Revegetation Plan
for the Lynx Cat Mountain Mine,
near the Community of Hinkley,
San Bernardino County, California

(U.S. Geological Survey 7.5' Hinkley quadrangle,
the Southeast 1/4 of Section 1, Township 10 North, Range 4 West, S.B.B.&M.)

Job #14-014b

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Figure 1. Vicinity Map with Proposed Access Road and Mine Site

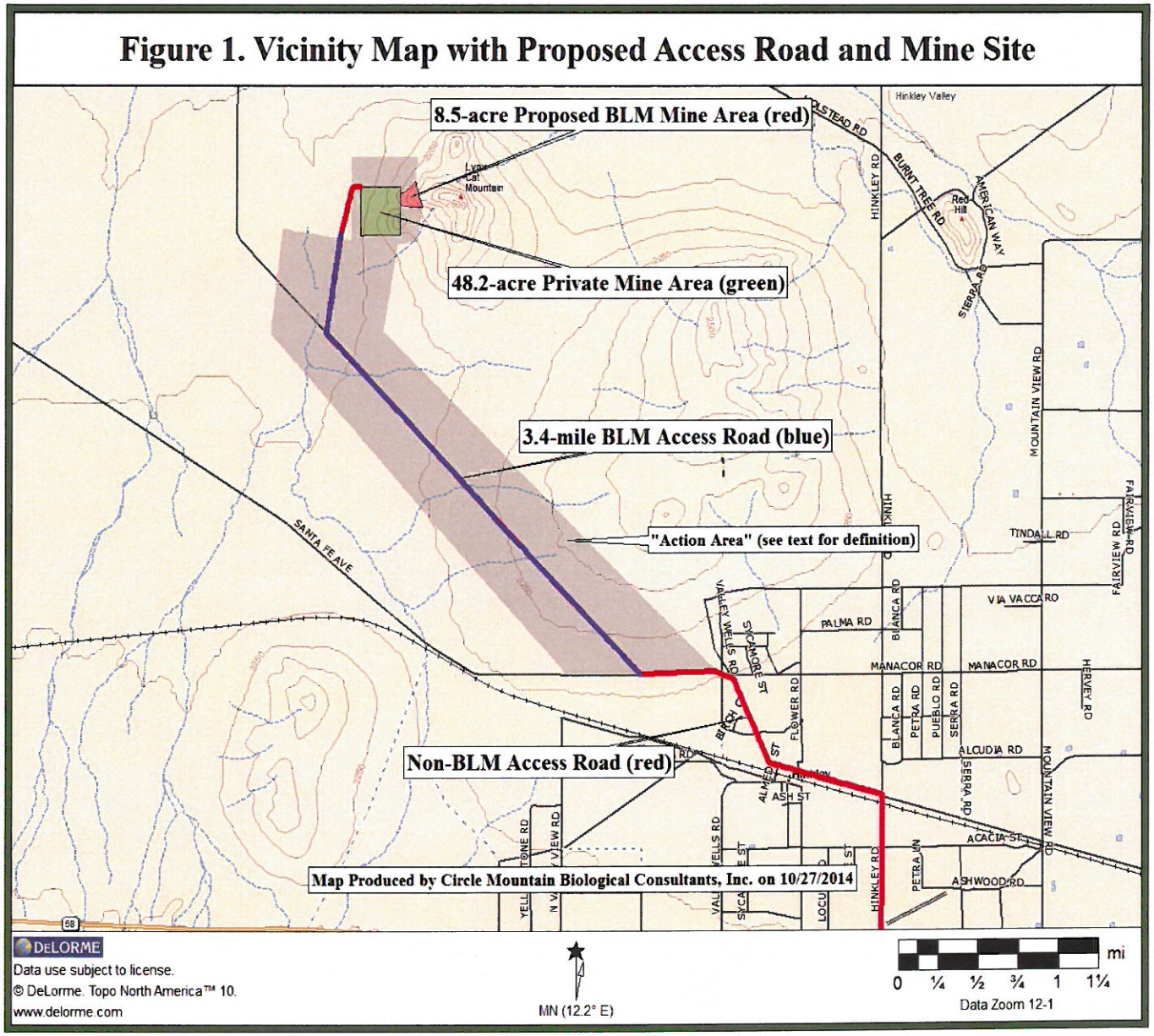
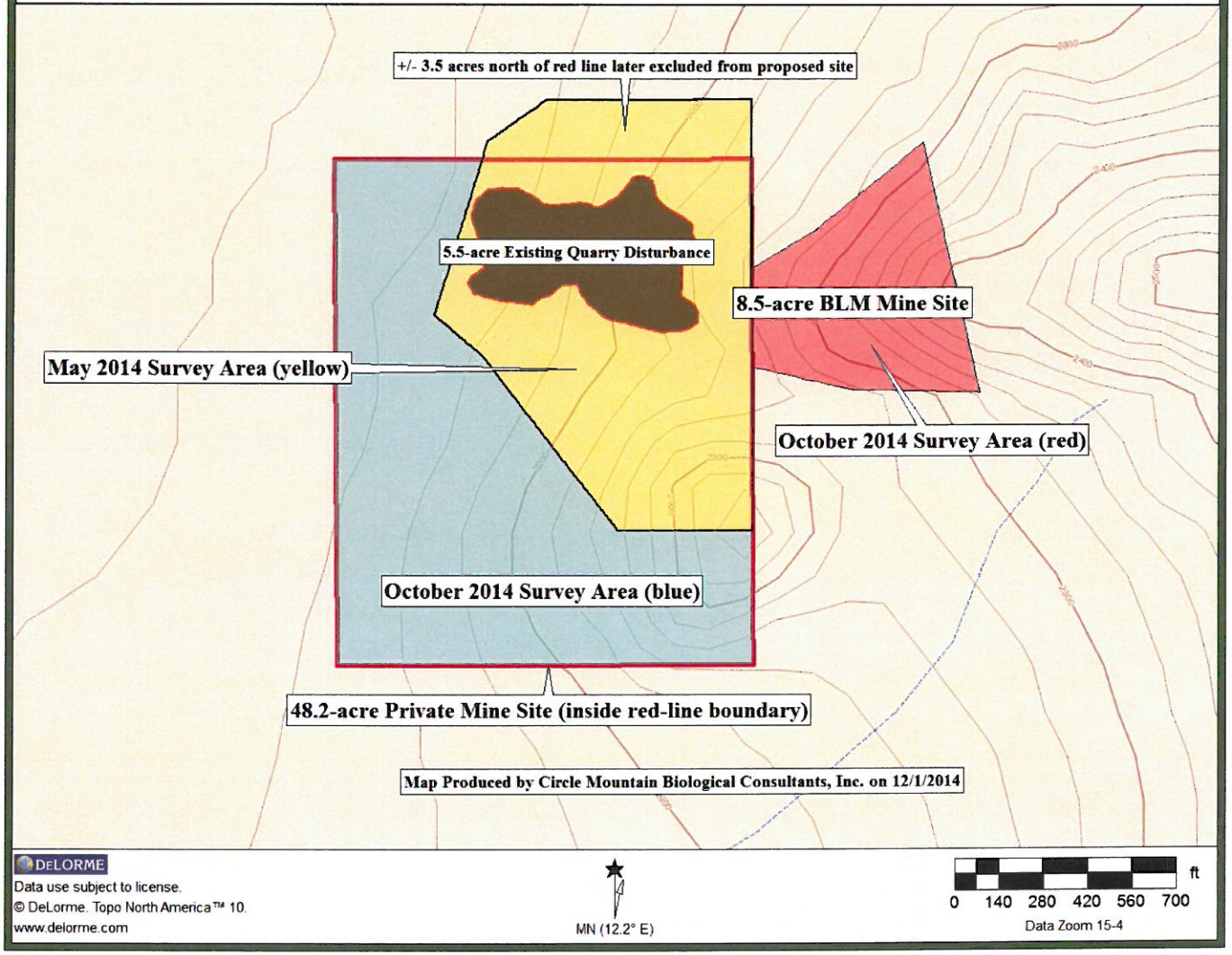


