Joshua Tree Census
for
TTM 67239
Palmdale, California

4 October 2022

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The California Fish and Game Commission accepted a petition in September 2020 to list the Western Joshua Tree (*Yucca brevifolia*) under the California Endangered Species Act (CESA). This action made the Joshua tree a candidate species with full protection until a decision on whether listing is warranted is completed. Coordination with the California Department of Fish and Wildlife (CDFW) and submission of an application for an Incidental Take Permit (ITP) is now necessary for take of Joshua trees.

CDFW published information detailing recommendations for field work to support an application for an Incidental Take Permit. This effort was performed in accordance with those field work recommendations. Further analysis, as noted in the ITP application requirements, will need to be developed prior to submittal of an ITP to CDFW (CDFW 2021).

Mr. Mark Hagan, Wildlife Biologist, has performed Joshua tree surveys for over 30 years and is considered by CDFW to be qualified to conduct these surveys. Ms. Wanda Deal assisted in data collection.

This current study was conducted to accomplish fieldwork in support of the ITP required by CDFW. This report should be sufficient to support the application for a Joshua tree ITP as delineated in the CDFW guidance for "ITP Application Field Work" written in April 2022 (CDFW 2021). Further analysis, as noted in the guidance under "ITP Application Guidance", will need to be developed prior to submittal of the ITP to CDFW (CDFW 2021). This report should also be sufficient for compliance with the City of Palmdale's Native Plant Ordinance (City of Palmdale 2020).

Residential development is planned for TTM 67239 (APNs 3111-001-063 and 088), Palmdale, California. The approximately 20 acre (8 ha) project area is located north of Avenue M-8 and west of 35th Street West, T6N, R12W, the E1/2 of the SE1/4 of the NW1/4 Section 6**,** S.B.B.M. (Appendix A, Figures 1 through 3). Avenue M-4, a dirt road, formed the northern boundary of the study site. Joshua tree woodland and desert scrub habitat was present north of Avenue M-4 with residential housing a short distance further north. Avenue M-8 formed the southern boundary of the study site. Residential homes were present south of Avenue M-8. Disturbed Joshua tree woodland and desert scrub habitat was present east of the study site. A well traveled dirt road (35th Street West) existed just within the eastern boundary. A dirt road formed the western boundary. Disturbed Joshua tree woodland and desert scrub habitat was present west of this dirt road. Topography of study site was approximately 2,529 to 2,545 feet (771 to 776 m) above sea level.

The entire project area although heavily disturbed, was one vegetation alliance; Joshua tree woodland\desert scrub plant community (Barbour et.al. 2007). At one time it may have been a Joshua tree, California Juniper tree, desert scrub ecotone. The dominant perennial shrub species within the study site was mormon tea (*Ephedra nevadensis*). The dominant annual plant species within the study site was red stemmed filaree (*Erodium cicutarium*). Most of the Joshua trees were present within the north-northeastern portion of the study site (Appendix A, Figure 4 to 8). A plant list for the study site is provided (Table 1).

The study site has been subjected to long term ongoing disturbance (Appendix A, Figure 4). Based on historical Google Earth photos a fire within the south and west of the site appears to have occurred prior to 2003. Historical Google Earth photos also indicate between 2009 and 2011 many spoil piles (soil, construction debris, etc.) were dumped within the study site with the amount of areal extent expanding each year through 2021 (last date of available

Table 1. List of plant species that were observed during the line transect survey of APNs 3111-001-063 and 088, Palmdale, California during the June 2022 biological survey (Hagan 2022). Two plant species were added from September 2022 survey marked below with an *.

Common Name	Scientific Name
Joshua tree	*Yucca brevifolia*
Creosote bush scrub *	*Larrea tridentata*
California juniper	*Juniperus californica*
Four-wing saltbush	*Atriplex canescens*
Mormon tea	*Ephedra nevadensis*
Peachthorn	*Lycium cooperi*
Cotton thorn	*Tetradymia spinosa*
Spiny hopsage	*Grayia spinosa*
Rabbit brush	*Chrysothamnus nauseosis*
Silver cholla	*Opuntia echinocarpa*
Desert straw	*Stephanomeria pauciflora*
Jimson weed *	*Datura meteloides*
Flattop buckwheat	*Eriogonum deflexum*
Spotted buckwheat	*Eriogonum maculatum*
Turkey mullein	*Eremocarpus setigerus*
Wishbone plant	*Mirabilis bigelovii*
Sun cups	*Camiissonia campestris*
Autumn vinegar-weed	*Lessingia germanorum*
California poppy	*Eschscholtzia californica*
Pygmy-leaved lupine	*Lupinus bicolor*
Goldfields	*Lasthenia californica*
Lacy phacelia	*Phacelia tanacetifolia*
California poppy	*Eschscholtzia californica*
Comb-bur	*Pectocarya recurvata*
Jimson weed	*Datura meteloides*
Blue mantle	*Eriastrum diffusum*
Fiddleneck	*Amsinckia □ophia□ate*
Desert needlegrass (1 small individual)	*Stipa comata*
Rattlesnake weed	*Euphorbia albomarginata*
Red stemmed filaree	*Erodium cicutarium*
Tumble mustard	*Sisymbrium altisissiimum*
Tansy mustard	*Descurainia □ophia*
Sahara mustard	*Brassica tournefortii*
Annual burweed	*Franseria acanthicarpa*
Cheatgrass	*Bromus tectorum*
Red brome	*Bromus rubens*

historic Google aerial photos). Trash dumps containing household waste and construction debris have been added to the edges and within the spoil piles and randomly within the study site over the same time frame. Joshua trees continue to persist within and around the dump sites.

The project area was surveyed on 19, 20, and 23 September 2022. Fruit and flower remnants were readily observable during the time of the survey. Joshua tree seeds were observed during the time of the survey. Line transects were walked within the entire study area, spaced sufficiently to determine presence of all Joshua trees. Joshua trees were counted, and the following assessed and or noted: health, phenophase, number of branches, flower panicles, height of Joshua trees, and whether they were clonal or single trees (Appendix B). Clonal Joshua trees were counted as a single tree and the height of the tallest tree was recorded. Due to the lack of tree rings and other ways of determining age of Joshua trees, juvenile trees were defined as those less than or equal to 6 foot that had no indication of having produced a terminal flowering panicle. Trees at 1 foot or less and not part of a clone were defined as seedlings. All trees greater than 6 foot were considered mature. Joshua tree health was defined in the following manner:

- Joshua trees in good condition were defined as those which appeared robust, little to no damage, with no rodent burrows at the base that would affect the root system.

