2025 BIOLOGICAL MONITORING COMPLETION REPORT FORT ORD NATURAL RESERVE (FONR)

for Operable Unit Carbon Tetrachloride Plume (OUCTP) & Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection

CONTRACT NO. W9123823D0009
TASK ORDER W9123825F0076

FORMER FORT ORD

Prepared for:
US Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Prepared by:

HARRIS ENVIRONMENTAL GROUP INC

Terracon

December 2025

This page intentionally left blank

2025 ANNUAL BIOLOGICAL MONITORING COMPLETION REPORT
For Operable Unit Carbon Tetrachloride Plume & Per- and Polyfluoroalkyl Substances Site Inspection, at the Fort Ord Natural Reserve (FONR)

SUBMITTED TO:

UNITED STATES ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO, CA 95814-2922

SUBMITTED BY:

HARRIS ENVIRONMENTAL GROUP, INC.
650 N. 6TH AVENUE
TUCSON, ARIZONA 85705

PREPARED BY:

JESS SUTTON, MS
SENIOR SCIENTIST
TERRACON CONSULTANTS, INC.

CAITLIN BEEBE
STAFF SCIENTIST
TERRACON CONSULTANTS, INC.

FILIPP KASHIRTSEV, MS
PROJECT BIOLOGIST AND GIS ANALYST III
HARRIS ENVIRONMENTAL GROUP, INC.

THOR ANDERSON, MS
SENIOR ECOLOGIST AND PROJECT MANAGER
HARRIS ENVIORNMENTAL GROUP, INC.

PROJECT MANAGER CONTACT DETAILS:
THOR ANDERSON
tanderson@heg-inc.com

CONTENTS

Section **Page**

FIGURES

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Ahtna	Ahtna Environmental, Inc.
BRAC	Base Realignment and Closure
Burleson	Burleson Consulting, Inc.
Chenega	Chenega Reliable Services, LLC
CNDDB	California Natural Diversity Database
DD&A	Denise Duffy & Associates
FONR	Fort Ord Natural Reserve
ft	foot/feet
ft^2	square feet
Harris	Harris Environmental Group Inc.
Harris-Terracon	Harris Environmental Group Inc. and Terracon Consultants Inc. Team
HMP	Habitat Management Plan
OUCTP	Operable Unit Carbon Tetrachloride Plume
PBO	Programmatic Biological Opinion
PFAS	Per- and Polyfluoroalkyl Substances
RTK	real-time kinematic
Terracon	Terracon Consultants Inc. (formerly Burleson Consulting Inc.)
Shaw	Shaw Environmental, Inc.
SI	Site Inspection
UC	University of California
USACE	United States Army Corps of Engineers

1. INTRODUCTION

The United States Army Corps of Engineers (USACE) contracted Harris Environmental Group, Inc. (Harris) to conduct rare plant surveys in Fort Ord Natural Reserve (FONR) on behalf of Fort Ord Base Realignment and Closure (BRAC) in Marina, California (Figure 1-1). Harris subcontracted Terracon Consultants, Inc. (Terracon), forming the Harris-Terracon team. This report presents the results of the 2025 rare plant surveys conducted in support of the Operable Unit Carbon Tetrachloride Plume (OUCTP) and Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection (SI).

The Fort Ord U.S. Army Base was closed in 1994 and a portion of former Fort Ord was transferred to the University of California (UC). Fort Ord Natural Reserve was established in 1996 as part of the UC Natural Reserve system. Groundwater in the aquifer under FONR was contaminated by several chemicals of concern due to activities conducted at the former Fort Ord Fritzsche Army Airfield Fire Drill Area between 1962 and 1985. OUCTP chemicals of concern include trichloroethene, carbon tetrachloride, tetrachloroethene, chloroform, 1,1-dichloroethene, total-1,2-dichloroethene, methylene chloride, and vinyl chloride. Per- and polyfluoroalkyl substances were potentially introduced to the FONR groundwater after 1972 when the Army began using PFAS-containing aqueous film-forming foams to extinguish fuel-based fires (USACE, 2024). Groundwater cleanup began in 1988 with the construction of the Groundwater Extraction and Treatment System and is ongoing. As part of the OUCTP clean-up efforts and PFAS SI analysis, soil boring locations and monitoring wells have been installed to test contamination of groundwater (Ahtna, 2023).

The *Installation-Wide Multispecies Habitat Management Plan* (HMP) and the reinitiated *Programmatic Biological Opinion* (PBO) *for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord* require that rare plant surveys be conducted prior to destruction or installation of remediation facilities (Baseline) for up to three years after (follow-up), unless rare plants of concern are not detected in Baseline nor in the first year of follow-up monitoring (USACE, 1997; USFWS, 2015; USFWS, 2017). Rare plants of concern with suitable habitat in FONR include Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), Seaside bird's beak (*Cordylanthus rigidus ssp. littoralis*), and Yadon's piperia (*Piperia yadonii*). Surveys for Yadon's piperia were included in 2016 at the request of the agencies, but were never found to be present on the site during surveys conducted by the Army or other entities.

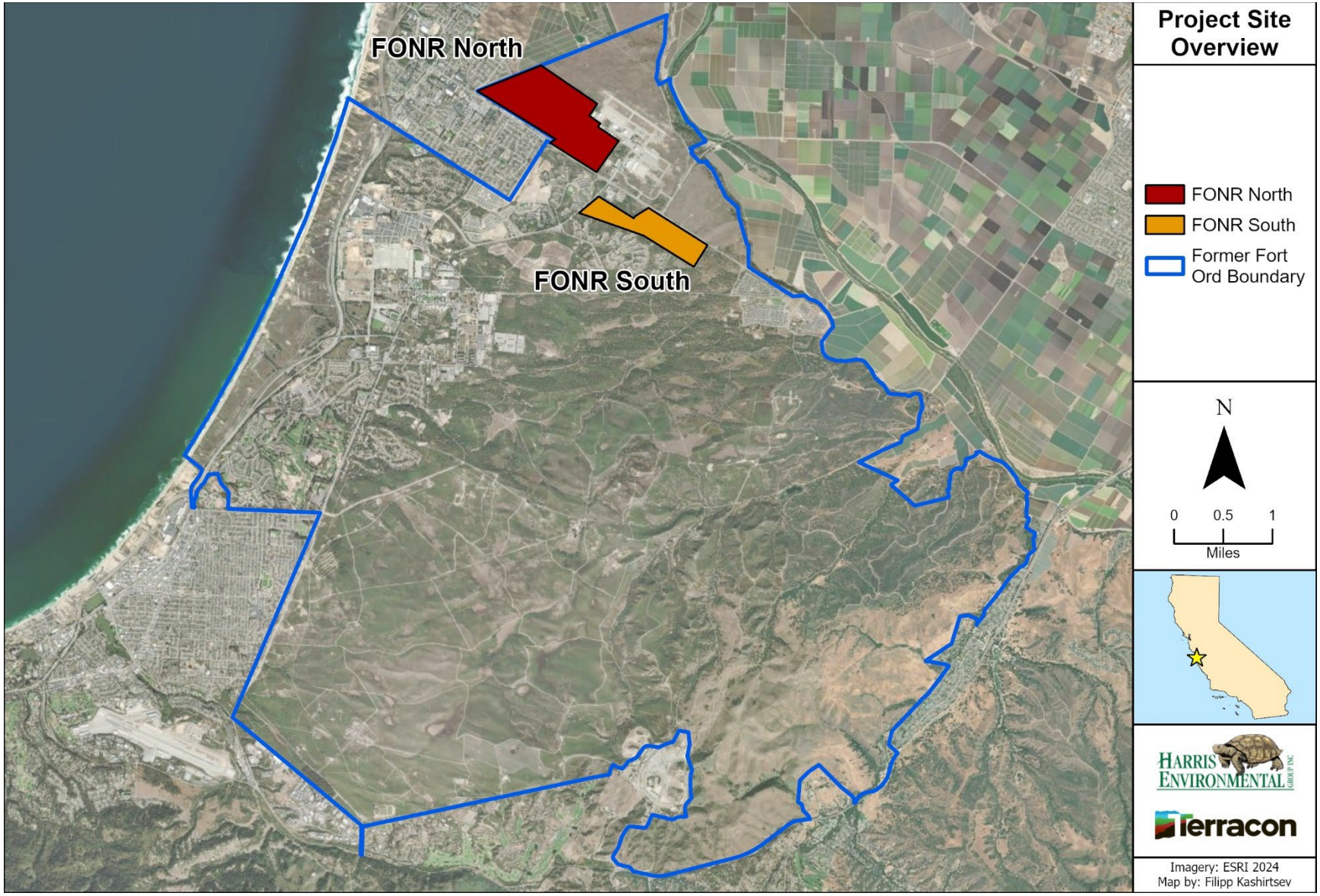

Figure 1-1. Overview of project site at Fort Ord Natural Reserve (FONR).