Figure 2. Locations of Proposed Mine Site and Survey Areas



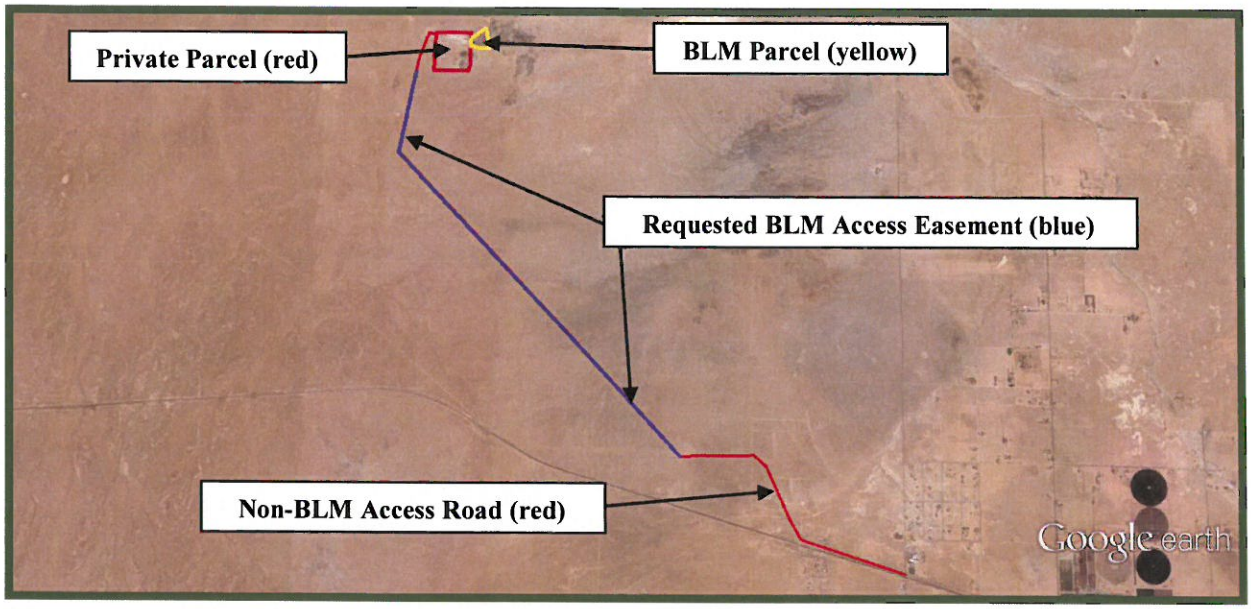


Figure 3. View of existing access roads and proposed mine site.

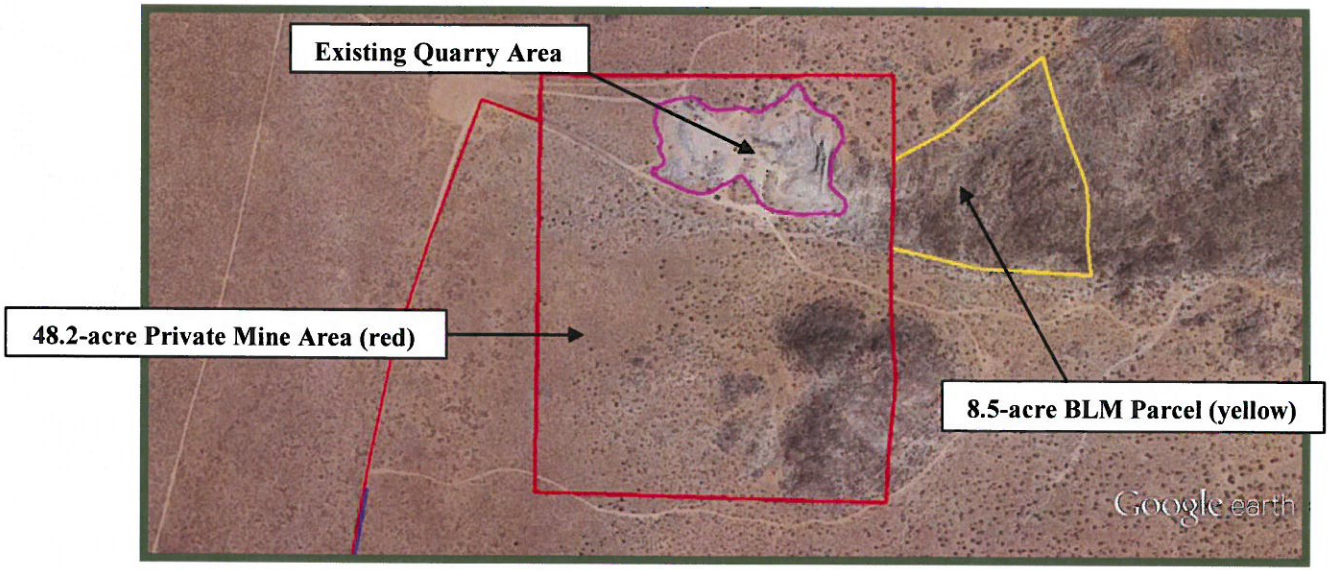


Figure 4. Enlarged view of private and BLM parcels.

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1.0. Introduction

Matcon, Inc. (Proponent) is proposing the revegetation of the Lynx Cat Mountain Quarry, a mine site, near the community of Hinkley, San Bernardino County, California. The legal description for the subject property is Township 10 North, Range 4 East, a portion of the southeastern ¼ of Section 1, S.B.B.&M. The Lynx Cat Mountain Quarry Mining and Reclamation Plan, Revision 2014 (Reclamation Plan) (Webber & Webber 2014), modifies and updates San Bernardino County Reclamation Plan 90M-010, as approved by San Bernardino County on June 28, 1990. As described in the Reclamation Plan, "[t]he mine is designated by the State of California as CA Mine ID# 90-36-0049. The existing mine site consists of a 25-acre project and holds vested status with the County of San Bernardino. ... [The Proponent] proposes to increase the area of the mine from 25 acres to approximately 48.2 acres." In addition to the 48.2 acres of private land, the mine is planned to include an 8.5-acre parcel to the east that is on public lands managed by the Bureau of Land Management (BLM).

Exhibit 1. Existing Quarry: Overview of existing pit, taken from west side of the quarry, facing east

This document is intended to expand upon and provide more specific measures and guidance to the revegetation section of the current Revision to the Reclamation Plan (Webber & Webber 2014).

