	, 5	. 10	, 1/	- 18
Grass: Annual Native																			-	- 1	-
Munroa squarrosa fi	false buffalograss	P	1	2	+	+	9	۱			D D	1	9	9	+				1		,
Vulpia octoflora s	sixweeks fescue	3		U		_	_				,	_	,	י כ	_	-			**		י ל
Subtotal		g		2		+	0				3	1	3	,	+	,	1		3	-	, ,
Grass: Annual Introduced											-		7	7		-			-	-	P
Bromus tectorum c	cheatgrass	р	p	-	3	_	4	4	ω	9	w	,	,	1	+	,		1	٥		,
Subtotal		р	р	-	u	_	-		w	9	u	9	3	+	-	,	1	1	2 8	T	,
Grass: Perennial Desirable (Cool)	(Cool)												1					1			-
Achnatherum hymenoides Ir	Indian ricegrass			7	+	+	4	_			1	1	-	1	+	+	1				1
	crested wheatgrass				Ð	_	_						,		_	_					
Pascopyrum smithii w	western wheatgrass					_	_					a		_		_					
					U	-	4					9	-	+	+	+	4			T	†
Grass: Perennial Desirable (Warm)	(Warm)																				
Andropogon hallii sa	sand bluestem	5	4	2	4	1 2	1 3	-	6	4 3	2 3	4	Ħ	33	,	5	4			^	^
Boutelous curtipendula si	sideoats grama		P			_	_					0	U	o .	-	0 1					3 (
Boutelous gracilis bi	blue grama	P	P		P	_	p	_		9	2				0				-	י כ	۳ در
Calamovilfa longifolia pe	prairie sandreed			_					-		Ð	U	2	-	,	_			,	<b>3</b> 7	- (
Panicum virgatum sv	switchgrass	P					ъ	_	6.				ש	Ð	_	0				- 7	
Schizachyrium scoparium lit	little bluestern	ď				1	P			D	U			,	U		_				,
as cryptandrus	sand dropseed	6	4	w	3	-	3	2	P	u,	4 4	6	U	U	2	_			2	2	- 7
Subtotal		11	00	6	2 7	2 4	1 7	w	7	7 3	8 7	=	13	5	s	1 12	4	1		×	=
Total Grass Cover		11 0	8 0	9 :	2 10	2 5	1 7	3 1	10 0	7 3	11 7	=	14 0		0 6			0	5 0	9 1	1
Forbs: Annual & Biennial Native	ative														-	-		-			10
Amaranthus retroflexus re	redroot amaranth		P	w	-	ď	ď		P	2	۳	٦	-	u	٥	2	4	1		-	•
Argemone polyanthemos cr	crested pricklypoppy					(5)	8										_				9 7
Conyza canadensis C	Canadian horseweed	ъ	P	b	p	ש	P		Þ	-	D	D	D	U	U	9	9	_	d	J	3 7
Croton texensis To	Texas croton						-					,		*	,	7	_		**	*	7
Helianthus annuus co	common sunflower		В		P	p	_								U	9	_		3		3
Subtotal		P	p	3	1	p	p		D	ω	0	U	-	9	6	2	,	1		-	,
Forbs: Annual & Biennial Introduced	ntroduced																				-
Amaranthus blitoides m	mat amaranth				1	1	g	4					1	-	1	+	4	1			1
Ambrosia artemisiifolia an	annual ragweed					_	_			o					_						
Bassia scoparia bu	burningbush					_	_			,					_						
in the	prickly lettuce	3				P	ъ					b					-	_			
agus	prickly Russian thistle	12	w	w	p	18	2	_	7	4	10 1	15	Cs.	7	2	D	19	_	4	w	u
Subtotal		12	w	3	p	18	2	_	7	4	10 1	15	S	00	2	p	10		4	w	s

# Reclamation Area 30 Vegetation Cover Data (continued)

Allowable Vegetation Cover	Total Ground Cover	Non-Noxious Vegetation Cover	Total Vegetation Cover	Total Hits	Bare Ground	Litter	Rock	Total Shrub Cover	Subtotal	Opuntia phaeacantha	Yucca glauca	Artemisia filifolia	Subshrubs/Shrubs/Succi	Total Forb Cover	Subtotal	Physalis hispida	Lygodesmia juncea	Ambrosia psilostachya	Forbs: Perennial Native	Scientific Name	
over		Cover								tulip pricklypear	soapweed yucca	sand sagebrush	ubshrubs/Shrubs/Succulents: Perennial Native			prairie groundcherry	rush skeletonplant	Cuman ragweed		Common Name	
33.2	90	46	46	8	s	13		0	Đ	P				12	9	ъ		ъ			
2	L	0	0	0	1			0	L	L		_		0	L					12	
13.2	82	26	26	8	9	28		0	P	Р			2000	S	2			2		- ,	2
2	H	0	9	0	L		_	0	_	L		_		0	L	L	_			12	_
15.2	72	28	30	8	4	21		0						6						- ,	ai.
	H	6	6	10	╀	1.0	_	0	_			4		-	L	L	_			ы	
3.2	90	16	22	SO	U	4		0	p	P				1						٠.	4
	H	4	4	12	H	<b>N</b>	-	0	_	H	_	$\dashv$		0 1	H	L	_			111	
31.2	80	44 2	46	ક	6	21		0						18	P			ъ			n
	H	2 18	2 1	5	-	(a)	-	0	_	H	_	-		0	H	L	_	_		ы	_
5.2	8		18	8	0	35		0					3	2							2
	H	6 28	6 34	3 50	-	27	$\dashv$	0	_	L				0			_	-		ы	
15.2	80	8 0	4 0	0	6	3		0 0	В	Р	ש	۳		7 1	р		P				7
	H	28	28	50	00	28	$\dashv$	200	9	p	-	$\dashv$		0 7	Н	_	_	-		12	_
15.2	80	8	8 6	3	"	00		0	٠	٠				0							ю
100	Н	36	42	50	9	20	$\dashv$	0	g	p	_	$\dashv$		10	Н	_	_	-			_
23.2	82	6 16	2 16	°		0		0	٠	٦		- 1		0 1						_ 、	0
	Н	6 52	6 52	50	7	17	$\dashv$	0		_	_	$\dashv$		15	_	_	_	$\dashv$			_
39.2	86	2	2	Ľ		7	- 1	0				-		5 0						2 5	5
	Н	40	40	50	00	22	+	-	o o	p	_	┪		6	g	-		ď	8		
27.2	84			0		10	- 1	0		_		- 1		0				٦		. :	=
		26	26	-	=	26	-	0	D	D		v		00		_	_	┪		_	
13.2	78	0				-	- 1	0						0							5
		26	28	50	15	21	┪	0	0	U		1		00				$\exists$		_	
13.2	70	2	2	_			- 1	0				- 1		0				- 1		2 5	5
		28	28	50	13	23	7	0	9		,	٠	8	2	$\forall$			┪		_	
15.2	74	00	90	4			- 1	0				- 1		0				- 1		1	:
2	_	42	42	50	10	19	1	0	9	o		┪		19				┪		_	
29.2	80	0	0	0				0						0					-	2	ñ
-	2	16	20	SO	12	28	1	0	7			1		S	7			7		_	
3.2	76	0	0	0				0				-	1	0						2 0	5
13	6	26	26	SO	18	19	1	0				T	4	4	7			7		-	
13.2	64	2	2	-				0				1								2 -	ā
19	7	32	32	50	12	z	-	0				1		S	D		,	ē		-	
19.2	76	2	2	-			Į,	0				1		0				-1		, 5	•

