Jeff Schoenbacher
Operations Lead

Chevron Environmental Management Company

P.O. Box 469
Questa, NM 87556
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jschoenbacher@chevron.com

July 11, 2023

Mr. James Smith
Coal Program Manager
Mining and Minerals Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Delivered via email to:
JamesR.Smith@emnrd.nm.gov

Re: McKinley Mine Permit No. 2016-02
Area 11 Bond Release Application

Dear Mr. Smith:

Enclosed for MMD review and comment is an application for bond release for an area designated as Area 11. This application includes 5 acres of area eligible for Phase I bond release, and 1,503 acres of land eligible for Phase II and III bond release (which includes the 5 acres of land eligible for Phase I bond release). CMI requests MMD's review and comment on completeness and content of this application package to ensure that all necessary information is contained in the application document.

This application includes bonding information detailing how much bond can be released. The current bond amount for this permit is $24,645,642 and a reduction of $3,318,963 will be requested as a part of the bond-release request.

If you have any questions regarding this submittal, please contact me at (575) 586-7537 or Mary Siemsglusz at (314) 984-8800.

Sincerely,

Jeff Schoenbacher
McKinley Mine – Operations Lead
CEMREC

Mary Siemsglusz, P.E.
Vice President
WSP USA, Inc

Encl

REPORT

Chevron Mining Inc.
McKinley Mine

Permit No. 2016-02
Area 11 Bond Release Application

Submitted to:

Mining and Mineral Division

1220 South St. Francis Drive,

Santa Fe, NM 87505

Submitted by:

Chevron Mining Inc.

6101 Bollinger Canyon Road,

San Ramon, CA 94583-2324

Prepared by:

Golder Associates USA Inc.

701 Emerson Road, Suite 250,

Creve Coeur, MO 63141

July 10, 2023

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EXHIBITS

Chevron Mining Inc. - McKinley Mine
Permit No. 2016-02
Application for Area 11 - Bond Release
July 10, 2023

1.0 INTRODUCTION

This document constitutes Chevron Mining Inc.'s (CMI) application for bond release of the permanent-program performance bond for Area 11 (Area 11), which includes 1,503 acres of land eligible for Phase II and III bond release, and 5 acres of land eligible for Phase I bond release located within the Phase II and III acreage. The Phase I bond release is being requested for a reclaimed pond that was excluded from the prior Phase I bond release for the rest of the area. Phase II bond release is being sought for the overall area since vegetation has been established and the contribution of suspended solids to streamflow or runoff outside the permit is not in excess of the 19.8 NMAC requirements. Phase III bond release is being sought since the entire area has met vegetation standards in accordance with the permit and the regulations and all remaining reclamation obligations have been completed. The application has been formatted to follow the requirements of 19.8.14.1412 New Mexico Administrative Code (NMAC).

2.0 19.8.14.1412 A (2) (A) APPLICANT AND PERMITTEE

Chevron Mining Inc.
6101 Bollinger Canyon Road
San Ramon, CA 94583-2324
Telephone: (925) 790-6958

McKinley Mine is covered by the New Mexico Mining and Minerals Division (MMD) Permit # 2016-02.

3.0 19.8.14.1412 A. (2) (B) LEGAL DESCRIPTION

The Phase I, Phase II and Phase III bond release is being requested for the permanent-program lands in an area referred to as Area 11, which is located in the sections listed below. The list also identifies land ownership to further define in those sections what lands are affected by this bond-release, which includes in whole or in part the following: leased allotments, Chevron-owned land, and a federal surface lease. The specific boundaries of the bond-release-application lands within this legal description are detailed in Exhibit F: Area 11 Bond Release – Land Inventory - Surface & Coal.

3.1 Bond Release Area Legal Description

T16N, R20W, New Mexico Principal Meridian, McKinley County, New Mexico

- Section Number 2 BIA Allotments 1572, 1573, 1574, 1575
- Section Number 3 Chevron owned Surface Deed
- Section Number 10 BIA Allotments 1577, 1578, 1579, 1580
- Section Number 11 Chevron owned Surface Deed

T17N, R20W, New Mexico Principal Meridian, McKinley County, New Mexico

- Section Number 35 Chevron owned Surface Deed
- Section Number 36 BIA Allotment 1576

4.0 19.8.14.1412 A. (2) (C) LOCATION

The areas for which bond release is being requested are located at the CMI McKinley Mine. The McKinley Mine is located approximately 23 miles northwest of Gallup, NM, and 3 miles east of Window Rock, AZ, on NM State Highway 264. The areas in this Phase II and Phase III bond-release application are located within the Tse Bonita School USGS quadrangle maps and are shown on the accompanying map Exhibit B: Area 9S Bond Release – USGS Quadrangle. Figure 1 shows the general location for the bond-release area and the permit boundaries.

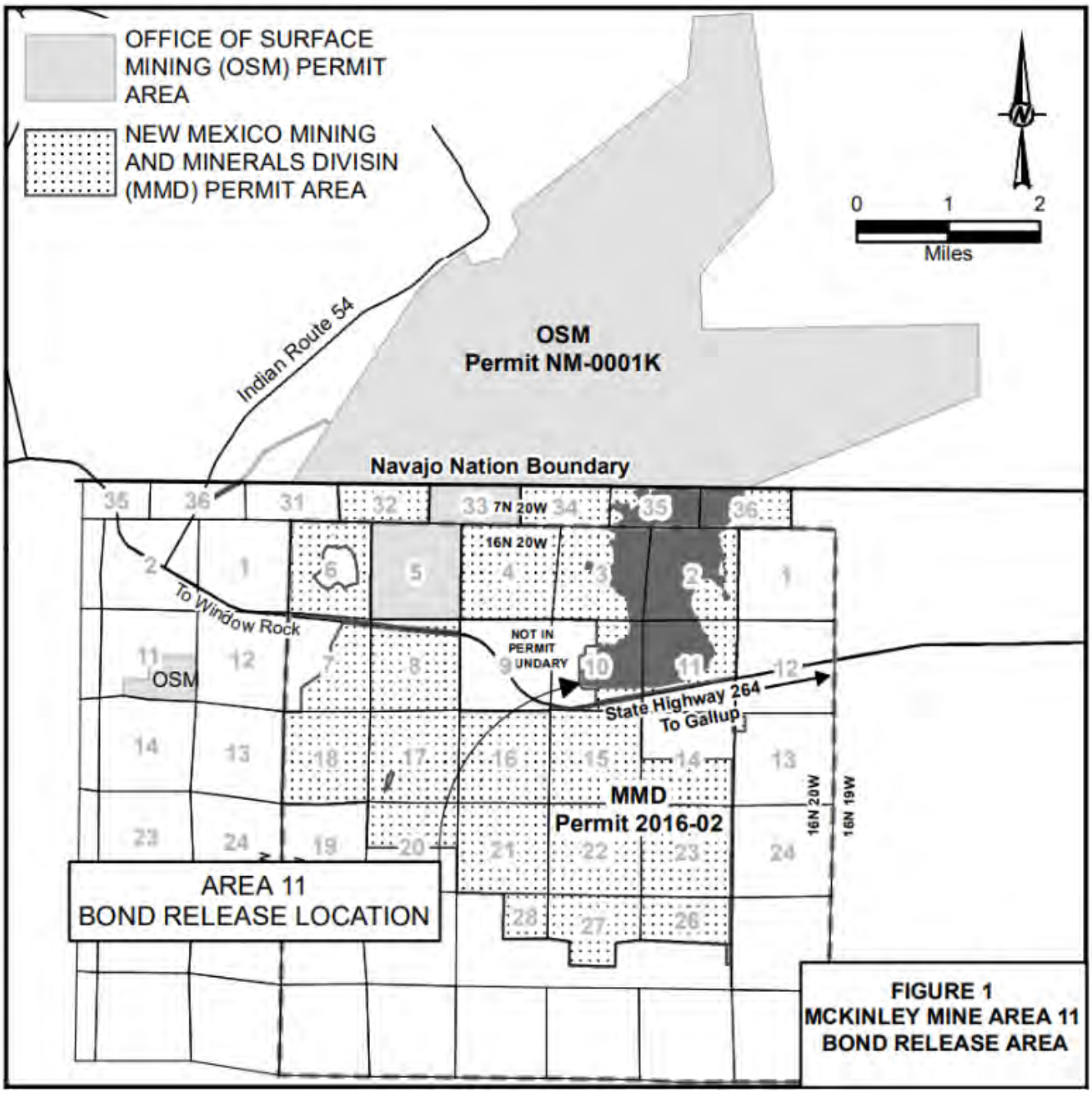


Figure 1: McKinley Mine Area 11 - Bond Release Area

5.0 19.8.14.1412 A. (2) (D) SUMMARY

5.1 Summary

Disturbance and mining in Area 11 occurred between 1992 and 2014. Phase I bond for much of the area was released in 2021, which covered backfilling and grading, graded spoil suitability, topsoil replacement and construction of hydrologic structures and drainage control. Phase I bond release for 5 acres of pond area that was not included in the 2021 Phase I bond release are included with this bond release application. Phase II and Phase III bond release is being sought for the portion of bond associated with completion of reclamation requirements that results in the reduction of settleable solids and the development of vegetation to meet the requirement as established in the regulations and the applicable permit. Exhibit C: Area Bond Release – Postmining Topography shows the reconstructed topography and drainage control.

Seeding of the reclaimed lands occurred between 1994 and 2019 as shown on Exhibit D: Area 11 Bond Release – Seeding Map. This map shows the year of seeding or reseeding for each disturbed area. Approximately 1,375 acres of the 1,503 total bond release acres (or 91.5%) has been seeded for 10 years or more.

In support of the post mining land use of grazing and wildlife habitat, the permit specifies that access roads and existing fences will remain for the use of the landowners. Roads are generally a two-track road with no surfacing material or roadside ditches as was typical before mining, and current land-owner roads in the general area. Three impoundments are proposed to remain as permanent impoundments within this bond release area; and one small depression is retained where a former sedimentation pond was reclaimed to retain moisture and provide water resources for the postmining land use. An aerial photograph is provided in Exhibit E: Area 11 Bond Release – Aerial, which shows the access roads to remain. In addition, roads may be found on Exhibit 4.4-1 of Volume III in Permit No. 2016-02.

The original calculation of the reclamation bond for Permit 2016-02 may be found in Appendix 2.9-A in Volume I. Calculations for the requested bond release for this application are provided below under Bonding Information, with additional detail provided in Section 12.5 Phase II and Phase III Performance Bond Reduction as well as in Appendix 1 Performance Bond Calculations.

5.2 Sediment Control

The National Pollutant Discharge Elimination System (NPDES) permit classifies all outfalls at McKinley mine as Appendix C outfalls, which fall under the criteria for Western Alkaline Coal Mining Subpart H regulations under 40 CFR 434.81. The Appendix C outfall classification means that the primary sediment control for the watersheds at each outfall are Best Management Practices (BMPs) which includes landforms, hydrologic conveyance and erosion-control structures, revegetation, etc.; no sediment ponds are necessary to control sediment in any of the watersheds. Compliance is verified through collection of water monitoring data from outfall discharges and field inspections of the BMPs.

5.3 Revegetation

Vegetation establishment and success was measured in 2019, 2020, 2021 and 2022 with the results documented in the Vegetation Monitoring Reports for the area designated as Vegetation Monitoring Unit (VMU) #2 that were submitted annually in the respective Annual Reports. The results of these reports are summarized in Section 12.1 the Revegetation section of the Phase III Bond Release Request Requirements. The results demonstrate that vegetation has been successfully established.

5.4 Bond Information

The bond reduction associated with the Area 11 bond release and the amount of bond that would remain is shown below. Please see Section 12.5 Performance Bond Reduction section for more detailed bonding information as well as Appendix 1.

The following summarizes the current and remaining bond fund, proposed bond release and remaining bond:

- Current Bond Type: Surety Bond
- Current Bond Fund: $ 24,645,642
- Less Previous A11/12 PI Bond Release: $ 1,150,724
- Remaining Bond Fund: $ 23,494,918
- Area 11 direct & indirect costs to be released: $ 3,318,963
- New Bond Fund Amount: $ 20,175,955 (in 2022 dollars)

5.5 Disturbed Acreage to be Released

The acres included in this bond release application and corresponding percentage of the permitted area are presented below:

- Acreage to be released (Area 11): 1,503 ac.
- Acres permitted: 12,958.2 ac.
- Percentage of acres permitted being released: 11.6 %

6.0 19.8.14.1412 A. (2) (E) SURFACE AND MINERAL RIGHTS

See the table in Appendix 2 for information on surface and mineral owners, which includes bond release acreages. Surface and mineral information is depicted on Exhibit F: Area 11 Bond Release – Land Inventory - Surface & Coal.

7.0 19.8.14.1412 A. (2) (F) NOTIFICATION LETTERS

A copy of the proposed draft notification letter is provided in Appendix 3. The notification letter will be sent once MMD advises CMI that the application is administratively complete and that CMI can proceed with the public notice process. CMI will coordinate with MMD to ensure all appropriate interests are notified by either CMI or MMD.

Notification letters regarding this bond-release application will be sent to adjoining land-owners and allotees (south of Highway 264), local government agencies, planning agencies, sewage and water-treatment authorities, and water companies in the vicinity of the proposed release areas.

MMD will provide notification letters and invitations for inspections to land-owners and allotees within the proposed release areas, to the surface and mineral owners listed on the table in Appendix 2 (e.g., BIA, BLM, NM State Land Office, etc.) and other government agencies.

CMI requested addresses from the BIA for allottees within and adjoining the proposed bond-release area who will be sent a notification letter. A copy of the information received from BIA with allottee addresses by allotment is contained in Appendix 4.

Appendix 5 contains a full list of all other interests (with addresses) that will be notified of this bond-release application.

8.0 19.8.14.1412 A. (2) (G) OTHER MAPS AND INFORMATION

The following exhibits are provided as part of this bond release application:

- Exhibit A: Area 11 Bond Release – Bond Release Location
- Exhibit B: Area 11 Bond Release – USGS Topgraphic Map
- Exhibit C: Area 11 Bond Release – Postmining Topography
- Exhibit D: Area 11 Bond Release – Seeding Map
- Exhibit E: Area 11 Bond Release – Aerial
- Exhibit F: Area 11 Bond Release – Land Inventory - Surface & Coal

9.0 19.8.14.1412 A. (2) (H) CERTIFICATION

A notarized certification is enclosed that states that all applicable reclamation activities have been accomplished in accordance with the requirements of SMCRA, the Act, the regulatory program, and the approved reclamation plan. The certification may be found in Appendix 6.

10.0 19.8.14.1412 A. (3) PUBLIC ADVERTISEMENT

A draft public notice is contained in Appendix 7 that addresses the requirements of this section. The advertisement shall be placed in the newspapers (Navajo Times and The Gallup Independent) once MMD advises CMI that the application is administratively complete and can proceed with public notice. A copy of the full application will be placed in the McKinley County courthouse prior to sending out notification letters and publication of the advertisement.

11.0 PHASE I BOND RELEASE REQUIREMENTS

Phase I bond for much of the area was released in 2021, which covered backfilling and grading, graded spoil suitability, topsoil replacement and construction of hydrologic structures and drainage control. Phase I bond release for 5 acres of pond area that was not included in the 2021 Phase I bond release are included with this bond release application. Reclamation of the sedimentation pond was completed after the initial application date for the 2021 bond release and these 5 acres now qualify for Phase I bond release.

Grading of the 5 acres occurred between 2017 and 2019. The location of this area is shown with a yellow highlight on Exhibit A and as red hatched areas on the remaining exhibits. Topsoil replacement for these areas also occurred between 2017 and 2019.

12.0 PHASE II BOND RELEASE REQUIREMENTS

12.1 Successful Establishment of Vegetation

Vegetation establishment and success was measured in 2019, 2020, 2021 and 2022 with the results documented in the Vegetation Monitoring Reports for the area designated as Vegetation Management Unit (VMU) -2, which were submitted in in the respective Annual Reports. The results of these reports are summarized in Section 12.1 the Revegetation section of the Phase III Bond Release Request Requirements. The results demonstrate that vegetation has been successfully established.

12.2 Sediment Control

Various demonstrations have been completed at McKinley Mine showing that surface water from reclaimed land does not contribute suspended solids to streamflow or runoff outside the permit area in excess of the requirements in 19.8.14.1412 C. (2). Key information to that end include both a modeling analysis and water monitoring data.

Modeling Information

As documented in the MMD Permit 2016-02 Section 6.3.3, on November 16, 2009, MMD approved a sediment-yield comparison study between premine and postmine lands. The study showed that reclaimed lands would have significantly less sediment yield than premining lands, that is 0.369 tons per acre for reclaimed lands verses 0.892 tons per acre for premined lands. Because of the large area included in the study, MMD considered it to be a representative study of the rest of the mine on MMD-jurisdictional lands. Subsequently, MMD advised CMI that sediment ponds in the study area and in fully reclaimed watersheds (seeded and mulched) were no longer necessary.

Monitoring Information

A comprehensive analysis of water-quality data for large, medium, and small watersheds is contained in Appendix B of the 1992 Annual Mining and Reclamation Report submitted to MMD. The findings from this report combine 1992 data with sampling data from as far back as 1982 to show that runoff from disturbed large, medium, and small watersheds has better water quality than that of paired undisturbed watersheds; the results are summarized in Table 1. This data was also used as additional support for the McKinley Mine's demonstration under the 20-41 (e) Windows program (now referenced as 19.9.20.2009 (e) NMAC) for a waiver from additional sediment control, which includes a requirement that the runoff from the regraded (i.e., reclaimed) area be as good as or better quality than the waters entering the permit area (i.e., undisturbed areas) in order to qualify for the window.

Table 1: Summary of Modeling Results

Watershed	Parameter	Undisturbed Average	Disturbed Average
Large	TSS	92604	45184
Medium	TSS	25847	25738
Small	TSS	20963	15267

Conclusion

The modeling information coupled with monitoring data demonstrate that the requirement in 19.8.14.1412 C. (2) was met. This information parallels the mine's NPDES permit that makes the same findings using both modeling information and monitoring data.

12.3 Prime Farmland

There are no areas designated as Prime Farmland within the Permit # 2016-01 permitted area.

12.4 Silt Dams

Three permanent impoundments are located within the Area 11 bond release area that are discussed in Section 13.4. All other sedimentation ponds have been or will be reclaimed.

12.5 Phase II Performance Bond Reduction

Please see Section 12.5 Performance Bond Reduction below for bonding and bond reduction information.

13.0 PHASE III BOND RELEASE REQUIREMENTS

13.1 Revegetation

Area 11 vegetation success is demonstrated through the results of vegetation sampling conducted VMU-2. VMU-2 vegetation sampling was completed in 2019, 2020, 2021 and 2022; the reports with results were submitted in the respective annual reports to MMD.

The reports are briefly summarized here and demonstrate that the results from VMU-2 vegetation sampling demonstrate that Area 11 met vegetation success standards in the Permit No. 2016-02 (the Permit), and those recommended in the

MMD Coal Mine Program Vegetation Standards (MMD 1999). The complete 2019, 2020, 2021 and 2022 Vegetation Monitoring Reports for VMU-2 are contained in Appendix 8.

The Permit requires that the following parameters be met for vegetation success: ground cover, productivity, diversity, and woody stem stocking (Table 2). The ground cover requirement for live perennial/biennial cover on the reclamation is 15%. The productivity requirement is 350 air-dry lbs/ac perennial/biennial annual production (i.e., forage production). The woody stem stocking success standard is 150 live woody stems/ac.

Table 2: Revegetation Success Standards for the Mining Minerals Diversion Permit Area

Vegetative Parameter	Success Standard
Ground Cover	15% live perennial/biennial canopy cover
Productivity	350 air-dry pounds per acre perennial/biennial annual production
Diversity	A minimum of 2 shrub or subshrub taxa contributing at least 1% relative cover each.
	A minimum of 2 perennial warm-season grass taxa contributing at least 1% relative cover each.
	A minimum of 1 perennial cool-season grass taxa contributing at least 1% relative cover.
	A minimum of 3 perennial/biennial forb taxa combining to contribute at least 1% relative cover.
Woody Stem Stocking	150 live woody stems per acre

Note: Diversity criteria assessed for individual perennial/biennial species relative cover as agreed upon by MMD and CMI in June 2019.

The MMD Coal Mine Program Vegetation Standards also state that for Phase III bond release applications, it must be demonstrated that the total annual production and total live cover of biennials and perennials equal or exceeds the approved standards for at least two of the last four years of the responsibility period. Shrub density and revegetation diversity must equal or exceed the approved standards during at least one of the two sampling years of the responsibility period (MMD 1999).

Based on the vegetation monitoring results over the past four years, the VMU-2 reclamation meets the standards and is eligible for Phase II and III bond release. Table 3 shows in what year the Permit vegetation success standards were met. Vegetation monitoring results for the past four years indicate that the vegetation community in VMU-2 meets the standards for cover in 2019, 2020 and 2022, forage production in 2019 and 2022, all the diversity standards in 2022, and woody stem stocking all four years. Detailed summaries of these results may be found in Table 4 and Table 5.

Table 3: Revegetation Success at McKinley Mine from 2019 to 2022, Mining and Minerals Division Permit Area

Vegetative Parameter[1]	Success Standard	MMD Guidance	M-VMU-2			
			2019	2020	2021	2022
Ground Cover	15% live perennial/biennial cover	in 2 of the last 4 years	☑	☑	☒	☑
Productivity	350 air-dry pounds per acre perennial/biennial annual production	in 2 of the last 4 years	☑	☒	☒	☑
Diversity	A minimum of 2 shrub or subshrub taxa contributing at least 1% relative cover each.	in 1 of the 2 sampling years of the responsibility period	☑	☑	☑	☑
	A minimum of 2 perennial warm-season grass taxa contributing at least 1% relative cover each.		☒	☑	☒	☑
	A minimum of 1 perennial cool-season grass contributing at least 1% relative cover.		☑	☑	☑	☑
	A minimum of 3 perennial/biennial forb taxa combining to contribute at least 1% relative cover.		☑	☒	☑	☑
Woody Stem Stocking	150 live woody stems per acre	in 1 of the 2 sampling years of the responsibility period	☑	☑	☑	☑

	M-VMU-2			
	2019	2020	2021	2022
	☑	☒	☒	☑

Notes:

[1] Parameter and corresponding standard explained in Table 2 of the Vegetation Success Monitoring Reports (Appendix H)

KEY

☑ All success standards met for the year

☒ Success standards not met for the year

☑ Success standards for ground cover and productivity met

Table 4: M-VMU-2 Statistical Analysis Results for Cover, Production, and Woody Plant Density, 2019 to 2022

Vegetation Metric	Year				Technical Standard
	2019	2020	2021	2022	
Total Vegetation Canopy Cover (%)[2]					
Mean	31.1	37.2	27.5	33.9	None
Standard Deviation	21.9	23.8	19.4	23.9	
90% Confidence Interval	5.7	6.2	5	6.2	
Nmin[1]	144	117	141	141	
Perennial/Biennial Canopy Cover (%)[3]					
Mean	24.9	39.0	22.5	35.0	15.0
Standard Deviation	23.4	26.8	19.8	26.1	
90% Confidence Interval	6.1	7	5.2	6.8	
Nmin[1]	258	134	220	157	
Basal Cover (%)					
Mean	1.6	2.0	3.2	3.3	None
Standard Deviation	1.2	1.4	5.1	3.1	
90% Confidence Interval	0.3	0.4	1.3	0.8	
Nmin[1]	168	144	701	244	
Annual Forage Production (lbs/ac)[4]					
Mean	787	627	425	828	350
Standard Deviation	1,120	794	644	759	
90% Confidence Interval	291	207	167	197	
Nmin[1]	576	456	652	238	
Annual Total Production (lbs/ac)[5]					
Mean	1,011	634	523	854	None
Standard Deviation	1,142	798	640	745	
90% Confidence Interval	297	207	167	194	
Nmin[1]	363	449	425	216	
Shrub Density (stems/acre) from Quadrats					
Mean	12,342	7,082	1,315	3,136	None
Standard Deviation	26,731	9,289	2,316	5,223	
90% Confidence Interval	6,952	2,416	602	1,358	
Nmin[1]	1,332	488	880	787	
Shrub Density (stems/acre) from Belt Transect					
Mean	2,671	3,264	989	2,509	150
Standard Deviation	2,567	2,490	588	1,550	
90% Confidence Interval	1,335	1,295	322	806	
Nmin[1]	310	196	122	128	

Notes:

1. Minimum sample number to obtain 90% probability that these samples mean is within 10% of the population mean.
2. Total canopy cover for all species.
3. Mean Canopy cover not including annuals or noxious weeds.
4. Annual forage production in air dry (lbs/ac) not including annuals or noxious weeds.
5. Total production in air dry (lbs/ac) including annuals or noxious weeds.

Hypothesis testing found the success standard was not met.

Table 5: M-VMU-2 Results for Diversity, 2019 to 2022

Diversity Component	Standard (% relative cover)	2019		2020		2021		2022	
		Result	Species	Result	Species	Result	Species	Result	Species
Subshrub or shrubs			**(8 spp.)**		**(5 spp.)**		**(4 spp.)**		**(2 spp.)**
Shrub 1	≥ 1.0%	21.78%	Four-wing saltbush	21.47%	Rubber rabbitbrush	5.28%	Rubber rabbitbrush	8.34%	Four-wing saltbush
Shrub 2	≥ 1.0%	9.69%	Rubber rabbitbrush	11.78%	Winterfat	4.11%	Winterfat	2.68%	Winterfat
Shrub 3 (bonus)	--	6.33%	Winterfat	3.52%	Gardner's saltbush	2.84%	Four-wing saltbush	--	--
Perennial warm-season grasses			**(6 spp.)**		**(3 spp.)**		**(3 spp.)**		**(3 spp.)**
Grass 1	≥ 1.0%	22.26%	James' galleta	23.24%	James' galleta	40.61%	James' galleta	64.03%	James' galleta
Grass 2	≥ 1.0%	0.99%	Blue grama	3.17%	Blue grama	0.63%	Sand dropseed	4.27%	Blue grama
Grass 3 (bonus)	--	0.36%	Buffalograss	2.42%	Alkali sacaton	0.16%	Blue grama	2.65%	Alkalai sacaton
Perennial cool-season grasses			**(10 spp.)**		**(11 spp.)**		**(4 spp.)**		**(2 spp.)**
Grass 1	≥ 1.0%	9.40%	Western wheatgrass	6.97%	Colorado wildrye	34.08%	Russian wildrye	4.77%	Russian wildrye
Grass 2 (bonus)	--	9.09%	Colorado wildrye	6.84%	Slender wheatgrass	4.00%	Western wheatgrass	3.58%	Thickspike wheatgrass
Perennial/biennial forbs		**3.52%**	**(8 spp.)**	**0.68%**	**(5 spp.)**	**3.21%**	**(6 spp.)**	**6.95%**	**(10 spp.)**
Forb 1	≥ 1.0% combined	0.80%	Scarlet globemallow	0.31%	Purple aster	2.96%	Rattlesnake weed	4.73%	Rattlesnake weed
Forb 2		0.75%	Flatspine stickseed	0.21%	Flatspine stickseed	0.11%	Scarlet globemallow	1.00%	Manyflowered ipomopsis
Forb 3		0.73%	Purple aster	0.10%	Upright prairie coneflower	0.08%	Flatspine stickseed	0.85%	Ragleaf bahia
Forb 4 (bonus)	--	0.52%	Palmer's penstemon	0.05%	Palmer's penstemon	0.00%	Redstem stork's bill	0.37%	Purple Aster

Notes:
-- = not applicable
Indicates an unmet parameter

Note: 1.Parameter and corresponding standard explained in Table 2 of the Vegetation Success Monitoring Reports (Appendix 8)

Reference: MMD, 1999. Coal Mine Reclamation Program Vegetation Standards, New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division.

13.2 Postmining Land Use (19.8.20.2064 NMAC)

The information in this section provides a demonstration that Area 11 meets the requirements of 19.8.20.2064 Revegetation: Grazing, which states: When the approved postmining land use is range or pasture land, the operator shall demonstrate to the director, that the reclaimed land has the capability of supporting livestock grazing at rates approximately equal to that for similar non-mined lands for at least two of the last four full years of liability required under Subsection B of 19.8.20.2065 NMAC. Subsequently, this analysis demonstrates that the standard in 19.8.20.2064 was met in two of the last four years of liability.

To that end, a livestock carrying-capacity analysis is provided herein for two of the last four full years based on the production data for vegetation sampling conducted in 2019 and 2022. The production values from these two years met and exceeded the annual production standard of 350 pounds per acre of air-dry perennial and biennial production (i.e., forage production) in the MMD permit. The analysis also includes 2020 and 2021 data, the years in which the production standard in the permit were not met to show that carrying capacity during the extended drought still exceeded the premining carrying capacity rate.The analysis also shows what would be the carrying capacity for total production as additional support information.

Carrying capacities were calculated for the mean and median forage production values, and for the mean total production value. The calculations were based on an average of 30 days per month with a 50% utilization of the vegetation production values. Carrying capacity is in terms of the animal-unit-month (AUM), which is the amount of dry forage required by one animal unit for one month based on a forage allowance of twenty-six (26) pounds per day for a 1,000-pound cow either dry or with calf up to 6 months of age, or four (4) sheep or goats (MMD 2000).

The non-mined carrying capacity figure selected to compare against the reclaimed carrying capacity is the average baseline premining figure of 0.07 AUM/Acre. (Dames and Moore 1974; Settlement Agreement 1988). Use of a value of 0.07 AUM/Acre was also formally referenced in MMD's approvals of CMI bond release applications in 2010 and 2012 (MMD 2010; MMD 2012).

Table 6 summarizes the carrying capacities calculated from the production data collected in 2019, 2020, 2021, and 2022.

Table 6: Summary of Carrying Capacities from Production Data (2019, 2020, 2021, and 2022)

Categories Measured	Production Lb/Ac	AUM/Ac
Premining Baseline Condition (Avg Value)		0.07
19 VMU 2 Mean Total Production	1011	0.65
19 VMU 2 Mean Forage Production	787	0.50
19 VMU 2 Median Forage Production	420	0.27
20 VMU 2 Mean Total Production	634	0.41
20 VMU 2 Mean Forage Production	627	0.40
20 VMU 2 Median Forage Production	297	0.19
21 VMU 2 Mean Total Production	523	0.34
21 VMU 2 Mean Forage Production	425	0.27
21 VMU 2 Median Forage Production	276	0.18
22 VMU 2 Mean Total Production	854	0.55
22 VMU 2 Mean Forage Production	828	0.53
22 VMU 2 Median Forage Production	615	0.39

References

- Dames and Moore, 1974. Environmental Assessment-McKinley Mine, McKinley County, New Mexico,
- MMD, 1999. Coal Mine Reclamation Program Vegetation Standards, New Mexico Energy, Minerals and Natural Resources Department Mining and Minerals Division.
- MMD, 2010. Director's Order with Findings of Fact and Conclusions of Law for McKinley Mine (Permit 2006-02) Area 4 and Area 9 Reclamation Liability-Release Application. Finding of Fact No. 21.
- MMD, 2012. Director's Order with Findings of Fact and Conclusions of Law for McKinley Mine Sections 7, 8 and 18 South Mine Access Area Reclamation Liability Release Application. Finding of Fact No. 22.
- Settlement Agreement, 1988. B.8 Report. MMD Permit No. 2016-02, Volume 10, Tab 09.

13.3 Surface and Groundwater

The report, titled “Area 11, Bond Release Application, Groundwater and Surface Water Evaluation” included in Appendix 9 documents the status of groundwater and surface water and demonstrates that the operation has complied with the probably hydrologic consequences determination.

13.4 Ponds and Small Depressions

There are three permanent impoundments in Area 11; as well as small depressions which were retained where prior sedimentation ponds were reclaimed in order to retain moisture and provide water sources for the post mining land use. The approximate location of permanent impoundments 11-8, 11-10, and 12-9 and the small depressions are shown on Exhibit C. The approved permanent impoundment designs for these impoundments are included in the Section 6.0 appendix of the McKinley Mine Permit # 2016-02 permit application package.

13.5 Performance Bond Reduction

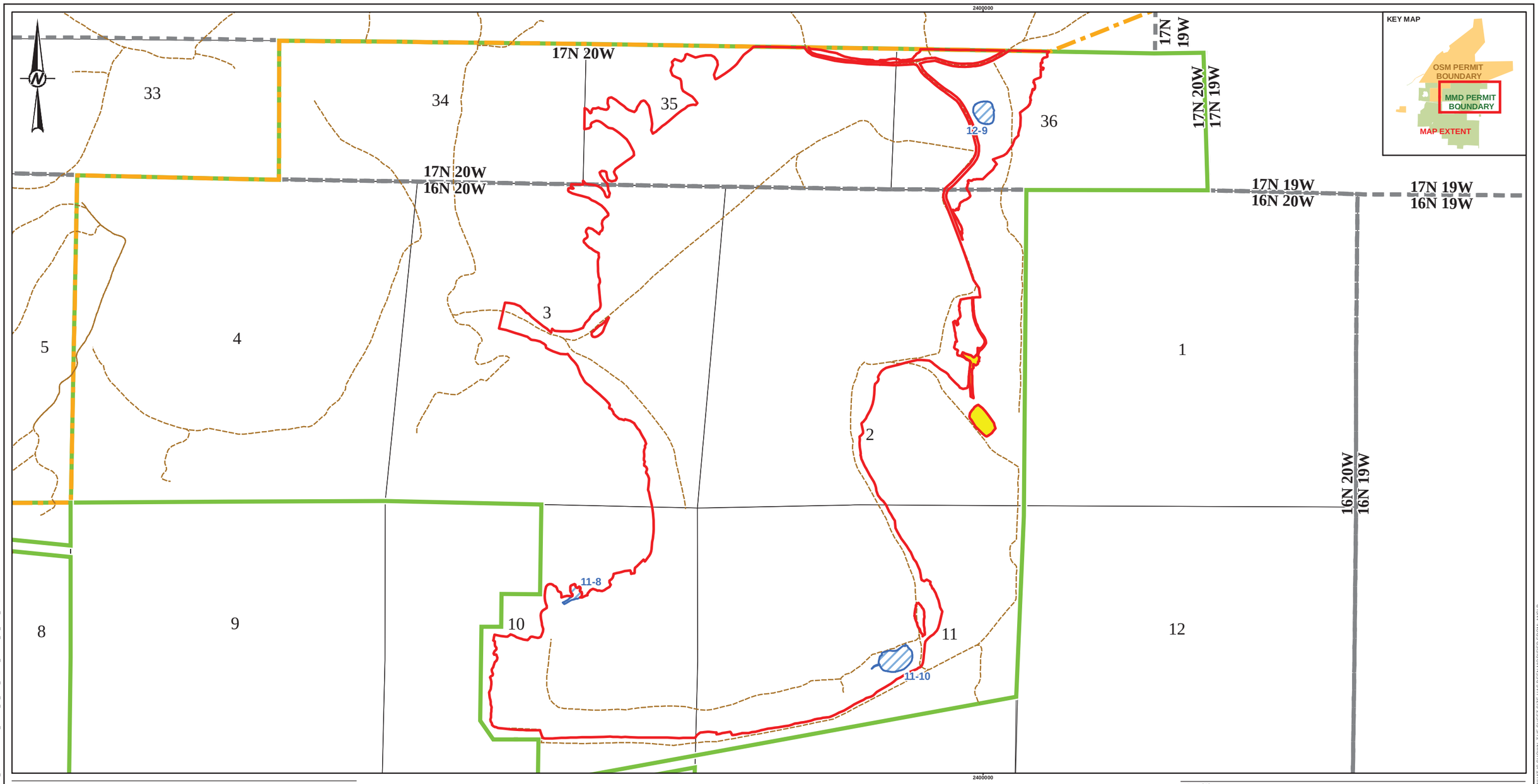
The bond reduction associated with the Area 11 bond release and the amount of bond that would remain is shown below. The bond reduction was computed by subtracting out the revegetation costs associated with the Area 11 acreage from the existing bond. A reduction in bond for the Phase I acreage was not necessary.

Spreadsheets are provided in Appendix 1 Performance Bond Calculation showing the rationale and calculations for the bond to be released, and the bond that would be retained for the remaining lands under reclamation liability in MMD jurisdiction. It was necessary to reallocate the current bond funds to the remaining cost centers to bring the bond up to date; these calculations (in 2015 dollars i.e., the last escalation) are provided in Table 1 of Appendix 1. Table 2 in the appendix escalates the bond calculations in Table 1 to 2022 dollars. Table 3 in the appendix shows what the new bond would be in 2022 dollars after release of the Area 11 area under liability.