1.1 Site Location and Description

Fort Ord Natural Reserve is 605 acres of coast live oak woodland, coastal scrub, maritime chaparral, and annual grassland. The property is divided into two parcels: FONR North, which contains the PFAS survey areas, and FONR South, which contains the OUCTP survey areas and Old County Road impact areas. FONR provides suitable habitat for several rare plant species, including Monterey gilia, Monterey spineflower, Seaside bird's beak, and Yadon's piperia. However, there are no confirmed Yadon's piperia individuals in FONR.

1.1.1 Reference Sites

Reference Site 1 is the primary reference site used for biological monitoring of HMP annuals in FONR; it is located southeast of FONR North and was established by Denise Duffy & Associates (DD&A) in 2010 due to its known populations of Monterey gilia and Monterey spineflower and easy accessibility (Figure 1-2; HGL, 2011). It is bounded on three sides by paved roads (Reservation Road, MBEST Drive, and University Drive). Following several annual meeting discussions, it was determined that Reference Site 1 was not fully representative of the well locations, and thus additional reference sites were selected (Table 1-1). F3 Plots 1, 2, and 3 were added to provide additional context to the FONR North survey areas; and V1 Plots 1, 2, and 3 were added to provide additional context to the FONR South survey areas (Figure 1-2 and Figure 1-3). The dominant habitat types of the reference sites are coast live oak woodland and maritime chapparal, with patches of annual grasslands that support populations of Monterey spineflower and Monterey gilia. The F3 and V1 plots were established by FONR staff in the past for long-term monitoring of Monterey spineflower and Monterey gilia.

1.1.2 Survey Areas

The PFAS survey areas included the access route to the monitoring well MW-BW-95-A (installed 9/22/18) and soil boring location SB-FDA-01 (conducted in 2022), including the 20-ft buffer surrounding the soil boring location (Figure 1-3). Baseline (Year 0) surveys for this site were conducted in 2022 by DD&A as a subcontractor to Ahtna Environmental, Inc. (Ahtna); Year 1 (2023) monitoring was conducted by USACE and Chenega Reliable Services, LLC (Chenega); and Year 2 (2024) monitoring was conducted by Harris-Terracon (DD&A, 2023; USACE, 2024; Harris-Terracon, 2024).

The OUCTP survey areas included the access route to the decommissioned well MW-OU2-68-180 (destroyed 10/31/23); the access route to and the 10-inch decommissioned steel conductor pipe; and the access route to well EW-OU2-13-180 (installed 6/30/24) and along the trench to well EW-OU2-09-180 (installed 7/29/10) (Figure 1-2; Table 1-1). The access route to MW-OU2-68-180 and the steel conductor pipe are in Year 2 of monitoring. For both sites, Baseline (Year 0) surveys were conducted by DD&A in 2023 and Year 1 surveys were conducted by Harris-Terracon in 2024 (DD&A, 2024; Harris-Terracon, 2025). The access route to well EW-OU2-13-180 and trench to EW-OU2-09-180 is in Year 1 of monitoring, and Baseline surveys (Year 0) were conducted in 2024 by DD&A (DD&A, 2025).

Additionally, three survey areas (approx. 0.05 ac) on the southwest side of Old County Road were established in 2025 as a result of habitat disturbances due to vehicles driving off the access roads. In 2024, pipeline installation materials were delivered on large trucks via Old County Road. During these deliveries, the trucks deviated from the designated corridor, resulting in disturbance of three areas that were known Monterey gilia habitat (DD&A, 2025). Due to this off-road vehicle disturbance, the three Old County Road sites were added to the BRAC monitoring program and are considered to be in Year 1 of monitoring in 2025. These areas had not been surveyed during Baseline monitoring in 2024, but data was collected by other entities in previous years. In 2010, Shaw Environmental, Inc. (Shaw) conducted

Baseline monitoring for the Upper/Lower 180-ft Aquifer in FONR South, which overlaps with the Old County Road sites, and is therefore considered Baseline for these sites (Shaw, 2011). There is also additional miscellaneous overlapping data that has been collected by DD&A, Shaw, Burleson Consulting, Inc. (Burleson), and Fred Watson, Ph.D, that is presented below for additional context.

Table 1-1. Locations surveyed in 2025 and their respective reference sites.

Location	Survey Area	Well Identification	Survey Year	Reference Sites		
				Ref Site 1	V1 Plots	F3 Plots
FONR North	PFAS	Access Route to MW-BW-95-A and Soil Boring SB-FDA-01	3	✓		✓
FONR South	OUCTP	MW-OU2-68-180 (Access Route Only)	2	✓	✓	
FONR South	OUCTP	Steel Conductor Pipe (including Access Route)	2	✓	✓	
FONR South	OUCTP	Access Route to EW-OU2-13-180 trench to EW-OU2-09-180	1	✓	✓	
FONR South	OUCTP	Old County Road sites	1	✓	✓	

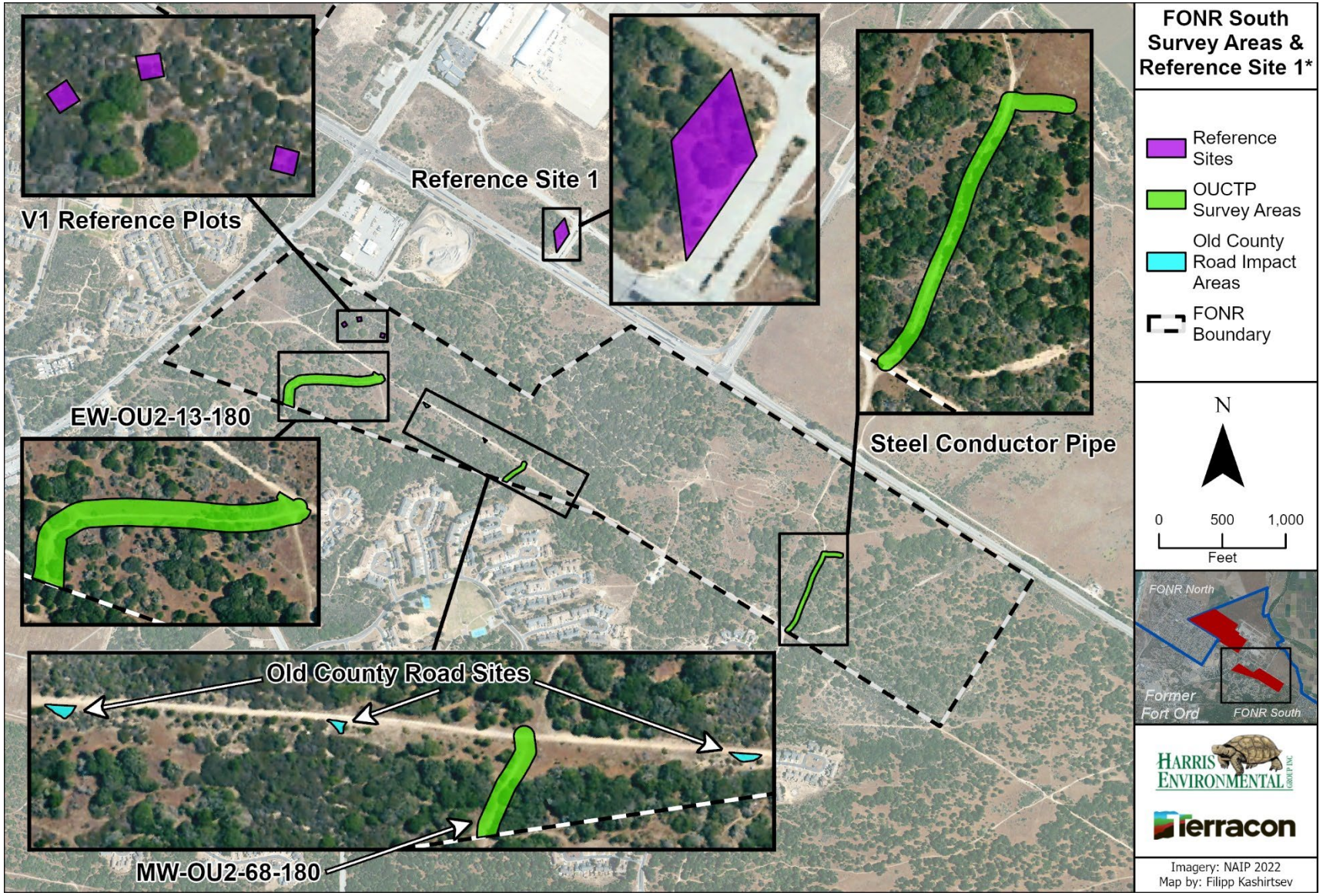

Figure 1-2. FONR South and Reference Site 1 overview.