Non-Noxious Annual Cover Excess Annual Cover

16.0 12.9

Reclamation Area 30 Vegetation Cover Data (continued)

0	(manual)											
	19	20		21	23	23	24	To	Total Hits	Average Absolute	Average Relative	Non-Noxious Relative
Scientific Name Common Name	-	-	-	12	1 2	- 2	1 2	188	All	Cover (%)	Cover (%)	Cover (%)
Grass: Annual Nauve												
Munroa squarrosa false buffalograss	-	$\exists$	ď.		-	1		4	4	0.3	0.9	10
Vulpia octoflora sixweeks fescue							U	_	_	0.1	0.2	0.2
Subtotal	-		9		-		9	5	S.	0.4	-	13
Grass: Annual Introduced							-					
Bromus tectorum cheatgrass	ъ	g	ų,		۳	4	1	120	18	1.5	41	
	D	9	D		0	4		50	- 1	1.5	41	
Grass: Perennial Desirable (Cool)									8	*10		
Achnatherum hymenoides Indian ricegrass	1	1	+	╛			1	1	-	01	0.2	0.3
								0	0 .	0.0	0.0	0.0
Pascopyrum smithii western wheatgrass								0	0 0	0.0	000	0.0
		1	+				1	_	-	0.1	0.2	0.0
Grass: Perennial Desirable (Warm)											0.0	0.5
Andropogon hallii sand bluestern	6 1	w	3 2		4	-	4 2	93	5	7.7	26.2	27.2
Bouteloua curtipendula sideoats grama	D		- 8		D	-		_	2	0.1	0.5	0.5
	1 1	1	p			U	-	=	u	0.9	3.0	3.1
olia	4 2		9		В	•		12	7	1.0	3.2	ب در در
Panicum virgatum switchgrass					-			w	w	0.3	0.7	0.7
B								_	-	0.1	0.2	0.2
Sporobolus cryptandrus sand dropseed	w	2	5	2	5 1	4 1	-	63	76	5.3	17.3	18.1
Subtotal	14 4	6	3 7	2	10 2	5 1	6 3	183	224	15.3	51.0	53.2
Total Grass Cover	15 4	6	3 7	2	11 2	9 1	6 3	207	2000	17.3	56.5	58.9
Forbs: Annual & Biennial Native												
Amaranthus retroflexus redroot amaranth	P	3	ď	4	P	ъ		20	20	1.7	4.6	4.8
emos		Þ		_				0	0	0.0	0.0	0.0
nsıs	P	1	ъ		P	P	ס	2	2	0.2	0.5	0.5
		ъ		_				0	0	0.0	0.0	0.0
Subtrated Common Summower	1	P	P	1	P	P	P	0	0	0.0	0.0	0.0
Forbs: Annual & Riennial Introduced	P	4	P		P	P	P	12	22	1.8	5.0	5.2
Amaranthus hitoides mat amaranth	t	Ī	t	1					·			
E.								<b>-</b>	> -	0.1	200	0.2
						3		0 0	0 0	0.0	000	0.0
-				_		0 '	B	0	0	0.0	000	0.0
Salsoh tragus prickly Russian thistle	w	p	2	_	4	20	16	2	166	13.7	37.8	30.4
Subtotal	w	p	2		4	20	16	165	167	13.8	38.0	39.7
		ŀ	ŀ	ŀ		ľ	1	1	1	0.00	0.00	33.1

# Reclamation Area 30 Vegetation Cover Data (continued)

		7	4		٦	╛		1	4		٦		Average	Average
Scientific Name	Common Name	1 19	ы	20	- 21	2 -	22	- 23		24	Tot	Total Hits	Absolute	Relative
Forbs: Perennial Native										I,	;	1	COVET (/0)	COVET (70)
Ambrosia psilostachya	Cuman ragweed	1	4	1	7	4	١	1	+	1	2	,	0.2	
Lygodesmia juncea	rush skeletonplant		_						_		0 1		0 6	200
Physalis hispida	prairie groundcherry		_						_		0 0		0.0	0.0
Subtotal	g	Ť	+		T	1		Ť	+			-	0.0	0.0
Subtotal			H			L		T	H		2	2	0.2	0.5
Total Forb Cover		3	0 4	0	2	0	4 0	20	0 16	0	189	191	15.8	43.5
Subshrubs/Shrubs/Succulents: Perennial Native	lents: Perennial Native	1000		-									THE RESIDENCE OF THE PARTY OF T	
Artemisia filifolia	sand sagebrush		$\dashv$		٦	4			$\dashv$		0	۰	0.0	00
Yucca glauca	soapweed yucca		_						_		0	0	0.0	00
Opuntia phaeacantha	tulip pricklypear	B	_		U		d	D	_		0	0	0.0	00
Subtotal		р	Н		p	Ц	٥	0	+		0	0	0.0	0.0
Total Shrub Cover		0	0 0	0	0	0	0 0	0	0	0	0	0	0.0	0.0
Rock			_			_			$\dashv$		0	0	0.0	
Litter		28	28	90	36	_	31	17	21	7	594	594	49.5	
Bare Ground		4	12	2	S		4	4	7		210	210	17.5	
Total Hits		50	4 50	3	50	2	50 2	50	1 50	3	1200	1200 1243	100.0	
Total Vegetation Cover		36	8 20	0 6	18	4	30 4	58	2 44	9			33.0	100.0
Non-Noxious Vegetation Cover	Cover	36	8 20	0 6	18	4	30 4	50 2	44	6	1		31.5	
Total Ground Cover		92	Н	76	90		92	92	+	86			82.5	
Allowable Vegetation Cover	ver	23.2		7.2	5.2	9	177		8	117			197	