The following summarizes the current and remaining bond fund, proposed bond release and remaining bond:

- Current Bond Type: Surety Bond
- Current Bond Fund: $ 24,645,642
- Less Previous A11/12 PI Bond Release: $ 1,150,724
- Remaining Bond Fund: $ 23,494,918
- Area 11 direct & indirect costs to be released: $3,318,963
- New Bond Fund Amount: $ 20,175,955 (in 2022 dollars)

Exhibits



KEY MAP

LEGEND

- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Township and Range
- Section

NOTE(S)
1.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

0 2,000 4,000
Feet

CLIENT
Chevron Mining Inc.
McKINLEY MINE

CONSULTANT
WSP

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT
CHEVRON MCKINLEY MINE

TITLE
AREA 11 BOND RELEASE – BOND RELEASE LOCATION

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT A**

PATH: P:\Projects\Chevron\McKinley_Mine\99 PROJECTS\1338105267_McKinley_Mine\0016_BondRelease\Area_11\Area_11_Bond_Release_ExhibitA_LS_RevA_.mxd PRINTED ON: 2023-07-11 AT: 11:18:38 AM

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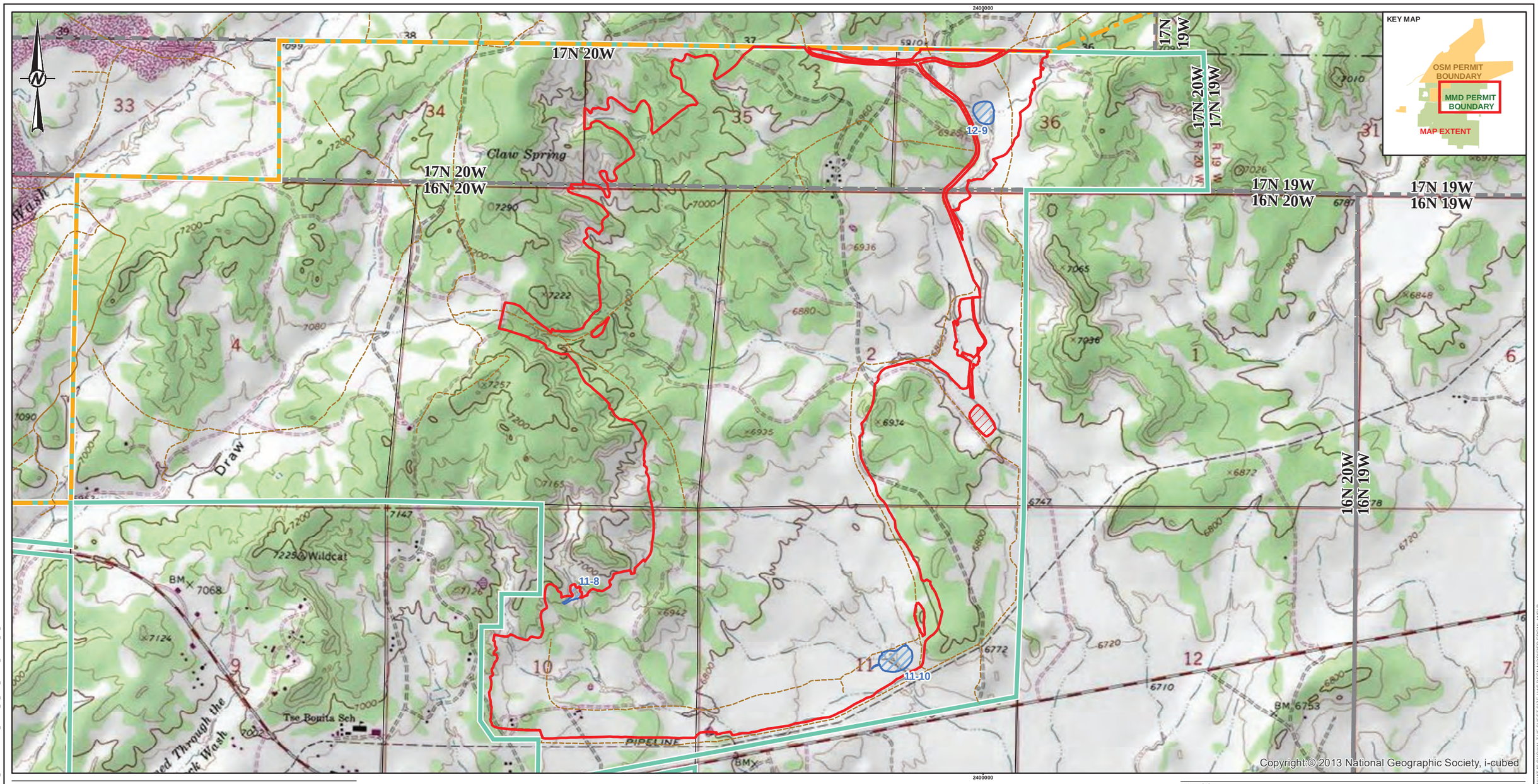

LEGEND

- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Township and Range
- Section
- USGS 24k Topo Map Boundaries

NOTE: TOPOGRAPHY ON USGS BASEMAP DEPICTS PRE-MINING CONDITIONS

0 2,000 4,000 Feet

NOTE(S)
1.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

CLIENT
Chevron Mining Inc.
McKINLEY MINE

CONSULTANT
WSP

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT
CHEVRON MCKINLEY MINE

TITLE
AREA 11 BOND RELEASE – USGS TOPOGRAPHIC MAP

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT B**

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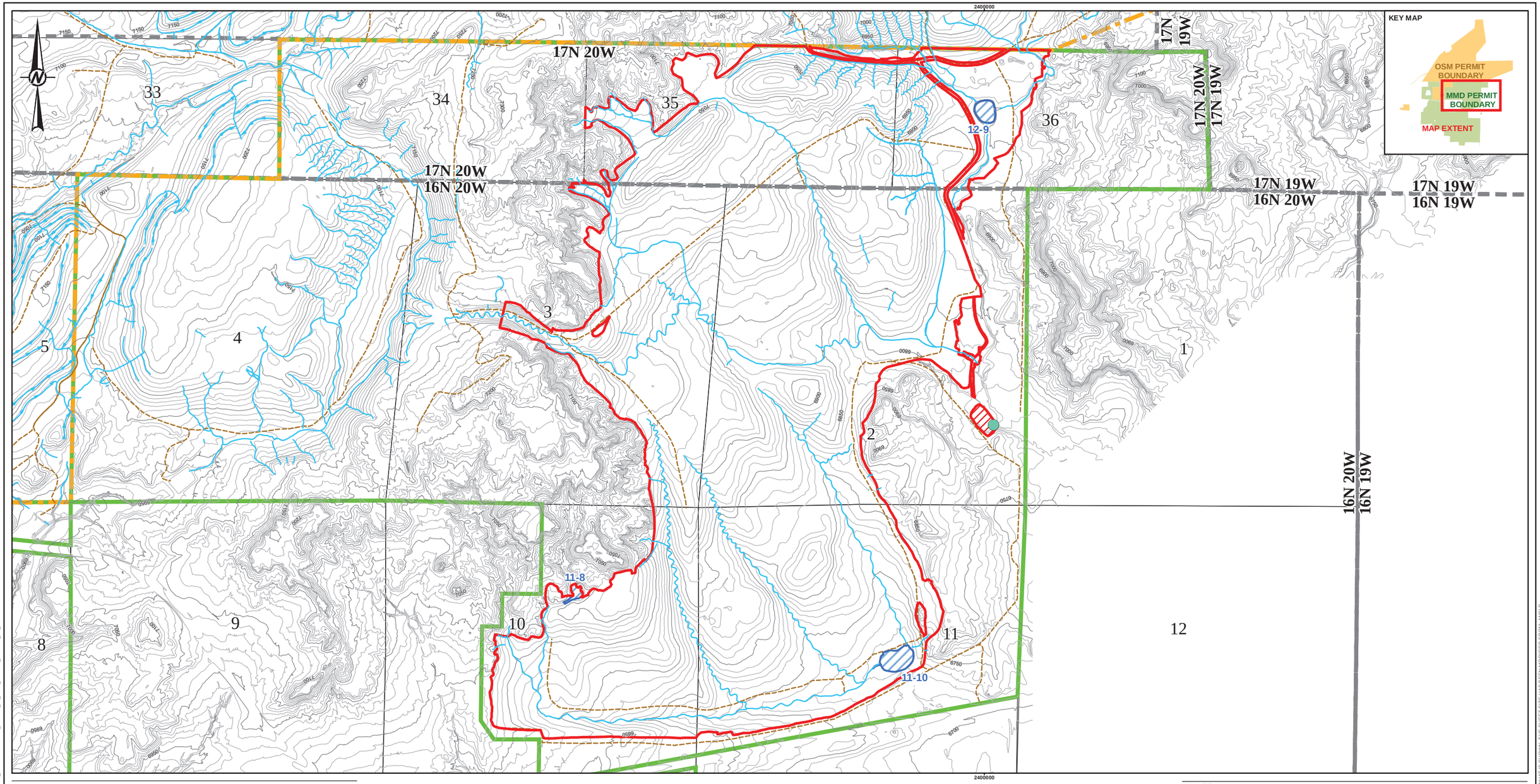

LEGEND

- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- Major Surface Contour (25 ft. Interval)
- Minor Surface Contour (5 ft. Interval)
- Small Depression Location
- Surface Drainage
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Township and Range
- Section
- USGS 24k Topo Map Boundaries

0 2,000 4,000 Feet

NOTE(S)
1.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

CLIENT Chevron Mining Inc. McKINLEY MINE

CONSULTANT wsp

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT
CHEVRON MCKINLEY MINE

TITLE
AREA 11 BOND RELEASE – POST-MINING TOPOGRAPHY

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT C**

PATH: P:\Projects\Chevron\McKinley_Mine\99_PROJECTS\1338105207_McKinley_Mine\0016_BondRelease\Area_11\Area_11_Bond_Release_ExhibitC_LS_RevA.mxd PRINTED ON: 2023-07-11 AT: 11:24:55 AM

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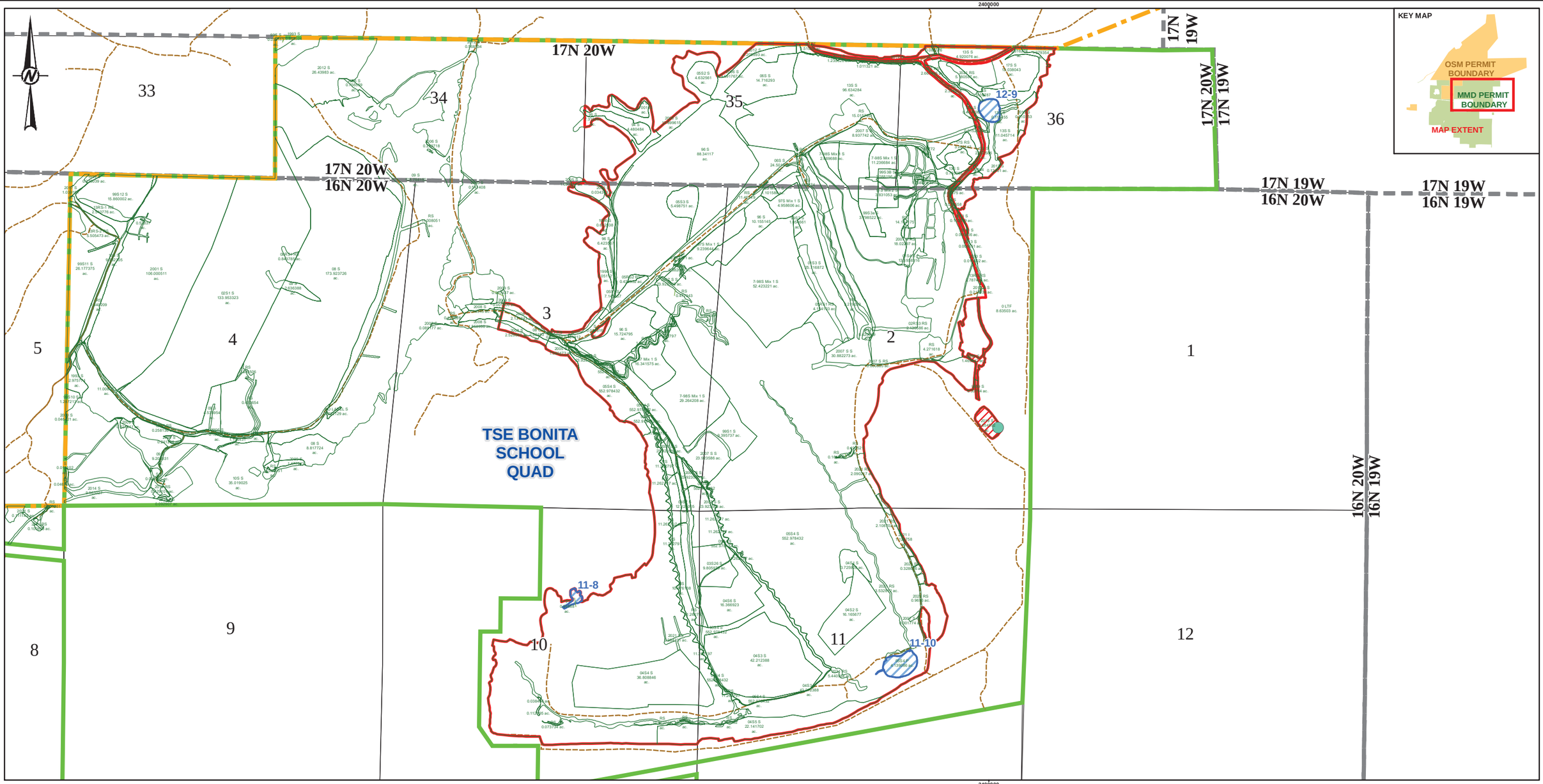

LEGEND

- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Small Depression Location
- Township and Range
- Section
- USGS 24k Topo Map Boundaries

0 2,000 4,000
Feet

NOTE(S)
1.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

CLIENT
Chevron Mining Inc.
McKINLEY MINE

CONSULTANT
wsp

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT
CHEVRON MCKINLEY MINE

TITLE
AREA 11 BOND RELEASE – SEEDING MAP

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT D**

PATH: P:\Projects\Chevron\McKinley_Mine\99_PROJECTS\1338105207_McKinley_Mine\0016_BondReleaseArea_11\Area_11_Bond_Release_ExhibitD_LS_RevA.mxd PRINTED ON: 2023-07-11 AT: 11:25:22 AM

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17N 20W

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17N 20W
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17N 20W
16N 20W

17N 19W
16N 20W

17N 19W
16N 19W

16N 20W
16N 19W

33 34 35 36

5 4 3 2 1

8 9 10 11 12

12-9

11-8

11-10

KEY MAP

OSM PERMIT BOUNDARY

MMD PERMIT BOUNDARY

MAP EXTENT

2400000

LEGEND

- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Township and Range
- Section
- USGS 24k Topo Map Boundaries

0 2,000 4,000
Feet

NOTE(S)
1.

REFERENCE(S)
1. AERIAL IMAGERY: NAIP 2020.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

CLIENT
Chevron Mining Inc.
McKINLEY MINE

CONSULTANT
wsp

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT
CHEVRON MCKINLEY MINE

TITLE
AREA 11 BOND RELEASE – AERIAL

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT E**

PATH: P:\Projects\Chevron\McKinley_Mine\99_PROJECTS\1338105207_McKinley_Mine\0016_BondReleaseArea_11\Area_11_Bond_Release_ExhibitE_LS_RevA.mxd PRINTED ON: 2023-07-11 AT: 11:26:13 AM

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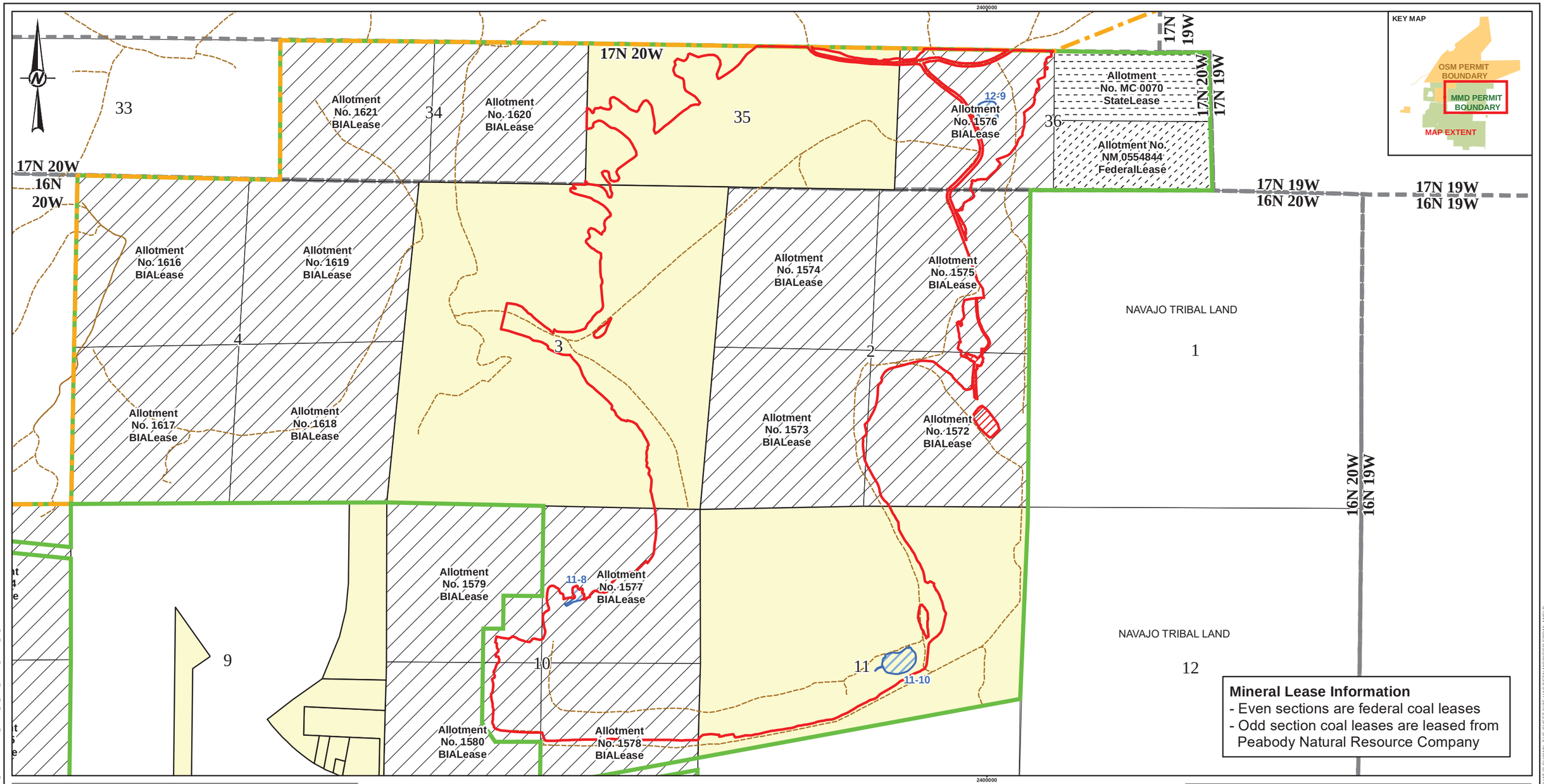

Mineral Lease Information
- Even sections are federal coal leases
- Odd section coal leases are leased from Peabody Natural Resource Company

LEGEND
- Phase I Area 11 Bond Release Boundary (5.0 acs)
- Phase II and III Area 11 Bond Release Boundary (1,503.0 acs)
- MMD Permit Boundary
- OSM Permit Boundary
- Post-Mining Two-Track Trails
- Permanent Pond
- Township and Range
- Section
- USGS 24k Topo Map Boundaries

SURFACE INFORMATION
- BIA Allotment Surface Lease
- Chevron Fee Surface
- Federal Surface Lease
- State Coal Lease

0 2,000 4,000 Feet

NOTE(S)
1.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET

CLIENT: Chevron Mining Inc. McKINLEY MINE

CONSULTANT: wsp

YYYY-MM-DD	2023-07-10
DESIGNED	-
PREPARED	HJ
REVIEWED	KK
APPROVED	MS

PROJECT: CHEVRON MCKINLEY MINE

TITLE: **AREA 11 BOND RELEASE – LAND INVENTORY - SURFACE & COAL**

PROJECT NO.	PHASE	REV.	FIGURE
1338105302	0003	A	**EXHIBIT F**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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Appendix 1: Performance Bond Calculations

Table 1: Remaining bond after TCP, A9&10, and A11& 12 (Escalated to 2015 dollars, and Funds Reallocated)

Item #	Cost Category		Quantity	Rate		TOTAL
1	Grading - Worst Case Pits					$0
2	Grading - Spoils					$0
3	Acid & Toxic Material Management					$0
4	Topsoil Replacement	South Facilities (Ac)	234.1	$1,135	$265,704	$265,700
5	Revegetation	Total Disturbance (Ac)	4982.3	$822	$4,095,451	$4,095,451
6	Road Removal	Sourth Facilities (Ac)	7	$4,335	$30,345	$30,345
7	Sedimentation Pond Removal	Sourth Faciliites Ponds	2	$7,000	$14,000	$14,000
8	Earthmoving Support (For South Facilities)		$418,800	100%	$418,800	$418,800
9	Facility Removal		$1,053,000	100%	$1,053,000	$1,053,000
10	Hydrologic Structures					$0
	SUBTOTAL - Direct Costs					$5,877,296
11	Contractor Mobilization/Demobilization (1% of Subtotal)					$59,000
12	Supplemental Contingencies (3% of Subtotal)					$176,000
13	Engineering Design Fees (2.5% of Subtotal)					$147,000
14	Contractor's Profit and Overhead (15% of Subtotal)					$882,000
15	Project Management Fee (2.5% of Subtotal)					$147,000
	TOTAL Without Gross Receipts Tax					$7,288,296
	Gross Receipts Tax (2022 rate: 6.75%)				6.75%	$492,000
	TOTAL With Gross Receipts Tax (In 2000 Dollars)					$7,780,296
		Inflation rate Qtr-1 2000 to Qtr-4 2015	1.62046		Total Escalated to 2015 Dollars	$12,607,692
		Inflation Factors: Qtr-1 2000 & Qtr-4 2015	500.48	811.01		
	Supplemental Fund For Permit Modifications/Revisions/Misc					$10,887,226
	Total bond (After A11/12 PI Approval and Reduction)					**$23,494,918**
					Current Bond Fund:	$24,645,642

Date: 071023

Table 2: Bond Escalated to 2022 Dollars

Item #	Cost Category		Quantity	Rate		TOTAL
1	Grading - Worst Case Pits					$0
2	Grading - Spoils					$0
3	Acid & Toxic Material Management					$0
4	Topsoil Replacement	South Facilities (Ac)	234.1	$1,135	$265,703.50	$265,700
5	Revegetation	Total Disturbance (Ac)	4982.3	$822	$4,095,451	$4,095,451
6	Road Removal	Sourth Facilities (Ac)	7	$4,335	$30,345	$30,345
7	Sedimentation Pond Removal	Sourth Faciliites Ponds	2	$7,000	$14,000	$14,000
8	Earthmoving Support (For South Facilities)		$418,800	100%	$418,800	$418,800
9	Facility Removal		$1,053,000	100%	$1,053,000	$1,053,000
10	Hydrologic Structures					$0
	SUBTOTAL - Direct Costs					$5,877,296
11	Contractor Mobilization/Demobilization (1% of Subtotal)					$59,000
12	Supplemental Contingencies (3% of Subtotal)					$176,000
13	Engineering Design Fees (2.5% of Subtotal)					$147,000
14	Contractor's Profit and Overhead (15% of Subtotal)					$882,000
15	Project Management Fee (2.5% of Subtotal)					$147,000
	TOTAL Without Gross Receipts Tax					$7,288,296
	Gross Receipts Tax (2022 rate: 6.75%)				6.75%	$492,000
	TOTAL With Gross Receipts Tax (In 2000 Dollars)					$7,780,296
	Inflation rate Qtr 4 2000 to Qtr-2 2022	2.02689		Total Escalated to 2022 Dollars		$15,769,804
	Inflation Factors: Qtr-4 2000 & Qtr-2 2022:	500.48	1014.42			
	Supplemental Fund For Permit Modifications/Revisions/Misc					$7,725,114
	Total bond (After A11/12 PI Approval and Reduction)					**$23,494,918**
					Current Bond Fund	$24,645,642

Note: Inflation factors from USCOE Civil Works Construction Cost System (Composite Index Weighted Average) 9/30/21

Table 3: Bond After A11 PII and PIII in 2022 dollars

k	Cost Category		Quanity	Rate		TOTAL
		Area 11 Revegetation Reduction (ac.)	1503.0	$822.00	$1,235,466	
1	Grading - Worst Case Pits		Input			$0
2	Grading - Spoils					$0
3	Acid & Toxic Material Management					$0
4	Topsoil Replacement	South Facilities (Ac)	234.1	$1,135	$265,703.50	$265,700
5	Revegetation	Total Disturbance (Ac)	4982.3	$822	$4,095,451	$2,859,985
6	Road Removal	Sourth Facilities (Ac)	7	$4,335	$30,345	$30,345
7	Sedimentation Pond Removal	Sourth Faciliites Ponds	2	$7,000	$14,000	$14,000
8	Earthmoving Support (For South facilities)		$418,800	100%	$418,800	$418,800
9	Facility Removal		$1,053,000	100%	$1,053,000	$1,053,000
10	Hydrologic Structures		$266,600	0%	$0	$0
	SUBTOTAL - Direct Costs					$4,641,830
11	Contractor Mobilization/Demobilization (1% of Subtotal)					$46,000
12	Supplemental Contingencies (3% of Subtotal)					$139,000
13	Engineering Design Fees (2.5% of Subtotal)					$116,000
14	Contractor's Profit and Overhead (15% of Subtotal)					$696,000
15	Project Management Fee (2.5% of Subtotal)					$116,000
	TOTAL Without Gross Receipts Tax					$5,754,830
	Gross Receipts Tax (2022 rate: 6.75%)				6.75%	$388,000
	TOTAL With Gross Receipts Tax (In 2000 Dollars)					$6,142,830
	Inflation rate Qtr 4 2000 to Qtr-2 2022	2.02689		Total inflated to 2022 Dollars		$12,450,841
	Inflation Factors: Qtr-4 2000 & Qtr-2 2022	500.48	1014.42			
	Supplemental Fund For Permit Modifications/Revisions/Misc					$7,725,114
	Total bond					**$20,175,955**
				Current Bond Fund		$24,645,642

Appendix 2: Surface and Mineral Rights Owners of Lands

Chevron Mining Inc - McKinley Mine
Permit 2016-02
Area 11 Bond Release Application
Surface and Mineral Rights Owners of Lands

Area	Township and Range	Section	Phase I Acres	Phase II Acres	Phase III Acres	Surface Ownership	Allotment Numbers	Right of Entry	Mineral Rights Ownership	Right to Mine
11	T16N, R20W	2	4.5	18.3	18.3	BIA	1572	Lease	BLM	Lease
		2		164.8	164.8	BIA	1573	Lease	BLM	Lease
		2		160.5	160.5	BIA	1574	Lease	BLM	Lease
		2	0.5	94.9	94.9	BIA	1575	Lease	BLM	Lease
		3		231.9	231.9	Chevron USA, Inc.		Fee Land	PNRC	Lease
		10		102.5	102.5	BIA	1577	Lease	BLM	Lease
		10		78.9	78.9	BIA	1578	Lease	BLM	Lease
		10		6.8	6.8	BIA	1579	Lease	BLM	Lease
		10		21.4	21.4	BIA	1580	Lease	BLM	Lease
		11		301.3	301.3	Chevron USA, Inc.		Fee Land	PNRC	Lease
		35		215.5	215.5	Chevron USA, Inc.		Fee Land	PNRC	Lease
		36		106.2	106.2	BIA	1576	Lease	BLM	Lease
		Total	**5.0**	**1503.0**	**1503.0**					

Note: BIA is the Bureau of Indian Affairs, BLM is the Burearu of Land Management, and PNRC is the Peabody Natural Resources Company

Land Owner	Address
BIA	USDI, Bureau of Indian Affairs, P.O. Box 1060, Gallup, NM 87305
BLM	USDI, Bureau of Land Management, Farmington Field Office, 6251 College Blvd., Suite A, Farmington, NM 87402
PNRC	Peabody Natural Resources Company, 701 Market St., Suite 718, St. Louis, MO 63101-1830
Chevron USA, Inc.	Chevron Mining Inc. 6101 Bollinger Canyon Road, San Ramon, CA 94583-2324

Appendix 3: Draft Notification Letter

Draft Notification Letter (Area 11)

Date: July 10, 2023
Mr. John Doe
1000 John Doe Lane
City, NM Zip Code

Re: McKinley Mine Area 11 Bond Release Application
Permit No. 2016-02

Dear Mr. Doe:

Chevron Mining Inc. (formerly The Pittsburg & Midway Coal Mining Co.) has filed an application for bond release of the permanent-program performance bond for Area 11 which includes 1,503 acres of land eligible for Phase II and Phase III bond release, and 5 acres of land that qualifies for Phase I bond release (which lies within the Phase II and III area). Phase II bond release is being sought since vegetation has been established and the contribution of suspended solids to streamflow or runoff outside the permit is not in excess of the 19.8 NMAC requirements. Phase III bond release is being sought since reclaimed land has met vegetation standards in accordance with the permit and the regulations and all remaining reclamation obligations have been completed. The Phase I bond release area includes a reclaimed pond areas that qualify for Phase I release.

The application was filed with the New Mexico Mining and Minerals Division (MMD) of the Energy, Minerals & Resources Department in Santa Fe, New Mexico. This application concerns property that may be under your control or ownership or that may be of interest to you.

Chevron Mining Inc.'s headquarters is located at 6001 Bollinger Canyon Road, San Ramon, CA 94583. The current permit number for the McKinley Mine regulated by MMD is 2016-02, which expired on March 7, 2021, but has been administratively extended by MMD.

The McKinley Mine is located approximately 23 miles northwest of Gallup, NM and 3 miles east of Window Rock, AZ on NM State Highway 264. The Area 11 bond release application is located within the Tse Bonita School USGS quadrangle maps.

The lands for which bond release is sought are shown on the accompanying map Figure 1: McKinley Mine Area 11 - Bond Release Area, and are located within the following areas:
T16N, R20W New Mexico Principal Meridian, McKinley County, New Mexico:
Section Numbers: 2, 3, 10 and 11.

T17N, R20W New Mexico Principal Meridian, McKinley County, New Mexico
Section Numbers: 35 and 36.

Area 11 Surface Ownership

Chevron Mining Inc - McKinley Mine
Permit 2016-02
Area 11 Bond Release Application
Surface Owners of Lands

Area	Township and Range	Section	Phase I Acres	Phase II Acres	Phase III Acres	Surface Ownership	Allotment Numbers
11	T16N, R20W	2	4.5	18.3	18.3	BIA	1572
		2		164.8	164.8	BIA	1573
		2		160.5	160.5	BIA	1574
		2	0.5	94.9	94.9	BIA	1575
		3		231.9	231.9	Chevron USA, Inc.	
		10		102.5	102.5	BIA	1577
		10		78.9	78.9	BIA	1578
		10		6.8	6.8	BIA	1579
		10		21.4	21.4	BIA	1580
		11		301.3	301.3	Chevron USA, Inc.	
	T17N, R20W	35		215.5	215.5	Chevron USA, Inc.	
		36		106.2	106.2	BIA	1576
		Total	**5.0**	**1503.0**	**1503.0**		

Land Owner	**Address**
BIA	USDI, Bureau of Indian Affairs, P.O. Box 1060, Gallup, NM 87305
Chevron USA, Inc.	Chevron Mining Inc. 6101 Bollinger Canyon Road, San Ramon, CA 94583-2324

Bonding Information

The following summarizes the current and remaining bond fund, proposed bond release and remaining bond:

Current Bond Type:	Surety Bond
▪ Current Bond Fund:	$ 24,645,642
▪ Less Previous A11/12 PI Bond Release:	$ 1,150,724
▪ Remaining Bond Fund:	$ 23,494,918
▪ Area 11 direct & indirect costs to be released:	$ 3,318,963
▪ New Bond Fund Amount:	$ 20,175,955 (in 2022 dollars)

Disturbed Acreage to be released:	
▪ Total acreage to be released:	1,503.0 ac.
▪ Acres permitted:	12,958.2 ac.
▪ Percentage of acres permitted being released:	11.6%

Phase I bond for much of the area was released in 2021, which covered backfilling and grading, graded spoil suitability, topsoil replacement and construction of hydrologic structures and drainage control. Five acres of pond area that was excluded from the 2021 Phase I bond release is now eligible for Phase I bond release and included with this bond release application. Phase II and Phase III bond release is being sought for the portion of bond associated with completion of reclamation requirements that results in the reduction of settleable solids and the development of vegetation on reclaimed land to meet the

requirement as established in the regulations and the applicable permit. Disturbance and mining in Area 11 occurred between 1992 and 2014. Seeding of the majority of the reclaimed lands occurred between 1994 and 2019. Assessment of Area 11 for vegetation performance was conducted in 2019, 2020, 2021 and 2022.

A copy of the detailed bond-release application is available for public inspection at the following locations:

- County Clerk, McKinley County Courthouse, 201 W Hill Ave, Gallup, New Mexico, 87301.
- New Mexico Mining and Minerals Division, 1220 South St. Francis Drive, Santa Fe, NM 87505 (Contact Name: James R. Smith by phone at 505-690-8071 or by email at JamesR.Smith@emnrd.nm.gov to make arrangements to review the bond release application).

Within 30 days of the final publication of a notice for this bond-release application in the Gallup Independent or Navajo Times newspaper, written comments, objections, or requests for a public hearing and informal conference on this bond-release application shall be submitted to:

- Mike Tompson, Director, Mining and Minerals Division, 1220 South St. Francis Drive, Santa Fe, NM 87505.

An inspection of the lands to be released will be conducted at the McKinley Mine at 9 AM on August 24, 2023 (Thursday). Parties interested in participating in the inspection may contact Mr. James R. Smith of the Mining and Minerals Division at 505-690-8071.

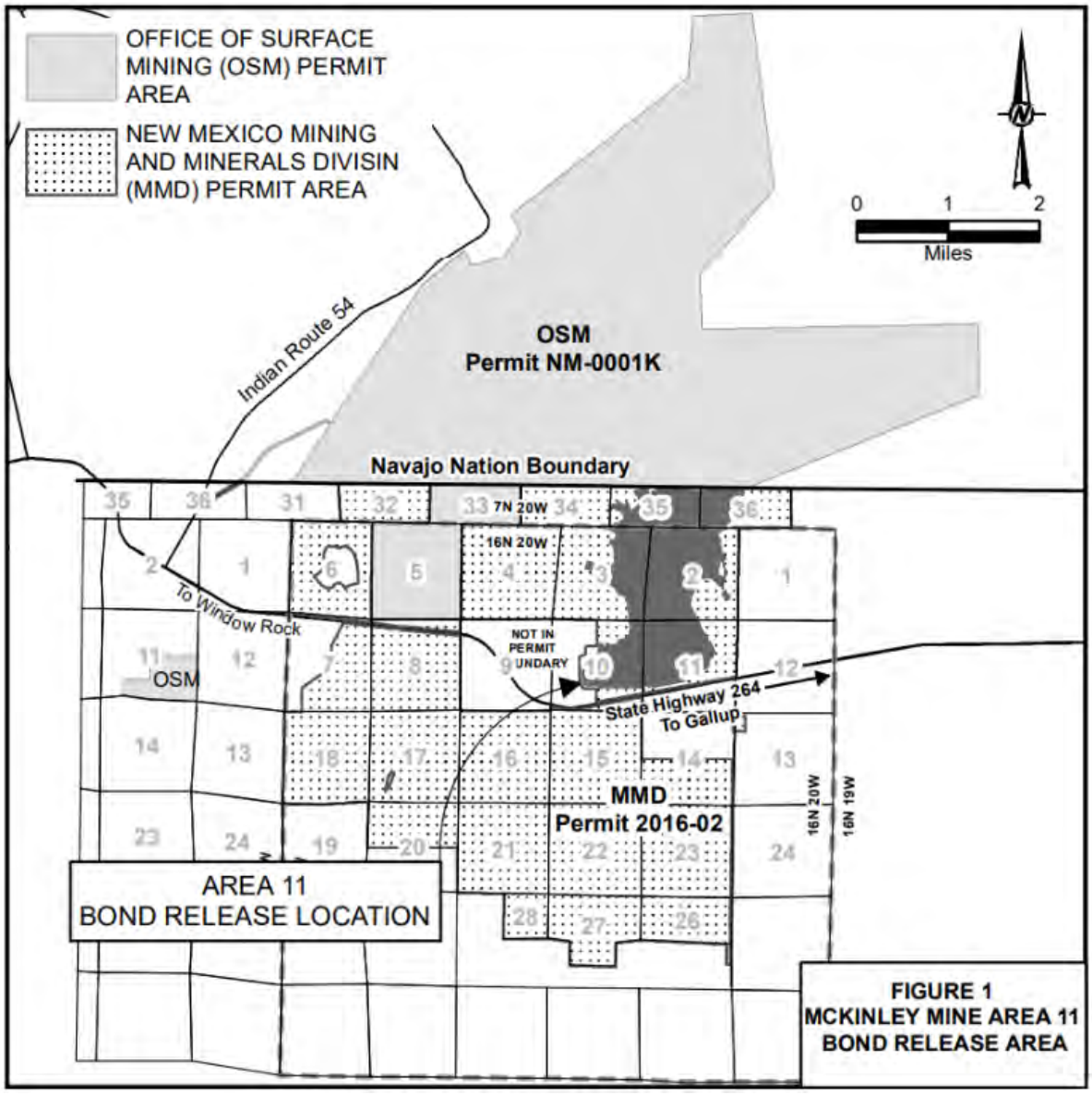

Figure 1: McKinley Mine Area 11 Bond Release Area

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LAS VEGAS, NV 89107-4301

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Appendix 5: Other Interests

Bureau of Indian Affairs
PO Box 1060
Gallup, NM 87301

Bureau of Land Management
6251 College Blvd. Suite A
Farmington, NM 87402

Continental Divide Electric Corp.
PO Box 786
Gallup, NM 87301

El Paso Natural Gas Co.
Gallup District Office
PO Box 103
Rehoboth, NM 87322

KHAC Radio
PO Box 9090
Window Rock, AZ 86515

McKinley County Manager
207 West Hill St
Gallup, NM 87301

Navajo Communications Company Inc.
PO Drawer 6000
Window Rock, AZ 86515

Navajo Land Development
PO Box 2249
Window Rock, AZ 86515

Navajo Nation Minerals Dept.
PO Box 1910
Window Rock, AZ 86515

Navajo Partnership for Housing, Inc.
PO Box 1370
St. Michaels, AZ 86511

Navajo Tribal Utility Authority
PO Box 170
Fort Defiance, AZ 86504

New Mexico State Land Office
PO Box 1148
Santa Fe, NM 87504-1148

Peabody Natural Resource Company
701 Market St.
St. Louis, MO 63101

Public Service Co. of NM
Alvandado Square
Albuquerque, NM 87158

Santa Fe Railroad
Trainmaster Office
811 Roundhouse Rd.
Gallup, NM 87301

District Technical Support Engineer
NM State Highway Dept.
PO Box 2159
Milan, NM 87201

Tse Bonita Valley Water Users Association
HCR-5, Box 34
Gallup, NM 87301

Appendix 6: Certification of Application

Certification of Application

I certify, to the best of my knowledge and belief, that all applicable reclamation activities have been accomplished on the lands contained in this Chevron Mining Inc – McKinley Mine, Permit 2016-02 Area 11 Bond Release Application in accordance with the requirements of SMCRA, the Act, the regulatory program, and the approved permit and reclamation plan.

Jeff Schoenbacher – CEMC
McKinley Mine – Operations Lead

6·14·23
Date

State of New Mexico)
) SS
County of Taos)

Subscribed and sworn to before me, in my presence, this 14th day of June, 2023.

Isaiah Vigil a Notary Public in and for the State of New Mexico.

Notary Public

My Commission expires 6/15/25

ISAIAH VIGIL
Notary Public - State of New Mexico
Commission # 1134732
My Comm. Expires Jun 15, 2025

Appendix 7: Public Notice

Public Notice

Chevron Mining Inc. (formerly The Pittsburg & Midway Coal Mining Co.) has filed an application for bond release of the permanent-program performance bond for Area 11 which includes 1,503 acres of land eligible for Phase II and Phase III bond release and 5 acres that qualify for Phase I bond release (which lies within the Phase II and III area). Phase II bond release is being sought since vegetation has been established and the contribution of suspended solids to streamflow or runoff outside the permit is not in excess of the 19.8 NMAC requirements. Phase III bond release is being sought since the reclaimed area has met vegetation standards in accordance with the permit and the regulations and all remaining reclamation obligations have been completed. The Phase I bond release area includes a reclaimed pond area that qualify for Phase I release.

The application was filed with the New Mexico Mining and Minerals Division (MMD) of the Energy, Minerals & Resources Department in Santa Fe, New Mexico.

Chevron Mining Inc.'s headquarters is located at 6001 Bollinger Canyon Road, San Ramon, CA 94583. The current permit number for the McKinley Mine regulated by MMD is 2016-02, which expired on March 7, 2021 but has been administratively extended by MMD.

The McKinley Mine is located approximately 23 miles northwest of Gallup, NM and 3 miles east of Window Rock, AZ on NM State Highway 264. The areas in the bond release application are located within the Tse Bonita School USGS quadrangle map.

The land for which bond release is sought is shown on the accompanying map Figure 1 McKinley Mine Area 11 Bond Release Area, and is located within the following areas:
T16N, R20W New Mexico Principal Meridian, McKinley County, New Mexico
Section Numbers: 2, 3, 10 and 11
T17N, R20W New Mexico Principal Meridian, McKinley County, New Mexico
Section Numbers: 35 and 36

Chevron Mining Inc - McKinley Mine
Permit 2016-02
Area 11 Bond Release Application
Surface Owners of Lands

Area	Township and Range	Section	Phase I Acres	Phase II Acres	Phase III Acres	Surface Ownership	Allotment Numbers
11	T16N, R20W	2	4.5	18.3	18.3	BIA	1572
		2		164.8	164.8	BIA	1573
		2		160.5	160.5	BIA	1574
		2	0.5	94.9	94.9	BIA	1575
		3		231.9	231.9	Chevron USA, Inc.	
		10		102.5	102.5	BIA	1577
		10		78.9	78.9	BIA	1578
		10		6.8	6.8	BIA	1579
		10		21.4	21.4	BIA	1580
		11		301.3	301.3	Chevron USA, Inc.	
	T17N, R20W	35		215.5	215.5	Chevron USA, Inc.	
		36		106.2	106.2	BIA	1576
		Total	**5.0**	**1503.0**	**1503.0**		

Land Owner	Address
BIA	USDI, Bureau of Indian Affairs, P.O. Box 1060, Gallup, NM 87305
Chevron USA, Inc.	Chevron Mining Inc. 6101 Bollinger Canyon Road, San Ramon, CA 94583-2324

Bonding Information

The following summarizes the current and remaining bond fund, proposed bond release and remaining bond:

Current Bond Type:	Surety Bond
▪ Current Bond Fund:	$ 24,645,642
▪ Less Previous A11/12 PI Bond Release:	$ 1,150,724
▪ Remaining Bond Fund:	$ 23,494,918
▪ Area 9N direct & indirect costs to be released:	$ 3,318,963
▪ New Bond Fund Amount:	$ 20,175,955 (in 2022 dollars)

Disturbed Acreage to be released:

▪ Total acreage to be released:	1,503.0 ac.
▪ Acres permitted:	12,958.2 ac.
▪ Percentage of acres permitted being released:	11.6%

Disturbance and mining in Area 11 occurred between 1992 and 2014. Phase I bond for much of the area was released in 2021, which covered backfilling and grading, graded spoil suitability, topsoil replacement and construction of hydrologic structures and drainage control. 5 acres of reclaimed pond area that was excluded from the 2021 Phase I bond release are now eligible for Phase I bond release and included with this bond release application. Seeding of the majority of the reclaimed lands occurred between 1994 and 2019. Assessment of Area 11 for vegetation performance was conducted in 2019, 2020, 2021 and 2022.

A copy of the detailed bond-release application is available for public inspection at the following locations:

- County Clerk, McKinley County Courthouse, 201 W Hill Ave, Gallup, New Mexico, 87301.
- New Mexico Mining and Minerals Division, 1220 South St. Francis Drive, Santa Fe, NM 87505 (Contact Name: James R. Smith by phone at 505-690-8071 or by email at JamesR.Smith@emnrd.nm.gov to make arrangements to review the bond release application).

Within 30 days of the final publication of a notice for this bond-release application in the Gallup Independent or Navajo Times newspaper, written comments, objections, or requests for a public hearing and informal conference on this bond-release application shall be submitted to:

- Mike Tompson, Director, Mining and Minerals Division, 1220 South St. Francis Drive, Santa Fe, NM 87505.

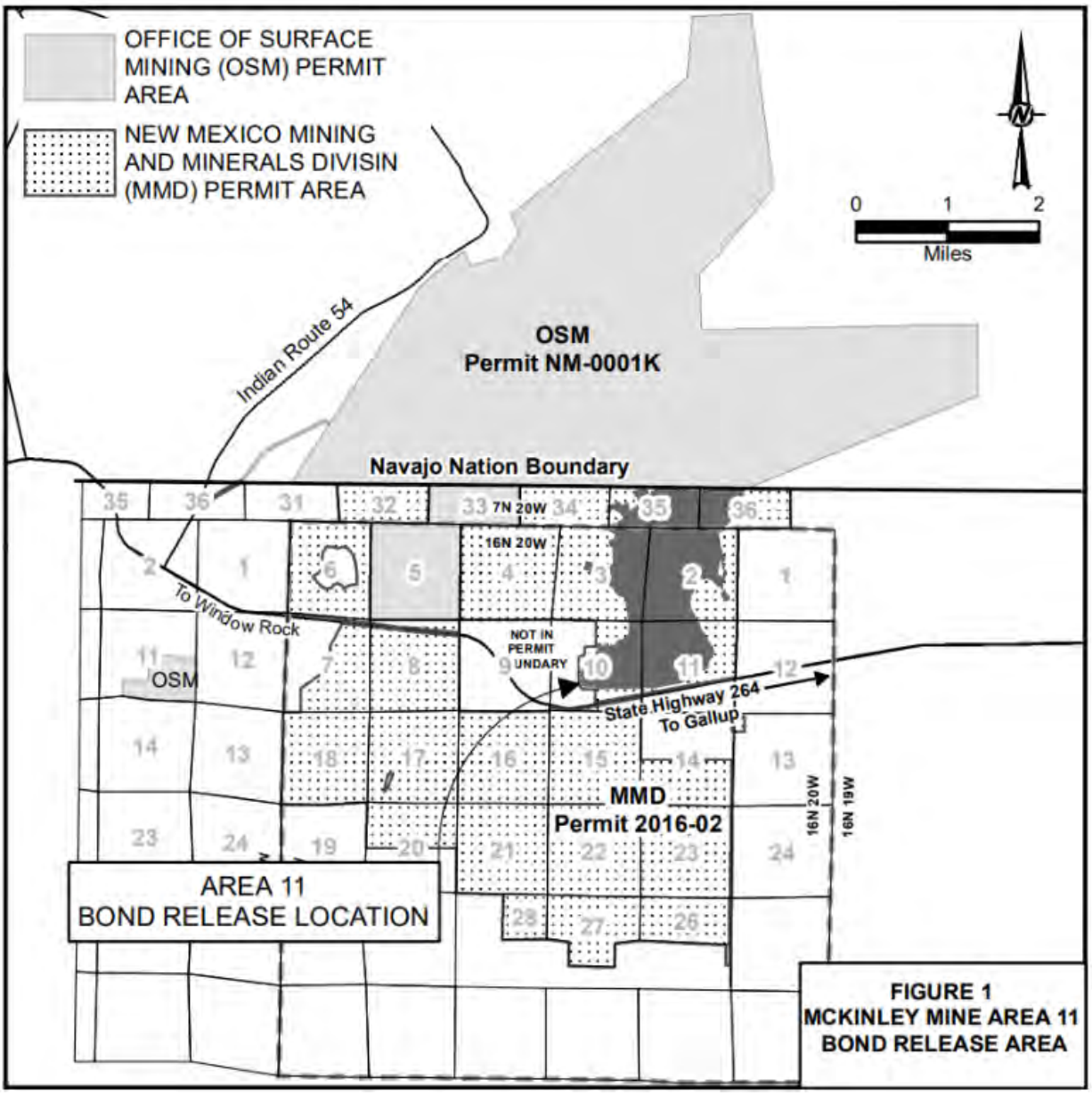

Figure 1: McKinley Mine Area 9N Bond Release Area

Appendix 8: Complete 2019, 2020, 2021 and 2022 Vegetation Monitoring Reports for VMU #2

REPORT

Vegetation Management Unit 2
Vegetation Success Monitoring, 2019

McKinley Mine, New Mexico Mining and Minerals Division Permit Area

Submitted to:

Chevron Environmental Management Company
Chevron Mining Inc. - McKinley Mine
24 Miles NW HWY 264
Mentmore, NM 87319

Submitted by:

Golder Associates Inc.
5200 Pasadena Avenue, N.E. Suite C
Albuquerque, New Mexico, USA 87113

+1 505 821-3043

133-8105207

February 21, 2020

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1.0 INTRODUCTION

Mining was completed in Mining and Minerals Division (MMD) jurisdictional lands at the McKinley Mine in 2007; most of the land is reclaimed, with only the facilities remaining. The lands mined and reclaimed included prelaw, initial-program, and permanent-program lands. Liability release has been completed on all prelaw and initial-program lands, and full bond release on a limited amount of permanent-program land.