2.0. Site Usage

The mine is not currently in operation, but a portion of the existing site has been periodically mined since 1963. The 2014 modification of the Reclamation Plan produced by Webber & Webber is intended to allow the Proponent "to increase the depth of the mine quarry areas; to increase maximum annual production from 3,000 tons per years to up to 400,000 tons per year, and; to add authority to install an asphalt batch plant on an as needed basis. ... [and] to extend the expiration date of the permit to 45 years from the date of approval (40 years of excavations, 5 years of reclamation monitoring)."

3.0. Existing Conditions

As described previously, the site includes approximately 6 acres of the existing quarry and expansion areas within a 48.2 acre area, plus an 8.5-acre parcel of BLM land. (See Figure 2.) On 8 and 9 December 2014, Sharon Dougherty of CMBC and Pat Seamount, an independent subcontractor, completed an analysis of vegetation on the mine site consisting of 14 randomly located 50-m linear transects and 50^{m2} plots. In addition to these vegetation surveys, CMBC has completed four distinct surveys of the quarry site, including 4 May 2014 when level portions of the 25 acres on the northern and eastern portions of the private parcel were surveyed; 30 September 2014 when the level portions of the 25 acres comprising the western and southern portions of the private parcel were surveyed; 28 October 2014 when the access road and adjacent areas were surveyed; and 30 October 2014 when the rocky, eastern portions of the private parcel and the entire 8.5-acre BLM parcel were surveyed (Circle Mountain Biological Consultants, Inc. 2014a). Information on the site's flora and fauna has been taken from these surveys, and from the vegetation analysis completed in December of 2014.

Exhibit 2. Lynx Cat Mountain Quarry: Vegetation on Site

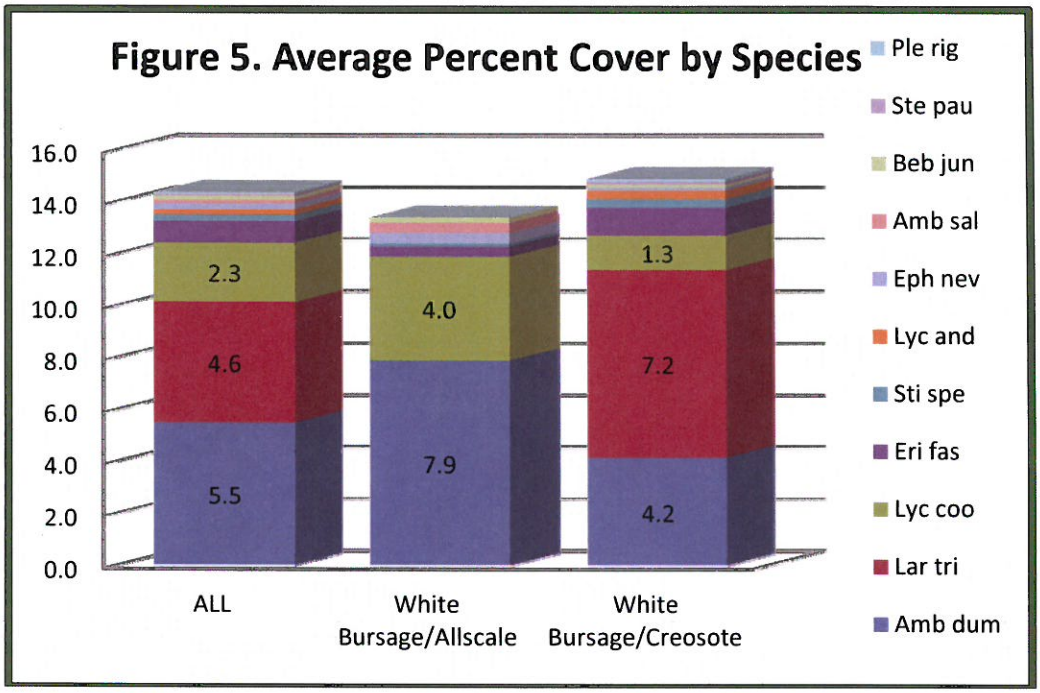
Per the Reclamation Plan, "the current 25-acre quarry site currently rises from about the 2150-foot elevation in the western portion, to 2350 feet (Lynx Cat Mountain) in the eastern portion of the site. The topography of the immediate region is gently-sloping alluvium punctuated by scattered groups of small granitic hills" (Webber and Webber 2014). Within the proposed area of operation, terrain is gently to moderately sloping on the western part of the site. The existing quarry extends into the steep and rocky slopes of Lynx Cat Mountain, which continue on the eastern and southeastern parts of the project area. Alluvial fans of sandy soil are characteristic of the western parts of the site, while extensive areas of boulders and exposed bedrock occur on the slopes and peaks of Lynx Cat Mountain to the west and southwest. These rocky areas are interspersed with small pockets of accumulated sand and gravel supporting vegetation. On the western alluvium, some areas apparently hold surface water. These sites are like miniature playas, with pebbly substrates, and are scattered amid shrub habitats. No USGS-designated blue line streams occur on the site, although a small wash drains from east to west along the base of the mountain, and just south of the existing quarry.

The plant communities found on the site are a blend of white bursage (burro bush) series and allscale series on the flats to the west, and white bursage series and creosote bush series on slightly higher elevations to the east (Sawyer and Keeler-Wolf 1995). Dominant shrubs include burro bush *(Ambrosia dumosa)*, creosote bush *(Larrea tridentata)*, allscale *(Atriplex polycarpa)*, peach thorn *(Lycium cooperi)*, and desert goldenhead *(Acamptopappus sphaerocephalus)*. Two species of cactus were observed, i.e., silver cholla (*Cylindropuntia echinocarpa*) and cottontop cactus (*Echinocactus polycephalus*) (Circle Mountain Biological Consultants, Inc. 2014a). Elevation, slope, aspect, and the amount of exposed bedrock are among the factors in the environment that affect the percent perennial cover, perennial density, species richness, and species composition found in habitats on the site. The 58 plant species identified during the survey are listed in the Biological Assessment for the site (Circle Mountain Biological Consultants, Inc. 2014a).

CMBC found that Agassiz's desert tortoise *(Gopherus agasssizii)* occurs on the site, and estimates that between 13 and 22 tortoises occur on the 57 acres±. The site is not found within Agassiz's desert tortoise critical habitat, but is located within the Superior-Cronese Desert Wildlife Management Area (DWMA), which was designated as an Area of Critical Environmental Concern (ACEC) with adoption of the West Mojave Plan (BLM 2006). (Previous documents prepared for the project indicated that the site is not located within a DWMA, but recent consultation with the BLM has determined that the property is located within DWMA boundaries.) Revegetation efforts will directly affect the tortoise by increasing the amount and quality of available habitat once mining has been completed.