- Joshua trees in fair condition were defined as those which may or may not appear robust, had moderate damage to the tree, poor crown to root ratio, and rodent burrows at the base that may be causing undetectable damage to the root system.

- Joshua trees in poor condition were defined as those which were not robust, had more severe damage to the tree, and extensive rodent burrows at the base that may be causing undetectable damage to the root system.

Photographic examples of different tree and habitat conditions are provided in Appendix A, Figures 10 through 13.

A total of 92 live Joshua trees were observed within the study site (Table 2). An additional 3 Joshua trees were observed within 25 feet of the eastern boundary. No Joshua trees were observed within 25 feet of the northern, western, or southern boundaries. Joshua trees were mapped on an aerial photograph (Appendix A, Figures 5 through 8). One individual seedling from sexual reproduction was observed within the study site. A total of 5 juvenile Joshua trees, from sexual reproduction were observed within the study site. A total of 10 dead Joshua trees, 9 down and 1 still standing, were observed, and noted within the study site. Many disarticulated Joshua tree remnants were scattered throughout the site. Typical Joshua tree woodlands exhibit more Joshua trees occurring within the mid-height range (7 to 12 foot) with small and very large trees making up a small percentage of the overall demographics of the community. Within this study area, >12 foot high Joshua trees, dominate the area representing approximately 85% of the overall number of trees. This study site was heavily weighted towards the >12 foot Joshua tree size which indicates an older Joshua tree woodland but also that reproduction has been repressed, most likely due to fire and extensive dumping. GPS locations of the Joshua trees within the project site were recorded (Appendix B). California Juniper trees (*Juniperus californica*) were present within the study site and were mapped (Appendix A, Figure 9).

Table 2. Number of Live Joshua trees by size class

Size Class of Joshua Trees (in feet*)	Total Number of Joshua Trees per Age Class
<1	1
1-3	1
4-6	4
7-9	5
10-12	10
>12	71
	92 Total On Site Joshua Trees
Offsite trees within 25 feet of boundary	
<1	0
1-3	0
4-6	0
7-9	0
10-12	0
>12	3
	3 Total Offsite Joshua Trees

*Trees >12 foot are equal to or >4 meters, 1 to 12 foot are <4 meters

Literature Cited:

Barbour, M.G., Keeler-Wolfe, T. and A.A. Schoenherr, Eds. 2007. Terrestrial vegetation of california, third edition. University of California Press, Berkley and Los Angeles, California. 712pp.

California Department of Fish and Wildlife (CDFW), 2021. ITP application fieldwork (draft). Valand (CDFW) email. On file at: Mark Hagan, 44715 17th Street East, Lancaster, California, 93535. 2pp.

City of Palmdale. 2020. Native plant ordinance. Title 14. Environmental Management, Chapter 14.04, Joshua tree and Native Desert Vegetation Preservation. Chapter 14.04 JOSHUA TREE AND NATIVE DESERT VEGETATION PRESERVATION (codepublishing.com) accessed 30 September 2022.

Appendix A (Figures)

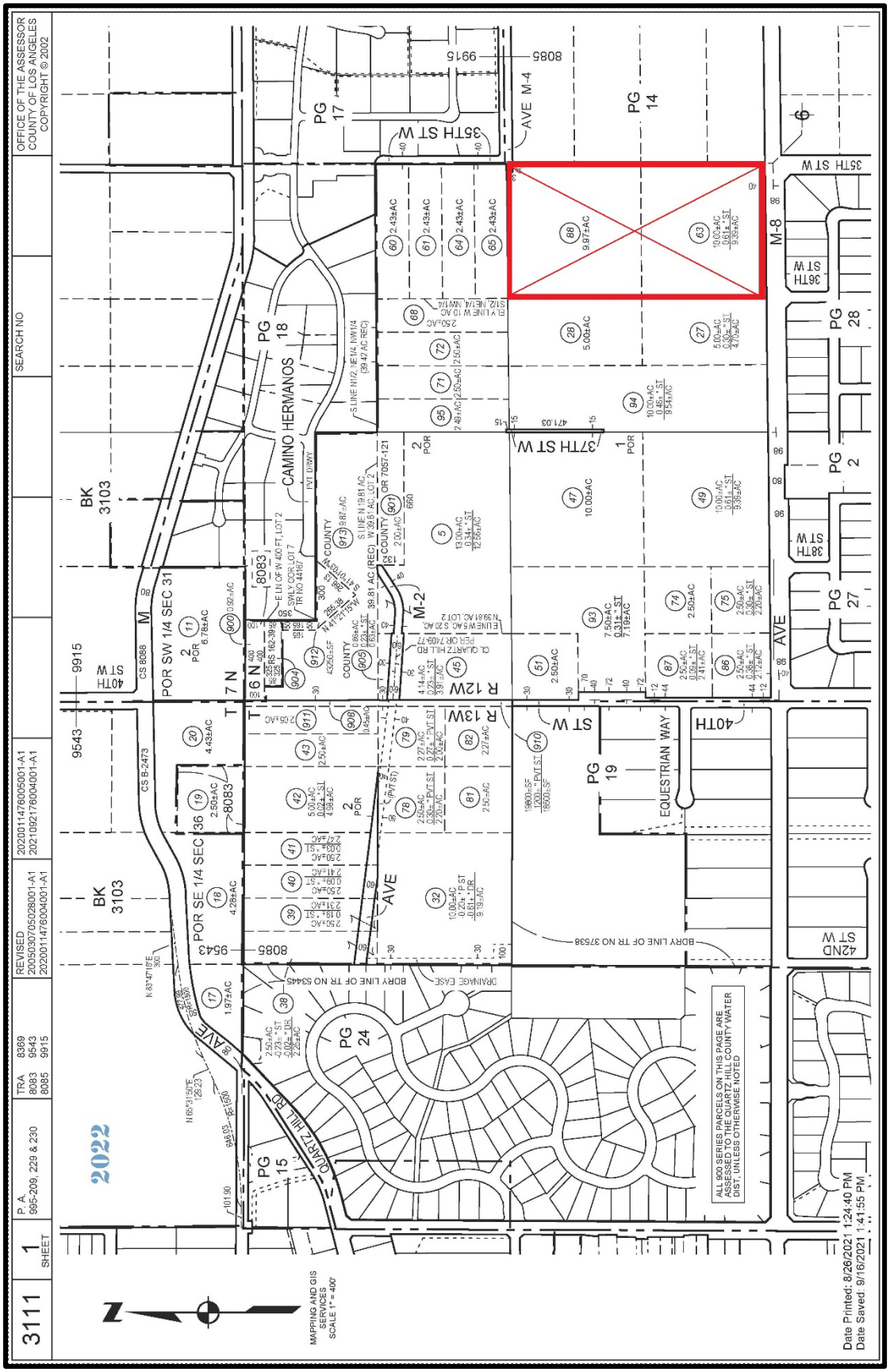


Figure 1. Approximate location of proposed project area as depicted on APN map.