Chevron Mining Inc. (CMI) is assessing the vegetation in the remaining permanent-program reclaimed areas in anticipation of future bond and liability releases. CMI understands the importance of returning the mined lands to productive traditional uses in a timely manner. In order to qualify for release, the lands must be in a condition that is as good as or better than the pre-mine conditions, stable, and capable of supporting the designated postmining land use of grazing and wildlife. The increment, or permit area as a whole, must meet vegetation establishment responsibility period criteria, which is a minimum of 10 years. Golder Associates Inc. (Golder) was retained to monitor and assess the vegetation relative to the established vegetation success standards in Permit # 2016-02.

1.1 Vegetation Management Unit 2

This report presents results from 2019 quantitative vegetation monitoring conducted in Vegetation Management Unit 2 (M-VMU-2), comprising about 1,518 acres within Area 11 (Figure 1). The elevation in this area ranges from about 6,700 to 7,000 feet above mean sea level. Permanent program reclamation in Area 11 started on lands disturbed after 1986, and reclamation generally was completed by 2013. Thus, reclamation age in the majority of M-VMU-2 ranges from 8 to more than 30 years old. The configuration of the vegetation monitoring units within the MMD Permit Area, shown on Figure 1 were developed in consultation with MMD. This section provides a general description of the reclamation activities that were implemented. Additional details of the reclamation for specific areas can be obtained through review of McKinley's annual reports.

1.2 Reclamation and Revegetation Procedures

Reclamation methods applied in Area 11 included grading of the spoils to achieve positive drainage and approximate original contour. Graded spoil monitoring was then conducted to verify that the upper 42 inches of spoil were suitable for plant growth or if it required mitigation to establish a suitable root zone. A minimum of 6 inches of topsoil or topsoil substitute were then applied over suitable spoils.

After topsoil or topdressing placement, the surface was scarified in preparation for planting. Seeding was done using various implements that drilled and/or broadcast the seed. After the seeding, mulch consisting of either hay or straw was applied at a rate of about 2 tons/acre. The mulch was anchored 3 to 4 inches into the soil with a tractor-drawn straight coulter disc. The seeding was generally performed in the fall, which coincided with logical units for seeding that had been topdressed over the spring and summer. Seed mixes used at McKinley have varied over time but included both warm- and cool-season grasses, introduced and native forbs, and shrubs. The early seed mixes tended to emphasize the use of alfalfa and cool-season grasses. Over time the seed mixes shifted to include more warm-season grasses and a broader variety of native forbs.

1.3 Prevailing Climate Conditions

The amount and distribution of precipitation are important determinants for vegetation establishment and performance. Once vegetation is established, the precipitation dynamics affect the amount of vegetation cover and biomass on a year-to-year basis with grasses and forbs showing the most immediate response.

The South Mine Area has experienced several drought years recently. Total annual precipitation was above the regional average (about 11.8 inches at Window Rock) in 2015 and below average in 2016, 2017, and 2018 (Table 1). Annual precipitation for 2019 is comparable to long-term averages for the region, though monsoonal precipitation was well below average. Figure 1 shows the location of the precipitation gages used for the South Mine. Departure of growing season precipitation (April through September) from long-term seasonal mean at Window Rock (1937-1999) for McKinley is shown on Figure 2 based on the Rain 11 station. Between 2015 and 2019, growing season precipitation has been below average in all years but 2015 and 2017, when growing season total precipitation was 1.53 and 0.55 inches above average, respectively. For 2016, 2018 and 2019, growing season precipitation was 1.79 to 2.84 inches below average. From 2015 to 2019, peak growing season months have been dry with a pronounced deficit in the early monsoon (July and August), with exceptions being the months of July for 2015 and 2018.

1.4 Objectives

The intent of this report is to document the vegetation community attributes in M-VMU-2 and compare them to the Permit vegetation success criteria. Section 2 describes the vegetation monitoring methods that were used in 2019. Section 3 presents the results of the investigation with respect to ground cover, annual production, shrub density, and composition and diversity. Section 4 is a summary of the results for M-VMU-2 with emphasis on vegetation success.

2.0 VEGETATION MONITORING METHODS

Vegetation attributes on M-VMU-2 in Area 11 were quantified using the methods described in Section 6.5 of the Permit. Fieldwork was conducted at the end of the growing season, but prior to the first killing frost. Vegetation monitoring in M-VMU-2 was conducted on September 10,11 and 19, 2019.

2.1 Sampling Design

A systematic random sampling procedure employing a transect/quadrat system was used to select sample sites within the reclaimed area. The transect locations were reviewed with MMD in advance of sampling. A 50-square foot grid was imposed over the VMU to delineate vegetation sample plots, and random points created in a geographic information system were used to select plots for vegetation sampling. The locations of randomly selected vegetation plots are shown on Figure 3 for M-VMU-2. In the field, the randomly selected transect locations were assessed in numerical order. If the transect location was determined to be unsuitable, the next alternative location was assessed for suitability. Unsuitable transects were those that fell on or would intersect roads, drainage ways, wildlife rock piles, or prairie dog colonies.

Transects originated from the southeastern corner of the vegetation plot. Each transect was 30 meters (m) long in a dog-leg pattern (Figure 4). Four 1-m^2 quadrats were located at pre-determined intervals along the transect for quantitative vegetation measurements. Each quadrat is considered an individual sample where measurements were made of production, total canopy, species canopy and basal cover, surface litter, surface rock fragments, and bare soil as discussed below.

2.2 Vegetation and Ground Cover

Relative and total canopy cover, basal cover, surface litter, rock fragments, and bare soil were estimated for each quadrat. Canopy cover estimates include the foliage and foliage interspaces of all individual plants rooted in the quadrat. Canopy cover is defined as the percentage of quadrat area included in the vertical projection of the canopy. The canopy cover estimates made on a species basis may exceed 100% in individual quadrats where the

vegetation has multi-layered canopies. In contrast, the sum of the total canopy cover, surface litter, rock fragments, and bare soil does not exceed 100%.

Basal cover is defined as the proportion of the ground occupied by the crowns of grasses and rooting stems of forbs and shrubs. Basal cover estimates were also made for surface litter, rock fragments, and bare soil. Like the total cover estimates, the basal cover estimates do not exceed 100%. All cover estimates were made in 0.05% increments. Percent area cards were used to increase the accuracy and consistency of the cover estimates. Plant frequency was determined on a species-basis by counting the number of individual plants rooted in each quadrat.

2.3 Annual Forage and Biomass Production

Production was determined by clipping and weighing all annual (current year's growth) above-ground biomass within the vertical confines of a 1-m^2 quadrat. Grasses and forbs were clipped to within 5 centimeters (cm) of the soil surface, and the current year's growth was segregated from the previous year's growth (e.g., gray, weathered grass leaves and dried culms). For this sampling event, plants that were less than 5 cm tall or considered volumetrically insignificant were not collected. Production from shrubs was determined by clipping the current year's growth.

The plant tissue samples of every species collected were placed individually in labeled paper bags. The plant tissue samples were air-dried (> 90 days) until no weight changes were observed with repeated measurements on representative samples. The average tare weight of the empty paper bags was determined to correct the total sample weight to air-dry vegetation weights. The net weight of the air-dried vegetation was converted to a pounds per acre (lbs/ac) basis.

2.4 Shrub Density

Shrub density, or the number of plants per square meter, was determined using the frequency count data from the quadrats and the belt transect method (Bonham 1989). Shrub density was calculated from the quadrat data by dividing the total number of individual plants counted by the number of quadrats measured. The density per square meter was converted to density per acre.

Shrub density was also determined using a belt transect method (Bonham 1989). Shrub density was determined from a 1-meter wide; 30-meter long belt transect situated along the perimeter of the dog-legged transect (Figure 4). Shrubs rooted in the belt transect were counted on a species basis.

2.5 Statistical Analysis and Sample Adequacy

For the vegetation success demonstrations at McKinley, statistical adequacy is determined on the basis of the canopy cover, production and shrub density data. The number of samples required to characterize a particular vegetation attribute depends on the uniformity of the vegetation and the desired degree of certainty required for the analysis.

The number of samples necessary to meet sample adequacy (N_{min}) was calculated assuming the data were normally distributed using Snedecor and Cochran (1967).

$$N_{min} = \frac{t^2 s^2}{(\bar{x}D)^2}$$

Where N_{min} equals minimum number of samples required, t is the two-tailed t-distribution value based on a 90% level of confidence with n-1 degrees of freedom, s is the standard deviation of the sample data, $\overline{x}$ is the mean, and D is the desired level of accuracy, which is 10 percent of the mean.

In addition to N_{min}, the 90% confidence interval (CI) of the sample mean and the level of confidence that the sample mean is within 10 percent of the true mean are reported.

It is often impractical to achieve sample adequacy in vegetation monitoring studies based on Snedecor and Cochran's equation, and a minimum sample number approach is taken. MMD recognizes the practical limitations of achieving statistical adequacy and has provided minimum sample sizes for various quantitative methods (MMD 1999). With normally distributed data where sample adequacy cannot be met because of operational constraints or for other reasons, 40 samples are often considered adequate. The 40-sample recommendation is based on an estimate of the number of samples needed for a t-test under a normal distribution (Sokal and Rohlf 1981). Schulz et al. (1961) demonstrated that 30 to 40 samples provide a robust estimate for most cover and density measurements with increased numbers of samples only slightly improving the precision of the estimate.

CMI collected 40 samples at the outset of sampling based on the guidance discussed above. The 40 samples came from ten transects each having four quadrats as described in Section 2.1. Each quadrat is considered a unique sampling unit. Additional analysis around sample adequacy was done to see the number of samples that would have been required for adequacy by the Snedecor and Cochran equation. Further analysis for sample adequacy of cover, production and density attributes was also demonstrated using a graphical stabilization of the mean method (Clark 2001).

The emphasis on statistical adequacy assumes that parametric tests of normally distributed data will be conducted to demonstrate compliance with the vegetation success standards. It is important to note that normally distributed data and sample adequacy are not required for hypothesis testing. Nonparametric hypothesis tests are used to analyze data that are not normally distributed. When sample adequacy is not achieved, it is appropriate to use the reverse null approach for hypothesis testing. The reverse null is also generally recommended to evaluate reclamation success whether N_{min} is met or not (MMD 1999). This is because the reverse null is more defensible (compared to the classic approach) where the rejection of the null hypothesis definitively concludes that the reclamation mean is greater the technical standard (McDonald and Howlin 2013).

The procedures for financial assurance release as described in Coal Mine Reclamation Program Vegetation Standards (MMD 1999) guided the statistical analysis. Statistical tests were performed using both Microsoft® Excel and Analyse-it (version 5.40.3), a statistical add-in for Excel. The normality of each dataset was first assessed using the Shapiro-Wilk test to determine the appropriate hypothesis test method (i.e., parametric versus nonparametric). Data were considered normal when the test statistic was significant (p-value > 0.10) for alpha (α) = 0.10. Thus, the null hypothesis that the population is normally distributed was accepted if the p-value > 0.10. In cases where the data were not normally distributed, a log transformation was applied to see if it normalized the data.

All hypothesis testing used to demonstrate compliance with the vegetation success standards was conducted using a reverse null approach. Because vegetation performance at McKinley is compared to technical standards, the one-sample, one-sided t-test is used for normally distributed data to evaluate the mean and the one-sample, one-sided sign test to analyze the median of data that are not normal (MMD 1999; McDonald and Howlin 2013). The one-sided hypothesis tests using the reverse null approach were designed as follows:

Perennial/Biennial Canopy Cover

H_0 : Reclaim < 90% of the Technical Standard (15%)

H_a : Reclaim ≥ 90% of the Technical Standard (15%)

Annual Forage Production

H_0 : Reclaim < 90% of the Technical Standard (350 lbs/ac)

H_a : Reclaim ≥ 90% of the Technical Standard (350 lbs/ac)

Shrub Density

H_0 : Reclaim < 90% of the Technical Standard (150 stems/ac)

H_a : Reclaim ≥ 90% of the Technical Standard (150 stems/ac)

where H_0 is the null hypothesis and H_a is the alternative hypothesis. All hypothesis tests were performed with a 90% level of confidence.

Under the reverse null test, the revegetation success standard is met when H_0 is rejected and H_a is accepted. The decision criteria at 90% confidence under the reverse null hypothesis are as follows:

One-sample, one-sided t-test

If $t^* < t_{(1-\alpha; n-1)}$, conclude failure to meet the performance standard

If $t^* \geq t_{(1-\alpha; n-1)}$, conclude that the performance standard was met

One-sample, one-sided sign test

If P > 0.10, conclude failure to meet the performance standard.

If P ≤ 0.10, conclude that the performance standard was met.

Statistical hypothesis testing was performed on perennial/biennial cover, annual forage production and shrub density using the one-sample, one-sided t-test and the one-sample, one-sided sign test. The hypotheses testing used the reverse null hypothesis bond release testing procedure as described in Coal Mine Reclamation Program Vegetation Standards (MMD 1999).

3.0 RESULTS

The vegetation community in M-VMU-2 is well established and dominated by perennial plants. A representative photograph of the vegetation and topography in M-VMU-2 is shown in Figure 5. The vegetation cover levels in 2019 suggest that the site is progressing to achieve vegetation success standards for the Permit Area. Vegetation success standards consist of four vegetative parameters: ground cover, productivity, diversity and woody stem stocking (Table 2). The ground cover requirement for live perennial/biennial cover on the reclamation is 15%. The productivity requirement is 350 air-dry lbs/ac perennial/biennial annual production. The woody stem stocking success standard is 150 live woody stems per acre.

Diversity is evaluated against numerical guidelines for different growth forms and photosynthetic pathways of the vegetation. In summary, the diversity guideline required by MMD would be met if at least two shrub or subshrub

species with individual relative cover values of 1%; at least two perennial warm-season grass species have individual relative cover levels of at least 1%; at least one perennial cool-season grass species has an individual relative cover level of at least 1%; and three perennial or biennial forb species have a combined relative cover of at least 1%. MMD (1999) allows for the use of biennial forbs because they are technically monocarpic (single-flowering) perennials that annually produce a significant amount of seed and therefore as a species, they persist in the reclaimed plant community. Relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit.

Diversity is also demonstrated by evidence of colonization or recruitment of native (not-seeded) plants from adjacent undisturbed native areas. Table 3 summarizes the attributes for plants recorded in the quadrats in addition to those encountered or observed but not recorded in the formal quantitative monitoring of M-VMU-2. Recruitment of these native plant species is indicative of ecological succession and the capacity of the site to support a self-sustaining ecosystem.

The field data for canopy and basal cover, density, production and shrub density by the belt transect are included in Appendix A, accompanied by Figure A-1 showing the 2019 transect locations within M-VMU-2. Figure A-1 also shows the seeded areas grouped by years. Photographs of the quadrats are included in Appendix B. Appendix C provides the statistical outputs for perennial/biennial canopy cover, annual forage production and shrub density by the belt transect method.

3.1 Ground Cover

Average total ground cover in M-VMU-2 is 41.1% comprised of 31.1% total vegetation cover, 3.5% rock, and 6.5% litter on a canopy cover basis (Table 3). On a basal area basis, average ground cover is 26.9% with 1.6% vegetation, 4.0% rock and 21.4% litter. Consistent with semi-arid rangelands the vegetation canopy cover in the individual quadrats varied, ranging from 0.1 to 93.0% (Table A-1).

Perennial/biennial canopy cover was calculated by summing the perennial/biennial species cover estimates after excluding the annual forbs and grasses. The mean perennial/biennial canopy cover was 24.9%, which was less than the mean total vegetation canopy cover suggesting the limited occurrence of overlapping canopies for perennial/biennial cover. In M-VMU-2, both the mean total vegetation canopy cover (31.1% ± 5.7% [90% confidence interval, CI]) and mean perennial/biennial canopy cover (24.9% ± 6.1%) exceeded the vegetation success standard of 15% perennial/biennial cover (Table 4).

The perennial/biennial canopy cover data for M-VMU-2 were not normally distributed (Figure C-1). A log transformation of the perennial/biennial canopy cover data did not result in a normal distribution. The calculated minimum sample size needed to meet N_{min} was 144 samples for total cover and 258 samples for perennial/biennial canopy cover (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the perennial/biennial canopy cover data were evaluated using a stabilization of the mean approach (Clark 2001) and with a one-sided, one-sample sign test using the reverse null (MMD 1999). Figure 6 illustrates the stabilization of the estimated mean for perennial/biennial canopy cover based on grouping four sample increments associated with a single transect. The samples were analyzed in four sample increments to allow an estimation of variability. The corresponding variability around the mean is expressed by the 90% CIs for each successive analytical increment. These data suggest that the mean stabilized within 90% CI of the 40-sample mean after the collection of 16 to 20 samples. The estimated population mean increase from samples 32 to 36 is the result of high cover values in transect M-VMU-2-T9P, Quads 2 and 3 (Table A-1) where perennial/biennial canopy cover measurements were 98.5% and 91.1%, respectively. The variability of the estimate slightly

decreased with the collection of additional data, but not to a meaningful degree. This analysis suggests that the collection of additional data beyond 40 samples would not improve the precision of the estimate of perennial/biennial cover.

Evaluation of the data using the one-sample, one-sided sign test found only 15 perennial/biennial cover quadrats did not meet 90% of the performance standard (13.5%) resulting in the probability (P) of 0.0778 of observing a z value less than -1.42. Therefore, under the reverse null hypothesis we conclude the performance standard is met for perennial/biennial canopy cover in 2019 (Table C-1).

3.2 Production

The 2019 annual forage production in M-VMU-2 was estimated to be 787 (± 291 [90% CI]) lbs/ac with an annual total production of 1,011 ± 297 lbs/ac (Table 4). Sixteen perennial grasses contribute 369 lbs/ac of forage and eight shrubs contribute 397 lbs/ac of browse indicating a diverse and productive rangeland. Colorado wildrye (*Leymus ambiguus*), western wheatgrass (*Pascopyrum smithii*), tall wheatgrass (*Thinopyrum ponticum*) and James' galleta (*Pleuraphis jamesii*) account for about 39% of the forage, while four-wing saltbush (*Atriplex canescens*) and rubber rabbitbrush (*Ericameria nauseosa*) account for an additional 43% of annual forage production (Table 3). The combined annual forage production for 16 perennial grasses and eight subshrubs/shrubs in M-VMU-2 is more than double the vegetation success standard of 350 lbs/ac.

The annual forage production data for M-VMU-2 were not normally distributed (Figure C-2). A log transformation of the annual forage production data did not result in a normal distribution. The calculated minimum sample size needed to meet N_{min} at the 90% confidence level for annual forage production was estimated to be 576 samples (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the data were evaluated using a stabilization of the mean (Clark 2001) and with a one-sided, one sample sign test using the reverse null (MMD 1999). Figure 7 illustrates the stabilization of the estimated mean and 90% CI for annual forage production. These data suggest that the mean stabilized within 90% CI of the 40-sample mean after the collection of 16 to 20 samples. The estimated population mean increase from samples 32 to 36 is the result of high forage production in M-VMU-2-T9P, Quads 2 and 3 (Table A-4) where annual forage production measurements were 737.57 g/m^2 (6,580 lbs/ac) and 272.16 g/m^2 (2,428 lbs/ac), respectively. The addition of fourmore samples did not change the mean and decreased the 90% CI, suggesting that the collection of additional data would not improve the precision of the estimate of forage production.

Evaluation of the data using the one-sample, one-sided sign test found only 15 production quadrats did not meet 90% of the performance standard (315 lbs/ac) resulting in the probability (P) of <0.0778 of observing a z value less than -1.42. Therefore, under the reverse null hypothesis we conclude the performance standard is met for annual forage production in 2019 (Table C-2).

3.3 Shrub Density

Shrub density ranged from an average of 2,671 ± 1,335 stems/ac based on the belt transect method to 12,342 ± 6,952 stems/ac for quadrat method (Table 4). In M-VMU-2, 14 shrub species were encountered in the belt transects (Table A-5) compared to eight species in the quadrats (Table 3), reflecting the increased area of analysis associated with the belt transects. Four-wing saltbush and winterfat (*Krascheninnikovia lanata*) were the most common shrubs encountered under both measurement methods.

The shrub density data by the belt transect method were not normally distributed (Figure C-3) and the calculated minimum sample size needed to meet N_{min} at the 90% confidence level was estimated to be

310 samples (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the shrub density belt transect data were evaluated using a stabilization of the mean (Clark 2001) and one-sided, one sample sign test using the reverse null (MMD 1999). Figure 8 illustrates the stabilization of the mean for shrub density based on individual belt transect data. The corresponding variability around the mean is expressed by the 90% CIs for each successive analytical increment. These data suggest that the mean stabilized within 90% CI of the 10-sample mean after the first belt transect and through the remainder of the sampling. However, an increase in the estimated population mean from samples 8 to 9 is the result of extremely high woody stem density in M-VMU-2-T9P (Table A-5) where measurements resulted in a shrub density of 2.37 stems/m^2 (9,578 stems/ac). The mean and 90% CI slightly decreased with the collection of an additional transect, but the collection of additional data beyond 10 samples would not improve the precision of the estimate of shrub density, which is well above the performance standard.

Evaluation of the data using the one-sample, one-sided sign test found only one transect failed to meet 90% of the performance standard (135 stems/ac) resulting in the probability (P) of 0.0136 of observing a z value less than -2.21. Therefore, under the reverse null hypothesis we conclude the performance standard is met for shrub density (i.e., woody stem stocking) by the belt transect method for 2019 (Table C-3).

3.4 Composition and Diversity

Collectively, 16 perennial grasses dominated the canopy cover in M-VMU-2 with a combined 56% relative canopy cover and James' galleta being most prevalent (Table 3). Four-wing saltbush, rubber rabbitbrush and winterfat dominate the shrub component of the reclamation plant community. Cool-season perennial grasses contribute 32% relative canopy cover to perennial/biennial canopy cover with western wheatgrass and Colorado wildrye being co-dominant. Multiple warm-season perennial grasses contribute almost 24% relative canopy cover to perennial/biennial canopy cover with James' galleta being dominant. Forbs are minor contributors to the cover in M-VMU-2 even though numerous species occurred. The annual forbs kochia (*Kochia scoparia*) and Russian thistle (*Salsola tragus*) were the most prevalent forbs from an absolute cover perspective. However, eight perennial/biennial forbs were recorded in M-VMU-2 with scarlet globemallow (*Sphaeralcea coccinea*), flatspine stickseed (*Lappula occidentalis*) and purple aster (*Machaeranthera canescens*) dominating the perennial/biennial forb canopy cover component.

Diversity is assessed through comparing the relative cover of various life-forms, based on their duration to the perennial/biennial cover of the vegetation management unit. In this context, relative cover is the average percent cover of a perennial/biennial species divided by the mean perennial/biennial cover of the sampling unit. Relative canopy cover of individual species contributing to perennial cover are listed in Table 3.

The diversity standard for cool-season grasses is achieved by several species that exceed 1% relative cover including western wheatgrass (9.40%), Colorado wildrye (9.09%) and thickspike wheatgrass (3.28%; *Elymus lanceolatus ssp. lanceolatus*).

The diversity standard for warm-season grasses requires a minimum of 2 species with 1% relative cover each. Numerous warm-season perennial grasses were recorded including purple threeawn (*Aristida purpurea*), buffalograss (*Bouteloua dactyloides*), blue grama (*B. gracilis*), saltgrass (Distichlis spicata), James' galleta, and tumblegrass (*Schedonnardus paniculatus*). The top three warm-season perennial grasses encountered had relative covers of 22.26% for James' galleta, 0.99% for blue grama and 0.36% for buffalograss. Thus, the warm-season grass standard was not achieved in M-VMU-2. Multiple factors may contribute to the reduced cover of warm-season perennial grasses in this region and reclamation plant community including reclamation seed mixes

emphasizing cool-season grasses, fall planting, growing-season drought in prior years and continued grazing pressure from trespass horses. With respect to 2019, we believe that the above-average winter precipitation followed by exceptionally droughty conditions during the early monsoon rainfall period probably contributed to higher cover for cool-season grasses relative to the warm-season perennial grasses (Figure 2).

The diversity standard for forbs requires a minimum of three non-annual forb taxa combining to contribute at least 1% relative cover. The combined relative cover of eight non-annual forbs is 3.52%, dominated by the native perennial forb, scarlet globemallow (0.80%) and two native monocarpic forbs, flatspine stickseed (0.75%) and purple aster (0.73%). Additional forbs contributing to the diversity standard are Palmer's penstemon (0.52%, *Penstemon palmeri*), Upright prairie coneflower (0.45%, *Ratibida columnifera*), blazingstar species (0.25, *Mentzelia spp.*), horseweed (0.02%, *Conyza canadensis*) and showy goldeneye (<0.01%, *Heliomeris multiflora*). Based on 2019 sampling, the combined relative cover for eight non-annual forbs is greater than 1%, meeting the diversity standard for forbs on M-VMU-2 reclamation.

The diversity standard for shrubs requires two species with a minimum relative cover of 1 percent for each species. The diversity standard for shrubs is achieved by four-wing saltbush (21.78%), rubber rabbitbrush (9.69%), winterfat (6.33%) and shadscale saltbush (1.06%, *Atriplex confertifolia*).

Based on the 2019 vegetation monitoring, 100 different plant species were present within the reclamation areas of M-VMU-2 (Table 3). We encountered 45 forbs, 23 grasses and 32 shrubs, trees and cacti. Of the 45 forbs, 17 are considered annuals whereas the remaining 28 have variable durations or are purely perennial. Of the 23 grasses, 12 are cool-season perennials, eight are warm-season perennials and three are cool-season annuals. Cacti (one species) and trees (four species) were rare on the reclamation, while shrubs and subshrubs were more commonly observed (28 species).

During the 2019 monitoring program, we infrequently encountered four Class C noxious weeds (NMDA 2016) on M-VMU-2. Class C noxious weeds are generally widespread in the state and managed at the local level based on feasibility of control and level of infestation. The only noxious weed recorded in the quadrats was cheatgrass (*Bromus tectorum*) with a mean canopy cover of 0.07%. Cheatgrass was not used in the assessment of revegetation success. Other noxious weeds observed on M-VMU-2 were musk thistle (*Carduus nutans*), Russian olive (*Elaeagnus angustifolia*) and saltcedar (*Tamarix ramosissima*). The contribution of these species to the vegetation community is insignificant with densities much lower than native rangeland beyond the permit boundary. CMI continues to monitor for noxious weeds and actively controls them through husbandry practices that include annual services for weed control. Further, competition from desirable seeded and native species is expected to inhibit any substantial increase of noxious weeds in the reclamation.

The recruitment of native plants and establishment of seeded species within M-VMU-2 is indicative of ecological succession and the capacity of the site to support a diverse and self-sustaining ecosystem.

4.0 SUMMARY

McKinley Mine's vegetation success standards for the post-mining land uses of grazing and wildlife are based on canopy cover, production, shrub density, and plant diversity. Results of the 2019 vegetation monitoring indicate that the vegetation community in M-VMU-2 is progressing well and is nearly in full compliance with the vegetation success standards. Statistical hypothesis testing was performed on perennial/biennial cover, annual forage production and shrub density data using the one-sample, one-sided sign test. All hypotheses testing used the reverse null hypothesis as recommended in Coal Mine Reclamation Program Vegetation Standards (MMD 1999).

Results of the statistical testing indicate that perennial/biennial canopy cover, annual forage production and shrub density levels in M-VMU-2 exceed their respective technical standards at the 90% level of confidence.

The diversity standards for cool-season grasses, forbs and shrubs were met in M-VMU-2. The diversity parameter for the warm-season grass standard was not met since only one species (a minimum of two needed) exceeded 1% relative cover. The lack of expression of the warm-season grasses may be due to drier summer monsoons over the past several years in combination with relatively wet springs that preferentially favor cool-season grass cover.

Overall, the performance of the vegetation is encouraging considering several growing seasons between 2016 and 2019 with below-average precipitation, a two-year drought in 2017 and 2018 and grazing pressure from feral horses. The performance of the vegetation under these conditions suggests that the plant communities developing on these areas are resilient and capable of sustaining themselves under adverse conditions that are characteristic of this region. While the reclamation in M-VMU-2 is now clearly capable of meeting and sustaining the postmining land use, CMI will evaluate the results of this sampling program to determine what is needed to achieve the revegetation success criteria for warm-season grasses.

5.0 REFERENCES

Bonham, C.D. 1989. Measurements for Terrestrial Vegetation. John Wiley & Sons. New York, NY.

Clark, D.L. 2001. Stabilization of the mean as a demonstration of sample adequacy. American Society for Surface Mining and Reclamation Annual Meeting. Albuquerque, NM. June 3-7, 2001. ASSMR, Lexington, KY.

Daubenmire, R. 1968. Plant communities: A textbook of plant synecology. Harper & Row, Publishers, New York.

Mining and Minerals Division (MMD). 1999. Coal Mine Reclamation Program Vegetation Standards. Santa Fe, NM. April 30.

McDonald, L., and S. Howlin. 2013. Evaluation and comparison of hypothesis testing techniques for bond release application. University of Wyoming, Laramie, WY.

New Mexico Department of Agriculture (NMDA). 2016. New Mexico Noxious Weed List Update. New Mexico State University, Las Cruces, NM.

Sokal, R.R. and F.J. Rohlf. 1981. Biometry (2nd edit.). W. H. Freeman and Co., San Francisco.

Schulz, A. M., R. P. Gibbens, and L. F. DeBano. 1961. Artificial populations for teaching and testing range techniques. J. Range Management. 14:236-242.

Snedecor, G.W. and W.G. Cochran. 1967. Statistical methods applied to experiments in agriculture and biology. 6th ed. Ames, Iowa: Iowa State University Press.

Tables

Table 1: South Mine Seasonal and Annual Precipitation (2015-2019)

Year	Station	Area	Precipitation (inches)													
			January	February	March	April	May	June	July	August	September	October	November	December	Annual Total	Growing Season Total
2015	Tipple	South Shop	2.05	1.59	0.11	0.52	1.64	1.11	2.37	1.62	0.30	1.36	1.31	0.76	14.74	7.56
	Rain 9	9				0.50	1.38	1.22	2.88	1.25	0.22	1.13	0.99			7.45
	Rain 10	10				0.42	1.32	1.11	2.59	1.39	0.30	1.10	0.78			7.13
	Rain 11	11				0.48	1.88	1.02	2.80	1.69	0.26	0.97	1.08			8.13
2016	Tipple	South Shop	0.62	0.22	0.05	1.31	0.80	0.07	1.37	1.74	1.75	0.40	1.57	1.84	11.74	7.04
	Rain 9	9				0.22	0.62	0.45	1.24	0.50	1.05	1.05	0.00			4.08
	Rain 10	10				0.13	0.55	0.20	2.75	0.38	0.99	0.14	0.02			5.00
	Rain 11	11				0.28	0.77	0.64	1.61	0.42	1.09	0.09	0.04			4.81
2017	Tipple	South Shop	1.25	1.64	0.48	0.35	0.77	0.42	2.48	0.90	1.34	0.15	0.09	0.02	9.89	6.26
	Rain 9	9				1.20	1.02	0.01	0.82	1.40	1.64	0.37	0.91			6.09
	Rain 10	10				1.00	0.67	0.08	0.94	1.63	1.36	0.34	0.81			5.68
	Rain 11	11				1.23	1.16	0.05	0.86	2.00	1.85	0.34	0.49			7.15
2018	Tipple	South Shop	0.35	0.79	0.54	0.09	0.29	0.51	2.61	1.34	1.10	1.65	0.19	0.29	9.75	5.94
	Rain 9	9				0.07	0.27	0.25	2.16	0.74	0.67	1.31			5.47	4.16
	Rain 10	10				0.08	0.20	0.27	3.05	1.15	0.92	1.51			7.18	5.67
	Rain 11	11				0.09	0.29	0.26	1.92	1.00	0.89	1.45			5.90	4.45
2019	Tipple	South Shop	1.30	1.81	1.23	0.44	1.77	0.33	0.22	0.05					7.15	2.81
	Rain 9	9				0.16	1.36	0.24	0.46	0.37					2.59	2.59
	Rain 10	10				0.20	1.49	0.37	0.19	0.27					2.52	2.52
	Rain 11	11				0.20	1.50	0.19	0.44	0.20					2.53	2.53
Window Rock, Long-term (029410)			0.72	0.68	0.88	0.61	0.49	0.47	1.75	2.05	1.23	1.14	0.83	0.95	11.80	6.60

Notes:
Long-term averages are from Window Rock, Arizona Station (029410) for 1937 to 1999 (Western Regional Climate Center, 2019).
Growing season total precipitation is the sum of monthly totals between April and September

Table 2: Revegetation Success Standards for the Mining and Minerals Division Permit Area

Vegetative Parameter	Success Standard
Ground Cover	15% live perennial/biennial cover
Productivity	350 air-dry pounds per acre perennial/biennial annual production
Diversity	A minimum of 2 shrub or subshrub taxa contributing at least 1% relative cover each.
	A minimum of 2 perennial warm-season grass taxa contributing at least 1% relative cover each.
	A minimum of 1 perennial cool-season grass contributing at least 1% relative cover.
	A minimum of 3 perennial/biennial forb taxa combining to contribute at least 1% relative cover.
Woody Stem Stocking	150 live woody stems per acre

Notes:
Diversity criteria are assessed through evaluating individual perennial/biennial species relative cover, as agreed upon by MMD and CMI in June 2019. Further, relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit.

Table 3: Vegetation Cover, Density and Production by Species, M-VMU-2, 2019

Scientific Name	Common Name	Code	Mean Vegetation Cover (%)			Mean Density (#/ac)	Mean Annual Production (lbs/ac)
			Canopy	Basal	Relative Canopy[a]		
Cool-Season Grasses							
Annuals							
Bromus arvensis	Field brome	BRAR5	0.75	<0.05	--	2833	9
Bromus tectorum	Cheatgrass	BRTE	0.07	<0.05	--	405	<1
Vulpia octoflora	Sixweeks fescue	VUOC	<0.05	<0.05	--	405	<1
Perennials							
Achnatherum hymenoides	Indian ricegrass	ACHY	0.72	<0.05	2.90	10724	13
Agropyron cristatum	Crested wheatgrass	AGCR	obs	obs	obs	obs	obs
Elymus elymoides	Bottlebrush squirreltail	ELEL	0.19	<0.05	0.77	2428	4
Elymus lanceolatus ssp. lanceolatus	Thickspike wheatgrass	ELLAL	0.82	<0.05	3.28	9308	16
Hesperostipa comata	Needle and thread	HECO26	0.72	<0.05	2.91	7487	10
Hordeum jubatum	Foxtail barley	HOJU	obs	obs	obs	obs	obs
Leymus ambiguus	Colorado wildrye	LEAM	2.26	0.15	9.09	14468	44
Pascopyrum smithii	Western wheatgrass	PASM	2.34	0.12	9.40	24787	75
Pseudoroegneria spicata	Bluebunch wheatgrass	PSSP6	<0.05	<0.05	0.05	3642	8
Schedonorus arundinaceus	Tall fescue	SCAR7	0.10	<0.05	0.40	304	5
Thinopyrum ponticum	Tall wheatgrass	THPO7	0.63	0.05	2.51	3035	24
Hordeae (tribe)	Undifferentiated wheatgrass species	UNKWG	0.24	<0.05	0.96	304	2
Warm-Season Grasses							
Perennials							
Aristida purpurea	Purple threeawn	ARPU	<0.05	<0.05	0.08	101	<1
Bouteloua curtipendula	Sideoats grama	BOCU	obs	obs	obs	obs	obs
Bouteloua dactyloides	Buffalograss	BODA2	0.09	<0.05	0.36	5666	1
Bouteloua gracilis	Blue grama	BOGR2	0.25	0.06	0.99	8701	3
Distichlis spicata	Saltgrass	DISP	<0.05	<0.05	0.02	304	<1
Pleuraphis jamesii	James' galleta	PLJA	5.54	0.66	22.26	59691	163
Schedonnardus paniculatus	Tumblegrass	SCPA	<0.05	<0.05	0.01	101	<1
Sporobolus airoides	Alkali sacaton	SPAI	obs	obs	obs	obs	obs
Forbs							
Annuals							
Alyssum desertorum	Desert madwort	ALDE	obs	obs	obs	obs	obs
Alyssum simplex	Alyssum	ALSI8	obs	obs	obs	obs	obs
Chenopodium incanum	Mealy goosefoot	CHIN2	0.07	<0.05	--	202	<1
Chenopodium leptophyllum	Narrowleaf goosefoot	CHLE4	obs	obs	obs	obs	obs
Chenopodium album	Lambsquarters	CHAL7	obs	obs	obs	obs	obs
Cordylanthus wrightii	Wright's bird's beak	COWR2	<0.05	<0.05	--	101	3
Eriogonum cernuum	Nodding buckwheat	ERCE2	obs	obs	obs	obs	obs
Eriogonum divaricatum	Divergent buckwheat	ERDI5	obs	obs	obs	obs	obs
Helianthus annuus	Common sunflower	HEAN3	obs	obs	obs	obs	obs
Heliomeris longifolia	Longleaf false goldeneye	HELO6	<0.05	<0.05	--	101	<1
Kochia scoparia	Kochia	KOSC	2.23	<0.05	--	4249	48
Lupinus kingii	King's lupine	LUKI	obs	obs	obs	obs	obs
Malacothrix fendleri	Fendler's desertdandelion	MAFE	0.40	<0.05	--	2226	5
Plantago patagonica	Woolly plantain	PLPA2	obs	obs	obs	obs	obs
Polygonum erectum	Erect knotweed	POER2	<0.05	<0.05	--	101	<1
Salsola tragus	Russian thistle	SATR	4.96	<0.05	--	13759	158
Xanthium strumarium	Rough cocklebur	XAST	obs	obs	obs	obs	obs
Perennials/Biennials							
Achillea millefolium	Common yarrow	ACMI2	obs	obs	obs	obs	obs
Calochortus nuttallii	Sego lily	CANU3	obs	obs	obs	obs	obs
Carduus nutans	Musk thistle	CANU4	obs	obs	obs	obs	obs
Chaetopappa ericoides	Rose heath	CHER	obs	obs	obs	obs	obs
Conyza canadensis	Horseweed	COCA	<0.05	<0.05	0.02	101	<1
Descurainia sophia	Flixweed	DESO	obs	obs	obs	obs	obs
Erodium cicutarium	Redstem stork's bill	ERCI6	obs	obs	obs	obs	obs
Grindelia nuda var. aphanactis	Curlytop gumweed	GRNUA	obs	obs	obs	obs	obs
Grindelia squarosa	Curly-cup gumweed	GRSQ	obs	obs	obs	obs	obs
Heliomeris multiflora	Showy goldeneye	HEMU3	<0.05	<0.05	<0.01	101	<1
Ipomopsis multiflora	Manyflowered ipomopsis	IPMU	obs	obs	obs	obs	obs
Lactuca serriola	Prickly lettuce	LASE	obs	obs	obs	obs	obs
Lappula occidentalis	flatspine stickseed	LAOC3	0.19	<0.05	0.75	4654	3
Linum lewisii	Lewis flax	LILE	obs	obs	obs	obs	obs
Machaeranthera canescens	Purple aster	MACA	0.18	<0.05	0.73	1113	6
Machaeranthera tanacetifolia	Tanseyleaf tansyaster	MATA	obs	obs	obs	obs	obs
Medicago sativa	Alfalfa	MESA	obs	obs	obs	obs	obs
Mentzelia Spp.	Blazingstar species	MENTZ	0.06	<0.05	0.25	202	<1

