Revegetation Plan
For the Baxter Quarry Expansion Project

Unincorporated Area of Central San Bernardino County, California
USGS – *Cave Mountain* Quadrangle,
Section 12 of Township 11 North, Range 6 East

.

Prepared for:
Lilburn Corporation
Attn: Martin Derus
1905 Business Center Drive
San Bernardino, CA 92408

Prepared February 2020

Prepared by:

Jericho Systems, Inc.
47 1st Street, Suite 1
Redlands, CA 92373

Certification

Jericho Systems, Inc.
47 1st Street, Suite 1
Redlands, CA 92373-4601
(909) 915-5900

Contact: Shay Lawrey, President and Ecologist/Regulatory Specialist

Certification: I hereby certify that the statements furnished herein, and in the attached exhibits present data and information required for this Biological Resources Repot to the best of my ability, and the facts, statements, and information presented are true and correct to the best of my knowledge and belief. This report was prepared in accordance with professional requirements and standards. Fieldwork conducted for this assessment was performed under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project proponent and that I have no financial interest in the project.

_____
Shay Lawrey, Ecologist/Regulatory Specialist

Table of Contents

1. INTRODUCTION 1
2. ENVIRONMENTAL SETTING 3
2.1. EXISTING VEGETATION 4
2.2. METHOD FOR COLLECTING BASELINE VEGETATION 4
2.3. BASELINE SURVEY RESULTS 4
3. REVEGETATION 5
3.1. SOIL SALVAGE 5
3.2. SEED COLLECTION 6
3.3. SITE PREPARATION 6
3.4. IRRIGATION 6
3.5. FERTILIZATION 6
3.6. WEED CONTROL 7
3.7. SEEDING METHODS AND RATES 7
3.8. SCHEDULE OF REVEGETATION 8
3.9. TEST PLOTS 8
4. REVEGETATION MONITORING 9
4.1. SUCCESS CRITERIA 9
4.2. TECHNICAL ASSESSMENT 9
4.3. REPORTING 10
5. CONCLUSION 10
6. REFERENCES 11

Appendix A – Floral Species Observed
Figures

1. Introduction

On behalf of Lilburn Corporation, Jericho Systems, Inc. (Jericho) gathered the baseline plant community information necessary to prepare a revegetation plan, per Section 3705 (*Performance Standards for Revegetation*) of the California State Mining and Geology Board's Surface Mining and Reclamation Act (SMARA) requirements for the Baxter Quarry Expansion Site Project (Project). Cal Portland Baxter Quarry (Operator) plans to expand its current mining operation on 49 acres onto an additional 69 acres within an approximately 280-acre site located immediately south and east of the existing mine. The current site delineation encompasses or encroaches on 19 parcels (Assessor Parcel Numbers [APN]: 054-220-[102, 103, 104, 108, 109, 110, 111, 112, 113, 114, 116, 118, 119, 120, 121, 122, 124, 135, 136]). Currently the proposed 69 acres within the 280-acre project area is mostly undisturbed, consisting primarily of Cave Mountain and adjacent parcels at the base of the mountain.

The majority of the proposed project footprint is currently on Cave Mountain, which has little vegetation. The portions of the footprint that are at the base of the mountain contain two native plant communities: *Larrea tidentata* Shrubland Alliance (*Chilopsis linearis* woodland alliance). Baseline vegetation data was collected within the vegetated areas of the project site and this Revegetation Plan was prepared so that if future changes to the currently proposed project footprint should occur that would impact adjacent habitat, a revegetation program is provided. The goal of the revegetation program is to establish the guidelines to monitor, maintain, and assess the results of the completed revegetation program through comparison to the established baseline data and recommended success criteria, in the event that such a revegetation program is needed. Reclamation of any vegetated areas would commence immediately upon termination of mining.

The property surveyed (which included the Project area) is approximately 280 acres and is located in the western portion of the Mojave Desert about 3.25 miles down south on the Basin Road exit off the I-15 highway, which is approximately halfway between Afton Canyon and the I-15 highway. Basin road begins on the I-15 highway around the terminus of the Cronese Valley, and travels south, skirting the base of Cave Mountain the *Cave Mountain* U.S. Geological Survey (USGS) 7.5-minute series quadrangle within the South 1/2 of Section 12, Township 11 North, Range 6 East, Mount Diablo Base Meridian (Figures 1-3).

The goal of the revegetation plan is to establish the guidelines to monitor, maintain, and assess the results of the completed revegetation program through comparison to the established baseline data and recommended success criteria, in the event that such a revegetation program is needed. Reclamation of any vegetated areas would commence immediately upon termination of mining.