12	Excess Annual Cover
16.	Non-Noxious Annual Cover

### Reclamation Area 31 Vegetation Cover Data

Subtotal	Salsola tragus	Melilotus officinalis	Lactuca serriola	Bassia scoparia	Ambrosia artemisiifolia	Forbs: Annual & Biennial Introduced	Subtotal	Machaeranthera canescens	Helianthus annuus	Conyza canadensis	Chenopodium leptophyllum	Amaranthus retroflexus	Forbs: Annual & Biennial Native	Total Grass Cover	Subtotal	Sporobolus cryptandrus	Sporobolus airoides	Panicum virgatum	Calamovilfa longifolia	Bouteloua gracilis	Bouteloua curtipendula	Andropogon hallii	Grass: Perennial Desirable (Warm)	Subtotal	Hesperostipa comata	Agropyron cristatum	Achnatherum hymenoides	Grass: Perennial Desirable (Cool)	Subtotal	Bromus tectorum	Grass: Annual Introduced	Subtotal	Vulpia octoflora	Munroa squarrosa	Grass: Annual Native	Scientific Name
	prickly Russian thistle	sweetclover	prickly lettuce	burningbush	annual ragweed	Introduced		hoary tansyaster	common sunflower	Canadian horseweed	narrowleaf goosefoot	redroot amaranth	I Native			sand dropseed	alkali sacaton	switchgrass	prairie sandreed	blue grama	sideoats grama	sand bluestern	de (Warm)		needle and thread	crested wheatgrass	Indian ricegrass	ile (Cool)		cheatgrass	d		sixweeks fescue	false buffalograss		Common Name
w	w			P			P	r				ď		10 0	10	g			10	P	9	P							p	p						
2	2		b		p		2	H	P	P		2		0 6	6	-	P		4			1				_			p	p		P		ď		2 1 2
6	6			P			P	P			_			0 9	9	p			9	b	P				L							H				2 1 3
6	6				+		-	H	P			-		0 7	7	2		_	4	P	- 6	-		p	L	_	P		p	р		L	-	-		1
s	s	,	U	_	+		2		2		ъ	p		0 7	7	<sub>3</sub>	_	_	w	ъ		_			_	_	-							-		2 -
6	6		0	_	+		6		ъ	ש	_	6		0 3	3	p	u	-	ъ	_	_	-					4						7	4		2 1
4	4	_	_		4		P	L		P	_	p		0 15	15	w	_	_	=	71	_				_	_	4							4		2
_	6		_		4			L		_	_			0																						7 2
6	6						_							7 0	7	4			w	P		D														- 00
4	4			D			P		ъ			P		6 0	6	Þ			4	-		-		р		ď			D	p						1 9
D		٦	8				2		60	ъ		2		13 0	13	р			=	ъ	1000	2		D	Ð											10
2	2				1		P				,	Ö		13 0	13	2		-	7	U	_	2					1			1		p	7	v		- =
3		7	d				2		2	0	ъ,	o l		15	15	D	12	ש	10	1	Ð	2		1			1		1	1		1		1		2 12
2	2	7	3		1		p		ъ.	D	,	0			6	p		-	6	U		0		+			1		9	0		g		D.		2 13
					1		p		ש		_	1	_	0 11	=	U.	_	- 65	9		U	-		+	_		+		+	+		+		+		2
ú	w	7	3		+		D	_	_	_	,	,	_	0 15	15	(A		-	6			w	-	9	_	,	9		,	,		+	_	+		2 4
-	_	_	_	_	+		p		ъ		,	5	_	-	1 12	1 2	_	-	00	- 1	9 1	-		+		_	+		+	+		_		,		2 5
4	4	_	_	_	+		9	_	_	_	-	,		0 8	000	_	_		5	_		,		4	_	_	1		1	-		-	_	4		16
					1							1		0	1							1		1			1		1	1			_			17
3	27	, ,	, 7	3			9	ľ	P					8 0	90	O		0	4	2	,	2						-	1	1		٥	,	٦		1 18

# Reclamation Area 31 Vegetation Cover Data (continued)

Amonabic vegetation Cover	Allowable Worstedon Conne	Total Cround Cover	Non-Noxious Vegetation Cover	Total Vegetation Cover	Total Hits	Bare Ground	Litter	Rock	Total Shrub Cover	Subtotal	hacacantha	Yucca glauca soapw	Artemisia filifolia sand s	Subshrubs/Shrubs/Succulents: Perennial Native	Total Forb Cover	Subtotal	hispida	Mirabilis hirsuta hairy i	Asclepias speciosa showy	Ambrosia psilostachya Cuma	Forbs: Perennial Native	١.		
									THE REAL PROPERTY OF THE PARTY		tulip pricklypear	soapweed yucca	sand sagebrush	erennial Native			prairie groundcherry	hairy four o'clock	showy milkweed	Cuman ragweed		Common Name	:	
21.1	7.0	311	26 0	26 0	50 0	19	18		0 0					Strong	3 0	D	P				Contract of the last	1 2	_	1
15.1	00	Н	20 0	20 0	50 0	z	15		0 0	P	р			STATE OF THE PARTY.	4 0	P			76	ď	Second.	-	2	1
27.1	84		22	32	80	00	26		1	-	D		-	State of	6							1	w	
23.1	٠	t	0 78	0 28	0 50	150	18	- 1	0 0	p	P		$\exists$		0 7	p	P	_	_	_		-	4	
	۰	9	0.0	0 30	0 50	18	17	-	0 0	H	H	_	$\dashv$		8 0	_	_	_	_	-	ALC: N	2		
25.1	۰	1	0.20	0 30	0 50	18	17	4	0 0	p	P	P	4	1	0 12	g		_		p	1	2 1	5	
25.1	04	4	•	0	0	L			0			_			2 0	,				٥		2	6	
35.1	82	ш	40 0	40 0	50 0	9	21		1 0	1					4 0	P	P		O		SECTION SEC	1 2	7	
23.1	72	н	20 0	28 0	50 0	14	22		0 0						7 0						Territories.	1 2	00	
15.1	82	0 02	н	20 0	50	9	31	1	0	p	p		1			р			,	p	1000	1	9	
25.1	00	00	4	30	0 50	6	ß	1	0 0	В	P		1		0 2					1	To the same	2	10	
1 25.1	80	0 30	4	0 30	0 50	10	25	-	0	D	p.	_	+	-	0 2	+	_	_	_	+		2	_	
22	H	0 30	4	0 36	0 50	7	22	-	0	р			-	-	0 3				- 8	_		2	Ξ	
31.1	86	6	1	-	0			1	0						0			_				N	12	
13.1	84	0 81	1	•	50 0			- 1	0 0	В	D				3 0	-						2	13	
17.1	92	77 0	н	_	0 0	4	35	-1	0 0				1		0 0							1 2	14	
31.1	72	36 2	ш	-	50 1	14	18	- 1	0 0				1		3 0	1	Ī			1		1 2	15	
23.1	80	28	ı	28	8	10	26		0	5	U	,	,			+				+		-	16	
1 19.1	84	0 24	4	_	0 50	00	30	+	0	3	Ð		+	-	4	+	_			+		2		
1 17.1	4 68	0 22	+	-	0 50	16	23	+	0	+	_		+	+	0 3	-	_	_	**	,		2	17 1	
	00	0	1	•	0			4	>					4	-							N	8	

