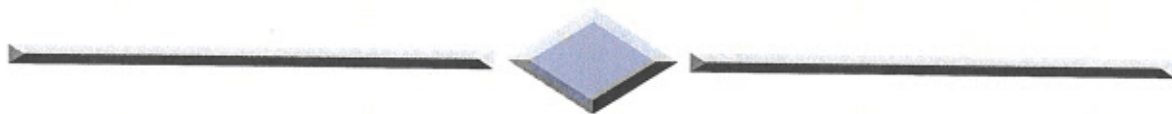


COORS ENERGY COMPANY

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2023 ANNUAL HYDROLOGY & RECLAMATION REPORT

**Prepared for:
COLORADO DIVISION OF
RECLAMATION, MINING &
SAFETY**

PERMIT NO. C-1981-028

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VEGETATION MONITORING 2023

2023 Vegetation Monitoring Report
Reclamation Areas
25, 32, 33, 34, 35, 36, 37, 38, 42, 43, and 44

Coors Energy Company Keenesburg Mine
Keenesburg, Colorado



November 2023

Prepared by:



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EXECUTIVE SUMMARY

Quantitative vegetation monitoring of Reclamation Areas 25, 32, 33, 34, 35, 36, 37, 38, 42, 43, and 44 at the Coors Energy Company (CEC) Keenesburg Mine was conducted in August 2023. 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 2022 to July 2023. 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 31.8%. The total herbaceous production standard was 102.7 g/m².

Reclamation Areas 25, 34, 35, 36, 37, 38, 42, 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 both met the cover and species composition standards, but neither area met the production standard.

Quarterly inspections of the entire permitted area were conducted during 2023 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. Several reclamation areas were reseeded in 2022. Vegetation monitoring of reclaimed areas is required by DRMS. This report presents the results of annual reclamation monitoring conducted on August 7 – 16, 2023 by Habitat Management, Inc. (Habitat Management). Quantitative information in this report characterizes the vegetative condition of Reclamation Areas 25, 32, 33, 34, 35, 36, 37, 38, 42, 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 2023 are summarized in Table 1.

Table 1: Reclamation Areas Monitored in 2023

| Reclamation Area | Acres | Seeding Date | Bond Release Status | Monitoring Guidelines | |
|------------------|-------|--------------|---------------------|-----------------------|------------|
| | | | | Cover | Production |
| 25 | 12.6 | 2012 | Phase I | Phase II | Interim |
| 32 | 5.5 | 2015 | Phase II | Interim | Interim |
| 33 | 12.4 | 2015 | Phase II | Interim | Interim |
| 34 | 6.9 | 2016 | Phase I | Phase II | Interim |
| 35 | 9.7 | 2020 | Phase I | Phase II | n/a |
| 36 | 25.1 | 2022 | Phase I | Phase II | n/a |
| 37 | 22.6 | 2022 | Phase I | Phase II | n/a |
| 38 | 10.9 | 2022 | Phase I | Phase II | n/a |
| 42 | 11.4 | 2022 | Phase I | Phase II | n/a |
| 43 | 8.3 | 2019 | Phase I | Phase II | n/a |
| 44 | 10.0 | 2019 | Phase I | Phase II | n/a |

Reclamation Areas 25, 34, 35, 36, 37, 38, 42, 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. Additionally, Reclamation Areas 25 and 34 were monitored for production using the interim guidelines. This was the first year of monitoring for Reclamation Areas 36 and 38. Reclamation Areas 25, 32, 33, 34, 35, 43, and 44 were last monitored in 2022 and Reclamation Areas 37 and 42 were last monitored in 2021.

Figure 1: Keenesburg Mine Site Map



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.

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 (Appendix A). A minimum of 15 vegetation cover samples were collected in Reclamation Areas 25, 34, 35, 36, 37, 38, 42, 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. A total of 15 herbaceous production samples were collected from Reclamation Areas 25, 32, 33, and 34 per CEC's interim reclamation monitoring guidelines.

2.2 Sample Timing

Vegetation monitoring occurred on August 7 – 16, 2023 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. Production samples where no cover data were collected were placed 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.

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 B) as well as on the complete species list (Appendix D).

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 F.

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 (2023).

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:

$$\text{Vegetation Cover Standard} = -0.0127x^3 + 0.2115x^2 + 2.1772x$$

$$\text{Herbaceous Production Standard} = 0.4666x^{2.1405}$$

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% non-noxious 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.

3.1 2023 Revegetation Success Standards

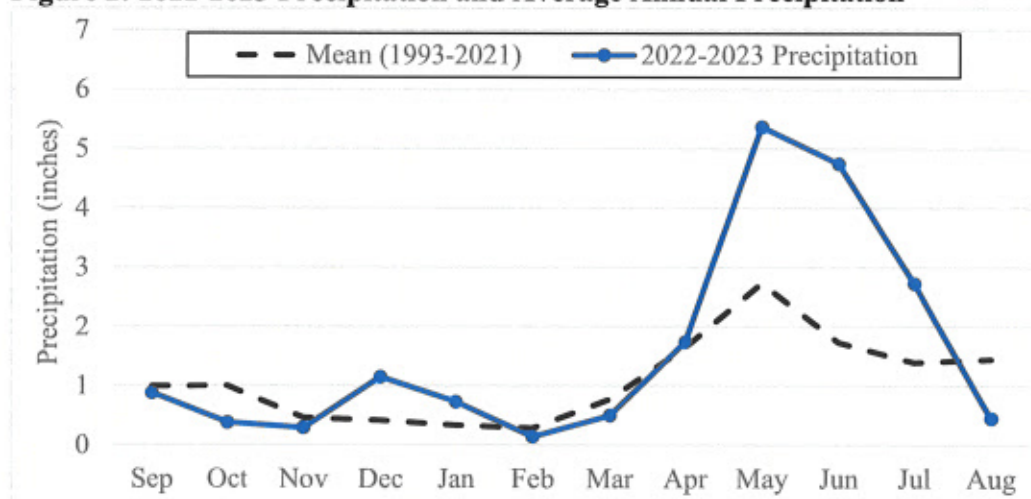
The following standards were calculated for vegetation cover and herbaceous production using the September 2022 through July 2023 precipitation (18.7 inches) in the permitted predictive equations.

1. Vegetation Cover Standard = 31.8% (90% Standard = 28.6%)
2. Herbaceous Production Standard = 102.7 g/m² (90% Standard = 92.4 g/m²)

4 2022-2023 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 2).

Figure 2: 2022-2023 Precipitation and Average Annual Precipitation

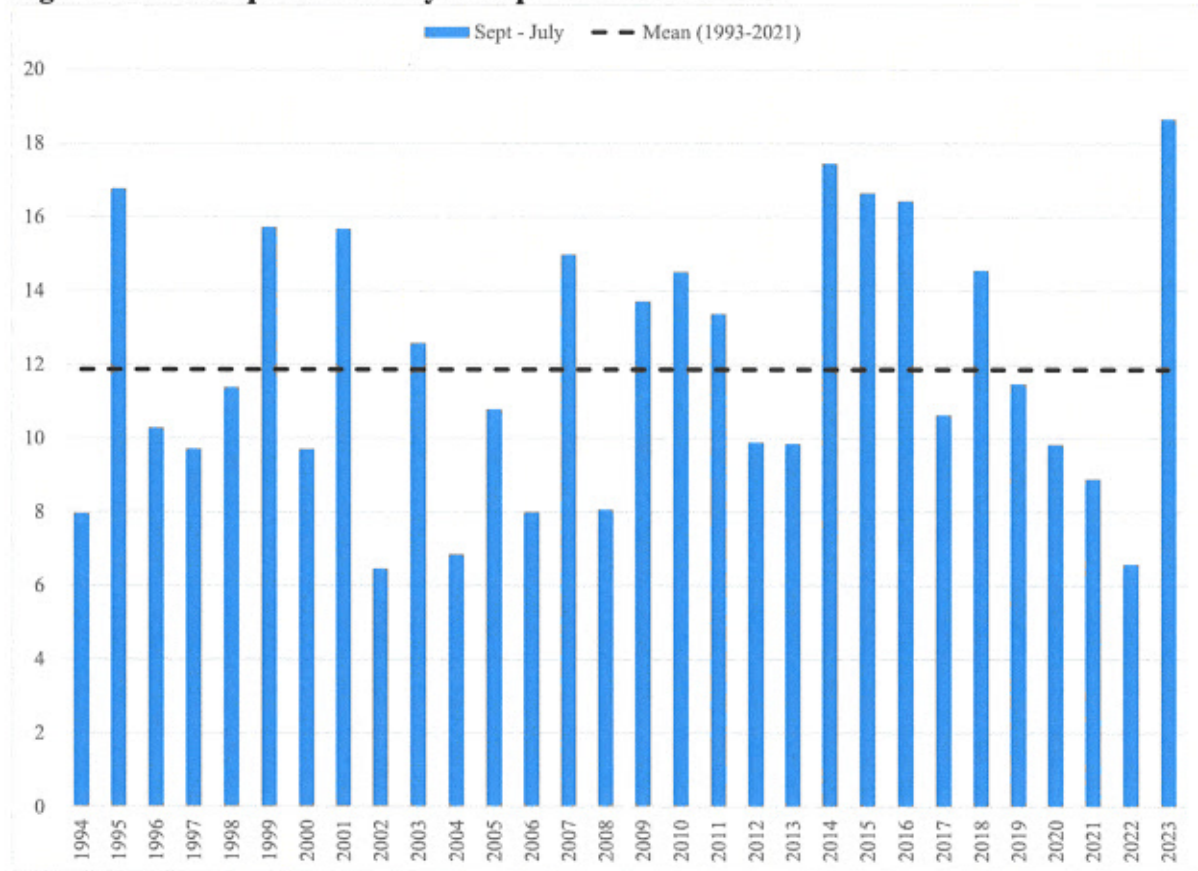


The Keenesburg Mine Reclamation Permit specifies the use of onsite precipitation from September to July for calculating the vegetation cover and herbaceous production standards. CEC collected precipitation data at the mine from 1984 through August 2020 using a manual rain gauge checked daily by on-site 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.

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Total cumulative precipitation for the period from September 2022 – July 2023 was 18.7 inches. This represents 157% of the average precipitation for the same period (1993-2021) and is the greatest precipitation recorded at the site (Figure 3). The pattern and timing of the precipitation was generally consistent with the average (Figure 2). However, the summer May-July precipitation was 219% of average. All data from 1993 – 2023 are presented in Appendix E.

Figure 3: Total September - July Precipitation 1994 – 2023



5 2023 PEST & DISEASE INSPECTIONS

Habitat Management was contracted to complete quarterly pest and disease inspections at the Keenesburg Mine in 2023. The inspections were completed on February 14, June 9, September 22, and November 9. The reports from each inspection are included in Appendix G.

6 RESULTS

Vegetation cover, species composition, and herbaceous production results for each Reclamation Area are summarized below. Results for Reclamation Areas monitored for Phase II bond release are presented first followed by those areas monitored for interim evaluation.

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

6.1 Phase II Monitoring

Reclamation Areas 25, 34, 35, 36, 37, 38, 42, 43, and 44 were monitored for Phase II bond release. Production data for Reclamation Areas 25 and 34 collected using the interim monitoring guidelines are also presented in this section.

6.1.1 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 64.9% (Table 2) which was a decrease from the 38.6% cover observed in 2022. A small component of cheatgrass (*Bromus tectorum*) was observed resulting in a slightly lower non-noxious cover average of 64.7%. However, substantial excess annual cover was recorded, and the allowable cover used for hypothesis testing was only 19.1%, up from 11.6% in 2022. 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 a total of 30 samples were collected.

Total non-noxious herbaceous production averaged 124.4 g/m² (Table 2) up from 35.6 g/m² in 2022. Annual species accounted for 63.6% of the relative production. Thus, the average allowable herbaceous production was only 58.2 g/m².

Table 2: Reclamation Area 25 Summary Statistics

| Summary Statistics | Mean | SE |
|--|-------|------|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 84.9 | 1.5 |
| Total Vegetation Cover | 64.9 | 2.6 |
| Non-Noxious Vegetation Cover | 64.7 | 2.7 |
| Allowable Vegetation Cover | 19.1 | 2.3 |
| Grass Cover | 13.3 | 1.7 |
| Forb Cover | 51.2 | 2.5 |
| Woody Cover | 0.3 | 0.2 |
| Perennial Cover | 11.6 | 1.8 |
| Annual Cover | 53.3 | 2.8 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 20.8 | 2.4 |
| Forb Cover | 78.4 | 2.4 |
| Woody Cover | 0.9 | 0.7 |
| Perennial Cover | 18.4 | 2.7 |
| Annual Cover | 81.6 | 2.7 |
| <i>Herbaceous Production Statistics (g/m²)</i> | | |
| Total Production | 124.4 | 12.5 |
| Allowable Production | 58.2 | 12.4 |
| Perennial Production | 45.3 | 14.2 |
| Annual Production | 79.1 | 12.1 |

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Thirty species contributed to the cover data and 14 more species were encountered along the transects (Table 3). Of the 44 species recorded, 31 were native or desirable. There were 16 grasses, 26 forbs, and two woody species including 16 perennial species and 28 annual species.

The only species observed along all 30 transects were Russian thistle (*Salsola tragus*) and common sunflower (*Helianthus annuus*) which comprised 48.0% and 21.3% of the non-noxious relative cover, respectively. Four other species contributed at least 3% of the relative cover including sand dropseed (*Sporobolus cryptandrus*), prairie sandreed (*Calamovilfa longifolia*), sand bluestem (*Andropogon hallii*), and false buffalograss (*Munroa squarrosa*).

Table 3: Reclamation Area 25 Species Composition

| Life Form | Cover Data | Present |
|----------------------|------------|-----------|
| Graminoids | | |
| Perennial | 7 | 10 |
| Annual | 5 | 6 |
| Native | 10 | 14 |
| Introduced | 2 | 2 |
| Cool Season | 2 | 4 |
| Warm Season | 5 | 6 |
| Total | 12 | 16 |
| Forbs | | |
| Perennial | 2 | 4 |
| Annual | 15 | 22 |
| Native | 10 | 15 |
| Introduced | 7 | 11 |
| Total | 17 | 26 |
| Woody Species | | |
| Perennial | 1 | 2 |
| Total Species | 30 | 44 |

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 4). Only 15 production samples were collected under the interim monitoring guidelines and the allowable production values calculated from these samples did not meet the technical standard (Table 4). Ten perennial grasses were observed along the transects which meets the Phase II bond release species composition standard.

Table 4: Reclamation Area 25 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 19.1 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | 58.2 | 102.7 | 92.4 | No |
| Species Composition (perennial grass) | 10 | 4 | | Yes |

6.1.2 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 29.7% staying consistent with the 29.4% observed in 2022 (Table 5). A small component of cheatgrass was observed resulting in a slightly lower non-noxious cover average of 29.4%. Annual species contributed a substantial amount of the relative cover resulting in an allowable vegetation cover of only 19.2%, up from 11.4% in 2022. Area 34 met sample adequacy for non-noxious cover with 28 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 66.9 g/m² (Table 5) up from 35.6 g/m² in 2022. Annual species accounted for 32.7% of the relative production. Thus, the average allowable herbaceous production was only 52.1 g/m².

Table 5: Reclamation Area 34 Summary Statistics

| Summary Statistics | Mean | SE |
|--|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 60.3 | 3.0 |
| Total Vegetation Cover | 29.7 | 2.2 |
| Non-Noxious Vegetation Cover | 29.4 | 2.2 |
| Allowable Vegetation Cover | 19.2 | 2.2 |
| Grass Cover | 16.6 | 2.7 |
| Forb Cover | 13.1 | 1.4 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 16.3 | 2.5 |
| Annual Cover | 13.4 | 1.3 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 52.8 | 4.9 |
| Forb Cover | 47.2 | 4.9 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 52.7 | 4.6 |
| Annual Cover | 47.3 | 4.6 |
| <i>Herbaceous Production Statistics (g/m²)</i> | | |
| Total Production | 66.9 | 6.6 |
| Allowable Production | 52.1 | 6.4 |
| Perennial Production | 45.0 | 7.3 |
| Annual Production | 21.9 | 3.5 |

Twenty-seven species contributed to the cover data and 19 other species were encountered along the transects (Table 6). Of the 46 species recorded, 36 were native or desirable. There were 18 grasses, 25 forbs, and three woody species including 24 perennial species and 22 annual species.

Table 6: Reclamation Area 34 Species Composition

| Life Form | Cover Data | Present |
|----------------------|------------|-----------|
| Graminoids | | |
| Perennial | 10 | 13 |
| Annual | 3 | 5 |
| Native | 12 | 16 |
| Introduced | 1 | 2 |
| Cool Season | 3 | 6 |
| Warm Season | 7 | 7 |
| Total | 13 | 18 |
| Forbs | | |
| Perennial | 5 | 8 |
| Annual | 9 | 17 |
| Native | 11 | 17 |
| Introduced | 3 | 8 |
| Total | 14 | 25 |
| Woody Species | | |
| Perennial | 0 | 3 |
| Total Species | 27 | 46 |

The only species observed on all 30 transects were common sunflower and sand dropseed which comprised 25.7% and 18.3% of the non-noxious relative cover, respectively. Prairie sandreed was only observed on 21 of the 30 transects but contributed 24% of the relative cover. Three other species also contributed more than 3% of the relative cover including Russian thistle, Bigelow's tansyaster (*Machaeranthera bigelovii*), and false buffalograss.

The allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 7). Only 15 production samples were collected under the interim monitoring guidelines and the allowable production values calculated from these samples did not meet the technical standard. However, 13 perennial grasses were observed along the transects which does meet the Phase II bond release species composition standard.

Table 7: Reclamation Area 34 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 19.2 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | 52.1 | 102.7 | 92.4 | No |
| Species Composition (perennial grass) | 13 | 4 | | Yes |

6.1.3 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.

Total vegetation cover averaged 37.1% up from 27.5% in 2022 (Table 8). A small component of cheatgrass was observed resulting in a slightly lower non-noxious cover average of 36.7%. Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 11.0% up from 7.7% in 2022. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Table 8: Reclamation Area 35 Summary Statistics

| Summary Statistics | Mean | SE |
|--|------|-----|
| Absolute Cover Statistics (%) | | |
| Total Ground Cover | 62.1 | 3.4 |
| Total Vegetation Cover | 37.1 | 3.4 |
| Non-Noxious Vegetation Cover | 36.7 | 3.4 |
| Allowable Vegetation Cover | 11.0 | 3.2 |
| Grass Cover | 10.3 | 1.6 |
| Forb Cover | 26.8 | 4.1 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 6.8 | 0.9 |
| Annual Cover | 30.3 | 3.6 |
| Non-Noxious Relative Cover Statistics (%) | | |
| Grass Cover | 31.3 | 5.8 |
| Forb Cover | 68.7 | 5.8 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 21.2 | 2.7 |
| Annual Cover | 78.8 | 2.7 |

Seventeen species contributed to the cover data and 10 other species were encountered along the transects (Table 9). This was a substantial increase from the 14 species observed in 2022. Of the 27 species recorded, 17 were native or desirable. There were 11 grasses and 16 forbs including six perennial species and 21 annual species.

There were five species observed along all of the 15 transects: common sunflower, Russian thistle, Jerusalem oak goosefoot (*Dysphania botrys*), Indian ricegrass (*Achnatherum hymenoides*), and sand dropseed. These species combined comprised 83.0% of the relative cover. An additional 5.4% was contributed by witchgrass (*Panicum capillare*) and the remaining cover was 11 species each contributing less than 2% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 10). However, six 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 2023.

Table 9: Reclamation Area 35 Species Composition

| Life Form | Cover Data | Present |
|-----------------------------|-------------------|----------------|
| <i>Graminoids</i> | | |
| Perennial | 5 | 6 |
| Annual | 4 | 5 |
| Native | 7 | 9 |
| Introduced | 2 | 2 |
| Cool Season | 2 | 2 |
| Warm Season | 3 | 4 |
| Total | 9 | 11 |
| <i>Forbs</i> | | |
| Perennial | 0 | 0 |
| Annual | 8 | 16 |
| Native | 3 | 8 |
| Introduced | 5 | 8 |
| Total | 8 | 16 |
| <i>Woody Species</i> | | |
| Perennial | 0 | 0 |
| Total Species | 17 | 27 |

Table 10: Reclamation Area 35 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|-------------------------|---------------------------|-------------------------------|--------------|
| Allowable Cover (%) | 11.0 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 6 | 4 | | Yes |

6.1.4 Reclamation Area 36

Reclamation Area 36 is a 25.1-acre parcel that was formerly part of the long-term spoil area. This area was graded to blend into the surrounding reclaimed mining and operational areas resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2020 but was repeated in 2022 due to poor initial establishment.

Total vegetation cover averaged 42.3% and non-noxious cover averaged 41.5% (Table 11). Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 14.4%. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Twenty-one species contributed to the cover data and 22 other species were encountered along the transects (Table 12). Of the 43 species recorded, 28 were native or desirable. There were 17 grasses and 26 forbs including 11 perennial species and 32 annual species.

Only common sunflower and Russian thistle were observed along all 15 transects comprising a combined total of 44.5% of the non-noxious relative vegetation cover. Prostrate knotweed

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(*Polygonum aviculare*), Indian ricegrass, and burningbush (*Bassia scoparia*) comprised another 18.1%, 17.5%, and 8.3%, respectively, of the relative cover. The remaining cover was 16 species each contributing less than 3% of the relative cover.

Table 11: Reclamation Area 36 Summary Statistics

| Summary Statistics | Mean | SE |
|---|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 66.1 | 3.8 |
| Total Vegetation Cover | 42.3 | 4.7 |
| Non-Noxious Vegetation Cover | 41.5 | 4.5 |
| Allowable Vegetation Cover | 14.4 | 3.7 |
| Grass Cover | 10.9 | 2.5 |
| Forb Cover | 31.3 | 5.1 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 7.9 | 2.3 |
| Annual Cover | 34.4 | 5.3 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 26.2 | 5.0 |
| Forb Cover | 73.8 | 5.0 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 20.0 | 4.9 |
| Annual Cover | 80.0 | 4.9 |

Table 12: Reclamation Area 36 Species Composition

| Life Form | Cover | |
|-----------------------------|-----------|-----------|
| | Data | Present |
| <i>Graminoids</i> | | |
| Perennial | 3 | 9 |
| Annual | 6 | 8 |
| Native | 6 | 12 |
| Introduced | 3 | 5 |
| Cool Season | 1 | 4 |
| Warm Season | 2 | 5 |
| Total | 9 | 17 |
| <i>Forbs</i> | | |
| Perennial | 0 | 2 |
| Annual | 12 | 24 |
| Native | 3 | 16 |
| Introduced | 9 | 10 |
| Total | 12 | 26 |
| <i>Woody Species</i> | | |
| Perennial | 0 | 0 |
| Total Species | 21 | 43 |

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 13). However, nine 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 2023.

Table 13: Reclamation Area 36 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 14.4 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 9 | 4 | | Yes |

6.1.5 Reclamation Area 37

Reclamation Area 37 is a 22.6-acre parcel that was formerly part of the long-term spoil area. This area was graded to blend into the surrounding reclaimed mining and operational areas resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2020 but was repeated in 2022 due to poor initial establishment.

Total vegetation cover averaged 36.8% and non-noxious cover averaged 33.9% (Table 14). Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 12.5%. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Table 14: Reclamation Area 37 Summary Statistics

| Summary Statistics | Mean | SE |
|---|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 71.5 | 4.1 |
| Total Vegetation Cover | 36.8 | 3.1 |
| Non-Noxious Vegetation Cover | 33.9 | 2.8 |
| Allowable Vegetation Cover | 12.5 | 2.8 |
| Grass Cover | 15.9 | 3.3 |
| Forb Cover | 20.9 | 3.9 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 8.9 | 2.6 |
| Annual Cover | 27.9 | 4.0 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 40.4 | 8.0 |
| Forb Cover | 59.6 | 8.0 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 27.9 | 8.1 |
| Annual Cover | 72.1 | 8.1 |

Twenty-three species contributed to the cover data and 22 other species were encountered along the transects (Table 15). Of the 45 species recorded, 31 were native or desirable. There were 19 grasses and 26 forbs including 14 perennial species and 31 annual species.