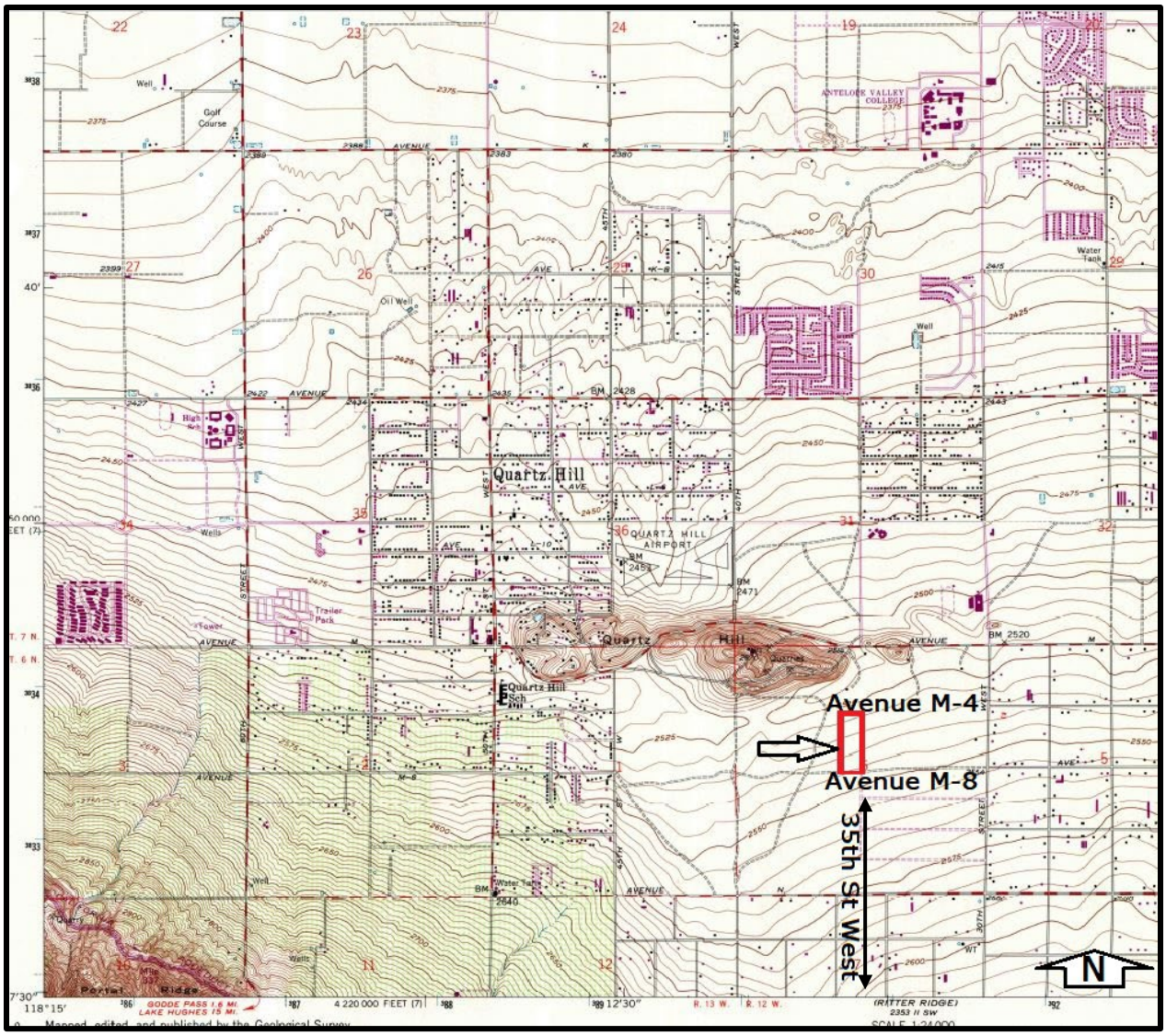


Figure 2. Approximate location of study area as depicted on excerpt from USGS Quadrangle, Palmdale, California, 7.5' 2015.

Figure 3. Aerial photo of the study site and surrounding area.