Table 3: Vegetation Cover, Density and Production by Species, M-VMU-2, 2019

Scientific Name	Common Name	Code	Mean Vegetation Cover (%)			Mean Density (#/ac)	Mean Annual Production (lbs/ac)
			Canopy	Basal	Relative Canopy[a]		
Perennials/Biennials (Cont.)							
Penstemon palmeri	Palmer's penstemon	PEPA8	0.13	<0.05	0.52	2833	3
Polygonum aviculare	Prostrate knotweed	POAV	obs	obs	obs	obs	obs
Ratibida columnifera	Upright prairie coneflower	RACO3	0.11	<0.05	0.45	101	2
Sisymbrium altissimum	Tall tumblemustard	SIAL2	obs	obs	obs	obs	obs
Sphaeralcea coccinea	Scarlet globemallow	SPCO	0.20	<0.05	0.80	1518	5
Sphaeralcea emoryi	Emory's globemallow	SPEM	obs	obs	obs	obs	obs
Sphaeralcea grossulariifolia	Gooseberryleaf globemallow	SPGR2	obs	obs	obs	obs	obs
Sphaeralcea hastulata	Spear globemallow	SPHA	obs	obs	obs	obs	obs
Sphaeralcea incana	Gray globemallow	SPIN2	obs	obs	obs	obs	obs
Tragopogon dubius	Yellow salsify	TRDU	obs	obs	obs	obs	obs
Shrubs, Trees and Cacti							
Perennials							
Artemisia frigida	Prairie sagewort	ARFR4	obs	obs	obs	obs	obs
Artemisia ludoviciana	White sagebrush	ARLU	obs	obs	obs	obs	obs
Artemisia tridentata	Big sagebrush	ARTR2	<0.05	<0.05	<0.01	202	<1
Atriplex acanthocarpa	Tubercled saltbush	ATAC	<0.05	<0.05	0.02	202	<1
Atriplex canescens	Four-wing saltbush	ATCA	5.41	0.14	21.78	2630	178
Atriplex confertifolia	Shadscale saltbush	ATCO	0.26	<0.05	1.06	101	23
Atriplex corrugata	Mat saltbush	ATCO4	obs	obs	obs	obs	obs
Atriplex obovata	Mound saltbush	ATOB	obs	obs	obs	obs	obs
Atriplex sp.	Undifferentiated saltbush species	ATRIP	obs	obs	obs	obs	obs
Chrysothamnus viscidiflorus	Yellow rabbitbrush	CHVI	obs	obs	obs	obs	obs
Elaeagnus angustifolia	Russian olive	ELAN	obs	obs	obs	obs	obs
Ephedra trifurca	Longleaf jointfir	EPTR	obs	obs	obs	obs	obs
Ephedra viridis	Mormon tea	EPVI	0.18	<0.05	0.70	405	4
Ericameria nauseosa	Rubber rabbitbrush	ERNA	2.41	0.14	9.69	1012	161
Eriogonum leptophyllum	Slenderleaf buckwheat	ERLE10	obs	obs	obs	obs	obs
Fallugia paradoxa	Apache plume	FAPA	obs	obs	obs	obs	obs
Gutierrezia sarothrae	Broom snakeweed	GUSA	0.22	<0.05	0.90	1922	2
Heterotheca villosa	Hairy false goldenaster	HEVI	obs	obs	obs	obs	obs
Juniperus monosperma	Oneseed juniper	JUMO	obs	obs	obs	obs	obs
Krascheninnikovia lanata	Winterfat	KRLA	1.57	0.06	6.33	5868	30
Lycium torreyi	Torrey wolfberry	LYTO	obs	obs	obs	obs	obs
Opuntia polyacantha	Plains pricklypear	OPPO	obs	obs	obs	obs	obs
Purshia mexicana	Mexican cliffrose	PUME	obs	obs	obs	obs	obs
Purshia tridentata	Antelope bitterbrush	PUTR2	obs	obs	obs	obs	obs
Rhus trilobata	Skunkbush sumac	RHTR	obs	obs	obs	obs	obs
Rosa woodsii	Woods' rose	ROWO	obs	obs	obs	obs	obs
Salix exigua	Narrowleaf willow	SAEX	obs	obs	obs	obs	obs
Sarcobatus vermiculatus	Greasewood	SAVE4	obs	obs	obs	obs	obs
Senecio flaccidus	Threadleaf groundsel	SEFL	obs	obs	obs	obs	obs
Tamarix ramosissima	Saltcedar	TARA	obs	obs	obs	obs	obs
Tetradymia canescens	Gray horsebrush	TECA	obs	obs	obs	obs	obs
Yucca baccata	Banana yucca	YUBA	obs	obs	obs	obs	obs
Cover Components							
Perennial/Biennial Vegetation Cover			24.9	1.6			
Total Vegetation Cover			31.1	1.6			
Rock			3.5	4.0			
Litter			6.5	21.4			
Bare Soil			58.9	73.1			

Notes:

[a] = relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit

-- = this parameter is not calculated for this attribute

#/ac = number of plants per acre

lbs/ac = air-dry forage pounds per acre

obs = observed on vegetation management unit during monitoring, but not recorded in the quadrats

Ps Pathway or growing season for the grasses is from Allred (2005)

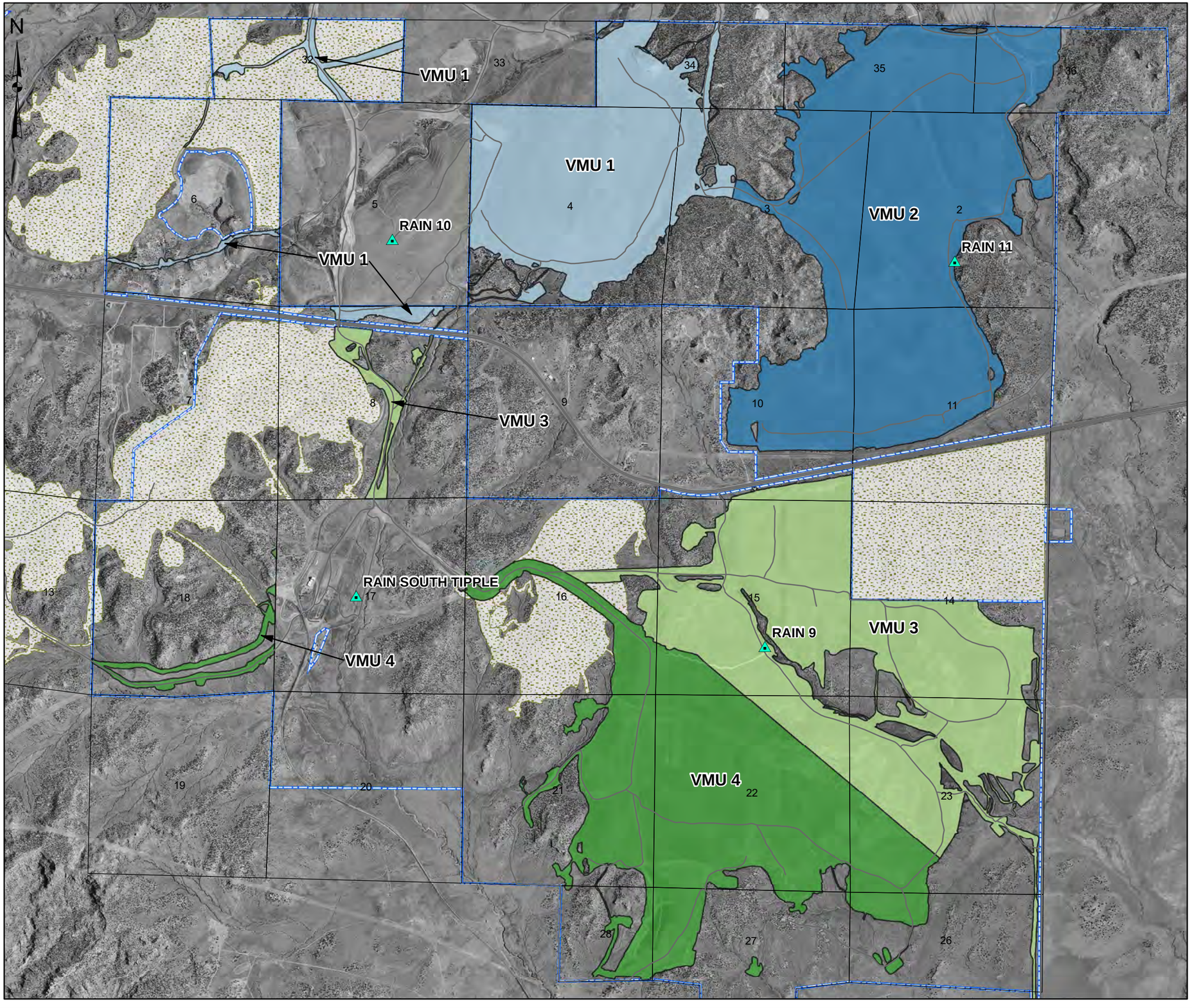
Duration for plants is from the USDA Plants Database

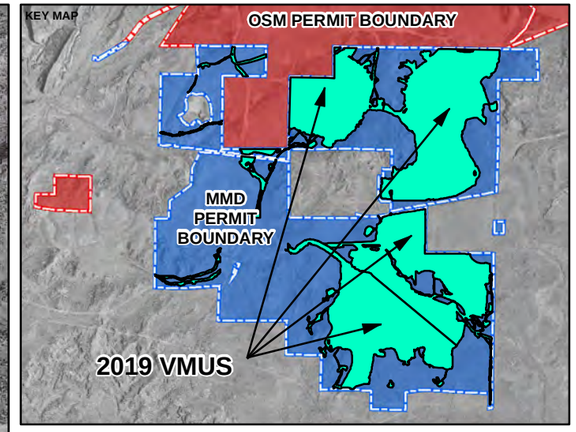
Table 4: Summary Statistics for M-VMU-2, 2019

		Technical Standard
Total Vegetation Canopy Cover (%)		
Mean	31.1	None
Standard Deviation	21.9	
90% Confidence Interval	5.7	
Nmin[1]	144	
Probability within true mean[2]	0.67	
Perennial/Biennial Canopy Cover (%)		
Mean	24.9	15.0
Standard Deviation	23.4	
90% Confidence Interval	6.1	
Nmin[1]	258	
Probability within true mean[2]	0.72	
Basal Cover (%)		
Mean	1.57	None
Standard Deviation	1.22	
90% Confidence Interval	0.32	
Nmin[1]	168	
Probability within true mean[2]	0.69	
Annual Forage Production (lbs/ac)		
Mean	787	350
Standard Deviation	1,120	
90% Confidence Interval	291	
Nmin[1]	576	
Probability within true mean[2]	0.81	
Annual Total Production (lbs/ac)		
Mean	1,011	None
Standard Deviation	1,142	
90% Confidence Interval	297	
Nmin[1]	363	
Probability within true mean[2]	0.76	
Shrub Density (stems/acre) from Quadrats		
Mean	12,342	150
Standard Deviation	26,731	
90% Confidence Interval	6,952	
Nmin[1]	1,332	
Probability within true mean[2]	0.91	
Shrub Density (stems/acre) from Belt Transect		
Mean	2,671	150
Standard Deviation	2,567	
90% Confidence Interval	1,335	
Nmin[1]	310	
Probability within true mean[2]	0.62	

Notes:
1 Minimum number of samples required to obtain 90 percent probability that the sample mean is within 10 percent of the population mean
2 Probability the true value of the mean is within 10 percent of the mean for the sample size

Figures





LEGEND

- Rain Gauges
- Two-tracks, Roads and Highways
- PLSS - Sections
- MMD VMU 1 (~ 838 acres)
- MMD VMU 2 (~ 1,518 acres)
- MMD VMU 3 (~ 1,275 acres)
- MMD VMU 4 (~ 1,238 acres)
- Liability Release
- MMD Permit Boundary

0 3,000 6,000 Feet

1 inch = 2,667 feet

NOTE(S)

1. VMU = VEGETATION MANAGEMENT UNIT FOR VEGETATION SAMPLING PLAN

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE - NEW MEXICO, WEST, FIPS 3003 (FEET)

CLIENT

CHEVRON MINING, INC. - MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE - MMD PERMIT PHASE III BOND RELEASE
2019 VEGETATION SAMPLING PROGRAM

TITLE

GENERAL OVERVIEW OF MCKINLEY SOUTH MINE AREA VEGETATION MANAGEMENT UNITS (VMU), 2019

CONSULTANT

GOLDER

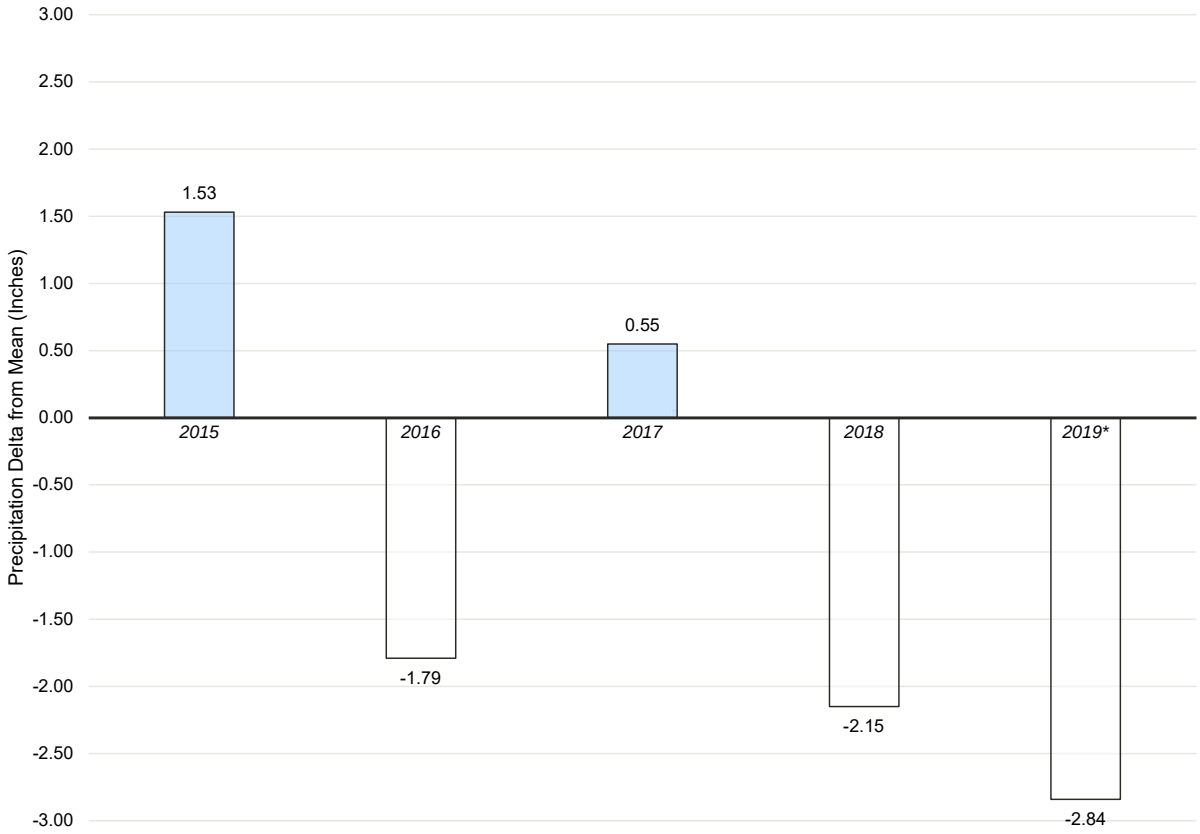
YYYY-MM-DD	2020-01-22
DESIGNED	DSW
PREPARED	DSW
REVIEWED	DR
APPROVED	FR

PROJECT NO.	CONTROL	REV.	FIGURE
133-8105207	000610	--	1

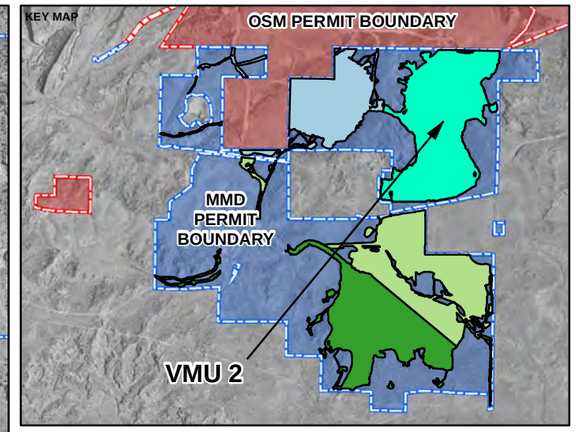
PATH: W:\McKinley\MXD\MMD_2019\133105207_000810_Fig1.mxd PRINTED ON: 2020-01-24 AT: 10:09:59 AM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Figure 2: Departure of Growing Season Precipitation from Long-Term Seasonal Mean at Window Rock; Rain 11 Gage



Notes:
Long-term averages are from Window Rock, Arizona Station (029410) for 1937 to 1999 (Western Regional Climate Center, 2019).
Growing season total precipitation is the sum of monthly totals between April and September
* The Seasonal mean for 2019 is from April through August



LEGEND

- Vegetation Transect - Sampled
- Vegetation Transect - Additional Alternate
- Two-tracks, Roads and Highways
- PLSS - Sections
- MMD VMU 2 (~ 1,518 acres)
- Liability Release
- MMD Permit Boundary

TRANSECT LABEL EXPLANATION: M-VMU-1-T1P

- MMD Permit Area
- Vegetation Management Unit (VMU-#)
- Transect Number
- Primary (P) or Alternate (A)

0 1,200 2,400 Feet

1 inch = 1,167 feet

NOTE(S)

1. KEY MAP SCALE IS DIFFERENT FROM OVERVIEW OF VMUS

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE - NEW MEXICO, WEST, FIPS 3003 (FEET)
2. ORTHO SOURCE: CHEVRON, 2013

CLIENT

CHEVRON MINING, INC. - MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE - MMD PERMIT PHASE III BOND RELEASE
2019 VEGETATION SAMPLING PROGRAM

TITLE

VEGETATION MONITORING TRANSECTS, 2019
VEGETATION MANAGEMENT UNIT 2

CONSULTANT

GOLDER

YYYY-MM-DD	2020-01-22
DESIGNED	DSW
PREPARED	DSW
REVIEWED	DR
APPROVED	FR

PROJECT NO.	CONTROL	REV.	FIGURE
133-8105207	000612	--	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

0

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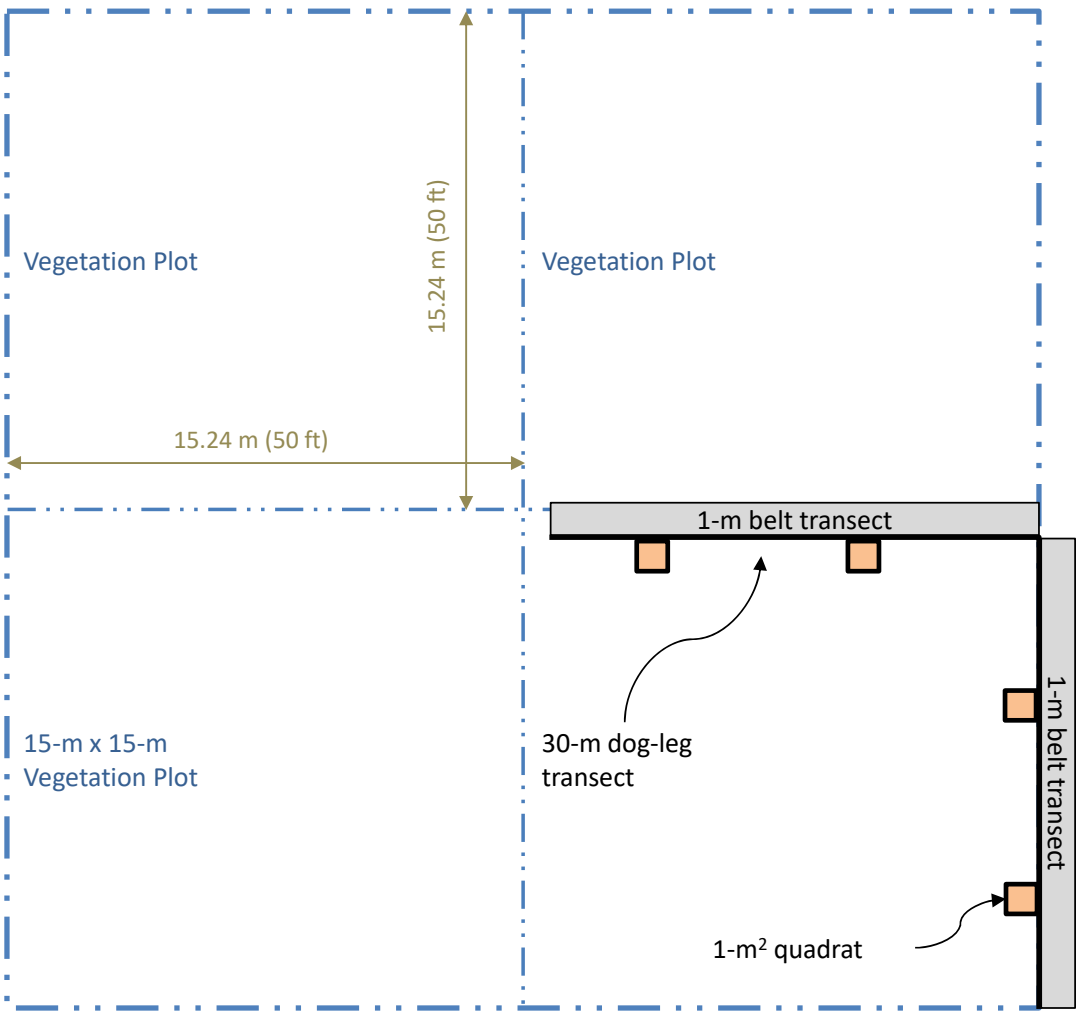
Figure 4: Vegetation Plot, Transect and Quadrat Layout



not to scale

Figure 5: Typical Grass-Shrubland Vegetation in M-VMU-2, September 2019

Figure 6: Stabilization of the Mean for Perennial/Biennial Cover - M-VMU-2

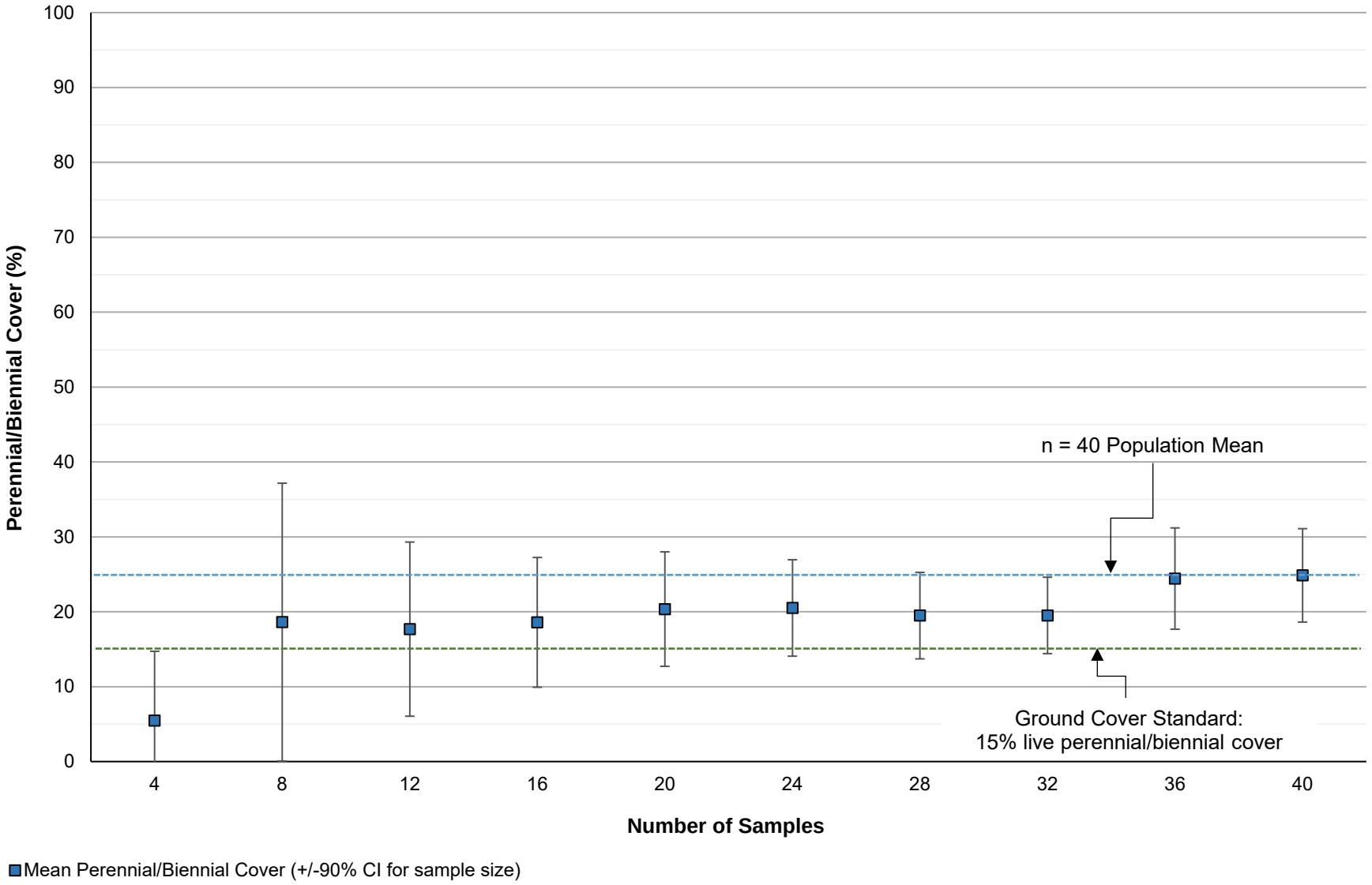


Figure 7: Stabilization of the Mean for Annual Forage Production - M-VMU-2

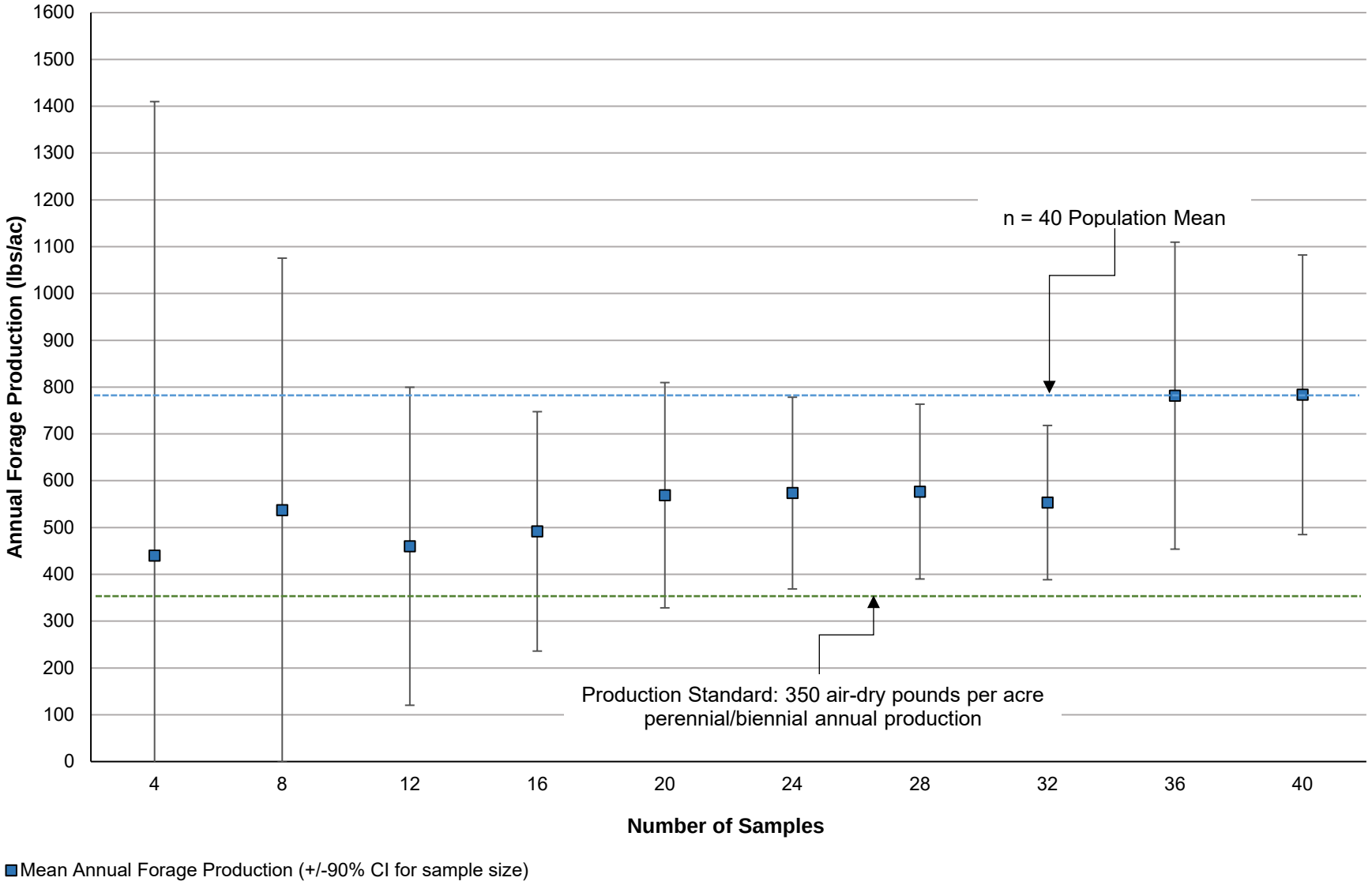
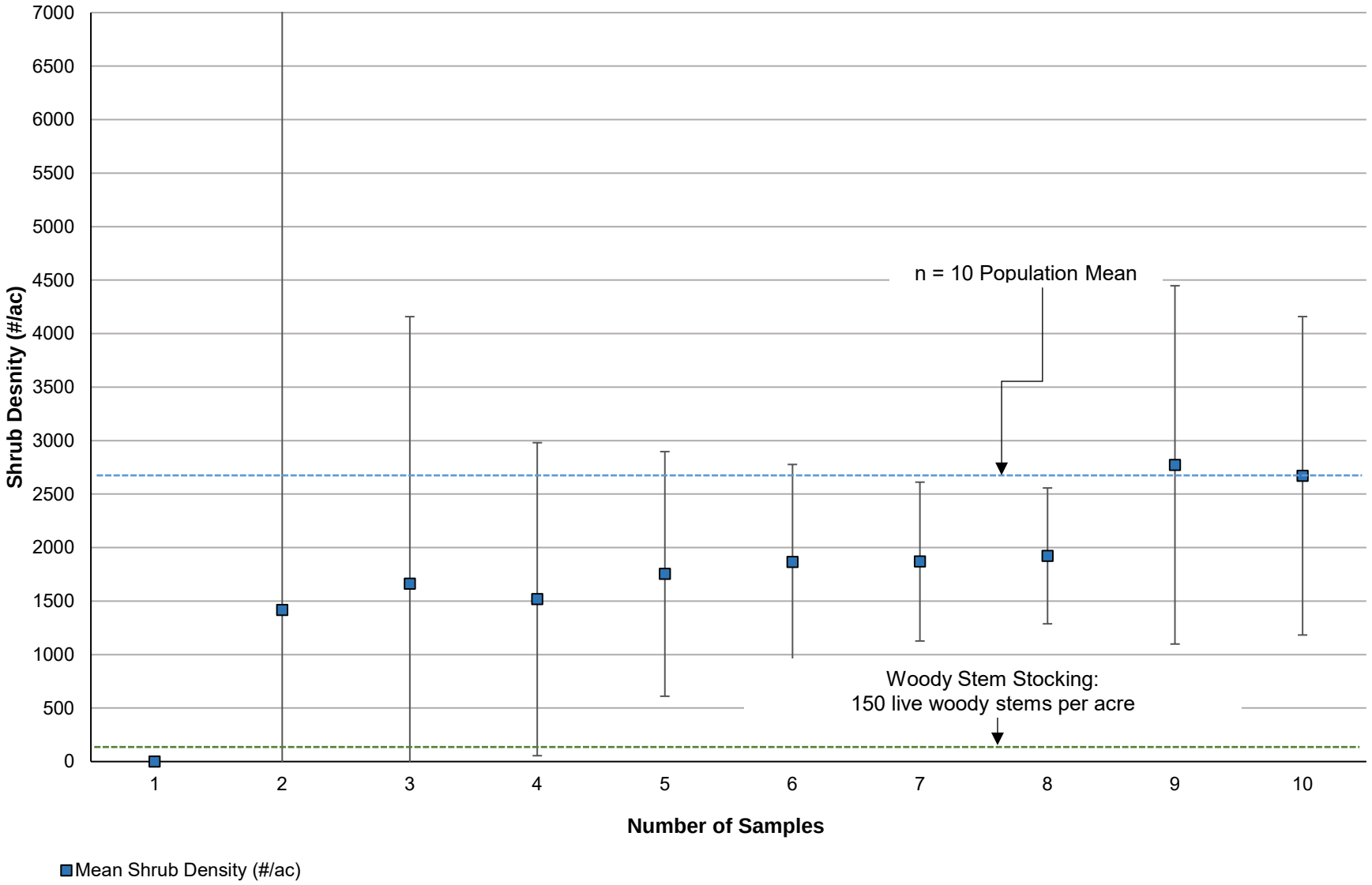


Figure 8: Stabilization of the Mean for Shrub Density - M-VMU-2



APPENDIX A

Vegetation Data Summary

N

M-VMU-2-T1P

M-VMU-2-T6P

M-VMU-2-T9P

M-VMU-2-T10P

M-VMU-2-T5P

M-VMU-2-T7P

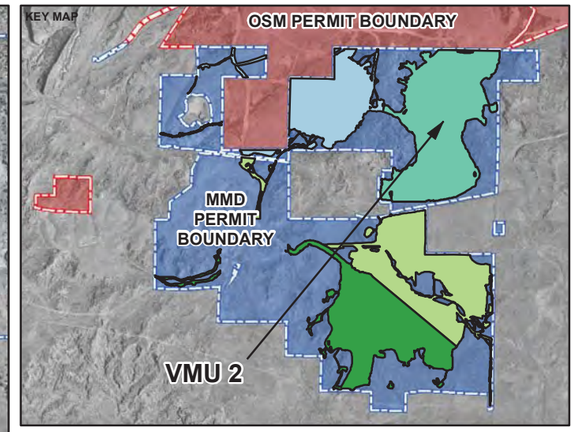
M-VMU-2-T3P

M-VMU-2-T2P

M-VMU-2-T4P

M-VMU-2-T8P

KEY MAP



LEGEND

- Transects for 2019 MMD PHIII Vegetation Sampling
- Two-tracks, Roads and Highways
- MMD VMU 2 (~ 1,518 acres)
- Liability Release
- MMD Permit Boundary

Seeded Areas by End_Year

- < 1997
- 1997 to 2013
- 2014 to 2018

TRANSECT LABEL EXPLANATION:

M-VMU-1-T1P

- MMD Permit Area
- Vegetation Management Unit (VMU-#)
- Transect Number
- Primary (P) or Alternate (A)

0 1,200 2,400 Feet

1 inch = 1,167 feet

NOTE(S)

1. SEEDING AREA ATTRIBUTES WERE CLASSIFIED MANUALLY BASED ON SEED MIX VARIATIONS (<1997 AND 1997 TO 2013) WITH AN ADDITONAL CLASS FOR RECENT SEEDING (2014 TO 2018)

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE - NEW MEXICO, WEST, FIPS 3003 (FEET)
2. ORTHO SOURCE: CHEVRON, 2013

CLIENT

CHEVRON MINING, INC. - MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE - MMD PERMIT PHASE III BOND RELEASE
2019 VEGETATION SAMPLING PROGRAM

TITLE

SEEDED AREA CLASSIFICATION (YEAR) AND TRANSECT LOCATIONS SAMPLED VEGETATION MANAGEMENT UNIT 2 (M-VMU-2), 2019

CONSULTANT

GOLDER

YYYY-MM-DD	2019-12-13
DESIGNED	DSW
PREPARED	DSW
REVIEWED	DR
APPROVED	FR

PROJECT NO.	CONTROL	REV.	FIGURE
133-8105206	000622	--	A-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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Table A-1: M-VMU-2 Canopy Cover Data

Transect	M-VMU-2-T1P				M-VMU-2-T2P				M-VMU-2-T3P				M-VMU-2-T4P				M-VMU-2-T5P				M-VMU-2-T6P				M-VMU-2-T7P				M-VMU-2-T8P				M-VMU-2-T9P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	1.00	2.00	T	20.00	5.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.00	--	--	--	--	--
BRTE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	2.30	0.40	--	--	--	--	--
VUOC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--
Perennials																																								
ACHY	--	--	--	--	--	T	--	--	0.75	0.20	0.05	13.00	0.10	--	--	0.20	T	0.10	3.30	0.20	--	--	--	--	--	--	--	--	0.50	--	--	--	2.30	--	T	8.00	--	--	--	--
ARPU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.75	--	--	--	--	--	--	--	--	--	--
BODA2	--	--	--	--	--	--	--	--	--	--	--	3.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOGR2	--	--	--	--	--	--	0.75	--	--	--	--	2.85	--	--	--	--	--	--	--	--	--	--	--	--	4.90	--	1.30	--	--	--	--	--	--	--	--	--	--	--	--
DISP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.20	--	--	--	--	--	--
ELEL	1.00	2.00	3.90	--	--	--	--	--	0.30	--	--	0.10	--	--	--	0.05	--	--	--	0.20	--	--	--	--	--	--	0.10	--	--	--	--	--	--	--	--	0.05	--	--	--
ELLAL	--	--	--	--	4.75	2.90	0.40	2.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.00	17.00	4.40	--	0.20	--	--	--	--	--	--	--
HECO26	--	--	--	--	--	0.25	--	0.20	1.20	--	9.75	--	--	7.80	0.50	--	1.00	--	--	--	6.00	--	--	--	--	--	--	1.75	--	--	--	--	0.50	--	--	--	--	--	--
LEAM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16.00	4.00	29.50	--	--	--	--	--	--	--	--	16.80	--	5.50	--	6.80	1.75	7.50	2.50
PASM	--	--	--	--	7.25	11.75	10.10	0.10	--	9.80	--	--	--	--	--	--	1.00	--	--	7.00	0.20	--	--	--	0.30	--	--	7.50	8.00	--	4.50	--	5.50	7.50	6.50	5.25	1.25	--	--	--
PLJA	--	15.00	--	--	--	0.40	--	--	18.50	--	--	--	33.50	--	12.00	24.00	--	--	--	0.20	4.00	--	6.25	--	--	--	1.60	--	0.35	1.80	14.00	25.00	--	--	--	5.80	--	19.00	12.00	28.00
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SCAR7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.00	--	--	--	--	--
SCPA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	--	--	--	--	--	--
THPO7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25.00	--	--	--	--	--	--	--	--	--	--	--
UNKWG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Forbs																																								
Annuals																																								
CHIN2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.80	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COWR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.30	--	--	--	--	--	--
HELO6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
KOSC	48.00	1.50	27.00	12.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAFE	--	--	--	--	--	--	--	--	10.50	1.00	0.30	2.80	--	--	--	--	--	--	--	--	--	--	0.50	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
POER2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SATR	22.00	12.00	40.00	58.00	--	--	1.50	0.80	5.50	15.00	0.15	6.00	0.15	1.70	0.10	--	--	--	0.30	--	9.00	15.25	--	--	3.00	0.05	5.20	1.10	--	--	--	--	--	--	T	1.40	--	--	--	--
Annual/Biennial																																								
COCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LAOC3	--	--	--	--	1.75	0.30	1.10	0.80	--	--	--	--	--	--	--	--	--	--	--	--	T	0.70	--	--	1.00	--	--	--	1.25	--	--	--	0.50	--	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.90	--	2.10	--	--	--	--	--	4.20	--	--	--	--	0.05	--	--
Perennials																																								
HEMU3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MENTZ	--	--	--	--	--	--	--	--	2.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.50	--	--	--	--	--	--
SPCO	--	--	--	--	--	--	--	--	--	--	--	--	--	1.00	1.25	--	--	--	--	--	--	--	--	--	5.25	--	--	--	0.50	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
ARTR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--
ATAC	--	--	--	--	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ATCA	--	--	--	--	--	--	--	34.00	0.10	--	--	--	--	--	--	--	--	--	35.00	--	36.00	--	--	--	0.20	--	--	--	--	--	0.50	--	5.50	--	78.00	--	0.10	--	27.00	--
ATCO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPVI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	8.50	--	0.50	0.10	--	--	--	--	0.10	--	0.05	--	--	--	--	--	--	87.00	--	0.05	--	--	--	--
GUSA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.50	--	--	--	--	--	--	--	--	--	0.05	--	--	--	6.40	--	1.00	--	--	--	--	--
KRLA	--	--	--	--	--	--	--	48.00	--	--	--	0.50	--	2.60	2.00	--	--	--	--	--	0.70	--	--	--	0.05	T	0.20	0.05	--	--	--	--	--	--	--	--	0.85	--	8.00	--
Cover Components																																								
Perennial/Biennial Vegetation Cover	1.0	17.0	3.9	0.0	13.8	15.9	12.4	85.1	23.4	10.0	9.8	20.1	33.6	11.4	15.8	24.4	10.5	35.6	10.5	53.2	10.9	16.7	20.8	36.7	12.7	0.0	5.4	35.3	28.4	6.2	19.0	25.2	46.5	98.5	91.1	19.1	9.0	20.9	54.5	30.5
Total Vegetation Cover	71.0	30.5	60.0	67.0	13.5	15.5	13.0	68.0	35.8	25.0	10.3	27.5	33.8	12.8	14.0	25.0	12.5	35.5	29.4	42.5	22.0	31.3	21.0	36.0	15.3	0.1	10.5	36.0	28.0	6.2	18.5	25.2	46.0	93.0	90.0	20.5	8.7	20.8	42.0	30.5
Rock	0.6	1.3	0.8	0.5	5.5	5.0	0.5	0.0	1.3	17.5	11.5	6.5	1.5	6.3	1.0	0.4	17.0	0.1	1.4	0.3	1.5	0.8	1.0	1.0	2.3	6.8	5.5	0.3	0.3	22.1	1.0	6.0	0.0	0.0	0.0	0.0	10.3	2.5	0.8	1.0
Litter	0.1	0.5	5.2	0.8	3.0	3.0	2.5	27.0	0.8	1.5	3.8	7.3	1.0	2.0	1.0	3.5	15.0	12.0	0.6	9.2	11.0	1.5	10.3	20.0	2.3	3.1	4.8	7.5	6.8	2.7	1.2	24.0	32.5	2.0	8.5	0.8	7.1	6.3	6.0	0.5
Base Soil	28.4	67.8	34.0	31.7	78.0	76.5	84.0	5.0	62.2	56.0	74.5	58.8	63.8	79.0	84.0	71.1	55.5	52.5	68.6	48.0	65.5	66.5	67.8	43.0	80.3	90.1	79.3	56.3	65.0	69.0	79.3	44.8	21.5	5.0	1.5	78.8	74.0	70.5	51.2	68.0