Table 15: Reclamation Area 37 Species Composition

| Life Form | Cover Data | Present |
|----------------------|------------|-----------|
| Graminoids | | |
| Perennial | 6 | 12 |
| Annual | 5 | 7 |
| Native | 9 | 15 |
| Introduced | 2 | 4 |
| Cool Season | 2 | 4 |
| Warm Season | 4 | 8 |
| Total | 11 | 19 |
| Forbs | | |
| Perennial | 1 | 2 |
| Annual | 11 | 24 |
| Native | 6 | 16 |
| Introduced | 6 | 10 |
| Total | 12 | 26 |
| Woody Species | | |
| Perennial | 0 | 0 |
| Total Species | 23 | 45 |

Four species (common sunflower, Russian thistle, Indian ricegrass, and false buffalograss) were observed along all 15 transects comprising 25.8%, 19.6%, 10.0%, and 5.2% of the non-noxious relative vegetation cover, respectively. Six other species also contributed at least 3% of the relative cover: prostrate knotweed, sand dropseed, witchgrass, western wheatgrass (*Pascopyrum smithii*), redroot amaranth (*Amaranthus retroflexus*), and prairie sandreed.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 16). However, 12 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 2023.

Table 16: Reclamation Area 37 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 12.5 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 12 | 4 | | Yes |

6.1.6 Reclamation Area 38

Reclamation Area 38 is a 10.9-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. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2020 but was repeated in 2022 due to poor initial establishment.

Total vegetation cover averaged 26.3% and non-noxious cover averaged 24.7% (Table 17). Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 12.7%. Reclamation Area 38 met sample adequacy for non-noxious cover with the minimum 15 samples.

Table 17: Reclamation Area 38 Summary Statistics

| Summary Statistics | Mean | SE |
|---|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 64.8 | 3.8 |
| Total Vegetation Cover | 26.3 | 1.8 |
| Non-Noxious Vegetation Cover | 24.7 | 1.8 |
| Allowable Vegetation Cover | 12.7 | 1.8 |
| Grass Cover | 13.1 | 1.3 |
| Forb Cover | 13.2 | 1.6 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 10.3 | 1.7 |
| Annual Cover | 16.0 | 2.0 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 45.9 | 5.1 |
| Forb Cover | 54.1 | 5.1 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 40.6 | 5.2 |
| Annual Cover | 59.4 | 5.2 |

Sixteen species contributed to the cover data and 14 other species were encountered along the transects (Table 18). Of the 30 species recorded, 21 were native or desirable. There were 12 grasses, 17 forbs, and one woody species including 12 perennial species and 18 annual species.

Only common sunflower and Indian ricegrass were observed along all 15 transects comprising 28.9% and 28.4% of the non-noxious relative vegetation cover, respectively. Russian thistle contributed 19.5% and prairie sandreed comprised 8.4% the relative cover. The remaining cover was 11 species each contributing less than 3% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 19). However, 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 2023.

Table 18: Reclamation Area 38 Species Composition

| Life Form | Cover | |
|----------------------|-----------|-----------|
| | Data | Present |
| Graminoids | | |
| Perennial | 6 | 8 |
| Annual | 4 | 4 |
| Native | 9 | 11 |
| Introduced | 1 | 1 |
| Cool Season | 3 | 3 |
| Warm Season | 3 | 5 |
| Total | 10 | 12 |
| Forbs | | |
| Perennial | 1 | 3 |
| Annual | 5 | 14 |
| Native | 2 | 9 |
| Introduced | 4 | 8 |
| Total | 6 | 17 |
| Woody Species | | |
| Perennial | 0 | 1 |
| Total Species | 16 | 30 |

Table 19: Reclamation Area 38 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 12.7 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 8 | 4 | | Yes |

6.1.7 Reclamation Area 42

Reclamation Area 42 is a 11.4-acre parcel that was formerly the access road for the mining and operational areas. This area was graded to blend into the surrounding reclaimed mining and operational areas. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2020 but was repeated in 2022 due to poor initial establishment.

Total vegetation cover averaged 48.9% and non-noxious cover averaged 42.1% (Table 20). Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 10.5%. Reclamation Area 38 met sample adequacy for non-noxious cover with the minimum 15 samples.

Twenty-nine species contributed to the cover data and 10 other species were encountered along the transects (Table 21). Of the 39 species recorded, 25 were native or desirable. There were 12 grasses and 26 forbs including 10 perennial species and 29 annual species.

Table 20: Reclamation Area 42 Summary Statistics

| Summary Statistics | Mean | SE |
|---|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 79.5 | 3.5 |
| Total Vegetation Cover | 48.9 | 3.4 |
| Non-Noxious Vegetation Cover | 42.1 | 2.4 |
| Allowable Vegetation Cover | 10.5 | 2.2 |
| Grass Cover | 19.3 | 2.5 |
| Forb Cover | 29.5 | 3.4 |
| Woody Cover | 0.1 | 0.1 |
| Perennial Cover | 5.9 | 1.1 |
| Annual Cover | 43.1 | 3.9 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 32.8 | 6.4 |
| Forb Cover | 66.9 | 6.3 |
| Woody Cover | 0.4 | 0.4 |
| Perennial Cover | 15.9 | 3.5 |
| Annual Cover | 84.1 | 3.5 |

Table 21: Reclamation Area 42 Species Composition

| Life Form | Cover Data | Present |
|-----------------------------|------------|-----------|
| <i>Graminoids</i> | | |
| Perennial | 5 | 6 |
| Annual | 6 | 6 |
| Native | 8 | 9 |
| Introduced | 3 | 3 |
| Cool Season | 2 | 2 |
| Warm Season | 3 | 4 |
| Total | 11 | 12 |
| <i>Forbs</i> | | |
| Perennial | 3 | 3 |
| Annual | 14 | 23 |
| Native | 10 | 15 |
| Introduced | 7 | 11 |
| Total | 17 | 26 |
| <i>Woody Species</i> | | |
| Perennial | 1 | 1 |
| Total Species | 29 | 39 |

Only common sunflower was observed along all 15 transects comprising 31.7% of the non-noxious relative vegetation cover. Russian thistle, false buffalograss, Indian ricegrass, and mat sandbur (*Cenchrus longispinus*) comprised another 22.6%, 9.7%, 7.1%, and 6.3%, respectively, of the relative cover. The remaining cover was 24 species each contributing less than 3% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 22). However, six 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 2023.

Table 22: Reclamation Area 42 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 10.5 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 6 | 4 | | Yes |

6.1.8 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.

Total vegetation cover averaged 40.8% up from 18.6% in 2022 and non-noxious vegetation cover was 33.9% up from 18.5% in 2022 (Table 23) Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 18.1% up from 13.2% in 2022. Area 43 met sample adequacy for non-noxious cover with the minimum 15 samples.

Table 23: Reclamation Area 43 Summary Statistics

| Summary Statistics | Mean | SE |
|--|------|-----|
| Absolute Cover Statistics (%) | | |
| Total Ground Cover | 84.4 | 2.2 |
| Total Vegetation Cover | 40.8 | 2.9 |
| Non-Noxious Vegetation Cover | 33.9 | 2.4 |
| Allowable Vegetation Cover | 18.1 | 2.4 |
| Grass Cover | 24.1 | 2.8 |
| Forb Cover | 16.5 | 1.4 |
| Woody Cover | 0.1 | 0.1 |
| Perennial Cover | 14.7 | 1.2 |
| Annual Cover | 26.1 | 2.7 |
| Non-Noxious Relative Cover Statistics (%) | | |
| Grass Cover | 49.0 | 3.4 |
| Forb Cover | 50.7 | 3.3 |
| Woody Cover | 0.3 | 0.3 |
| Perennial Cover | 43.1 | 3.3 |
| Annual Cover | 56.9 | 3.3 |

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Twenty-one species contributed to the cover data and 13 more species were encountered along the transects (Table 24). Of the 34 species recorded, 26 were native or desirable. There were 11 grasses, 21 forbs, and two woody species including 13 perennial species and 21 annual species.

Table 24: Reclamation Area 43 Species Composition

| Life Form | Cover | |
|-----------------------------|-----------|-----------|
| | Data | Present |
| <i>Graminoids</i> | | |
| Perennial | 3 | 8 |
| Annual | 2 | 3 |
| Native | 4 | 10 |
| Introduced | 1 | 1 |
| Cool Season | 0 | 3 |
| Warm Season | 3 | 5 |
| Total | 5 | 11 |
| <i>Forbs</i> | | |
| Perennial | 2 | 3 |
| Annual | 13 | 18 |
| Native | 12 | 14 |
| Introduced | 3 | 7 |
| Total | 15 | 21 |
| <i>Woody Species</i> | | |
| Perennial | 1 | 2 |
| Total Species | 21 | 34 |

The only species observed on all 15 transects were sand dropseed and common sunflower which contributed 40.1% and 18.4% of the overall non-noxious relative cover, respectively. Other species contributing more than 3% of the relative cover were annual ragweed (*Ambrosia artemisiifolia*) with 12.8%, witchgrass with 9.0%, and ribseed sandmat (*Chamaesyce glyptosperma*) with 5.8%.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 25). 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 2023.

Table 25: Reclamation Area 43 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 18.1 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 8 | 4 | | Yes |

6.1.9 Reclamation Area 44

Reclamation Area 44 is a 10.0-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.

Total vegetation cover averaged 38.1% (Table 26) this is an increase from the 19.6% observed in 2022. Chetgrass contributed over 18% of the overall relative vegetation cover, thus the non-noxious cover was only 30.8%. Additionally, substantial excess annual cover was recorded further reducing the allowable cover used for hypothesis testing to only 14.9%. Only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Table 26: Reclamation Area 44 Summary Statistics

| Summary Statistics | Mean | SE |
|---|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 70.5 | 4.1 |
| Total Vegetation Cover | 38.1 | 3.4 |
| Non-Noxious Vegetation Cover | 30.8 | 2.6 |
| Allowable Vegetation Cover | 14.9 | 2.6 |
| Grass Cover | 23.3 | 3.2 |
| Forb Cover | 14.8 | 3.0 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 11.9 | 1.8 |
| Annual Cover | 26.3 | 3.7 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 54.9 | 6.5 |
| Forb Cover | 45.1 | 6.5 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 40.3 | 6.3 |
| Annual Cover | 59.7 | 6.3 |

Twenty-five species contributed to the cover data and 11 more species were encountered along the transects (Table 27). Of the 36 species recorded, 23 were native or desirable. There were 14 grasses and 22 forbs, including 10 perennial species and 26 annual species.

There were five dominant species observed along at least 13 of the 15 transects. Common sunflower contributed 19.9% of the non-noxious relative cover, sand dropseed contributed 18.0%, Indian ricegrass contributed 13.8%, witchgrass contributed 11.9%, and redroot amaranth contributed 11.1%. Other species contributing at least 3% of the relative cover included Russian thistle and prostrate knotweed.

Table 27: Reclamation Area 44 Species Composition

| Life Form | Cover | |
|----------------------|-----------|-----------|
| | Data | Present |
| Graminoids | | |
| Perennial | 6 | 8 |
| Annual | 6 | 6 |
| Native | 9 | 11 |
| Introduced | 3 | 3 |
| Cool Season | 4 | 4 |
| Warm Season | 2 | 4 |
| Total | 12 | 14 |
| Forbs | | |
| Perennial | 1 | 2 |
| Annual | 12 | 20 |
| Native | 5 | 12 |
| Introduced | 8 | 10 |
| Total | 13 | 22 |
| Woody Species | | |
| Perennial | 0 | 0 |
| Total Species | 25 | 36 |

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 28). 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 2023.

Table 28: Reclamation Area 44 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 14.9 | 31.8 | 28.6 | No |
| Allowable Production (g/m ²) | n/a | n/a | n/a | n/a |
| Species Composition (perennial grass) | 8 | 4 | | Yes |

6.2 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.

6.2.1 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.

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Total vegetation cover averaged 71.2% (Table 29) which was a substantial increase from the 20.2% cover observed in 2022. Non-noxious vegetation cover was 66.0% up from 19.6% in 2022. Excess annual cover was much lower than in other Reclamation Areas resulting in an allowable vegetation cover of 60.4% up from 17.8% in 2022.

Total non-noxious herbaceous production averaged 81.2 g/m² (Table 29) up from 35.6 g/m² in 2022. Annual species accounted for 36.1% of the relative production. Thus, the average allowable herbaceous production was 60.0 g/m² up from only 29.8 g/m² in 2022.

Twenty species contributed to the cover data and 14 other species were encountered along the transects (Table 30). Of the 34 species recorded, 25 were native or desirable. There were 14 grasses and 20 forbs, including 12 perennial species and 22 annual species.

The dominant species contributing to cover in all 10 transects were prairie sandreed and blue grama (*Bouteloua gracilis*) which contributed 45.8% and 25.3%, respectively, of the non-noxious relative cover. False buffalograss, Russian thistle, and common sunflower were also observed on all 10 transects, but combined to comprise only 11.0% of the relative cover. Two other species, sand dropseed and witchgrass, also contributed at least 3% of the relative cover.

Sample adequacy would have required 5 cover samples and 35 production samples. While the allowable cover calculated from the samples collected exceeded the technical standard, the allowable production did not (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 29: Reclamation Area 32 Summary Statistics

| Summary Statistics | Mean | SE |
|--|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 92.6 | 1.7 |
| Total Vegetation Cover | 71.2 | 2.8 |
| Non-Noxious Vegetation Cover | 66.0 | 3.4 |
| Allowable Vegetation Cover | 60.4 | 3.4 |
| Grass Cover | 62.8 | 2.9 |
| Forb Cover | 8.4 | 1.6 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 53.8 | 3.1 |
| Annual Cover | 17.4 | 3.5 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 86.0 | 2.6 |
| Forb Cover | 14.0 | 2.6 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 81.0 | 4.0 |
| Annual Cover | 19.0 | 4.0 |
| <i>Herbaceous Production Statistics (g/m²)</i> | | |
| Total Production | 81.2 | 6.6 |
| Allowable Production | 60.0 | 6.6 |
| Perennial Production | 51.9 | 5.2 |
| Annual Production | 29.4 | 8.2 |

Table 30: Reclamation Area 32 Species Composition

| Life Form | Cover | |
|----------------------|-----------|-----------|
| | Data | Present |
| Graminoids | | |
| Perennial | 7 | 10 |
| Annual | 4 | 4 |
| Native | 9 | 12 |
| Introduced | 2 | 2 |
| Cool Season | 2 | 4 |
| Warm Season | 5 | 6 |
| Total | 11 | 14 |
| Forbs | | |
| Perennial | 1 | 2 |
| Annual | 8 | 18 |
| Native | 3 | 13 |
| Introduced | 6 | 7 |
| Total | 9 | 20 |
| Woody Species | | |
| Perennial | 0 | 0 |
| Total Species | 20 | 34 |

Table 31: Reclamation Area 32 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|------------------|--------------------|------------------------|-------|
| Allowable Cover (%) | 60.4 | 31.8 | 28.6 | Yes |
| Allowable Production (g/m ²) | 60.0 | 102.7 | 92.4 | No |
| Species Composition (perennial grass) | 2 | 4 | | No |

6.2.2 Reclamation Area 33

Reclamation Area 33 is a 12.4-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 68.4% (Table 32) up from 20.0% in 2022. Non-noxious vegetation cover was 59.8% up from 20.0% in 2022. Area 33 was the only area with no excess annual cover; thus, the non-noxious vegetation cover was used for hypothesis testing.

Total non-noxious herbaceous production averaged 95.2 g/m² (Table 32) up from 20.4 g/m² in 2022. Annual species accounted for 17.1% of the relative production; thus, the average allowable herbaceous production was 88.4 g/m².

Fifteen species contributed to the cover data and 21 other species were encountered along the transects (Table 33). Of the 36 species recorded, 23 were native or desirable. There were 16 grasses, 19 forbs, and one woody species including 13 perennial species and 23 annual species.

Table 32: Reclamation Area 33 Summary Statistics

| Summary Statistics | Mean | SE |
|--|------|-----|
| <i>Absolute Cover Statistics (%)</i> | | |
| Total Ground Cover | 95.2 | 1.4 |
| Total Vegetation Cover | 68.4 | 2.6 |
| Non-Noxious Vegetation Cover | 59.8 | 2.5 |
| Allowable Vegetation Cover | 59.8 | 2.5 |
| Grass Cover | 66.8 | 2.9 |
| Forb Cover | 1.6 | 0.9 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 54.8 | 3.2 |
| Annual Cover | 13.6 | 1.9 |
| <i>Non-Noxious Relative Cover Statistics (%)</i> | | |
| Grass Cover | 97.4 | 1.5 |
| Forb Cover | 2.6 | 1.5 |
| Woody Cover | 0.0 | 0.0 |
| Perennial Cover | 91.8 | 2.2 |
| Annual Cover | 8.2 | 2.2 |
| <i>Herbaceous Production Statistics (g/m²)</i> | | |
| Total Production | 95.2 | 6.0 |
| Allowable Production | 88.4 | 6.0 |
| Perennial Production | 78.9 | 8.0 |
| Annual Production | 16.3 | 5.1 |

Table 33: Reclamation Area 33 Species Composition

| Life Form | Cover | |
|-----------------------------|-----------|-----------|
| | Data | Present |
| <i>Graminoids</i> | | |
| Perennial | 7 | 10 |
| Annual | 3 | 6 |
| Native | 8 | 14 |
| Introduced | 2 | 2 |
| Cool Season | 0 | 2 |
| Warm Season | 7 | 8 |
| Total | 10 | 16 |
| <i>Forbs</i> | | |
| Perennial | 0 | 2 |
| Annual | 5 | 17 |
| Native | 3 | 8 |
| Introduced | 2 | 11 |
| Total | 5 | 19 |
| <i>Woody Species</i> | | |
| Perennial | 0 | 1 |
| Total Species | 15 | 36 |

The dominant species contributing to cover in all 10 transects were prairie sandreed and blue grama which contributed 51.1% and 28.9%, respectively, of the non-noxious relative cover. Three other species observed on all 10 transects were sand dropseed which contributed 8.3% of the relative cover, witchgrass with 4.9%, and common sunflower with 0.9%.

Sample adequacy would have required 3 cover samples and 25 production samples. The allowable cover calculated from the samples collected exceeded the technical standard. (Table 34). Additionally, had an adequate sample size been collected, the allowable production calculated from the samples collected would have met the technical standard. 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 34: Reclamation Area 33 Success Criteria

| Reclamation Success Criteria | Reclamation Area | Technical Standard | 90% Technical Standard | Pass? |
|--|-------------------------|---------------------------|-------------------------------|--------------|
| Allowable Cover (%) | 59.8 | 31.8 | 28.6 | Yes |
| Allowable Production (g/m ²) | 88.4 | 102.7 | 92.4 | Yes |
| Species Composition (perennial grass) | 2 | 4 | | No |

7 DISCUSSION

Reclamation Areas 25, 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. Reclamation Areas 36, 37, 38, and 42 were monitored for the first time in 2023.

7.1 Vegetation Cover

Based on the results of the quantitative sampling, only two (Areas 32 and 33) of the 11 Reclamation Areas had allowable vegetation cover that passed the success standard (Table 35). All but one of the Phase II Reclamation Areas (25, 34, 35, 36, 37, 42, 43, and 44) would have passed using the total non-noxious cover if there had not been excess annual cover. Only Reclamation Area 38 still would not pass. Most of the Phase II areas (Reclamation Areas 35, 36, 37, 38, 42, 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 Areas 25 and 34, while older reclamation, were treated with a pre-emergent herbicide in 2020 to control the cheatgrass. This treatment effectively treated the cheatgrass, but left substantial bare areas for the invasion of other annual species. It may take a few years for the perennial grasses to fill in.

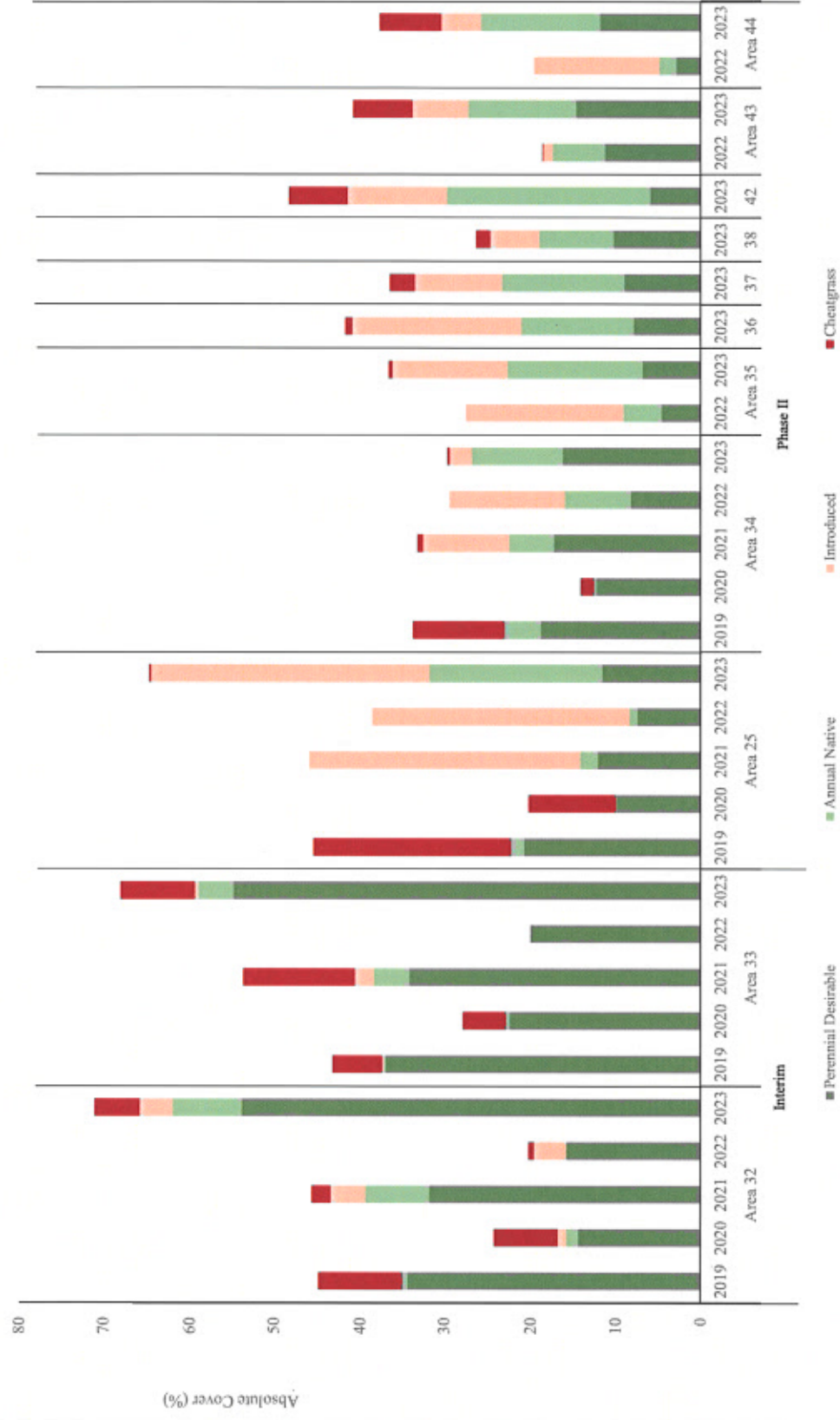
Desirable perennial vegetation cover increased from 2022 to 2023 in all monitoring areas that have been previously monitored (Figure 4). This is after a substantial decrease from 2021 to 2022 in the four areas with longer term data. In Areas 32 and 33, 2023 exhibited the greatest desirable perennial cover on record. However, in Areas 25 and 34 it was similar to the 2021 data and less than that observed in 2019.

Table 35: Vegetation Cover Success Standard Comparison

| | Phase II Monitoring | | | | | | | | | | Interim Monitoring | |
|-----------------------------|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------------|--|
| | Area 25 | Area 34 | Area 35 | Area 36 | Area 37 | Area 38 | Area 42 | Area 43 | Area 44 | Area 32 | Area 33 | |
| Vegetation Cover | | | | | | | | | | | | |
| Average Vegetation Cover | 64.9 | 29.7 | 37.1 | 42.3 | 36.8 | 26.3 | 48.9 | 40.8 | 38.1 | 71.2 | 68.4 | |
| Average Non-Noxious Cover | 64.7 | 29.4 | 36.7 | 41.5 | 33.9 | 24.7 | 42.1 | 33.9 | 30.8 | 66.0 | 59.8 | |
| Average Allowable Cover | 19.1 | 19.2 | 11.0 | 14.4 | 12.5 | 12.7 | 10.5 | 18.1 | 14.9 | 60.4 | 59.8 | |
| N | 30 | 30 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 10 | 10 | |
| Nmin (non-noxious) | 9 | 28 | 23 | 32 | 19 | 14 | 9 | 14 | 20 | 5 | 3 | |
| Nmin (allowable) | 74 | 65 | 232 | 179 | 132 | 53 | 124 | 48 | 83 | 6 | 3 | |
| Stdev Allowable Cover | 12.6 | 11.9 | 12.5 | 14.3 | 10.7 | 6.9 | 8.7 | 9.3 | 10.1 | 10.8 | 7.8 | |
| Standard | 31.8 | | | | | | | | | | | |
| 90% of Standard | 28.6 | | | | | | | | | | | |
| T (one-tail, $\alpha=0.9$) | 1.311 | 1.311 | 1.345 | 1.345 | 1.345 | 1.345 | 1.345 | 1.345 | 1.345 | 1.383 | 1.383 | |
| Standard Passed? | No | No | No* | No* | No* | No | No | No | No* | Yes | Yes | |

* Only sampled to the minimum sample size

Figure 4: Absolute Cover by Life Form 2019 – 2023



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The 11 months preceding vegetation monitoring (September – July) were the wettest since CEC started collecting precipitation data in 1993 after three years that were all at least 30% drier than average. The increased precipitation likely resulted in the observed flush in annual vegetation while the perennial vegetation was not able to react as quickly. The increased precipitation also increased the cover standard, so most areas could not pass once the excess annual cover was subtracted from the total vegetation cover. However, given another year or two of more average precipitation, hopefully the perennial vegetation will recover.