This Plan considered the requirements set forth in Section 3705 (*Performance Standards for Revegetation*) of the California State Mining and Geology Board's Surface Mining and Reclamation Act (SMARA) which are as follows:

a) *A vegetative cover suitable for the proposed end use and capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer shall be established on disturbed land unless an artificially maintained landscape is consistent with the approved reclamation plan. Vegetative cover or density, and species-richness shall be, where appropriate, sufficient to stabilize the surface against effects of long-term erosion and shall be similar to naturally occurring habitats in the surrounding area. The vegetative density, cover and species richness of naturally occurring habitats shall be documented in baseline studies carried out prior to the initiation of mining*

activities. However, for areas that will not be reclaimed to prior conditions, the use of data from reference areas in lieu of baseline site data is permissible.

b) Test plots conducted simultaneously with mining shall be required to determine the most appropriate planting procedures to be followed to ensure successful implementation of the proposed revegetation plan. The lead agency may waive the requirement to conduct test plots when the success of the proposed revegetation plan can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be planted.

c) Where surface mining activities result in compaction of the soil, ripping, disking, or other means shall be used in areas to be revegetated to eliminate compaction and to establish a suitable root zone in preparation for planting.

d) Prior to closure, all access roads, haul roads, and other traffic routes to be reclaimed shall be stripped of any remaining roadbase materials, prepared in accordance with subsection 3705(g), covered with suitable growth media or topsoil, and revegetated. When it is not necessary to remove roadbase materials for revegetative purposes, lead agencies may set a different standard as specified in section 3700(b) of this Article.

e) Soil analysis shall be required to determine the presence or absence of elements essential for plant growth and to determine those soluble elements that may be toxic to plants, if the soil has been chemically altered or if the growth media consists of other than the native topsoil. If soil analysis suggests that fertility levels or soil constituents are inadequate to successfully implement the revegetative program, fertilizer or other soil amendments may be incorporated into the soil. When native plant materials are used, preference shall be given to slow-release fertilizers, including mineral and organic materials that mimic natural sources, and shall be added in amounts similar to those found in reference soils under natural vegetation of the type being reclaimed.

f) Temporary access for exploration or other short-term uses on arid lands shall not disrupt the soil surface except where necessary to gain safe access. Barriers shall be installed when necessary to gain safe access. Barriers shall be installed when necessary to prevent unauthorized vehicular traffic from interfering with the reclamation of temporary access routes.

g) Native plant species shall be used for revegetation, except when introduced species are necessary to meet the end uses specified in the approved reclamation plan. Areas to be developed for industrial, commercial, or residential use shall be revegetated for the interim period, as necessary, to control erosion. In this circumstance, non-native plant species may be used if they are not noxious weeds and if they are species known not to displace native species in the area.

h) Planting shall be conducted during the most favorable period of the year for plant establishment.

i) Soil stabilizing practices shall be used where necessary to control erosion and for successful plant establishment. Irrigation may be used when necessary to establish vegetation.

j) If irrigation is used, the operator must demonstrate that the vegetation has been self-sustaining without irrigation for a minimum of two years prior to release of the financial assurances by the lead agency, unless an artificially maintained landscape is consistent with the approved end use.

k) Noxious weeds shall be managed:

(1) when they threaten the success of the proposed revegetation;

(2) to prevent spreading to nearby areas; and

(3) to eliminate fire hazard.

l) Protection measures, such as fencing of revegetated areas and/or the placement of cages over individual plants, shall be used in areas where grazing, trampling, herbivory, or other causes threaten the success of the proposed revegetation. Fencing shall be maintained until revegetation efforts are successfully completed and the lead agency authorizes removal.

m) Success of revegetation shall be judged based upon the effectiveness of the vegetation for the approved end use, and by comparing the quantified measures of vegetative cover, density, and species-richness of the reclaimed mined-lands to similar parameters of naturally occurring vegetation in the area. Either baseline data or data from nearby reference areas may be used as the standard for comparison. Quantitative standards for success and the location(s) of the reference area(s) shall be set forth in the approved reclamation plan. Comparisons shall be made until performance standards are met provided that, during the last two years, there has been no human intervention, including, for example, irrigation, fertilization, or weeding. Standards for success shall be based on expected local recovery rates. Valid sampling techniques for measuring success shall be specified in the approved reclamation plan. Sample sizes must be sufficient to produce at least an 80 percent confidence level. There are standard statistical methods in commonly available literature for determining an 80 percent confidence level on a site-by-site basis.

2. Environmental Setting

The Mojave Desert is subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures around Baker (the closest town) peak at 108 degrees Fahrenheit (° F) in July and fall to an average annual minimum temperature of 33.0° F in December. Average annual precipitation around Baker averages 3.7 inches. Elevation on site ranges from approximately 1,220 feet above mean sea level (amsl) at the base of the mountain, to 2,050 feet amsl at the top of the mountain.

Hydrologically, the Project site is within the Mojave hydrologic unit of the Colorado River hydrologic region. This watershed is not tributary to the ocean or any other water body; rather, all water either infiltrates into the groundwater basin, evaporates, or flows toward the Mojave River south of the Project site. All flow channels on-site are intermittent or ephemeral and likely only receive stream flow during and following significant rain events. Typical of arid regions, the area experiences short-duration, high-intensity rainfall storm events producing potentially high rates of runoff when the initial infiltration rates are exceeded. During these periods the small, incised washes become conduits for water flow.

The general project vicinity consists of active quarries and undeveloped open space. Habitat within and surrounding the project site consists primarily of *Larrea tridentata* shrubland alliance (creosote bush scrub) with *Chilopsis linearis* woodland alliance (desert willow woodland) within surrounding wash areas to the south and east that will not be impacted.

3. Existing Vegetation

The baseline inventory of flora was conducted on dates June 4, 9 and 21, 2019 by Jericho Systems, Inc. A visual survey was conducted in all vegetated areas of the project site to assess occurrence of special status species (Table 1) and to document total site diversity.