Notes:
Species codes defined in Table 3

Table A-2: M-VMU-2 Basal Cover Data

Transect	M-VMU-2-T1P				M-VMU-2-T2P				M-VMU-2-T3P				M-VMU-2-T4P				M-VMU-2-T5P				M-VMU-2-T6P				M-VMU-2-T7P				M-VMU-2-T8P				M-VMU-2-T9P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	T	T	T	0.30	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--
BRTE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	T	T	--	--	--	--	--
VUOC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--
Perennials																																								
ACHY	--	--	--	--	--	T	--	--	T	T	T	0.25	0.05	--	--	T	T	T	0.05	T	--	--	--	--	--	--	--	--	0.10	--	--	--	0.05	--	T	0.05	--	--	--	--
ARPU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	--	--	--	--	--	--	--	--	--	--
BODA2	--	--	--	--	--	--	--	--	--	--	--	0.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOGR2	--	--	--	--	--	--	0.20	--	--	--	--	0.65	--	--	--	--	--	--	--	--	--	--	--	--	1.40	--	0.30	--	--	--	--	--	--	--	--	--	--	--	--
DISP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--
ELEL	T	0.10	0.20	--	--	--	--	--	T	--	--	T	--	--	--	T	--	--	--	T	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	T	--	--
ELLAL	--	--	--	--	0.25	0.20	T	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	0.50	0.35	--	T	--	--	--	--	--	--	--
HECO26	--	--	--	--	--	0.05	--	T	0.05	--	0.60	--	--	0.40	T	--	T	--	--	--	0.20	--	--	--	--	--	--	0.10	--	--	--	--	T	--	--	--	--	--	--
LEAM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.40	0.25	1.90	--	--	--	--	--	--	--	--	0.55	--	0.05	--	0.60	0.20	0.50	0.50
PASM	--	--	--	--	0.40	0.70	0.40	T	--	1.00	--	--	--	--	--	--	T	--	--	0.20	T	--	--	--	T	--	--	0.30	0.50	--	0.20	--	0.30	0.20	0.50	0.05	T	--	--	--
PLJA	--	2.00	--	--	--	0.05	--	--	2.20	--	--	--	4.20	--	1.50	2.50	--	--	--	T	0.45	--	0.80	--	--	--	0.20	--	0.05	0.30	3.50	2.50	--	--	--	0.75	--	1.50	1.00	2.80
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SCAR7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	--	--	--	--	--
SCPA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--
THPO7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.10	--	--	--	--	--	--	--	--	--	--	--
UNKWG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Forbs																																								
Annuals																																								
CHIN2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COWR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--
HELO6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
KOSC	0.05	T	0.10	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAFE	--	--	--	--	--	--	--	--	0.40	T	T	0.05	--	--	--	--	--	--	--	--	--	--	T	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
POER2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SATR	T	T	0.20	0.10	--	--	T	T	T	0.05	T	0.05	T	T	T	--	--	--	T	--	T	0.05	--	--	0.05	T	0.05	0.05	--	--	--	--	--	--	T	T	--	--	--	--
Annual/Biennial																																								
COCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LAOC3	--	--	--	--	0.05	T	T	T	--	--	--	--	--	--	--	--	--	--	--	--	T	T	--	--	T	--	--	--	T	--	--	--	T	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	0.10	--	--	--	--	--	T	--	--	--	--	T	--	--
Perennials																																								
HEMU3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MENTZ	--	--	--	--	--	--	--	--	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--
SPCO	--	--	--	--	--	--	--	--	--	--	--	--	--	T	T	--	--	--	--	--	--	--	--	--	0.20	--	--	--	T	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
ARTR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--
ATAC	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ATCA	--	--	--	--	--	--	--	3.00	T	--	--	--	--	--	--	--	--	0.50	--	0.80	--	--	--	T	T	--	--	--	--	--	T	--	0.10	--	0.68	--	T	--	0.30	--
ATCO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPVI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	0.75	--	T	T	--	--	--	--	T	--	T	--	--	--	--	--	--	4.50	--	T	--	--	--	--
GUSA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	T	--	--	--	0.05	--	T	--	--	--	--
KRLA	--	--	--	--	--	--	--	1.50	--	--	--	0.05	--	0.30	0.05	--	--	--	--	--	T	--	--	--	T	T	0.05	T	--	--	--	--	--	--	--	--	0.20	--	0.25	--
Cover Components																																								
Total Vegetation Cover	0.1	2.1	0.5	0.2	0.7	1.1	0.6	4.5	2.8	1.1	0.6	2.0	4.3	0.7	1.6	2.5	0.8	0.5	0.4	1.4	0.7	1.5	1.4	2.1	1.7	0.0	0.7	2.7	1.3	0.7	3.7	2.5	1.1	4.8	1.2	0.9	0.8	1.7	2.1	3.3
Rock	1.0	1.5	2.5	1.5	6.0	5.1	0.5	0.0	1.4	23.5	12.2	6.6	1.8	6.8	1.5	0.4	18.0	0.1	1.5	0.6	1.7	0.9	1.1	1.1	2.8	6.8	5.6	0.4	0.3	22.4	2.0	6.5	0.0	0.5	0.0	0.1	10.3	2.5	0.8	1.0
Litter	0.1	2.0	18.5	2.2	9.3	8.9	2.5	90.0	25.3	6.5	9.5	29.3	21.0	5.5	3.5	13.8	25.0	24.0	4.6	32.0	29.0	4.0	21.0	39.0	7.4	3.1	6.3	28.0	31.3	4.7	4.0	26.0	69.0	86.0	86.3	0.8	14.2	24.3	10.2	27.5
Base Soil	98.9	94.4	78.5	96.2	84.0	85.0	96.4	5.5	70.7	69.0	77.7	62.3	73.0	87.0	93.5	83.4	56.3	75.5	93.5	66.0	68.7	93.7	76.6	57.8	88.3	90.1	87.5	68.9	67.2	72.3	90.3	65.0	30.0	8.7	12.5	98.3	74.8	71.5	87.0	68.2

Notes:
Species codes defined in Table 3

Table A-3: M-VMU-2 Frequency Data

Transect	M-VMU-2-T1P				M-VMU-2-T2P				M-VMU-2-T3P				M-VMU-2-T4P				M-VMU-2-T5P				M-VMU-2-T6P				M-VMU-2-T7P				M-VMU-2-T8P				M-VMU-2-T9P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	5	5	2	7	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--
BRTE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--	--
VUOC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--
Perennials																																								
ACHY	--	--	--	--	--	2	--	--	16	1	1	32	6	--	--	5	1	3	19	7	--	--	--	--	--	--	--	--	3	--	--	--	6	--	2	2	--	--	--	--
ARPU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--
BODA2	--	--	--	--	--	--	--	--	--	--	--	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOGR2	--	--	--	--	--	--	17	--	--	--	--	17	--	--	--	--	--	--	--	--	--	--	--	--	42	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--
DISP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--	--
ELEL	1	7	6	--	--	--	--	--	1	--	--	1	--	--	--	1	--	--	--	1	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	5	--	--	--
ELLAL	--	--	--	--	13	6	2	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5	33	27	--	1	--	--	--	--	--	--	--	--
HECO26	--	--	--	--	--	1	--	8	8	--	26	--	--	4	1	--	2	--	--	--	20	--	--	--	--	--	--	3	--	--	--	--	1	--	--	--	--	--	--	--	--
LEAM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	26	4	50	--	--	--	--	--	--	--	--	4	--	5	--	19	9	17	9
PASM	--	--	--	--	19	46	30	2	--	23	--	--	--	--	--	--	2	--	--	2	4	--	--	--	2	--	--	42	23	--	7	--	16	17	5	3	2	--	--	--
PLJA	--	4	--	--	--	2	--	--	36	--	--	--	19	--	9	92	--	--	--	1	20	--	8	--	--	--	7	--	3	6	78	95	--	--	--	1	--	63	36	110
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SCAR7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--
SCPA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
THPO7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--	--	--	--	--
UNKWG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Forbs																																								
Annuals																																								
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HELO6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
KOSC	15	5	14	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAFE	--	--	--	--	--	--	--	--	8	5	1	6	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
POER2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SATR	7	3	26	17	--	--	3	8	2	5	4	5	2	3	1	--	--	--	3	--	1	1	--	--	24	1	5	9	--	--	--	--	--	--	3	3	--	--	--	--
Annual/Biennial																																								
COCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LAOC3	--	--	--	--	8	3	12	6	--	--	--	--	--	--	--	--	--	--	--	--	2	3	--	--	1	--	--	--	8	--	--	--	3	--	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6	--	2	--	--	--	--	--	2	--	--	--	--	1	--	--
Perennials																																								
HEMU3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MENTZ	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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SPCO	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--	--	--	--	--	10	--	--	--	3	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
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ATAC	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ATCA	--	--	--	--	--	--	--	2	1	--	--	--	--	--	--	--	--	8	--	3	--	--	--	1	1	--	--	--	--	--	1	--	5	--	1	--	1	--	2	--
ATCO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPVI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	1	--	1	1	--	--	--	--	1	--	1	--	--	--	--	--	--	3	--	1	--	--	--	--
GUSA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	--	--	--	--	--	1	--	--	--	12	--	2	--	--	--	--	--
KRLA	--	--	--	--	--	--	--	36	--	--	--	11	--	2	1	--	--	--	--	--	1	--	--	--	2	1	1	1	--	--	--	--	--	--	--	--	1	--	1	--

Notes:
Species codes defined in Table 3

Table A-4: M-VMU-2 Air-dry Aboveground Annual Production Data

Transect	M-VMU-2-T1P				M-VMU-2-T2P				M-VMU-2-T3P				M-VMU-2-T4P				M-VMU-2-T5P				M-VMU-2-T6P				M-VMU-2-T7P				M-VMU-2-T8P				M-VMU-2-T9P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses (g/m^2)																																								
Non-Forage																																								
BRAR5	--	--	--	--	--	--	--	--	--	--	--	--	0.41	--	--	3.11	2.41	0.31	24.71	5.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.51	--	--	--	--	--
BRTE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.51	--	--	--	--	--	--	--	--	--	--	--	1.91	0.31	--	--	--	--	--	--
VUOC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.41	--	--	--	--	--	--	--	--	--	--	--
Forage																																								
ACHY	--	--	--	--	--	0.41	--	--	2.01	0.31	0.21	31.31	0.41	--	--	0.91	0.31	0.06	4.81	0.61	--	--	--	--	--	--	--	--	1.81	--	--	--	2.31	--	0.41	14.61	--	--	--	--
ARPU	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.71	--	--	--	--	--	--	--	--	--	--	--
BODA2	--	--	--	--	--	--	--	--	--	--	--	4.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BOGR2	--	--	--	--	--	--	0.91	--	--	--	--	4.51	--	--	--	--	--	--	--	--	--	--	--	--	7.21	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--
DISP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.71	--	--	--	--	--	--	--
ELEL	1.51	5.21	7.81	--	--	--	--	--	1.31	--	--	0.41	--	--	--	0.51	--	--	--	0.51	--	--	--	--	--	--	0.21	--	--	--	--	--	--	--	--	--	--	0.41	--	--
ELLAL	--	--	--	--	6.31	3.81	0.71	2.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.31	51.31	6.91	--	0.61	--	--	--	--	--	--	--	--
HECO26	--	--	--	--	--	0.81	--	1.01	1.11	--	11.21	--	--	18.21	0.71	--	2.01	--	--	--	8.71	--	--	--	--	--	--	2.51	--	--	--	--	0.51	--	--	--	--	--	--	--
LEAM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	39.31	9.91	55.01	--	--	--	--	--	--	--	--	38.61	--	18.01	--	12.51	3.71	12.61	7.71
PASM	--	--	--	--	9.01	21.61	17.61	3.41	--	36.81	--	--	--	--	--	--	0.81	--	--	13.21	0.05	--	--	--	100.71	--	--	17.51	17.21	--	4.81	--	11.81	27.51	36.41	18.71	0.81	--	--	--
PLJA	--	182.61	--	--	--	0.81	--	--	37.31	--	--	--	116.71	--	37.91	63.71	--	--	--	0.41	12.71	--	17.71	--	--	--	2.41	--	0.41	5.21	44.71	37.21	--	--	--	25.11	--	44.81	17.21	85.71
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SCAR7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.71	--	--	--	--	--
SCPA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.21	--	--	--	--	--	--	--
THPO7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	106.61	--	--	--	--	--	--	--	--	--	--	--	--
UNKWG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Forbs (g/m^2)																																								
Non-forage																																								
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COWR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12.71	--	--	--	--	--	--	--
HELO6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
KOSC	106.11	5.81	67.51	36.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAFE	--	--	--	--	--	--	--	--	9.81	2.11	0.81	6.31	--	--	--	--	--	--	--	--	--	--	0.61	0.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
POER2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SATR	30.91	39.21	178.12	255.72	--	--	2.71	1.31	17.71	42.61	1.41	18.61	0.51	2.31	0.51	--	--	--	0.81	--	14.51	65.71	--	--	11.41	0.41	14.41	2.41	--	--	--	--	--	--	0.91	5.11	--	--	--	--
Forage																																								
COCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HEMU3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LAOC3	--	--	--	--	2.01	0.71	4.91	0.61	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.51	--	--	1.21	--	--	--	0.91	--	--	--	2.01	--	--	--	--	--	--	--
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.81	--	6.51	--	--	--	--	--	17.81	--	--	--	--	0.81	--	--
MENTZ	--	--	--	--	--	--	--	--	2.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.91	--	--	--	--	--	--	--
SPCO	--	--	--	--	--	--	--	--	--	--	--	--	--	1.01	4.01	--	--	--	--	--	--	--	--	--	16.31	--	--	--	0.91	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti (g/m^2)																																								
Forage																																								
ARTR2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	--	--	--	--	--
ATAC	--	--	--	--	--	0.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ATCA	--	--	--	--	--	--	--	126.51	0.21	--	--	--	--	--	--	--	--	162.12	--	119.51	--	--	--	0.71	0.81	--	--	--	--	--	1.21	--	16.81	--	216.42	--	0.41	--	152.21	--
ATCO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	102.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPVI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	--	--	--	--	0.41	--	--	--	--	--	--	--	--	--	--	27.31	--	1.61	0.11	--	--	--	--	0.21	--	0.21	--	--	--	--	--	--	689.35	--	0.41	--	--	--	--
GUSA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.31	--	--	--	--	--	--	--	--	--	0.31	--	--	--	4.51	--	0.91	--	--	--	--	--
KRLA	--	--	--	--	--	--	--	88.01	--	--	--	2.91	--	9.61	8.01	--	--	--	--	--	3.21	--	--	--	0.41	0.21	1.21	0.01	--	--	--	--	--	--	--	--	0.91	--	19.11	--
Total Above Ground Biomass (g/m^2)																																								
Non-forage	137.02	45.02	245.63	291.83	0.00	0.00	2.71	1.31	27.52	44.72	2.22	24.92	0.92	2.31	2.92	3.62	2.41	0.31	25.52	5.81	17.53	65.71	0.61	0.61	11.41	0.46	14.41	2.41	0.41	0.00	0.00	0.00	14.62	0.31	4.42	5.11	0.00	0.00	0.00	0.00
Forage	1.51	187.82	7.81	0.00	17.33	29.18	24.14	222.06	44.46	37.12	11.42	44.05	117.12	28.83	50.64	66.64	30.44	198.19	22.44	142.57	24.68	40.82	129.73	73.53	129.68	0.21	10.60	127.95	74.58	12.12	50.73	37.82	103.21	737.57	272.16	58.84	14.64	49.74	201.14	93.42
Total Production	138.53	232.84	253.44	291.83	17.33	29.18	26.85	223.37	71.98	81.84	13.64	68.97	118.04	31.14	53.56	70.26	32.85	198.50	47.96	148.38	42.21	106.53	130.34	74.14	141.09	0.67	25.01	130.36	74.99	12.12	50.73	37.82	117.83	737.88	276.58	63.95	14.64	49.74	201.14	93.42
Total Above Ground Biomass (lbs/ac)																																								
Non-forage	1222	402	2191	2604	0	0	24	12	246	399	20	222	8	21	26	32	22	3	228	52	156	586	5	5	102	4	129	22	4	0	0	0	130	3	39	46	0	0	0	0
Forage	13	1676	70	0	155	260	215	1981	397	331	102	393	1045	257	452	595	272	1768	200	1272	220	364	1157	656	1157	2	95	1142	665	108	453	337	921	6580	2428	525	131	444	1795	833
Total Production	1236	2077	2261	2604	155	260	240	1993	642	730	122	615	1053	278	478	627	293	1771	428	1324	377	950	1163	661	1259	6	223	1163	669	108	453	337	1051	6583	2468	571	131	444	1795	833

Notes:
Species codes defined in Table 3
Non-forage and forage determintations are based on the permit (e.g. plants of perennial and/or biennial duration are forage and plants of annual duration are non-forage; noxious weeds are non-forage)

Table A-5: M-VMU-2 Shrub Belt Transect Data

Transect	M-VMU-2-T1P	M-VMU-2-T2P	M-VMU-2-T3P	M-VMU-2-T4P	M-VMU-2-T5P	M-VMU-2-T6P	M-VMU-2-T7P	M-VMU-2-T8P	M-VMU-2-T9P	M-VMU-2-T10P
Shrubs, Trees and Cacti										
ARTR2	--	--	--	--	3	1	--	--	--	--
ATAC	--	5	--	--	--	--	--	--	--	--
ATCA	--	1	1	3	5	4	3	4	35	10
ATCO	--	--	1	--	1	--	--	--	1	--
ATCO4	--	--	1	--	--	--	4	--	--	--
ATOB	--	--	5	--	--	2	--	--	--	--
ATRIP	--	--	--	--	--	3	--	4	--	--
EPTR	--	--	--	--	--	--	--	--	--	2
EPVI	--	--	--	--	--	3	--	--	--	--
ERNA	--	--	--	--	7	--	1	2	16	--
GUSA	--	--	--	--	4	--	1	--	2	--
KRLA	--	15	8	5	--	5	5	5	17	1
PUME	--	--	--	--	--	--	--	1	--	--
PUTR2	--	--	--	--	--	--	--	1	--	--

Notes:

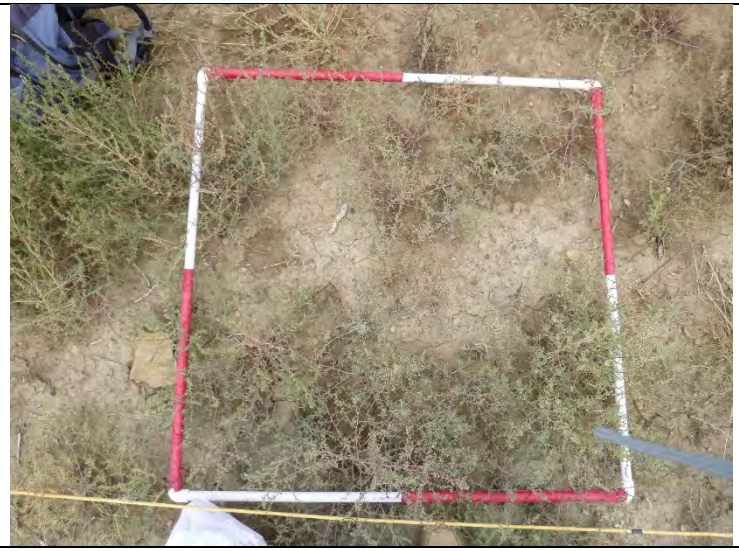
Code	Scientific Name	Common Name
ARTR2	*Artemisia tridentata*	Big sagebrush
ATAC	*Atriplex acanthocarpa*	Tubercled saltbush
ATCA	*Atriplex canescens*	Four-wing saltbush
ATCO	*Atriplex confertifolia*	Shadscale saltbush
ATCO4	*Atriplex corrugata*	Mat saltbush
ATOB	*Atriplex obovata*	Mound saltbush
ATRIP	*Atriplex sp.*	Undifferentiated saltbush species
EPTR	*Ephedra trifurca*	Longleaf jointfir
EPVI	*Ephedra viridis*	Mormon tea
ERNA	*Ericameria nauseosa*	Rubber rabbitbrush
GUSA	*Gutierrezia sarothrae*	Broom snakeweed
KRLA	*Krascheninnikovia lanata*	Winterfat
PUME	*Purshia mexicana*	Mexican cliffrose
PUTR2	*Purshia tridentata*	Antelope bitterbrush

APPENDIX B

Quadrat Photographs

M-VMU-2-T1P

Q1



Q2

No Photo

Q3

Q4

M-VMU-2-T2P

Q1

Q2

Q3

Q4

M-VMU-2-T3P	
No Photo	
Q1	Q2
	
Q3	Q4

M-VMU-2-T4P

Q1

Q2

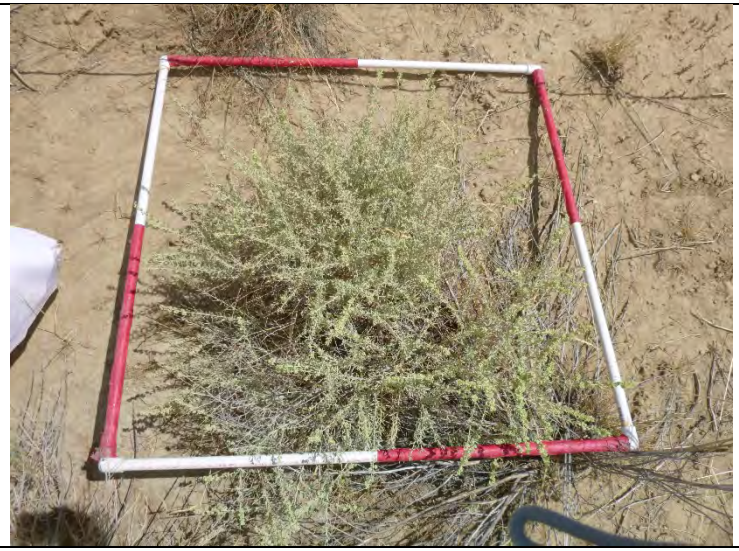
No Photo

Q3

Q4

M-VMU-2-T5P

Q1



Q2

Q3

Q4

M-VMU-2-T6P

Q1

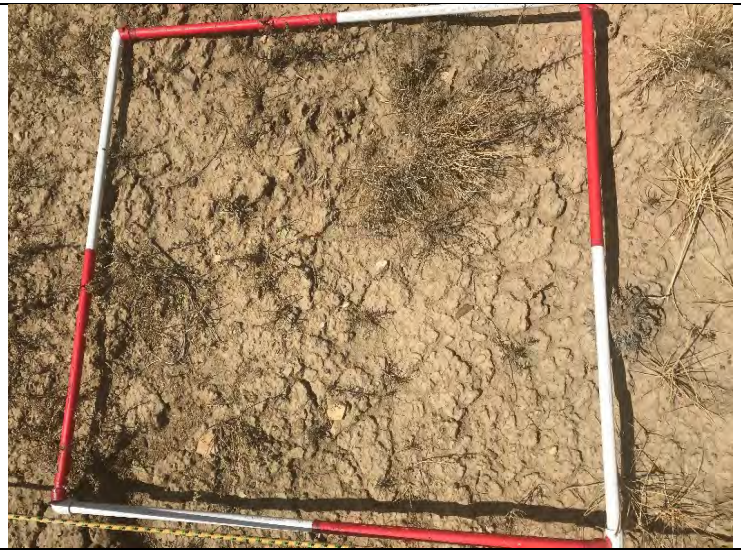
Q2

Q3

No Photo

Q4

M-VMU-2-T7P



Q1

Q2

Q3

Q4

M-VMU-2-T8P

Q1

Q2

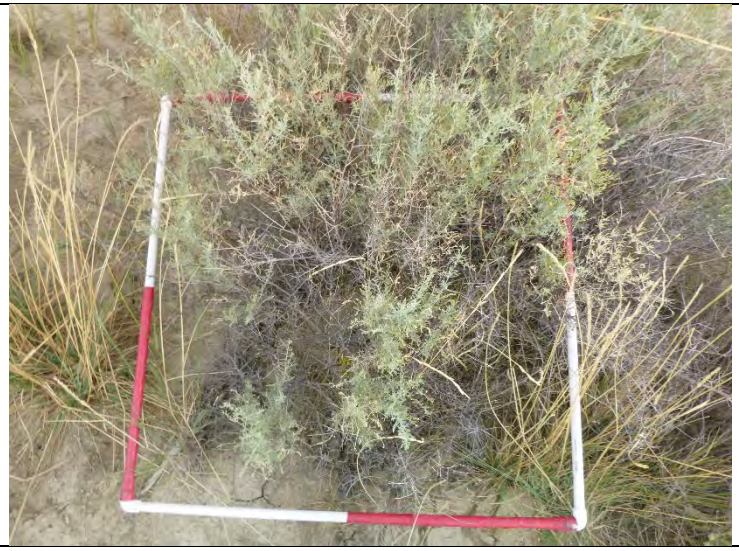
Q3

Q4

M-VMU-2-T9P

Q1

Q2



Q3

Q4

M-VMU-2-T10P

Q1

Q2

Q3

Q4

APPENDIX C

Vegetation Statistical Analysis

Figure C-1: Pernnial/Biennial Cover Descriptive Statistics and Normality

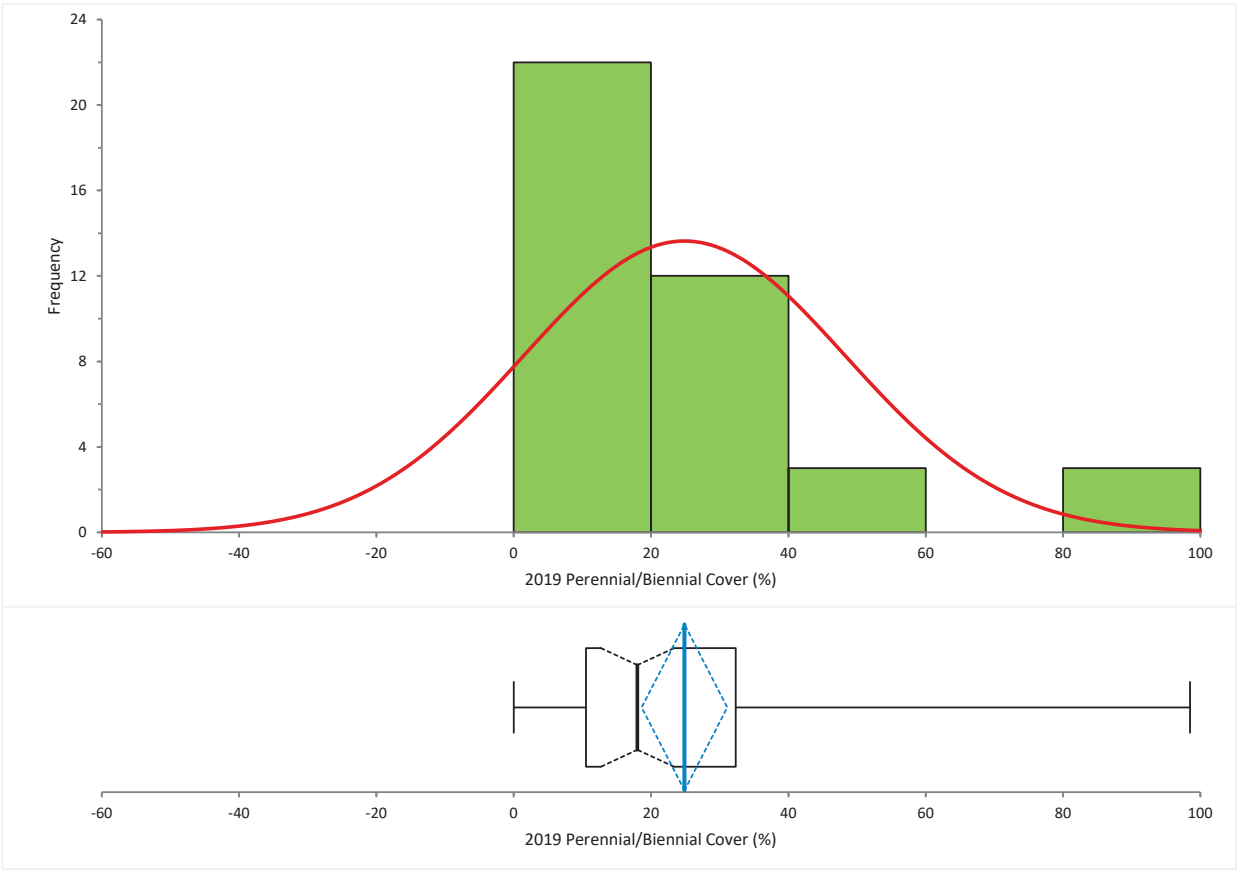
Distribution: 2019 Perennial/Biennial Cover

Analyse-it v5.40.2

M-VMU2_HypTest-RAWDATA-2019 A1:F41
Filter: No filter

Last updated 24 January 2020 at 14:01 by Ward, Dustin

Descriptives



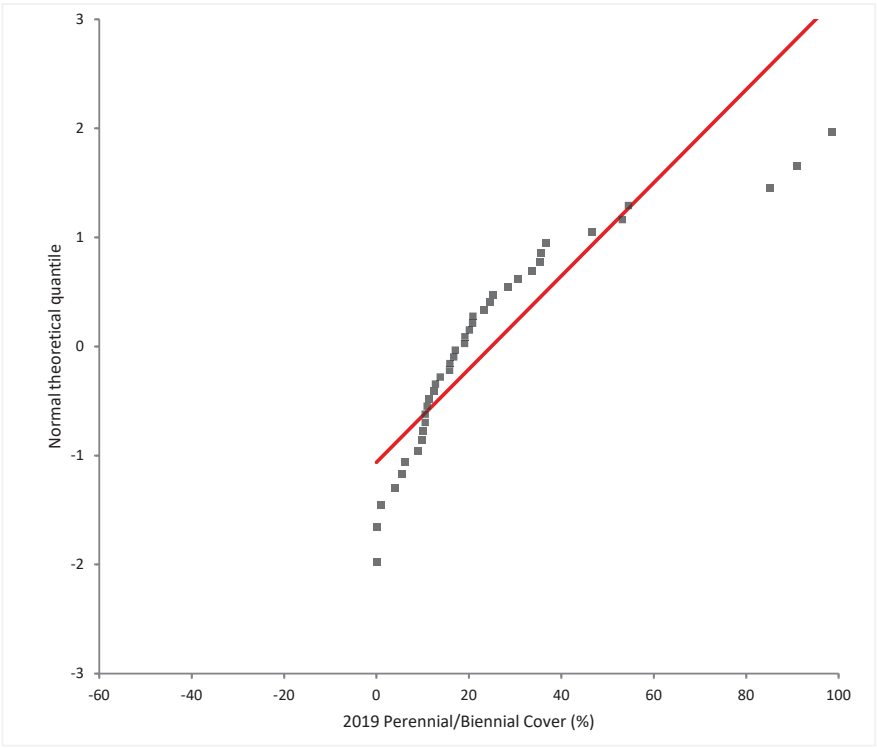
N	40

	Mean	90% CI	Mean SE	SD	Skewness	Kurtosis
2019 Perennial/Biennial Cover (%)	24.86	18.62 to 31.10	3.701	23.41	1.8	3.27

GOLDER

Figure C-1: Pernnial/Biennial Cover Descriptive Statistics and Normality

Normality



Shapiro-Wilk test

W statistic	0.80
p-value	<0.0001 [1]

H0: F(Y) = N(μ, σ)
The distribution of the population is normal with unspecified mean and standard deviation.
H1: F(Y) ≠ N(μ, σ)
The distribution of the population is not normal.

[1] Reject the null hypothesis in favour of the alternative hypothesis at the 10% significance level.

GOLDER

Figure C-2: Annual Forage Production Descriptive Statistics and Normality

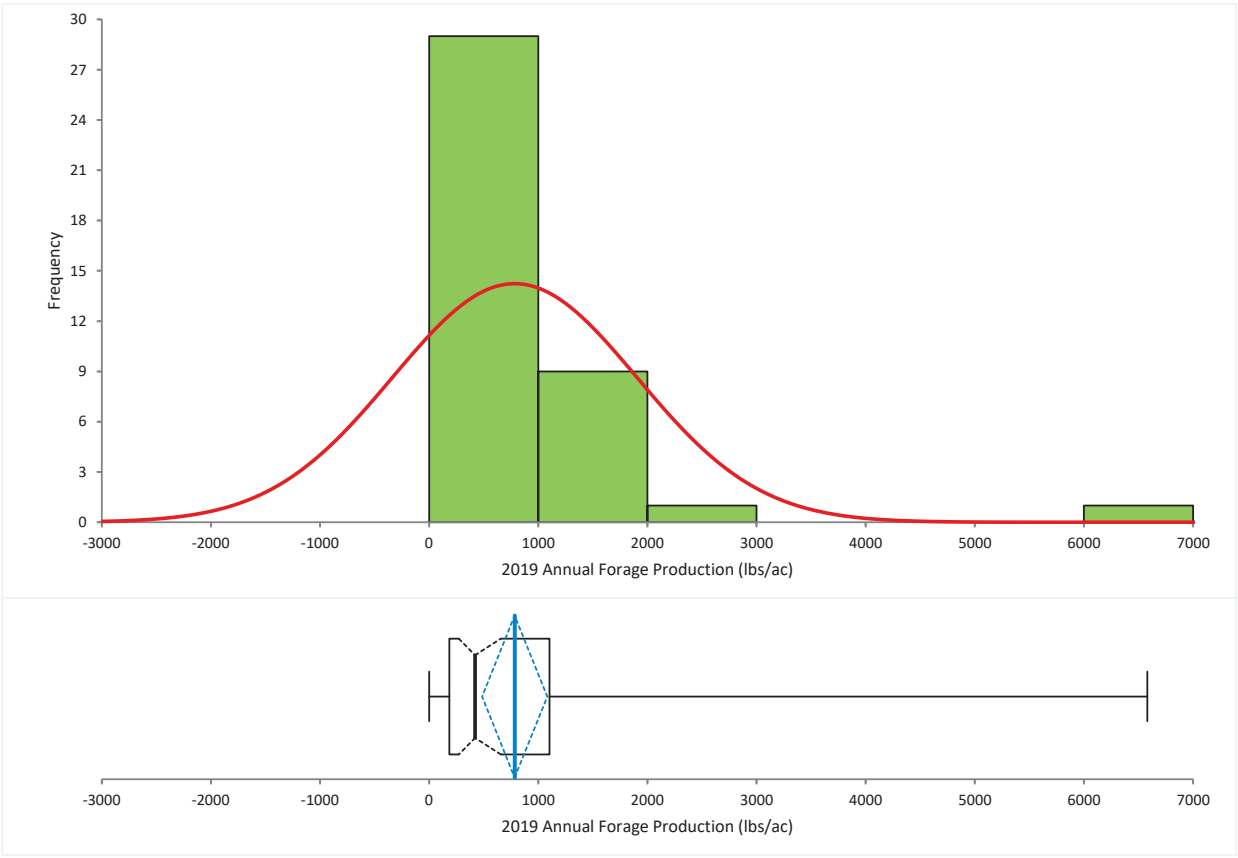
Distribution: 2019 Annual Forage Production

Analyse-it v5.40.2

M-VMU2_HypTest-RAWDATA-2019 A1:F41
Filter: No filter

Last updated 24 January 2020 at 14:02 by Ward, Dustin

Descriptives



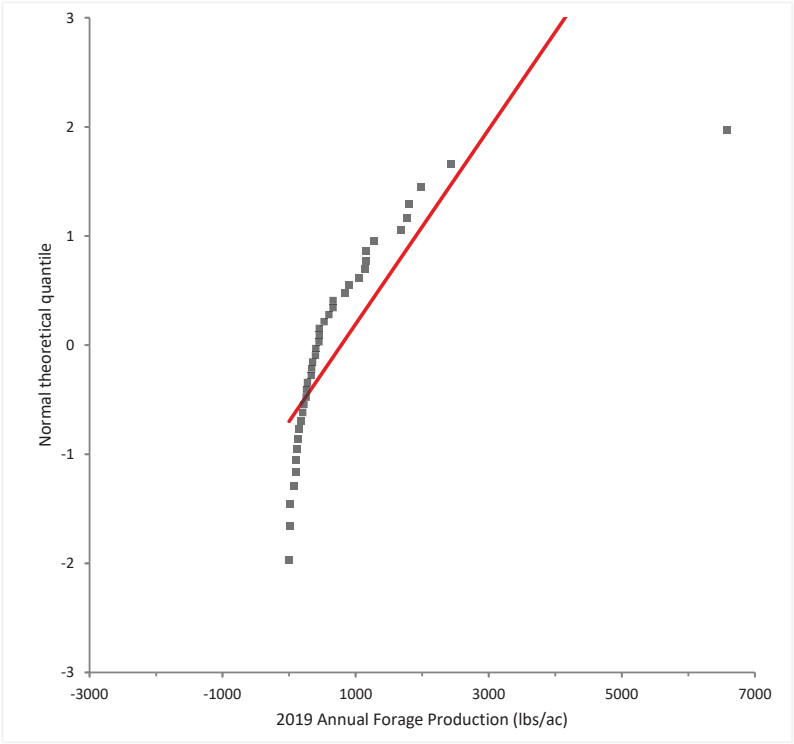
N	40

	Mean	90% CI	Mean SE	SD	Skewness	Kurtosis
2019 Annual Forage Production (lbs/ac)	7.835726E+02	4.848910E+02 to 1.082254E+03	1.772723E+02	1.121168E+03	3.8	18.42

GOLDER

Figure C-2: Annual Forage Production Descriptive Statistics and Normality

Normality



Shapiro-Wilk test

W statistic	0.60
p-value	<0.0001 [1]

H0: F(Y) = N(μ, σ)
The distribution of the population is normal with unspecified mean and standard deviation.
H1: F(Y) ≠ N(μ, σ)
The distribution of the population is not normal.

[1] Reject the null hypothesis in favour of the alternative hypothesis at the 10% significance level.

GOLDER

Figure C-3: Shrub Density by the Belt Transect Method Descriptive Statistics and Normality

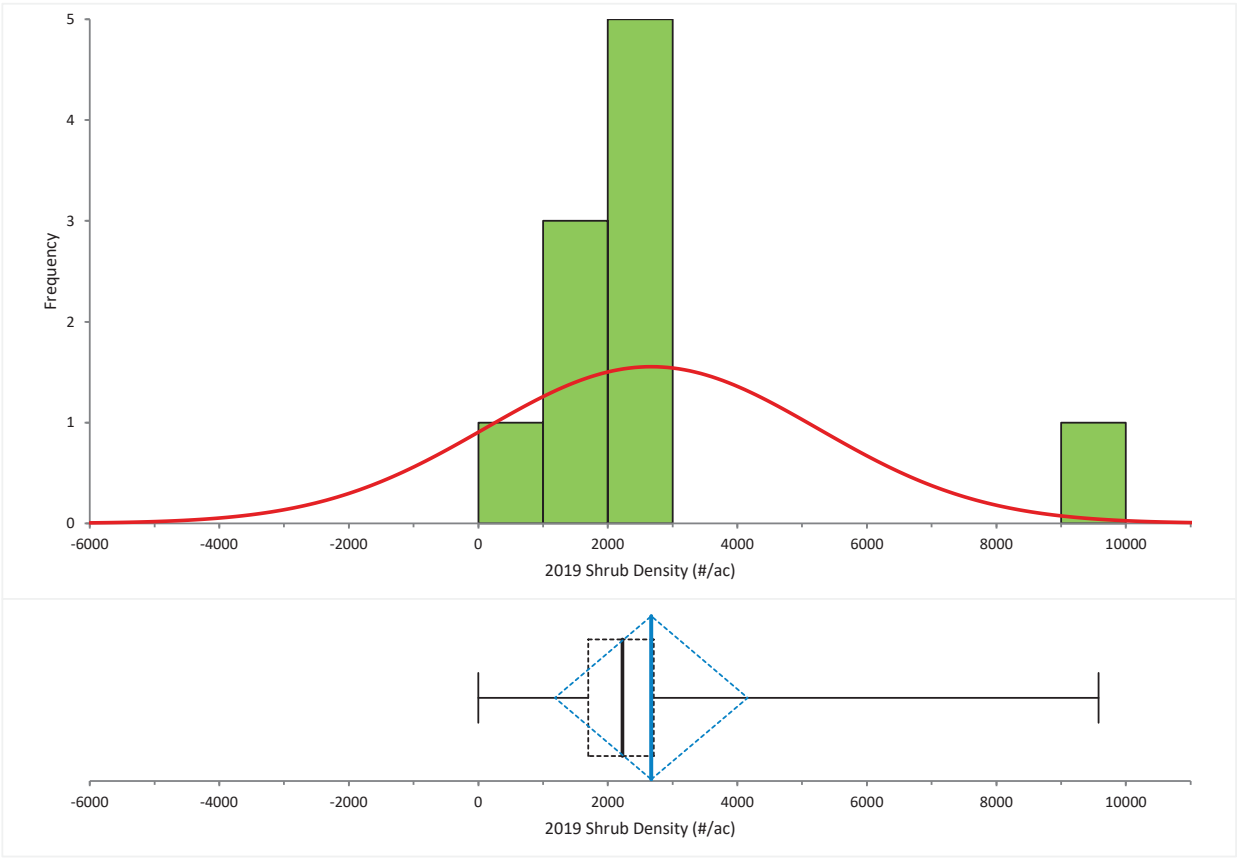
Distribution: 2019 Shrub Density

Analyse-it v5.40.2

M-VMU2_HypTest-RAWDATA-2019 A1:F41
Filter: No filter

Last updated 24 January 2020 at 14:03 by Ward, Dustin

Descriptives

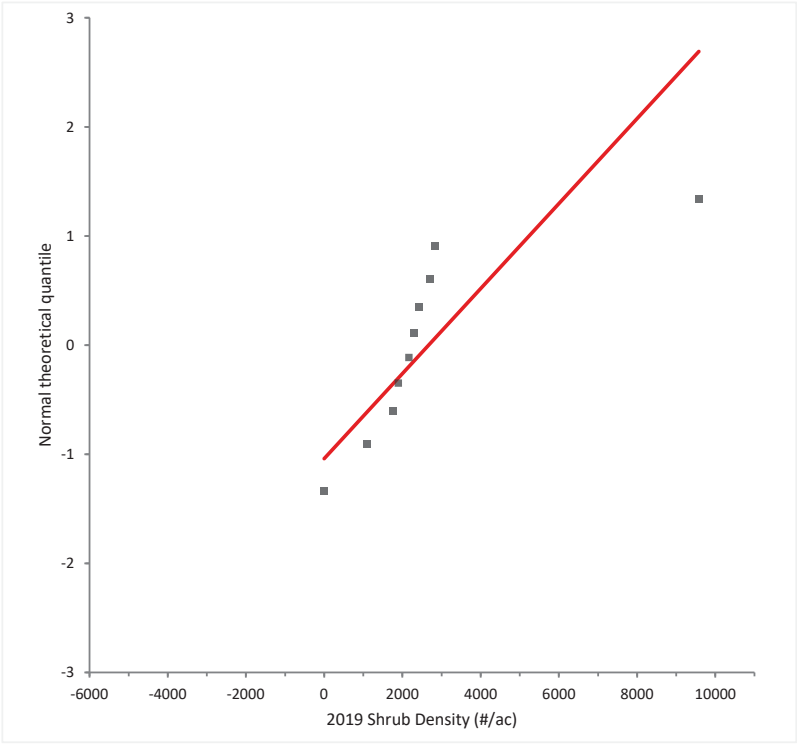


	N
	10

	Mean	90% CI	Mean SE	SD	Skewness	Kurtosis
2019 Shrub Density (#/ac)	2.670928E+03	1.182776E+03 to 4.159079E+03	8.118164E+02	2.567189E+03	2.5	7.39

Figure C-3: Shrub Density by the Belt Transect Method Descriptive Statistics and Normality

Normality



Shapiro-Wilk test

W statistic	0.68
p-value	0.0005 [1]

H0: F(Y) = N(μ, σ)
The distribution of the population is normal with unspecified mean and standard deviation.
H1: F(Y) ≠ N(μ, σ)
The distribution of the population is not normal.