7.2 Herbaceous Production

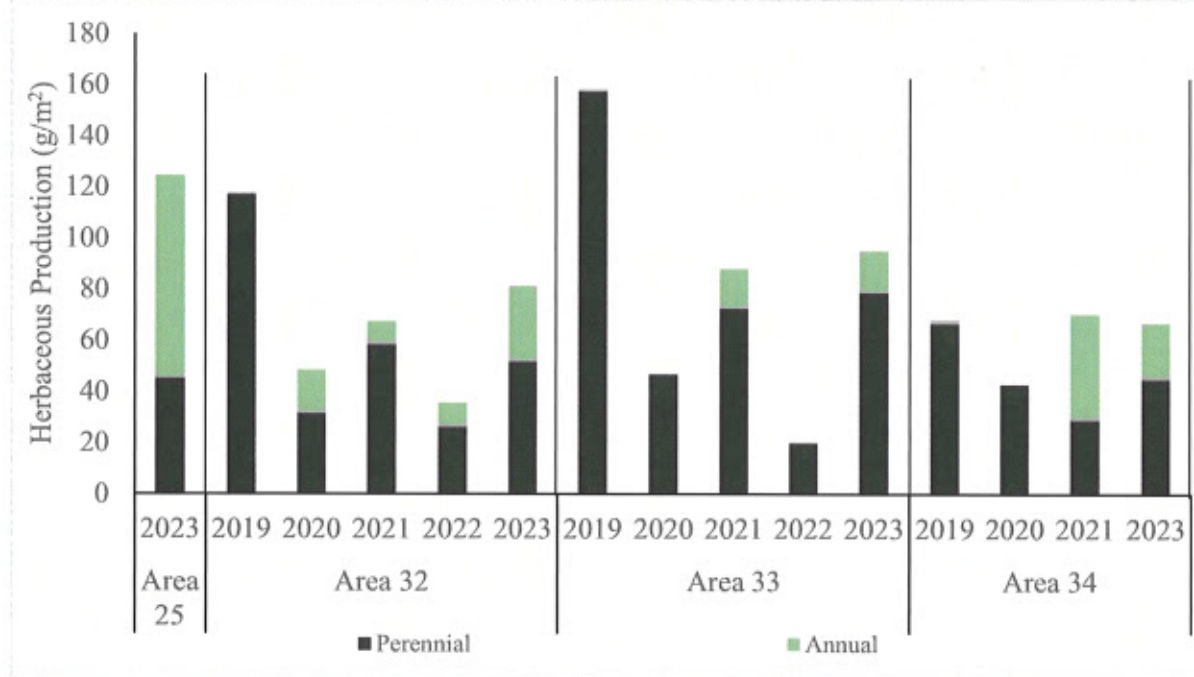
Based on the results of the herbaceous production sampling, only Reclamation Area 33 would have passed the calculated production success standard had an adequate sample size been collected (Table 36). Using the total non-noxious production without subtracting excess annual production, Area 25 would also have passed. Overall, non-noxious herbaceous production and allowable production increased from 2022 to 2023 in all areas (Figure 5). However, the above average precipitation in fall 2022 and spring/summer 2023 resulted in an increased production standard as well.

Table 36: Herbaceous Production Success Standard Comparison

| Herbaceous Production | Interim Monitoring | | | |
|------------------------------|---------------------------|----------------|----------------|----------------|
| | Area 25 | Area 32 | Area 33 | Area 34 |
| Average Total Production | 124.4 | 81.2 | 95.2 | 66.9 |
| Average Allowable Production | 58.2 | 60.0 | 88.4 | 52.1 |
| N | 15 | 15 | 15 | 15 |
| Nmin (non-noxious) | 55 | 35 | 22 | 52 |
| Nmin (allowable) | 246 | 65 | 25 | 83 |
| Stdev Allowable Production | 67.8 | 35.9 | 33.1 | 35.3 |
| Standard | 102.7 | | | |
| 90% of Standard | 92.4 | | | |
| T (one-tail, $\alpha=0.9$) | 1.345 | 1.345 | 1.345 | 1.345 |
| Standard Passed? | No* | No* | Yes* | No* |

* Only sampled to the minimum sample size

Figure 5: Non-Noxious Herbaceous Production by Life Form 2019 – 2023



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. While no reclamation areas were monitored for Phase III release, the interim areas (Areas 32 and 33) were compared to this standard to track their progress. Neither interim area met the 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 nine 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 as well.

8 SUMMARY

Quantitative monitoring revealed that none of the areas monitored using the Phase II guidelines (Reclamation Areas 25, 34, 35, 36, 37, 38, 42, 43, and 44) met the vegetation cover standard for Phase II bond release (Table 37). They did all meet the Phase II species composition standard.

Reclamation Areas 32 and 33 were monitored under the interim monitoring program and both met the vegetation cover standard. Additionally, Area 33 met the herbaceous production standard, but neither area met the species composition standards.

All Phase II and interim reclamation areas will require additional sampling in 2024.

Table 37: Success Standard Summary

| Reclamation Standard | Phase II Monitoring | | | | | | | | | Interim Monitoring* | |
|-----------------------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------------------|---------|
| | Area 25 | Area 34 | Area 35 | Area 36 | Area 37 | Area 38 | Area 42 | Area 43 | Area 44 | Area 32 | Area 33 |
| Vegetation Cover | No | No | No* | No* | No* | No | No | No | No* | Yes | Yes |
| Herbaceous Production | No* | No* | n/a | n/a | n/a | n/a | n/a | n/a | n/a | No* | Yes* |
| Species Composition | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| Eligible for Release | No | No | No | No | No | No | No | No | No | n/a | n/a |

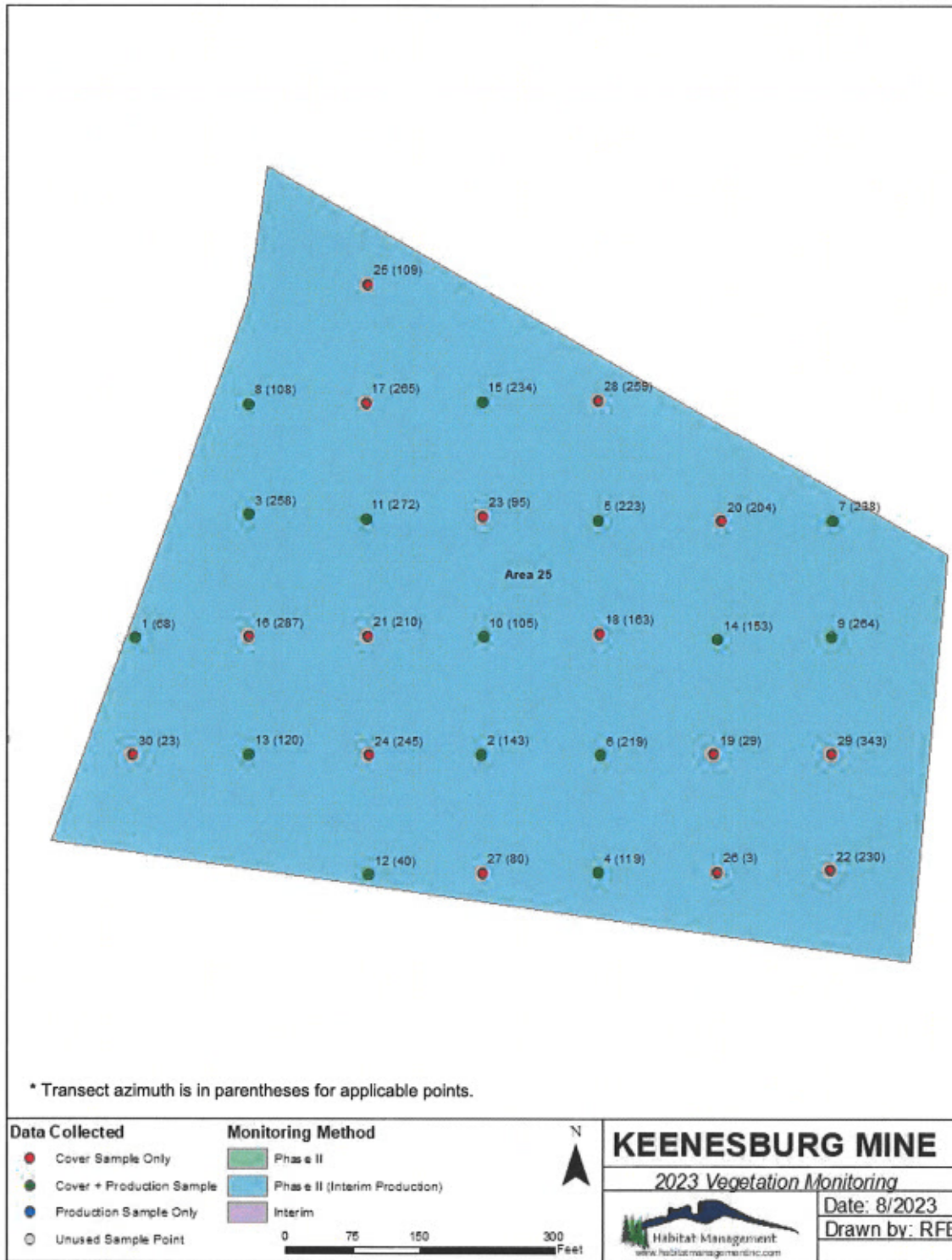
* Only sampled to the minimum sample size

9 LITERATURE CITED

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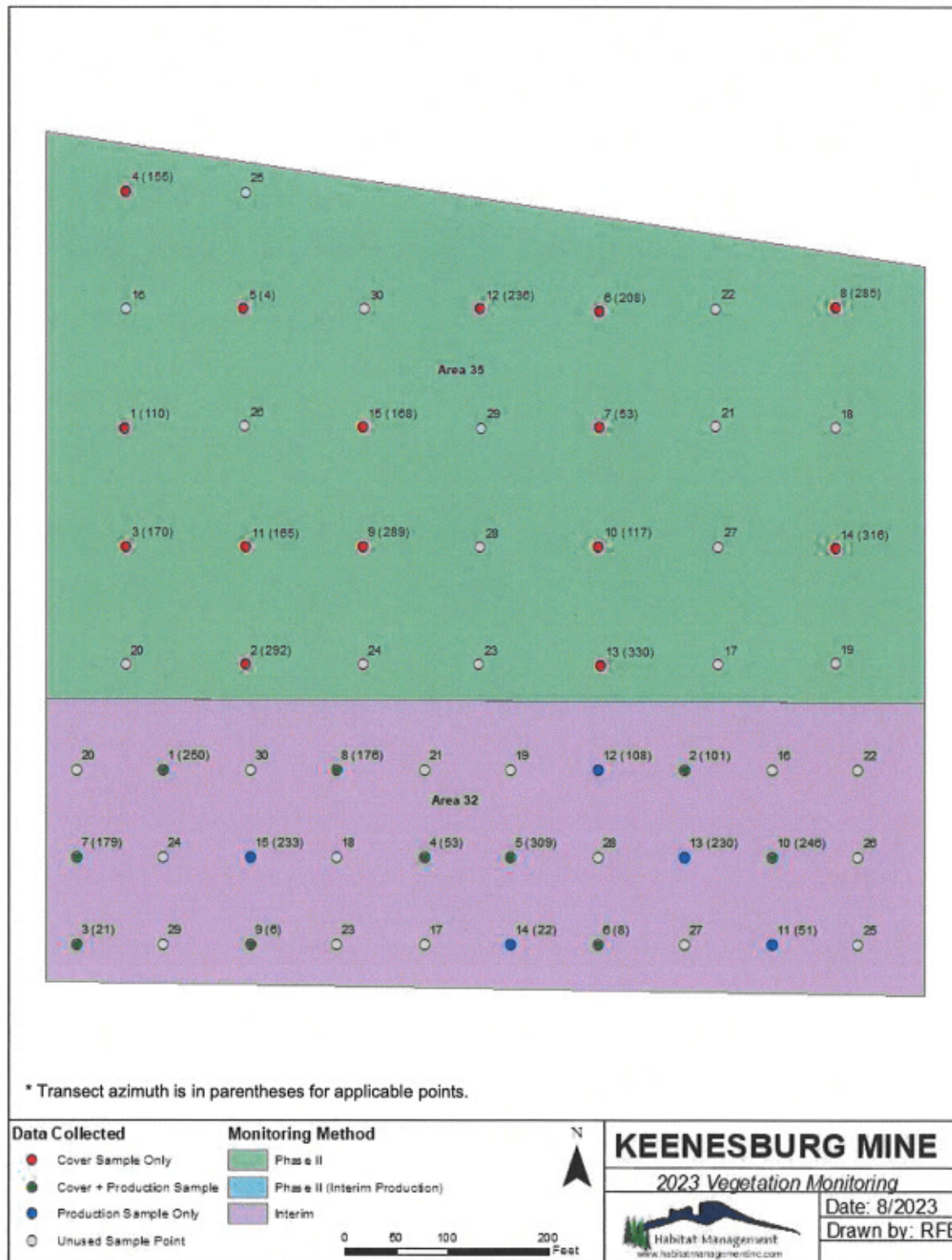
Appendix A: Sample Point Location Maps

Sample Point Locations Area 25

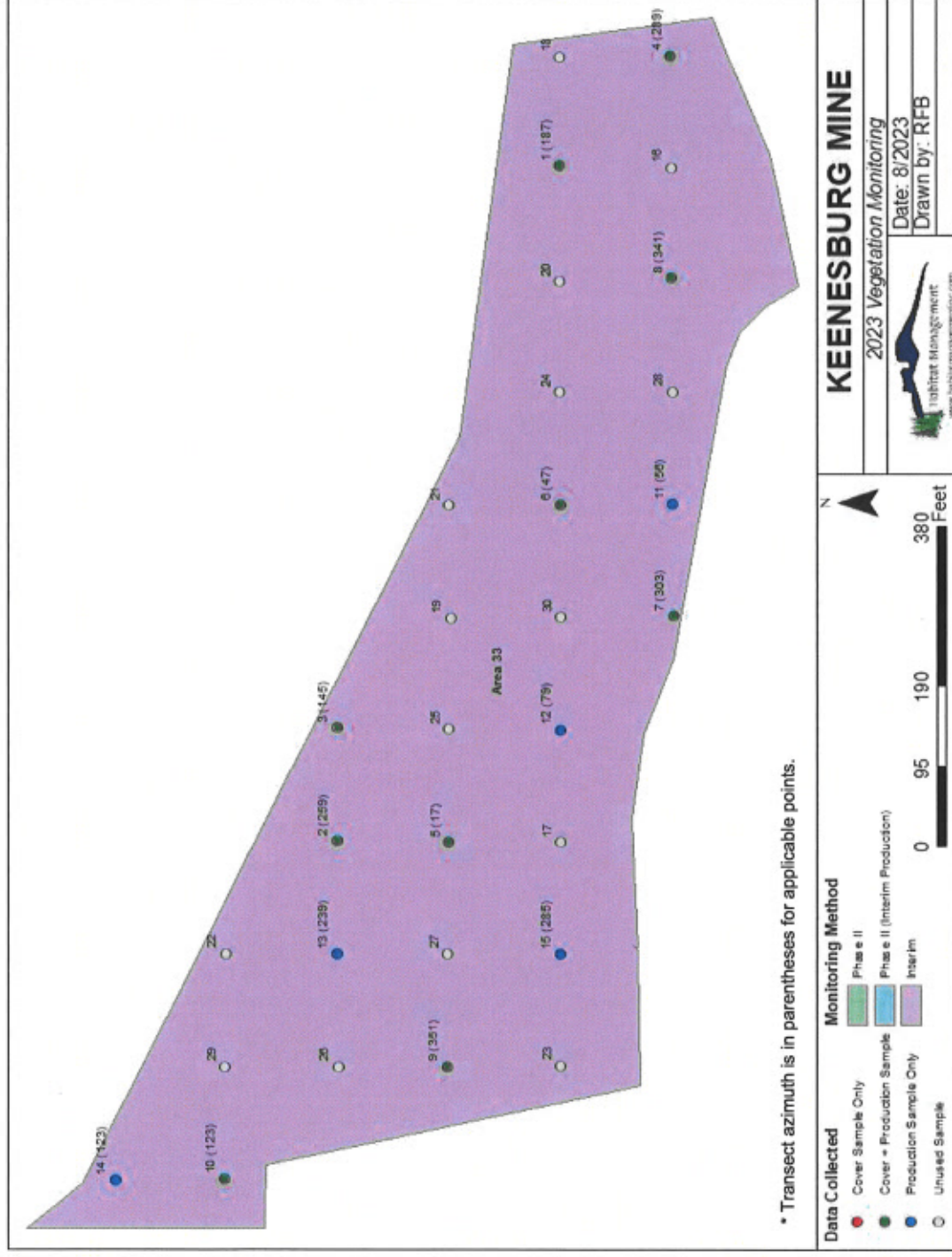


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Sample Point Locations Areas 32 & 35