*Reference Site 1 used as a reference for FONR South and FONR North survey areas

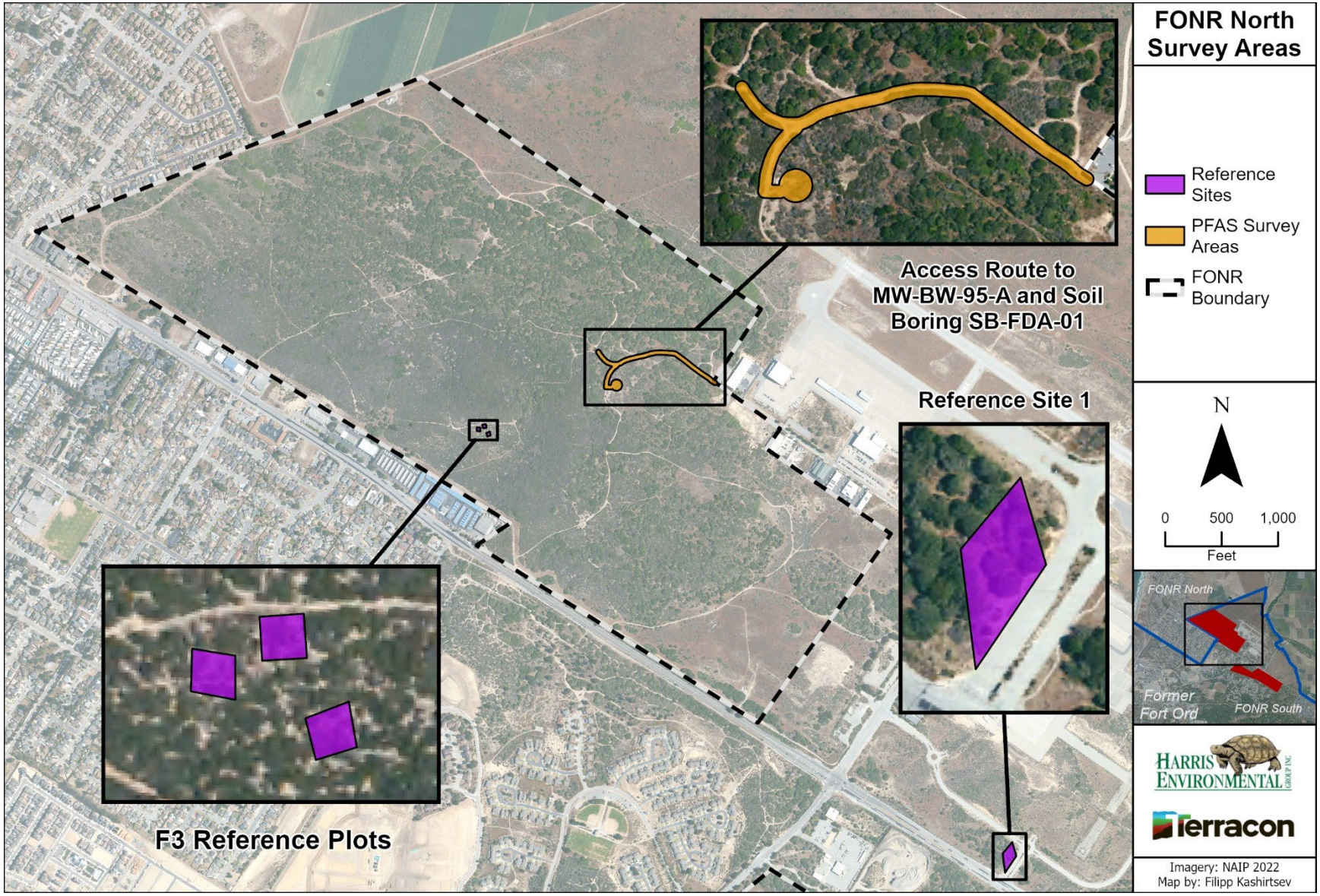

Figure 1-3. FONR North and Reference Site 1 overview.

1.2 Special Status Species

1.2.1 Monterey gilia

Monterey gilia is a native annual herb that is endemic to the Monterey Bay area. It is in the phlox family (Polemoniaceae) and is listed as state Threatened and federally Endangered. It occurs in open sandy soil in maritime chaparral, dune scrub, coastal scrub, and disturbed areas (Calflora, 2025). The plant forms a prostrate, basal rosette with serrate or once pinnate leaves. The branching flowering stalks range from 2-6 inches tall and are densely glandular. The plant blooms from April through June and the flower consists of a narrow tube with a purple throat and pink-to-purple lobes (Porter, 2018).

1.2.2 Monterey Spineflower

Monterey spineflower is a native annual herb in the buckwheat family (Polygonaceae) and is listed as federally Threatened. It occurs in open sandy soil in maritime chaparral, dune scrub, coastal scrub, and disturbed areas (Calflora, 2025). The plant is prostrate with dense inflorescences and a white to pink corolla; it blooms from April to June (Reveal and Rosatti, 2014). Monterey spineflower may be confused with diffuse spineflower (*Chorizanthe diffusa*) and Fort Ord spineflower (*Chorizanthe minutiflora*); diffuse spineflower has yellow-throated white flowers and an upright inflorescence and Fort Ord spineflower has very small greenish-white flowers barely exserted from the calyx (Yeager and Mitchell, 2016).

1.2.3 Seaside Bird's Beak

Seaside bird's beak is a native annual herb in the broomrape family (Orobanchaceae) and is listed as state Endangered. It occurs in coastal strand, northern coastal scrub, coastal sage scrub, closed-cone pine forest, southern oak woodland, foothill woodland, and chaparral habitats (Calflora, 2025). The plant is erect with compact, head-like clusters of yellowish flowers marked with maroon on the lower side; it blooms from June to August and can be identified into October by its distinctive habit and fruit structure (Wetherwax and Tank, 2013).

1.2.4 Yadon's Piperia

Yadon's piperia is a native perennial herb in the orchid family (Orchidaceae) and is listed as federally Endangered. Yadon's piperia occurs in maritime chaparral, Monterey pine forest, and Monterey cypress forest. The plant has 2-3 basal leaves and a single erect flowering stalk (Ackerman and Lauri, 2013). The white flowers are distinguished from other piperia species by the short, downward facing spur. Yadon's piperia blooms from May to August (Calflora, 2025).

1.3 Survey Objectives

The objectives of the 2025 rare plant surveys were to:

1. Identify locations and estimate populations of Monterey gilia, Monterey spineflower, Seaside bird's beak, and Yadon's piperia at reference sites.
2. Identify locations and estimate populations of Monterey gilia, Monterey spineflower, Seaside bird's beak, and Yadon's piperia within the PFAS survey area (access route to MW-BW-95-A and soil boring location SB-FDA-01); the OUCTP survey areas (access route to MW-OU2-68-180, access route to the steel conductor pipe, and access route to well EW-OU2-13-180 and EW-OU2-09-180); and the three areas on the southwest side of Old County Road which served as an access route in FONR South.
3. Map Monterey gilia, Monterey spineflower, Seaside bird's beak, and Yadon's piperia populations for comparison to past surveys and to inform future management activities.
4. Assess results with respect to Success Criteria specified in the 2017 PBO.

This page intentionally left blank

2. METHODS

Monterey gilia, Monterey spineflower, and Seaside bird's beak were surveyed during peak bloom to map population size and abundance. Peak bloom was determined by visiting the reference sites and communicating with FONR staff and the BRAC biologist. Because Yadon's piperia must be identified by its inflorescence, and the blooming period for the species occurs later in the summer, locations of any piperia plants are recorded and reported for future species identification.

The Harris-Terracon team mapped rare plants using ArcGIS Field Maps with a Juniper Systems Geode GNS3S Receiver with sub-meter accuracy and RTK (real-time kinematic) corrections. Where applicable, rare plants were considered within the survey area if they were within a 50-foot (ft) radius of a well or soil boring location or within 20 ft of secondary access routes. When Monterey gilia, Monterey spineflower, Seaside bird's beak, or piperia species were encountered only partially within these survey areas, the survey was extended to incorporate the boundary of that population.