[1] Reject the null hypothesis in favour of the alternative hypothesis at the 10% significance level.

Table C-1: Perennial/Biennial Canopy Cover, Method 5 - CMRP

Transect	Quad	2019 Perennial/Biennial Cover (%)	90% of Technical Standard	P/B CVR minus TS
M-VMU-2-T1P	1	1.0	13.5	-12.5
	2	17.0	13.5	3.5
	3	3.9	13.5	-9.6
	4	0.0	13.5	-13.5
M-VMU-2-T2P	1	13.8	13.5	0.3
	2	15.9	13.5	2.4
	3	12.4	13.5	-1.2
	4	85.1	13.5	71.6
M-VMU-2-T3P	1	23.4	13.5	9.9
	2	10.0	13.5	-3.5
	3	9.8	13.5	-3.7
	4	20.1	13.5	6.6
M-VMU-2-T4P	1	33.6	13.5	20.1
	2	11.4	13.5	-2.1
	3	15.8	13.5	2.3
	4	24.4	13.5	10.9
M-VMU-2-T5P	1	10.5	13.5	-3.0
	2	35.6	13.5	22.1
	3	10.5	13.5	-3.0
	4	53.2	13.5	39.7
M-VMU-2-T6P	1	10.9	13.5	-2.6
	2	16.7	13.5	3.2
	3	20.8	13.5	7.3
	4	36.7	13.5	23.2
M-VMU-2-T7P	1	12.7	13.5	-0.8
	2	0.0	13.5	-13.5
	3	5.4	13.5	-8.2
	4	35.3	13.5	21.8
M-VMU-2-T8P	1	28.4	13.5	14.9
	2	6.2	13.5	-7.3
	3	19.0	13.5	5.5
	4	25.2	13.5	11.7
M-VMU-2-T9P	1	46.5	13.5	33.0
	2	98.5	13.5	85.0
	3	91.1	13.5	77.6
	4	19.1	13.5	5.6
M-VMU-2-T10P	1	9.0	13.5	-4.5
	2	20.9	13.5	7.4
	3	54.5	13.5	41.0
	4	30.5	13.5	17.0
			k	15
			n	40
			z	-1.42
Standard one-tailed normal curve area (Table C-3; MMD, 1999)				0.4222
			P	0.0778

Notes:
P/B CVR = Perennial/Biennial Cover
TS = 90% of the Technical Standard for Perennial/Biennial Cover
P = 0.5-Area = prob of observing z; <=0.1 performance standard met

z value calculation:

$$z = \frac{(k+0.5)-0.5n}{0.5\sqrt{n}}$$

Table C-2: Forage Production, Method 5 - CMRP

Transect	Quad	2019 Annual Forage Production (lbs/ac)	90% of Technical Standard	FP minus TS
M-VMU-2-T1P	1	13.5	315	-301.5
	2	1675.7	315	1360.7
	3	69.7	315	-245.3
	4	0.0	315	-315.0
M-VMU-2-T2P	1	136.7	315	-178.3
	2	254.0	315	-61.0
	3	171.6	315	-143.4
	4	1975.7	315	1660.7
M-VMU-2-T3P	1	396.7	315	81.7
	2	331.2	315	16.2
	3	101.9	315	-213.1
	4	393.0	315	78.0
M-VMU-2-T4P	1	1044.9	315	729.9
	2	257.2	315	-57.8
	3	451.8	315	136.8
	4	594.6	315	279.6
M-VMU-2-T5P	1	271.6	315	-43.4
	2	1768.2	315	1453.2
	3	200.2	315	-114.8
	4	1272.0	315	957.0
M-VMU-2-T6P	1	220.2	315	-94.8
	2	350.7	315	35.7
	3	1157.4	315	842.4
	4	656.0	315	341.0
M-VMU-2-T7P	1	1146.2	315	831.2
	2	1.9	315	-313.1
	3	94.6	315	-220.4
	4	1141.5	315	826.5
M-VMU-2-T8P	1	657.3	315	342.3
	2	108.1	315	-206.9
	3	452.6	315	137.6
	4	337.4	315	22.4
M-VMU-2-T9P	1	902.9	315	587.9
	2	6580.5	315	6265.5
	3	2428.2	315	2113.2
	4	525.0	315	210.0
M-VMU-2-T10P	1	130.6	315	-184.4
	2	443.8	315	128.8
	3	1794.5	315	1479.5
	4	833.5	315	518.5
			k	15
			n	40
			z	-1.42
			Standard one-tailed normal curve area (Table C-3; MMD, 1999)	0.4222
			P	0.0778

Notes:
FP = Forage Production
TS = 90% of the Technical Standard for Annual Forage Production
P = 0.5-Area = prob of observing z; <=0.1 performance standard met

z value calculation:

$$z = \frac{(k+0.5)-0.5n}{0.5\sqrt{n}}$$

Table C-3: Shrub Density by the Belt Transect Method, Method 5 - CMRP

Transect	2019 Shrub Density (#/ac)	90% of Technical Standard	SD minus TS
M-VMU-2-T1P	0.0	135	-135.0
M-VMU-2-T2P	2832.8	135	2697.8
M-VMU-2-T3P	2158.3	135	2023.3
M-VMU-2-T4P	1079.2	135	944.2
M-VMU-2-T5P	2697.9	135	2562.9
M-VMU-2-T6P	2428.1	135	2293.1
M-VMU-2-T7P	1888.5	135	1753.5
M-VMU-2-T8P	2293.2	135	2158.2
M-VMU-2-T9P	9577.6	135	9442.6
M-VMU-2-T10P	1753.6	135	1618.6
		k	1
		n	10
		z	-2.21
Standard one-tailed normal curve area (Table C-3; MMD, 1999)			0.4864
		P	0.0136

Notes:
SD = Shrub Density
TS = 90% of the Technical Standard for Woody Stem Stocking
P = 0.5-Area = prob of observing z; <=0.1 performance standard met
z value calculation:

$$z = \frac{(k+0.5)-0.5n}{0.5\sqrt{n}}$$

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REPORT

Vegetation Management Unit 2
Vegetation Success Monitoring, 2020

McKinley Mine, New Mexico - Mining and Minerals Division Permit Area

Submitted to:

Chevron Environmental Management Company
Chevron Mining Inc. - McKinley Mine
24 Miles NW HWY 264
Mentmore, NM 87319

Submitted by:

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133-8105207

February 19, 2021

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1.0 INTRODUCTION

Mining was completed in Mining and Minerals Division (MMD) jurisdictional lands at the McKinley Mine in 2007; most of the land is reclaimed, with only the facilities remaining. The lands mined and reclaimed included prelaw, initial-program, and permanent-program lands. Liability release has been completed on all prelaw and initial-program lands, and full bond release on a limited amount of permanent-program land.

Chevron Mining Inc. (CMI) is assessing the vegetation in the remaining permanent-program reclaimed areas in anticipation of future bond and liability releases. CMI understands the importance of returning the mined lands to productive traditional uses in a timely manner. In order to qualify for release, the lands must be in a condition that is as good as or better than the pre-mine conditions, stable, and capable of supporting the designated postmining land use of grazing and wildlife. The increment, or permit area as a whole, must meet vegetation establishment responsibility period criteria, which is a minimum of 10 years. Golder Associates Inc. (Golder) was retained to monitor and assess the vegetation relative to the established vegetation success standards in Permit # 2016-02.

1.1 Vegetation Management Unit 2

This report presents results from 2020 quantitative vegetation monitoring conducted in Vegetation Management Unit 2 (M-VMU-2), comprising about 1,518 acres within Area 11 (Figure 1). The elevation in this area ranges from about 6,700 to 7,000 feet above mean sea level. Permanent program reclamation in Area 11 started on lands disturbed after 1986, and reclamation generally was completed by 2013. Thus, reclamation age in the majority of M-VMU-2 ranges from 8 to more than 30 years old. The configuration of the vegetation monitoring units within the MMD Permit Area, shown on Figure 1 were developed in consultation with MMD. This section provides a general description of the reclamation activities that were implemented. Additional details of the reclamation for specific areas can be obtained through review of McKinley's annual reports.

1.2 Reclamation and Revegetation Procedures

Reclamation methods applied in Area 11 included grading of the spoils to achieve a stable configuration, positive drainage, and approximate original contour. Graded spoil monitoring was then conducted to verify that the upper 42 inches of spoil were suitable for plant growth or if it required mitigation to establish a suitable root zone. A minimum of 6 inches of topsoil or topsoil substitute were then applied over suitable spoils.

After topsoil or topdressing placement, the surface was scarified in preparation for planting. Seeding was done using various implements that drilled and/or broadcast the seed. After the seeding, mulch consisting of either hay or straw was applied at a rate of about 2 tons/acre. The mulch was anchored 3 to 4 inches into the soil with a tractor-drawn straight coulter disc. The seeding was generally performed in the fall, which coincided with logical units for seeding that had been topdressed over the spring and summer. Seed mixes used at McKinley have varied over time but included both warm- and cool-season grasses, introduced and native forbs, and shrubs. The early seed mixes tended to emphasize the use of alfalfa and cool-season grasses. Over time the seed mixes shifted to include more warm-season grasses and a broader variety of native forbs.

1.3 Prevailing Climate Conditions

The amount and distribution of precipitation are important determinants for vegetation establishment and performance. Once vegetation is established, the precipitation dynamics affect the amount of vegetation cover and biomass on a year-to-year basis with grasses and forbs showing the most immediate response.

The South Mine Area has experienced several drought years recently and 2020 was characteristic of an exceptional drought year. Total annual precipitation has been below the regional average (about 11.8 inches at Window Rock) for the last five years (Table 1). Annual precipitation for 2020 was almost 55% (6.44 inches) of the long-term average for the region and monsoonal precipitation was well below average (about 27% of average). Figure 1 shows the location of the precipitation gages used for the South Mine. Departure of growing season precipitation (April through September) from long-term seasonal mean at Window Rock (1937-1999) for McKinley is shown on Figure 2 based on the Rain 11 gage. Between 2015 and 2020, growing season precipitation has been below average in all years but 2015 and 2017, when growing season total precipitation was 1.53 and 0.55 inches above average, respectively. For 2016 and 2018 through 2020, growing season precipitation was 1.79 to 4.81 inches below average. From 2015 to 2020, precipitation during peak growing season months has been variable and mostly dry with a pronounced deficit in August. When comparing the Rain 11 gage to the other South Mine gages, August 2020 saw the most precipitation (0.69 inches) but was still a third of normal for the month (2.05 inches).

1.4 Objectives

The intent of this report is to document the vegetation community attributes in M-VMU-2 and compare them to the Permit vegetation success criteria. Section 2 describes the vegetation monitoring methods that were used in 2020. Section 3 presents the results of the investigation with respect to ground cover, annual production, shrub density, and composition and diversity. Section 4 is a summary of the results for M-VMU-2 with emphasis on vegetation success.

2.0 VEGETATION MONITORING METHODS

Vegetation attributes on M-VMU-2 in Area 11 were quantified using the methods described in Section 6.5 of the Permit. Fieldwork was conducted at the end of the growing season, but prior to the first killing frost. Vegetation monitoring in M-VMU-2 was conducted between September 13 and 14, 2020.

2.1 Sampling Design

A systematic random sampling procedure employing a transect/quadrat system was used to select sample sites within the reclaimed area. The transect locations were reviewed with MMD in advance of sampling. A 50-square foot grid was imposed over the VMU to delineate vegetation sample plots, and random points created in a geographic information system were used to select plots for vegetation sampling. The locations of randomly selected vegetation plots are shown on Figure 3 for M-VMU-2. In the field, the randomly selected transect locations were assessed in numerical order. If the transect location was determined to be unsuitable, the next alternative location was assessed for suitability. Unsuitable transects were those that fell on or would intersect roads, drainage ways, wildlife rock piles, or prairie dog colonies.

Transects originated from the southeastern corner of the vegetation plot. Each transect was 30 meters (m) long in a dog-leg pattern (Figure 4). Four 1-m^2 quadrats were located at pre-determined intervals along the transect for quantitative vegetation measurements. Each quadrat is considered an individual sample where measurements were made of production, total canopy, species canopy and basal cover, surface litter, surface rock fragments, and bare soil as discussed below.

2.2 Vegetation and Ground Cover

Relative and total canopy cover, basal cover, surface litter, rock fragments, and bare soil were estimated for each quadrat. Canopy cover estimates include the foliage and foliage interspaces of all individual plants rooted in the

quadrat. Canopy cover is defined as the percentage of quadrat area included in the vertical projection of the canopy. The canopy cover estimates made on a species basis may exceed 100% in individual quadrats where the vegetation has multi-layered canopies. In contrast, the sum of the total canopy cover, surface litter, rock fragments, and bare soil does not exceed 100%.

Basal cover is defined as the proportion of the ground occupied by the crowns of grasses and rooting stems of forbs and shrubs. Basal cover estimates were also made for surface litter, rock fragments, and bare soil. Like the total cover estimates, the basal cover estimates do not exceed 100%. All cover estimates were made in 0.05% increments. Percent area cards were used to increase the accuracy and consistency of the cover estimates. Plant frequency was determined on a species-basis by counting the number of individual plants rooted in each quadrat.

2.3 Annual Forage and Biomass Production

Production was determined by clipping and weighing all annual (current year's growth) above-ground biomass within the vertical confines of a 1-m^2 quadrat. Grasses and forbs were clipped to within 5 centimeters (cm) of the soil surface, and the current year's growth was segregated from the previous year's growth (e.g., gray, weathered grass leaves and dried culms). For this sampling event, plants that were less than 5 cm tall or considered volumetrically insignificant were not collected. Production from shrubs was determined by clipping the current year's growth.

The plant tissue samples of every species collected were placed individually in labeled paper bags. The plant tissue samples were air-dried (> 90 days) until no weight changes were observed with repeated measurements on representative samples. The average tare weight of the empty paper bags was determined to correct the total sample weight to air-dry vegetation weights. The net weight of the air-dried vegetation was converted to a pounds per acre (lbs/ac) basis.

2.4 Shrub Density

Shrub density, or the number of plants per square meter, was determined using the frequency count data from the quadrats and the belt transect method (Bonham 1989). Shrub density was calculated from the quadrat data by dividing the total number of individual plants counted by the number of quadrats measured. The density per square meter was converted to density per acre.

Shrub density was also determined using a belt transect method (Bonham 1989). Shrub density was determined from a 1-meter wide; 30-meter long belt transect situated along the perimeter of the dog-legged transect (Figure 4). Shrubs rooted in the belt transect were counted on a species basis.

2.5 Statistical Analysis and Sample Adequacy

The procedures for financial assurance release as described in Coal Mine Reclamation Program (CMRP) Vegetation Standards (MMD 1999) and the Permit guided this statistical analysis. Statistical tests were performed using both Microsoft® Excel and Analyse-it (version 5.65.7), a statistical add-in for Excel. The normality of each dataset was first assessed using the Shapiro-Wilk test to determine the appropriate hypothesis test method (i.e., parametric versus nonparametric). Data were considered normal when the test statistic was significant (p-value > 0.10) for alpha (α) = 0.10. Thus, the null hypothesis that the population is normally distributed was accepted if the p-value > 0.10. In cases where the data were not normally distributed, a log transformation was applied to see if it normalized the data.

All hypothesis testing used to demonstrate compliance with the vegetation success standards was conducted using a reverse null approach. Because vegetation performance at McKinley is compared to technical standards, the one-sample, one-sided t-test (CMRP Method 3) is used for normally distributed data to evaluate the mean and the one-sample, one-sided sign test (CMRP Method 5) to analyze the median of data that are not normal (MMD 1999; McDonald and Howlin 2013). The one-sided hypothesis tests using the reverse null approach were designed as follows:

Perennial/Biennial Canopy Cover

H_0 : Reclaim < 90% of the Technical Standard (15%)

H_a : Reclaim ≥ 90% of the Technical Standard (15%)

Annual Forage Production

H_0 : Reclaim < 90% of the Technical Standard (350 lbs/ac)

H_a : Reclaim ≥ 90% of the Technical Standard (350 lbs/ac)

Shrub Density

H_0 : Reclaim < 90% of the Technical Standard (150 stems per acre [stems/ac])

H_a : Reclaim ≥ 90% of the Technical Standard (150 stems/ac)

where H_0 is the null hypothesis, that the parameter mean of the reclaimed area is less than 90% of the parameter mean of the technical standard and H_a is the alternative hypothesis, that the parameter mean of the reclaimed area is greater than or equal to 90% of the parameter mean of the technical standard. All hypothesis tests were performed with a 90% level of confidence.

Under the reverse null test, the revegetation success standard is met when H_0 is rejected and H_a is accepted. The decision criteria at 90% confidence under the reverse null hypothesis are as follows:

One-sample, one-sided t-test – Method 3 (CMRP)

If $t^* < t_{(1-\alpha;\, n-1)}$, conclude failure to meet the performance standard

If $t^* \geq t_{(1-\alpha;\, n-1)}$, conclude that the performance standard was met

One-sample, one-sided sign test – Method 5 (CMRP)

If $P > 0.10$, conclude failure to meet the performance standard

If $P \leq 0.10$, conclude that the performance standard was met

Statistical hypothesis testing was performed on perennial/biennial cover, annual forage production and shrub density (woody stem stocking) using the one-sample, one-sided t-test and the one-sample, one-sided sign test. The hypotheses testing used the reverse null hypothesis bond release testing procedure as described in CMRP Vegetation Standards (MMD 1999).

Statistical adequacy is not required for vegetation success demonstrations at McKinley under the reverse null approach, but is presented on the basis of the canopy cover, production, and shrub density data. The number of

samples required to characterize a particular vegetation attribute depends on the uniformity of the vegetation and the desired degree of certainty required for the analysis.

The number of samples necessary to meet sample adequacy (N_{min}) was calculated assuming the data were normally distributed using Snedecor and Cochran (1967).

$$N_{min} = \frac{t^2 s^2}{(\overline{x}D)^2}$$

Where N_{min} equals minimum number of samples required, t is the two-tailed t-distribution value based on a 90% level of confidence with n-1 degrees of freedom, s is the standard deviation of the sample data, $\overline{x}$ is the mean, and D is the desired level of accuracy, which is 10 percent of the mean.

In addition to N_{min}, the 90% confidence interval (CI) of the sample mean and the level of confidence that the sample mean is within 10 percent of the true mean are reported.

It is often impractical to achieve sample adequacy in vegetation monitoring studies based on Snedecor and Cochran's equation, and a minimum sample number approach is taken. MMD recognizes the practical limitations of achieving statistical adequacy and has provided minimum sample sizes for various quantitative methods (MMD 1999). With normally distributed data where sample adequacy cannot be met because of operational constraints or for other reasons, 40 samples are often considered adequate. The 40-sample recommendation is based on an estimate of the number of samples needed for a t-test under a normal distribution (Sokal and Rohlf 1981). Schulz et al. (1961) demonstrated that 30 to 40 samples provide a robust estimate for most cover and density measurements with increased numbers of samples only slightly improving the precision of the estimate.

CMI collected 40 samples at the outset of sampling based on the guidance discussed above. The 40 samples came from ten transects each having four quadrats as described in Section 2.1. Each quadrat is considered a unique sampling unit. Additional analysis around sample adequacy was done to see the number of samples that would have been required for adequacy by the Snedecor and Cochran equation. Further analysis for sample adequacy of cover, production and density attributes was also demonstrated using a graphical stabilization of the mean method (Clark 2001).

The emphasis on statistical adequacy assumes that parametric tests of normally distributed data will be conducted to demonstrate compliance with the vegetation success standards. It is important to note that normally distributed data and sample adequacy are not required for hypothesis testing. Nonparametric hypothesis tests are used to analyze data that are not normally distributed. When sample adequacy is not achieved, it is appropriate to use the reverse null approach for hypothesis testing. The reverse null is also generally recommended to evaluate reclamation success whether N_{min} is met or not (MMD 1999). This is because the reverse null is more defensible (compared to the classic approach) where the rejection of the null hypothesis definitively concludes that the reclamation mean is greater the technical standard (McDonald and Howlin 2013).

3.0 RESULTS

The vegetation community in M-VMU-2 is well established and dominated by perennial plants. A representative photograph of the vegetation and topography in M-VMU-2 is shown in Figure 5. The vegetation cover levels in 2019 and 2020 suggest that the site is progressing to achieve vegetation success standards for the Permit Area. Vegetation success standards consist of four vegetative parameters: ground cover, productivity, diversity, and

woody stem stocking (Table 2). The ground cover requirement for live perennial/biennial cover on the reclamation is 15%. The productivity requirement is 350 air-dry lbs/ac perennial/biennial annual production. The woody stem stocking success standard is 150 live woody stems/ac.

Diversity is evaluated against numerical guidelines for different growth forms and photosynthetic pathways of the vegetation. In summary, the diversity guideline required by MMD would be met if at least two shrub or subshrub species with individual relative cover values of 1%; at least two perennial warm-season grass species have individual relative cover levels of at least 1%; at least one perennial cool-season grass species has an individual relative cover level of at least 1%; and three perennial or biennial forb species have a combined relative cover of at least 1%. MMD (1999) allows for the use of biennial forbs because they are technically monocarpic (single-flowering) perennials that annually produce a significant amount of seed and therefore as a species, they persist in the reclaimed plant community. Relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit.

Diversity is also demonstrated by evidence of colonization or recruitment of native (not-seeded) plants from adjacent undisturbed native areas. Table 3 summarizes the attributes for plants recorded in the quadrats in addition to those encountered or observed but not recorded in the formal quantitative monitoring of M-VMU-2. Recruitment of these native plant species is indicative of ecological succession and the capacity of the site to support a self-sustaining ecosystem.

The field data for canopy and basal cover, density, production, and shrub density by the belt transect are included in Appendix A, accompanied by Figure A-1 and Table A-1 showing the 2020 transect locations within M-VMU-2. Figure A-1 also shows the seeded areas grouped by years and the 2019 transects. Photographs of the quadrats are included in Appendix B. Appendix C provides the statistical analysis equations (Table C-1), data (Table C-2) and outputs for perennial/biennial canopy cover (Table C-3 and Figures C-1 & C-2), annual forage production (Table C-4 and Figures C-3 & C-4), and shrub density by the belt transect method (Table C-5 and Figure C-5).

3.1 Ground Cover

Perennial/biennial canopy cover was calculated by summing the perennial/biennial species cover estimates after excluding the annual forbs and grasses. Any recorded noxious weeds are excluded from perennial/biennial cover. Average total ground cover in M-VMU-2 is 58.1% comprised of 37.2% total vegetation cover, 3.5% rock, and 17.4% litter on a canopy cover basis (Table 3). On a basal area basis, average ground cover is 49.0% with 2.0% vegetation, 4.1% rock, and 42.9% litter. Consistent with semi-arid rangelands the vegetation canopy cover in the individual quadrats varied, ranging from 0.2 to 96.5% (Table A-2). The mean perennial/biennial canopy cover was 39.0%, which was greater than the mean total vegetation canopy cover suggesting the occurrence of overlapping canopies for perennial/biennial cover is common. In 2019 and 2020 M-VMU-2, significantly exceeded the vegetation success standard of 15% perennial/biennial cover for total vegetation canopy cover and perennial/biennial canopy cover (Table 4). In 2020 the mean total vegetation canopy cover was 37.2% (± 6.2% [90% CI]) and the mean perennial/biennial canopy cover was 39.0% (± 7.0%).

The perennial/biennial canopy cover data for M-VMU-2 were not normally distributed (Figure C-1). A log transformation of the perennial/biennial canopy cover data did not result in a normal distribution (Figure C-2). The calculated minimum sample size needed to meet N_{min} was 117 samples for total cover and 134 samples for perennial/biennial canopy cover (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the perennial/biennial canopy cover data were evaluated using a stabilization of the mean approach (Clark 2001) and with a one-sample, one-sided sign test using the reverse null (MMD 1999). Figure 6 illustrates

the stabilization of the estimated mean for perennial/biennial canopy cover based on grouping four sample increments associated with a single transect. The samples were analyzed in four sample increments to allow an estimation of variability. The corresponding variability around the mean is expressed by the 90% CIs for each successive analytical increment. These data suggest that the mean perennial/biennial cover was estimated to within the 90% CI of the estimated population mean (n=40) after 12 samples with the 90% CI tightening to no greater than about ± 8% cover after 24 samples. The variability of the estimate slightly decreased with the collection of additional data, but not to a meaningful degree. This analysis suggests that 40 samples were more than adequate, and that the collection of additional data beyond 40 samples would not improve the precision of the estimate of perennial/biennial cover.

Evaluation of the data using the one-sample, one-sided sign test found only six perennial/biennial cover quadrats did not meet 90% of the performance standard (13.5%) resulting in the probability (P) of <0.001 of observing a z value less than -4.27. Therefore, under the reverse null hypothesis we conclude the performance standard is met for perennial/biennial canopy cover in 2020 (Table C-3). This standard was also met under the same statistical analysis methods in 2019.

3.2 Production

Productivity for vegetation success is assessed for above-ground annual forage production, excluding annuals and noxious weeds in air dry pounds per acre (lbs/ac). Total annual production for all plant species is reported but not used in determining productivity success for the VMU. The 2020 annual forage production in M-VMU-2 was estimated to be 627 (± 207 [90% CI]) lbs/ac with an annual total production of 634 (± 207) lbs/ac (Table 4). The combined production for grasses, forbs, and shrubs based on an analysis of comparable ecological sites reported by Parametrix (2012) was 430.5 to 794.2 lbs/ac. The annual forage production performance of M-VMU-2 in 2019 (719 lbs/ac) and 2020 demonstrate the site's ability to exceed the minimum production values for comparable ecological sites. Fourteen perennial grasses contribute 189 lbs/ac of forage and five shrubs contribute 431 lbs/ac of browse indicating a diverse and productive rangeland (Table 3). In 2020, rubber rabbitbrush (*Ericameria nauseosa*) accounted for nearly 46% (285 lbs/ac) of the mean annual forage production and was complimented by winterfat (89 lbs/ac, *Krascheninnikovia lanata*) and three saltbush species (57 lbs/ac, *Atriplex spp.*). Six native perennial grasses each exceeded 10 lbs/ac of forage combining to almost 26% (162 lbs/ac) of the mean annual forage production: Indian ricegrass (*Achnatherum hymenoides*), slender wheatgrass (*Elymus trachycaulus*), needle and thread (*Hesperostipa comata*), Colorado wildrye (*Leymus ambiguus*), western wheatgrass (*Pascopyrum smithii*), and James' galleta (*Pleuraphis jamesii*). The combined annual forage production for 14 perennial grasses, four perennial/biennial forbs and five subshrubs/shrubs in M-VMU-2 exceeded the vegetation success standard of 350 lbs/ac by almost 80% but failed the hypothesis testing as discussed below.

The annual forage production data for M-VMU-2 were not normally distributed (Figure C-3). This can be attributed to five quadrats exceeding 1,600 lbs/ac and being as high as 3,379 lbs/ac (Table C-2). Additionally, a log transformation of the annual forage production data did not result in a normal distribution (Figure C-4). The calculated minimum sample size needed to meet N_{min} at the 90% confidence level for annual forage production was estimated to be 456 samples (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the data were evaluated using a stabilization of the mean (Clark 2001) and with a one-sample, one-sided sign test using the reverse null (MMD 1999). Figure 7 illustrates the stabilization of the estimated mean and 90% CI for annual forage production. These data suggest that the mean annual forage production was estimated to within the 90% CI of the estimated population mean (n=40) after eight samples, with the 90% CI tightening to no greater than about ± 220 lbs/ac after 28 samples. The variability of the estimate slightly decreased with the

collection of additional data, but not to a meaningful degree. This analysis suggests that 40 samples were more than adequate, and that the collection of additional data would not improve the precision of the estimate of annual forage production.

Evaluation of the data using the one-sample, one-sided sign test found 21 production quadrats did not meet 90% of the performance standard (315 lbs/ac) resulting in the probability (P) of 0.1808 of observing a z value less than 0.47. Therefore, under the reverse null hypothesis we conclude the performance standard is unmet for annual forage production in 2020 (Table C-4). For M-VMU-2, this standard was met in 2019 and evaluated with a one-sample, one-sided sign test using the reverse null. In 2020 because of the exceptional drought, we observed a lower mean and increased variance in annual forage production.

3.3 Shrub Density

Shrub density ranged from an average of 3,264 (± 1,295 [90% CI]) stems/ac based on the belt transect method to 7,082 (± 2,416) stems/ac for quadrat method (Table 4). In M-VMU-2, 11 shrub species were encountered in the belt transects (Table A-6) compared to five species in the quadrats (Table 3), reflecting the increased area of analysis associated with the belt transects. Winterfat was the most encountered subshrub under both measurement methods.

The shrub density data by the belt transect method were normally distributed (Figure C-5) and the calculated minimum sample size needed to meet N_{min} at the 90% confidence level was estimated to be 196 samples (Table 4). Because N_{min} was not met and called for an unreasonable number of samples, the shrub density belt transect data were evaluated using a stabilization of the mean (Clark 2001) and one-sample, one-sided t-test using the reverse null (MMD 1999). Figure 8 illustrates the stabilization of the mean for shrub density based on individual belt transect data. The corresponding variability around the mean is expressed by the 90% CIs for each successive analytical increment. These data suggest that the mean shrub density was estimated to within the 90% CI of the estimated population mean (n=10) after three samples, with the 90% CI tightening to no greater than about ± 1,600 stems/ac after 7 samples. The variability of the estimate slightly decreased with the collection of additional data, but not to a meaningful degree. This analysis suggests that the collection of additional data beyond 10 samples would not improve the precision of the estimate of shrub density, which is well above the performance standard.

The one-sample, one-sided t-test calculated t*-statistic for M-VMU-2 shrub density is 3.97, where the sample mean is 3,264 stems/ac with a standard deviation of 2,490, the technical standard is 150 stems/ac and the sample size is 10. The one-tail $t_{(0.1, 9)}$ value is 1.383. Therefore, under the reverse null hypothesis ($t^* >= t_{(1-\alpha; n-1)}$), we conclude that the performance standard is met for shrub density (i.e., woody stem stocking) by the belt transect method (Table C-5).

3.4 Composition and Diversity

Collectively, 14 perennial grasses dominated the canopy cover in M-VMU-2 with a combined 58% relative canopy cover and James' galleta being most prevalent (Table 3). Rubber rabbitbrush and winterfat dominate the shrub component of the reclamation plant community. Cool-season perennial grasses contribute 29% relative canopy cover to perennial/biennial canopy cover with Colorado wildrye and slender wheatgrass being co-dominant. Three warm-season perennial grasses contribute almost 29% relative canopy cover to perennial/biennial canopy cover with James' galleta being dominant. Forbs are minor contributors to the cover in M-VMU-2 even though numerous species occurred. Russian thistle (*Salsola tragus*) was the only recorded annual forb species in 2020 and is excluded from determining vegetation success. Five perennial/biennial forbs were recorded in M-VMU-2 with

purple aster (*Machaeranthera canescens*) and flatspine stickseed (*Lappula occidentalis*) dominating the perennial/biennial forb canopy cover component.

Diversity is assessed through comparing the relative cover of various life-forms, based on their duration to the perennial/biennial cover of the vegetation management unit. In this context, relative cover is the average percent cover of a perennial/biennial species divided by the mean perennial/biennial cover of the sampling unit. Relative canopy cover of individual species contributing to perennial cover are listed in Table 3.

The diversity standard for cool-season grasses is achieved by multiple species that exceed 1% relative cover including Colorado wildrye (6.97%) and slender wheatgrass (6.94%).

The diversity standard for warm-season grasses is achieved by three species that exceed 1% relative cover including James' galleta (23.24%), blue grama (3.17%), and alkali sacaton (2.42%, *Sporobolus airoides*). Thus, the warm-season perennial grass standard was achieved in M-VMU-2 in 2020. No other species were recorded in 2020. Five additional warm-season grasses have been observed since 2019 on M-VMU-2 with four of these recorded in the quadrats (2019): purple threeawn (*Aristida purpurea*), buffalograss (*Bouteloua dactyloides*), saltgrass (*Distichlis spicata*), and tumblegrass (*Schedonnardus paniculatus*).

The diversity standard for forbs requires a minimum of three non-annual forb taxa combining to contribute at least 1% relative cover. The combined relative cover of five non-annual forbs is 0.68%, dominated by the native monocarpic forbs, purple aster (0.31%), and flatspine stickseed (0.21%). Three native forbs contribute additional relative canopy cover: blazingstar species (<0.01%, *Mentzelia species*), Palmer's penstemon (0.0.05%%, *Penstemon palmeri*), and Upright prairie coneflower (0.0.10%, *Ratibida columnifera*). Based on 2020 sampling, the combined relative cover for five non-annual forbs is less than 1%, thus the diversity standard for forbs in 2020 for M-VMU-2 is unmet. Conversely, the reclamation in 2019 demonstrated performance far exceeding the forb standard even with below normal precipitation during the growing sseason. We believe the exceptional drought persisting in 2020 has led to a lack of forb expression and this is not related to a failure of forbs to perform on site. Seed sources for non-annual forbs exist on site and we expect a response commensurate with precipitation.

The diversity standard for shrubs requires two species with a minimum relative cover of 1 percent for each species. The diversity standard for shrubs is achieved by rubber rabbitbrush (21.47%), winterfat (11.78%), and Gardner's saltbush (3.52%, *Atriplex gardneri*).

Based on the 2020 vegetation monitoring, 105 different plant species were present within the reclamation areas of M-VMU-2 (Table 3). We encountered 45 forbs, 27 grasses and 33 shrubs, trees, and cacti. Of the 45 forbs, 17 are considered annuals whereas the remaining 28 have variable durations or are purely perennial. Of the 27 grasses, 16 are cool-season perennials, eight are warm-season perennials and three are cool-season annuals. Cacti (one species), succulents (one species), and trees (four species) were rare on the reclamation, while shrubs and subshrubs were more commonly observed (27 species).

During the 2020 monitoring program, we infrequently encountered four Class C noxious weeds (NMDA 2020) on M-VMU-2. Class C noxious weeds are generally widespread in the state and managed at the local level based on feasibility of control and level of infestation. The only noxious weed recorded in the quadrats was cheatgrass (*Bromus tectorum*) with a mean canopy cover of 0.92%, occurring in seven quadrats with cover levels ranging from 0.5 to 13.0% (Table A-2). Cheatgrass was not used in the assessment of revegetation success. Other noxious weeds observed on M-VMU-2 were musk thistle (*Carduus nutans*), Russian olive (*Elaeagnus angustifolia*), and saltcedar (*Tamarix ramosissima*). The contribution of these species to the vegetation community

is insignificant with densities much lower than native rangeland beyond the permit boundary. CMI continues to monitor for noxious weeds and actively controls them through husbandry practices that include annual services for weed control. Further, competition from desirable seeded and native species is expected to inhibit any substantial increase of noxious weeds in the reclamation.

The recruitment of native plants and establishment of seeded species within M-VMU-2 is indicative of ecological succession and the capacity of the site to support a diverse and self-sustaining ecosystem.

4.0 SUMMARY

McKinley Mine's vegetation success standards for the post-mining land uses of grazing and wildlife are based on canopy cover, production, shrub density, and plant diversity (Table 2). The vegetation survey in 2020 was the second year of the past two years evaluating vegetation success in M-VMU-2 and we summarize our general findings here:

1. Despite the prolonged drought, the reclamation has been resilient and successful for cover and shrub density, demonstrating permanence.
2. Drought, especially in 2020, resulted in more low production quadrats (i.e., increased variability). Despite estimated population means well above the technical standard for the past 2 years, under statistical hypothesis testing in 2020 this standard was unmet.
3. Drought also affected the expression of warm-season grasses in 2019 and forbs in 2020. Although these diversity parameters were unmet, this site demonstrates the ability to meet all of the diversity parameters. It is uncertain what precipitation patterns will achieve the diversity standard simultaneously for all life-forms because compositional contributions based on lifeform change in response to environmental and sampling variables.

For 2020, M-VMU-2 exceeded the success parameters for cover, shrub density, and most diversity parameters, but fell short with annual forage production and forb diversity (Tables 5 and 6). For 2019, M-VMU-2 only fell short with the warm-season grass diversity component. Results for both years indicate that the vegetation community in M-VMU-2 is progressing well, is capable of meeting all success parameters and is nearly in full compliance with the vegetation success standards.

Precipitation is a key environmental factor affecting vegetation establishment and performance. Cumulative water year (WY) precipitation is shown in Figure 9 for the South Tipple gage and the Window Rock long-term averages. Precipitation patterns at the South Tipple gage were below the long-term average with clear deficits during the peak growing season favoring cool-season grasses and shrubs. Typical precipitation gains at Window Rock occur between June and September where cumulative precipitation increases at a greater rate than the rest of the WY. At the South Tipple gage the greatest precipitation gains occurred outside the typical growing season between October and May (8.68 inches, WY2019) and between November and March (5.85 inches, WY2020). In WY2019, June through August only saw 0.6 inches of precipitation when almost 4.3 inches is normal at Window Rock (Table 1). In WY2020, the total growing season precipitation (April through September) was 1.74 inches, or 26% of average, with just over one inch of that total falling in July. These temporal precipitation patterns indicate exceptionally dry conditions for M-VMU-2 and vegetation performance above all, but one or two success parameters indicates a permanent, established, and resilient plant community.

Between 2019 and 2020, the estimated population means for perennial/biennial canopy cover (%) and annual forage production (lbs/ac) exceed their corresponding technical standards (Figure 9b and 9c). Shrub density based on the belt transect method ranged from an average of 2,671 stems/ac in 2019 to 3,264 stems/ac in 2020:

each far exceeding the technical standard of 150 live stems/ac (Figure 9d). Based on the 2020 statistical hypothesis testing for M-VMU-2, both perennial/biennial canopy cover and shrub density exceed their respective technical standards, but annual forage production did not meet the technical standard at the 90% level of confidence (Table 5). In 2020, the diversity standards for cool- and warm-season grasses and shrubs were met in M-VMU-2, but the diversity standard for perennial/biennial forbs was not met (Table 6). In 2019, the combined relative perennial/biennial forb cover for eight species was 3.52%, compared to 0.68% for five species in 2020.

Overall, vegetation performance in M-VMU-2 is encouraging considering below-average precipitation for the past 5 years including a two-year drought in 2017 and 2018 and the exceptional drought this past year. The continued presence of feral horses is also likely to negatively affect cover and production, especially when forage is scarce. The performance of the vegetation under these conditions suggests that the reclaimed plant communities are resilient and capable of sustaining themselves under adverse conditions that are characteristic of this region. While the reclamation in M-VMU-2 is now clearly capable of meeting and sustaining the post-mining land use, CMI will evaluate the results of this sampling program to determine what is needed to achieve the revegetation success criteria.

5.0 REFERENCES

Bonham, C.D. 1989. Measurements for Terrestrial Vegetation. John Wiley & Sons. New York, NY.

Clark, D.L. 2001. Stabilization of the mean as a demonstration of sample adequacy. American Society for Surface Mining and Reclamation Annual Meeting. Albuquerque, NM. June 3-7, 2001. ASSMR, Lexington, KY.

Mining and Minerals Division (MMD). 1999. Coal Mine Reclamation Program Vegetation Standards. Santa Fe, NM. April 30.

McDonald, L., and S. Howlin. 2013. Evaluation and comparison of hypothesis testing techniques for bond release application. University of Wyoming, Laramie, WY.

Parametrix. 2012. Revegetation Success Standards Report: McKinley Mine – Response to OSM. Prepared by Jim Nellessen of Parametrix, Albuquerque, New Mexico. April 2012.

New Mexico Department of Agriculture (NMDA). 2020. New Mexico Noxious Weed List Update. New Mexico State University, Las Cruces, NM. June 2020.

Sokal, R.R. and F.J. Rohlf. 1981. Biometry (2nd edit.). W. H. Freeman and Co., San Francisco.

Schulz, A. M., R. P. Gibbens, and L. F. DeBano. 1961. Artificial populations for teaching and testing range techniques. J. Range Management. 14:236-242.

Snedecor, G.W. and W.G. Cochran. 1967. Statistical methods applied to experiments in agriculture and biology. 6th ed. Ames, Iowa: Iowa State University Press.