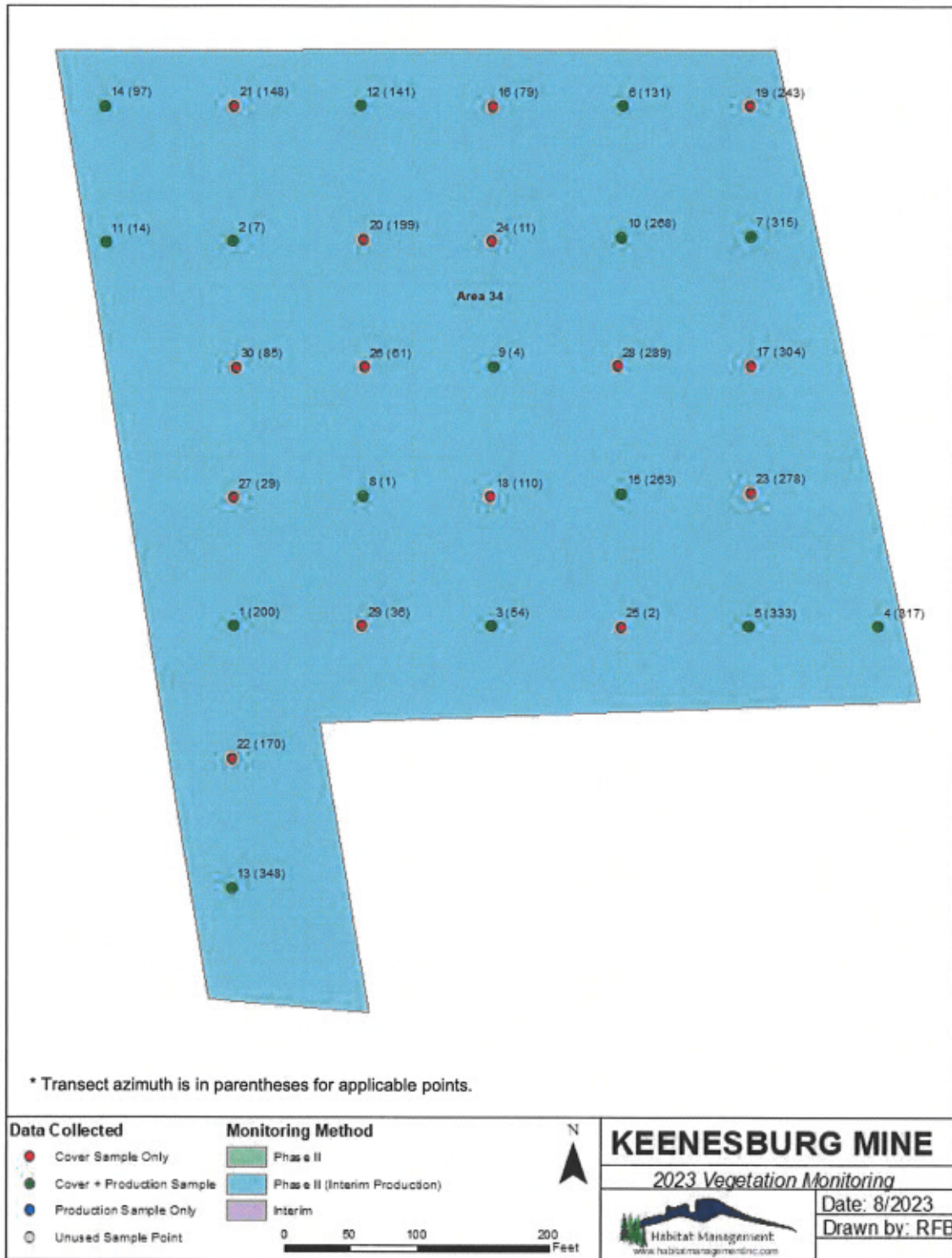


Sample Point Locations Area 33

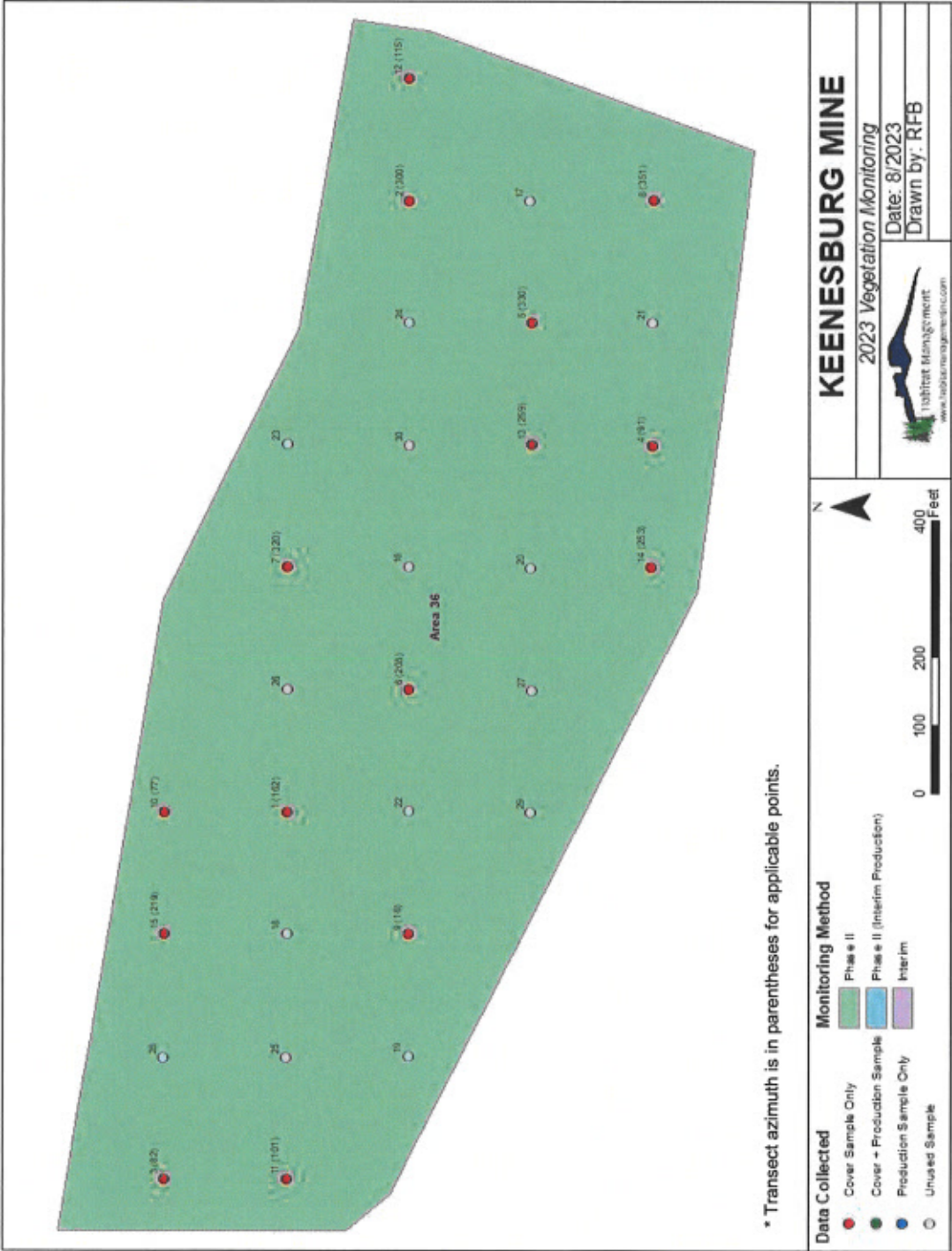


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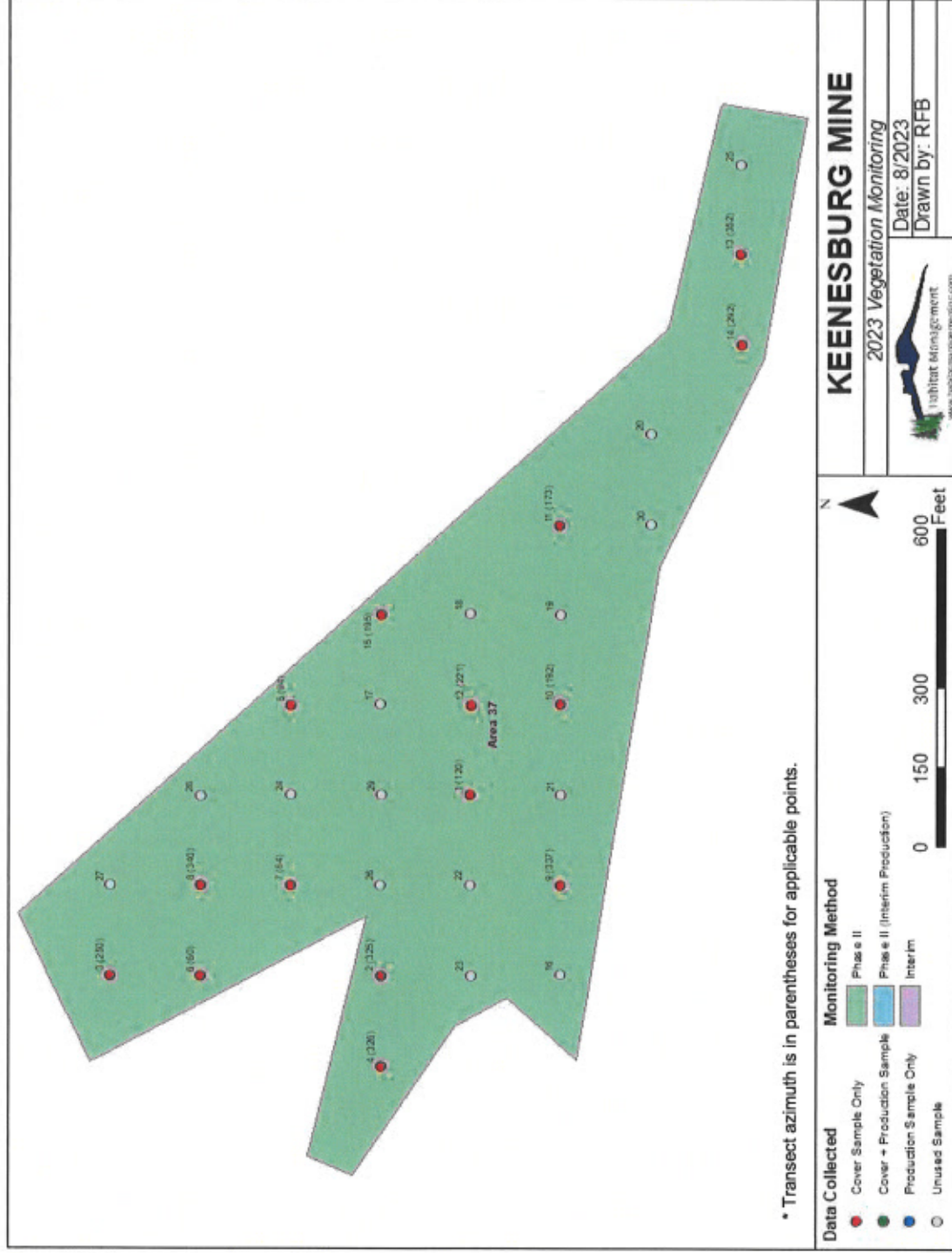
Sample Point Locations Area 34



Sample Point Locations (Area 36)

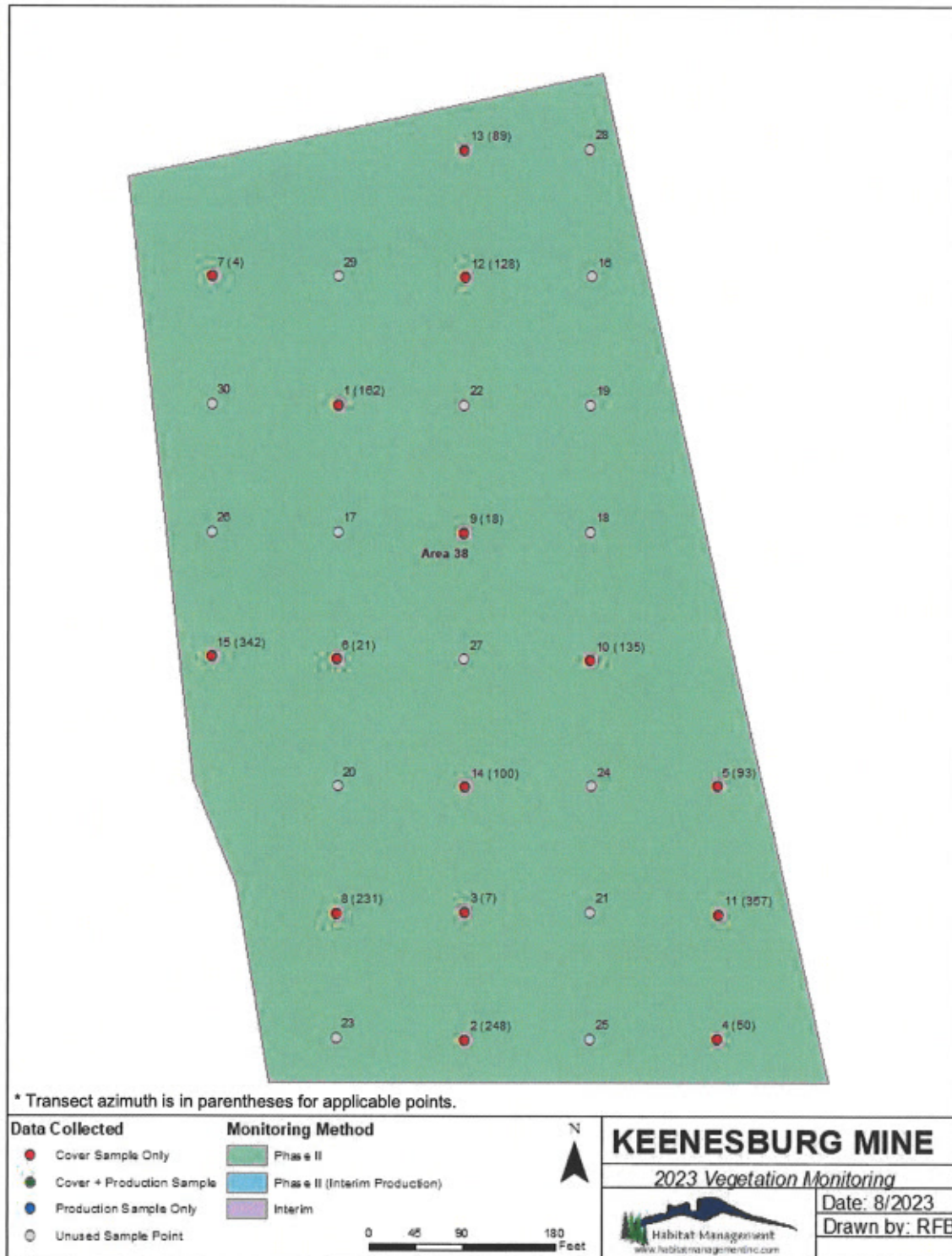


Sample Point Locations Area 37



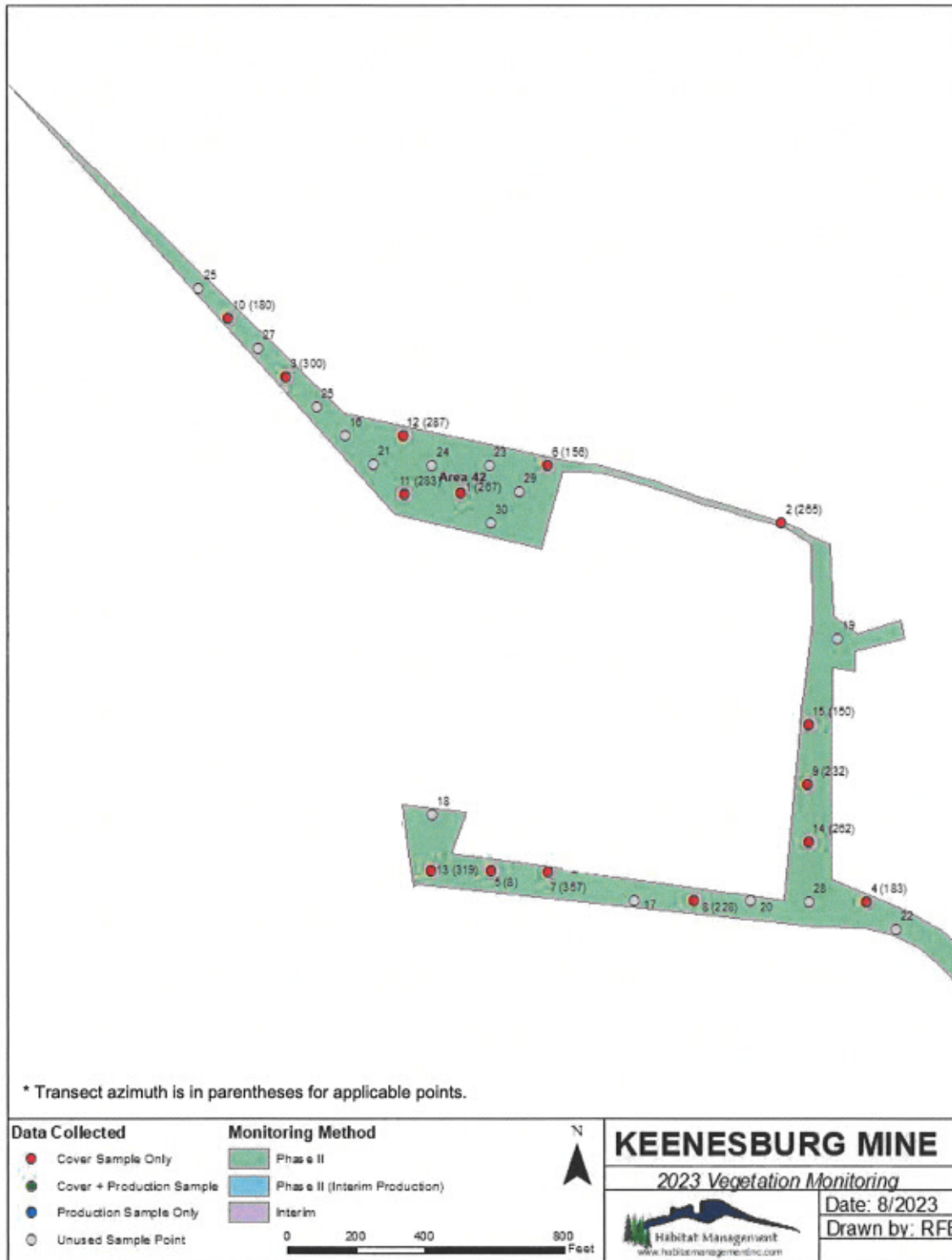
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Sample Point Locations Area 38



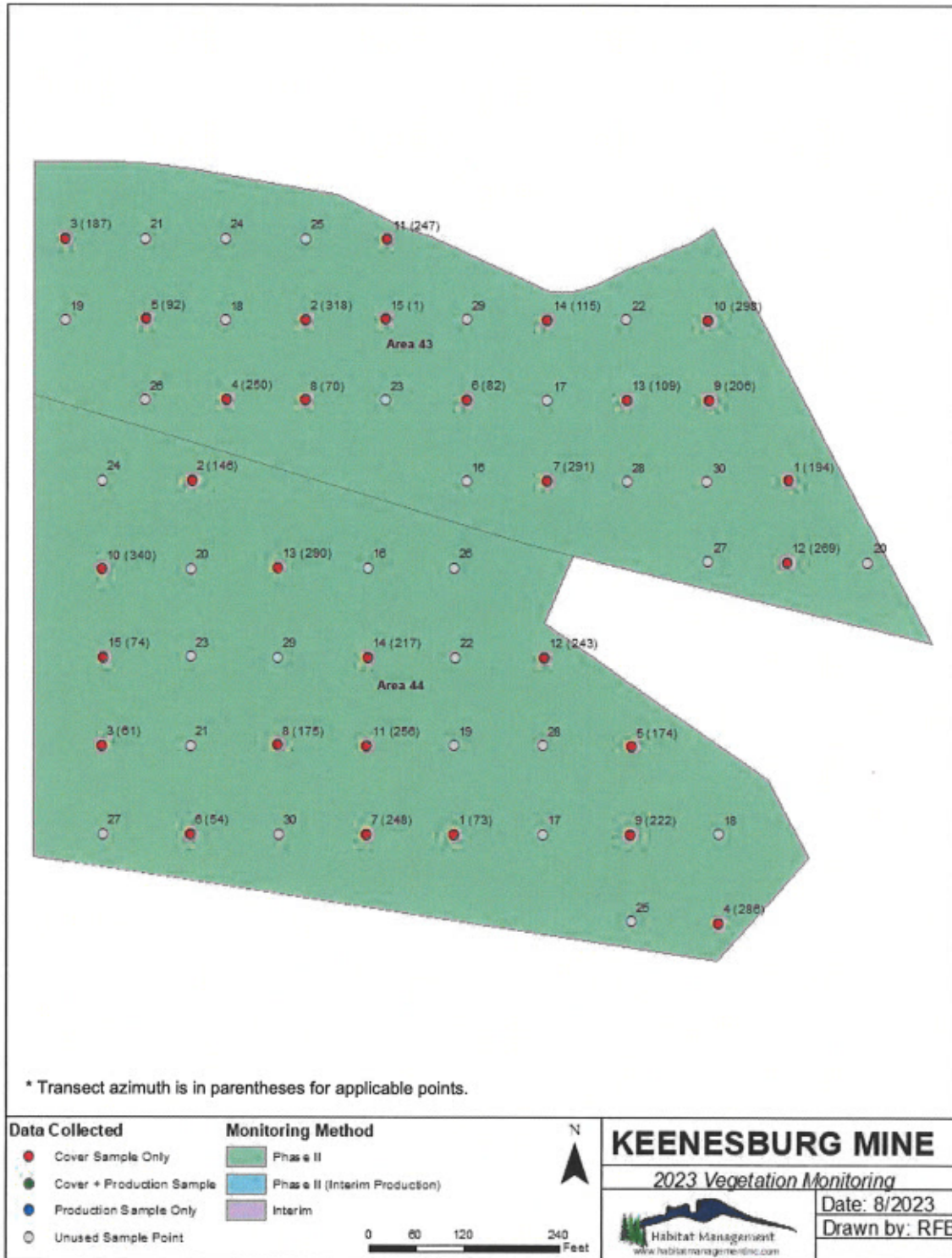
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Sample Point Locations Area 42



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Sample Point Locations Areas 43 & 44



Appendix B: Vegetation Cover Data

Kearneyville 2023 Vegetation Monitoring Report

Reclamation Area 25 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--|-------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | | | | | | | | | | | |
| Munroa squarrosa | false buffalograss | P | 1 | P | 1 | P | 1 | 1 | P | P | 3 | 2 | 1 | 3 | 2 | P | P | 1 | 2 |
| Panicum capillare | witchgrass | | | | | P | P | | | | 1 | 2 | 3 | | | | 1 | 1 | 1 |
| Vulpia octoflora | sixweeks fescue | | | | | | | | | | | | | | | | | | P |
| Subtotal | | P | 1 | P | 1 | | 1 | 1 | 1 | P | 4 | 4 | 4 | 3 | 2 | P | P | 1 | 3 |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | | | | 1 | 1 | | 1 | P | | P | P | | | | P | | | P |
| Eragrostis cilianensis | sinkgrass | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | 1 | 1 | | 1 | P | | P | P | | | | P | | | P |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | | | | | | | P | | | | | | | | | |
| Bromus inermis | smooth brome | | | | | | | | | | | | P | | | | | | |
| Elymus trachycaulis | slender wheatgrass | | | | P | | | | | | | 3 | | | | | | | |
| Pascopyrum smithii | western wheatgrass | | | | P | | | | | | | 1 | | | | | | | |
| Subtotal | | P | | | | | | | P | P | | 4 | | | | | | | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | | 2 | P | | | | | 3 | | P | | | P | | | | 3 |
| Aristida purpurea | purple threeawn | | | | | | | | | | | | | | P | | | | |
| Bouteloua gracilis | blue grama | | | | | | | | 13 | 4 | | | 3 | 1 | 1 | | 6 | 9 | 1 |
| Calamovilfa longifolia | prairie sundreed | 3 | | 4 | 2 | | P | | 2 | | P | 2 | P | 2 | | | | | |
| Panicum virgatum | switchgrass | | P | | 4 | 2 | 5 | 4 | 2 | P | 1 | 3 | 5 | 2 | 4 | P | 1 | P | 3 |
| Sporobolus cryptandrus | sand dropseed | | | | | | | | | | 2 | 1 | 5 | 8 | 5 | P | 1 | 6 | 10 |
| Subtotal | | 4 | P | 6 | 2 | 5 | 2 | 5 | 4 | 2 | 15 | 5 | 12 | 2 | 1 | 5 | 8 | 10 | 1 |
| Total Grass Cover | | 4 | 1 | 0 | 1 | 6 | 2 | 7 | 1 | 3 | 0 | 6 | 1 | 16 | 5 | 5 | 0 | 2 | 9 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | |
| Anaranthus retroflexus | redroot amaranth | P | 1 | 1 | 1 | 1 | P | P | P | P | 1 | 1 | P | P | P | P | P | P | P |
| Ambrosia acanthicarpa | flaxseed bur rugweed | | | | | | P | P | 2 | P | P | P | | | P | | | | |
| Argemone polyanthemis | crested pricklypoppy | | P | | | P | P | P | | | | | | | | | | | |
| Chamaesyce glyptosperma | ribseed sandmat | | | | | | | | | | | | | | | | | | |
| Chenopodium desiccatum | aridland goosefoot | | | | | | | | 1 | | | P | | | | | | | P |
| Chenopodium leptophyllum | narrowleaf goosefoot | P | | | | | | | | | | | | | | | | | |
| Cleome serrulata | Rocky Mountain beeplant | | | | | | | | | | | | | | | | | | |
| Coryza canadensis | Canadian horseweed | | | | | | 1 | | P | P | P | P | | | | | | | |
| Croton texensis | Texas croton | | | | | | | | | | | | | | | | | | |
| Erigeron bellidiflorus | western daisy fleabane | | | | | | P | 3 | 1 | P | | | | | 1 | | | | P |
| Helianthus annuus | common sunflower | 22 | 21 | 15 | 11 | 3 | 10 | 12 | 1 | 5 | 4 | 5 | 6 | 7 | 4 | 2 | 1 | 9 | 7 |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | | | | | | | P | | | | | | | | | 1 |
| Subtotal | | 22 | 22 | 16 | 1 | 12 | 1 | 4 | 12 | 15 | 1 | 8 | 5 | 6 | 7 | 5 | 2 | 1 | 9 |

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Reclamation Area 25 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--|-------------------------|------|------|------|------|-----|------|-----|------|------|------|------|------|-----|-----|------|------|------|-----|
| 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | |
| Ambrosia artemisiifolia | annual ragweed | | | | | | | | | | | | | | | | | | |
| Bassia scoparia | burningbush | | | | | | | | | | | | | | | | | | |
| Dysphania botrys | Jerusalem oak goosefoot | P | 1 | 3 | P | | | | | | | | | | | | | | |
| Lactuca serriola | prickly lettuce | P | | | | | | | | | | | | | | | | | |
| Melilotus officinalis | sweet-clover | | | | | | | | | | | | | | | | | | |
| Polygonum aviculare | prostrate knotweed | | | | | | | | | | | | | | | | | | |
| Salsola collina | slender Russian thistle | | | | | | | | | | | | | | | | | | |
| Salsola tragus | prickly Russian thistle | 10 | 4 | 15 | 4 | 16 | 2 | 19 | 3 | 20 | 10 | 1 | 7 | 3 | 15 | 3 | 11 | 1 | 20 |
| Sisymbrium alissimum | tall tumbleweed | | | | | | | | | | | | | | | | | | |
| Tragopogon dubius | yellow safefly | | | | | | | | | | | | | | | | | | |
| Subtotal | | 10 | 4 | 16 | 7 | 16 | 2 | 20 | 3 | 20 | 10 | 1 | 9 | 4 | 16 | 3 | 13 | 1 | 22 |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cuman ragweed | | | | | | | | | | | | | | | | | | |
| Cuscuta indecora | bigseed alfalfa dodder | | | | | | | | | | | | | | | | | | |
| Symphoricarum falcatum | white prairie aster | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | |
| Forbs: Perennial Introduced | | | | | | | | | | | | | | | | | | | |
| Convolvulus arvensis | field bindweed | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | |
| Total Forb Cover | | 32 | 4 | 38 | 7 | 32 | 3 | 33 | 4 | 24 | 0 | 22 | 1 | 24 | 5 | 24 | 3 | 20 | 1 |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | | | |
| Artemisia filifolia | sand sagebrush | | | | | | | | | | | | | | | | | | |
| Opuntia polyacantha | hairspine pricklypear | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | |
| Total Shrub Cover | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rock | | | | | | | | | | | | | | | | | | | |
| Litter | | 6 | 8 | 5 | 5 | 12 | 11 | 12 | 4 | 13 | 13 | 5 | 3 | 15 | 16 | 3 | 10 | 4 | 14 |
| Bare Ground | | 8 | 4 | 7 | 5 | 11 | 9 | 9 | 6 | 5 | 3 | 6 | 3 | 7 | 17 | 9 | 5 | 5 | 16 |
| Total Hits | | 50 | 5 | 50 | 8 | 50 | 5 | 50 | 5 | 50 | 0 | 50 | 2 | 50 | 7 | 50 | 8 | 50 | 1 |
| Total Vegetation Cover | | 72 | 10 | 76 | 16 | 76 | 10 | 80 | 10 | 54 | 0 | 60 | 4 | 58 | 14 | 80 | 16 | 64 | 2 |
| Non-Noxious Vegetation Cover | | 72 | 10 | 76 | 16 | 76 | 10 | 78 | 10 | 52 | 0 | 60 | 4 | 56 | 14 | 80 | 16 | 64 | 2 |
| Total Ground Cover | | 84 | 92 | 86 | 90 | 78 | 82 | 82 | 88 | 90 | 94 | 88 | 94 | 86 | 66 | 82 | 90 | 90 | 68 |
| Allowable Vegetation Cover | | 25.4 | 29.4 | 29.4 | 31.4 | 5.4 | 13.4 | 9.4 | 33.4 | 17.4 | 21.4 | 31.4 | 41.4 | 9.4 | 0.0 | 29.4 | 23.4 | 35.4 | 0.0 |
| Non-Noxious Annual Cover | | | | | | | | | | | | | | | | | | | |
| Excess Annual Cover | | | | | | | | | | | | | | | | | | | |