Two plant communities occur within the project arear. Most of the area is dominated by creosote bush shrubland (*Larrea tridentata* Shrubland Alliance; photo 1, 2). Lower areas inside the wash on the east and south of the project area are dominated by desert willow woodland (*Chilopsis linearis* Woodland Alliance; photo 3). *C*ensus surveys identified 24 plant species (Table 1) on the site but only a 9 of these occurred in the sampled plots. A complete list of observed plant species is included as Appendix A. Field data sheets are included as Appendix B.

3.1. Method for Collecting Baseline Vegetation

Methodology used to collect data needed to establish revegetation criteria was based on California Native Plant Society guidelines (CNPS, 2019) and modified based on Keeley and Fotheringham, (2005). Accordingly, a 20m x 50m was randomly established and subdivided into 10m x 10m subplots to assess shrub density, percent ground surface cover (%GSC) and dominance. For herbaceous density cover and dominance 60 nested 1 m^2 plots were sampled within the larger 100m^2 plots. Due to sparsity of vegetation, data from 1m^2 was not informative and is not included further. A total of 30 100m^2 plots within three 1000m^2 plots were surveyed to provide baseline data needed to determine seed and seedling types and to establish the success criteria for future revegetation efforts, if needed.

3.2. Baseline Survey Results

Vegetation in the general area is very sparse with depauperate species diversity with rocky areas having little or no vegetation.

Diversity

The area is relatively species depauperate relative to other regions of the Mojave Desert. Species diversity ranged between 1-4 species per 100m^2 (Table 1) with 1-3 shrub species per 100m^2 observed dominated by creosote. Native herbaceous species diversity was even lower with 0-2 species per 100m^2.

Density

Average individual plant density was 50-100 per 1000m^2 with an average of 6.3 per 100m^2 (Table 1). Shrub density was higher in the creosote shrubland (3.4 per 100m^2) than in the desert willow woodland (1.9 per 100m^2).

Cover

There was a total 9-13% Ground Surface Cover (GSC) in the two plant alliances (Table 1). In the creosote shrubland, the shrub layer canopy accounted for 75 % GSC and *Larrea tridentata* was the dominant shrub. In the desert willow woodland (photo 3) the shrub layer canopy accounted for 98% GSC and *Chilopsis linearis* was the dominant shrub. The native herbaceous species cover 1.2% GSC in

creosote shrubland primarily due to the perennial grass species *Hilaria rigida* (big galleta). In desert willow woodland herbaceous cover was exceedingly low by both absolute and relative measure. No non-native species occurred within the sampled plots but *Schismus barbatus* (Old han schismus) occurred patchily across the site.

Table 1
Plant Species Density and % Ground Surface Cover (GSC)

Species	%GSC	# 100m^2
Shrub		
Senegalia greggii (Catclaw acacea)	0.4	0.1
Larrea tridentata (Creosote bush)	6.3	3
Cylindropuntia ramosissima (pencil cholla)	0.3	0.3
Perennial Grass		
Hilaria rigida (Big galleta)	2.4	2.9
Herbaceous Species		
Croton californicus (California croton)	0.01	0.01
***Chilopsis linearis* Woodland Alliance (Desert willow woodland)**		
Shrub		
Ambrosia dumosa (Burro weed)	0.01	0.1
Ambrosia salsola (Burrobrush)	0.2	0.1
Chilopsis linearis (Desert willow)	12.7	1.7
Herbaceous Species		
Physalis crassifolia (Thick leaved ground cherry)	0.01	0.1

4. Revegetation

If required, revegetation of the site upon termination of mining would follow a series of steps. These steps may be modified or changed should new information or techniques that would improve the results of the revegetation activities become available. In the event that future changes to the currently proposed project footprint should occur that would impact adjacent habitat, all impacted areas currently consisting of creosote shrubland and desert willow woodland alliance vegetation would be reclaimed (Figure 4). Success criteria and revegetation strategies were designed specifically to meet the needs of the vegetative community and environmental conditions adjacent the project site. Note that no desert willow woodland will be impacted by the planned project footprint.

4.1. Soil Salvage

The top 12 inches of topsoil if available due to the rocky conditions within areas of creosote shrubland habitat that are impacted shall be salvaged and stockpiled for restoration. Any available vegetated soils onsite will be stockpiled in separate identified stockpiles for use as a seed bank during revegetation. The

topsoil salvage stockpiles will be kept on site adjacent to the proposed new disturbances. Exact locations of the soil stockpiles will be determined prior to clearing/grubbing activities and will be dependent upon grading plans and available space. The soil stockpiles will be clearly marked and stabilized with a breathable erosion control method such as jute netting. If the native seed bank within the removed topsoil is desired for revegetation, then the topsoil should be piled in wide rows that are a maximum of 3 feet high to prevent sterilization of the seed bank during soil storage. If the desired goal is only to retain the developed soil and chemical composition to provide additional soil richness for reseeding, then creating taller, more condensed stockpiles would be appropriate.

4.2. Seed Collection

Local seed collection preserves the local genetic identity and diversity of the existing plant community while providing seed that is optimally suited for growth at the site and offer the greatest probability of successful revegetation. Seed collection must be undertaken and monitored by a professional seed collecting firm or a qualified botanist. When seed collection is not possible or if the number of available plants are minimal, a certified weed free seed mix may be used in lieu of seed collected at the site. Certified weed free seed mixes are available and may be purchased from professional nurseries.