Rare plant survey methods were based on the *2022 Biological Monitoring Completion Report* and past vegetation surveys at FONR (DD&A, 2023). Populations of five or fewer individuals were mapped as points and the number of individual plants for each point was recorded. Populations with more than five individuals were mapped as polygons. Generally, populations were considered discrete if there was a gap of greater than three feet between individuals, however this was left to the discretion of the field biologist to delineate logical population boundaries. Individual plants were counted for all Monterey gilia, Seaside bird's beak, and piperia species populations (points and polygons), whereas Monterey spineflower individuals were only counted for points. Monterey spineflower populations mapped as polygons were instead characterized by the average absolute percent cover within the polygon. Percent cover was determined by visually assessing the entire polygon and categorizing it by cover class.

The cover classes used were:

- Very Sparse (corresponding to an absolute cover of less than 3 percent)
- Sparse (3 to 25 percent)
- Medium Low (26 to 50 percent)
- Medium (51 to 75 percent)
- Medium High (76 to 97 percent)
- Very High (greater than 97 percent)

Data defining rare plant populations were exported to shapefiles and projected into NAD 1983 State Plane California IV FIPS 0404 (US Feet) using ArcGIS Pro (ESRI, 2025).

The 2025 data were compared to data from previous surveys to evaluate percent change of individual plants and percent change in area of polygons from year to year.

This page intentionally left blank

3. RESULTS and DISCUSSION

3.1 Monterey Gilia

Monterey gilia was surveyed on April 16, 21-23, 29; and May 15 and 21. The following sections describe Monterey gilia populations mapped within the reference sites, PFAS, and OUCTP survey areas. See Appendix A for complete survey results.

3.1.1 Reference Sites

Monterey gilia was present at all reference sites in 2025 (highlighted in yellow in Table 3-1). At Reference Site 1, 20 populations of Monterey gilia (11 points and 9 polygons) totaling 1,046 individuals and occupying 983 square feet (ft^2) were recorded in 2025. This was a 47% and 48% decline in individuals since 2023 and 2024, respectively, but still a substantial increase from the 40 individuals that were recorded in 2022 (Table 3-1; Figure 3-3).

The V1 Plots, which include Plots 1, 2, and 3, contained 37 populations of Monterey gilia (32 points and 5 polygons) (Table 3-1; Figure 3-4). The populations included 214 individuals and occupied 127 ft^2. After a steady decline across all plots from 2023 to 2024, Plot 2 had a 178% increase in individuals in 2025, while Plots 1 and 3 continued to decline in individuals by 30% and 16%, respectively (Table 3-1).

The F3 Plots, which include Plots 1, 2, and 3, contained 22 populations (all points) of Monterey gilia, totaling 31 individuals (Table 3-1; Figure 3-5). These plots experienced a significant decline in 2025, with a 96% decrease in Plots 1 and 2, and an 85% decrease in Plot 3. There were no populations in the F3 Plots that were greater than five individuals, therefore all populations were recorded as points and the population area (i.e., polygons) showed a 100% decrease from 2024 to 2025 (Table 3-1).

Table 3-1. Monterey gilia populations within the reference sites in 2025 and past survey years.

Location	Year	Total Populations	Indiv. Plants	Indiv. Plants % Change from Prev. Year	Points	Polygons	Population Area (ft^2)*	Area % Change from Prev. Year
Reference Site 1	2010	14	1,086	N/A	7	7	1,715	N/A
	2011	16	318	-71%	4	12	1,410	-18%
	2012	16	70	-78%	12	4	210	-85%
	2013	20	736	951%	7	13	1,281	510%
	2014	4	97	-87%	2	2	370	-71%
	2015	11	1,078	1,011%	4	7	1,512	309%
	2016	12	1,090	1%	6	3	1,964	30%
	2017	8	463	-58%	6	2	1,950	-1%
	2018	7	321	-31%	1	6	1,102	-43%
	2019	19	11,469	3,473%	8	11	2,541	131%
	2020	19	875	-92%	10	9	979	-61%
	2021	23	926	6%	10	13	1,062	8%
	2022	4	40	-96%	0	4	60	-94%
	2023	22	1,985	4,863%	11	11	1,243	1,972%
	2024	44	2,017	2%	29	15	1,322	6%
	2025	20	1,046	-48%	11	9	983	-26%
V1 Plot 1	2023	3	272	N/A	1	2	272	N/A
V1 Plot 2		2**	19**	N/A	1**	1	31	N/A
V1 Plot 3		3	92	N/A	0	3	239	N/A
V1 Plot 1	2024	12	168	-38%	7	5	77	-72%
V1 Plot 2		6	9	-53%	6	0	0	-100%
V1 Plot 3		13	86	-7%	6	7	48	-80%
V1 Plot 1	2025	11	117	-30%	8	3	87	13%
V1 Plot 2		4	25	178%	3	1	21	N/A
V1 Plot 3		22	72	-16%	21	1	19	-60%
F3 Plot 1	2023	N/A	58	N/A	N/A	N/A	N/A	N/A
F3 Plot 2		N/A	197	N/A	N/A	N/A	N/A	N/A
F3 Plot 3		N/A	284	N/A	N/A	N/A	N/A	N/A
F3 Plot 1	2024	32	112	93%	29	3	22	N/A
F3 Plot 2		25	303	54%	13	12	211	N/A
F3 Plot 3		17	98	-65%	13	4	80	N/A
F3 Plot 1	2025	3	4	-96%	3	0	0	-100%
F3 Plot 2		7	12	-96%	7	0	0	-100%
F3 Plot 3		12	15	-85%	12	0	0	-100%

*Population area does not include point data

**Data different from past reports due to updated survey area boundaries in 2024 (Harris-Terracon, 2024)

Data from the reference sites demonstrate how Monterey gilia populations naturally fluctuate from year to year due to precipitation, the level of herbivory present, and other stochastic variables (Dorrell-Canepa, 1994; Fox *et al*, 2006; Fox, 2007). The cumulative annual precipitation in the Monterey region decreased from 23.87 inches to 17.42 inches from 2023 to 2024, and further decreased to 12.55 inches in 2025 (NCEI NOAA, 2025; Figure 3-1). Although the number of individuals did increase after above-average rainfall in 2023 (23.87 in) and was maintained in 2024, Monterey gilia populations experienced a decline in 2025, particularly at Reference Site 1 and F3 Plots, which is commensurate with the below-average cumulative rainfall in 2025 (12.55 in). However, the slight increase of individuals in V1 Plot 2 highlights the influence of seed bank viability and localized conditions on population trends. All cumulative precipitation is reported in water years.

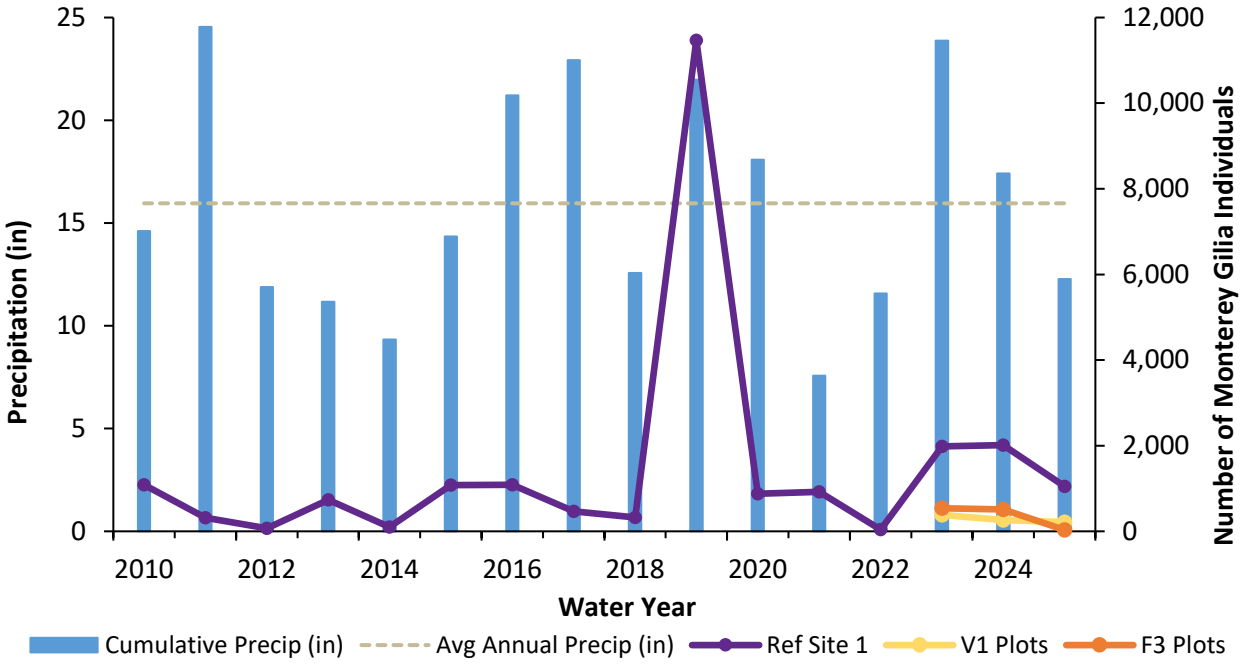

Figure 3-1. Monterey gilia populations at reference sites versus annual precipitation. The dotted line represents the 30-year normal for annual cumulative precipitation.
(NCEI NOAA, 2025; Harris-Terracon, 2024)