Reduction Area 25 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | |
|-----------------------------------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------------|----------------------------|----------------------------|--------------------------------|------|------|
| | | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | | | | | 1st | 2nd |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | | |
| Munroa squarrosa | false buffalograss | P | | | | | | | | | | | | | | | | | | | | | | | | 22 | 32 | 1.5 | 3.0 | | |
| Panicum capillare | witchgrass | | | | | | | | | | | | | | | | | | | | | | | | | 11 | 12 | 0.7 | 1.1 | | |
| Vulpia octiflora | sixweeks fescue | 1 | P | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | | |
| Subtotal | | 1 | P | 2 | | | | | | | | | | | | | | | | | | | | | | 34 | 45 | 2.3 | 4.2 | | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 3 | 0.2 | 0.3 | | |
| Eragrostis cilianensis | stinkgrass | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 0.1 | 0.2 | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | 5 | 0.3 | 0.5 | | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | | |
| Bromus inermis | smooth brome | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | | |
| Elymus trachycaulis | slender wheatgrass | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 3 | 0.2 | 0.3 | | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 4 | 0.3 | 0.4 | | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | 8 | P | | | 14 | | | | | | | | | | | 2 | | | | | | | | | 1 | 33 | 33 | 2.2 | 3.1 | |
| Aristida purpurea | purple threeawn | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | | |
| Bouteloua gracilis | blue grama | P | | | | 1 | | | | | | | | | | | | | | | | | | | | 3 | 3 | 0.2 | 0.3 | | |
| Calamovilfa longifolia | prairie sandreed | 2 | P | 2 | 1 | P | P | | | | | | | | | | | 3 | | | | | | | | 6 | 1 | 55 | 63 | 3.7 | 5.9 |
| Panicum virgatum | switchgrass | | | | | | | | | | | | | | | | | | | | | | | | | 5 | 5 | 0.3 | 0.5 | | |
| Sporobolus cryptandrus | sand dropseed | 3 | 5 | 1 | | | | | | | | | | | | | | | | | | | | | | P | 61 | 69 | 4.1 | 6.5 | |
| Subtotal | | 13 | 5 | 3 | 16 | 1 | 1 | | | | | | | | | | | | | | | | | | | 7 | 1 | 157 | 173 | 10.5 | 16.2 |
| Total Grass Cover | | 14 | 0 | 5 | 0 | 5 | 0 | 16 | 0 | 3 | 0 | 6 | 1 | 0 | 1 | 4 | 0 | 9 | 1 | 0 | 0 | 2 | 0 | 7 | 1 | 200 | 227 | 13.3 | 21.3 | 21.4 | |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | | | 5 | P | P | 1 | 6 | P | | | | | | | | | | | | | | | | | P | 18 | 21 | 1.2 | 2.0 | |
| Ambrosia artemisiifolia | flatspaw bur rugweed | | | | | 1 | P | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | | |
| Argemone polyanthemos | crested pricklypoppy | P | P | P | P | P | | P | | | | | | | | | | | | | | | | | | 2 | 2 | 0.1 | 0.2 | 0.2 | |
| Chamaesyce glyptosperma | ribseed sandmat | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Chenopodium desiccatum | aridland goosefoot | | | | | P | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | 0.1 | |
| Chenopodium leptophyllum | narrowleaf goosefoot | P | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Cleome serrulata | Rocky Mountain beeplant | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Conyza canadensis | Canadian horseweed | | | | | P | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | 0.1 | |
| Croton texensis | Texas croton | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 3 | 0.2 | 0.3 | 0.3 | |
| Erigeron bellidiastrium | western daisy fleabane | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | 21 | 21 | 1.4 | 2.0 | 2.0 | |
| Helianthus annuus | common sunflower | P | 4 | 3 | 6 | 5 | 4 | 7 | 6 | 4 | 13 | 12 | 10 | 2 | 222 | 226 | 14.8 | 21.2 | 21.3 | 21.2 | 21.2 | 21.2 | 21.2 | 21.2 | 21.2 | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | 3 | 8 | 8 | 7 | 6 | 11 | 7 | 9 | 4 | 15 | 12 | 10 | 2 | 269 | 276 | 17.9 | 25.9 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 10 | 2 | 269 | 276 | 17.9 | 26.0 |

Kearney Mine 2023 Vegetation Monitoring Report

Redmine Area 25 Vegetation Cover Data (continued)

| Scientific Name | | Common Name | | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | | Total Hits | | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|---|-------------------------|-------------|-----|------|------|-----|------|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|-----|------|------|-----|------|-----|------|------|-----|------------|------|----------------------------|----------------------------|--------------------------------|
| Forbs: Annual & Biennial Introduced | | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | All | | | | |
| Ambrosia artemisiifolia | annual ragweed | | | | | | | | | | | | | | | | | | | | | | | 1 | | 6 | 6 | 0.4 | 0.6 | 0.6 | | |
| Bassia scoparia | burningbush | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.1 | 0.1 | | |
| Dysphania botrys | Jerusalem oak goosefoot | P | P | P | 1 | | | | | | | P | | | 2 | 1 | P | P | P | P | P | 1 | P | P | 2 | 2 | 9 | 17 | 0.6 | 1.6 | 1.6 | |
| Lactuca serriola | prickly lettuce | P | P | P | P | | | | | | | P | P | | P | P | 1 | P | P | P | P | P | P | P | P | P | 6 | 8 | 0.4 | 0.8 | 0.8 | |
| Melilotus officinalis | sweetclover | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Polygonum aviculare | prostrate knotweed | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 3 | 0.1 | 0.3 | 0.3 | | |
| Salsola collina | slender Russian thistle | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Salsola tragus | prickly Russian thistle | 8 | 1 | 13 | 20 | 2 | 9 | 2 | 18 | | | 21 | 18 | | P | | 9 | 1 | 12 | 28 | 16 | 2 | 11 | 2 | 15 | 4 | 465 | 510 | 31.0 | 47.8 | 48.0 | |
| Sisymbrium altissimum | tall tumbled mustard | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 0.1 | 0.2 | 0.2 | | |
| Tragopogon dubius | yellow salsify | | | | | | | | | | | | | | | | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Subtotal | | 8 | 1 | 13 | 20 | 3 | 10 | 2 | 18 | | | 23 | 1 | 10 | 1 | 12 | | | | 28 | 17 | 2 | 12 | 2 | 18 | 6 | 491 | 547 | 32.7 | 51.3 | 51.5 | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cumun ragweed | P | P | | | | | | | | 2 | | | P | P | | | | | | | | | | | 6 | 6 | 0.4 | 0.6 | 0.6 | | |
| Cuscuta indecora | bigseed alfalfa dodder | | | | | | | | | | | | | P | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Symphoricarum falcatum | white prairie aster | | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | 2 | 0.1 | 0.2 | 0.2 | | |
| Subtotal | | P | P | | | | | | | | 4 | | | P | P | | | | | | | | | | | 8 | 8 | 0.5 | 0.8 | 0.8 | | |
| Forbs: Perennial Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Convolvulus arvensis | field bindweed | | | | | | | | | | | | | | | | | | | P | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | P | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Total Forb Cover | | 11 | 1 | 21 | 0 | 28 | 3 | 21 | 2 | | | 34 | 0 | 34 | 1 | 17 | 1 | 21 | 0 | 32 | 0 | 32 | 2 | 24 | 2 | 28 | 8 | 768 | 831 | 51.2 | 78.0 | 78.2 |
| Subshrubs/Shrubs/Succulents; Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Artemisia filifolia | sand sagebrush | | | | | | | | | | | | | | | | | | 3 | 3 | | | | | | 5 | 8 | 0.3 | 0.8 | 0.8 | | |
| Opuntia polyacantha | hairspine pricklypear | P | | | | | | | | P | P | | | P | P | | | | | P | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Subtotal | | P | | | | | | | | P | P | | | P | 3 | 3 | | | 3 | 3 | | | | | | 5 | 8 | 0.3 | 0.8 | 0.8 | | |
| Total Shrub Cover | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 8 | 0.3 | 0.8 | 0.8 | |
| Rock | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Litter | | 16 | 12 | 11 | 8 | 15 | 5 | 14 | 12 | 5 | | 5 | | | | | | | 5 | 13 | 19 | 12 | 301 | 301 | 20.1 | | | | | | | |
| Bare Ground | | 9 | 12 | 6 | 5 | 8 | 5 | 19 | 10 | 4 | | 5 | | | | | | | 4 | 5 | 5 | 5 | 3 | 226 | 226 | 15.1 | | | | | | |
| Total Hits | | 50 | 1 | 50 | 0 | 50 | 3 | 50 | 2 | 50 | 0 | 50 | 2 | 50 | 2 | 50 | 3 | 50 | 1 | 50 | 2 | 50 | 2 | 50 | 2 | 50 | 9 | 1500 | 1593 | 100.0 | | |
| Total Vegetation Cover | | 50 | 2 | 52 | 0 | 66 | 6 | 74 | 4 | 80 | 4 | 80 | 4 | 84 | 4 | 80 | 6 | 82 | 2 | 82 | 2 | 64 | 4 | 52 | 4 | 70 | 18 | | | 64.9 | 100.0 | 100.0 |
| Non-Noxious Vegetation Cover | | 50 | 2 | 52 | 0 | 66 | 6 | 74 | 4 | 80 | 4 | 80 | 4 | 84 | 4 | 80 | 6 | 82 | 2 | 82 | 2 | 64 | 4 | 52 | 4 | 70 | 18 | | | 64.7 | | |
| Total Ground Cover | | 82 | 76 | 88 | 90 | 84 | 90 | 84 | 90 | 62 | 80 | 92 | 90 | 90 | 94 | | | | | 92 | 90 | 90 | 90 | 94 | | | | | 84.9 | | | |
| Allowable Vegetation Cover | | 3.4 | 5.4 | 19.4 | 27.4 | 7.4 | 33.4 | 0.0 | 9.4 | 35.4 | 17.4 | 5.4 | 23.4 | | | | | | | 35.4 | 17.4 | 5.4 | 23.4 | | | | | | | | | |

Kearney Mine 2023 Vegetation Monitoring Report

Redmine Area 32 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|--|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|----------------------------|----------------------------|--------------------------------|
| | | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd |
| Grass: Annual Native | | | | | | | | | | | | | | | |
| Munroa squarrosa | false buffalo grass | P | P | 1 | P | 1 | P | 4 | 3 | P | 2 | 1 | P | 11 | 16 |
| Panicum capillare | witchgrass | P | P | P | P | P | P | 7 | P | P | 3 | 1 | 11 | 11 | 2.2 |
| Subtotal | | | | | | | | | | | | | | | |
| | | 3 | 1 | 1 | P | 1 | P | 11 | 3 | P | 5 | 1 | 22 | 27 | 4.4 |
| Grass: Annual Introduced | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | P | 7 | P | 1 | 4 | 6 | 1 | P | 3 | P | 5 | 26 | 27 | 5.2 |
| Eragrostis cilianensis | stinkgrass | | | P | P | P | P | 1 | P | P | P | 1 | 1 | 0.2 | 0.3 |
| Subtotal | | | | | | | | | | | | | | | |
| | | P | 7 | P | 1 | 4 | 6 | 1 | 1 | 3 | P | 5 | 27 | 28 | 5.4 |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | |
| Elymus trachycaulus | slender wheatgrass | | 1 | | | | | | | | | | 1 | 1 | 0.2 |
| Leymus cinereus | basin wildrye | | | P | | | | | | | | | 0 | 0 | 0.0 |
| Pascopyrum smithii | western wheatgrass | | | P | | | | | | | | | 0 | 0 | 0.0 |
| Thinopyrum intermedium | intermediate wheatgrass | 1 | | | | | | | | | | | 1 | 1 | 0.2 |
| Subtotal | | | | | | | | | | | | | | | |
| | | 1 | 1 | P | | | | | | | | | 2 | 2 | 0.4 |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | P | P | | | | | P | | | | | 0 | 0 | 0.0 |
| Bouteloua curtipendula | sideouts grama | P | P | 1 | | P | | 3 | | P | | | 4 | 4 | 1.0 |
| Bouteloua gracilis | blue grama | 5 | 1 | 6 | 1 | 11 | 2 | 9 | 2 | 10 | 4 | 13 | 1 | 80 | 90 |
| Calamovilfa longifolia | prairie sandreed | 24 | 18 | 28 | 14 | 12 | 1 | 15 | 16 | 2 | 11 | 8 | 14 | 160 | 163 |
| Panicum virgatum | switchgrass | 1 | | 2 | | P | 1 | P | 4 | | | | 8 | 8 | 1.6 |
| Sporobolus cryptandrus | sand dropseed | P | 2 | 2 | | P | 2 | 2 | 1 | P | 1 | 2 | 11 | 12 | 2.2 |
| Subtotal | | | | | | | | | | | | | | | |
| | | 30 | 1 | 37 | 1 | 21 | 3 | 28 | 25 | 3 | 24 | 1 | 22 | 2 | 3.1 |
| Total Grass Cover | | | | | | | | | | | | | | | |
| | | 34 | 2 | 28 | 0 | 26 | 3 | 34 | 1 | 37 | 6 | 27 | 1 | 263 | 277 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | P | P | P | 1 | P | 1 | P | 7 | P | P | P | 8 | 10 | 2.6 |
| Argemone polyanthemos | crested pricklypoppy | | | | P | P | | P | P | | | | 0 | 0 | 0.0 |
| Chamaesyce glyptosperma | ribweed sandmat | P | | | P | | | | | | | | 0 | 0 | 0.0 |
| Chenopodium desiccatum | aridland goosefoot | | | | P | | | | | | | | 0 | 0 | 0.0 |
| Chenopodium leptophyllum | narrowleaf goosefoot | | | P | P | P | | | | | | | 0 | 0 | 0.0 |
| Conyza canadensis | Canadian horseweed | P | P | P | P | P | | P | P | P | P | P | 0 | 0 | 0.0 |
| Croton texensis | Texas croton | | | | | | | | | | | | 0 | 0 | 0.0 |
| Erigeron bellidistrum | western daisy fleabane | | | | | | | | | | | | 0 | 0 | 0.0 |
| Helianthus annuus | common sunflower | P | 2 | P | 1 | 4 | P | 1 | 2 | 1 | P | P | 11 | 11 | 2.2 |
| Polygonum ramosissimum | bushy knotweed | | | | | P | | | | | | | 0 | 0 | 0.0 |
| Solanum triflorum | cutleaf nightshade | P | | | | | | | | | | | 0 | 0 | 0.0 |
| Subtotal | | | | | | | | | | | | | | | |
| | | P | 2 | P | 1 | 4 | 1 | P | 8 | 2 | 1 | P | 19 | 21 | 3.8 |
| Total Forb Cover | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 62.8 | 87.2 | 93.8 |

Kearneyville 2023 Vegetation Monitoring Report

Redman Area 32 Vegetation Cover Data (continued)

| Scientific Name | Common Name | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | Total Hits | | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | |
|-------------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|----------------------------|----------------------------|--------------------------------|------|------|
| | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | All | | | | | | |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus blitoides | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| Bassia scoparia | | | | | | | | | | | | | | | | | | | | | | 2 | 2 | 2 | 0.4 | 0.5 | | | |
| Dysphania botrys | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.2 | 0.3 | | | |
| Lactuca serriola | | | | | | | | | | | | | | | | | | | | | | 2 | 6 | 6 | 1.2 | 1.6 | | | |
| Melilotus officinalis | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.2 | 0.3 | | | |
| Salsola tragus | | | | | | | | | | | | | | | | | | | | | | 1 | 8 | 12 | 1.6 | 3.1 | | | |
| Trigonopogon dubius | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 0.2 | 0.3 | 0.3 | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | | | 5 | 19 | 23 | 3.8 | 6.0 | 6.5 | | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | | | | | | | | | | | | | | | | | | | | | | | 4 | 4 | 0.8 | 1.0 | 1.1 | | |
| Mentzelia nuda | | | | | | | | | | | | | | | | | | | | | | | 0 | 1 | 0.0 | 0.3 | 0.3 | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | | | | 4 | 5 | 0.8 | 1.3 | 1.4 | | |
| Total Forb Cover | | | | | | | | | | | | | | | | | | | | | | | 5 | 0 | 42 | 49 | 8.4 | 12.8 | 13.8 |
| Rock | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Litter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bare Ground | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Hits | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Vegetation Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Noxious Vegetation Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Ground Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Allowable Vegetation Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Noxious Annual Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Excess Annual Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Kearneyville 2023 Vegetation Monitoring Report

Recreation Area 33 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|--|-------------------------|----|---|----|-----|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|
| Grass: Annual Native | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Munroa squarrosa | false buffalograss | | | P | | | | | | | P | 0 | 0.0 | 0.0 | 0.0 |
| Panicum capillare | witchgrass | 1 | 1 | P | 4 | P | 2 | 2 | 4 | P | 2 | 15 | 3.0 | 4.3 | 4.9 |
| Vulpia octoflora | sixweeks fescue | | | | | | | | | | P | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | 1 | 1 | P | 4 | P | 2 | 2 | 4 | P | 2 | 15 | 3.0 | 4.3 | 4.9 |
| Grass: Annual Introduced | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 7 | 2 | 5 | 4 | 3 | 10 | 4 | 2 | 5 | 1 | 43 | 8.6 | 11.9 | |
| Eragrostis cilianensis | stinkgrass | P | P | | | 1 | | | P | | 1 | 2 | 0.4 | 0.5 | 0.6 |
| Subtotal | | 7 | 2 | 5 | 4 | 4 | 10 | 4 | 2 | 5 | 2 | 45 | 9.0 | 12.5 | 0.6 |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | P | P | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Agropyron cristatum | crested wheatgrass | P | P | P | P | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | P | P | P | P | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | P | | | P | P | 1 | 2 | P | P | 3 | 0.6 | 0.8 | 0.9 |
| Bouteloua curtipendula | sidecoats grama | | | | | P | | 1 | | P | | 1 | 0.2 | 0.3 | 0.3 |
| Bouteloua gracilis | blue grama | 10 | 1 | 7 | 3 | 10 | 13 | 15 | 1 | 7 | 2 | 88 | 17.6 | 25.5 | 28.9 |
| Calamovilfa longifolia | prairie sandreed | 18 | 1 | 22 | 1 | 24 | 8 | 5 | 2 | 13 | 3 | 150 | 30.0 | 45.0 | 51.1 |
| Panicum virgatum | switchgrass | 1 | 1 | P | 1.6 | 3 | P | P | P | 3 | 2 | 7 | 1.4 | 1.9 | 2.2 |
| Schizachyrium scoparium | little bluestem | | | | | | | | | | 1 | 1 | 0.2 | 0.3 | 0.3 |
| Sorghastrum nutans | Indiangrass | 2 | 1 | P | 5 | 6 | 1 | 1 | P | P | 2 | 0 | 0.0 | 0.0 | 0.0 |
| Sporobolus cryptandrus | sand dropseed | | | | | | | | | | | 24 | 4.8 | 7.3 | 8.3 |
| Subtotal | | 31 | 3 | 30 | 1 | 31 | 24 | 23 | 28 | 6 | 29 | 274 | 54.8 | 81.0 | 92.0 |
| Total Grass Cover | | 39 | 4 | 32 | 1 | 36 | 32 | 29 | 34 | 6 | 34 | 334 | 66.8 | 97.8 | 111.1 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | | | 1 | P | | 1 | | | | P | 2 | 0.4 | 0.5 | 0.6 |
| Cleome serrulata | Rocky Mountain beeplant | | | P | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Conyza canadensis | Canadian horseweed | | | P | P | P | P | P | P | P | 1 | 1 | 0.2 | 0.3 | 0.3 |
| Croton texensis | Texas croton | | | P | P | P | P | P | P | P | P | 0 | 0.0 | 0.0 | 0.0 |
| Helianthus annuus | common sunflower | P | P | P | P | P | P | P | P | P | 3 | 3 | 0.6 | 0.8 | 0.9 |
| Plantago patagonica | woolly plantain | | | | | P | P | P | P | P | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | P | P | 1 | P | P | 1 | P | P | P | 4 | 6 | 1.2 | 1.6 | 1.8 |

Kearney Fire 2023 Vegetation Monitoring Report

Redmond Area 33 Vegetation Cover Data (continued)

| Scientific Name | Common Name | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | Total Hits | | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|---|-------------|------|------|------|------|------|------|------|------|------|-----|-----|------|---|----|----|----|---|----|---|----|---|------------|-----|----------------------------|----------------------------|--------------------------------|-----|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alyssum sp. | | | | | | | | | | | | | | P | | P | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Ambrosia artemisiifolia | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Bassia scoparia | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Chenopodium album | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Dysphania botrys | | | | | | | | | | | | | | | | P | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Lactuca serriola | P | | | | | | | | | | | | | | | | | | P | | | | 1 | 1 | 0.2 | 0.3 | 0.3 | |
| Melilotus officinalis | | | | | | | | | | | | | | | | | | | P | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Polygonum aviculare | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Salsola tragus | P | | | | | | | | | | | | | P | | | | | | | | | 1 | 1 | 0.2 | 0.3 | 0.3 | |
| Sisymbrium altissimum | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Tragopogon dubius | | | | | | | | | | | | | | | | | | | P | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | P | | P | 2 | | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | 2 | 2 | 0.4 | 0.5 | 0.6 | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evolvulus nuttallianus | | | | | | | | | | | | | | | | P | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Tradescantia occidentalis | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | | | | | | | | | | | | | | | P | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Total Forb Cover | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 8 | 8 | 1.6 | 2.2 | 2.5 |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Opuntia polyacantha | | | | | | | | | | | | | | | | P | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | | | | | | | | | | | | | | | P | | | | | | | 0 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Rock | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | | | |
| Litter | 11 | 14 | 11 | 12 | 9 | 14 | 19 | 15 | 13 | 16 | 134 | 134 | 26.8 | | | | | | | | | | | | | | | |
| Bare Ground | | | | 6 | 1 | 1 | 2 | 1 | 3 | 6 | 24 | 24 | 4.8 | | | | | | | | | | | | | | | |
| Total Hits | 50 | 4 | 50 | 1 | 50 | 3 | 50 | 0 | 50 | 2 | 50 | 3 | 50 | 6 | 50 | 3 | 50 | 6 | 50 | 3 | 50 | 4 | 500 | 527 | 100.0 | | | |
| Total Vegetation Cover | 78 | 8 | 64 | 2 | 78 | 2 | 64 | 6 | 80 | 0 | 70 | 4 | 58 | 6 | 68 | 12 | 68 | 6 | 56 | 8 | | | | | 68.4 | 100.0 | 100.0 | |
| Non-Noxious Vegetation Cover | 64 | 8 | 60 | 2 | 68 | 2 | 56 | 6 | 74 | 0 | 50 | 4 | 50 | 6 | 64 | 12 | 58 | 6 | 54 | 6 | | | | | 59.8 | | | |
| Total Ground Cover | 100 | 92 | 100 | 88 | 98 | 98 | 96 | 98 | 94 | 88 | | | | | | | | | | | | | | | 95.2 | | | |
| Allowable Vegetation Cover | 64.0 | 60.0 | 68.0 | 56.0 | 74.0 | 50.0 | 50.0 | 64.0 | 58.0 | 54.0 | | | | | | | | | | | | | | | 59.8 | | | |
| Non-Noxious Annual Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Excess Annual Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Kearnsburg Mine 2023 Vegetation Monitoring Report

Redmine Area 34 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd |
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | P | | | | | | | | | | | | | | | | | |
| Munroa squarrosa | false buffalograss | 2 | | | | | | | | | | | | | | | | | |
| Panicum capillare | witchgrass | P | | | | | | | | | | | | | | | | | |
| Subtotal | | 2 | | | | | | | | | | | | | | | | | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 1 | | | | | | | | | | | | | | | | | |
| Eragrostis cilianensis | sinkgrass | | | | | | | | | | | | | | | | | | |
| Subtotal | | 1 | | | | | | | | | | | | | | | | | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | | | | | | | | | | | | | | | | |
| Agropyron cristatum | crested wheatgrass | | | | | | | | | | | | | | | | | | |
| Bromus inermis | smooth brome | | | | | | | | | | | | | | | | | | |
| Cyperus schweinitzii | Schweinitz's flatsedge | 2 | | | | | | | | | | | | | | | | | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | | | | | | | | |
| Thinopyrum intermedium | intermediate wheatgrass | | | | | | | | | | | | | | | | | | |
| Subtotal | | 2 | | | | | | | | | | | | | | | | | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | 1 | | | | | | | | | | | | | | | | | |
| Bouteloua curtipendula | sideoats grama | 1 | | | | | | | | | | | | | | | | | |
| Bouteloua gracilis | blue grama | P | | | | | | | | | | | | | | | | | |
| Calamovilfa longifolia | prairie sandreed | 20 | 1 | 5 | | | | | | | | | | | | | | | |
| Panicum virgatum | switchgrass | P | | | | | | | | | | | | | | | | | |
| Schizachyrium scoparium | little bluestem | 2 | 1 | | | | | | | | | | | | | | | | |
| Sporobolus cryptandrus | sand dropseed | 1 | 4 | | | | | | | | | | | | | | | | |
| Subtotal | | 25 | 1 | 10 | 2 | 6 | 2 | 10 | 11 | 5 | 1 | 1 | 6 | 1 | 13 | 4 | 5 | 4 | 6 |
| Total Grass Cover | | 28 | 1 | 12 | 0 | 2 | 0 | 11 | 0 | 12 | 0 | 5 | 1 | 6 | 1 | 19 | 5 | 5 | 1 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | P | | | | | | | | | | | | | | | | | |
| Ambrosia acanthicarpa | flatspine bur ragweed | P | | | | | | | | | | | | | | | | | |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | | | | | | | | | | | |
| Chamaesyce glyptosperma | ribseed sandmat | P | | | | | | | | | | | | | | | | | |
| Chenopodium desiccatum | aridland goosefoot | P | | | | | | | | | | | | | | | | | |
| Croton texensis | Texas croton | P | 1 | | | | | | | | | | | | | | | | |
| Erigeron bellidiflorum | western daisy fleabane | | | | | | | | | | | | | | | | | | |
| Helianthus annuus | common sunflower | P | 4 | 1 | 1 | 6 | 2 | | | | | | | | | | | | |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | 3 | 1 | 2 | | | | | | | | | | | | | |
| Subtotal | | P | 5 | 14 | 1 | 8 | 2 | 1 | 8 | 4 | 5 | 1 | 6 | 1 | 4 | 5 | 1 | 12 | 7 |