Non-Noxious Annual Cover 7
Excess Annual Cover 4

### Reclamation Area 31 Vegetation Cover Data

The same of the same of the same of the same								
Scientific Name Common Name	1 19	1 20	21		Total Hits	Absolute	Relative	Relative
Native					888	20.00 (10)	20121 (70)	(4)
Munroa squarrosa false buffalograss	p	g	1	٥	٥	0.0	0.0	0.0
				1	-	0.1	0.3	0.3
Subtotal	p	р		_	-	0.1	0.3	0.3
Grass: Annual Introduced								
Bromus tectorum cheatgrass			ŋ	0	0	0.0	0.0	0.0
			D	0	0	0.0	0.0	0.0
Grass: Perennial Desirable (Cool)								
Achnatherum hymenoides Indian ricegrass			1	0	•	0.0	0.0	0.0
				0	0	0.0	0.0	0.0
-				0	0	0.0	0.0	0.0
				0	0	0.0	0.0	0.0
Grass: Perennial Desirable (Warm)								
Andropogon hallii sand bluestem	p	3	P	21	21	2.0	7.3	7.3
Bouteloua curtipendula sideoats grama	6			_	-	0.1	0.3	0.3
Bouteloua gracilis blue grama	1	b	-	9	9	0.9	3.1	3.1
Calamovilfa longifolia prairie sandreed	90	6	90	136	136	13.0	47.1	47.1
Panicum virgatum switchgrass			ס	2	2	0.2	0.7	0.7
94	w			9	9	0.9	3.1	3.1
Sporobolus cryptandrus sand dropseed		-		24	25	2.3	8.7	8.7
Subtotal	12	10	9	202	203	19.2	70.2	70.2
Total Grass Cover	12 0	10 0	9 0	203	204	19.3	70.6	70.6
Forbs: Annual & Biennial Native								
Amaranthus retroflexus redroot amaranth	ď	1		13	13	1.2	4.5	4.5
Chenopodium leptophyllum narrowleaf goosefoot				0	0	0.0	0.0	0.0
Conyza caradensis Canadian horseweed	ъ			0	0	0.0	0.0	0.0
Helianthus annuus common sunflower	Þ	P		4	4	0.4	1.4	1.4
Machaeranthera canescens hoary tansyaster			T	0	0	0.0	0.0	0.0
Subtotal	P	-		17	17	1.6	5.9	5.9
Forbs: Annual & Biennial Introduced								
Ambrosia artemisiifolia annual ragweed				0	0	0.0	0.0	0.0
Bassia scoparia burningbush			ъ	0	0	0.0	0.0	0.0
Lactuca serriola prickly lettuce		P		0	0	0.0	0.0	0.0
Meliotus officinalis sweetclover				0	0	0.0	0.0	0.0
Salsola tragus prickly Russian thistle	ω	w	D	62	62	5.9	21.5	21.5
Subtotal	w	3	-	62	62	5.9	21.5	21.5

## Reclamation Area 31 Vegetation Cover Data (continued)

Catantific Name		19	20	21	Total Hits		Relative	Relative
SCIENCIAL SHIPS	Common Name	- 2	1 2	1 2	1st All	Cover (%)	Cover (%)	Cover (%)
Forbs: Perennial Native	e	STATE OF THE PARTY OF	The same of	Section 2	The second	Alles Marie and Alles		
Ambrosia psilostachya	Cuman ragweed	1	Ð	9	2 2	0.2	0.7	0.7
Asclepias speciosa	showy milkweed					00	00	00
Mirabilis hirsuta	hairy four o'clock	5			0	00	0.0	0.0
Physalis hispida	prairie groundcherry					0.2	0.7	0.7
Subtotal		9	0	9		0.4	14	1.4
Total Forb Cover		3 0	4 0	0 0		7.9	28.7	78.7
Subshrubs/Shrubs/Succ	ubshrubs/Shrubs/Succulents: Perennial Native		2000000	COMP.				
Artemisia filifolia	sand sagebrush				2 2	0.2	0.7	0.7
Yucca glauca	soapweed yucca	ď				0.0	0.0	0.0
Opuntia phaeacantha	tulip pricklypear		р	Đ	0 0	0.0	0.0	0.0
Subtotal		P	р	p	2 2	0.2	0.7	0.7
Total Shrub Cover		0 0	0 0	0 0	2 2	0.2	0.7	0.7
Rock					0 0	0.0		
Läter		18	18	32	497 497	47.3		
Bare Ground		17	18	9	265 265	25.2		
Total Hits		50 0	50 0	50 0	1050 1051	100.0		
Total Vegetation Cover		30 0	28 0	18 0		27.4	100.0	100.0
Non-Noxious Vegetation Cover	n Cover	30 0	28 0	18 0		27.4		
Total Ground Cover		66	64	82		74.8		
Allowable Vegetation Cover	over	25.1	23.1	13.1		22.6		