3.1.2 PFAS Areas

Monterey gilia was present along the access route to well MW-BW-95-A and soil boring location SB-FDA-01 (Table 3-2). There were 11 populations (9 points and 2 polygons) totaling 76 individuals in 2025 (Year 3) (Figure 3-6). This is a 25% reduction in number of individuals in the access route since 2024 (Year 2) (101 individuals), but is still 280% greater than the 20 individuals recorded in 2022 (Baseline). The Monterey gilia populations occupied 31 ft^2 in 2025, a 72% reduction from the 111 ft^2 mapped area in 2024 (Year 1) (Table 3-2).

3.1.3 OUCTP Areas

Along the access route to MW-OU2-68-180, there were 3 populations of Monterey gilia (2 points and 1 polygon), totaling 67 individuals and occupying 90 ft^2 in 2025 (Year 2). This continues the upward trajectory of gilia from zero individuals in 2023 (Baseline) and 44 individuals occupying 54 ft^2 in 2024 (Year 1) (Table 3-2; Figure 3-8).

Monterey gilia was not found in the steel conductor pipe survey area in 2025 (Year 2). This is consistent with past survey years, where no gilia was found in 2023 (Baseline) or 2024 (Year 1) (Table 3-2; Figure 3-10).

Along the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180, there were 2 populations totaling 7 individuals in 2025 (Year 1) (Table 3-2; Figure 3-10). This is a 77% reduction in the number of gilia individuals, down from 31 in 2024 (Baseline) (DD&A, 2025).

Within the Old County Road sites, there were 6 populations of Monterey gilia totaling 189 individuals and occupying 241 ft^2 in 2025 (Year 1). This is a decrease from Baseline (2010) conditions when there were 628 individuals documented, but a substantial increase from the 6 individuals that were recorded in 2012 and 67 individuals that were recorded in 2013 (Shaw, 2011; DD&A 2013; DD&A 2014). See Table 3-3 for additional presence/absence data for each individual site.

Table 3-2. Monterey gilia populations within the OUCTP and PFAS survey areas in 2025 and past survey years.

Location	Year	Total Pops	Indiv. Plants	Indiv. Plants % Change from Prev. Year	Points	Polygons	Population Area (ft^2)*	Area % Change from Prev. Year
MW-BW-95-A (access route) and Soil Boring SB-FDA-01	2022 (Year 0)	3**	20**	N/A	2**	1	65	N/A
	2023 (Year 1)	11	84	320%	8	3	50	-23%
	2024 (Year 2)	11	101	20%	8	3	111	121%
	2025 (Year 3)	11	76	-25%	9	2	31	-72%
MW-OU2-68-180 (access route only)	2023 (Year 0)	0**	0**	N/A	0	0**	0**	N/A
	2024 (Year 1)	3	44	N/A	2	1	54	N/A
	2025 (Year 2)	3	67	52%	2	1	90	67%
Steel Conductor Pipe (and access route)	2023 (Year 0)	0	0	N/A	0	0	0	N/A
	2024 (Year 1)	0	0	N/A	0	0	0	N/A
	2025 (Year 2)	0	0	N/A	0	0	0	N/A
EW-OU2-13-180 (access route & trench to EW-OU2-09-180)	2024 (Year 0)[1]	1	31	N/A	0	1	76	N/A
	2025 (Year 1)	2	7	-77%	2	0	0	N/A
Old County Road Sites	2010[2] (Year 0)	2	628	N/A	0	2	1,107	N/A
	2012[3]	2	6	-99%	0	2	56	-95%
	2013[4]	1	67	1,017%	0	1	340	507%
	2025 (Year 1)	6	189	182%	3	3	241	-29%

*Population area does not include point data

**Data different from past reports due to updated survey area boundaries in 2024

Harris-Terracon, 2024; [1]DD&A, 2025; [2]Shaw, 2011; [3]DD&A; 2013; [4]DD&A, 2014

Table 3-3 presents historical presence/absence data for Monterey gilia across the three Old County Road sites, as reported in past Annual Reports and personal communication with Fred Watson, Ph.D. In the easternmost polygon, Monterey gilia was present in 2010, absent in 2012 and 2013, and present again in 2025. The center polygon had confirmed presence of Monterey gilia in all survey years. In the westernmost polygon, Monterey gilia was consistently absent across all survey years (Table 3-3) (Shaw, 2011; DD&A, 2013; DD&A 2014; F. Watson, personal communication, September 7, 2024). See Figure 3-11 for polygon locations.

Table 3-3. Historical presence/absence data for Monterey gilia along Old County Road sites.

Year	Source	Polygon Location	Present/Absent
2010	Shaw	Easternmost	Present
2012	DD&A	Easternmost	Absent
2013	DD&A	Easternmost	Absent
2025	Harris-Terracon	Easternmost	Present
2010	Shaw	Center	Present
2012	DD&A	Center	Present
2013	DD&A	Center	Present
2017	F. Watson	Center	Present
2025	Harris-Terracon	Center	Present
2010	Shaw	Westernmost	Absent
2012	DD&A	Westernmost	Absent
2013	DD&A	Westernmost	Absent
2025	Harris-Terracon	Westernmost	Absent

3.2 Monterey Spineflower

Monterey spineflower was surveyed on May 7-8, 12-13, 15-16, and 21, 2025. The following sections describe Monterey spineflower populations mapped within the reference sites, PFAS, and OUCTP survey areas. See Appendix A for complete survey results.

3.2.1 Reference Sites

Monterey spineflower was present at all reference sites in 2025 (highlighted in yellow in Table 3-4). At Reference Site 1, 16 populations (6 points and 10 polygons) occupied 5,678 ft² (Figure 3-3). Though the number of populations has been decreasing since 2023, the population areas have steadily expanded from 1,464 ft^2 in 2023 to 5,678 ft^2 in 2025 – a 288% increase (Table 3-4). The 2025 population occupied the highest area recorded since 2017. The cover classes of the polygons ranged from *very sparse* (<3% cover) to *medium low* (26-50% cover) in 2025. This is a shift from slightly higher densities in 2024, where the majority of the polygons fell within the *very sparse* and *sparse* (3-25% cover) cover classes. However, it should be noted that due to the methodology used, the overall area of Monterey spineflower can vary dramatically depending on encroachment of the surrounding populations. In 2024 and 2025, one polygon (in the southern corner) accounted for roughly 2,500 ft^2 and 3,300 ft^2, respectively; an area that had not been included in past years because it had not yet encroached on the survey area boundary (Harris-Terracon, 2024) (Figure 3-3).

The V1 Plots contained 9 Monterey spineflower populations (6 points and 3 polygons) occupying 913 ft^2 in 2025 (Table 3-4; Figure 3-4). The number of populations remained consistent over the last three years, having 8 populations in both 2023 and 2024, and 9 in 2025. Though there was a substantial decrease in population area from 2023 to 2024 (44%), the population areas remained relatively stable into 2025, with little-to-no change in Plots 1 and 2 and a 27% decrease in Plot 3 (Table 3-4).

The F3 Plots contained 24 Monterey spineflower populations (11 points and 13 polygons) occupying 528 ft^2 (Table 3-4; Figure 3-5). The only cover classes present in the F3 Plots were *very sparse* and *sparse*. While individual plant counts remained stable, polygon area declined by 41% from 2024 to 2025. There was no point or polygon data collected for the F3 Plots in 2023, which is why the F3 Plots are the only sites where all Monterey spineflower individuals were counted in 2024 and 2025 (Table 3-4).

Table 3-4. Monterey spineflower populations within the reference sites in 2025 and past survey years.