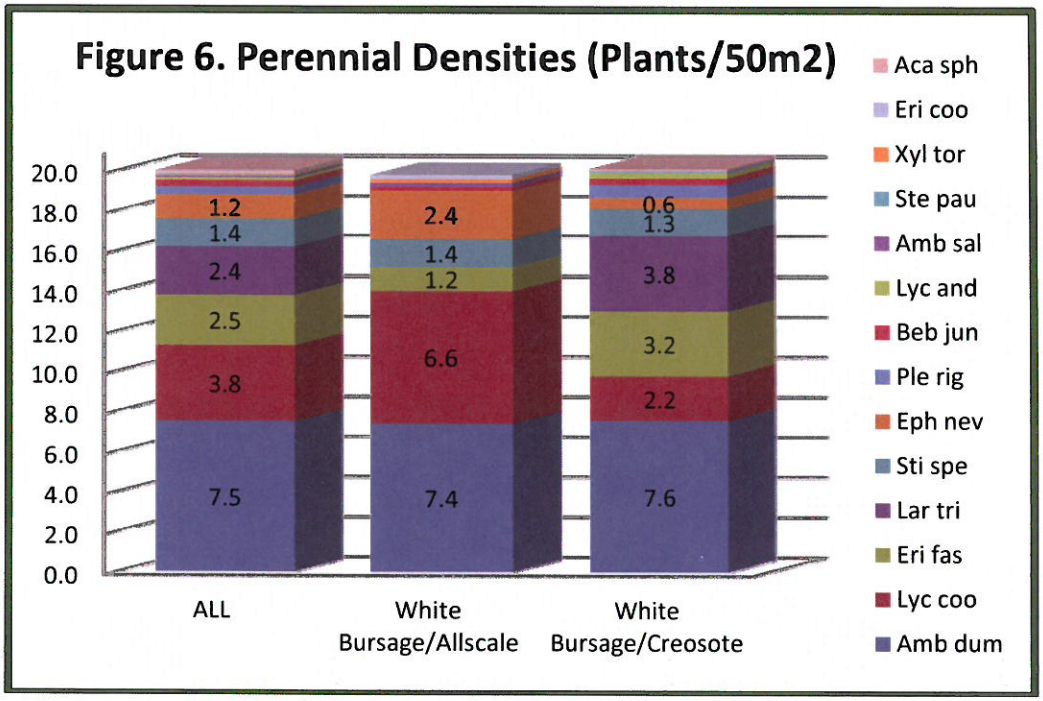
Sharon Dougherty of CMBC and Pat Seamount, a subcontractor, carried out a vegetation analysis of undisturbed areas in the vicinity of the project site in December 8 and 9 of 2014. Data from these samples, plus locations and other characteristics of the samples are given in Appendix A. The goal of the analysis was to determine basic characteristics of the flora that will be of value in establishing targets for the revegetation effort, including perennial cover, perennial densities, perennial species composition and frequencies. Only perennials were considered during these winter surveys. Results of this analysis are summarized below.

The total cover from living perennials on fourteen 50 m transects ranged from 8 to 26% (i.e., out of 100 points on the line, live plants were present on 8 to 26 points. **The average perennial cover was about 14.4%.** Eleven perennial species occurred in sufficient numbers to be represented on linear transects. The most abundant species, in terms of cover, was burro bush (average 5.5%), followed by creosote bush (average 4.6%), peach thorn (average 2.3%), and California buckwheat (average 0.8%). Interestingly, allscale was not recorded on any of the linear transects or density plots. Other species detected on linear transects include desert needlegrass *(Stipa speciosa)*, Anderson's boxthorn *(Lycium andersonii)*, Nevada joint-fir *(Ephedra nevadensis)*, and several others.



When samples are subdivided by habitat, the results are somewhat different. The five samples considered to be from white bursage/allscale series averaged 13.4% cover, while the nine samples from white bursage/creosote bush series averaged 14.9% cover. The main difference was in the species represented in the samples. In white bursage/allscale series, the most abundant species, in terms of cover, were burro bush (7.9%) and peach thorn (4.0%). All other species recorded on linear transects appeared on only one, higher elevation transect. In white bursage/creosote bush series, creosote bush was responsible for the largest amount of cover (average 7.2%), followed by burro bush (4.2%), peach thorn (1.3%), and California buckwheat (1.1%). To put it slightly differently, in white bursage/allscale series, burro bush was responsible for 29.9% of the total cover, followed by peach thorn with 59.0%. Five other species were responsible for less than 12% of total cover. In white bursage/creosote bush series, creosote bush was responsible for 48.5% of total cover, followed by burro bush with 28.0%, peach thorn with 8.9%, and California buckwheat with 7.1%. Six other species were responsible for a total of less than 8% of the total cover.

Perennial densities measured on the fourteen 50 ^{m2} plots averaged 20.0 perennials per plot. This translates to about 1,618 perennial plants per acre. Overall, the most common perennial species by density was burro bush (7.5 plants per 50 ^{m2} plot), followed by peach thorn (3.8 plants per plot), California buckwheat (2.5 plants per plot), creosote bush (2.4 plants per plot), desert needlegrass (1.4 plants per plot), and Nevada joint-fir (1.2 plants per plot). In terms of the percentage of total density, burro bush represented 37.5% of all samples, peach thorn 19.0%, California buckwheat 12.5%, creosote bush 12.0%, desert needlegrass 7.0%, and Nevada joint-fir 6.0%. All other species together represented about 6.0% of all samples.



The five samples considered to be from white bursage/allscale series averaged 19.8 perennials per 50 ^{m2} (1,603 perennials per acre). In this series, perennial densities by species were divided mostly between burro bush (average 7.4 plants per 50 ^{m2} plot) and peach thorn (average 6.6 plants per plot). In terms of the percentage of the total perennial density represented by each species, in white bursage/allscale series, burro bush accounted for 37.4% of the total number of perennial plants counted, followed by peach thorn which accounted for 33.3%.

In white bursage/creosote bush samples, burro bush was the most abundant shrub (average 7.6 shrubs per plot), followed by creosote bush (average 3.8 plants per plot), California buckwheat (average 3.2 shrubs per plot), peach thorn (2.2 shrubs per plot), and desert needlegrass (average 1.3 plants per plot). In this series, burro bush accounted for 37.6% of the total number of shrubs in the samples, followed by creosote bush (18.8%), California buckwheat (16.0%), peach thorn (11.1%), and desert needlegrass (6.6%).

Perennial species richness for all samples was moderate, with only 14 species recorded in sampled areas. (CMBC's more extensive biological surveys of the site found a total of 18 perennials, including about 13 shrub and subshrub species, three perennial grass species, and two species of cactus.)

The average number of species recorded per sample in all areas was 5.0; in burro bush allscale habitats, it was slightly lower, averaging only 4.2 species per sample, and in burro bush/creosote bush habitats it was higher, averaging 5.4 species per sample.

4.0. Revegetation Plan

The Reclamation Plan (Webber and Webber 2014) produced for the site includes a basic plan for revegetation of the site. The plan relies on the establishment of seeded "soil islands" within disturbed areas, with the expectation that vegetation will spread from these islands into adjacent areas over time. Per the Plan, "once ripping of the surfaces is completed, the revegetation process will begin with the placement of soil islands on all accessible, horizontal areas. Soil islands will basically consist of vegetative growth media, including any site collected topsoil, fine-textured waste tailings from the screening operation , and site collected organics (shrubs, bushes, grasses). ... The soil islands will cover approximately 25% of the initial revegetation area and will average 6-12 inches in thickness, depending on available soil/organics. These islands will be seeded ... prior to the onset of the winter storm season. Initial revegetation efforts will not include any irrigation, fertilizers, mulch, lime or other non-native constituents unless recommended by a qualified individual upon unsatisfactory results." This document is intended to expand upon the concepts included in the Reclamation Plan, and provide more concrete details and methodology.