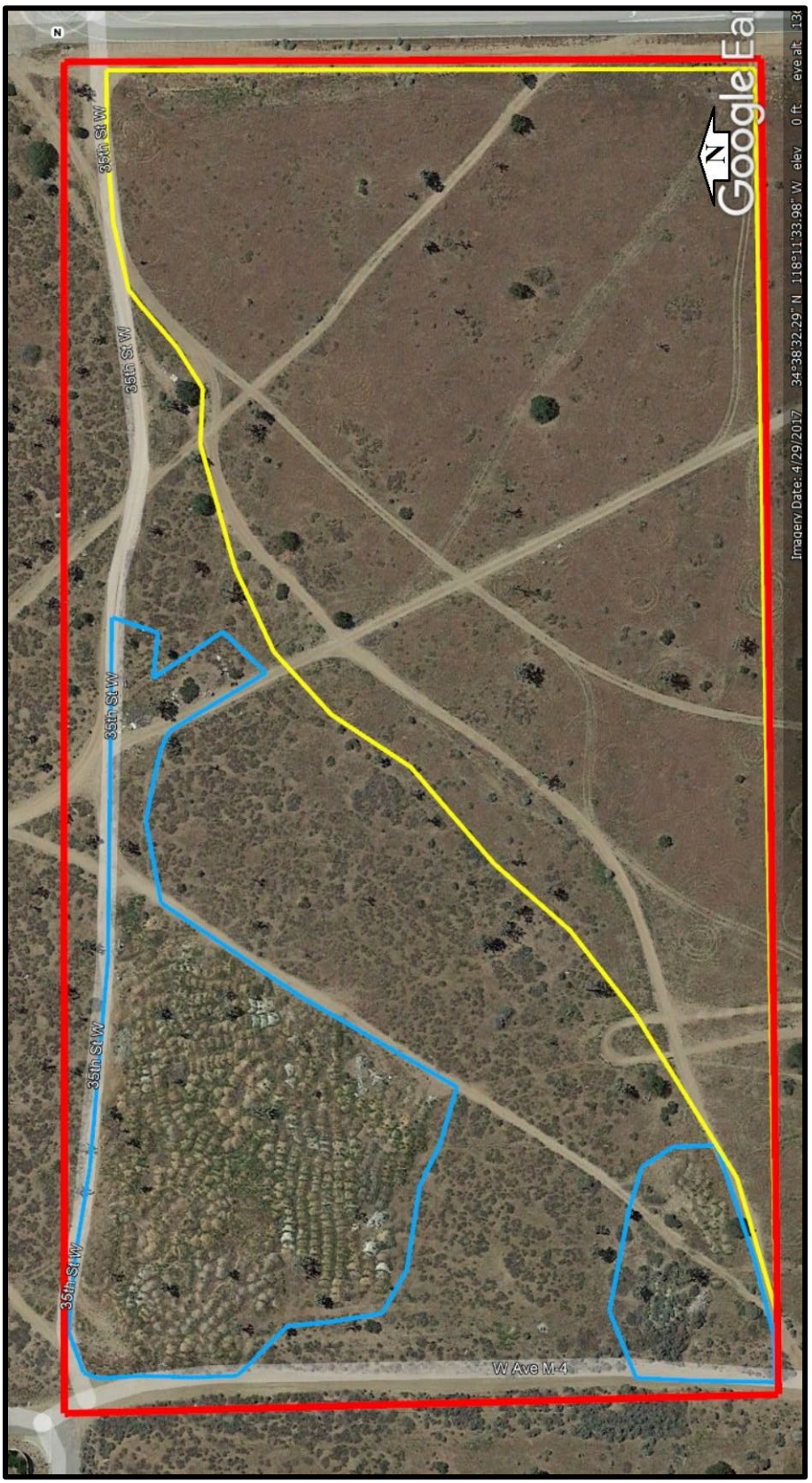
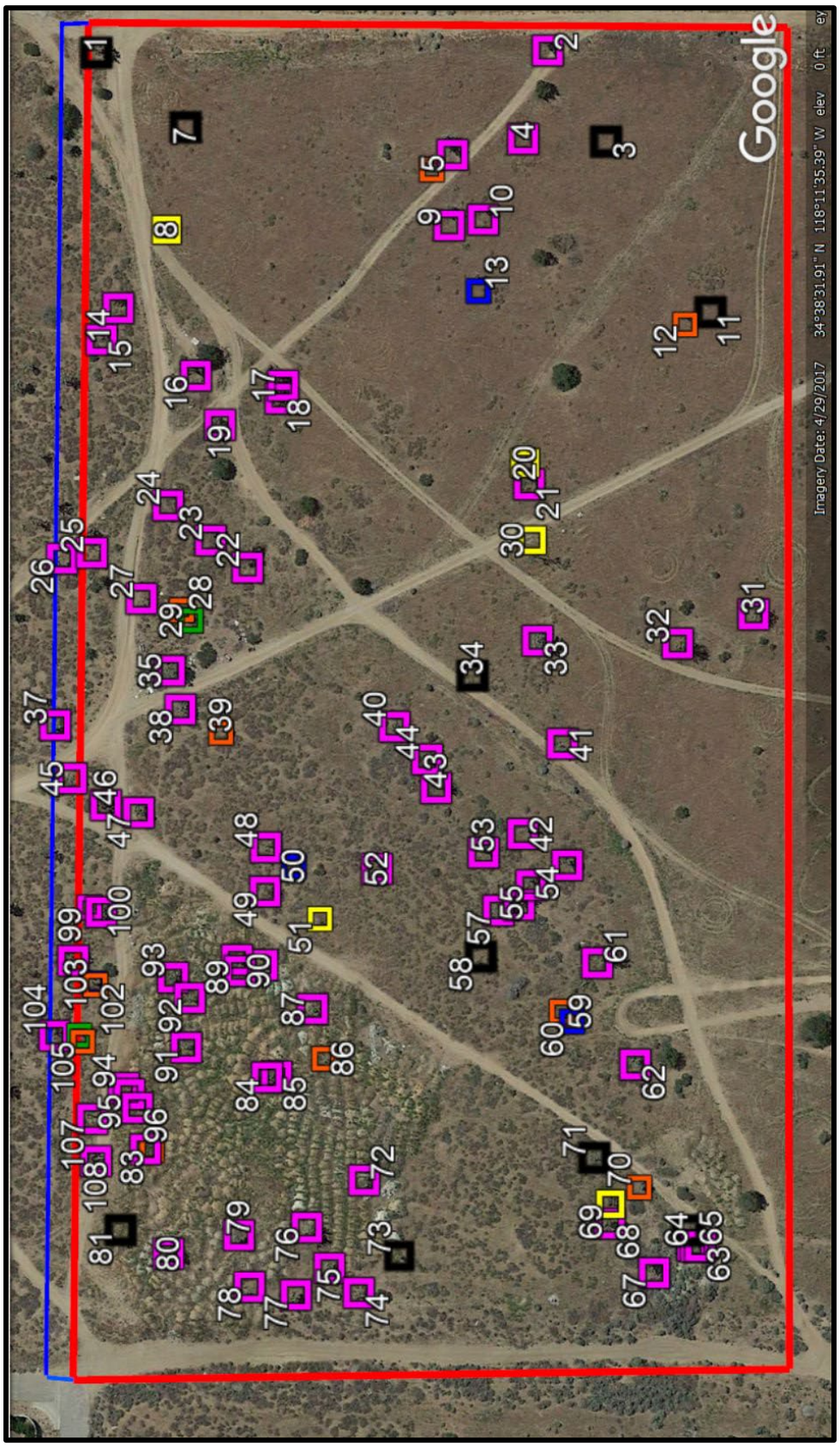