Location	Year	Total Populations	Indiv. Plants	Indiv. Plants % Change from Prev. Year	Points	Polygons (varying density classes)	Population Area (ft^2)*	Area % Change from Prev. Year
Reference Site 1	2010	2	N/A	N/A	0	2	2,846	N/A
	2011	1	N/A	N/A	0	1	2,865	1%
	2012	3	N/A	N/A	1	2	1,494	-48%
	2013	7	N/A	N/A	0	7	2,813	88%
	2014	7	N/A	N/A	1	6	1,119	-60%
	2015	4	N/A	N/A	1	3	2,114	89%
	2016	2	N/A	N/A	0	2	3,241	53%
	2017	4	N/A	N/A	0	4	2,855	-12%
	2018	4	N/A	N/A	1	3	3,556	25%
	2019	18	N/A	N/A	11	7	3,045	-14%

Location	Year	Total Populations	Indiv. Plants	Indiv. Plants % Change from Prev. Year	Points	Polygons (varying density classes)	Population Area (ft^2)*	Area % Change from Prev. Year
	2020	8	N/A	N/A	1	7	3,687	21%
	2021	30	N/A	N/A	15	15	1,890	-49%
	2022	10	N/A	N/A	7	3	117	-94%
	2023	34	N/A	N/A	21	13	1,464	1,151%
	2024	29	N/A	N/A	15	14	4,468	205%
	2025	16	N/A	N/A	6	10	5,678	27%
V1 Plot 1	2023	1	N/A	N/A	0	1	541	N/A
V1 Plot 2		6**	N/A	N/A	3**	3**	143**	N/A
V1 Plot 3		1	N/A	N/A	0	1	1,211	N/A
V1 Plot 1	2024	1	N/A	N/A	0	1	503	-7%
V1 Plot 2		1	N/A	N/A	1	0	0	-100%
V1 Plot 3		6	N/A	N/A	3	3	564	-53%
V1 Plot 1	2025	1	N/A	N/A	0	1	501	0%
V1 Plot 2		7	N/A	N/A	6	1	3	N/A
V1 Plot 3		1	N/A	N/A	0	1	409	-27%
F3 Plot 1	2023***	N/A	289	N/A	N/A	N/A	N/A	N/A
F3 Plot 2		N/A	239	N/A	N/A	N/A	N/A	N/A
F3 Plot 3		N/A	23	N/A	N/A	N/A	N/A	N/A
F3 Plot 1	2024	8	345	19%	1	7	363	N/A
F3 Plot 2		8	316	32%	3	5	535	N/A
F3 Plot 3		11	25	9%	11	0	0	N/A
F3 Plot 1	2025	7	248	-28%	3	4	194	-47%
F3 Plot 2		10	320	1%	2	8	325	-39%
F3 Plot 3		7	32	10%	6	1	9	N/A

*Population area does not include point data
**Data different from past reports due to updated survey area boundaries in 2024
***2023 F3 Plot data only included individual plant counts
(Harris-Terracon, 2024)

Monterey spineflower typically germinates more readily in dry years, but adult survival and seed set increase with wetter, warmer weather in spring. Additionally, seedling abundance often reflects recent additions to and depletions of the seed bank rather than prevailing weather (Fox *et al,* 2006). Although the 2025 water-year had below-average rainfall, the total area occupied by Monterey spineflower at Reference Site 1 increased by 27%, from 4,468 ft^2 in 2024 to 5,678 ft^2 in 2025 (Figure 3-2). The Reference Site 1 populations were more interconnected in 2025, resulting in higher area occupied, but were less dense than past years. This could be the result of seed bank viability and dispersal as opposed to a direct correlation with precipitation. However, as mentioned above, due to the survey methodology, there was a large population (~2,500 - 3,300 ft^2) included in the 2024 and 2025 survey area at Reference Site 1, that was not included in years past; this could further explain the continued increase in population area with a decrease in precipitation. Both the V1 Plots and F3 Plots decreased from 2024 to 2025 by 14% and 41%, respectively, a commensurate decrease with the decline in precipitation in 2025 (Figure 3-2).

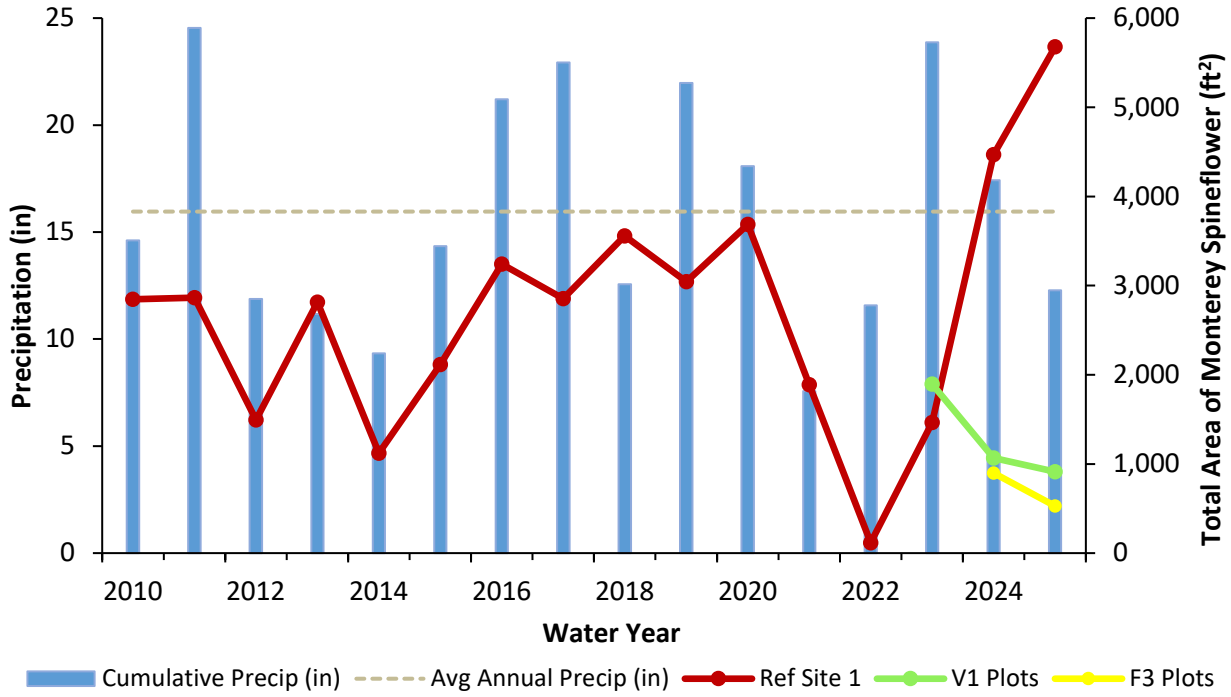

Figure 3-2. Area of Monterey spineflower populations at the reference sites versus annual precipitation. The dotted line represents the 30-year normal for annual cumulative precipitation.
(NCEI NOAA, 2025; Harris-Terracon, 2024)

3.2.2 PFAS Survey Areas

In 2025 (Year 3), Monterey spineflower was present along the access route to well MW-BW-95-A and soil boring location SB-FDA-01, with 66 populations (40 points and 26 polygons) occupying 4,415 ft^2 (Table 3-5; Figure 3-6 and 3-7). This is a decrease in the number of populations, down from 106 in 2024 (Year 2). However, the population area remained stable, increasing by 1% from 2024, primarily due to one of those populations expanding considerably outside the survey area boundary (Figure 3-6). Overall, the populations ranged from *very sparse* to *medium high* (76-97%) cover, showing a slight increase in density distribution from 2024 (Year 2) to 2025 (Year 3). Since Baseline (2022), this site has increased in Monterey spineflower population area by 84% (Table 3-5).

3.2.3 OUCTP Survey Areas

Monterey spineflower was present at all OUCTP sites in FONR South in 2025. The access route to MW-OU2-68-180 contained 8 populations (2 points and 6 polygons) in 2025 (Year 2), compared to 13 populations in 2024 (Year 1) (Figure 3-8). However, this was only a decrease in the number of points; the number of polygons and the population area remained stable (Table 3-5).

Within the access route to the steel conductor pipe, there were 16 populations occupying 1,355 ft^2 in 2025 (Year 2), compared to 38 populations within 876 ft^2 in 2024 (Year 1) – a 55% increase in area this year (Figure 3-9). These polygons also had a general shift from higher to lower density, with three polygons occupying the *medium* and *medium high* cover classes in 2024, compared to zero in 2025 (Table 3-5).