4.1. Responsible Parties. While the Proponent is ultimately responsible for all aspects of carrying out the Revegetation Plan, it will be helpful for specific tasks to be assigned to a qualified Revegetation Manager. This person will be responsible for scheduling, planning, and implementing all components of the revegetation plan, including test plot studies, scheduling, coordination, and implementation of the plan, weed control, revegetation monitoring and reporting, and adapting the plan to changing conditions over the life of the project, with the approval of the Proponent. The Revegetation Manager will also be responsible for keeping accurate records of all actions.

4.2. Revegetation Goals. The Reclamation Plan (Webber and Webber 2014) states that the goal of revegetation efforts on the site is "to accelerate the reestablishment of native vegetation subsequent to land disturbance, eventually leading to vegetative conditions that existed prior to mining." Additional goals will include establishing native plant cover to resist the incursion and spread of invasive annual grasses and forbs, to help reduce erosion, and to reestablish appropriate habitat for the Federal and State threatened Agassiz's desert tortoise and other wildlife, and ultimately to meet the success criteria set forth in this document. Criteria for success will be based on current perennial species densities, cover, and species richness, as determined from CMBC's 2014 vegetation analysis.

4.3. Site Conditions. Per the Reclamation Plan, "the Lynx Cat Mountain Quarry project is an active mine site that currently operates under authority of San Bernardino County Mining/Reclamation Plan 90M-010, approved July 9, 1990. The project under Reclamation Plan 90M-010 consists of a 25-acre portion of an 81.53-acre land parcel located northwest of the town of Hinkley, California in western-central San Bernardino County. The property on which the quarry is located is privately-owned by MATCON Corporation. Existing improvements on the project site include a few quarry benches, granite stockpiles, and dirt roads." In addition, the mine will include an 8.5-acre area of public land managed by the BLM.

The Reclamation Plan states: "A sandy-rocky type of "topsoil" exists on some portions of the project site around the base of the granite hills, in a thickness of one to twelve inches. Other areas contain virtually no topsoil material, allowing the granitic rock to be clearly exposed."

4.4. Test Plots. The County of San Bernardino strongly encourages the use and evaluation of test plots during mining to "help develop the best method that will ensure a successful plan to revegetate the entire site when mining is completed" (http://cms.sbcounty.gov/lus/Mining/FrequentlyAskedQuestions.aspx). CMBC recommends the establishment of six test plots each during the first two years of site revegetation (i.e., plots 1-6 in year one, and plots 7-12 in year 2). The test plots will utilize the seed mix planned for revegetation of the site (See Table 1, Section 4.5.3). CMBC proposes establishing these twelve 120 m^2 plots (60 m X 2 m) in a grid formation using a 12" high bed of topsoil, fines, and organic material in the initial areas proposed for revegetation. The table below shows the combinations of treatments to be tested in each plot.

Table 1. Test Plots

PLOTS	MECHANICAL TREATMENT		BOTANICAL TREATMENT		
	Seed Spreader	Imprinter	Seed Only	Seeds + Salvaged Cacti	None
1, 7	X		X		
2, 8	X			X	
3, 9	X				X
4, 10		X	X		
5, 11		X		X	
6, 12		X			X

If necessary, based on changing conditions and preliminary results, additional combinations of treatments may be tested. The results will be used to develop recommendations for changes to this plan, as needed.

4.5. Components of the Revegetation Plan.

4.5.1. Topsoil Conservation. Per the Reclamation Plan, "[t]opsoil that exists on proposed excavation areas will be removed and stockpiled prior to aggregate extraction activities. Topsoil will be removed only to allow advancement of the working excavations, so as to preclude any unnecessary surface disturbance. All topsoil that exists will be stored within topsoil stockpiles located as shown on the Mine Plan Map. This secured topsoil will be utilized to enhance the composition of the growth media for the revegetation soil islands discussed previously. Any unsold fine-textured waste tailings comprised of fine material produced by the crushing/screening operations will be blended with stockpiled topsoil material to aid production of the growth media for the soil islands, as previously described." Specifically, the Reclamation Plan states that "prior to excavations of the granite aggregate material, the top 6-12 inches of "overburden" material, including any vegetation, will be removed and placed into stockpiles for use during reclamation activities."

Topsoil represents a valuable resource in revegetation efforts, and contributes native seed, beneficial soil microorganisms, as well as organic and mineral nutrients crucial to revegetation success. All available topsoil will be stripped and salvaged prior to each stage of mining in expansion areas. Removal of topsoil and stockpiling will be carried out only as areas are prepared for mining, to avoid unnecessary disturbance. Topsoil will be stockpiled in areas protected from vehicle traffic and heavy equipment disturbance. The stockpiles must be protected from wind and water erosion through the use of suitable weed-free mulch or matting. As revegetation is expected to be implemented over many years, mounds of stock-piled topsoil will be used in the order they were deposited.

4.5.2. Salvage of Plant Materials. Cacti in expansion areas will be salvaged in advance of mining. Cacti are relatively hardy and easy to transplant, and can provide added structure to revegetation areas, creating sites for trapping windblown seed and providing sheltered microclimates for germination. Salvaged cacti will be placed in an area protected from vehicle traffic and heavy equipment disturbance until they are incorporated into revegetation areas.

4.5.3. Seed Sources. A possible seed mix for the site is provided in Table 2. The mix is a commercial mix that the Proponent indicates has been approved by the BLM.

Table 2. Proposed Seed Mixture and Application Rate

Species	Application Rate (lbs PLS/acre)
Purple three-awn (*Aristida purpurea* var. *purpurea*)	2.0
Indian ricegrass (*Achnatherum hymenoides*)	3.0
Needle grama (*Bouteloua aristidoides*)	2.0
Alkali sacaton (*Sporobolus airoides*)	1.0
Sand dropseed (*Sporobolus cryptandrus*)	1.0
California poppy (*Eschscholzia californica*)	2.0
Bluebells (*Phacelia campanularia*)	1.0
Desert marigold (*Baileya multiradiata*)	1.0
Brittlebush (*Encelia farinosa*)	1.0
Arizona [California] buckwheat (*Eriogonum fasciculatum*)	1.0
Fourwing saltbush (*Atriplex canescens*)	2.0
Cheesebush (*Hymenoclea salsola*)	1.0
Total	18.0

It is critical that the seed be purchased as pure live seed (PLS). This assures that the seed is viable and will germinate properly. Only species native to the area should be included in the mix, and preferably the final mix should be based on the species known to occur on the site, particularly dominant perennial species such as burro bush, peach thorn, and creosote bush. If possible, seed from local sources is preferred,

4.5.4. Site Preparation, Distribution of Seed and Plant Materials. The Reclamation Plan (Webber and Webber 2014) states that "[p]reparation of disturbed areas for reclamation will occur annually on those project areas that will not be further impacted by continuing project

operations. Preparation will include removal of any equipment, final grading of slopes, and ripping the surface where applicable. In those project areas where soil compaction has occurred, such as haul roads and quarry floors, ripping should insure decompaction to the depth of undisturbed natural soils." As described in the Plan, revegetation will be carried out by establishing and seeding soil islands. The soil islands will include topsoil and retained dead plant material, as well as processing fines (sand, silt, and clay). CMBC recommends that where space allows, soil islands will be at least 60 m in length and 10 m wide to allow placement of linear transects and density plots during monitoring efforts. Salvaged cacti will be transplanted into the soil islands, in low densities.