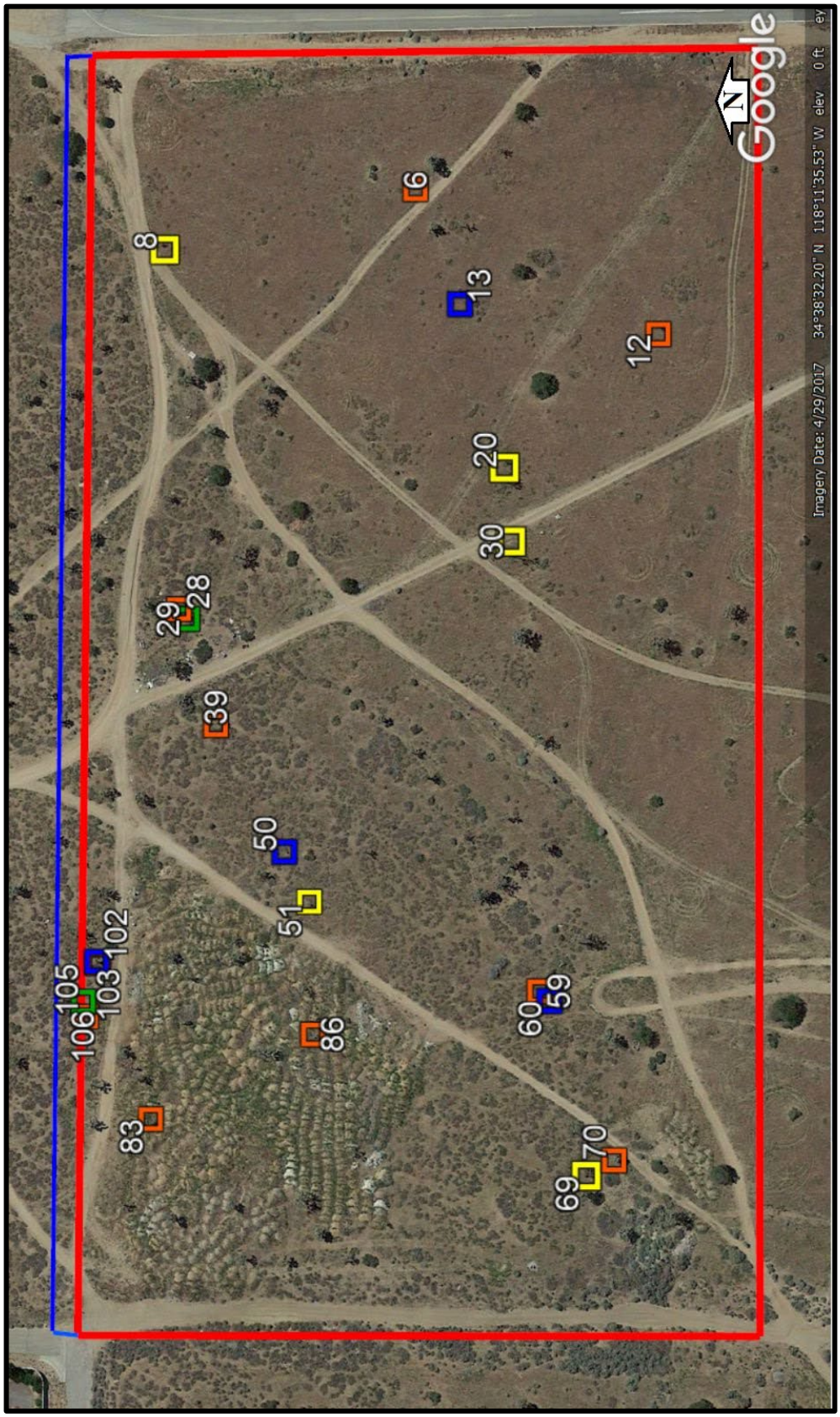