Within the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180, there were 63 populations occupying 7,928 ft^2 in 2025 (Year 1), with the majority of polygons falling into the *very sparse* and *sparse* cover classes (Figure 3-10). This was a 171% increase in population area from 2,927 ft^2 in 2024 (Baseline) (Table 3-5).

Within the three Old County Road sites, there were 26 populations (17 points and 9 polygons) of Monterey spineflower occupying 704 ft^2 in 2025 (Year 1), with the majority of polygons falling into the *very sparse* cover class (Table 3-5; Figure 3-11). The Baseline (2010) and subsequent survey data for Monterey spineflower were collected at a larger scale than the 2025 data, therefore these data are not comparable across years. As a result, we only report the presence/absence of Monterey spineflower for survey years 2010-2013. Monterey spineflower was present in 2010 (Baseline), 2012, 2013, as well as 2025 (Table 3-5). See Table 3-6 for additional presence/absence data for each individual site.

Table 3-5. Monterey spineflower populations within the OUCTP and PFAS survey areas in 2025 and past survey years.

Location	Year	Total Populations	Points	Polygons (varying density classes)	Population Area (ft^2)*	Area % Change from Prev Year
MW-BW-95-A (access route) and Soil Boring SB-FDA-01	2022 (Year 0)	19**	6**	13**	2,403**	N/A
	2023 (Year 1)	18	12	6	134	-94%
	2024 (Year 2)	106	70	36	4,362	3,155%
	2025 (Year 3)	66	40	26	4,415	1%
MW-OU2-68-180 (access route only)	2023 (Year 0)	10**	4**	6**	1,620**	N/A
	2024 (Year 1)	13	7	6	1,537	-5%
	2025 (Year 2)	8	2	6	1,518	-1%
Steel Conductor Pipe (and access route)	2023 (Year 0)	7	1	6	2,400	N/A
	2024 (Year 1)	38	19	19	876	-64%
	2025 (Year 2)	16	6	10	1,355	55%
EW-OU2-13-180 (access route & trench to EW-OU2-09-180)	2024 (Year 0)	26	9	17	2,927	N/A
	2025 (Year 1)	63	47	16	7,928	171%
Old County Road Sites	2010 (Year 0)[1]	Present				
	2012[2]	Present				
	2013[3]	Present				
	2025 (Year 1)	26	17	9	704	N/A

*Population area does not include point data

**Data different from past reports due to updated survey area boundaries in 2024

(Harris-Terracon, 2024; [1]Shaw, 2011; [2]DD&A; 2013; [3]DD&A, 2014)

Table 3-6 presents historical presence/absence data for Monterey spineflower across the three Old County Road sites, as reported in past Annual Reports. In the easternmost polygon, Monterey spineflower was present in 2010 and 2012, absent in 2013, and returned by 2025. Similarly, in the center polygon, Monterey spineflower was present in 2010, absent in 2012 and 2013, and re-established by 2025. In the westernmost polygon, Monterey spineflower was present across all survey years (Table 3-6) (Shaw, 2011; DD&A, 2013; DD&A 2014; Burleson, 2020). See Figure 3-11 for polygon locations.

Table 3-6. Historical presence/absence data for Monterey spineflower along Old County Road sites.

Year	Source	Polygon Location	Present/Absent
2010	Shaw	Easternmost	Present
2012	DD&A	Easternmost	Present
2013	DD&A	Easternmost	Absent
2025	Harris-Terracon	Easternmost	Present
2010	Shaw	Center	Present
2012	DD&A	Center	Absent
2013	DD&A	Center	Absent
2025	Harris-Terracon	Center	Present
2010	Shaw	Westernmost	Present
2012	DD&A	Westernmost	Present
2013	DD&A	Westernmost	Present
2020	Burleson	Westernmost	Present
2025	Harris-Terracon	Westernmost	Present

3.3 Seaside bird's beak

Seaside bird's beak was surveyed concurrently with Monterey gilia and Monterey spineflower. One population of Seaside bird's beak, containing 10 individuals, was observed in 2025 (Year 3) within the soil boring location SB-FDA-01 buffer (part of the MW-BW-95-A survey area) (Figure 3-6). There were no Seaside bird's beak individuals observed in 2023 (Year 1) or 2024 (Year 2), however the species was present in 2022 (Baseline), when there was one individual observed adjacent to SB-FDA-01 (DD&A, 2023). Seaside bird's beak has not been found in reference sites in previous years or within the remaining survey areas in 2025.

3.4 Yadon's Piperia

Yadon's piperia was surveyed concurrently with Monterey gilia and Monterey spineflower. In 2025, one piperia rosette was identified within the westernmost Old County Road site, but the plant was not identifiable to species. The plant was no longer alive when a follow-up survey was conducted by BRAC biologist on August 6, 2025, possibly due to herbivory. In 2024 (Baseline), there were three piperia individuals identified within the access route to EW-OU2-13-180 and trench to EW-OU2-09-180, but they were confirmed to be Michael's piperia (*Piperia michaelii*) (DD&A, 2025). No piperia individuals were identified in this site in 2025 (Year 1). Also in 2024, there was one piperia individual identified in the reference F3 Plot 3, but it was not identifiable to species (Harris-Terracon, 2024). No piperia were found within the remaining reference plots or survey areas in 2025.

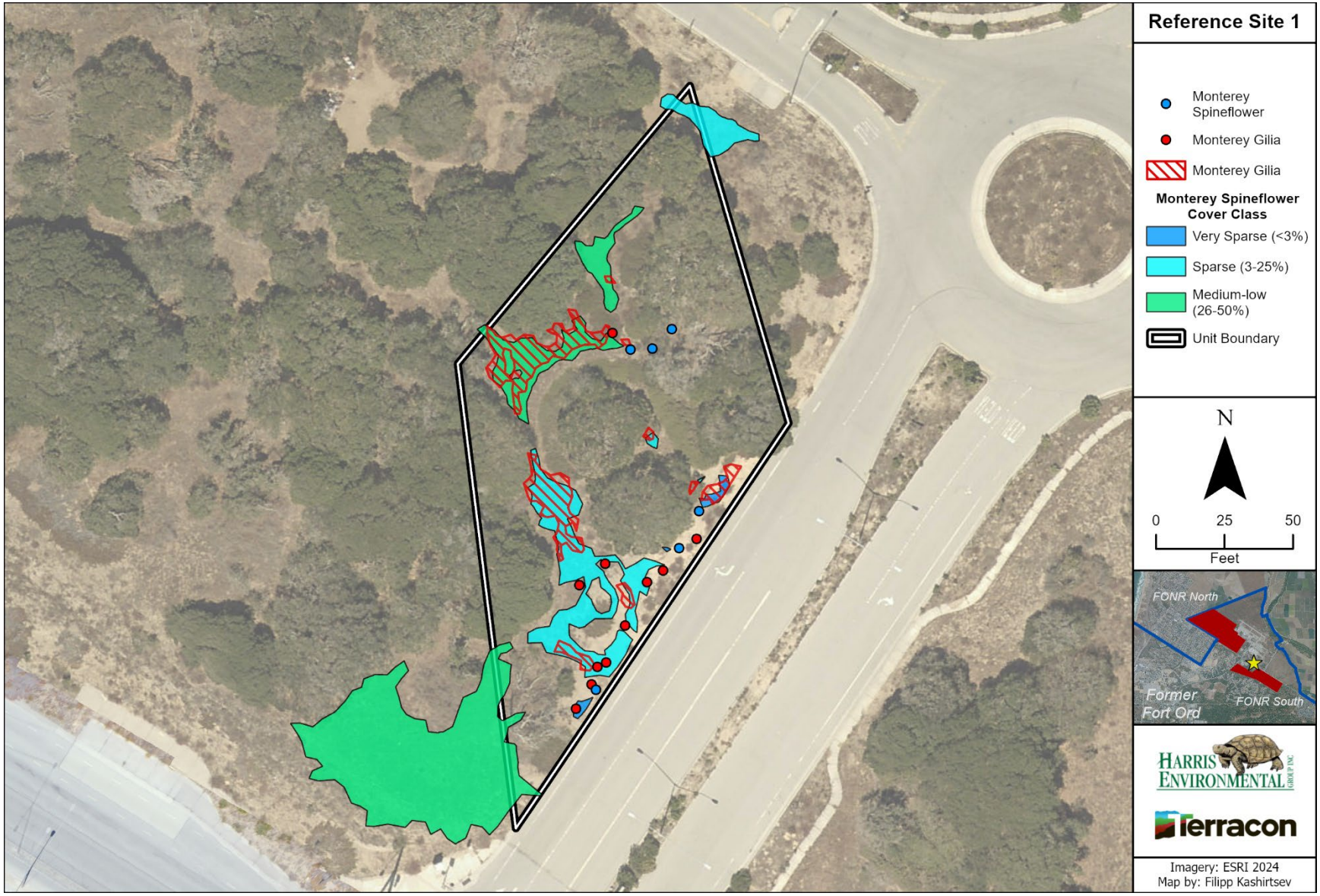

Figure 3-3. 2025 Monterey gilia and Monterey spineflower populations at Reference Site 1.