Two alternative site preparation and seed distribution methods are proposed. In the first, an imprinter will be used to create an irregular surface on the revegetation areas and distribute the seed mix. Imprinting is a process using a heavy drum roller with patterns of V-shaped teeth, typically drawn by a tractor. The roller breaks up and incorporates dead plant material into the top soil, while creating a pattern of pockets in the soil surface. These pockets are persistent over a period of years, and serve as micro-sites for retention and germination of seeds, trapping water and sheltering seedlings from sun and wind, while decreasing erosion. Seed is distributed from an attached hopper. Planting will be planned for the fall months, to take advantage of winter rains. Use of a hand-held seed spreader to distribute seed over newly established soil islands will be considered as an alternative method to imprinting. If test plots show comparable results to imprinting, this alternative may be less expensive.

4.4.5. Maintenance & Erosion Control. Revegetated areas will be checked monthly for erosion damage, and corrective action taken if damage is found. Treatments may include placement of rice straw bales or wattles, fiber blankets, mats, etc. Use of heavy equipment that may compact soils and destroy imprinting will be avoided.

Revegetated areas will be checked in the spring months, annually, for disturbance-adapted, invasive, exotic species, such as Saharan mustard or Russian thistle. These plants will be removed by hand before they mature and set seed. (Annual exotic grasses, such as Mediterranean split grass, are present throughout the region, even in relatively undisturbed areas, and it is not practical to try to remove these species from revegetated areas.)

Any tortoise proof fencing surrounding the mine areas will also be regularly checked and repaired as needed to prevent potential violation of State and Federal Endangered Species Acts. Fencing will be removed when mining and revegetation operations are completed.

4.4.6. Revegetation Monitoring. The Reclamation Plan indicates that in the fall following initial revegetation efforts, "progress of the initial revegetation activities will be assessed. If necessary, a qualified person [i.e., Revegetation Manager] will recommend adjustments to the seed mixture so the desired results can be achieved. This will be done in coordination with officials of San Bernardino County." CMBC recommends that a qualified person(s) complete sampling of the sites which will include measurements of perennial cover, perennial densities, and species composition and richness. If indicated, changes in the method of seed application and site preparation may also be recommended. The Reclamation Plan directs that "[e]ach Fall, in every subsequent operating year, soil islands will be placed on those project areas that will not

be impacted by further mining activities. This process will continue until the entire site has been revegetated and monitored for five years to verify the success criteria described in the Revegetation Plan have been achieved.

Revegetated areas will be sampled by a qualified botanist or biologist, using the same methodology used in CMBC's 2014 vegetation analysis, with the addition of Daubenmire plots to sample annual densities. Since revegetation efforts will be carried out over a period of many years, CMBC proposes that spring sampling visits be scheduled every three years over the life of the project.

It is crucial that a log of revegetation activities should be kept, with details on the treatments applied. The Revegetation Manager will be responsible for ensuring that the log is kept current and complete. Information kept will include the locations (as determined by a hand-held GPS or similarly accurate method) and size of the revegetation sites, dates of activities, types of equipment used, seed mix and application rates, schedule of supplemental watering (if any), dates and nature of any invasive plant control activities. A report on revegetation efforts and results will be prepared after each monitoring effort. The report will include recommendations on changes that may be necessary to improve the success of the efforts.

4.4.7. Criteria for Success of Revegetation Effort. Given the relatively low levels of perennial plant cover, densities, and species richness found during CMBC's vegetation analysis, and the goal of revegetation to approximate site conditions found prior to mining, it is reasonable to aim for at least 80% of the pre-mining levels of cover, density, and species richness. These success criteria are listed below in Table 3.

Table 3. Revegetation Targets

Measure	Pre-disturbance Conditions	Target (80% predisturbance)
Perennial Cover	14.4%	11.2%
Perennial Density	20.0 perennials per 50 m^2 plot, (1,618± perennials per acre)	16.0 perennials per 50 m^2 plot, (1,294± perennials per acre)
Perennial Species Richness	14.0 perennials (5 per sample)	10.4 perennials (4 per sample)

4.4.8. Adaptive Management of Revegetation Efforts. The Revegetation Manager responsible for the revegetation effort will have the prerogative to change elements of the plan with the approval of the Proponent, as the project proceeds, to improve the likelihood of success. For example, if the seed mix as proposed is not representative of vegetation on the site, or is not effective in establishing similar vegetation to that found pre-disturbance, changes can be made. Other techniques or elements that have proven effective in comparable efforts may be added or substituted, as needed, i.e., use of soil mycorhizzae inoculants, use of baby powder or other materials to discourage seed predation by rodents, etc.

5.0. Summary and Conclusions

Matcon, Inc. plans revegetation of its Lynx Cat Mountain Mine, located on an 86-acre mine site, near the community of Yermo, San Bernardino County, California. A Mining and Reclamation Plan Revision was produced by Webber & Webber Mining Consultants, Inc. on 10 November

2014, which modifies and updates San Bernardino County Reclamation Plan 90M-010, as approved by San Bernardino County on June 28, 1990. This revegetation plan expands upon the general program for revegetation described in Webber & Webber's Reclamation Plan.

This plan calls for the designation of a Revegetation Manager who will be responsible for scheduling, planning, and implementing all components of the revegetation plan, including test plot studies, scheduling, coordination, and implementation of the plan, weed control, revegetation monitoring and reporting, and adapting the plan to changing conditions over the life of the project, with the approval of the Proponent. The Revegetation Manager will also be responsible for keeping accurate records of all actions.

Proposed criteria for success include: perennial cover: at least 80% of that found in undisturbed areas (11.2%), perennial densities: at least 80% of that found in undisturbed areas (16.0 perennials per 50 m^2 plot), perennial species richness: at least 80% of that found in undisturbed areas (10.4 perennial species, or an average of 4 species per sampled area).

The Revegetation Manager responsible for the revegetation effort will have the prerogative to change elements of the plan with the approval of the Proponent, as the project proceeds, to improve the likelihood of success.

The Reclamation Plan states that revegetation efforts will begin no later than fall of 2020. CMBC recommends that these efforts begin as early as possible to allow for the maximum viability of seed and beneficial microorganisms retained in salvaged topsoil. Elements of the revegetation plan and timelines are listed below in Table 4.