Figure 4. Depiction of approximate boundaries for the concentration of spoil piles and dump sites and for the location of a historical fire. Blue delineates the spoil piles and dump sites, yellow delineates the historical fire. Random small dump sites occur within the unmarked areas.



Green= 1 to 3 ft Blue= 4 to 6 ft Yellow= 7 to 9 ft Orange= 10 to 11 ft Pink= >12 ft
Red line is study site boundary. Blue line is the 25 feet from the study site boundary.

Figure 5. Approximate location of all Joshua trees within study site.



Green= 1 to 3 ft Blue= 4 to 6 ft Yellow= 7 to 9 ft Orange= 10 to 11 ft
Red line is study site boundary. Blue line is the 25 feet from the study site boundary.

Figure 6. Approximate location of the tree sizes 1 foot to 12 foot. The 1 seedling (#106) was depicted in the 1 foot group.

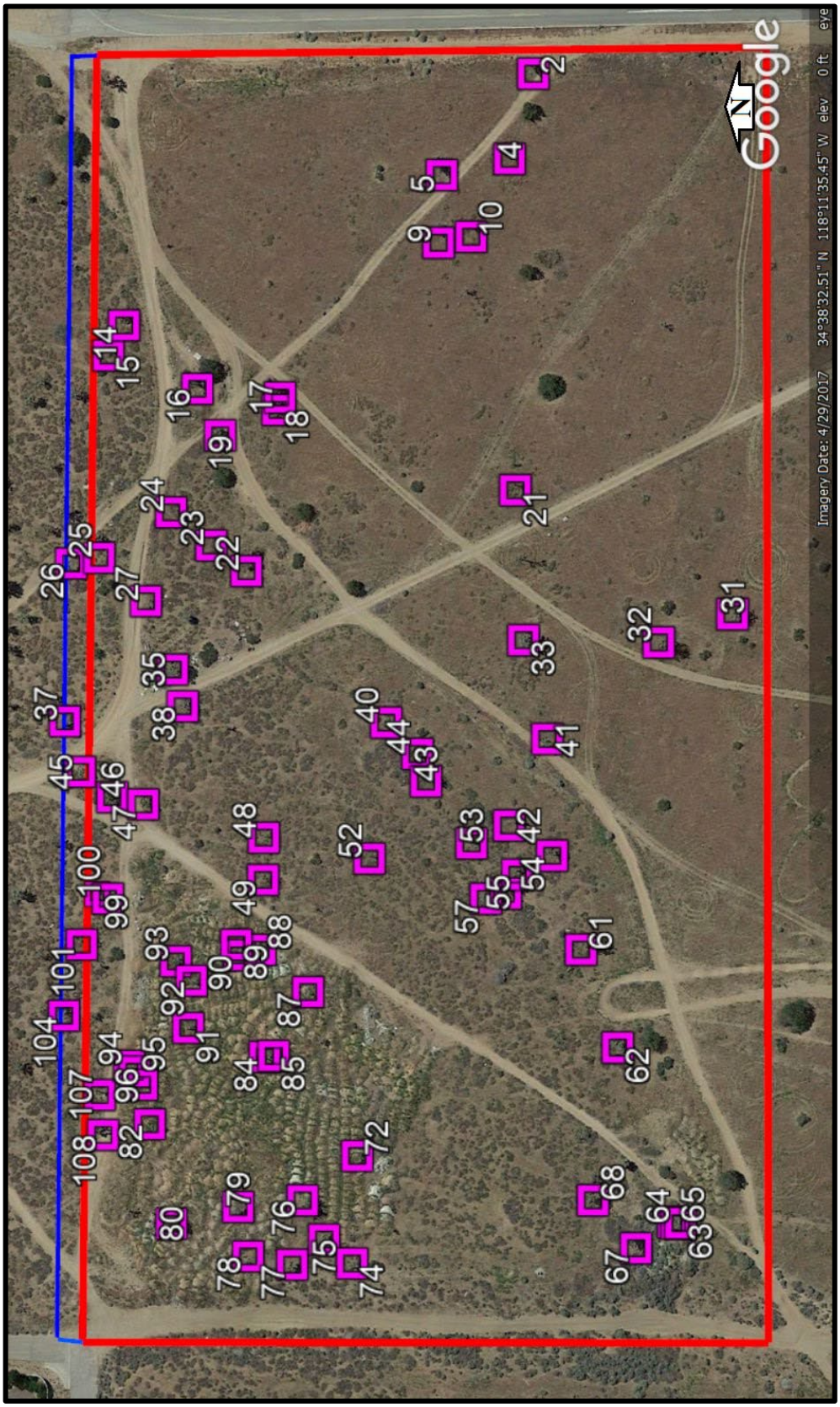


Figure 7. Approximate location of the >12 foot Joshua trees within the study site (red line) and within 25 feet of the boundary (blue line). None are within 25 feet of the north, south, or west boundary.

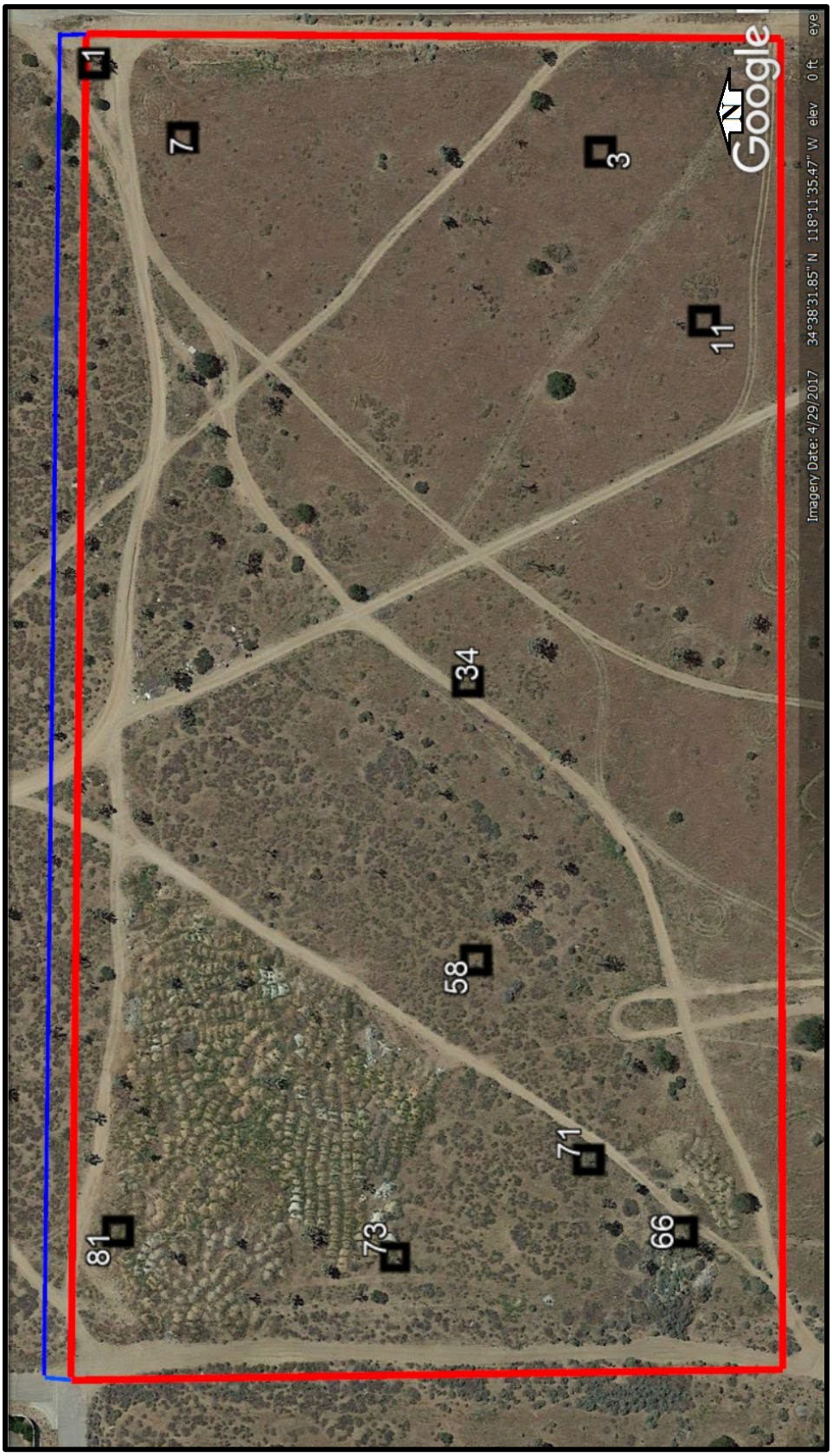


Figure 8. Approximate location of dead Joshua trees within the study site. This does not include remnants of dead Joshua trees.