Non-Noxious Annual Cover
Excess Annual Cover

### Reclamation Area 32 Vegetation Cover Data

	- ALM	1			ł	-											
Scientific Name Common Name		. 2	- 4	- 4	-	, ,		7	- 90	-		10	Total Hits		Absolute	Relative	Relative
Native												Į,	88	-	Cave: (/e)	Cakes ( 50)	Coxet (20)
Murroa squarrosa false buffalograss	p	П	П	Н	p	Ц		P	P	$\forall$	4		0	7	00	0.0	0.0
Subtetal	9			-	p			р	D				0 0		0.0	0.0	0.0
Grass: Annual Introduced								Section 1									
Bromus tectorum cheatgrass		ъ	U	-	$\dashv$			9	1	-			۳	1	80	26	
Subtotal		D	8	-				9	1	-	,		**	-	0,6	26	
Grass: Perennial Destrable (Cool)		100				8	1								910		
Achnatherum hymenoides Indian ricegrass				9	-	4		1	1	1	_		- 1	1	0.0	0.0	0.0
Pascopyrum smithii western wheatgrass			9		U	_					9 '		0	_	0.0	00	00
			0	a	D	4			1	+	,		1	1	00	00	000
Grass: Percanial Desirable (Warm)	0.400	No.				3	1	BANKIN .	No.								
Boutelous curépendula sideoats grama	p		1	p	p	, p	ď		1	1	$\dashv$	_	0	1	0.0	0.0	0.0
Boutelous gracilis blue grams	4	-	P	1	2	P	_	6	2	b	<u>-</u>	_		2	3.8	19.0	19.5
dia	9 1	-	-	7	9	13	_	4	00	5	3 10	12		9	11.4	59.5	61.1
	ъ				*5	_		P		P	_		0 0	_	0.0	0.0	0.0
aram	i, i				_				1		_		-		0.2	0.9	0.9
Sporobolus cryptandrus sand dropseed	9 70	P	'0	,	_	,	_		,	9	. 79		. 0		0.0	0.0	0.0
	13 2	2	-	00	12	2 3	-	5	=	5	4 13	40	78 93	+	156	80.3	532
Total Grass Cover	13 2	2 0	1 0	9	0 12	2 4	-	10 0	11 3		4 13			5	16.2	82.80	85.0
Forbs: Annual & Biennial Native	Services.	2000	2000	2000	100			No.	10000					8		-	Constitution of the last
exus	Ð				P	P	_	P	Р	а	ש		0 0		0,0	0.0	0.0
Helianthus annus common sunflower			9	9	P	_				,	,				0.0	0.0	8.0
	9		9	9	9	9		9	9			1		+	0.0	0.0	000
Forbs: Annual & Biennial Introduced		- A CO CO	No.	200													9.4
is.						+		9		1	+	4	0	1	0.0	0.0	0.0
Salsola tragus prickly Russian thistle		4	7	w	9	12	L	-	-	ъ	-	L	1	Ť	3.8	16.4	16.8
Compositi		4	1	w	9	12		ľ	-	9	-	L	19 19	-	3.80	16.4	16.8
Forbs: Perennial Native	-											9			THE PERSON		
Ambrosia psüostachya Cuman ragweed		Γ		t	H	H	L			H			_		0.2	0.9	0.9
Subform				ı	-	-	L			H	-	L	_		0.2	0.9	0.9
Total Pere Cever	0 0	4 0	7 0	3	0 0	0 2	0	1 0	1 0	0	0 2	0	20 20		4.0	17.2	17.7
amocane						-					H	L					The state of the s
Opunta phacacantha tulp pricklypear		P	T	t	t	╀	L		Γ	t	H	L	0 0	t	0.0	0.0	0.0
Total Shrub Cover					٠.					٠.	-	-	L	t	0.0	0.0	0.0
Don't	0	0 0	0 0	0	0	0	0	0 0	0 0	0	0 0	0	0 0		0.0	0.0	0.0
Liter	Å	36	3,	3	2	2		5	3	ò	1				0.0		
Bare Ground	N (	16 6	16 6	0 0	7 2	3 4		8 0	. 5	× 8	e !	_	90 90		60.2		
Total Hits	50 2	90 0	50 0	50	0 50	2 50	-	50 0	50 3	-	4 8	ω	٧.	T	0000		
Total Vegetation Cover	26 4	12 0	16 0	24	0 24	4 12	2	22 0	- 1	_	_	6		Ī	20.2	100.0	100.0
Non-Noxious Vegetation Cover	26 4	12 0	16 0	22 0	0 24	4 10	2	22 0	24 6	_	8 30	6	ı		19.6		
Total Ground Cover	96	68	68	82	86	Н	60	82	90	88	-	20	1		80.4		
Allowable Vegetation Cover	24.2	10.2	14.2	20.2	22.2		8.2	20.2	22.2	8.2	8	22 05 22			17.8		
				H	H	f	H	-		H	H	0.0			100		The same of the same of

Non-Noxious Annual Cover
Excess Annual Cover

### Reclamation Area 33 Vegetation Cover Data

Allowabl	Total Gr	Non-Non	Total Ve	Total Hits	Bare Ground	Litter	DA MILOI	MOOGOCAL	Convolvu	Forbs: F	Subtotal	Physalis hispida	Forbs: I	Subtotal	Salsola tragus	Bassia scoparia	Forbs: A	Subtotal	Heliantha	Forbs: /	Total G	Subtotal	Sporobol	Sorghast	Schizach	Panicum	Calamov	Boutelou	CHAPS.	Manager	Pascopy	Agropyr	Achnath	Grass:	Subtotal	Bromus	Grass:	Subtotal	Munroa	Grass:	Scientil
llowable Vegetation Cover	otal Ground Cover	Non-Noxious Vegetation Cover	otal Vegetation Cover	ts	und		OTH POTO COVER	-	onvolvulus arvensis	orbs: Perennial Introduced		hispida	orbs: Perennial Native		agus a	coparia	Annual & Bienn		clianthus annuus	orbs: Annual & Biennial Native	otal Grass Cover		Sporobolus cryptandrus	Sorghastrum nutans	Schizachyrium scoparium	anicum virgatum	Calamoviffa longifolia	Boutelous gracilis	Press, refermant pestrapic (warm)		ascopyrum smitha	Agropyron cristatum	Achnatherum hymenoides	rass: Perennial Desirable (Cool)		romus tectorum	rass: Annual Introduced		dunroa squarrosa	Grass: Annual Native	scientific Name
over		n Cover					THE COLUMN THE PERSON NAMED IN COLUMN TO SERVICE AND S		field bindweed	luced		praine groundcherry	Contraction of the Contraction o		prickly Russian thirtle	burningbush	orbs: Annual & Biennial Introduced		common sunflower	nial Native			sand dropseed			switchgrass	prairie sandreed	blue grama	ane (warm)		western wheatgrass	crested wheatgrass	s Indian ricegrass	rable (Cool)		cheatgrass	ced		fake buffalograss	Service of Services	Common Name
30.0	94	30 8	30 8	50 4	w	32	0 0		t		t	t		9	9	v	1610				15 .	15	9				15	,	t	P	t	ט	_	2000			1000				
22.0	94	22	22	50	w į	K.	0	-	t		H	H		9	Ð	1		H	H		4 11	4 11	H		,	5	4 00	a,	t	H	H		_		H				H		-
100	Н	2 12	2 12	1 50	2	4	0 0	⊢	9		H	H		H	-	4			Н		1 6	1 6	p	P	_	_	5	_		H	H	_			p	p		L	H		, 12
12.0	96	0	0	0			0	L	L	L	L	L		L	L	_					0						_			L										THE STATE OF	2
18.0	90	18 2	18 2	50 1	5	8	0 0									1					9 1	9 1		-		ы	4	,		l										12000	- 4
16.0	68	16 4	16 4	50 2	16	X	0 0				Γ					1	1000		П	No.	00	00	-		8			,	İ	t	T				p	p			П		- 5
20.0	88	20	20	50	6 1	ď	0	-			H				-	1			Н	100	2 10	2 10	_	v		_	2 7	J.		H	┝	_	-		p	p			Н		-
100	H	4 12	4 12	2 50	ω	4	0 0	-	H		H	H		Н	_	4		_	Н		2 6	2 6	1 p	_			0.7	-		L	L		_						Ц		6
12.0	94	4	4	2			0	L	Ц							_					2	2	_				13	_		L				STATE OF	Р	P	W			20100	7 2
28.0	94	28 2	28 2	50 1	w 5	2	0 0		П	8			001100			١	1000			-	14 1	14 1	P	ъ,	9 7	3	6 6	•						200			The same			2000	- 00
24.0	78	24 2	24	50	= 5	3	0		П			П		9	U	1		9	Ð		12	œ	9				7 -	- P		4	w		-	0.000	U	p		D	p		- 9
18.0	96	2 18	2 18	8	2 5	ğ	0 0	H	Н		9	p				1	8	+	+		1 9	9	75	_	7	,	4 4		-		H	ים	+		p	p		-	Н		-
.0	6	2	2	1 5	(a 4	40	0	L	Н		L	Н				4		4	4		-	-	-			_		_		L	L		4			4		_			2 0
			ı		£ 22		0 0	0	0		0 0	0 0			0		8	1	0		100 115	8	2 4				200	0 0		4	u	0 0	_	Books	0	0	8	0	0		Total Hits
	~							T	П			П		1		1		1	1										ı				1			1		-			
20.0	89.2	20.0	20.0	100.0	10.8	6,8	0.0	0.0	0.0	The same	0.0	0.0		0.0	0.0	8		00	0.0		20.0	19.2	0,4	0.6	0.0	2 5	130	00		8.0	0.6	0.0	0.2	BEALDING	0.0	8	State of the last	0.0	0.0		Absolute Cover (%)
			100.0				0.0	0.0	0.0	National Property	0.0	0.0		0.0	0.0	00		0.0	0.0	The second second	100.0	96.5	3.5	2.6	0.0	36	8 1.	00		3.5	2.6	0.0	0.9	The state of the s	0.0	0.0		0.0	0.0		Relative Cover (%)
			100.0				0.0	0.0	0.0	Constitution of the last	0.0	0.0		0.0	0,0	00		0.0	0.0		100.0	96.5	3.5	2.6	0.0	36	66.7	00		3.5	2.6	0.0	0.9	Contract of the last	0.0	0.0		0.0	0.0		Relative Cover (%)