Tables

Table 1: South Mine Seasonal and Annual Precipitation (2015-2020)

Year	Station	Area	Precipitation (inches)													
			January	February	March	April	May	June	July	August	September	October	November	December	Annual Total	Growing Season Total
2015	Tipple	South Shop	2.05	1.59	0.11	0.52	1.64	1.11	2.37	1.62	0.30	1.36	1.31	0.76	**14.74**	*7.56*
	Rain 9	9				0.50	1.38	1.22	2.88	1.25	0.22	1.13	0.99			*7.45*
	Rain 10	10				0.42	1.32	1.11	2.59	1.39	0.30	1.10	0.78			*7.13*
	Rain 11	11				0.48	1.88	1.02	2.80	1.69	0.26	0.97	1.08			*8.13*
2016	Tipple	South Shop	0.62	0.22	0.05	1.31	0.80	0.07	1.37	1.74	1.75	0.40	1.57	1.84	**11.74**	*7.04*
	Rain 9	9				0.22	0.62	0.45	1.24	0.50	1.05	1.05	0.00			*4.08*
	Rain 10	10				0.13	0.55	0.20	2.75	0.38	0.99	0.14	0.02			*5.00*
	Rain 11	11				0.28	0.77	0.64	1.61	0.42	1.09	0.09	0.04			*4.81*
2017	Tipple	South Shop	1.25	1.64	0.48	0.35	0.77	0.42	2.48	0.90	1.34	0.15	0.09	0.02	**9.89**	*6.26*
	Rain 9	9				1.20	1.02	0.01	0.82	1.40	1.64	0.37	0.91			*6.09*
	Rain 10	10				1.00	0.67	0.08	0.94	1.63	1.36	0.34	0.81			*5.68*
	Rain 11	11				1.23	1.16	0.05	0.86	2.00	1.85	0.34	0.49			*7.15*
2018	Tipple	South Shop	0.35	0.79	0.54	0.09	0.29	0.51	2.61	1.34	1.10	1.65	0.19	0.29	**9.75**	*5.94*
	Rain 9	9				0.07	0.27	0.25	2.16	0.74	0.67	1.31	0.00			*4.16*
	Rain 10	10				0.08	0.20	0.27	3.05	1.15	0.92	1.51	0.00			*5.67*
	Rain 11	11				0.09	0.29	0.26	1.92	1.00	0.89	1.45	0.00			*4.45*
2019	Tipple	South Shop	1.30	1.81	1.23	0.44	1.77	0.33	0.22	0.05	1.59	0.09	1.14	0.85	**10.82**	*4.40*
	Rain 9	9				0.16	1.36	0.24	0.46	0.37	1.84	0.05	0.07			*4.43*
	Rain 10	10				0.20	1.49	0.37	0.19	0.27	1.34	0.03	0.05			*3.86*
	Rain 11	11				0.20	1.50	0.19	0.44	0.20	1.72	0.06	0.08			*4.25*
2020	Tipple	South Shop	0.98	1.44	1.35	0.17	0.01	0.04	1.13	0.24	0.15	0.26	0.40	0.27	**6.44**	*1.74*
	Rain 9	9				0.16	0.02	0.11	0.60	0.06	0.14	0.08	0.45			*1.09*
	Rain 10	10				0.11	0.02	0.13	0.79	0.14	0.14	0.16	0.09			*1.33*
	Rain 11	11				0.22	0.00	0.05	0.63	0.69	0.20	0.30	0.41			*1.79*
Window Rock, Long-term (029410)			0.72	0.68	0.88	0.61	0.49	0.47	1.75	2.05	1.23	1.14	0.83	0.95	**11.80**	*6.60*

Notes:
Long-term averages are from Window Rock, Arizona Station (029410) for 1937 to 1999 (Western Regional Climate Center, 2020).
Growing season total precipitation is the sum of monthly totals between April and September

Table 2: Revegetation Success Standards for the Mining and Minerals Division Permit Area

Vegetative Parameter	Success Standard
Ground Cover	15% live perennial/biennial cover
Productivity	350 air-dry pounds per acre perennial/biennial annual production
Diversity	A minimum of 2 shrub or subshrub taxa contributing at least 1% relative cover each.
	A minimum of 2 perennial warm-season grass taxa contributing at least 1% relative cover each.
	A minimum of 1 perennial cool-season grass contributing at least 1% relative cover.
	A minimum of 3 perennial/biennial forb taxa combining to contribute at least 1% relative cover.
Woody Stem Stocking	150 live woody stems per acre

Notes:

Diversity criteria are assessed through evaluating individual perennial/biennial species relative cover, as agreed upon by MMD and CMI in June 2019. Further, relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit.

Table 3: Vegetation Cover, Density, and Production by Species, M-VMU-2, 2020

Scientific Name	Common Name	Code	Mean Vegetation Cover (%)			Mean Density (#/ac)	Mean Annual Production (lbs/ac)
			Canopy	Basal	Relative Canopy[a]		
Cool-Season Grasses (19)							
Annuals (3)							
Bromus arvensis	Field brome	BRAR5	0.25	<0.05	--	2,934	2
Bromus tectorum	Cheatgrass	BRTE	0.92	<0.05	--	10,218	6
Vulpia octoflora	Sixweeks fescue	VUOC	obs	obs	obs	obs	obs
Perennials (16)							
Achnatherum hymenoides	Indian ricegrass	ACHY	1.43	0.07	3.67	2,630	15
Agropyron cristatum	Crested wheatgrass	AGCR	obs	obs	obs	obs	obs
Bromus inermis	Smooth brome	BRIN2	<0.05	<0.05	0.03	101	<1
Elymus elymoides	Bottlebrush squirreltail	ELEL	0.67	<0.05	1.70	3,541	7
Elymus glaucus	Blue wildrye	ELGL	0.05	<0.05	0.13	304	1
Elymus lanceolatus ssp. lanceolatus	Thickspike wheatgrass	ELLAL	0.30	<0.05	0.77	1,619	3
Elymus trachycaulus	Slender wheatgrass	ELTR7	2.71	0.16	6.94	14,973	26
Hesperostipa comata	Needle and thread	HECO26	1.43	0.09	3.66	5,463	11
Hordeum jubatum	Foxtail barley	HOJU	obs	obs	obs	obs	obs
Leymus ambiguus	Colorado wildrye	LEAM	2.72	0.22	6.97	7,588	29
Pascopyrum smithii	Western wheatgrass	PASM	1.65	0.08	4.23	12,343	13
Pseudoroegneria spicata	Bluebunch wheatgrass	PSSP6	<0.05	<0.05	0.12	202	<1
Schedonorus arundinaceus	Tall fescue	SCAR7	obs	obs	obs	obs	obs
Thinopyrum intermedium	Intermediate wheatgrass	THIN6	0.24	<0.05	0.62	304	4
Thinopyrum ponticum	Tall wheatgrass	THPO7	obs	obs	obs	obs	obs
Hordeae (tribe)	Unknown wheatgrass species	UNKWG	obs	obs	obs	obs	obs
Warm-Season Grasses (8)							
Perennials (8)							
Aristida purpurea	Purple threeawn	ARPU	obs	obs	obs	obs	obs
Bouteloua curtipendula	Sideoats grama	BOCU	obs	obs	obs	obs	obs
Bouteloua dactyloides	Buffalograss	BODA2	obs	obs	obs	obs	obs
Bouteloua gracilis	Blue grama	BOGR2	1.24	0.15	3.17	5,059	5
Distichlis spicata	Saltgrass	DISP	obs	obs	obs	obs	obs
Pleuraphis jamesii	James' galleta	PLJA	9.07	0.47	23.24	32,982	69
Schedonnardus paniculatus	Tumblegrass	SCPA	obs	obs	obs	obs	obs
Sporobolus airoides	Alkali sacaton	SPAI	0.95	0.09	2.42	3,339	6

Table 3: Vegetation Cover, Density, and Production by Species, M-VMU-2, 2020

Scientific Name	Common Name	Code	Mean Vegetation Cover (%)			Mean Density (#/ac)	Mean Annual Production (lbs/ac)
			Canopy	Basal	Relative Canopy[a]		
Forbs (45)							
Annuals (17)							
Alyssum desertorum	Desert madwort	ALDE	obs	obs	obs	obs	obs
Alyssum simplex	Alyssum	ALSI8	obs	obs	obs	obs	obs
Chenopodium incanum	Mealy goosefoot	CHIN2	obs	obs	obs	obs	obs
Chenopodium leptophyllum	Narrowleaf goosefoot	CHLE4	obs	obs	obs	obs	obs
Chenopodium album	Lambsquarters	CHAL7	obs	obs	obs	obs	obs
Cordylanthus wrightii	Wright's bird's beak	COWR2	obs	obs	obs	obs	obs
Eriogonum cernuum	Nodding buckwheat	ERCE2	obs	obs	obs	obs	obs
Eriogonum divaricatum	Divergent buckwheat	ERDI5	obs	obs	obs	obs	obs
Helianthus annuus	Common sunflower	HEAN3	obs	obs	obs	obs	obs
Heliomeris longifolia	Longleaf false goldeneye	HELO6	obs	obs	obs	obs	obs
Kochia scoparia	Kochia	KOSC	obs	obs	obs	obs	obs
Lupinus kingii	King's lupine	LUKI	obs	obs	obs	obs	obs
Malacothrix fendleri	Fendler's desertdandelion	MAFE	obs	obs	obs	obs	obs
Plantago patagonica	Woolly plantain	PLPA2	obs	obs	obs	obs	obs
Polygonum erectum	Erect knotweed	POER2	obs	obs	obs	obs	obs
Salsola tragus	Russian thistle	SATR	<0.05	<0.05	--	708	obs
Xanthium strumarium	Rough cocklebur	XAST	obs	obs	obs	obs	obs
Perennials/Biennials (28)							
Achillea millefolium	Common yarrow	ACMI2	obs	obs	obs	obs	obs
Calochortus nuttallii	Sego lily	CANU3	obs	obs	obs	obs	obs
Carduus nutans	Musk thistle	CANU4	obs	obs	obs	obs	obs
Chaetopappa ericoides	Rose heath	CHER	obs	obs	obs	obs	obs
Conyza canadensis	Horseweed	COCA	obs	obs	obs	obs	obs
Descurainia sophia	Flixweed	DESO	obs	obs	obs	obs	obs
Erodium cicutarium	Redstem stork's bill	ERCI6	obs	obs	obs	obs	obs
Grindelia nuda var. aphanactis	Curlytop gumweed	GRNUA	obs	obs	obs	obs	obs
Grindelia squarosa	Curly-cup gumweed	GRSQ	obs	obs	obs	obs	obs
Heliomeris multiflora	Showy goldeneye	HEMU3	obs	obs	obs	obs	obs
Ipomopsis multiflora	Manyflowered ipomopsis	IPMU	obs	obs	obs	obs	obs
Lactuca serriola	Prickly lettuce	LASE	obs	obs	obs	obs	obs
Lappula occidentalis	Flatspine stickseed	LAOC3	0.08	<0.05	0.21	2,934	<1
Linum lewisii	Lewis flax	LILE	obs	obs	obs	obs	obs
Machaeranthera canescens	Purple aster	MACA	0.12	<0.05	0.31	607	4
Machaeranthera tanacetifolia	Tanseyleaf tansyaster	MATA	obs	obs	obs	obs	obs
Medicago sativa	Alfalfa	MESA	obs	obs	obs	obs	obs
Mentzelia species	Unknown blazingstar species	MENTZ	<0.05	<0.05	<0.01	202	obs
Penstemon palmeri	Palmer's penstemon	PEPA8	<0.05	<0.05	0.05	101	1
Polygonum aviculare	Prostrate knotweed	POAV	obs	obs	obs	obs	obs
Ratibida columnifera	Upright prairie coneflower	RACO3	<0.05	<0.05	0.10	304	<1
Sisymbrium altissimum	Tall tumblemustard	SIAL2	obs	obs	obs	obs	obs
Sphaeralcea coccinea	Scarlet globemallow	SPCO	obs	obs	obs	obs	obs
Sphaeralcea emoryi	Emory's globemallow	SPEM	obs	obs	obs	obs	obs
Sphaeralcea grossulariifolia	Gooseberryleaf globemallow	SPGR2	obs	obs	obs	obs	obs
Sphaeralcea hastulata	Spear globemallow	SPHA	obs	obs	obs	obs	obs
Sphaeralcea incana	Gray globemallow	SPIN2	obs	obs	obs	obs	obs
Tragopogon dubius	Yellow salsify	TRDU	obs	obs	obs	obs	obs

Table 3: Vegetation Cover, Density, and Production by Species, M-VMU-2, 2020

Scientific Name	Common Name	Code	Mean Vegetation Cover (%)			Mean Density (#/ac)	Mean Annual Production (lbs/ac)
			Canopy	Basal	Relative Canopy[a]		
Shrubs, Trees and Cacti (33)							
Perennials (33)							
Artemisia frigida	Prairie sagewort	ARFR4	obs	obs	obs	obs	obs
Artemisia ludoviciana	White sagebrush	ARLU	obs	obs	obs	obs	obs
Artemisia tridentata	Big sagebrush	ARTR2	obs	obs	obs	obs	obs
Atriplex acanthocarpa	Tubercled saltbush	ATAC	obs	obs	obs	obs	obs
Atriplex canescens	Four-wing saltbush	ATCA	0.77	<0.05	1.97	202	24
Atriplex confertifolia	Shadscale saltbush	ATCO	obs	obs	obs	obs	obs
Atriplex corrugata	Mat saltbush	ATCO4	obs	obs	obs	obs	obs
Atriplex gardneri	Gardner's saltbush	ATGA	1.38	<0.05	3.52	304	19
Atriplex obovata	Mound saltbush	ATOB	obs	obs	obs	obs	obs
Atriplex species	Unknown saltbush species	ATRIP	1.13	0.06	2.90	1,214	15
Chrysothamnus viscidiflorus	Yellow rabbitbrush	CHVI	obs	obs	obs	obs	obs
Elaeagnus angustifolia	Russian olive	ELAN	obs	obs	obs	obs	obs
Ephedra trifurca	Longleaf jointfir	EPTR	obs	obs	obs	obs	obs
Ephedra viridis	Mormon tea	EPVI	obs	obs	obs	obs	obs
Ericameria nauseosa	Rubber rabbitbrush	ERNA	8.38	0.26	21.47	1,619	285
Eriogonum leptophyllum	Slenderleaf buckwheat	ERLE10	obs	obs	obs	obs	obs
Fallugia paradoxa	Apache plume	FAPA	obs	obs	obs	obs	obs
Gutierrezia sarothrae	Broom snakeweed	GUSA	obs	obs	obs	obs	obs
Heterotheca villosa	Hairy false goldenaster	HEVI	obs	obs	obs	obs	obs
Juniperus monosperma	Oneseed juniper	JUMO	obs	obs	obs	obs	obs
Krascheninnikovia lanata	Winterfat	KRLA	4.60	0.17	11.78	3,743	89
Lycium torreyi	Torrey wolfberry	LYTO	obs	obs	obs	obs	obs
Opuntia polyacantha	Plains pricklypear	OPPO	obs	obs	obs	obs	obs
Purshia mexicana	Mexican cliffrose	PUME	obs	obs	obs	obs	obs
Purshia tridentata	Antelope bitterbrush	PUTR2	obs	obs	obs	obs	obs
Rhus trilobata	Skunkbush sumac	RHTR	obs	obs	obs	obs	obs
Rosa woodsii	Woods' rose	ROWO	obs	obs	obs	obs	obs
Salix exigua	Narrowleaf willow	SAEX	obs	obs	obs	obs	obs
Sarcobatus vermiculatus	Greasewood	SAVE4	obs	obs	obs	obs	obs
Senecio flaccidus	Threadleaf groundsel	SEFL3	obs	obs	obs	obs	obs
Tamarix ramosissima	Saltcedar	TARA	obs	obs	obs	obs	obs
Tetradymia canescens	Gray horsebrush	TECA	obs	obs	obs	obs	obs
Yucca baccata	Banana yucca	YUBA	obs	obs	obs	obs	obs
Cover Components							
Perennial/Biennial Vegetation Cover			39.0	2.0			
Total Vegetation Cover			37.2	2.0			
Rock			3.5	4.1			
Litter			17.4	42.9			
Bare Soil			42.0	51.0			

Notes:
[a] = relative cover is the average percent cover of a perennial/biennial species divided by the total perennial/biennial cover of the sampling unit
-- = this parameter is not calculated for this attribute
#/ac = number of plants per acre
lbs/ac = air-dry forage pounds per acre
obs = observed on vegetation management unit during monitoring, but not recorded in the quadrats
Ps Pathway or growing season for the grasses is from Allred (2005)
Duration for plants is from the USDA Plants Database

Table 4: Summary Statistics for M-VMU-2

	2019	2020	Technical Standard
Total Vegetation Canopy Cover (%)			
Mean	31.1	37.2	None
Standard Deviation	21.9	23.8	
90% Confidence Interval	5.7	6.2	
Nmin[1]	144	117	
Probability within true mean[2]	0.67	0.66	
Perennial/Biennial Canopy Cover (%)			
Mean	24.9	39.0	15.0
Standard Deviation	23.4	26.8	
90% Confidence Interval	6.1	7.0	
Nmin[1]	258	134	
Probability within true mean[2]	0.72	0.67	
Basal Cover (%)			
Mean	1.57	2.03	None
Standard Deviation	1.22	1.44	
90% Confidence Interval	0.32	0.38	
Nmin[1]	168	144	
Probability within true mean[2]	0.69	0.67	
Annual Forage Production (lbs/ac)			
Mean	787	627	350
Standard Deviation	1,120	794	
90% Confidence Interval	291	207	
Nmin[1]	576	456	
Probability within true mean[2]	0.81	0.79	
Annual Total Production (lbs/ac)			
Mean	1,011	634	None
Standard Deviation	1,142	798	
90% Confidence Interval	297	207	
Nmin[1]	363	449	
Probability within true mean[2]	0.76	0.78	
Shrub Density (stems/acre) from Quadrats			
Mean	12,342	7,082	150
Standard Deviation	26,731	9,289	
90% Confidence Interval	6,952	2,416	
Nmin[1]	1,332	488	
Probability within true mean[2]	0.91	0.79	
Shrub Density (stems/acre) from Belt Transect			
Mean	2,671	3,264	150
Standard Deviation	2,567	2,490	
90% Confidence Interval	1,335	1,295	
Nmin[1]	310	196	
Probability within true mean[2]	0.62	0.59	

Notes:
1 Minimum number of samples required to obtain 90 percent probability that the sample mean is within 10 percent of the population mean
2 Probability the true value of the mean is within 10 percent of the mean for the sample size

Table 5: Statistical Analysis Results for Cover, Production, and Woody Plant Density, 2019 to 2020

Parameter[1]		Standard	90% of Standard	M-VMU-2			
				2019		2020	
				Result[2]	Tested[3]	Result[2]	Tested[3]
Cover	Live perennial/biennial cover	≥ 15%	≥ 13.5%	24.9%	Pass	39.0%	Pass
Productivity	Air-dry pounds per acre perennial/biennial annual production	≥ 350 lb/ac	≥ 315 lb/ac	787	Pass	627	Fail
Woody Stem Stocking	Live woody stems per acre	≥ 150 stems/ac	≥ 135 stems/ac	2,671	Pass	3,264	Pass

Notes:

[1] Each parameter and corresponsing standards are explained in Table 2 of the Vegetation Survey Report

[2] Table 4 of each report presents results for these values

[3] Appendix C of each report presents the statistical analysis of each parameter; A "pass" or "Fail" indicates the result concerning the statistical testing required based on distribtution of data

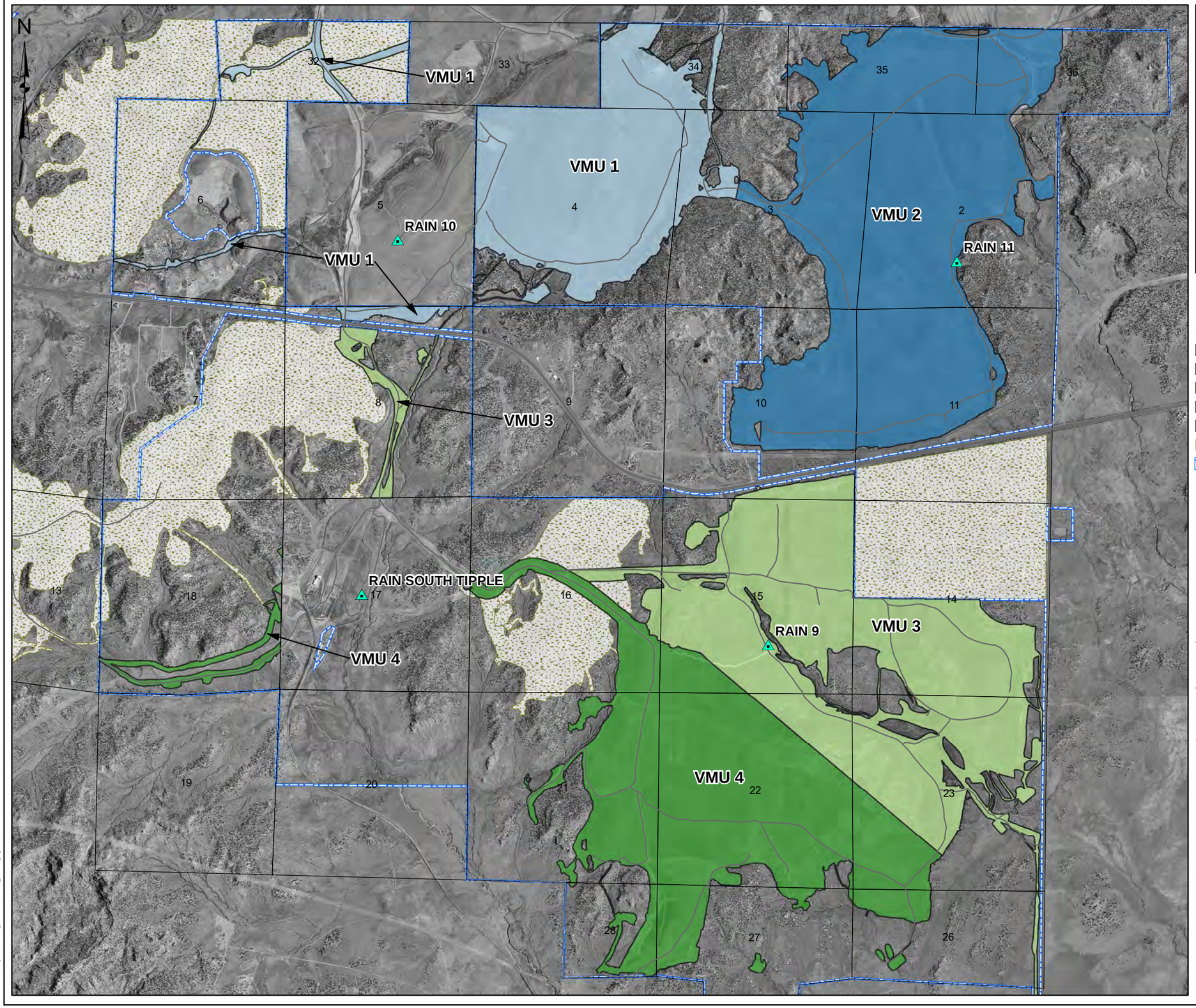
RED highlighting indicates an unmet parameter

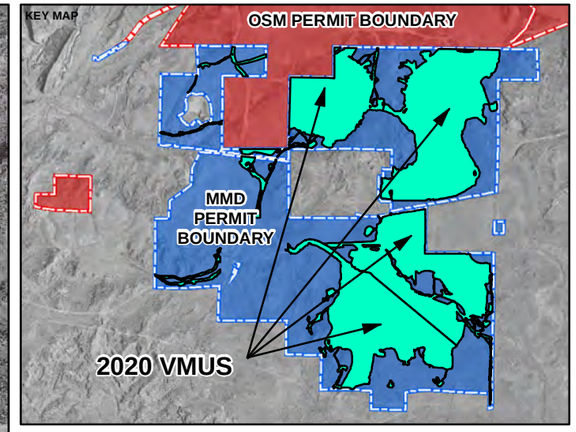
Table 6: Results for Diversity, 2019 to 2020

	Parameter[1]	Standard	M-VMU-2			
			2019		2020	
			Result[2]	Species	Result[2]	Species
Diversity	**Subshrub or shrubs**			**(8 spp.)**		**(5 spp.)**
	Shrub 1 (in % relative cover) - Required	≥ 1.0%	21.78%	Four-wing saltbush	21.47%	Rubber rabbitbrush
	Shrub 2 (in % relative cover) - Required	≥ 1.0%	9.69%	Rubber rabbitbrush	11.78%	Winterfat
	Shrub 3 (in % relative cover) (Bonus)	--	6.33%	Winterfat	3.52%	Gardner's saltbush
	Perennial warm-season grasses			**(6 spp.)**		**(3 spp.)**
	Warm-season grass 1 (in % relative cover) - Required	≥ 1.0%	22.26%	James' galleta	23.24%	James' galleta
	Warm-season grass 2 (in % relative cover) - Required	≥ 1.0%	0.99%	Blue grama	3.17%	Blue grama
	Warm-season grass 3 (in % relative cover) (bonus)	--	0.36%	Buffalograss	2.42%	Alkali sactaon
	Perennial cool-season grasses			**(10 spp.)**		**(11 spp.)**
	Cool-season grass 1 (in % relative cover) - Required	≥ 1.0%	9.40%	Western wheatgrass	6.97%	Colorado wildrye
	Cool-season grass 2 (in % relative cover) (bonus)	--	9.09%	Colorado wildrye	6.94%	Slender wheatgrass
	Perennial/biennial forbs (combined relative cover)	**≥ 1.0%**	**3.52%**	**(8 spp.)**	**0.68%**	**(5 spp.)**
	Forb 1 - Required	--	0.80%	Scarlet globemallow	0.31%	Purple aster
	Forb 2 - Required	--	0.75%	Flatspine stickseed	0.21%	Flatspine stickseed
	Forb 3 - Required	--	0.73%	Purple aster	0.10%	Upright prairie coneflower
	Forb 3 (Bonus)	--	0.52%	Palmer's penstemon	0.05%	Palmer's penstemon

Notes:
[1] Each parameter and corresponsing standards are explained in Table 2 of the Vegetation Survey Report
[2] Text Section 3.4 and Table 3 from each report explain the diversity results that are summarized in this table
RED highlighting indicates an unmet parameter

Figures





LEGEND

- Rain Gauges
- Two-tracks, Roads and Highways
- PLSS - Sections
- MMD VMU 1 (~ 838 acres)
- MMD VMU 2 (~ 1,518 acres)
- MMD VMU 3 (~ 1,284 acres)
- MMD VMU 4 (~ 1,238 acres)
- Liability Release
- MMD Permit Boundary

0 3,000 6,000 Feet

1 inch = 2,667 feet

NOTE(S)

1. VMU = VEGETATION MANAGEMENT UNIT FOR VEGETATION SAMPLING PLAN

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE - NEW MEXICO, WEST, FIPS 3003 (FEET)

CLIENT

CHEVRON MINING, INC. - MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE - MMD PERMIT PHASE III BOND RELEASE
2020 VEGETATION SAMPLING PROGRAM

TITLE

GENERAL OVERVIEW OF MCKINLEY SOUTH MINE AREA VEGETATION MANAGEMENT UNITS (VMU), 2020

CONSULTANT

GOLDER

YYYY-MM-DD	2020-11-05
DESIGNED	DSW
PREPARED	DSW
REVIEWED	DR
APPROVED	FR

PROJECT NO.	CONTROL	REV.	FIGURE
133-8105207	000630	--	1

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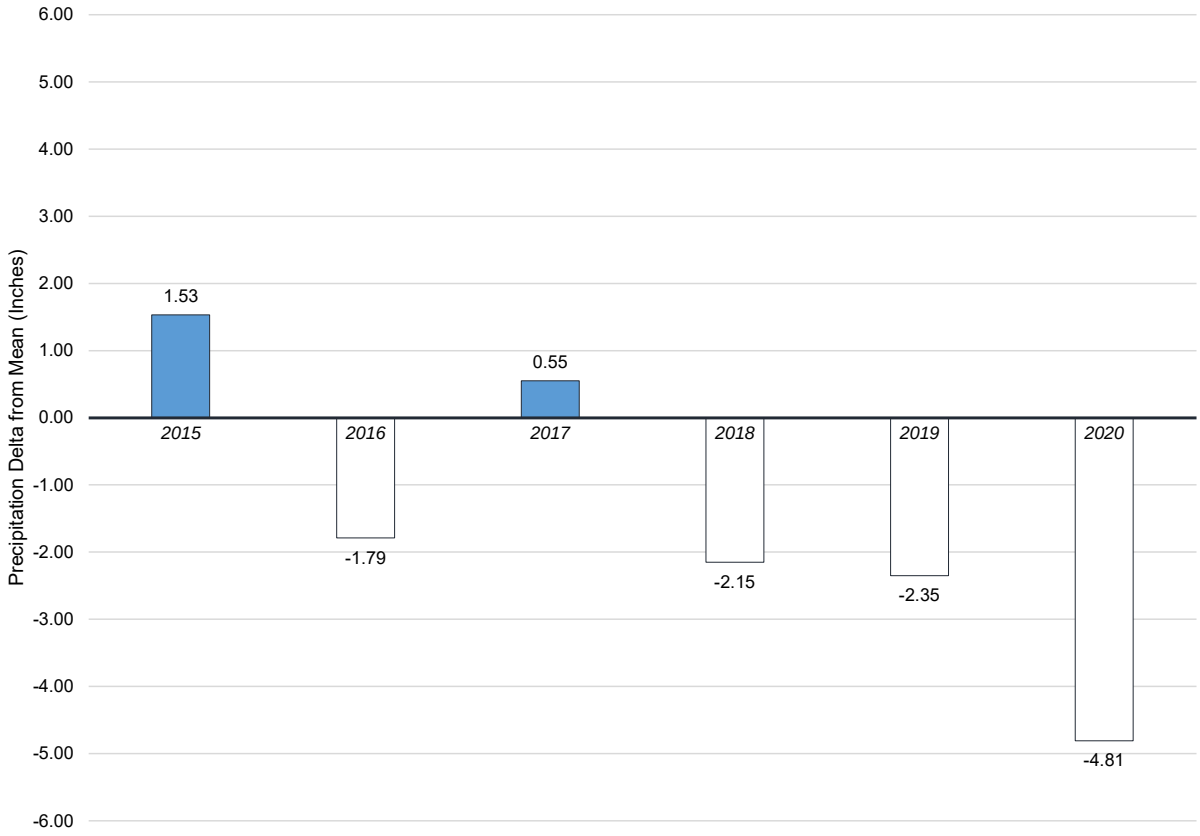
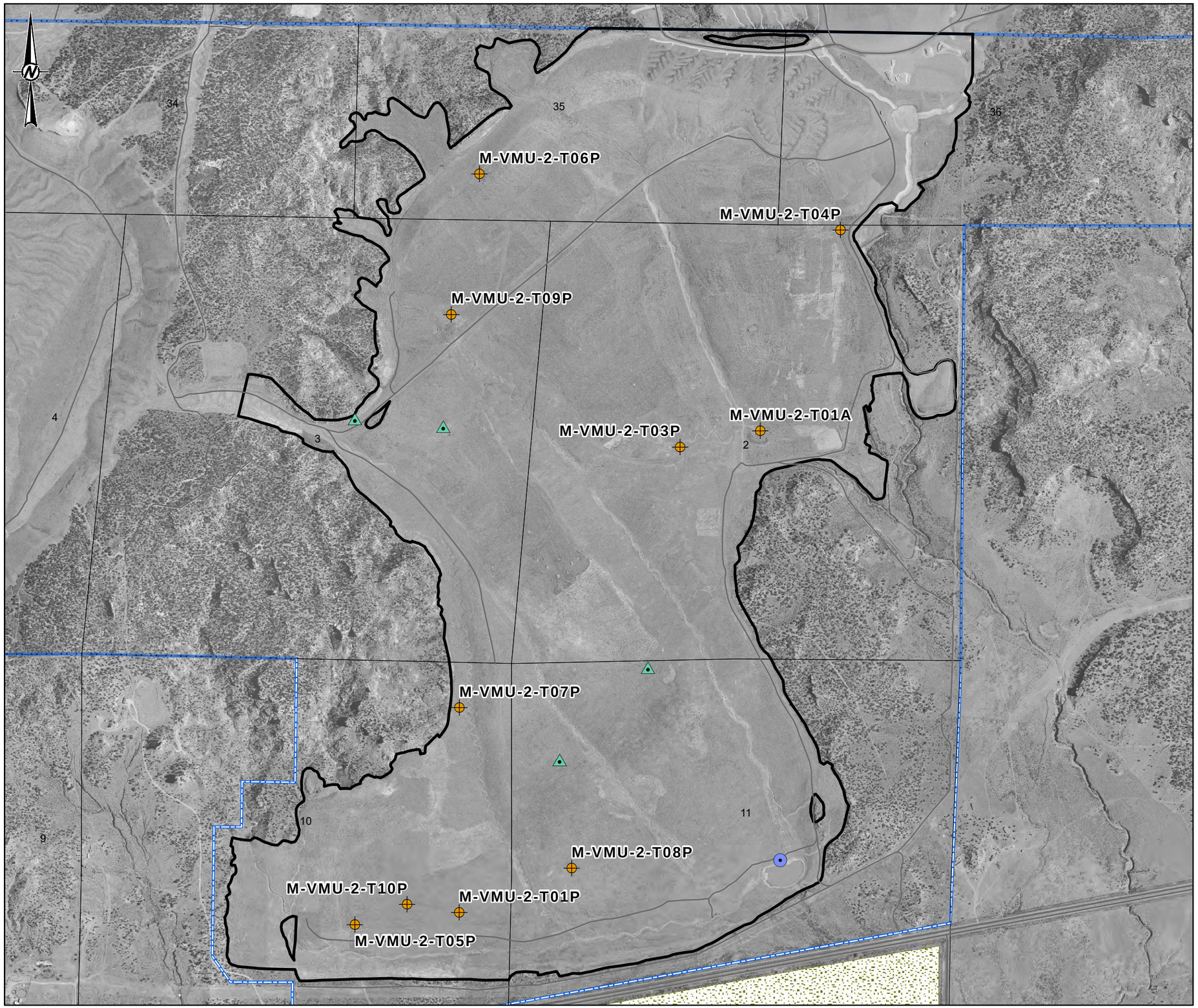
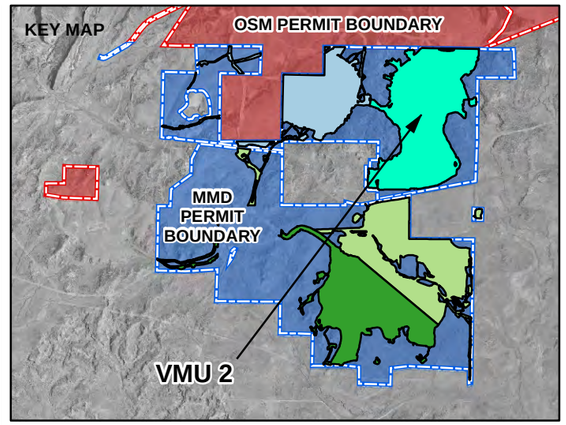
Figure 2: Departure of Growing Season Precipitation from Long-Term Seasonal Mean at Window Rock; Rain 11 Gage



Notes:
Long-term averages are from Window Rock, Arizona Station (029410) for 1937 to 1999 (Western Regional Climate Center, 2020).
Growing season total precipitation is the sum of monthly totals between April and September
Source data is in Table 1

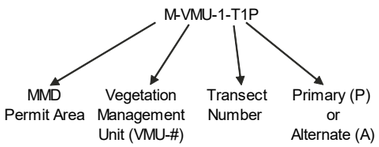




LEGEND

- Vegetation Transect - Sampled
- Vegetation Transect - Deselected
- Vegetation Transect - Additional Alternate
- Two-tracks, Roads and Highways
- PLSS - Sections
- MMD VMU 2 (~ 1,518 acres)
- Liability Release
- MMD Permit Boundary

TRANSECT LABEL EXPLANATION:



NOTE(S)

1. KEY MAP SCALE IS DIFFERENT FROM OVERVIEW OF VMUS.
2. M-VMU-2-T01A REPLACED M-VMU-2-T02P DUE TO LANDING IN A ROADWAY.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE – NEW MEXICO, WEST, FIPS 3003 (FEET).
2. ORTHO SOURCE: CHEVRON, 2013.

CLIENT

CHEVRON MINING, INC. – MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE – MMD PERMIT PHASE III BOND RELEASE
2020 VEGETATION SAMPLING PROGRAM

TITLE

VEGETATION MONITORING TRANSECTS, 2020
VEGETATION MANAGEMENT UNIT 2

CONSULTANT

GOLDER

YYYY-MM-DD	2020-11-20
DESIGNED	GFD
PREPARED	GFD
REVIEWED	DSW
APPROVED	DR

PROJECT NO.	CONTROL	REV.	FIGURE
1338105207	B002	0	3

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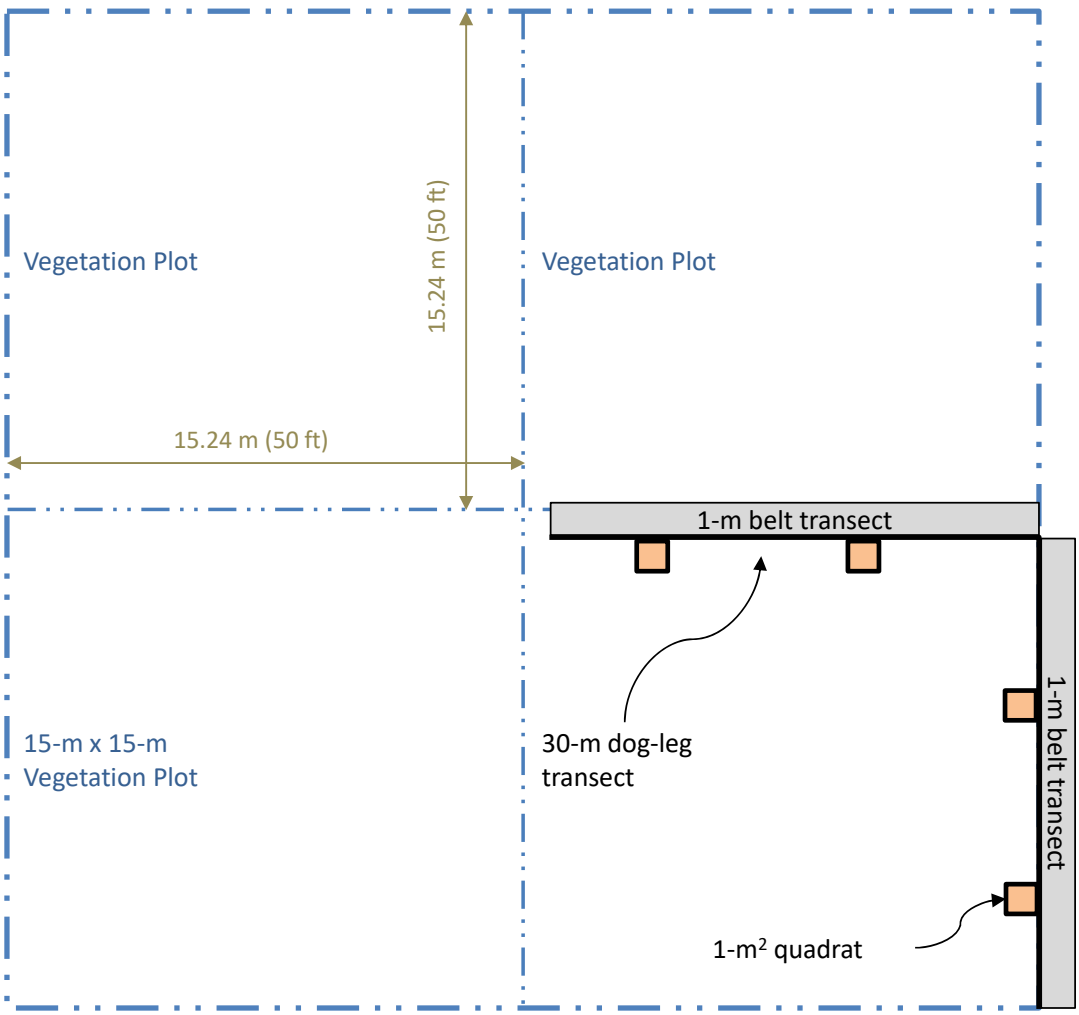
Figure 4: Vegetation Plot, Transect, and Quadrat Layout