Table 4. Tasks and Timeline

Tasks	Description	Timeline
Cacti	Salvage & transplant	2015 & ongoing
Topsoil	Salvage & storage	2015 & ongoing
Seed mix	Refine mix, arrange for purchase, or collection and storage of seed	2019 or 1 year prior to initiating revegetation, & ongoing as needed
Initial revegetation	Establish soil islands within the initial revegetation area as shown on the Reclamation Plan Map.	2020 or Year 1 of revegetation
Test plots	Establishment	2021-2022 or Years 2-3 of revegetation, and
Test plots	Measure & evaluate	2021-2025 or Years 2-5 of revegetation
Continuing revegetation	Implementation, adaptive management	Ongoing, as mined areas are idled.
Monitoring	Monitor success, report	Ongoing, every 3 years
Maintenance	Check conditions and take corrective actions as needed	Ongoing, as part of daily operations

6.0. Literature Cited

Circle Mountain Biological Consultants, Inc. 2014a. Lynx Cat Mountain Mine: Focused surveys for Agassiz's desert tortoise, habitat assessments for burrowing owl and Mohave ground squirrel, and general biological resource assessment for a 57-acre± site and public access road near the community of Hinkley, San Bernardino County, California. Unpublished report prepared by Ed LaRue on behalf of Matcon Corporation, Inc. Wrightwood, CA.

Circle Mountain Biological Consultants, Inc. 2014b. Formal Biological Assessment for Desert Tortoise at the Lynx Cat Mountain Mine near the Community of Hinkley, San Bernardino County, California. Prepared for the U.S. Bureau of Land Management, Barstow Field Office and U.S. Fish and Wildlife Service, Palm Springs Fish and Wildlife Office on behalf of Matcon Corporation, Inc. Wrightwood, CA.

Webber & Webber Mining Consultants, Inc. November 10, 2014. Lynx Cat Mountain Quarry Mining and Reclamation Plan, Revision 2014. Webber & Webber Mining Consultants, Inc., Redlands, CA.

APPENDIX A.

Vegetation Analysis

Table A.1. Locations and Characteristics of Samples

Transect/ Plot	Land owner	Elevation (m)	Slope (%)	Aspect	Start Point		End Point		Bearing	Plant community	% Bedrock
					Easting	Northing	Easting	Northing			
1	Private	651	4	W	477555	3871370			106	WBS/AS	0
2	Private	651	6	W	477542	3871277	477541	3871229	171	WBS/AS	0
3	Private	654	7	W	477558	3871132	477561	3871184	349	WBS/AS	0
4	Private	665	10	W	477663	3870997	477621	3870970	227	WBS/AS	0
5	Private	679	13	SW	477730	3870989	477761	3871024	29	WBS/CB	36
6	Private	670	15	SW	477753	3870997	477766	3870948	155	WBS/CB	10
7	Private	685	28	SW	477785	3870967	477830	3870982	59	WBS/CB	36
8	Private	687	22	S	477871	3870959	477914	3870980	57	WBS/CB	98
9	Private	703	26	S	477884	3871029	477881	3870998	172	WBS/CB	86
10	Private	707	36	W	477841	3871063	477886	3871051	87	WBS/CB	84
11	Private	682	23	NW	477815	3871175	477803	3871223	334	WBS/CB	0
12	Private	682	9	W	477856	3871202	477893	3871232	44	WBS/CB	2
13	BLM	733	10	W	478089	3871309	478130	3871303	85	WBS/CB	82
14	BLM	702	27	NW	478086	3871407	478094	3871449	357	WBS/AS	25

Table A.2. Percent Cover: All Samples

Transect	Total % Cover	Cover by Species										
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevadensis	Ambrosia salsola	Stephanomeria pauciflora	Eriogonum fasiculatum	Bebbea juncea	Stipa speciosa	Pleuraphis rigida
1	**23**	11	0	12	0	0	0	0	0	0	0	0
2	**12**	5	0	7	0	0	0	0	0	0	0	0
3	**12**	0	0	12	0	0	0	0	0	0	0	0
4	**8**	4	0	4	0	0	0	0	0	0	0	0
5	**10**	0	0	10	0	0	0	0	0	0	0	0
6	**29**	0	0	4	23	1	0	0	0	0	1	0
7	**12**	0	0	3	8	0	0	1	0	0	0	0
8	**10**	0	0	0.5	9.5	0	0	0	0	0	0	0
9	**9**	1	0	0	4	0	0	0	3	1	0	0
10	**10**	0	3	0	3.5	0	0	0	3.5	0	0	0
11	**26**	8	0	13	5	0	0	0	0	0	0	0
12	**23**	3	0	7	12	0	0	0	0	0	0	1
13	**5**	0	0	0	0	0	0	0	3	0	2	0
14	**12**	0	0	4.5	0	2	2	0	2	1	0.5	0
Average	***14.4***	*2.3*	*0.2*	*5.5*	*4.6*	*0.2*	*0.1*	*0.1*	*0.8*	*0.1*	*0.3*	*0.1*
Standard Dev.	*7.5*	*3.5*	*0.8*	*4.7*	*6.7*	*0.6*	*0.5*	*0.3*	*1.4*	*0.4*	*0.6*	*0.3*

Table A.3. Percent Cover: Burro bush/Allscale Series

Transect	Total % Cover	Cover by Species										
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevadensis	Ambrosia salsola	Stephanomeria pauciflora	Eriogonum fasiculatum	Bebbea juncea	Stipa speciosa	Pleuraphis rigida
1	**23**	11	0	12	0	0	0	0	0	0	0	0
2	**12**	5	0	7	0	0	0	0	0	0	0	0
3	**12**	0	0	12	0	0	0	0	0	0	0	0
4	**8**	4	0	4	0	0	0	0	0	0	0	0
14	**12**	0	0	4.5	0	2	2	0	2	1	0.5	0
Average	***13.4***	*4*	*0*	*7.9*	*0*	*0.4*	*0.4*	*0*	*0.4*	*0.2*	*0.1*	*0*
Standard Dev.	*5.6*	*4.5*	*0.0*	*3.9*	*0.0*	*0.9*	*0.9*	*0.0*	*0.9*	*0.4*	*0.2*	*0.0*

Table A.4 Percent Cover: Burro bush/Creosote bush Series

Transect	Total % Cover	Cover by Species										
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevadensis	Ambrosia salsola	Stephanomeria pauciflora	Eriogonum fasiculatum	Bebbea juncea	Stipa speciosa	Pleuraphis rigida
5	**10**	0	0	10	0	0	0	0	0	0	0	0
6	**29**	0	0	4	23	1	0	0	0	0	1	0
7	**12**	0	0	3	8	0	0	1	0	0	0	0
8	**10**	0	0	0.5	9.5	0	0	0	0	0	0	0
9	**9**	1	0	0	4	0	0	0	3	1	0	0
10	**10**	0	3	0	3.5	0	0	0	3.5	0	0	0
11	**26**	8	0	13	5	0	0	0	0	0	0	0
12	**23**	3	0	7	12	0	0	0	0	0	0	1
13	**5**	0	0	0	0	0	0	0	3	0	2	0
Average	***14.9***	*1.3*	*0.3*	*4.2*	*7.2*	*0.1*	*0.0*	*0.1*	*1.1*	*0.1*	*0.3*	*0.1*
Standard Dev.	*8.7*	*2.7*	*1.0*	*4.8*	*7.2*	*0.3*	*0.0*	*0.3*	*1.6*	*0.3*	*0.7*	*0.3*