Non-Noxious Armaal Cover
Excess Annual Cover

cheatgrass  Indian ricegrass  um crested wheatgrass  nediam intermediate wheatgrass  nediam intermediate wheatgrass  nediam stand bhestern  purple threeawn  purple thr	ntroduced	1 2	1 2	- w	- 4	2 -	2 5	2 6	7 1 2	- ∞		- 9	9 10	9 10	9 10 11	9 10 11	9 10 11	9 10 11 12 13	9 10 11 12 13 14	9 10 11 12 13 14 15 1	9 10 11 12 13 14 15	9 10 11 12 13 14 15 16
Perennial Desirable (Cool)  Actum hymenoides Indian ricegrass on cristelum crested wheatgrass schweinizii Schweinizis flatsedge stipa comatta needle and thread rum smithii western wheatgrass I purpurea gon hallii sand blaestem purple threeawn a curtipendula sickoats grama a dactybides buffalograss a gracilis bate grama a gracilis bate grama iffit hongifolia prairie sandreed I I I P P P P  Virigatum swichigrass as a cryptandrus swichigrass bate cryptandrus sand dropseed I I I P P P  Virigatum stars Indiangrass as cryptandrus sand dropseed I I I P P P  Virigatum stars Indiangrass bate cryptandrus sand dropseed I I I P P P  Virigatum crested pricklypoppy rum nutars Indiangrass bate cryptandrus crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos crested pricklypoppy see polyanthemos prickly lettace samues common sunflower P J J I J J J J J S O S O O O  Lanual & Biennial Introduced samues prickly Russian thistle  6 7 1 4 1 7 4 4 9 3 1 1 3 1 9 9 8 1	ectorum	9 9	T	1	+	+	+															
nerum hymenoides Indian ricegrass on cristatum crested wheatgrass schweinizia Schweiniz's flatsedge stipa connatta rum smithii western wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum intermecham intermediate wheatgrass rum purpurea pu	Grass: Perennial Desirable (Cool)																					
schweinizii Schweiniz/s flatsedge postipa comata needle and thread	oides		-	P		$\dashv$	_					$\dashv$	-	-	P					P	P	P
rum smithii western wheatgrass  rum intermediam intermediate wheatgrass  I p p p p  Rerennial Desirable (Warm)  Rerennial Desirable (Warm)  Rerennial Desirable (Warm)  Rerennial Desirable (Warm)  Rerennial Desirable (Warm)  Rerennial Desirable (Warm)  Report		ge		ď		P	-		Ф							,						
Ium intermediatin intermediate wheatgrass I		_																				
Perennial Desirable (Warm)  Perennial Desirable (Warm)  Repon hallii sand bhestem  pupple threeawn  a curtipendala sideoats grama  a ductyloides buffalograss  a gracilis bhe grama  a gracilis bhe grama  grama switchgrass  buffalograss  a gracilis bhe grama  It p p p I I p p  priving sum switchgrass  yrium scoparium little bhestem  rrum nutans Indiangrass  is cryptandrus sand dropseed  I I S 2 P P I I I P P P  prass Cover  a cannibicarpa flatspine bur ragweed  a cannibicarpa flatspine bur ragweed  a cannibicarpa flatspine bur ragweed  a cannibicarpa flatspine bur ragweed  a cannibicarpa flatspine sunflower  is graveolens fetid goosefoot  as annual & Biennial Introduced  serricia prickly lettuce  nancarathium Scotch cottonhistie  prickly Russian thistle  6 7 1 4 1 7 4 4 4 3  P 9 8	un mennediun	grass	Ī	t	t	H	L	L				P	p	P	P	p	P	P	p	P	p	P
purpurea purple threeavn as curripendula sideoats grama and actyloides buffalograss as gracilis bhae grama buffalograss buffalograss buffalograss buffalograss by virgatum scoparium little bhaestem little bh	Grass: Perennial Desirable (Warm)		-	P		P		-	p			P	p 1	p 1	p 1 p	p 1 p	p 1 p	p 1 p	p 1 p p	1 p	1 p	1 p
purpurea purple threeawn as curtipendula sideoats grama buffalograss a dactyloides buffalograss a gracilis babe grama lift longifolia prairie sandreed li l p p l l l l p p liftalongifolia prairie sandreed li l p p l l l p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l p p p liftalongifolia prairie sandreed li l l l l l l p p liftalongifolia prairie sandreed li l l l l l l p p liftalongifolia prairie sandreed li l l l l l l p p liftalongifolia prairie sandreed li l l l l l l l p p liftalongifolia prairie sandreed li l l l l l l l p p liftalongifolia prairie sandreed li l l l l l l l l p p liftalongifolia prairie sandreed li l l l l l l l l l l p p liftalongifolia prairie sandreed li l l l l l l l l l l p p liftalongifolia prairie sandreed liftalongifolia prairie sandreed liftalongifolia prairie sandreed liftalongifolia prairie sandreed liftalongifolia prairie sandreed liftalongifolia prairie sandreed liftalongifolia l l l l l l l l l l l l l l l l l l	Andropogon hallii sand bluestem	P	P	1	1	-	4	1	۱"	_	1	2	2 p	1	9	9	9	9	9	9	9	9
as dactyloides buffalograss bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains bugrains little bhestem li		- 2	8			_	_						_	_	_	י פי	י פי	י פי	י פי	י פי	י פי	י פי
as gracilis blue grama prairie sandreed 1 1 P P P 1 1 1 P P P 1 I I P P P I I I P P P I I I P P P I I I P P P I I I P P P I I I P P P I I I P P P I I I I P P P I I I I P P P I I I I P P P I I I I P P P I I I I P P P I I I I I P P P I I I I I P P P I I I I I P P P I I I I I I P P P I I I I I I P P P I				P					P		ъ	פ	Ъ	P	P	۵ ا	-	7	7		-	70