Kearneyville 2023 Vegetation Monitoring Report

Redmond Area 34 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--|----------------------------|------|------|------|------|------|------|------|------|-----|-----|------|-----|------|------|------|------|------|------|
| 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd | 1st | 2nd |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | |
| <i>Ambrosia artemisiifolia</i> | annual ragweed | P | P | | | | | | | | | | | | | | P | | P |
| <i>Bassia scoparia</i> | burningbush | | | | | | | | | | | | | | | | | | |
| <i>Cirsium flodmanii</i> | Flodman's thistle | P | P | 1 | P | P | P | 2 | P | 1 | P | 1 | P | | P | P | P | 2 | |
| <i>Dysphania botrys</i> | Jerusalem oak goosefoot | P | | | | | | | | | | | | | | | | | |
| <i>Melilotus officinalis</i> | sweetclover | P | | | | | | | | | | | | | | | | | |
| <i>Salsola collina</i> | slender Russian thistle | | | | | | | | | | | | | | | | | | |
| <i>Salsola tragus</i> | prickly Russian thistle | 2 | | P | 5 | 1 | 3 | P | 1 | P | P | 1 | 1 | 1 | 1 | P | 2 | P | P |
| <i>Tragopogon dubius</i> | yellow salify | | | | | | | | | | | | | | | | | | |
| Subtotal | | 2 | 1 | P | 6 | 1 | 3 | P | 3 | P | 1 | 1 | 1 | 1 | 1 | P | 2 | 2 | P |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | |
| <i>Ambrosia psilostachya</i> | Cuman ragweed | P | | | | | | | | | | | | P | 1 | | | | |
| <i>Asclepias stenophylla</i> | slimleaf milkweed | | | | | | | | | | | | | | | | | | |
| <i>Cuscuta indecora</i> | bigseed alfalfa dodder | | | P | | P | | | P | | | | | | | | | P | P |
| <i>Evolvulus nuttallianus</i> | shaggy dwarf morning-glory | | | | | | | | | 1 | | | | | | | | 1 | P |
| <i>Physalis hispida</i> | prairie groundcherry | P | | P | | | | | P | 2 | 1 | | | | | P | | 4 | 1 |
| <i>Psoraleidium lanceolatum</i> | lemon scurfs | | | | | | | | | | | | | | | | | | |
| <i>Ratibida columnifera</i> | upright prairie coneflower | | | | | | | | | | | | | P | | | | | |
| <i>Symphoricarum falcatum</i> | white prairie aster | | | | | | | | | | | | | | | | | | |
| Subtotal | | P | | P | | P | | | P | 2 | 1 | 1 | | P | 1 | P | | 5 | 1 |
| Total Forb Cover | | 2 | 0 | 6 | 0 | 14 | 1 | 12 | 1 | 11 | 0 | 2 | 0 | 4 | 0 | 8 | 0 | 7 | 0 |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | | | |
| <i>Cylindropuntia whipplei</i> | Whipple cholla | | | | | | | | | | | | | | | | | | |
| <i>Opuntia polyacantha</i> | hairspring pricklypear | | | | | P | | | | | | | | P | | | | | |
| <i>Yucca glauca</i> | soupsweed yucca | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | P | | | | | | | | P | | | | | |
| Total Shrub Cover | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rock | | | | | | | | | | | | | | | | | | | |
| Litter | | 15 | 13 | 18 | 20 | 19 | 15 | 10 | 26 | 13 | 7 | 18 | 18 | 24 | 8 | 18 | 9 | 13 | 18 |
| Bare Ground | | 5 | 19 | 16 | 12 | 18 | 22 | 24 | 11 | 29 | 33 | 16 | 24 | 2 | 30 | 15 | 27 | 18 | 19 |
| Total Hits | | 50 | 1 | 50 | 0 | 50 | 0 | 50 | 0 | 50 | 1 | 50 | 2 | 50 | 1 | 50 | 0 | 50 | 0 |
| Total Vegetation Cover | | 60 | 2 | 36 | 0 | 32 | 2 | 36 | 2 | 26 | 0 | 26 | 0 | 32 | 0 | 26 | 2 | 16 | 2 |
| Non-Noxious Vegetation Cover | | 58 | 2 | 36 | 0 | 32 | 2 | 36 | 2 | 26 | 0 | 26 | 0 | 32 | 0 | 26 | 2 | 16 | 2 |
| Total Ground Cover | | 90 | 62 | 68 | 76 | 64 | 56 | 52 | 78 | 42 | 34 | 68 | 52 | 96 | 40 | 70 | 46 | 64 | 62 |
| Allowable Vegetation Cover | | 47.8 | 25.8 | 21.8 | 25.8 | 15.8 | 15.8 | 21.8 | 15.8 | 5.8 | 9.8 | 21.8 | 5.8 | 35.8 | 13.8 | 23.8 | 17.8 | 27.8 | 15.8 |
| Non-Noxious Annual Cover | | | | | | | | | | | | | | | | | | | |
| Excess Annual Cover | | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | |
| Non-Noxious Annual Cover | | | | | | | | | | | | | | | | | | | |
| Excess Annual Cover | | | | | | | | | | | | | | | | | | | |

November 2023

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Habitat Management, Inc.

| | |
|--------------------------|------|
| Non-Noxious Annual Cover | 13.1 |
| Excess Annual Cover | 10.2 |

Kearney-More 2023 Vegetation Monitoring Report

Redman Area 34 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|---|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|----------------------------|----------------------------|--------------------------------|
| Grass: Annual Native | | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | 1st 2nd | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Munroa squarrosa | false buffalograss | P | P | P | | 1 | 1 | 1 | P | 1 | 3 | 2 | P | 12 | 1.5 | 3.2 | 3.2 |
| Panicum capillare | witchgrass | | | | | | | | | | | | | 1 | 1 | 0.2 | 0.2 |
| Subtotal | | P | P | P | | 1 | 1 | 1 | P | 1 | 3 | 2 | P | 13 | 1.6 | 3.4 | 3.4 |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | | | | | | | | | P | | | | 4 | 5 | 1.1 | |
| Eragrostis cilianensis | stinkgrass | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Subtotal | | | | | | | | | | P | | | | 4 | 5 | 1.1 | 0.0 |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | 1 | | | | P | 1 | | | | 1 | | | 4 | 6 | 1.3 | 1.3 |
| Agropyron cristatum | crested wheatgrass | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Bromus inermis | smooth brome | | | | 4 | | | | | | | | | 7 | 8 | 1.7 | 1.7 |
| Cyperus schweinitzii | Schweinitz's flatsedge | P | | | | P | P | | | | P | | | 0 | 1 | 0.0 | 0.2 |
| Pascopyrum smithii | western wheatgrass | | | | P | 1 | | | | | | | | 6 | 7 | 1.5 | 1.5 |
| Thinopyrum intermedium | intermediate wheatgrass | | | | P | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Subtotal | | 1 | | | 4 | 1 | 1 | | | | 1 | | | 17 | 22 | 4.6 | 4.7 |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | | | | | | | | | | | | 7 | 10 | 2.1 | 2.1 |
| Bouteloua curtipendula | sideoats grama | | | | 1 | | | | | 1 | | | | 3 | 3 | 0.2 | 0.6 |
| Bouteloua gracilis | blue grama | 1 | | P | 2 | | P | | P | | | | | 6 | 7 | 1.5 | 1.5 |
| Calamovilfa longifolia | prairie sandreed | 7 | | 1 | 20 | 1 | 3 | P | | | | | | 109 | 113 | 7.3 | 23.8 |
| Panicum virgatum | switchgrass | | | | P | | | | | | | | | 2 | 2 | 0.1 | 0.4 |
| Schizachyrium scoparium | little bluestem | | | P | 2 | | P | | P | P | | | | 6 | 6 | 0.4 | 1.3 |
| Sporobolus cryptandrus | sand dropseed | 1 | 5 | 4 | 3 | 3 | 1 | 1 | 5 | 6 | 1 | 5 | 4 | 82 | 86 | 5.5 | 18.1 |
| Subtotal | | 8 | 6 | 5 | 29 | 1 | 4 | 1 | 5 | 8 | 1 | 9 | 9 | 215 | 227 | 14.3 | 48.3 |
| Total Grass Cover | | 9 | 0 | 6 | 5 | 0 | 6 | 0 | 5 | 9 | 2 | 11 | 0 | 249 | 270 | 16.6 | 57.4 |
| Forb: Annual & Biennial Native | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | 1 | | P | | | P | | | | P | P | | 2 | 2 | 0.1 | 0.4 |
| Ambrosia acanthicarpa | flatspine bur ragweed | | | | | | P | | P | | P | P | | 0 | 0 | 0.0 | 0.0 |
| Argemone polyanthemis | crested pricklypoppy | | | | | | | P | | | | | | 0 | 0 | 0.0 | 0.0 |
| Chamaesyce glyptosperma | ribseed sandmat | | | 1 | | | | | | P | | 1 | 1 | 2 | 3 | 0.1 | 0.6 |
| Chenopodium desiccatum | aridland goosefoot | | | | P | | | | | P | | P | | 1 | 1 | 0.1 | 0.2 |
| Croton texensis | Texas croton | P | | P | | | P | P | P | P | P | P | | 3 | 3 | 0.2 | 0.6 |
| Erigeron bellidiflorus | western daisy fleabane | | | | | | | | P | | | | | 0 | 0 | 0.0 | 0.0 |
| Helianthus annuus | common sunflower | P | 2 | 2 | 1 | 6 | P | 6 | 2 | 4 | 3 | 3 | 10 | 119 | 121 | 7.9 | 25.5 |
| Muhlenbergia bigelovii | Bigelow's tansyaster | | P | | | | 6 | P | | P | | 2 | | 18 | 19 | 1.2 | 4.0 |
| Subtotal | | 1 | 2 | 3 | 1 | 6 | 6 | 6 | 2 | 4 | 3 | 6 | 1 | 145 | 149 | 9.7 | 31.4 |

Kearney Mine 2023 Vegetation Monitoring Report

Redmine Area 34 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|--|----------------------------|------|-----|-----|------|------|------|------|-----|------|------|------|-----|------------|----------------------------|----------------------------|--------------------------------|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | |
| Ambrosia artemisiifolia | annual ragweed | | | | | | | | | | | | | 1 | 0.1 | 0.2 | 0.2 |
| Bassia scoparia | burningbush | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Cirsium flodmanii | Flodman's thistle | | P | | | | P | | P | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Dysphania botrys | Jerusalem oak goosefoot | P | | P | | | 1 | P | P | | 4 | | P | 12 | 0.8 | 2.7 | 2.8 |
| Melilotus officinalis | sweetclover | | | | | | | | | P | | | | 0 | 0.0 | 0.0 | 0.0 |
| Salsola collina | slender Russian thistle | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Salsola tragus | prickly Russian thistle | 1 | P | 1 | P | 2 | P | 4 | P | 1 | P | P | P | 26 | 1.7 | 5.9 | 6.0 |
| Tragopogon dubius | yellow salsify | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | 1 | P | 1 | P | 2 | 1 | 4 | P | 1 | 4 | 1 | P | 39 | 2.6 | 8.8 | 8.9 |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cuman ragweed | | | | | | | | | | | | | 2 | 0.1 | 0.4 | 0.4 |
| Asclepias stenophylla | slimleaf milkweed | | P | | | | P | | | | | 1 | P | 0 | 0.0 | 0.0 | 0.0 |
| Cuscuta indecora | bigeed alfalfa dodder | | | P | | | | 2 | | | | P | | 2 | 0.1 | 0.4 | 0.4 |
| Evolvulus nuttallianus | shaggy dwarf morning-glory | | | | | | P | | | | | | | 1 | 0.1 | 0.2 | 0.2 |
| Physalis hispida | prairie groundcherry | | | | | | | | | | | P | | 1 | 0.1 | 0.2 | 0.2 |
| Psoralea arguta | lemon scurfs | | | | | | | | | | P | | | 6 | 0.4 | 1.7 | 1.7 |
| Ratibida columnifera | upright prairie coneflower | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Symphoricarpos falcatus | white prairie aster | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | | | P | P | P | P | 2 | | | | P | P | 12 | 0.8 | 2.9 | 3.0 |
| Total Forb Cover | | 2 | 0 | 4 | 1 | 8 | 7 | 12 | 2 | 5 | 7 | 8 | 10 | 196 | 13.1 | 43.2 | 43.6 |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | |
| Cylindropuntia whipplei | Whipple cholla | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Opuntia polyacantha | hairspine pricklypear | | | P | | | | P | | | | P | | 0 | 0.0 | 0.0 | 0.0 |
| Yucca glauca | soapweed yucca | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | | | | | | | | | | | P | | 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 | 0.0 |
| Rock | | | | | | | | | | | | | | 0 | 0.0 | | |
| Litter | | 12 | 21 | 14 | 15 | 19 | 8 | 11 | 14 | 20 | 8 | 11 | 25 | 460 | 30.7 | | |
| Bare Ground | | 27 | 21 | 27 | 1 | 19 | 29 | 25 | 29 | 16 | 26 | 20 | 15 | 595 | 39.7 | | |
| Total Hits | | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 1500 | 100.0 | | |
| Total Vegetation Cover | | 22 | 0 | 16 | 0 | 68 | 4 | 24 | 0 | 28 | 2 | 32 | 4 | 38 | 2 | 29.7 | 100.0 |
| Non-Noxious Vegetation Cover | | 22 | 0 | 16 | 0 | 68 | 4 | 24 | 0 | 28 | 2 | 32 | 4 | 34 | 2 | 29.4 | |
| Total Ground Cover | | 46 | 58 | 46 | 98 | 62 | 42 | 50 | 42 | 68 | 48 | 60 | 70 | | 60.3 | | |
| Allowable Vegetation Cover | | 11.8 | 5.8 | 7.8 | 57.8 | 13.8 | 15.8 | 17.8 | 3.8 | 17.8 | 21.8 | 23.8 | 9.8 | | 19.2 | | |

Kearney Mine 2023 Vegetation Monitoring Report

Reclamation Area 35 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|-------------------------------------|-------------------------|----|---|----|---|----|---|----|---|----|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Munroa squarrosa | false buffalograss | P | 1 | P | P | 2 | P | P | P | | P | P | P | P | P | 1 | 4 | 0.5 | 1.3 | 1.4 | |
| Panicum capillare | witchgrass | 7 | P | 3 | 4 | 1 | | | | | P | | | | 1 | | 16 | 2.1 | 5.4 | 5.4 | |
| Subtotal | | 7 | 1 | 3 | 4 | 3 | P | P | P | P | P | P | P | P | 1 | 1 | 20 | 2.7 | 6.7 | 6.8 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | P | P | | | | | | | | | | | | | | 3 | 0.4 | 1.0 | | |
| Eragrostis cilianensis | stinkgrass | 1 | P | 2 | 1 | P | | | P | | P | | | | P | P | 3 | 0.4 | 1.3 | 1.4 | |
| Subtotal | | 1 | P | 2 | 1 | P | | | P | | P | | | 3 | P | P | 6 | 0.8 | 2.4 | 1.4 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | 2 | 1 | 4 | P | 3 | 4 | 1 | 2 | 2 | 2 | 1 | 5 | P | 1 | 2 | 7 | 36 | 39 | 13.3 | |
| Cyperus schweinitzii | Schweinitz's flatsedge | P | | | P | 3 | P | | | | | | | | | P | 3 | 0.4 | 1.0 | 1.0 | |
| Subtotal | | 2 | 1 | 4 | P | 3 | 4 | 1 | 2 | 2 | 2 | 1 | 5 | P | 1 | 2 | 7 | 39 | 42 | 14.3 | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | |
| Bouteloua curtipendula | sidecoats grama | | | 1 | | | | | | | | | | | | | 1 | 0.1 | 0.3 | 0.3 | |
| Bouteloua gracilis | blue grama | | | | | | | P | | | | | | | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Calamovilfa longifolia | prairie sandreed | | | | | | | | | | | | | | | | 1 | 0.1 | 0.3 | 0.3 | |
| Sporobolus cryptandrus | sand dropseed | P | P | 4 | 1 | 1 | P | P | 1 | P | 1 | P | P | 1 | P | P | 10 | 1.3 | 4.0 | 4.1 | |
| Subtotal | | P | P | 5 | 1 | 1 | P | P | 1 | P | 1 | P | P | 1 | 2 | P | 12 | 1.6 | 4.7 | 4.8 | |
| Total Grass Cover | | 10 | 1 | 5 | 0 | 10 | 1 | 8 | 0 | 7 | 0 | 4 | 0 | 1 | 1 | 3 | 0 | 77 | 83 | 27.9 | 28.2 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | P | P | 2 | 1 | | P | P | P | | P | | | | 1 | P | 4 | 0.5 | 1.7 | 1.7 | |
| Ambrosia acanthiaca | flatspine bur ragweed | | | | P | | P | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | P | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Chamaesyce glyptosperma | ribseed sandmat | P | | P | P | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Coryza canadensis | Canadian horseweed | P | | P | P | | P | P | | | 2 | | | | | | 2 | 0.3 | 0.7 | 0.7 | |
| Croton texensis | Texas croton | | | | | P | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Erigeron bellidistrum | western daisy fleabane | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Helianthus annuus | common sunflower | 2 | 8 | 4 | P | 7 | 7 | 13 | 3 | 5 | 16 | 6 | 2 | 4 | 6 | 11 | 93 | 12.4 | 32.0 | 32.3 | |
| Subtotal | | 2 | 8 | 6 | 1 | 7 | 7 | 13 | 3 | 5 | 18 | 1 | 6 | 2 | 4 | 6 | 1 | 99 | 102 | 34.3 | 34.7 |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | |
| Bassia scoparia | burningbush | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Cuscuta indecora | bigseed alfalfa dodder | P | P | | P | 2 | 1 | | P | 1 | P | 1 | P | P | P | 1 | 6 | 0.8 | 2.0 | 2.0 | |
| Dysphania botrys | Jerusalem oak goosefoot | 3 | 3 | 3 | P | 3 | 1 | 3 | 3 | 6 | 2 | 4 | 4 | 2 | 1 | 3 | 41 | 5.5 | 14.1 | 14.3 | |
| Lactuca scariola | prickly lettuce | | | P | P | | P | P | | P | P | P | P | P | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Polygonum aviculare | prostrate knotweed | | | P | P | | P | | 1 | | 3 | P | P | P | P | | 4 | 0.5 | 1.3 | 1.4 | |
| Salsola collina | slender Russian thistle | P | 1 | P | P | P | 1 | P | 1 | 1 | P | P | P | P | P | 1 | 3 | 0.4 | 1.3 | 1.4 | |
| Salsola tragus | prickly Russian thistle | P | P | P | 1 | 1 | 7 | 15 | 3 | 4 | 7 | 1 | 4 | 1 | 4 | 4 | 48 | 6.4 | 18.9 | 19.0 | |
| Sisymbrium albidum | tall tumbledmustard | P | | | | | P | P | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | 3 | 4 | 3 | 1 | 6 | 1 | 9 | 8 | 8 | 12 | 1 | 5 | 8 | 1 | 6 | 5 | 13.6 | 37.7 | 38.1 | |
| Total Forb Cover | | 5 | 0 | 12 | 0 | 9 | 0 | 2 | 0 | 13 | 1 | 16 | 0 | 31 | 4 | 11 | 0 | 26.8 | 72.1 | 72.8 | |

Kearney Mine 2023 Vegetation Monitoring Report

Redmine Area 35 Vegetation Cover Data (continued)

| Scientific Name | Common Name | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|------------------------------|-------------|-----|------|-----|------|------|------|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------------|----------------------------|----------------------------|--------------------------------|--|
| Rock | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | 0.0 | | |
| Litter | 8 | 13 | 12 | 7 | 12 | 15 | 8 | 18 | 16 | 4 | 21 | 10 | 15 | 17 | 12 | 188 | 188 | 25.1 | 25.1 | | | |
| Bare Ground | 27 | 20 | 19 | 33 | 18 | 15 | 10 | 18 | 19 | 13 | 13 | 28 | 17 | 11 | 23 | 284 | 284 | 37.9 | 37.9 | | | |
| Total Hits | 50 | 1 | 50 | 0 | 50 | 1 | 50 | 0 | 50 | 5 | 50 | 3 | 50 | 2 | 50 | 0 | 50 | 1 | 750 | 769 | 100.0 | |
| Total Vegetation Cover | 30 | 2 | 34 | 0 | 38 | 2 | 20 | 0 | 40 | 2 | 40 | 0 | 64 | 6 | 32 | 4 | 36 | 0 | 37.1 | 100.0 | 100.0 | |
| Non-Noxious Vegetation Cover | 30 | 2 | 34 | 0 | 38 | 2 | 20 | 0 | 40 | 2 | 40 | 0 | 64 | 6 | 32 | 4 | 30 | 0 | 36.7 | | | |
| Total Ground Cover | 46 | 60 | 62 | 34 | 64 | 70 | 80 | 64 | 62 | 74 | 74 | 44 | 66 | 78 | 54 | | | 62.1 | | | | |
| Allowable Vegetation Cover | 3.8 | 7.8 | 11.8 | 0.0 | 13.8 | 13.8 | 37.8 | 1.8 | 3.8 | 39.8 | 5.8 | 0.0 | 3.8 | 17.8 | 3.8 | | | 11.0 | | | | |

| | |
|--------------------------|------|
| Non-Noxious Annual Cover | 29.9 |
| Excess Annual Cover | 26.2 |

Kearney Mine 2023 Vegetation Monitoring Report

Redstart Area 36 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|--|-------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longepedunculatus | mat sandbur | P | | | | | | | | | | | | | | | 5 | 7 | 2.0 | 2.0 |
| Munroa squarrosa | false buffalograss | | P | | | | | | | | | | | | | | 2 | 2 | 0.3 | 0.6 |
| Panicum capillare | witchgrass | | | P | | | | | | | | | | | | | 6 | 7 | 0.8 | 2.0 |
| Subtotal | | | | | | | | | | | | | | | | | | | | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | |
| Bromus arvensis | field brome | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Bromus tectorum | cheatgrass | | | | | | | | | | | | | | | | 6 | 6 | 0.8 | 1.7 |
| Eragrostis cilianensis | stinkgrass | | | | | | | | | | | | | | | | 2 | 2 | 0.3 | 0.6 |
| Eragrostis minor | little lovegrass | | | | | | | | | | | | | | | | 1 | 1 | 0.3 | 0.6 |
| Triticum aestivum | common wheat | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Subtotal | | | | | | | | | | | | | | | | | | | | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hystrixoides | Indian ricegrass | | | | | | | | | | | | | | | | 6 | 48 | 51 | 14.7 |
| Cyperus schweinitzii | Schweinitz's flatsedge | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Elymus trachycaulus | slender wheatgrass | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Subtotal | | | | | | | | | | | | | | | | | | | | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | |
| Bouteloua curtipendula | sideoats grama | | | | | | | | | | | | | | | | 6 | 48 | 51 | 14.7 |
| Bouteloua gracilis | blue grama | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Calamovilfa longifolia | prairie sandreed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Panicum virgatum | switchgrass | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Sporobolus cryptandrus | sand dropseed | | | | | | | | | | | | | | | | 10 | 10 | 1.3 | 2.9 |
| Subtotal | | | | | | | | | | | | | | | | | | | | |
| Total Grass Cover | | | | | | | | | | | | | | | | | | | | |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 |
| Ambrosia artemisiifolia | flatspine bur ragweed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Chamaecypariss glaucosperma | ribweed sandmat | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Chenopodium desiccatum | aridland goosefoot | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Chenopodium leptophyllum | narrowleaf goosefoot | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Cleome serrulata | Rocky Mountain beoplant | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Conyza canadensis | Canadian horseweed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Croton texensis | Texas croton | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 |
| Eriogonum annuum | western daisy fleabane | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Helianthus annuus | annual buckwheat | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | | | | | | | | | | | | | | 84 | 92 | 11.2 | 26.4 |
| Polygonum ramosissimum | bushy knotweed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 |
| Subtotal | | | | | | | | | | | | | | | | | | | | |
| Total Forb Cover | | | | | | | | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | |

Kearney-More 2023 Vegetation Monitoring Report

Redman Area 36 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | | | | | | | | | | | | | | | |
|-------------------------------------|----------------------------|-----|-----|-----|-----|------|------|-----|------|-----|------|-----|------|------|------|------|------------|----------------------------|----------------------------|--------------------------------|---|----|---|----|---|----|-----|-----|------|------|------|-------|------|------|-------|-------|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alyssum sp. | madwort | P | | P | | | | | | P | 4 | P | | P | 20 | 1 | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | |
| Bassia scoparia | burningbush | P | | P | | | | | | | 1 | P | 6 | P | | | 27 | 3.6 | 8.2 | 8.3 | | | | | | | | | | | | | | | | |
| Cuscuta indecora | bigseed alfalfa dodder | | P | | | | | | | | | | | | | | 7 | 0.9 | 2.0 | 2.0 | | | | | | | | | | | | | | | | |
| Dryophaniam botrys | Jerusalem oak goosefoot | | P | | | | | P | | 1 | | | 1 | 1 | | 1 | 5 | 0.7 | 1.4 | 1.4 | | | | | | | | | | | | | | | | |
| Lactuca serriola | prickly lettuce | | | P | P | | | P | | P | P | | 2 | 2 | P | P | 2 | 0.3 | 0.6 | 0.6 | | | | | | | | | | | | | | | | |
| Melilotus officinalis | sweetclover | | P | | | | | | | | | | 1 | | | | 1 | 0.1 | 0.3 | 0.3 | | | | | | | | | | | | | | | | |
| Polygonum aviculare | prostrate knotweed | 2 | | 3 | 3 | 12 | 1 | 4 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 6 | 52 | 6.9 | 17.2 | 17.5 | | | | | | | | | | | | | | | | |
| Salsola collina | slender Russian thistle | 1 | | | | | | | | | | | P | | | | 1 | 0.1 | 0.3 | 0.3 | | | | | | | | | | | | | | | | |
| Salsola tragus | prickly Russian thistle | 1 | 1 | 6 | P | 8 | 10 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 4 | 53 | 7.1 | 17.8 | 18.1 | | | | | | | | | | | | | | | | |
| Sisymbrium alissimum | tall tumbledmustard | | | P | 1 | | | | | | | | | | P | P | 1 | 0.1 | 0.3 | 0.3 | | | | | | | | | | | | | | | | |
| Subtotal | | 3 | 1 | 2 | 9 | 4 | 20 | 1 | 18 | 4 | 4 | 2 | 2 | 5 | 3 | 20 | 149 | 19.9 | 48.0 | 48.9 | | | | | | | | | | | | | | | | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cuman ragweed | | | | | P | | | P | 1 | | | P | | P | | 0 | 0.0 | 0.3 | 0.3 | | | | | | | | | | | | | | | | |
| Rathidia columnifera | upright prairie coneflower | P | | | | | | | | P | | | | | | P | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | |
| Subtotal | | P | | | | P | | | P | 1 | P | | P | P | P | P | 0 | 0.0 | 0.3 | 0.3 | | | | | | | | | | | | | | | | |
| Total Forb Cover | | 10 | 4 | 4 | 0 | 11 | 0 | 10 | 1 | 29 | 1 | 26 | 4 | 7 | 3 | 26 | 4 | 6 | 0 | 22 | 2 | 20 | 1 | 35 | 3 | 14 | 1 | 235 | 265 | 31.3 | 74.9 | 76.1 | | | | |
| Rock | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| Litter | | 13 | 6 | 21 | 16 | 11 | 4 | 15 | 9 | 12 | 6 | 26 | 12 | 11 | 7 | 10 | 179 | 23.9 | | | | | | | | 10 | 179 | 179 | 23.9 | | | | | | | |
| Bare Ground | | 19 | 39 | 17 | 21 | 10 | 13 | 19 | 20 | 19 | 13 | 13 | 14 | 17 | 5 | 15 | 254 | 33.9 | | | | | | | | 5 | 254 | 254 | 33.9 | | | | | | | |
| Total Hits | | 50 | 4 | 50 | 0 | 50 | 2 | 50 | 1 | 50 | 1 | 50 | 6 | 50 | 3 | 50 | 5 | 50 | 3 | 50 | 0 | 50 | 2 | 50 | 2 | 50 | 3 | 50 | 1 | 750 | 787 | 100.0 | | | | |
| Total Vegetation Cover | | 36 | 8 | 10 | 0 | 24 | 4 | 26 | 2 | 58 | 2 | 66 | 12 | 32 | 6 | 42 | 10 | 38 | 6 | 62 | 8 | 22 | 0 | 48 | 4 | 44 | 4 | 76 | 6 | 50 | 2 | | | 42.3 | 100.0 | 100.0 |
| Non-Noxious Vegetation Cover | | 36 | 8 | 10 | 0 | 24 | 4 | 26 | 2 | 58 | 2 | 66 | 12 | 32 | 6 | 42 | 10 | 34 | 6 | 58 | 8 | 22 | 0 | 48 | 4 | 44 | 4 | 72 | 6 | 50 | 2 | | | 41.5 | | |
| Total Ground Cover | | 62 | 22 | 66 | 58 | 80 | 74 | 62 | 60 | 62 | 74 | 74 | 72 | 66 | 90 | 70 | | | | | | | | | | | | | | | | | 66.1 | | | |
| Allowable Vegetation Cover | | 6.5 | 0.0 | 0.0 | 0.0 | 28.5 | 36.5 | 2.5 | 12.5 | 4.5 | 28.5 | 0.0 | 18.5 | 14.5 | 42.5 | 20.5 | | | | | | | | | | | | | | | | | 14.4 | | | |

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|--------------------------|------|
| Non-Noxious Annual Cover | 33.6 |
| Excess Annual Cover | 29.5 |

Redburn Area 37 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|--|------------------------|---|---|----|---|----|---|----|---|----|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | nut sandbur | | P | | P | | P | P | P | P | P | 1 | | | | | 1 | 1 | 0.1 | 0.3 | |
| Munroa squarrosa | false buffalograss | 2 | P | P | 2 | 3 | 1 | P | P | 1 | P | P | 2 | P | 2 | P | 14 | 14 | 1.9 | 4.8 | |
| Panicum capillare | wickgrass | 6 | P | 6 | 1 | | 1 | | 1 | | | | | | P | | 14 | 14 | 1.9 | 4.8 | |
| Subtotal | | 2 | 6 | P | 8 | 3 | 3 | P | P | 1 | 1 | 1 | 2 | P | 2 | P | 29 | 29 | 3.9 | 9.9 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | P | 5 | 6 | 7 | 1 | P | | P | P | P | P | | 3 | 1 | | 22 | 23 | 2.9 | 7.8 | |
| Eragrostis cilianensis | stinkgrass | | | | | | | | P | P | | | | | P | | 0 | 0 | 0.0 | 0.0 | |
| Eragrostis minor | little lovegrass | 1 | 1 | | P | | P | | | | | | | | | | 2 | 2 | 0.3 | 0.7 | |
| Triticum aestivum | common wheat | | | | | | | | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Subtotal | | P | 6 | 7 | 7 | 1 | P | | P | P | P | P | | 3 | 1 | | 24 | 25 | 3.2 | 8.5 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | 3 | P | 3 | | | 3 | 4 | | P | P | 1 | 1 | P | P | 4 | 26 | 27 | 3.5 | 9.2 | |
| Cyperus schweinitzii | Schweinitz's flatsedge | | | | | | P | P | 1 | | P | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Elymus trachycaulus | slender wheatgrass | P | | P | P | | P | P | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Pascopyrum smithii | western wheatgrass | | | P | P | | 4 | 1 | 5 | | | | | | | | 9 | 10 | 1.2 | 3.4 | |
| Subtotal | | 3 | P | 3 | P | 3 | 4 | 7 | 1 | 9 | P | 1 | 1 | P | P | 4 | 35 | 37 | 4.7 | 12.6 | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | | | | | P | P | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Bouteloua curtipendula | sideoats grama | | | | | | P | P | | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Bouteloua gracilis | blue grama | | | | | | P | P | 1 | | | | | | | | 1 | 1 | 0.1 | 0.3 | |
| Calamovilfa longifolia | prairie sandreed | P | 5 | 1 | | 1 | P | P | 1 | | | | | | | | 7 | 8 | 0.9 | 2.7 | |
| Panicum virgatum | switchgrass | P | | P | | | | | 1 | | | | | | | | 1 | 1 | 0.1 | 0.3 | |
| Schizachyrium scoparium | little bluestem | | | | P | | | | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Sorghastrum nutans | Indiangrass | | | | | | | | P | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Sporobolus cryptandrus | sand dropseed | P | 2 | 7 | 1 | 1 | 4 | 5 | P | P | P | P | P | | | 2 | 22 | 22 | 2.9 | 7.5 | |
| Subtotal | | P | 2 | 12 | 2 | 1 | 5 | 5 | 2 | 1 | P | P | P | | | 2 | 31 | 32 | 4.1 | 10.9 | |
| Total Grass Cover | | 5 | 0 | 14 | 0 | 22 | 0 | 17 | 1 | 7 | 0 | 12 | 1 | 3 | 0 | 3 | 6 | 119 | 123 | 15.9 | 41.8 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | P | 1 | P | | P | 1 | P | P | 1 | 1 | P | P | 1 | P | | 5 | 8 | 0.7 | 2.7 | |
| Ambrosia artemisiifolia | flatspine bur ragweed | | | | | | | | P | | | P | | | | | 0 | 0 | 0.0 | 0.0 | |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | | | | P | | | | | 0 | 0 | 0.0 | 0.0 | |
| Chamaesyce glyptosperma | ribweed sandmat | P | | P | P | | P | P | P | P | | | P | | | | 0 | 0 | 0.0 | 0.0 | |
| Chenopodium desiccatum | aridland goosefoot | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Chenopodium leptophyllum | narrowleaf goosefoot | | | | | | | | | | | | P | | | | 0 | 0 | 0.0 | 0.0 | |
| Conyza canadensis | Canadian horseweed | 1 | | | | | P | P | | | | | | | | | 1 | 1 | 0.1 | 0.3 | |
| Croton texensis | Texas croton | | | | | | P | P | P | | | | | | | P | 0 | 0 | 0.0 | 0.0 | |
| Erigeron belizianus | western daisy fleabane | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Helianthus annuus | common sunflower | 5 | 4 | 3 | 3 | 1 | 2 | 3 | 1 | 10 | 4 | 14 | 1 | 4 | 8 | 7 | 70 | 70 | 9.3 | 23.8 | |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | 1 | | P | | P | | | | | | | | | 1 | 1 | 0.1 | 0.3 | |
| Oenothera pallida | pale evening primrose | P | | P | P | P | P | P | | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Peltandra patagonica | woolly plantain | P | | P | P | | P | P | | | | | | | | | 0 | 0 | 0.0 | 0.0 | |
| Polygonum ramosissimum | bushy knotweed | 1 | | | | | | | | 1 | | | | | | | 2 | 2 | 0.3 | 0.7 | |
| Subtotal | | 5 | 7 | 3 | 4 | 2 | 2 | 4 | 1 | 12 | 1 | 4 | 14 | 2 | 1 | 5 | 7 | 79 | 82 | 10.5 | 27.9 |

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Redburn Area 37 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) |
|--|----------------------------|-----|------|------|------|-----|------|------|-----|------|------|------|-----|-----|-----|------|------------|----------------------------|----------------------------|--------------------------------|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | |
| Alyssum sp. | madwort | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Ambrosia artemisiifolia | annual ragweed | | P | | | | P | | | 2 | | P | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Bassia scoparia | burningbush | | | | P | | | P | | | | | | | | | 2 | 0.3 | 0.7 | 0.7 |
| Cuscuta indecora | bigseed alfalfa dodder | 1 | | | | | 1 | | P | | P | 4 | 1 | P | | P | 6 | 0.8 | 2.4 | 2.6 |
| Dysphania botrys | Jerusalem oak goosefoot | P | | | P | | P | | | | | 1 | 1 | | P | | 2 | 0.3 | 0.7 | 0.7 |
| Lactuca scariola | prickly lettuce | P | | | P | | | | P | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Melilotus officinalis | sweetclover | | | | P | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Polygonum aviculare | prostrate knotweed | P | 5 | 1 | P | 2 | 1 | | | 9 | 1 | P | 2 | | P | | 17 | 2.3 | 7.5 | 8.1 |
| Salsola collina | slender Russian thistle | P | | | | | | | | | 1 | | 1 | | P | | 2 | 0.3 | 0.7 | 0.7 |
| Salsola tragus | prickly Russian thistle | 3 | P | P | P | 1 | P | P | 2 | 2 | 11 | 5 | 3 | 5 | 1 | 11 | 48 | 6.4 | 18.0 | 19.6 |
| Subtotal | | 4 | 5 | 1 | P | 2 | 1 | 1 | 2 | 13 | 1 | 11 | 6 | 7 | 3 | 11 | 77 | 10.3 | 29.9 | 32.5 |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cuman ragweed | | | | | P | 1 | | P | | | | | | | | 1 | 0.1 | 0.3 | 0.4 |
| Ratibida columnifera | upright prairie coneflower | | P | | | | | | | P | | | | | | | 0 | 0.0 | 0.0 | 0.0 |
| Subtotal | | | P | | | P | 1 | | P | P | | | | | | | 1 | 0.1 | 0.3 | 0.4 |
| Total Forb Cover | | 9 | 0 | 12 | 1 | 3 | 0 | 6 | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 18 | 157 | 20.9 | 58.2 | 63.1 |
| Rock | | | | | | | | | | | | | | | | | 0 | 0.0 | | |
| Litter | | 12 | 22 | 16 | 22 | 25 | 15 | 17 | 10 | 15 | 13 | 10 | 13 | 35 | 19 | 16 | 260 | 34.7 | | |
| Bare Ground | | 24 | 2 | 9 | 5 | 15 | 19 | 17 | 26 | 9 | 20 | 13 | 26 | 2 | 17 | 10 | 214 | 28.5 | | |
| Total Hits | | 50 | 0 | 50 | 1 | 50 | 0 | 50 | 2 | 50 | 0 | 50 | 0 | 50 | 1 | 50 | 750 | 100.0 | | |
| Total Vegetation Cover | | 28 | 0 | 52 | 2 | 50 | 0 | 46 | 4 | 20 | 0 | 32 | 0 | 26 | 2 | 28 | 0 | 36.8 | 100.0 | 100.0 |
| Non-Noxious Vegetation Cover | | 28 | 0 | 42 | 2 | 38 | 0 | 32 | 2 | 52 | 4 | 54 | 18 | 22 | 0 | 26 | 0 | 33.9 | | |
| Total Ground Cover | | 52 | 96 | 82 | 90 | 70 | 62 | 66 | 48 | 82 | 60 | 74 | 48 | 96 | 66 | 80 | | 71.5 | | |
| Allowable Vegetation Cover | | 6.5 | 20.5 | 16.5 | 10.5 | 0.0 | 10.5 | 10.5 | 6.5 | 30.5 | 12.5 | 32.5 | 0.5 | 0.0 | 4.5 | 26.5 | | 12.5 | | |

| | |
|--------------------------|------|
| Non-Noxious Annual Cover | 24.9 |
| Excess Annual Cover | 21.5 |

Reclamation Area 38 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|-------------------------------------|-------------------------|---|----|----|---|---|---|---|---|---|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | P | | P | | P | | | P | | | | | | 1 | 1 | 0.1 | 0.5 | 0.5 | |
| Munroa squarrosa | false buffalograss | | P | P | P | | P | P | | P | | P | | | 3 | 2 | 5 | 0.7 | 2.5 | 2.6 | |
| Panicum capillare | witchgrass | | | | | | | P | 4 | 1 | | | | | | | 4 | 0.5 | 2.5 | 2.6 | |
| Subtotal | | | P | P | P | P | P | P | 4 | 1 | P | P | | | 3 | 3 | 10 | 1.3 | 5.4 | 5.8 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 1 | P | | P | | 1 | 3 | | 4 | P | | | 1 | 1 | 1 | 12 | 1.6 | 6.4 | | |
| Subtotal | | 1 | P | | P | | 1 | 3 | | 4 | P | | | 1 | 1 | 1 | 12 | 1.6 | 6.4 | 0.0 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | 5 | P | 5 | 2 | 4 | 8 | 1 | 4 | 1 | 3 | 4 | 9 | 4 | 3 | 1 | 54 | 7.2 | 26.6 | 28.4 | |
| Elymus trachycaulus | slender wheatgrass | | | P | | 1 | | | | | | | | | P | | 1 | 0.1 | 0.5 | 0.5 | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | 1 | | | | | | | 1 | 0.1 | 0.5 | 0.5 | |
| Subtotal | | 5 | P | 5 | 2 | 5 | 8 | 1 | 4 | 2 | 3 | 4 | 9 | 4 | 3 | 1 | 56 | 7.5 | 27.6 | 29.5 | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | P | P | | | P | | | | P | P | | | | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Calamovilfa longifolia | prairie sandreed | P | 11 | P | 3 | P | P | P | | P | P | P | 2 | | P | | 16 | 2.1 | 7.9 | 8.4 | |
| Panicum virgatum | switchgrass | | | P | 1 | P | | P | | P | P | 1 | | | P | | 2 | 0.3 | 1.0 | 1.1 | |
| Sorghastrum nutans | Indiangrass | | | P | | P | | | | P | P | P | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Sporobolus cryptandrus | sand dropseed | P | P | | | | | P | 1 | P | P | | 1 | 1 | | | 2 | 0.3 | 1.5 | 1.6 | |
| Subtotal | | P | 11 | P | 3 | 1 | P | P | 1 | P | P | 1 | 3 | 1 | P | | 20 | 2.7 | 10.3 | 11.1 | |
| Total Grass Cover | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | 0 | 11 | 0 | 5 | 0 | 6 | 0 | 9 | 0 | 5 | 0 | 12 | 1 | 5 | 1 | 98 | 13.1 | 49.8 | 53.2 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | P | | | | | P | P | | | P | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Chenopodium desiccatum | aridland goosefoot | | | | | | P | P | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Croton texensis | Texas croton | | | | | | | | | | | P | | | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Helianthus annuus | common sunflower | P | 2 | 5 | 2 | 4 | 2 | 4 | 2 | 2 | 4 | 3 | 6 | 11 | 4 | 4 | 55 | 7.3 | 27.1 | 28.9 | |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | | | | | P | | P | | | | | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Plantago patagonica | woolly plantain | | | | | | | P | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | P | 2 | 5 | 2 | 4 | 2 | 4 | 2 | 2 | 4 | 3 | 6 | 11 | 4 | 4 | 55 | 7.3 | 27.1 | 28.9 | |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | |
| Alyssum sp. | madwort | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Cirsium flodmanii | Flodman's thistle | | | P | | | | | P | | | | | | P | | 0 | 0.0 | 0.0 | 0.0 | |
| Dysphania botrys | Jerusalem oak goosefoot | P | P | P | 1 | P | P | P | P | P | P | 1 | | | 1 | | 3 | 0.4 | 1.5 | 1.6 | |
| Lactuca serriola | prickly lettuce | P | | P | | | P | P | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Melilotus officinalis | sweetclover | | | | | | | | | | | | 2 | 2 | | | 2 | 0.3 | 2.0 | 2.1 | |
| Salsola collina | slender Russian thistle | P | P | P | P | P | 1 | | | | 1 | | | | | | 2 | 0.3 | 1.0 | 1.1 | |
| Salsola tragus | prickly Russian thistle | 7 | 1 | P | P | 2 | 4 | 8 | 4 | | | 1 | | 2 | 2 | 5 | 36 | 4.8 | 18.2 | 19.5 | |
| Sisymbrium albisarum | tall tumblermustard | | | | | | | | | | | P | | | | | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | 7 | 1 | P | 1 | 2 | 5 | 8 | | 4 | 1 | 2 | 2 | 2 | 3 | 5 | 43 | 5.7 | 22.7 | 24.2 | |

Kearney Mine 2023 Vegetation Monitoring Report

Reclamation Area 2 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | |
|-----------------------------------|-------------------------|----|----|----|---|----|----|----|---|----|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbar | 4 | | | 7 | 3 | | 1 | 3 | 1 | | | | 1 | 1 | 1 | 19 | 22 | 2.5 | 5.4 | |
| Munroa squarrosa | false buffalograss | 2 | 9 | 1 | 8 | 2 | 1 | 1 | | | 6 | 1 | 2 | | P | P | 32 | 34 | 4.3 | 8.3 | |
| Panicum capillare | witchgrass | | | | 4 | 2 | | | | | | | | | P | P | 4 | 7 | 0.5 | 1.7 | |
| Subtotal | | 2 | 13 | 1 | 8 | 13 | 5 | 1 | 3 | 1 | 6 | 1 | 2 | 1 | 1 | 1 | 55 | 63 | 7.3 | 15.4 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 15 | 4 | P | 1 | 2 | 12 | 1 | 2 | 6 | 1 | P | 1 | 4 | 1 | P | 51 | 58 | 6.8 | 14.2 | |
| Eragrostis cilianensis | stinkgrass | | | | | | | | P | 1 | | | | | 4 | 2 | 4 | 7 | 0.5 | 1.7 | |
| Eragrostis minor | little lovegrass | | | | | | | | 1 | | | | | | P | P | 1 | 1 | 0.1 | 0.2 | |
| Subtotal | | 15 | 4 | P | 1 | 2 | 12 | 1 | 2 | 7 | 2 | P | 1 | 4 | 1 | 4 | 56 | 66 | 7.5 | 16.2 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | 2 | | 5 | 1 | 2 | | | 4 | 3 | 1 | 5 | 2 | P | 24 | 25 | 3.2 | 6.1 | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | 0.1 | 0.2 | |
| Subtotal | | | | 2 | | 5 | 1 | 2 | | | 4 | 3 | 1 | 5 | 3 | P | 25 | 26 | 3.3 | 6.4 | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | |
| Bouteloua curtipendula | sideoats grama | | | | | | | | | | | | | | | P | 0 | 0 | 0.0 | 0.0 | |
| Bouteloua gracilis | blue grama | 1 | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.2 | |
| Calamovilfa longifolia | prairie sandreed | 1 | P | | | | | | 1 | 1 | 1 | | | 2 | P | 1 | 2 | 2 | 0.3 | 0.5 | |
| Sporobolus cryptandrus | sand dropseed | | | | 1 | P | 1 | | | | | | | | | | 6 | 7 | 0.8 | 1.7 | |
| Subtotal | | 2 | P | | 1 | P | 1 | | 1 | 1 | 1 | | | 2 | P | 1 | 9 | 10 | 1.2 | 2.5 | |
| Total Grass Cover | | 17 | 0 | 19 | 1 | 10 | 0 | 14 | 7 | 7 | 1 | 12 | 2 | 6 | 0 | 11 | 2 | 2 | 1 | 11 | 1 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | 8 | 3 | 3 | 0 | 145 | 165 | |
| Amaranthus retroflexus | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | | 1 | P | | | | | | 1 | 1 | | | P | 1 | P | 4 | 5 | 0.5 | 1.2 | |
| Ambrosia artemisiifolia | flatspine bur ragweed | | | | | | | | | | | | | | P | P | 0 | 0 | 0.0 | 0.0 | |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | | | | | | | P | P | 0 | 0 | 0.0 | 0.0 | |
| Chamaesyce glyptosperma | ribseed sandmat | 3 | | | | | | | | | | | | | | P | 3 | 3 | 0.4 | 0.7 | |
| Chenopodium desiccatum | aridland goosefoot | | | | | 1 | | | | | | | | | | | 1 | 1 | 0.1 | 0.2 | |
| Chenopodium leptophyllum | narrowleaf goosefoot | | | | 1 | | | | | | | 1 | 1 | | 1 | 1 | 4 | 6 | 0.5 | 1.5 | |
| Cleome serrulata | Rocky Mountain beeplant | | | | 1 | | | | P | 1 | | | | | | | 1 | 1 | 0.1 | 0.2 | |
| Coryza canadensis | Canadian horseweed | | | | | | | | 1 | | | | | | P | P | 1 | 1 | 0.1 | 0.2 | |
| Croton texensis | Texas croton | | | | | | | | | | | | | | | P | 0 | 0 | 0.0 | 0.0 | |
| Helianthus annuus | common sunflower | 8 | 4 | 2 | 6 | 7 | 1 | 12 | 8 | 10 | 7 | 3 | 16 | 12 | 7 | 6 | 2 | 110 | 111 | 14.7 | 27.2 |
| Oenothera pallida | pale evening primrose | | | | | | | | | | | | | | | P | 0 | 0 | 0.0 | 0.0 | |
| Plantago patagonica | woolly plantain | | | | | | | | | | | | | | | P | 0 | 0 | 0.0 | 0.0 | |
| Subtotal | | 8 | 8 | 2 | 7 | 7 | 1 | 14 | 8 | 11 | 8 | 4 | 17 | 1 | 7 | 4 | 124 | 128 | 16.5 | 31.4 | |