4.3. Site Preparation

Upon termination of mining activities, the surfaces to be revegetated would be ripped to about 18 inches in depth to break up compacted areas and would be left in a textured or rough condition with shallow rills and furrows to create optimal conditions for revegetation with a native seed mix. Any available soils will be deposited in a uniform depth or in random “islands” up to one-foot thick and seeded.

Priority for seeding should be given to species with low seed dispersibility particularly if there is adjacent undisturbed habitat to provide a seed source. Quick-growing, shallow-rooted species can be included in the seed mix to provide short-term erosion control on vulnerable slopes. By providing short-term erosion control, more favorable growing conditions will be created for climax species that will provide long-term erosion control.

4.4. Irrigation

The plant palette proposed for the mine site consists of primarily drought-tolerant plants species that should perform well once established without additional water. Woody species may require some supplemental water for root establishment of native species in drought years. Precipitation in the area in some years should be sufficient for seed germination of annual species with soil seed bank persistent through 2-3 drought years.

Planting in the fall or early winter, prior to anticipated winter precipitation events, will be sufficient for seed germination and root establishment and reduce weed growth that is typically associated with supplemental irrigation. Scarification of the soil and the creation of surface rills and furrows will allow for maximized collection of water from rain events and run-off.

4.5. Fertilization

No fertilization of the site is recommended. The native seeds used for revegetation will be tolerant of existing soil conditions. Additionally, the mechanical loosening, and creation of surface rills and furrows, will create conditions favorable for seed germination and root establishment by native species. Widespread use of fertilizers on desert sites appears to benefit non-native weedy species and not the native species sought as the goal of the revegetation plan (Clary, 1987).

4.6. Weed Control

The purpose of the non-native invasive species control plan is to reduce or eliminate the occurrence of non-native invasive plant species that may invade the site where active and natural revegetation is taking place. Non-native invasive species (weeds) can compete with native plant species for available moisture and nutrients and consequently interfere with revegetation of the site. No non-native species occurred within the sampled plots but *Schismus barbatus* (Old han schismus) occurred patchily across the site.

The occurrence of non-native invasive species on-site shall be monitored by visual inspection quarterly for the first year and then annually thereafter. The goal is to prevent non-native invasive species from becoming established and depositing seeds in revegetated areas. No areas will be allowed to have more than 10 percent non-native invasive species ground cover. If inspections reveal that non-native invasive species are becoming or have become established on site, then removal will be initiated. Inspections shall be made in conjunction with revegetation monitoring.

Non-native vegetation will be removed using the most efficient method as determined by the site conditions. Removal may occur regularly in the first year and may consist of using mechanized equipment, hand tools and/or herbicide spraying. Herbicides may be applied to control an instance where there is an aggressive and extensive weed invasion on site. All non-native, invasive weeds will be removed before they produce seed or reach a height of 8 inches, whichever comes first. Once the weed growth is under control, weeding will take on a more selective approach and be completed with hand tools and such as hoes, shovels and rakes and spraying, if essential to meet success criteria.

Reports of inspections and weed control implementation shall be part of the annual revegetation monitoring and kept on file by the Operator.

4.7. Seeding Methods and Rates

The revegetation area(s) will be seeded with a certified weed-free seed mix applied hydraulically (hydro-seeded) with preference for locally collected seed. Seed will be delivered to the site in sealed and labeled packaging, along with a California State Agricultural Code seed certification that includes the supplier's name, geographic location, and collection date, and the tested purity and germination percentage rates. The seed mix will be applied by hydroseeding with a low nitrogen hydroseed slurry containing seed, natural fiber mulch, and organic tackifier. The hydroseed mulch will help more of the seed stay in place and germinate compared to hand seeding.

A seed mix should be a subset of the native plants identified during surveys (Table 2). Seed mix can be supplemented with locally confirmed native herbaceous species as needed based on seed availability. Species recommended were the most commonly encountered on the site and accounted for the majority of the vegetative coverage. Selection of species at the time of revegetation should be a balance of availability with some preference to species with low dispersibility. The recommended seeding rate

should be for a goal of total herbaceous density of 1-2 individuals $100m^{-2}$ and must be calculated based factors above and on formulas presented by Jeanette Dorner (2002, p. 47-50).

Table 2.
Recommended Seed Mix of the Most Common Species Accounted

Scientific Name	Common Name	Growth Form	Seeding Rate
Amsinckia tessellata var. tessellata	Fiddleneck	Annual herb	0.25
Chorizanthe brevicornu	Brittle spine flower	Annual herb	0.25
Chorizanthe rigida	Rigid spiny herb	Annual herb	0.25
Stillingia spinulosa	Broad leaved stillingia	Annual, Perennial herb	0.5
Hilaria rigida	Big galleta	Perennial grass	1.0
Stephanomeria pauciflora	Wire lettuce	Perennial herb	0.25
Ambrosia dumosa	Burro weed	Shrub	2.5
Ambrosia salsola	Burrobrush	Shrub	2.5
Encelia farinosa	Brittlebush	Shrub	2.0
Larrea tridentata	Creosote bush	Shrub	3.0
Senegalia greggii	Catclaw, devil's claw	Shrub	1.0
Cylindropuntia echinocarpa	Silver cholla	Shrub (stem succulent)	1.0
Cylindropuntia ramosissima	Branched pencil cholla	Shrub (stem succulent)	0.5
Echinocactus polycephalus var. *polycephalus*	Cottontop	Shrub (stem succulent)	0.5