virgatum switchgrass virgatum switchgrass virgatum little bhesterm rum nutans Indiangrass rum nutans Indiangrass p tass Cover Indiangrass  sand dropseed 2 3 p 1 1 2 4 p  Annual & Biennial Native  a cauthicarpa flatspine bur ragweed a cauthicarpa flatspine bur ragweed a p tagraveolens fetid goosefoot samuus common sunflower anthera sp. tansyaster  p		1	P	ъ	1	1	_		P		-	I p	р	1 p p 1	1 p p 1 p		Ð	9	9	D D D D	B B I B	B B I B
vergatum switchgrass  p p p p p p p p p p p p p p p p p p	olia	1 1		2		-	ש		P			9	9 1 p	9 1 p								
rum nutans Indiangrass Indiangrass sand dropseed 2 3 p 1 1 2 4 p  Is cryptandrus sand dropseed 2 3 p 1 1 2 4 p  Is acanthicarpa flatspine bur ragweed a acanthicarpa flatspine bur ragweed be polyanthemos crested pricklypoppy  Texas croton p p g 3 p p 1 1 2 4 p p  Is annual & Biennial Introduced p p 3 1 1 3 1 9 9 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			3	P		,							1	•								
last cryptandrus         sand dropseed         2         3         p         1         1         2         4         p           rass Cover         4         1         5         2         2         1         5         5         p           Ahmual & Biemaial Native         4         1         6         0         2         0         2         1         5         0         0           Ahmual & Biemaial Native         4         1         6         0         2         0         2         1         5         0         0           Ahmual & Biemaial Introduced         p         3         1         1         3         1         9         4           anthera sp.         tansyaster         p         3         1         1         3         1         9         8           Innual & Biemaial Introduced         p         3         1         3         1         9         8           Innual & Biemaial Introduced         p         3         1         7         4         4         4         3		_	P				_					- 7	1 7			**						
Annual & Biennial Native  4 1 5 2 2 1 5 5 0 0 0  Annual & Biennial Native  4 1 6 0 2 0 2 1 5 0 5 0 0 0  Annual & Biennial Native  p p 3  p p p p p p p p p p p p p p p p		2	3	9	-	1 2	4		P		2	2	2 p		p	p 3 1 4	p 3 1 4	p 3 1 4	p 3 1 4	p 3 1 4 2 1 1	p 3 1 4 2 1 1	p 3 1 4 2 1 1 6
Annual & Biennial Native  a acauthicarpa flatspine bur ragweed a cauthicarpa flatspine bur ragweed flatspine b	Total Grass Cover	4 1	8			2 5	-	•			3 3	12	12 1 1	12 1 1 4	12 1 1 4 1	12 1 1 4 1 4 1	12 1 1 4 1 4 1 3	12 1 1 4 1 4 1 3 2	12 1 1 4 1 4 1 3 2 1	12 1 1 4 1 4 1 3 2 1 1	12 1 1 4 1 4 1 3 2 1 1 6	12 1 1 4 1 4 1 3 2 1 1 6 4
a acanthicarpa flatspine bur ragweed pricklypoppy p a polyanthemos crested pricklypoppy p a polyanthemos crested pricklypoppy p p p p p p p p p p p p p p p p p	Forbs: Annual & Biennial Native				-		-			100							4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
ne polyanthemos crested pricklypoppy Exensis Texas croton is graveolens fetid goosefoot Is annuas common sunflower annhera sp. tansyaster  p 3 1 1 3 1 9 4  annhera sp. tansyaster  p 3 1 1 3 1 9 8  kunual & Biennial Introduced  p 3 1 1 3 1 9 8  serriola prickly lettuce serriola prickly Russian thistle serriola prickly Russian thistle  b 7 1 4 1 7 4 4 3	Ambrosia acanthicarpa flatspine bur ragwe	ā.		7	1	+	,	1	ω	- 1	1	1		9	3	9	p	9	-			
authera sp. tansy aster p 3 1 1 3 1 9 4  Innual & Biennial Introduced prickly Russian thistle agus prickly Russian thistle	anthemos				ש									-	-				P	P	P	P
as annuas common sunflower p 3 1 1 3 1 9 4 authera sp. tansyaster p 3 1 1 3 1 9 4 authera sp. tansyaster p 3 1 1 3 1 9 8  Innual & Biennial Introduced p 3 1 1 3 1 9 8 serriola prickly lettuce um a canthium Scotch cottonthistle um a canthium Scotch grickly Russian thistle 6 7 1 4 1 7 4 4 3	eolens		Ъ				ъ		- 9		, -	-			,	,	P	P	P	P	p p	p p
anthers sp. tansyaster p p g knual & Biennial Introduced p 3 1 1 3 1 9 8 kerriola prickly lettuce prickly Russian thistle 6 7 1 4 1 7 4 4 3		P	3 1	1	w	_	9		4		9,	b ,		Ð	P 27	P 2 11	P 2 11 6 1	P 2 11 6 1	P 2 11 6 1 2	P 2 11 6 1 2	P 2 11 6 1 2 2	P 2 11 6 1 2 2 2
serriola prickly lettuce  sagus prickly Russian thistle  agus prickly Russian thistle  6 7 1 4 1 7 4 4 3	anthera sp.		P			Ð	H	L			3	-					D	D	9	9	9	9
serriola prickly lettuce serriola prickly lettuce mn acanthium Scotch cottonthistle agus prickly Russian thistle 6 7 1 4 1 7 4 4 3	Subtotal	P	3 1	-	3	-	9	Ц	00	I I	10	10 p	Ц	P	P 2	p 2 11 6	p 2 11 6 1	p 2 11 6	p 2 11 6 1	p 2 11 6 1 2	P 2 11 6 1 2 4	P 2 11 6 1 2 4 2
serriola prickly lettuce  ma canthium Scotch cottonthistle  agus prickly Russian thistle 6 7 1 4 1 7 4 4 3	Forbs: Annual & Biennial Introduced									100												
agus prickly Russian thistle 6 7 1 4 1 7 4 4 3							Ð							Р	P	P	Р	ğ	79	P	79	
	agus		7 1	4	7	4	4	L	3	١.	7 1	7 1 p	-	1 p	1 p 9	1 p 9 7 1 4	1 p 9 7 1 4 10	1 p 9 7 1 4	1 p 9 7 1 4 10	1 p 9 7 1 4 10 20 1	1 p 9 7 1 4 10 20 1 13	1 p 9 7 1 4 10 20 1 13 6