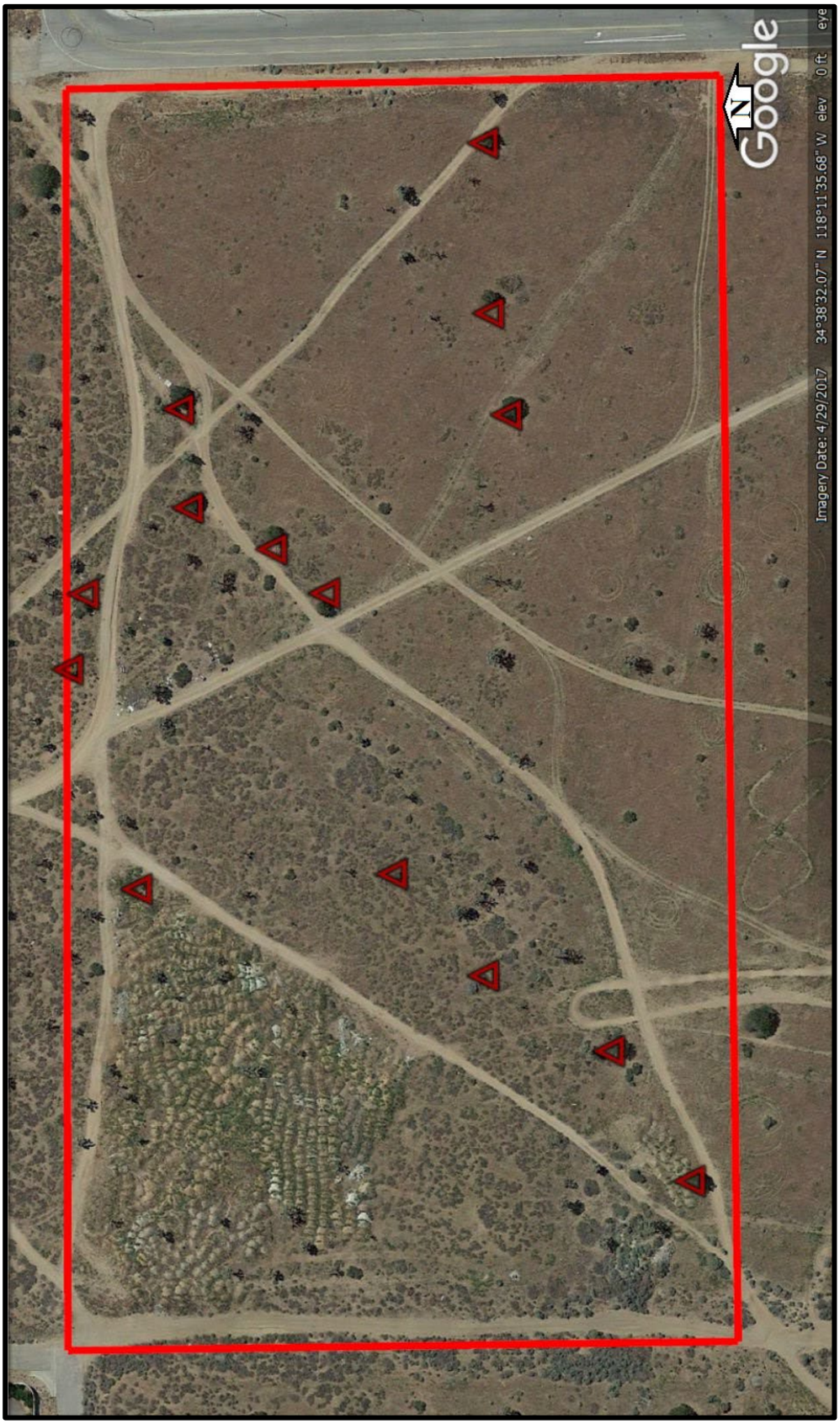


Figure 9. Approximate locations of California Juniper trees within the study site are marked with red triangles.

Figure 10. Example of a Joshua tree considered good condition and representative of habitat within the study site.

Figure 11. Example of a fair condition Joshua tree due to damaged trunk and representative of habitat within the study site.

Figure 12. Example of a poor condition Joshua tree and representative of habitat within the study site.

Figure 13. Representative photographs of spoil piles within the northeastern portion of the site.

Appendix B (Data)

Table includes live and dead Joshua trees onsite and within 25 feet of the boundary

ID	Size (height in feet)	Health Good (G) Fair (F) Poor (P) Dead (D)	Panicles (P#) Branches (B#)	Flowers Fruit	Mature (M) Juvenile (J) Seedling (S)	Clonal(C) Single (S)	GPS
1	Down	D				S	34°38'18.85"N/118°11'32.60"W
2	>12	F	P>5 B>5	Fruit	M	S	34°38'18.79"N/118°11'37.77"W
3	Down	D					34°38'19.65"N/118°11'38.45"W
4	>12	G	P>5 B>5	Fruit	M	S	34°38'19.63"N/118°11'37.50"W
5	>12	F	P>5 B>5	Fruit	M	S	34°38'19.78"N/118°11'36.69"W
6	11	G	P5 B>5		M	C	34°38'19.92"N/118°11'36.46"W
7	Down	D					34°38'19.55"N/118°11'33.63"W
8	7	G	P2 B2	Fruit Flowers	M	C	34°38'20.52"N/118°11'33.42"W
9	>12	F	P>5 B>5	Fruit	M	S	34°38'20.45"N/118°11'36.66"W
10	>12	G	P>5 B>5	Flowers	M	S	34°38'20.39"N/118°11'37.05"W
11	Down	D					34°38'21.25"N/118°11'39.66"W
12	12	G	P5 B>5	Flowers	M	S	34°38'21.36"N/118°11'39.38"W
13	6	P	P1 B3		M	S	34°38'21.07"N/118°11'37.00"W
14	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'21.26"N/118°11'32.88"W
15	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'21.56"N/118°11'32.69"W
16	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'21.89"N/118°11'33.77"W
17	>12	F	P>5 B>5	Fruit	M	S	34°38'21.97"N/118°11'34.77"W
18	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'22.10"N/118°11'34.75"W
19	>12	G	P>5 B>5	Fruit	M	C	34°38'22.35"N/118°11'34.05"W
20	9	P	P>5 B 3	Fruit Flowers	M	C	34°38'22.68"N/118°11'37.55"W
21	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'22.88"N/118°11'37.60"W
22	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'23.69"N/118°11'34.39"W
23	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'23.44"N/118°11'33.96"W
24	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'23.11"N/118°11'33.47"W
25	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'23.56"N/118°11'32.60"W
26	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'23.62"N/118°11'32.26"W Outside of boundary/within 25ft
27	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'23.99"N/118°11'33.17"W
28	12	G	P>5 B>5	Fruit Flowers	M	C	34°38'24.10"N/118°11'33.64"W
29	2	G	0		J	C	34°38'24.19"N/118°11'33.74"W
30	9	G	P1 B2		M	C	34°38'23.41"N/118°11'37.64"W
31	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'24.09"N/118°11'40.19"W