4.8. Schedule of Revegetation

Seeding of the revegetation area(s) shall occur at the appropriate time of the year and at an application rate for optimum seed sprouting and growth. The ideal window for seeding native plants in Southern California, is in late fall generally, prior to anticipated winter precipitation events that typically occur between November and March in the project area. The contractor will need to coordinate installation efforts with any rain events to ensure that work is not being conducted on the site during periods of inundation.

Following the initial seeding, revegetation areas will be monitored quarterly for the first year and then annually thereafter. Appropriate remediation action such as reseeding and weed removal will be determined at the time of monitoring.

4.9. Test Plots

Per Section 3705 (b) of the SMARA requirements:

> *"Test plots conducted simultaneously with mining shall be required to determine the most appropriate planting procedures to be followed to ensure successful implementation of the proposed revegetation plan. The lead agency may waive the requirement to conduct test plots when the success of the proposed revegetation plan can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be planted."*

The Operator shall establish a minimum four-100m^2 test plots representative of the slope aspect where mining will occur in areas currently consisting of creosote scrub habitat. Test plots would include surface ripping/no seeding (control plot); soil cover/no seeding; surface ripping, soil cover/no seeding; and surface ripping, soil cover/seeding as described above with the recommended seed mixture. Additional tests would be conducted if the initial tests and any active revegetation are not successful and may include various types and amounts of seeds and different surface/soil preparation.

5. Revegetation Monitoring

5.1. Success Criteria

Successful revegetation will be achieved when a self-sustaining native plant cover is established in any areas of the proposed project where native habitat is disturbed. The revegetated site should resemble and blend into the natural surrounding environment. The success of the revegetation effort will be determined through statistical comparison of the revegetated areas to the baseline inventory.

Acceptable performance standards for mine reclamation are based on a percentage of cover, density, and species diversity when compared with the baseline. An acceptable standard at the Project site would measure success at 45% of the baseline cover, 40% of the baseline density, and 40% of the baseline species diversity within the shrub canopy, five years after reclamation or until criteria is met. For this sparsely vegetated site, success criteria would be 4.25% cover, 2.5 density, and 1 for diversity

5.2. Technical Assessment

The permanence and sustainability of the revegetated plant community will be determined annually after the initial seeding. Annual assessments of the reclamation area will be conducted by a qualified botanist to determine the success of the revegetation effort. Interim success standards may be used as thresholds for annual monitoring and to ensure the success of revegetation. Although quarterly monitoring will be conducted during the first year and annually thereafter, sustainability will be assessment once a year.

The plant species will be evaluated for relative success as determined by the cover, density, and species diversity success criteria. Remedial actions include removing non-native invasive species and reseeding based on annual assessment results. An evaluation of the surviving species will be repeated annually following initial seeding for five years or until the success criteria are achieved.

Annual monitoring will include random plot sampling within the revegetation area. The number of plots and sampling area size will vary to produce the 80% confidence level required under SMARA's Performance Standards for Revegetation. The following data will be collected within the sample plots:

a. Survivorship: assessed by absolute counts
b. Plant density
c. Species diversity
d. Cover per specified area

All data will be recorded on a standard form and copies will be submitted as an appendix to each Annual Report. Photo documentation will also be included for representative transects, in order to visually document annual vegetation changes and community development.

5.3. Reporting

The Operator will document the progress of any revegetation efforts and submit Annual Maintenance and Monitoring reports to San Bernardino County.

6. Conclusion

Upon termination of mining activities, any surfaces to be revegetated would be scarified to create conditions optimal for seeding. Any revegetation areas will be covered with available surface materials and hydro-seeded. Seeding would occur following the first rain of the fall season and before the winter rains.

An acceptable performance standard for this project site would measure success at 45% of the baseline cover, 40% of the baseline density, and450% of the baseline species diversity, five years after reclamation. The baseline data showed that native shrub species diversity ranged between 1-4 species per $100m^2$ and native herbaceous species diversity was with 0-2 species per $100m^2$. Average individual plant density was 6.3 per $100m^2$. In the creosote shrubland the shrub layer canopy accounted for 9.4% GSC with *Larrea tridentata* being the dominant shrub. The native herbaceous species cover 1.2% GSC in creosote shrubland primarily due to the perennial grass species *Hilaria rigida* (big galleta).

Accordingly, successful revegetation in the revegetation area would be achieved at approximately 4.25% GSC of *Larrea tridentata* in the creosote bush scrub community, an approximate plant density of 2.5 plants per $100m^2$ and a species diversity of one native shrub species per $100m^2$. No areas will be allowed to have more than 10 percent non-native invasive species ground cover.

Annual assessments of the reclamation area will be conducted by a revegetation specialist to determine the success of the revegetation effort until said criteria are achieved. Remedial action would occur per the recommendation of the revegetation specialist.