Redmond Area 2 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | | | | | | | | | | | |
|---|-------------------------|------|------|-----|------|-----|-----|-----|------|------|-----|------|------|-----|------|-----|------------|----------------------------|----------------------------|--------------------------------|------|------|------|----|---|----|---|----|---|----|---|--|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alyssum sp. | madwort | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | |
| Ambrosia artemisiifolia | annual ragweed | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | |
| Bassia scoparia | burningbush | | | | 1 | | | | | 2 | | | | | | | 3 | 0.4 | 0.7 | 0.9 | | | | | | | | | | | | |
| Chenopodium album | lambsquarters | | | | | | | | | | | | | | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | |
| Cuscuta indecora | bigseed alfalfa dodder | | | | | | | | | | | P | | | | | 0 | 0.0 | 0.2 | 0.3 | | | | | | | | | | | | |
| Dysphania botrys | Jerusalem oak goosefoot | | | | | | | | | 1 | | | | | | | 1 | 0.0 | 0.2 | 0.3 | | | | | | | | | | | | |
| Lactuca serriola | prickly lettuce | | | P | | | | | | 1 | | | | | | | 4 | 0.5 | 1.0 | 1.1 | | | | | | | | | | | | |
| Melilotus officinalis | sweetclover | | | | | | | | 1 | | | | | | | | 3 | 0.4 | 0.7 | 0.9 | | | | | | | | | | | | |
| Polygonum aviculare | prostrate knotweed | | | | | | | | | | | | | | | | 1 | 0.1 | 0.2 | 0.3 | | | | | | | | | | | | |
| Salsola tragus | prickly Russian thistle | 9 | 4 | 3 | 7 | 1 | 2 | 3 | 4 | 13 | 1 | 6 | 4 | 1 | 8 | 10 | 69 | 9.2 | 2.0 | 2.3 | | | | | | | | | | | | |
| Sisymbrium altissimum | tall tumbledmustard | | | | | | | | 1 | | | | | | 1 | 1 | 3 | 0.4 | 0.7 | 0.9 | | | | | | | | | | | | |
| Subtotal | | 9 | 4 | 3 | 8 | 1 | 2 | 7 | 3 | 6 | 17 | 1 | 6 | 5 | 4 | 1 | 10 | 14 | 88 | 102 | 25.0 | 29.1 | | | | | | | | | | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia psilostachya | Cuman ragweed | | | | | | 1 | | | | | | | | | | 1 | 1 | 0.1 | 0.2 | 0.3 | | | | | | | | | | | |
| Physalis hispida | prairie groundcherry | 5 | 1 | | | | | | | | | | 3 | 2 | | | 5 | 6 | 0.7 | 1.5 | 1.7 | | | | | | | | | | | |
| Psoraleidiam lanceolatum | lemon scurpea | | | | | | | | | | | | | | | | 3 | 5 | 0.4 | 1.2 | 1.4 | | | | | | | | | | | |
| Subtotal | | 5 | 1 | | | | 1 | | | | | | 3 | 2 | | | 9 | 12 | 1.2 | 2.9 | 3.4 | | | | | | | | | | | |
| Total Forb Cover | | 22 | 5 | 8 | 0 | 5 | 0 | 15 | 0 | 8 | 1 | 17 | 0 | 19 | 3 | 7 | 1 | 17 | 0 | 221 | 242 | 59.3 | 69.1 | | | | | | | | | |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Artemisia filifolia | sand sagebrush | | | | | | 1 | | | | | | | | | | | 1 | 1 | 0.1 | 0.2 | 0.3 | | | | | | | | | | |
| Subtotal | | | | | | | 1 | | | | | | | | | | | 1 | 1 | 0.1 | 0.2 | 0.3 | | | | | | | | | | |
| Total Shrub Cover | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.1 | 0.2 | 0.3 | | | | | | | | | | | |
| Rock | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | | | | | | | | | | | | | |
| Litter | | 9 | 20 | 17 | 12 | 23 | 16 | 16 | 15 | 11 | 13 | 17 | 19 | 12 | 20 | 9 | 229 | 229 | 30.5 | | | | | | | | | | | | | |
| Bare Ground | | 2 | 3 | 18 | 9 | 12 | 4 | 13 | 7 | 12 | 21 | 3 | 6 | 19 | 5 | 20 | 154 | 154 | 20.5 | | | | | | | | | | | | | |
| Total Hits | | 50 | 5 | 50 | 1 | 50 | 2 | 50 | 3 | 50 | 3 | 50 | 7 | 50 | 3 | 50 | 0 | 750 | 791 | 100.0 | | | | | | | | | | | | |
| Total Vegetation Cover | | 78 | 10 | 54 | 2 | 30 | 0 | 58 | 14 | 30 | 4 | 60 | 4 | 42 | 6 | 54 | 4 | 32 | 2 | 60 | 14 | 50 | 6 | 42 | 0 | | | | | | | |
| Non-Noxious Vegetation Cover | | 48 | 10 | 46 | 2 | 30 | 0 | 56 | 10 | 30 | 4 | 36 | 2 | 38 | 6 | 44 | 4 | 54 | 2 | 32 | 2 | 54 | 12 | 44 | 6 | 30 | 2 | 50 | 6 | 40 | 0 | |
| Total Ground Cover | | 96 | 94 | 64 | 82 | 76 | 92 | 74 | 86 | 76 | 58 | 94 | 88 | 62 | 90 | 60 | | | | | | | | | | | | | | | | |
| Allowable Vegetation Cover | | 15.9 | 13.9 | 0.0 | 23.9 | 0.0 | 3.9 | 5.9 | 11.9 | 21.9 | 0.0 | 21.9 | 11.9 | 0.0 | 17.9 | 7.9 | | | | | | | | | | | | | | | | |

Kearneyville 2023 Vegetation Monitoring Report

Redburn Area 43 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | |
|-------------------------------------|-------------------------|----|---|---|---|----|---|----|---|---|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | mat sandbur | | | | | | | | P | | | | P | 1 | | | 0 | 1 | 0.0 | 0.3 | 0.4 | |
| Panicum capillare | wichgrass | 6 | 2 | | | | | P | P | 8 | 1 | | | 6 | 1 | | 22 | 25 | 2.9 | 7.6 | 9.0 | |
| Subtotal | | 6 | 2 | | | | | P | P | 8 | 1 | | P | 1 | 6 | | 22 | 26 | 2.9 | 7.9 | 9.4 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| Subtotal | | 1 | 1 | | | | | | | | | | | | | | 52 | 54 | 6.9 | 16.3 | 0.0 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Cyperus schweinitzii | Schweinitz's flatsedge | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Calamovilfa longifolia | prairie sandreed | | | 1 | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Panicum virgatum | switchgrass | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Schizachyrium scoparium | little bluestem | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Sporobolus cryptandrus | sand dropseed | 9 | 1 | 4 | 1 | 2 | 9 | 6 | 9 | 1 | 10 | 6 | 8 | 4 | 1 | 6 | 1 | 105 | 111 | 14.0 | 33.5 | 40.1 |
| Subtotal | | 9 | 1 | 4 | 1 | 3 | 9 | 6 | 9 | 1 | 10 | 7 | 8 | 4 | 1 | 6 | 1 | 107 | 113 | 14.3 | 34.1 | 40.8 |
| Total Grass Cover | | 16 | 4 | 4 | 1 | 16 | 0 | 12 | 0 | 6 | 0 | 11 | 1 | 13 | 0 | 7 | 0 | 181 | 193 | 24.1 | 58.3 | 69.7 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | | | | | | | | P | 1 | | | 1 | | | | 2 | 2 | 0.3 | 0.6 | 0.7 | |
| Ambrosia acanthioides | flatspine bur ragweed | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Chamaecrista ciliolata | ribweed sandmat | 1 | | 3 | P | | | P | 2 | P | 3 | 3 | 1 | | | | 8 | 16 | 1.1 | 4.8 | 5.8 | |
| Chenopodium leptophyllum | narrowleaf goosefoot | 1 | | | P | | | P | P | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Conyza canadensis | Canadian horseweed | | | | | | | P | P | 1 | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Croton texensis | Texas croton | | | | P | | | P | P | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Eriogonum bellidifolium | western daisy fleabane | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Eriogonum annuum | annual buckwheat | | | | P | | | P | 2 | | | | | | | | 2 | 2 | 0.3 | 0.6 | 0.7 | |
| Helianthus annuus | common sunflower | 5 | 1 | 6 | 4 | 4 | 2 | 3 | P | 1 | 2 | 1 | 3 | 6 | 1 | 6 | 50 | 51 | 6.7 | 15.4 | 18.4 | |
| Machaeranthera bigelovii | Bigelow's tansyaster | | | | P | 1 | 2 | 1 | P | | | | | | | | 5 | 5 | 0.7 | 1.5 | 1.8 | |
| Plantago patagonica | woolly plantain | | | | P | | | P | P | | | | 1 | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Subtotal | | 7 | 1 | 7 | 5 | 3 | 5 | 4 | 3 | 2 | 2 | 5 | 3 | 8 | 2 | 7 | 6 | 72 | 81 | 9.6 | 24.5 | 29.2 |
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia artemisiifolia | annual ragweed | 6 | 1 | | | | | | | | | | | | | | 48 | 51 | 6.4 | 15.4 | 18.4 | |
| Bassia scoparia | burningbush | | | | | | | | | | | | | | | | 0 | 1 | 0.0 | 0.3 | 0.4 | |
| Cuscuta indecora | bigseed alfalfa dodder | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Dysphania botrys | Jerusalem oak goosefoot | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Lactuca scariola | prickly lettuce | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Salicaria collina | slender Russian thistle | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Salicaria tragus | prickly Russian thistle | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Subtotal | | 6 | 1 | | 2 | 1 | 3 | 5 | 4 | P | | | | | | | 5 | 5 | 6.7 | 16.3 | 19.5 | |

Kearney Mine 2023 Vegetation Monitoring Report

Return Area 6 Vegetation Cover Data (continued)

| Scientific Name | Common Name | | | | | | | | | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | | | | | | | | | | | | | |
|---|----------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|------|-----|-----|------|------|------|------|-----|------|------|------|------|------|------|------------|----------------------------|----------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|------|------|-------|---|------|-------|-------|--|
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mentzelia nuda | bractless blazingstar | | | | | | | | | | | | | | | | | | | | | P | P | | | | | | | | | 0 | 0 | 0.0 | 0.0 | | | | | | | | | | | | | |
| Physalis hispida | prairie groundcherry | | | | | | | | | | | | | | | | | | | P | 1 | P | P | | | | | 1 | | | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | | | | | | |
| Ratibida columnifera | upright prairie coneflower | | | | | | | | | | | | | | | | | | | P | | P | P | | | | | 1 | | | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | | | P | 1 | P | P | | | | | | 2 | 2 | 0.3 | 0.6 | 0.7 | | | | | | | | | | | | | | |
| Total Forb Cover | | | | | | | | | | | | | | | | | 13 | 2 | 7 | 0 | 7 | 3 | 6 | 0 | 7 | 0 | 9 | 0 | 6 | 2 | 5 | 0 | 4 | 3 | 6 | 0 | 11 | 1 | 124 | 137 | 16.5 | 41.4 | 49.5 | | | | | |
| Subshrubs/Shrubs/Succulents: Perennial Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Opuntia polyacantha | hairspine pricklypear | | | | | | | | | | | | | | | | | | | P | | P | P | | | | | | | | | 1 | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | | | | |
| Yucca glauca | sageweed yucca | | | | | | | | | | | | | | | | | P | P | | | | P | P | | | | | | | 1 | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | | | | | |
| Subtotal | | | | | | | | | | | | | | | | | | | P | P | P | | | P | P | | | | | | 1 | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | | | | | |
| Total Shrub Cover | | | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.1 | 0.3 | 0.4 | | | | | | | | |
| Rock | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | 2 | 2 | 0.3 | | | | | | | | | | | | | |
| Litter | | | | | | | | | | | | | | | | 20 | 34 | 18 | 23 | 22 | 20 | 23 | 24 | 20 | 21 | 23 | 15 | 24 | 19 | 19 | 325 | 325 | 43.3 | | | | | | | | | | | | | | | |
| Bare Ground | | | | | | | | | | | | | | | | 1 | 5 | 9 | 9 | 15 | 9 | 8 | 14 | 3 | 4 | 10 | 8 | 1 | 11 | 10 | 117 | 117 | 15.6 | | | | | | | | | | | | | | | |
| Total Hits | | | | | | | | | | | | | | | | | 50 | 6 | 50 | 1 | 50 | 3 | 50 | 0 | 50 | 0 | 50 | 1 | 50 | 2 | 50 | 0 | 50 | 4 | 50 | 2 | 50 | 1 | 50 | 1 | 750 | 775 | 100.0 | | | | | |
| Total Vegetation Cover | | | | | | | | | | | | | | | | | 58 | 12 | 22 | 2 | 46 | 6 | 36 | 0 | 26 | 0 | 40 | 2 | 38 | 4 | 24 | 0 | 54 | 8 | 50 | 4 | 34 | 2 | 54 | 4 | 50 | 2 | 40 | 2 | 40.8 | 100.0 | 100.0 | |
| Non-Noxious Vegetation Cover | | | | | | | | | | | | | | | | | 56 | 10 | 22 | 2 | 20 | 6 | 30 | 0 | 26 | 0 | 36 | 2 | 32 | 4 | 24 | 0 | 42 | 8 | 34 | 2 | 30 | 2 | 36 | 4 | 42 | 2 | 38 | 2 | 40 | 2 | 33.9 | |
| Total Ground Cover | | | | | | | | | | | | | | | | | 98 | 90 | 82 | 82 | 70 | 82 | 84 | 72 | 94 | 92 | 80 | 84 | 98 | 78 | 80 | | | | | | | | | | | | | | | | | |
| Allowable Vegetation Cover | | | | | | | | | | | | | | | | | 40.2 | 6.2 | 4.2 | 14.2 | 10.2 | 20.2 | 16.2 | 8.2 | 26.2 | 18.2 | 14.2 | 20.2 | 26.2 | 22.2 | 24.2 | | | | | | | | | | | | | | | | | |

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|--------------------------|------|
| Non-Noxious Annual Cover | 19.2 |
| Excess Annual Cover | 15.8 |

Kearneyville 2023 Vegetation Monitoring Report

Reclamation Area 44 Vegetation Cover Data

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | |
|-----------------------------------|---------------------------|----|---|---|---|----|---|---|----|----|----|----|----|----|----|----|------------|----------------------------|----------------------------|--------------------------------|------|------|
| Grass: Annual Native | | | | | | | | | | | | | | | | | | | | | | |
| Cenchrus longispinus | nut sandbur | 1 | | | | 1 | | | | | | | | | P | 1 | 2 | 3 | 0.3 | 0.9 | 1.1 | |
| Munroa squarrosa | false buffalograss | | | | | | | | | | | P | | | 1 | | 2 | 2 | 0.3 | 0.6 | 0.8 | |
| Panicum capillare | witchgrass | 1 | 1 | 7 | 1 | 6 | | | 1 | 4 | 2 | P | 1 | | 1 | 2 | 25 | 31 | 3.3 | 9.7 | 11.9 | |
| Subtotal | | 2 | 1 | 7 | 1 | 7 | | | 1 | 4 | 2 | P | 1 | | 2 | 2 | 29 | 36 | 3.9 | 11.3 | 13.8 | |
| Grass: Annual Introduced | | | | | | | | | | | | | | | | | | | | | | |
| Bromus tectorum | cheatgrass | 2 | | | | 6 | | | 1 | 1 | 5 | 2 | 2 | | 14 | 5 | 55 | 58 | 7.3 | 18.2 | | |
| Eriogonum ciliolense | stinkgrass | | | | | P | | | 1 | | | P | | | | | 2 | 2 | 0.3 | 0.6 | 0.8 | |
| Eriogonum minor | little lovegrass | | | | | P | | | | P | 1 | | | | | | 1 | 3 | 0.1 | 0.9 | 1.1 | |
| Subtotal | | 2 | | | | P | | | 2 | 2 | 1 | 5 | 3 | | 14 | 5 | 58 | 63 | 7.7 | 19.7 | 1.9 | |
| Grass: Perennial Desirable (Cool) | | | | | | | | | | | | | | | | | | | | | | |
| Achnatherum hymenoides | Indian ricegrass | 2 | 4 | 1 | | 2 | | | 1 | 1 | 3 | | | | | 4 | 34 | 36 | 4.5 | 11.3 | 13.8 | |
| Cyperus schweinitzii | Schweinitz's flatsedge | | | | | P | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Elymus trachycaulus | slender wheatgrass | 1 | 1 | | | 1 | | | 1 | | | P | | | | 1 | 5 | 5 | 0.7 | 1.6 | 1.9 | |
| Pascopyrum smithii | western wheatgrass | | | | | | | | | | | P | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Subtotal | | 2 | 5 | 2 | | 3 | | | 2 | 1 | 3 | | | | 10 | 1 | 5 | 41 | 43 | 5.5 | 13.5 | 16.5 |
| Grass: Perennial Desirable (Warm) | | | | | | | | | | | | | | | | | | | | | | |
| Andropogon hallii | sand bluestem | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Bouteloua gracilis | blue grama | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Calamagrostis longifolia | prairie sandreed | | | | | | | | | | | | | | | | 3 | 3 | 0.4 | 0.9 | 1.1 | |
| Sporobolus cryptandrus | sand dropseed | | 2 | 5 | 1 | 3 | | 4 | | 1 | 1 | 2 | 11 | 1 | 3 | 3 | 1 | 44 | 47 | 5.9 | 14.7 | 18.0 |
| Subtotal | | 2 | 2 | 5 | 1 | 3 | | 4 | | 1 | 2 | 2 | 11 | 1 | 4 | 3 | 1 | 47 | 50 | 6.3 | 15.7 | 19.2 |
| Total Grass Cover | | 6 | 0 | 8 | 1 | 14 | 1 | 2 | 0 | 19 | 1 | 6 | 0 | 7 | 0 | 5 | 2 | 175 | 192 | 23.3 | 60.2 | 73.6 |
| Forbs: Annual & Biennial Native | | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus | redroot amaranth | 3 | 1 | | | 2 | | | 2 | 1 | 3 | | | | 5 | | 23 | 29 | 3.1 | 9.1 | 11.1 | |
| Ambrosia artemisiifolia | flatspine bur ragweed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Argemone polyanthemos | crested pricklypoppy | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Chamaesyce gyptosperma | ribweed sandmat | | | 1 | | | | | | | 1 | | | | | P | 1 | 3 | 0.4 | 1.3 | 1.5 | |
| Chenopodium leptophyllum | narrowleaf goosefoot | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Cleome serrulata | Rocky Mountain beechplant | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Conyza canadensis | Canadian horseweed | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Croton texensis | Texas croton | | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Helianthus annuus | common sunflower | 10 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 7 | 9 | 3 | 3 | 2 | 2 | 1 | 48 | 52 | 6.4 | 16.3 | 19.9 | |
| Oenothera pallida | pale evening primrose | | | | | | | | | | | | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | 13 | 1 | 1 | 3 | 4 | 1 | 4 | 10 | 10 | 6 | 8 | 2 | 4 | 1 | 3 | 75 | 86 | 10.0 | 27.0 | 33.0 | |

Kearney Fire 2023 Vegetation Monitoring Report

Redanatin Area 44 Vegetation Cover Data (continued)

| Scientific Name | Common Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total Hits | Average Absolute Cover (%) | Average Relative Cover (%) | Non-Noxious Relative Cover (%) | | |
|-------------------------------------|----------------------------|------|-----|------|-----|------|-----|------|------|------|------|-----|------|------|-----|-----|------------|----------------------------|----------------------------|--------------------------------|------|------|
| Forbs: Annual & Biennial Introduced | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ambrosia artemisiifolia</i> | annual ragweed | 1 | | | | | | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| <i>Bassia scoparia</i> | burningbush | | | | P | 1 | | | | 6 | | | | | | | 7 | 7 | 0.9 | 2.2 | 2.7 | |
| <i>Cuscuta indecora</i> | bigseed alfalfa dodder | | | | P | | | P | 3 | 1 | | | 1 | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| <i>Dysphania botrys</i> | Jerusalem oak goosefoot | | | P | P | | | P | | | | P | | | | 1 | 6 | 7 | 0.8 | 2.2 | 2.7 | |
| <i>Lactuca serriola</i> | prickly lettuce | | | | | P | | | | | | P | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| <i>Melilotus officinalis</i> | sweetclover | | | | | P | | 1 | | | 1 | | | | | | 2 | 2 | 0.3 | 0.6 | 0.8 | |
| <i>Polygonum aviculare</i> | prostrate knotweed | 1 | | | P | 1 | | P | | 3 | 1 | 2 | | | | | 6 | 8 | 0.8 | 2.5 | 3.1 | |
| <i>Salsola collina</i> | slender Russian thistle | | | P | P | P | | 1 | | | | P | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| <i>Salsola tragus</i> | prickly Russian thistle | 2 | 1 | | P | P | | 1 | | | 2 | P | 1 | | | | 11 | 13 | 1.5 | 4.1 | 5.0 | |
| <i>Sisymbrium altissimum</i> | tall tumbledmustard | | | | P | | | | | 1 | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Subtotal | | 4 | 1 | | 6 | 1 | 1 | 3 | 3 | 1 | 10 | 1 | 5 | | | 1 | 35 | 40 | 4.7 | 12.5 | 15.3 | |
| Forbs: Perennial Native | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ambrosia psilostachya</i> | Cuman ragweed | | | | P | | 1 | | | | | | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| <i>Ratibida columnifera</i> | upright prairie coneflower | | | | P | | | P | | | | P | | | | | 0 | 0 | 0.0 | 0.0 | 0.0 | |
| Subtotal | | | | | P | | | | | | | P | | | | | 1 | 1 | 0.1 | 0.3 | 0.4 | |
| Total Forb Cover | | 17 | 2 | 1 | 9 | 5 | 2 | 6 | 7 | 0 | 13 | 1 | 20 | 7 | 13 | 0 | 2 | 111 | 127 | 14.8 | 39.8 | 48.7 |
| Rock | | | | | | | | | | | | 1 | | | | | 1 | 1 | 0.1 | | | |
| Litter | | 12 | 15 | 12 | 15 | 19 | 13 | 7 | 20 | 6 | 23 | 23 | 17 | 19 | 18 | 23 | 242 | 242 | 32.3 | | | |
| Bare Ground | | 15 | 26 | 21 | 24 | 7 | 25 | 29 | 12 | 11 | 7 | 10 | 5 | 11 | 8 | 10 | 221 | 221 | 29.5 | | | |
| Total Hits | | 50 | 2 | 50 | 1 | 50 | 0 | 50 | 3 | 50 | 12 | 50 | 1 | 50 | 0 | 50 | 2 | 750 | 783 | 100.0 | | |
| Total Vegetation Cover | | 46 | 4 | 18 | 2 | 34 | 2 | 22 | 0 | 48 | 6 | 24 | 0 | 32 | 0 | 56 | 8 | 40 | 2 | 48 | 34 | 6 |
| Non-Noxious Vegetation Cover | | 42 | 4 | 18 | 2 | 34 | 2 | 22 | 0 | 36 | 6 | 24 | 0 | 32 | 8 | 36 | 2 | 20 | 4 | 24 | 6 | |
| Total Ground Cover | | 70 | 48 | 58 | 52 | 86 | 50 | 42 | 76 | 78 | 86 | 80 | 90 | 78 | 84 | 80 | | | | | | |
| Allowable Vegetation Cover | | 26.1 | 2.1 | 18.1 | 6.1 | 20.1 | 8.1 | 12.1 | 18.1 | 40.1 | 20.1 | 4.1 | 16.1 | 20.1 | 4.1 | 8.1 | | | 4.9 | | | |

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|--------------------------|------|
| Non-Noxious Annual Cover | 18.9 |
| Excess Annual Cover | 15.9 |

Appendix C: Herbaceous Production Data