Table A.5. Perennial Densities: All Samples

Plot	Density (Plants/ 50^{m2})	Density by Species													
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevad-ensis	Ambrosia salsola	Stephano-meria pauciflora	Xylo-rhizza tortifolia	Erica-meria cooperii	Eriogonum fasiculatum	Bebbea juncea	Acampto-pappus sphaero-cephalus	Stipa speciosa	Pleuraphis rigida
1	**35**	24	0	11	0	0	0	0	0	0	0	0	0	0	0
2	**14**	6	0	5	0	0	0	0	0	0	0	0	0	3	0
3	**9**	0	0	9	0	0	0	0	0	0	0	0	0	0	0
4	**12**	3	0	6	0	0	0	0	0	0	0	0	0	3	0
5	**25**	1	0	21	1	2	0	0	0	0	0	0	0	0	0
6	**29**	0	0	12	12	3	0	0	0	0	0	0	0	2	0
7	**9**	0	0	2	6	0	0	1	0	0	0	0	0	0	0
8	**7**	0	0	2	4	0	0	0	0	0	1	0	0	0	0
9	**13**	1	0	0	1	0	0	0	0	0	8	2	0	1	0
10	**21**	0	2	0	1	0	0	0	0	0	14	0	0	4	0
11	**37**	14	0	17	4	0	0	0	0	0	0	0	0	2	0
12	**30**	4	0	14	5	0	0	0	0	0	0	0	1	0	6
13	**10**	0	0	0	0	0	0	0	0	0	6	1	0	3	0
14	**29**	0	0	6	0	12	1	0	1	1	6	1	0	1	0
Average	***20.0***	*3.8*	*0.1*	*7.5*	*2.4*	*1.2*	*0.1*	*0.1*	*0.1*	*0.1*	*2.5*	*0.3*	*0.1*	*1.4*	*0.4*
Standard Dev.	*10.6*	*7.0*	*0.5*	*6.7*	*3.5*	*3.2*	*0.3*	*0.3*	*0.3*	*0.3*	*4.3*	*0.6*	*0.3*	*1.4*	*1.6*

Table A.6. Perennial Densities: Burro bush/Allscale Series

Plot	Density (Plants/ 50^{m2})	Density by Species													
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevad-ensis	Ambrosia salsola	Stephano-meria pauciflora	Xylo-rhizza tortifolia	Erica-meria cooperii	Eriogonum fasiculatum	Bebbea juncea	Acampto-pappus sphaero-cephalus	Stipa speciosa	Pleuraphis rigida
1	**35**	24	0	11	0	0	0	0	0	0	0	0	0	0	0
2	**14**	6	0	5	0	0	0	0	0	0	0	0	0	3	0
3	**9**	0	0	9	0	0	0	0	0	0	0	0	0	0	0
4	**12**	3	0	6	0	0	0	0	0	0	0	0	0	3	0
14	**29**	0	0	6	0	12	1	0	1	1	6	1	0	1	0
Average	***19.8***	*6.6*	*0*	*7.4*	*0*	*2.4*	*0.2*	*0*	*0.2*	*0.2*	*1.2*	*0.2*	*0*	*1.4*	*0*
Standard Dev.	*11.5*	*10.0*	*0.0*	*2.5*	*0.0*	*5.4*	*0.4*	*0.0*	*0.4*	*0.4*	*2.7*	*0.4*	*0.0*	*1.5*	*0.0*

Table A.7. Perennial Densities: Burro bush/Creosote bush Series

Plot	Density (Plants/ 50^{m2})	Density by Species													
		Lycium cooperii	Lycium andersonii	Ambrosia dumosa	Larrea tridentata	Ephedra nevad-ensis	Ambrosia salsola	Stephano-meria pauciflora	Xylo-rhizza tortifolia	Erica-meria cooperii	Eriogonum fasiculatum	Bebbea juncea	Acampto-pappus sphaero-cephalus	Stipa speciosa	Pleuraphis rigida
5	**25**	1	0	21	1	2	0	0	0	0	0	0	0	0	0
6	**29**	0	0	12	12	3	0	0	0	0	0	0	0	2	0
7	**9**	0	0	2	6	0	0	1	0	0	0	0	0	0	0
8	**7**	0	0	2	4	0	0	0	0	0	1	0	0	0	0
9	**13**	1	0	0	1	0	0	0	0	0	8	2	0	1	0
10	**21**	0	2	0	1	0	0	0	0	0	14	0	0	4	0
11	**37**	14	0	17	4	0	0	0	0	0	0	0	0	2	0
12	**30**	4	0	14	5	0	0	0	0	0	0	0	1	0	6
13	**10**	0	0	0	0	0	0	0	0	0	6	1	0	3	0
Average	***20.1***	*2.2*	*0.2*	*7.6*	*3.8*	*0.6*	*0.0*	*0.1*	*0.0*	*0.0*	*3.2*	*0.3*	*0.1*	*1.3*	*0.7*
Standard Dev.	*10.8*	*4.6*	*0.7*	*8.4*	*3.7*	*1.1*	*0.0*	*0.3*	*0.0*	*0.0*	*5.0*	*0.7*	*0.3*	*1.5*	*2.0*

Figure A.1. Number Perennial Species: All Samples

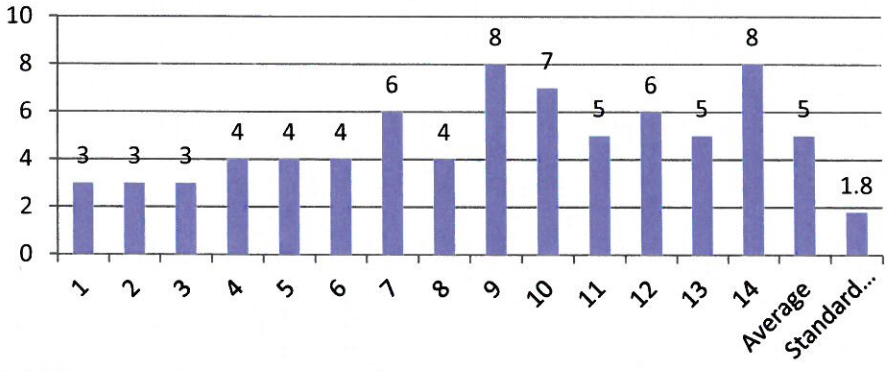


Figure A.2. Number Perennial Species: Burro bush/Allscale Series

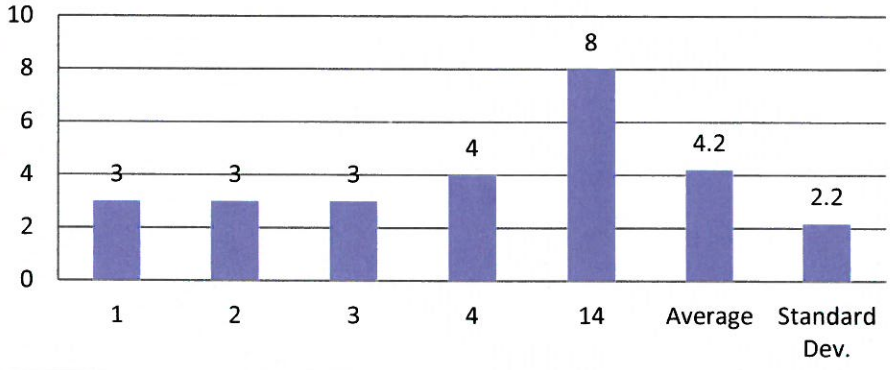


Figure A.3. Number Perennial Species: Burro bush/Creosote bush Series