not to scale

Figure 5: Typical Grass-Shrubland Vegetation in M-VMU-2, September 2020

Figure 6: Stabilization of the Mean for Perennial/Biennial Cover - M-VMU-2, 2020

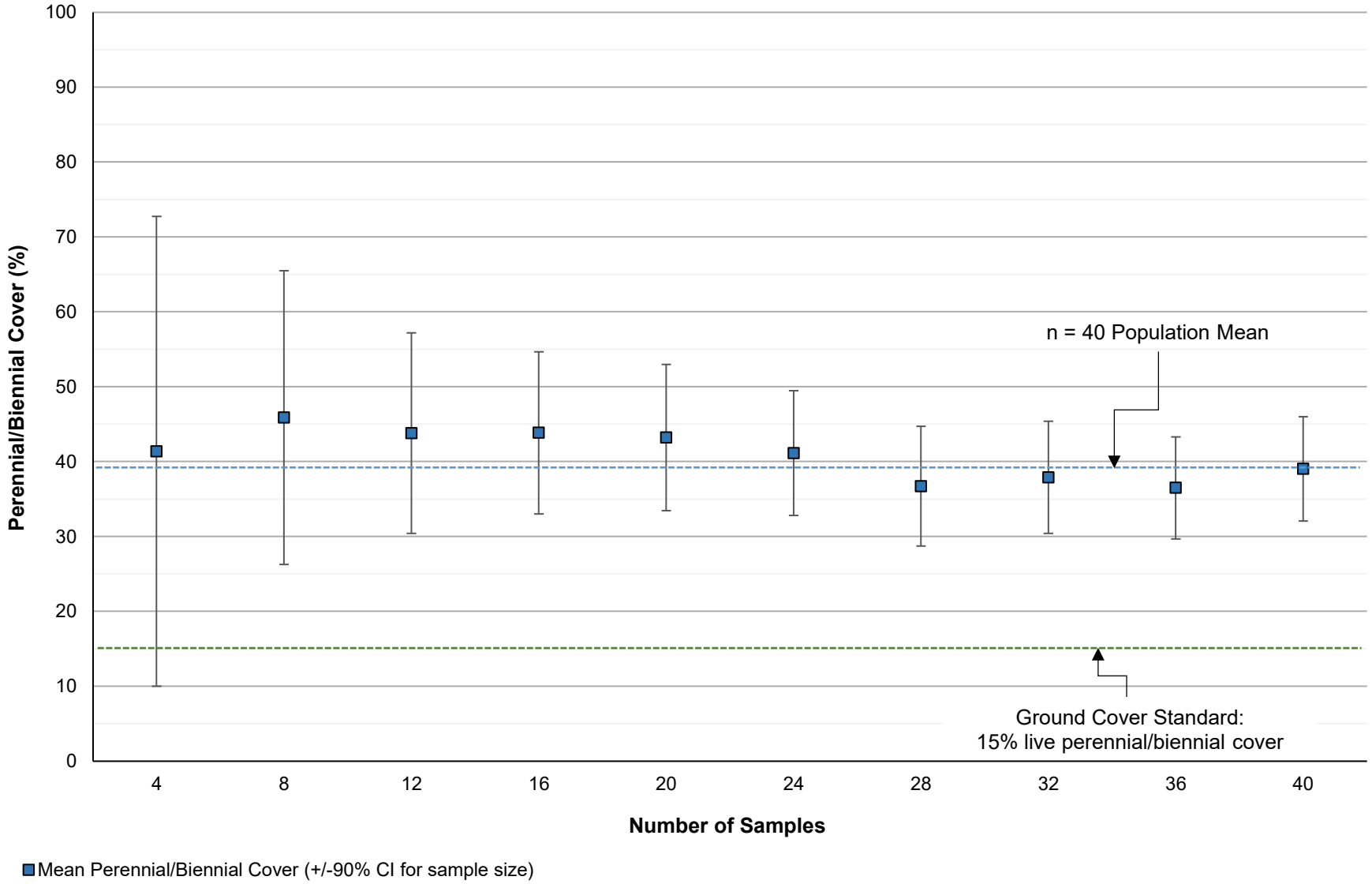


Figure 7: Stabilization of the Mean for Annual Forage Production - M-VMU-2, 2020

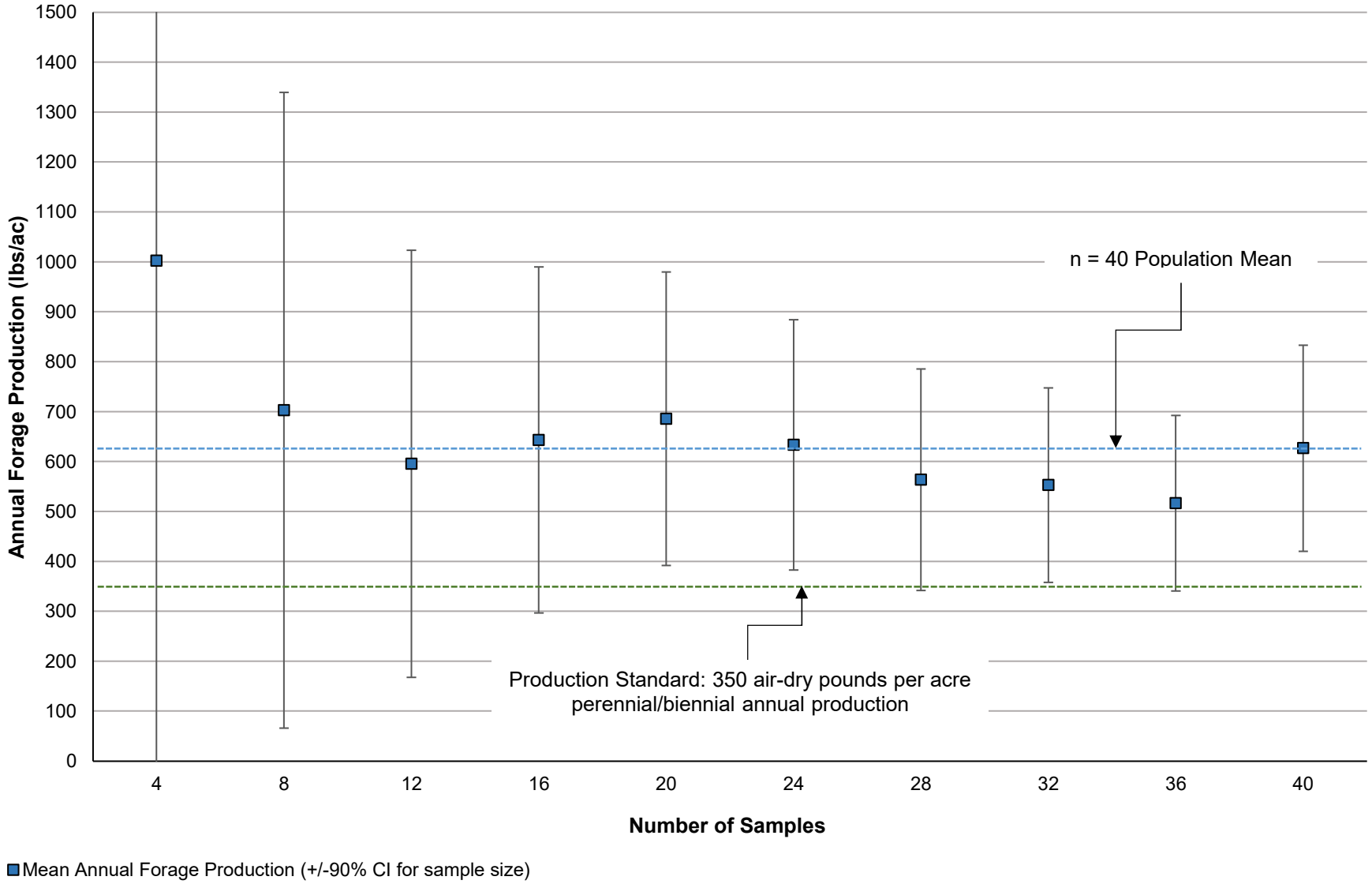


Figure 8: Stabilization of the Mean for Shrub Density - M-VMU-2, 2020

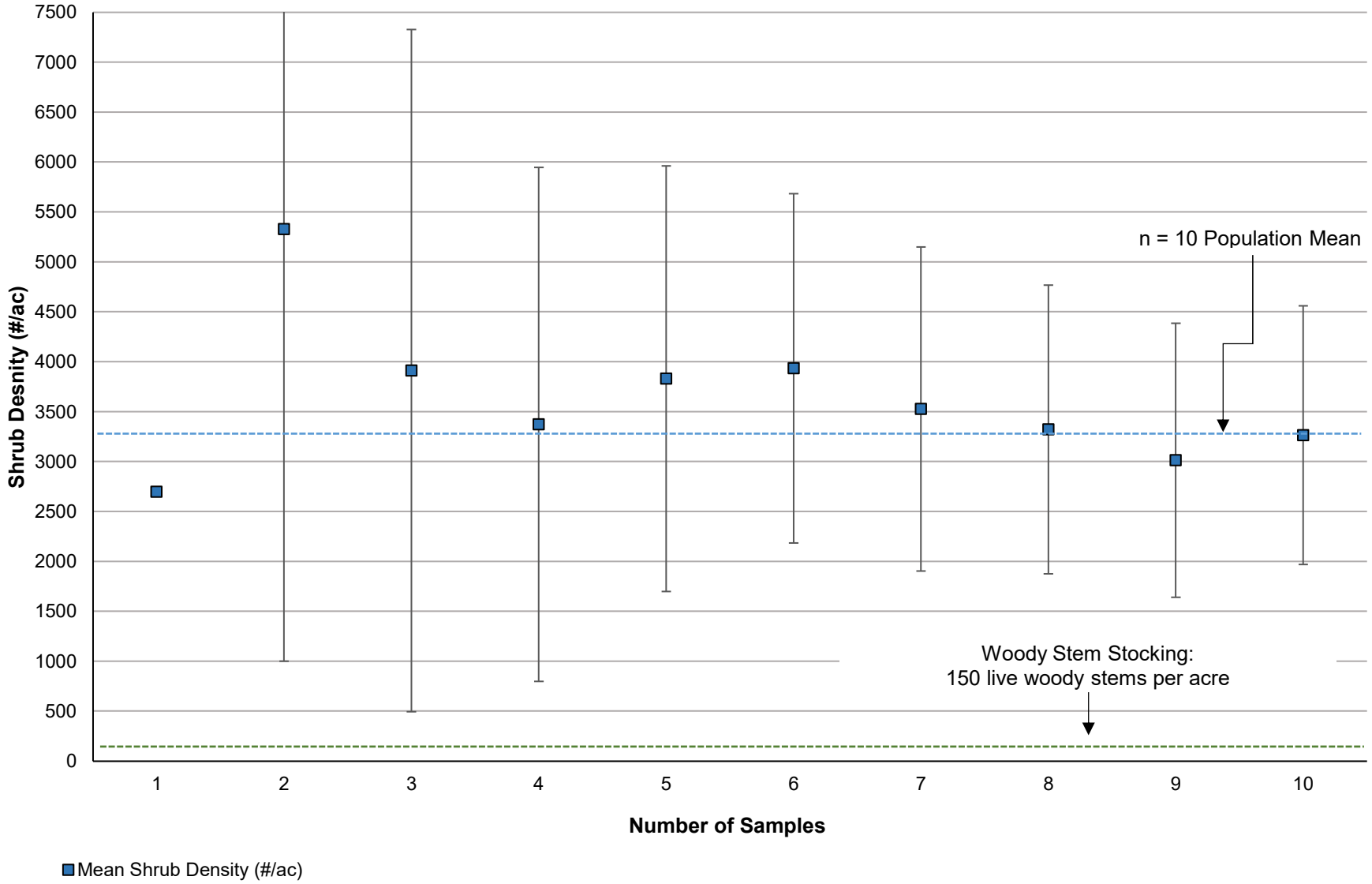


Figure 9: Graphical Summary of Water Year (WY) Precipitation Totals and Vegetation Parameters - M-VMU-2, 2019 to 2020

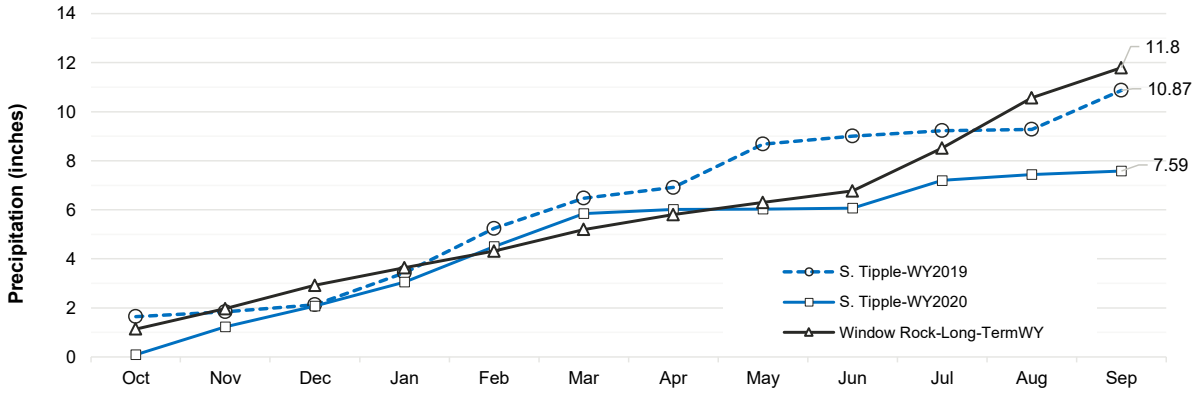


Figure 9a: Water Year (WY) Precipitation for the South Tipple location (WY2019 and WY 2020), compared to Window Rock

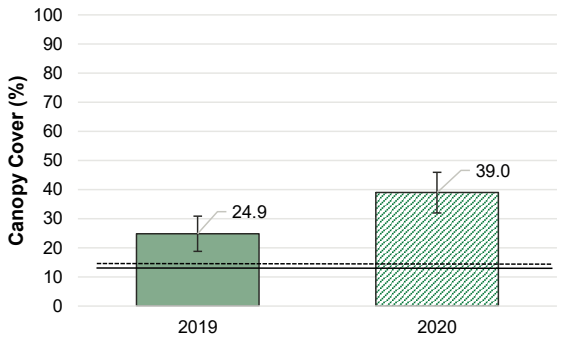


Figure 9b: M-VMU-2, Perennial/Biennial Canopy Cover (%) with Technical Standard (15%) and 90% of Technical Standard (13.5%)

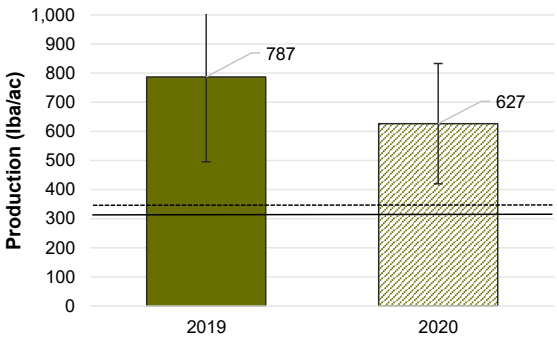


Figure 9c: M-VMU-2, Annual Forage Production (lbs/ac) with Technical Standard (350 lbs/ac) and 90% of Technical Standard (315 lbs/ac)

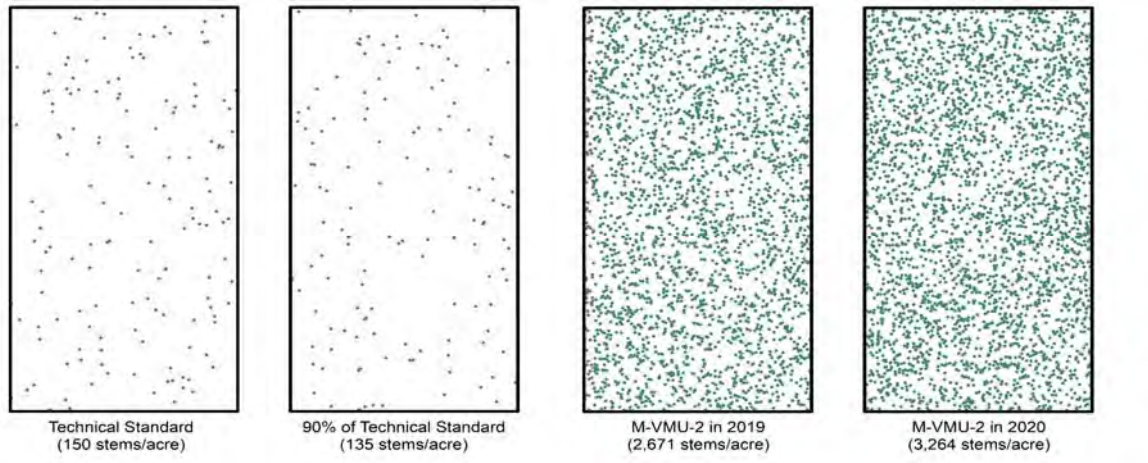


Figure 9d: M-VMU-2, Shrub Density (stems/acre) from Belt Transect with Technical Standard (150 stems/acre) and 90% of Technical Standard (135 stems/ac)

Notes:
WY = Water Year; an example is WY 2019: this includes the monthly totals for October (2018) through September (2019)
9a: Long-term averages are from Window Rock, Arizona Station (029410) for 1937 to 1999 (WRRC, 2020) and the source data is from Table 1
9b, c and d: Source data is from Table 4
9d: Plots represent one acre (not to scale), points represent a randomized density and do not represent the actual distribution, size, form or cover of woody plants

APPENDIX A

Vegetation Data Summary

N

M-VMU-2-T06P

M-VMU-2-T04P

M-VMU-2-T09P

M-VMU-2-T01A

M-VMU-2-T03P

M-VMU-2-T07P

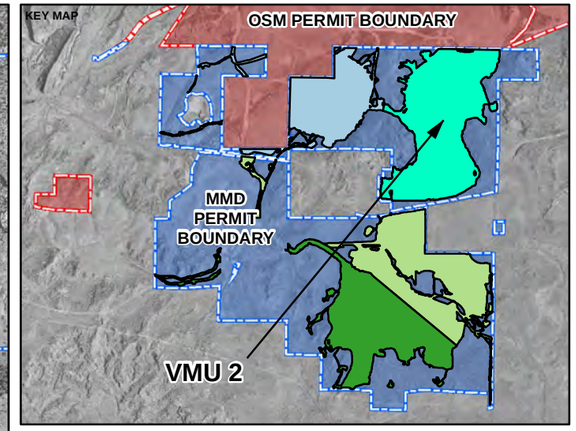
M-VMU-2-T08P

M-VMU-2-T10P

M-VMU-2-T05P

M-VMU-2-T01P

KEY MAP



LEGEND

- Transects for 2020 MMD PHIII Vegetation Sampling
- 2019 PHIII Transects
- Two-tracks, Roads and Highways
- MMD VMU 2 (~ 1,518 acres)
- Liability Release
- MMD Permit Boundary

Seeded Areas by End_Year

- < 1997
- 1997 to 2013
- 2014 to 2018

TRANSECT LABEL EXPLANATION:

M-VMU-1-T1P

- MMD Permit Area
- Vegetation Management Unit (VMU-#)
- Transect Number
- Primary (P) or Alternate (A)

0 1,200 2,400 Feet

1 inch = 1,200 feet

NOTE(S)

1. SEEDING AREA ATTRIBUTES WERE CLASSIFIED MANUALLY BASED ON SEED MIX VARIATIONS (<1997 AND 1997 TO 2013) WITH AN ADDITONAL CLASS FOR RECENT SEEDING (2014 TO 2018)

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927, STATE PLANE - NEW MEXICO, WEST, FIPS 3003 (FEET)
2. ORTHO SOURCE: CHEVRON, 2013

CLIENT

CHEVRON MINING, INC. - MCKINLEY MINE
24 MILES, NW HWY 264
MENTMORE, NM 87319

PROJECT

MCKINLEY MINE - MMD PERMIT PHASE III BOND RELEASE
2020 VEGETATION SAMPLING PROGRAM

TITLE

SEEDED AREA CLASSIFICATION (YEAR) AND TRANSECT LOCATIONS SAMPLED VEGETATION MANAGEMENT UNIT 2 (M-VMU-2), 2020

CONSULTANT

GOLDER

YYYY-MM-DD	2021-02-04
DESIGNED	DSW
PREPARED	DSW
REVIEWED	DR
APPROVED	FR

PROJECT NO.	CONTROL	REV.	FIGURE
133-8105207	000622	--	A-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

PATH: W:\McKinley\MXD\MMD_2020\133105207_000622_Fig4-1_M-VMU-2_2020.mxd PRINTED ON: 2021-02-05 AT 11:46:03 AM

Table A-1: M-VMU-2 Selected Transect Locations, 2020

Transect	Longitude (x)	Latitude (y)
M-VMU-2-T01A	-108.9267479	35.6466244
M-VMU-2-T01P	-108.9389486	35.6302890
M-VMU-2-T03P	-108.9300527	35.6460536
M-VMU-2-T04P	-108.9235259	35.6534136
M-VMU-2-T05P	-108.9432443	35.6298439
M-VMU-2-T06P	-108.9384596	35.6551703
M-VMU-2-T07P	-108.9390400	35.6371834
M-VMU-2-T08P	-108.9343294	35.6318185
M-VMU-2-T09P	-108.9395538	35.6504282
M-VMU-2-T10P	-108.9411012	35.6305396

Table A-2: M-VMU-2 Canopy Cover Data, 2020

Transect	M-VMU-2-T01A				M-VMU-2-T01P				M-VMU-2-T03P				M-VMU-2-T04P				M-VMU-2-T05P				M-VMU-2-T06P				M-VMU-2-T07P				M-VMU-2-T08P				M-VMU-2-T09P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	1.20	7.00	--	0.30	0.50	--	--	--	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BRTE	--	--	--	--	0.50	--	--	--	--	--	--	--	--	--	--	--	13.00	3.50	--	1.25	--	--	--	--	--	--	--	--	13.00	--	--	--	--	--	--	2.45	--	--	--	3.25
Perennials																																								
ACHY	--	--	--	13.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.75	11.00	--	--	--	--	--	--	8.25	3.75	--	20.50	--	--	--	--
BOGR2	--	--	--	2.80	--	--	--	--	22.00	--	--	--	--	--	--	--	--	--	2.20	--	--	0.30	--	--	--	--	--	--	1.75	--	20.50	--	--	--	--	--	--	--	--	--
BRIN2	--	--	--	--	--	--	--	--	--	--	--	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ELEL	--	5.00	--	--	--	--	--	--	--	--	0.20	0.85	0.40	--	--	--	--	--	--	0.80	--	--	--	--	10.75	0.75	--	--	1.20	--	4.30	--	--	--	--	--	--	--	2.10	0.25
ELGL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.00	--	--	--
ELLAL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.50	--	--	--	--	--	--	--	--	--	--	--	--	1.50	--	--	--
ELTR7	--	--	--	--	--	--	--	--	8.00	0.85	15.00	3.25	--	--	--	--	--	23.50	--	--	--	--	10.00	23.00	--	--	--	--	--	--	--	--	--	--	--	--	18.00	5.75	--	1.00
HECO26	--	--	--	--	--	--	11.60	--	--	--	20.50	1.00	--	--	--	--	--	--	--	--	--	6.75	0.75	1.30	--	--	--	--	--	1.30	--	0.50	0.70	--	3.75	--	2.20	6.75	--	--
LEAM	--	--	11.80	9.75	--	--	--	--	--	--	--	--	--	13.75	--	19.00	--	--	--	--	22.50	0.75	--	--	--	--	--	--	--	--	--	--	--	17.75	13.50	--	--	--	--	--
PASM	--	--	--	--	--	9.50	--	4.60	--	0.15	--	--	--	--	--	--	--	11.00	--	--	--	--	--	--	8.25	--	--	--	10.00	11.00	1.80	9.75	--	--	--	--	--	--	--	--
PLJA	--	--	22.00	1.70	83.50	--	14.00	14.50	--	60.75	--	4.25	18.00	--	3.50	22.00	--	5.00	--	21.50	--	--	--	--	--	--	--	--	31.00	--	--	11.00	1.50	--	10.00	18.00	6.00	1.00	--	13.50
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPAI	--	--	--	--	2.50	--	1.85	--	--	--	--	--	6.25	3.25	--	--	7.00	4.50	--	12.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
THIN6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.75
Forbs																																								
Annual																																								
SATR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.20	--	--	--	--	--	--	--
Annual/Biennial																																								
LAOC3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.60	--	--	--	--	0.75	--	--	--	--	--	--	--	0.50	0.40	--	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.70	0.20	2.80	0.20	--	--	--	--	--	--	--	--	--	--	--	--
Perennials																																								
MENTZ	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	0.40	--	--	--	--	--	--	0.15	--	--	--	--	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
ATCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.30	--	--	--	--	--
ATGA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23.00	--	--	--	--	--	--	--	--	--	--	32.00	--	--	--	--	--	--	--	--	--
ATRIP	--	--	--	--	--	--	--	--	--	--	--	--	0.70	--	--	--	--	--	--	--	21.00	23.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	87.00	--	10.00	--	--	--	--	--	--	--	21.50	1.10	60.00	26.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	51.00	--	63.00	15.00
KRLA	--	--	2.00	--	14.00	18.25	2.30	25.00	--	--	--	--	--	--	--	--	19.50	0.75	0.30	--	--	--	--	--	3.75	--	--	--	3.75	16.00	27.00	1.30	--	--	--	--	--	10.00	40.00	--
Cover Components																																								
Perennial/Biennial Vegetation Cover	0.0	92.4	35.8	37.3	100.0	27.8	29.8	44.1	30.2	61.8	35.7	30.9	27.0	78.0	30.0	41.0	26.5	74.3	4.1	57.8	43.5	31.3	23.1	25.1	26.1	12.0	2.8	0.2	47.7	28.3	85.6	23.1	10.9	21.5	28.6	40.0	79.2	23.5	105.1	39.5
Total Vegetation Cover	1.2	88.5	35.3	34.5	90.5	26.5	28.5	43.5	29.1	61.0	35.7	28.5	26.8	62.5	30.0	42.0	37.8	75.5	4.1	46.0	43.0	31.3	23.1	25.0	19.5	11.8	2.8	0.2	58.0	28.0	61.5	22.3	11.0	21.5	28.2	41.5	68.0	23.5	96.5	42.0
Rock	0.0	0.0	0.3	13.0	0.0	2.8	0.6	0.5	0.3	0.0	0.5	0.4	0.8	0.5	20.0	0.0	2.0	0.0	7.0	0.8	1.0	18.0	21.0	18.5	1.5	3.0	1.0	13.5	1.5	2.3	0.3	1.0	0.0	0.0	0.0	4.2	0.5	1.0	0.0	0.5
Litter	9.0	0.0	3.9	2.5	2.0	6.2	17.0	33.0	4.0	17.5	5.2	2.8	20.0	8.0	2.8	32.0	21.0	16.3	11.0	21.3	52.0	3.0	10.0	8.5	74.3	29.0	5.0	30.0	22.0	6.0	31.8	29.3	20.0	25.0	14.0	28.0	14.8	43.5	3.5	12.5
Base Soil	89.8	11.5	60.5	50.0	7.5	64.5	53.9	23.0	66.6	21.5	58.6	68.4	52.5	29.0	47.3	26.0	39.3	8.3	77.9	32.0	4.0	47.7	45.9	48.0	4.8	56.3	91.2	56.3	18.5	63.7	6.5	47.5	69.0	53.5	57.8	26.3	16.8	32.0	0.0	45.0

Notes:
Species codes defined in Table 3

Table A-3: M-VMU-2 Basal Cover Data, 2020

Transect	M-VMU-2-T01A				M-VMU-2-T01P				M-VMU-2-T03P				M-VMU-2-T04P				M-VMU-2-T05P				M-VMU-2-T06P				M-VMU-2-T07P				M-VMU-2-T08P				M-VMU-2-T09P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	T	0.45	--	T	T	--	--	--	--	--	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BRTE	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	0.60	0.15	--	0.05	--	--	--	--	--	--	--	--	0.40	--	--	--	--	--	--	0.10	--	--	--	0.40
Perennials																																								
ACHY	--	--	--	0.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	0.40	--	--	--	--	--	--	0.35	0.30	--	1.25	--	--	--	--
BOGR2	--	--	--	0.25	--	--	--	--	2.75	--	--	--	--	--	--	--	--	--	0.35	--	--	0.10	--	--	--	--	--	--	0.15	--	2.40	--	--	--	--	--	--	--	--	--
BRIN2	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ELEL	--	0.20	--	--	--	--	--	--	--	--	T	0.05	0.05	--	--	--	--	--	--	0.05	--	--	--	--	0.55	0.05	--	--	0.10	--	0.15	--	--	--	--	--	--	--	0.10	0.05
ELGL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.15	--	--	--
ELLAL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	--	--	--
ELTR7	--	--	--	--	--	--	--	--	0.30	0.10	0.70	0.30	--	--	--	--	--	2.10	--	--	--	--	0.35	1.50	--	--	--	--	--	--	--	--	--	--	--	--	0.90	0.20	--	0.10
HECO26	--	--	--	--	--	--	0.40	--	--	--	1.20	0.10	--	--	--	--	--	--	--	--	--	0.40	0.10	0.15	--	--	--	--	--	0.10	--	0.05	0.05	--	0.25	--	0.30	0.30	--	--
LEAM	--	--	0.85	0.65	--	--	--	--	--	--	--	--	--	1.00	--	1.75	--	--	--	--	3.00	0.05	--	--	--	--	--	--	--	--	--	--	--	0.85	0.55	--	--	--	--	--
PASM	--	--	--	--	--	0.40	--	0.20	--	T	--	--	--	--	--	--	--	0.45	--	--	--	--	--	--	0.20	--	--	--	0.55	0.60	0.10	0.85	--	--	--	--	--	--	--	--
PLJA	--	--	1.20	0.10	4.75	--	0.60	0.70	--	3.75	--	0.20	1.00	--	0.15	1.10	--	0.20	--	--	--	--	--	--	--	--	--	--	1.30	--	--	0.55	0.10	--	0.70	0.90	0.50	0.10	--	0.70
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPAI	--	--	--	--	0.20	--	0.10	--	--	--	--	--	0.75	0.55	--	--	0.45	0.30	--	1.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
THIN6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.60
Forbs																																								
Annual																																								
SATR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--
Annual/Biennial																																								
LAOC3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	--	--	--	--	0.05	--	--	--	--	--	--	--	T	T	--	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	T	0.30	T	--	--	--	--	--	--	--	--	--	--	--	--
Perennials																																								
MENTZ	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	T	--	--	--	--	--	--	T	--	--	--	--	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
ATCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.10	--	--	--	--
ATGA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.50	--	--	--	--	--	--	--	--	--	--	0.35	--	--	--	--	--	--	--	--	--
ATRIP	--	--	--	--	--	--	--	--	--	--	--	--	0.10	--	--	--	--	--	--	--	1.25	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	1.00	--	0.15	--	--	--	--	--	--	--	0.35	0.05	1.80	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.00	--	3.50	0.35
KRLA	--	--	0.05	--	0.55	1.30	0.15	0.80	--	--	--	--	--	--	--	--	0.60	0.05	T	--	--	--	--	--	0.10	--	--	--	0.30	0.30	0.70	0.10	--	--	--	--	--	0.20	1.75	--
Cover Components																																								
Perennial/Biennial Vegetation Cover	0.0	1.2	2.1	1.6	5.5	1.7	1.3	1.7	3.1	3.9	1.9	1.0	2.0	3.5	0.3	2.9	1.1	4.1	0.4	2.0	4.3	1.6	1.3	1.7	1.1	0.5	0.3	0.0	2.4	1.0	3.7	1.6	0.6	1.2	1.6	2.3	4.9	0.8	5.4	1.8
Total Vegetation Cover	0.0	1.7	2.1	1.6	5.6	1.7	1.3	1.7	3.1	3.9	1.9	1.0	2.0	3.5	0.3	2.9	1.7	4.3	0.4	2.0	4.3	1.6	1.3	1.7	1.1	0.5	0.3	0.0	2.8	1.0	3.7	1.6	0.6	1.2	1.6	2.4	4.9	0.8	5.4	2.2
Rock	0.0	0.0	0.3	14.0	0.0	3.0	1.5	0.8	0.3	0.0	0.6	0.4	1.0	0.6	30.0	0.0	2.8	0.3	7.3	1.5	1.0	20.0	22.0	21.0	1.8	3.3	1.0	13.5	2.0	3.6	0.7	1.6	0.0	0.0	0.0	5.5	0.6	1.0	0.0	0.8
Litter	10.0	79.0	10.5	11.0	76.5	13.5	35.0	60.0	19.0	71.0	20.0	18.0	34.0	37.0	9.5	62.0	49.0	83.5	13.0	56.0	89.5	28.0	28.0	24.0	80.0	39.0	5.5	30.1	68.5	17.3	81.0	42.0	28.0	43.0	17.0	47.0	77.0	63.0	94.3	46.0
Base Soil	90.0	19.3	87.1	73.4	17.9	81.8	62.3	37.5	77.6	25.1	77.5	80.6	63.0	58.9	60.2	35.1	46.6	12.0	79.3	40.5	5.3	50.5	48.7	53.3	17.2	57.3	93.2	56.4	26.7	78.1	14.6	54.8	71.4	55.9	81.4	45.2	17.6	35.2	0.4	51.1

Notes:
Species codes defined in Table 3
T = Trace amount of cover; 0.033 is the trace value used for data analysis purposes

Table A-4: M-VMU-2 Frequency Data (counts), 2020

Transect	M-VMU-2-T01A				M-VMU-2-T01P				M-VMU-2-T03P				M-VMU-2-T04P				M-VMU-2-T05P				M-VMU-2-T06P				M-VMU-2-T07P				M-VMU-2-T08P				M-VMU-2-T09P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses																																								
Annuals																																								
BRAR5	5	12	--	2	2	--	--	--	--	--	--	--	--	--	--	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BRTE	--	--	--	--	7	--	--	--	--	--	--	--	--	--	--	--	12	7	--	4	--	--	--	--	--	--	--	--	29	--	--	--	--	--	--	35	--	--	--	7
Perennials																																								
ACHY	--	--	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	9	--	--	--	--	--	--	7	3	--	1	--	--	--	--
BOGR2	--	--	--	4	--	--	--	--	3--	--	--	--	--	--	--	--	--	--	5	--	--	1	--	--	--	--	--	--	1	--	9	--	--	--	--	--	--	--	--	--
BRIN2	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ELEL	--	7	--	--	--	--	--	--	--	--	1	1	1	--	--	--	--	--	--	1	--	--	--	--	10	1	--	--	3	--	3	--	--	--	--	--	--	--	6	1
ELGL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--
ELLAL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--
ELTR7	--	--	--	--	--	--	--	--	48	2	10	9	--	--	--	--	--	15	--	--	--	--	7	37	--	--	--	--	--	--	--	--	--	--	--	--	13	6	--	1
HECO26	--	--	--	--	--	--	4	--	--	--	7	2	--	--	--	--	--	--	--	--	--	12	3	1	--	--	--	--	--	2	--	1	4	--	13	--	2	3	--	--
LEAM	--	--	3	13	--	--	--	--	--	--	--	--	--	8	--	13	--	--	--	--	4	1	--	--	--	--	--	--	--	--	--	--	--	15	18	--	--	--	--	--
PASM	--	--	--	--	--	27	--	6	--	1	--	--	--	--	--	--	--	7	--	--	--	--	--	--	15	--	--	--	11	29	3	23	--	--	--	--	--	--	--	--
PLJA	--	--	17	2	91	--	11	13	--	45	--	5	9	--	5	20	--	5	--	13	--	--	--	--	--	--	--	--	17	--	--	11	3	--	17	23	5	1	--	13
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPAI	--	--	--	--	1	--	1	--	--	--	--	--	11	5	--	--	6	2	--	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
THIN6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3
Forbs																																								
Annual																																								
SATR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	--	--	--	--	--	--	--
Annual/Biennial																																								
LAOC3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	--	--	--	9	--	--	--	--	--	--	--	--	8	5	--	--	--	--	--	--	--
Annual/Biennial/Perennial																																								
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	1	3	1	--	--	--	--	--	--	--	--	--	--	--	--
Perennials																																								
MENTZ	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	1	--	--	--	--	--	--	1	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti																																								
Perennials																																								
ATCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--
ATGA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--
ATRIP	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	9	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	1	--	3	--	--	--	--	--	--	--	1	3	3	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	2
KRLA	--	--	1	--	2	2	1	8	--	--	--	--	--	--	--	--	1	1	1	--	--	--	--	--	3	--	--	--	3	1	3	1	--	--	--	--	--	2	7	--

Notes:
Species codes defined in Table 3
The quadrat (plot) size is one square meter ($1m^2$; see Figure 4); plants rooted in the quadrat were counted on an individual basis

Table A-5: M-VMU-2 Air-dry Aboveground Annual Production Data, 2020

Transect	M-VMU-2-T01A				M-VMU-2-T01P				M-VMU-2-T03P				M-VMU-2-T04P				M-VMU-2-T05P				M-VMU-2-T06P				M-VMU-2-T07P				M-VMU-2-T08P				M-VMU-2-T09P				M-VMU-2-T10P			
Quadrat	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Grasses (g/m^2)																																								
Non-forage																																								
BRAR5	0.81	3.37	--	0.58	1.25	--	--	--	--	--	--	--	--	--	--	1.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BRTE	--	--	--	--	0.95	--	--	--	--	--	--	--	--	--	--	--	8.27	2.23	--	1.41	--	--	--	--	--	--	--	--	5.11	--	--	--	--	--	--	2.83	--	--	--	3.97
Forage																																								
ACHY	--	--	--	11.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.75	8.11	--	--	--	--	--	--	5.22	4.80	--	35.91	--	--	--	--
BOGR2	--	--	--	2.59	--	--	--	--	6.57	--	--	--	--	--	--	--	--	--	2.73	--	--	0.42	--	--	--	--	--	--	1.26	--	8.28	--	--	--	--	--	--	--	--	--
BRIN2	--	--	--	--	--	--	--	--	--	--	--	--	0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ELEL	--	2.94	--	--	--	--	--	--	--	--	1.66	1.32	2.48	--	--	--	--	--	--	0.77	--	--	--	--	12.48	1.63	--	--	0.92	--	2.66	--	--	--	--	--	--	--	0.85	1.47
ELGL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.43	--	--	--
ELLAL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11.66	--	--	--	--	--	--	--	--	--	--	--	--	1.58	--	--	--	--
ELTR7	--	--	--	--	--	--	--	--	4.21	2.27	18.03	3.76	--	--	--	--	--	52.32	--	--	--	--	6.55	13.51	--	--	--	--	--	--	--	--	--	--	--	--	8.63	4.60	--	0.97
HECO26	--	--	--	--	--	--	13.50	--	--	--	12.69	0.62	--	--	--	--	--	--	--	--	--	5.68	1.28	1.58	--	--	--	--	--	0.87	--	0.52	2.38	--	6.59	--	0.94	1.73	--	--
LEAM	--	--	3.89	12.88	--	--	--	--	--	--	--	--	--	12.10	--	14.29	--	--	--	--	56.95	2.73	--	--	--	--	--	--	--	--	--	--	--	14.00	13.05	--	--	--	--	--
PASM	--	--	--	--	--	8.88	--	4.53	--	1.80	--	--	--	--	--	--	--	12.86	--	--	--	--	--	--	3.53	--	--	--	5.22	5.79	2.62	12.13	--	--	--	--	--	--	--	--
PLJA	--	--	17.52	2.71	45.52	--	11.83	14.36	--	85.46	--	3.41	14.46	--	5.20	16.83	--	10.80	--	18.97	--	--	--	--	--	--	--	--	19.66	--	--	10.35	0.74	--	6.48	7.04	5.89	0.89	--	11.73
PSSP6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPAI	--	--	--	--	1.28	--	3.24	--	--	--	--	--	1.80	0.57	--	--	9.82	4.14	--	4.80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
THIN6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.88
Forbs (g/m^2)																																								
Forage																																								
LAOC3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.83	--	--	--	--	1.00	--	--	--	--	--	--	1.32	--	--	--	--	--	--	--	--	--
MACA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11.06	1.11	6.29	0.43	--	--	--	--	--	--	--	--	--	--	--	--
PEPA8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RACO3	--	0.97	--	--	--	--	--	--	0.53	--	--	--	--	1.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shrubs, Trees and Cacti (g/m^2)																																								
Forage																																								
ATCA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	101.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.87	--	--	--	--	--
ATGA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	55.04	--	--	--	--	--	--	--	--	--	--	29.71	--	--	--	--	--	--	--	--	--
ATRIP	--	--	--	--	--	--	--	--	--	--	--	--	3.61	--	--	--	--	--	--	--	40.75	20.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ERNA	--	374.87	--	13.04	--	--	--	--	--	--	--	28.38	1.04	187.10	90.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	251.51	--	279.68	51.60
KRLA	--	--	6.33	--	15.49	21.37	2.76	38.17	--	--	--	--	--	--	--	--	105.13	3.16	0.84	--	--	--	--	--	14.81	--	--	--	7.11	62.14	39.23	4.14	--	--	--	--	--	8.51	69.90	--
Total Air-dry Aboveground Annual Production (g/m^2)																																								
Non-forage	0.81	3.37	0.00	0.58	2.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	8.27	2.23	0.00	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.11	0.00	0.00	0.00	0.00	0.00	0.00	2.83	0.00	0.00	0.00	3.97
Forage	0.00	378.79	27.75	42.78	62.30	30.26	31.34	57.07	11.32	89.54	32.39	37.51	24.07	201.73	95.81	31.13	114.96	184.85	4.41	79.59	97.71	29.73	22.97	16.10	47.30	10.86	6.29	0.43	34.19	68.81	82.52	28.48	8.35	18.81	30.00	44.54	273.41	15.74	350.44	85.67
Total Production	0.81	382.16	27.75	43.36	64.51	30.26	31.34	57.07	11.32	89.54	32.39	37.51	24.07	201.73	95.81	32.96	123.23	187.08	4.41	81.01	97.71	29.73	22.97	16.10	47.30	10.86	6.29	0.43	39.30	68.81	82.52	28.48	8.35	18.81	30.00	47.37	273.41	15.74	350.44	89.64
Total Air-dry Aboveground Annual Production (lbs/ac)																																								
Non-forage	7	30	0	5	20	0	0	0	0	0	0	0	0	0	0	16	74	20	0	13	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	25	0	0	0	35
Forage	0	3379	248	382	556	270	280	509	101	799	289	335	215	1800	855	278	1026	1649	39	710	872	265	205	144	422	97	56	4	305	614	736	254	74	168	268	397	2439	140	3127	764
Total Production	7	3410	248	387	576	270	280	509	101	799	289	335	215	1800	855	294	1099	1669	39	723	872	265	205	144	422	97	56	4	351	614	736	254	74	168	268	423	2439	140	3127	800

Notes:
g/m^2 = grams per square meter
lbs/ac = pounds per acre
1 gram per square meter (g/m^2) is equal to 8.922 pounds per acre (lbs/ac)
Species codes defined in Table 3
Non-forage and forage determinations are based on the permit (e.g. plants of perennial and/or biennial duration are forage and plants of annual duration are non-forage; noxious weeds are non-forage)

Table A-6: M-VMU-2 Shrub Belt Transect Data, 2020

Transect	M-VMU-2-T01A	M-VMU-2-T01P	M-VMU-2-T03P	M-VMU-2-T04P	M-VMU-2-T05P	M-VMU-2-T06P	M-VMU-2-T07P	M-VMU-2-T08P	M-VMU-2-T09P	M-VMU-2-T10P
Shrubs, Trees and Cacti										
ATCA	--	--	1	7	2	13	3	5	3	2
ATCO	--	1	--	--	--	2	--	--	--	--
ATGA	--	1	--	--	2	--	--	--	--	1
ATRIP	--	--	2	2	2	17	--	1	--	--
CHVI	--	--	--	--	--	1	--	--	--	--
EPTR	1	--	--	--	--	--	--	--	--	--
ERNA	9	--	4	3	--	--	4	--	--	8
GUSA	--	--	1	1	--	--	1	--	--	--
KRLA	10	57	--	--	36	--	--	8	--	29
OPPO	--	--	--	--	--	--	--	--	1	--
PUME	--	--	--	--	--	--	--	--	--	1

Notes:

The shnrub belt transect area (plot) is 30m2 (1mx30m; see Figure 4); shrubs rooted in the belt transect were counted on an individual basis

Code	Scientific Name	Common Name
ATCA	*Atriplex canescens*	Four-wing saltbush
ATCO	*Atriplex confertifolia*	Shadscale saltbush
ATGA	*Atriplex gardneri*	Gardner's saltbush
ATRIP	*Atriplex species*	Unknown saltbush species
CHVI	*Chrysothamnus viscidiflorus*	Yellow rabbitbrush
EPTR	*Ephedra trifurca*	Longleaf jointfir
ERNA	*Ericameria nauseosa*	Rubber rabbitbrush
GUSA	*Gutierrezia sarothrae*	Broom snakeweed
KRLA	*Krascheninnikovia lanata*	Winterfat
OPPO	*Opuntia polyacantha*	Plains pricklypear
PUME	*Purshia mexicana*	Mexican cliffrose