7. References

Calflora: Information on California plants for education, research and conservation. [web application]. 2018. Berkeley, California: The Calflora Database [a non-profit organization]. Available: http://www.calflora.org/. (Accessed: March 26, 2019)

Clary, R.F. 1987. Roadside revegetation in the Mojave Desert. Restoration and Management Notes, Vol. 5:2 page 97.

Dorner, Jeanette. 2002). An introduction to using native plants in restoration projects. https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/intronatplant.pdf

Jepson Flora Project (eds.) 2018. *Jepson eFlora*, http://ucjeps.berkeley.edu/eflora/. (Accessed: April 1, 2019).

Keeley, J.E. and Fotheringham, C.J. 2005. Plot shape effects on plant species diversity measurements. Journal of Vegetation Science 16: 249-256.

Maddox, Jay C.; Carlquist, Sherwin. 1985. Wind dispersal in Californian desert plants: experimental studies and conceptual considerations. Aliso. 11(1): 77-96. [3256]

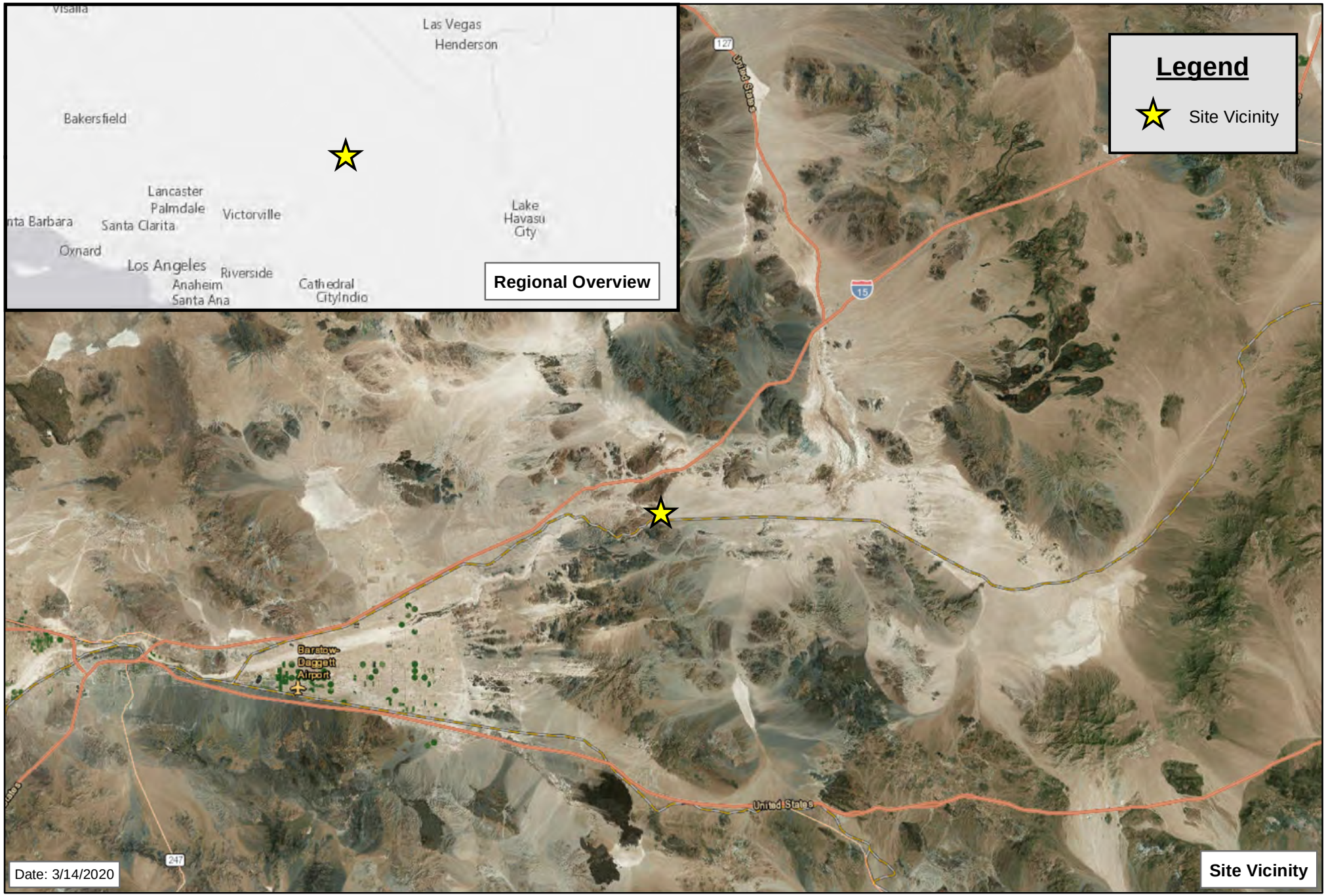
Sawyer, John O., Keeler-Wolf, Todd, and Evens, Julie M. 2009. A manual of California vegetation. Second Edition. California Native Plant Society, Sacramento, California, USA. 1,300 pages.

S&S Seeds, Inc. Professional seed collecting firm for native California plants. Personal communication. May 30, 2019.

Western Regional Climate Center. Period of Record Monthly Climate Summary for Haiwee, California (043710). Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3710. (Accessed: March 26, 2019).