ID	Size (height in feet)	Health Good (G) Fair (F) Poor (P) Dead (D)	Panicles (P#) Branches (B#)	Flowers Fruit	Mature (M) Juvenile (J) Seedling (S)	Clonal(C) Single (S)	GPS
32	>12	P	P>5 B>5	Fruit Flowers	M	C	34°38'24.37"N/118°11'39.32"W
33	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'24.36"N/118°11'37.72"W
34	Down	D					34°38'24.69"N/118°11'36.97"W
35	>12	F	P>5 B>5	Fruit Flowers	M	S	34°38'24.67"N/118°11'33.50"W
36	Deleted						>25 ft from boundary
37	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'25.19"N/118°11'32.20"W Outside of boundary/within 25ft
38	>12	G	P>5 B>5	Fruit Flowers	M		34°38'25.03"N/118°11'33.63"W
39	12	G	P>5 B>5	Fruit Flowers	M	S	34°38'25.25"N/118°11'34.10"W
40	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'25.18"N/118°11'36.09"W
41	>12	P	P>5 B>5		M	C	34°38'25.32"N/118°11'38.01"W
42	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'26.18"N/118°11'37.56"W
43	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'25.75"N/118°11'36.57"W
44	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'25.48"N/118°11'36.46"W
45	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'25.69"N/118°11'32.39"W
46	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'25.94"N/118°11'32.78"W
47	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'26.01"N/118°11'33.16"W
48	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'26.33"N/118°11'34.62"W
49	>12	G	P>5 B>5	Flowers	M	C	34°38'26.74"N/118°11'34.62"W
50	4	G			J	S	34°38'26.50"N/118°11'34.94"W
51	8	G	P1 B2	Fruit Flowers	M	C	34°38'27.00"N/118°11'35.25"W
52	>12	G	P5 B>5		M	S	34°38'26.52"N/118°11'35.90"W
53	>12	G	P5 B5	Fruit Flowers	M	S	34°38'26.36"N/118°11'37.12"W
54	>12	F	P>5 B>5	Fruit Flowers	M	S	34°38'26.47"N/118°11'38.08"W
55	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'26.66"N/118°11'37.67"W
56	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'26.85"N/118°11'37.53"W
57	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'26.90"N/118°11'37.29"W
58	Down	D					34°38'27.34"N/118°11'37.10"W

ID	Size (height in feet)	Health Good (G) Fair (F) Poor (P) Dead (D)	Panicles (P#) Branches (B#)	Flowers Fruit	Mature (M) Juvenile (J) Seedling (S)	Clonal(C) Single (S)	GPS
59	11	G	P>5 B>5	Flowers	M	S	34°38'27.85"N/118°11'38.03"W
60	5	G	P1 B1		M	S	34°38'27.94"N/118°11'38.15"W
61	>12	P	P>5 B>5	Fruit Flowers	M	C	34°38'27.39"N/118°11'38.43"W
62	>12	F	P>5 B>5	Flowers	M	S	34°38'28.34"N/118°11'38.88"W
63	>12	F	P>5 B>5	Fruit Flowers	M	C	34°38'30.05"N/118°11'39.64"W
64	>12	P	P>5 B>5	Fruit Flowers	M	C	34°38'30.05"N/118°11'39.60"W
65	>12	G	P4 B>5	Fruit Flowers	M	C	34°38'30.04"N/118°11'39.55"W
66	Down	D					34°38'29.90"N/118°11'39.50"W
67	>12	G	P>5 B>5	Fruit Flower	M	C	34°38'30.30"N/118°11'39.12"W
68	>12	G	P>5 B>5	Fruit Flower	M	C	34°38'29.84"N/118°11'38.60"W
69	9	P	P>5 B>5	Fruit Flowers	M	C	34°38'29.66"N/118°11'38.61"W
70	12	G	P>5 B>5	Fruit Flowers	M	C	34°38'29.50"N/118°11'38.94"W
71	Down	D					34°38'29.22"N/118°11'38.42"W
72	>12	F	P>5 B>5	Fruit Flowers	M	C	34°38'29.45"N/118°11'35.78"W
73	8	D					34°38'30.16"N/118°11'36.19"W Dead but still standing
74	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'30.52"N/118°11'35.73"W
75	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'30.29"N/118°11'35.39"W
76	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'29.90"N/118°11'35.13"W
77	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'30.54"N/118°11'35.01"W
78	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'30.47"N/118°11'34.48"W
79	>12	F	P>5 B>5	Fruit Flowers	M	C	34°38'29.98"N/118°11'34.35"W
80	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'30.16"N/118°11'33.55"W
81	Down	D					34°38'29.94"N/118°11'33.00"W
82	>12	F	P>5 B>5	Fruit Flowers	M	C	34°38'29.18"N/118°11'33.27"W
83	12	F	P1 B>5		M	S	34°38'29.18"N/118°11'33.35"W
84	>12	G	P>5 B>5		M	S	34°38'28.49"N/118°11'34.66"W
85	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'28.48"N/118°11'34.77"W

ID	Size (height in feet)	Health Good (G) Fair (F) Poor (P) Dead (D)	Panicles (P#) Branches (B#)	Flowers Fruit	Mature (M) Juvenile (J) Seedling (S)	Clonal(C) Single (S)	GPS
86	12	G	P>5 B>5	Fruit Flowers	M	S	34°38'28.31"N/118°11'35.31"W
87	>12	F	P>5 B>5	Flowers	M	C	34°38'27.84"N/118°11'35.17"W
88	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'27.43"N/118°11'34.59"W
89	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'27.39"N/118°11'34.30"W
90	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'27.49"N/118°11'34.34"W
91	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'28.22"N/118°11'33.73"W
92	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'27.75"N/118°11'33.77"W
93	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'27.56"N/118°11'33.57"W
94	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'28.60"N/118°11'33.02"W
95	>12	F	P>5 B>5	Fruit Flowers	M	C	34°38'28.66"N/118°11'33.08"W
96	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'28.79"N/118°11'33.18"W
97	Deleted						>25 ft from boundary
98	Deleted						>25 ft from boundary
99	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'26.91"N/118°11'32.61"W
100	>12	G	P>5 B>5	Fruit Flowers	M	C	34°38'26.95"N/118°11'32.74"W
101	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'27.41"N/118°11'32.43"W
102	5	G			J	S	34°38'27.62"N/118°11'32.67"W
103	12	G	P3 B4	Fruit Flowers	M	S	34°38'27.64"N/118°11'32.68"W
104	>12	G	P>5 B>5	Fruit Flowers	M	S	34°38'28.12"N/118°11'32.22"W Outside of boundary/within 25ft
105	12	G	P>5 B>5	Fruit Flowers	M	S	34°38'28.17"N/118°11'32.54"W
106	1	G			S	S	34°38'28.11"N/118°11'32.50"W Seedling - Individual
107	>12	G	P>5 B>5	Fruit Flower	M	S	34°38'28.90"N/118°11'32.66"W
108	>12	G	P>5 B>5	Fruit Flower	M	C	34°38'29.30"N/118°11'32.71"W