# Reclamation Area 34 Vegetation Cover Data (continued)

	Calantific Vanna		-		2	з	4		v	6	7		00	9	10	=	-	12	13	14		-	15	15 16	$\dashv$
Osia psilostachya Cuman ragweed pricipe is inflower scuripea is inflower scuripea is inflower scuripea is inflower scuripea prairie groundcherry white prairie groundcherry veriny dock  fail prob Cover veriny dock  fail prob Cover scuripea prairie groundcherry veriny dock  fail prob Cover prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native prob Sirubis/Succule nts: Perennial Native pp	Forbs: Perennial Native				The same of										THE STATE OF					Į,					
Is his hispida prairie ground-cherry hyotrichum fak-atum white prairie ground-cherry x venosus veiny dock    P	Ambrosia psilostachya	Cuman ragwood	ъ	$\dashv$			$\neg$	$\dashv$	_		ď	$\dashv$	4			$\exists$	-		9		+				
Thy otric prairie aster   Paris   Pa	Physalis hispida	prairie groundcherry		_								_							σ.			7	-	-0	· e
Tetal   Part	Symphyotrichum falcatum	white prairie aster		_					_												_	_			7
Part   Part	Rumex venosus	veiny dock		_													_				_				
Forb Cover   For	Subtotal	The second secon	р	Н							e l	+				+	_		9			,	3		9
Interpretation   Inte	Total Forb Cover				80.	5 1	90		200	1	2		-		9		-			0	22	22 1	22 1	22 1 17 0 8 0	22 1 17 0 8
isisti filifolia sand sagebrush  I glauca soapweed yucca  is phaeacauntha tulip pricklypear p  Shrub Cover	Subshrubs/Shrubs/Succui	dents: Perennial Native			STATE OF THE PARTY	200000								8	81	-									
I glauca soapweed yucca phaeacanntha tulip pricklypear p 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Artemisia filifolia	sand sagebrush	٦	$\dashv$			1	┥	4		٦	$\dashv$	4			1	+		- 1		-				
tal         p         0	Yucca glauca	soapweed yucca		_				_									_					_	-	,	<b>3</b>
tail         p         o         o         o         p	Opuntia phaeacantha	tulip pricklypear	p	_				_				Ð		9			_				_			7 0	7 0
Shrub Cover         0 <th< td=""><td>Subtotal</td><td></td><td>p</td><td>H</td><td></td><td></td><td></td><td>Н</td><td></td><td></td><td></td><td>p</td><td></td><td>9</td><td></td><td></td><td>+</td><td></td><td>- 1</td><td></td><td>+</td><td></td><td>9</td><td>P</td><td>P</td></th<>	Subtotal		p	H				Н				p		9			+		- 1		+		9	P	P
Ground         27         17         15         23         16         15         9         14         36         8         16         24         21         21         21         23         16         15         24         17         30         16         2         2         12         12         12         12         14         36         8         16         24         21         21         14         36         8         16         24         21 <td>Total Shrub Cover</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>100</td> <td></td> <td></td> <td>100</td> <td>200</td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td>0 0 0 0</td> <td>0 0 0 0 0 0</td> <td>0 0 0 0 0</td>	Total Shrub Cover								100			100	200					0	0	0	0		0 0 0 0	0 0 0 0 0 0	0 0 0 0 0
Exercise of Exercise Cover     27     17     15     23     16     15     9     14     36     8     16     24     21     21       Hits     23     16     15     24     17     30     16     2     29     12     12     12     12     14       Wege station Cover     20     2     2     2     14     2     2     2     2     2     2     2     2     2     2     2     2     2     2     2     2     2     2     2     12 <t< td=""><td>Rock</td><td></td><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><math>\dashv</math></td><td>4</td><td></td><td>- 1</td><td><math>\rightarrow</math></td><td><math>\rightarrow</math></td><td></td><td>- 1</td><td></td><td>1</td><td></td><td></td><td></td><td></td></t<>	Rock		7									$\dashv$	4		- 1	$\rightarrow$	$\rightarrow$		- 1		1				
13   17   28   15   24   17   30   16   2   29   12   12   12   13   14   15   15   15   15   15   15   15	Litter		27	-	7	15	23	16		5	9	7		55	00	16	24		2		9		10	10 19	10 19
50     1     50     2     50     1     50     1     50     0     50     0     50     0     50     1     50     1     50     0     50     0     50     1     50     1     50     0     50     0     50     0     50     1     50     0     0     50     0	Bare Ground		13	-		28	15	24		17	30	16		2	29	12	=		5		17	17 22		22 16	22
20     2     32     4     14     2     24     2     0     36     0     22     0     40     2     24     2     26     0     44     4     28     2     24       20     2     32     4     14     2     24     2     20     0     36     0     22     0     40     2     24     2     26     0     44     4     28     2     28       20     3     2     4     14     2     24     2     20     0     36     0     22     0     40     2     24     2     26     0     44     4     28     2     28       2     3     4     14     2     24     2     66     3     40     2     24     2     26     0     44     4     28     2     28       3     4     16     40     52     66     40     68     96     42     76     76     76	Total Hits		50	9	12	50 1	50	1 50	-			-		0 1		-	2 5(	-	8	0		50 1	50 1 50 1	50 1 50 1 50 0	50 1 50 1 50 0
20     2     32     4     14     2     24     2     20     0     36     0     22     0     40     2     24     2     26     0     44     4     28     2     2       74     66     44     70     52     66     40     68     96     42     76     76	Total Vegetation Cover			_	4			_	_				_			_	_	2	8	0	480	48 2	48 2 36 2	48 2 36 2 30 0	48 2 36 2 30 0 32
74 66 44 70 52 66 40 68 96 42 76 76	Non-Noxious Vegetation	Cover		_	4			_	_		_	_	_	_		_	-	2	×	-	48	48 2	48 2 36 2	48 2 36 2 30 0	48 2 36 2 30 0 32
	Total Ground Cover		74	Н	66	44	70	un.	52	66	40		50	96	42	70	+	76	7	70	66	66	66 56	66 56 68	66 56 68 48

18.	Excess Annual Cover
21.	Non-Noxious Annual Cover