Appendix A
Plant Species Observed

Scientific Name	Common Name	Growth Form	Status	Family
Ambrosia dumosa	Burro weed	Shrub	Native	Asteraceae
Ambrosia salsola	Burrobrush	Shrub	Native	Asteraceae
Dicoria canescens	Desert dicoria	Annual herb	Native	Asteraceae
Encelia farinosa	Brittlebush	Shrub	Native	Asteraceae
Psathyrotes ramosissima	Turtleback	Annual, Perennial herb	Native	Asteraceae
Stephanomeria pauciflora	Wire lettuce	Perennial herb	Native	Asteraceae
Chilopsis linearis	Desert willow	Shrub	Native	Bignoniaceae
Cylindropuntia echinocarpa	Silver cholla	Shrub (stem succulent)	Native	Cactaceae
Cylindropuntia ramosissima	Branched pencil cholla	Shrub (stem succulent)	Native	Cactaceae
Echinocactus polycephalus var. *polycephalus*	Cottontop	Shrub (stem succulent)	Native	Cactaceae
Achyronychia cooperi	Frost mat	Annual herb	Native	Caryphyllaceae
Juniperus californica	California juniper	Shrub	Native	Cupressaceae
Croton californicus	Desert croton	Perennial herb	Native	Euphorbiaceae
Senegalia greggii	Catclaw, devil's claw	Shrub	Native	Fabaceae
Hilaria rigida	Big galleta	Perennial grass	Native	Poaceae
Schismus arabicus	Arabian schismus	Annual grass	Non-native, Invasive	Poaceae
Chorizanthe brevicornu	Brittle spine flower	Annual herb	Native	Polygonaceae
Chorizanthe rigida	Rigid spiny herb	Annual herb	Native	Polygonaceae
Physalis crassifolia	Thick leaved ground cherry	Annual, Perennial herb	Native	Solanaceae
Larrea tridentata	Creosote bush	Shrub	Native	Zygophyllaceae

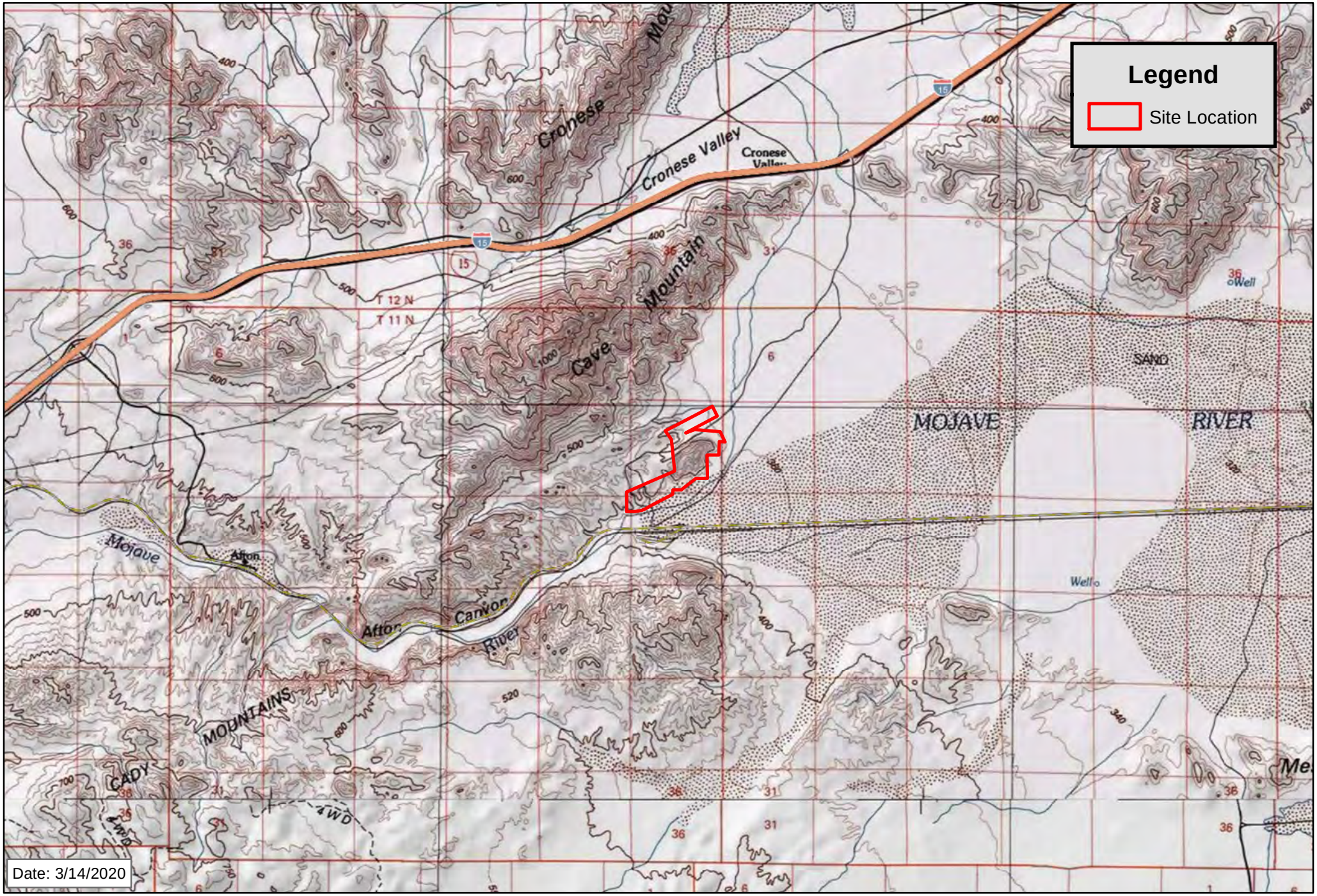


0 5 10 20 30 40 Miles

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

JERICHO SYSTEMS INCORPORATED

Figure 1 - Regional Overview Site Vicinity	Portland Baxter Quarry Between Yermo and Baker, CA



0 0.5 1 2 3 4 Miles

Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Copyright:© 2013 National Geographic Society, i-cubed

1 inch = 7,067 feet

Figure 2
Site Location

Portland Baxter Quarry
Between Yermo and Baker, CA

0 0.5 1 2 3 4 Miles

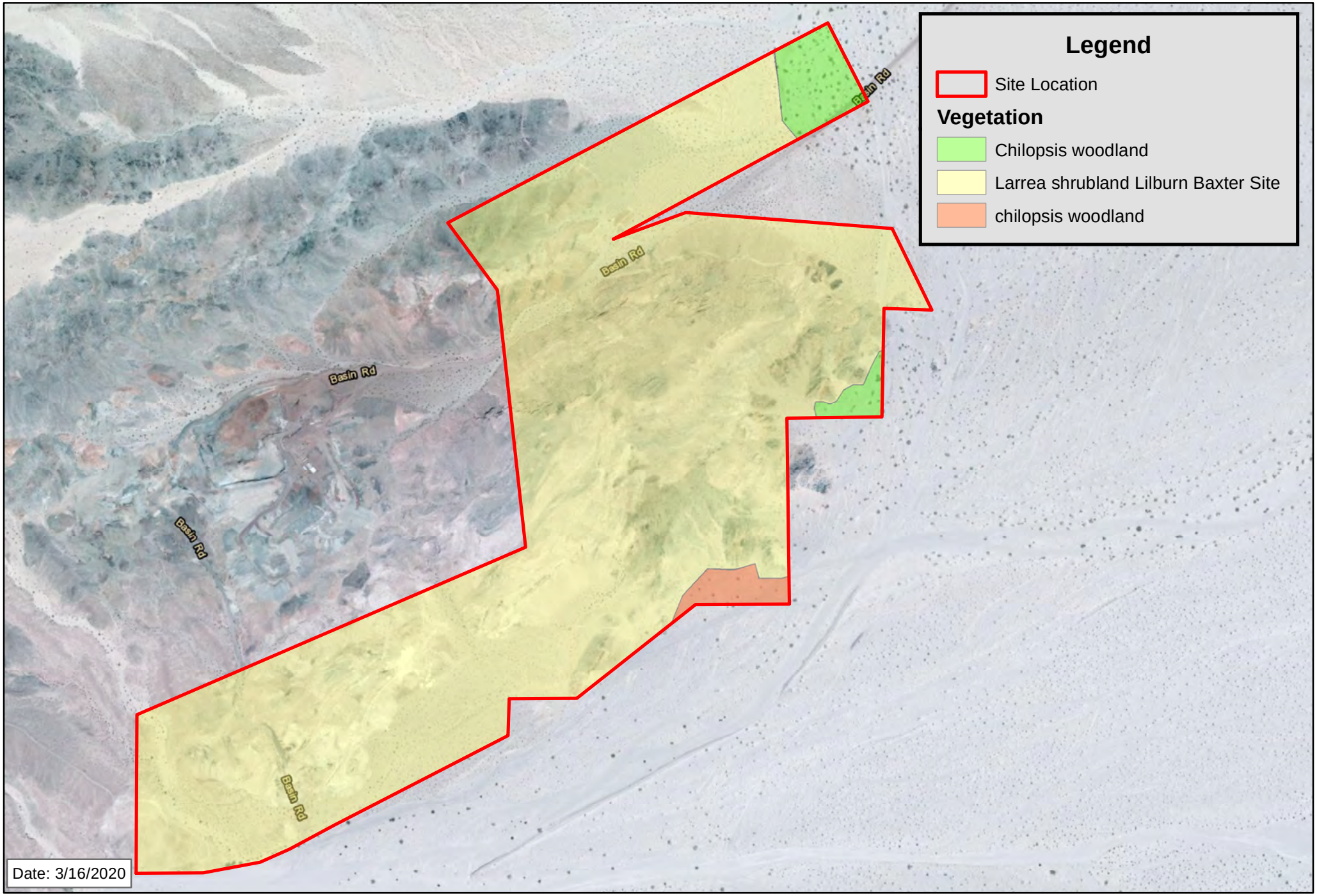
Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

1 inch = 7,067 feet

Figure 3
Site Location

Portland Baxter Quarry
Between Yermo and Baker, CA



0 0.075 0.15 0.3 0.45 0.6 Miles

Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

JERICHO SYSTEMS INCORPORATED

1 inch = 875 feet

Figure 4
Vegetation

Portland Baxter Quarry
Between Yermo and Baker, CA