Figure 3-4. 2025 Monterey gilia and Monterey spineflower populations at reference V1 Plots.

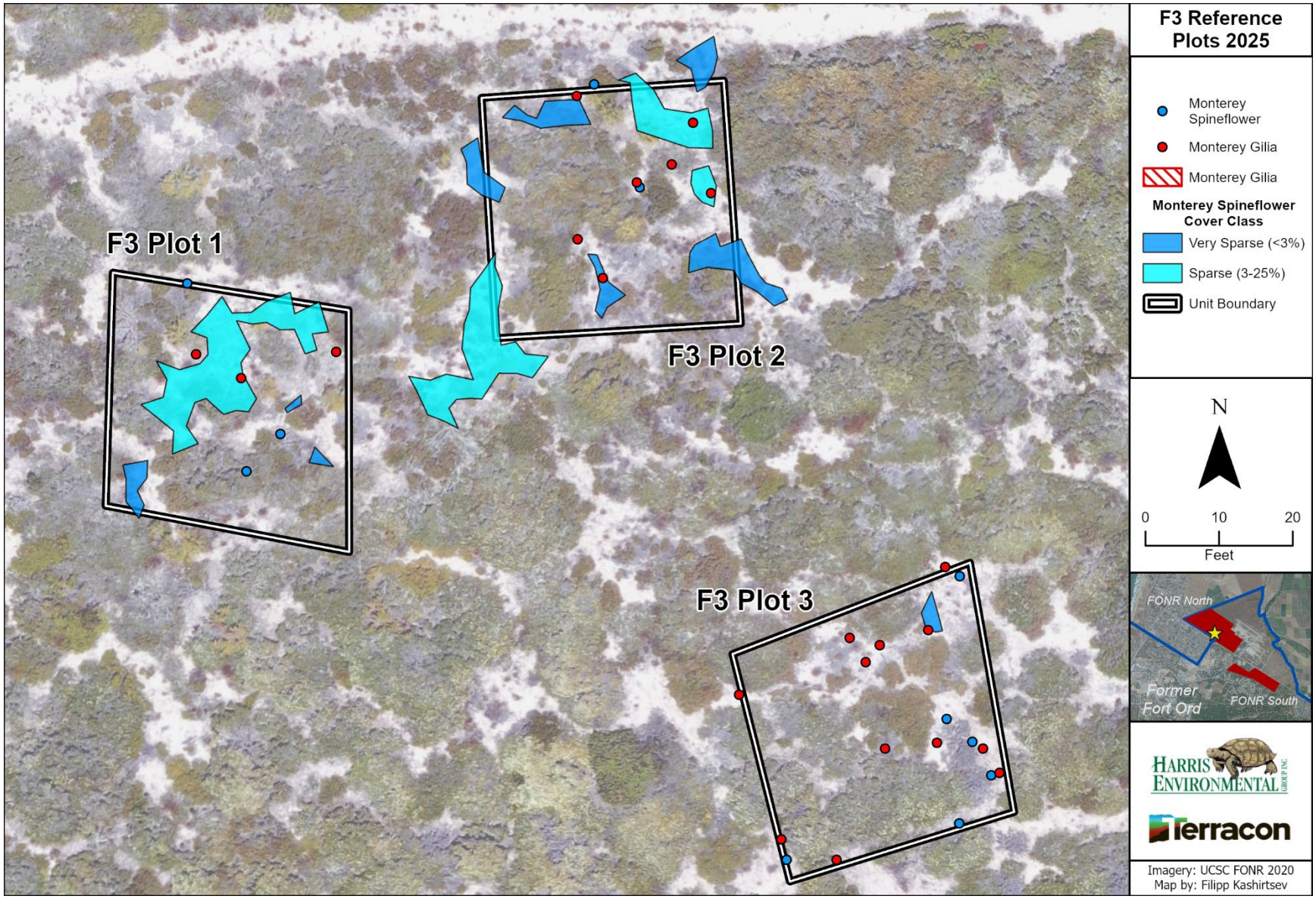

Figure 3-5. 2025 Monterey gilia and Monterey spineflower populations at reference F3 Plots.

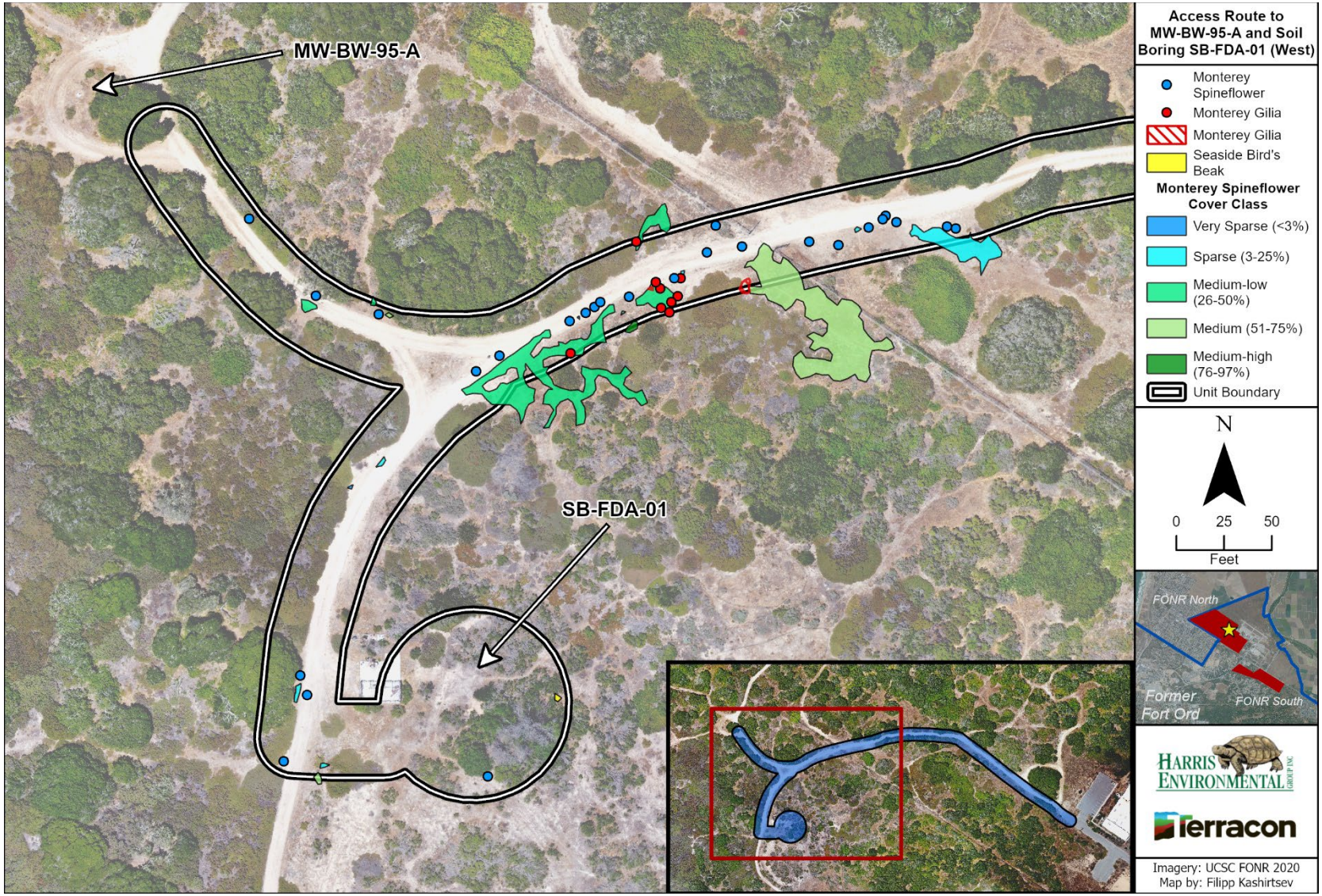

Figure 3-6. 2025 Monterey gilia and Monterey spineflower populations within the access route to MW-BW-95-A and SB-FDA-01 (west portion of survey area).

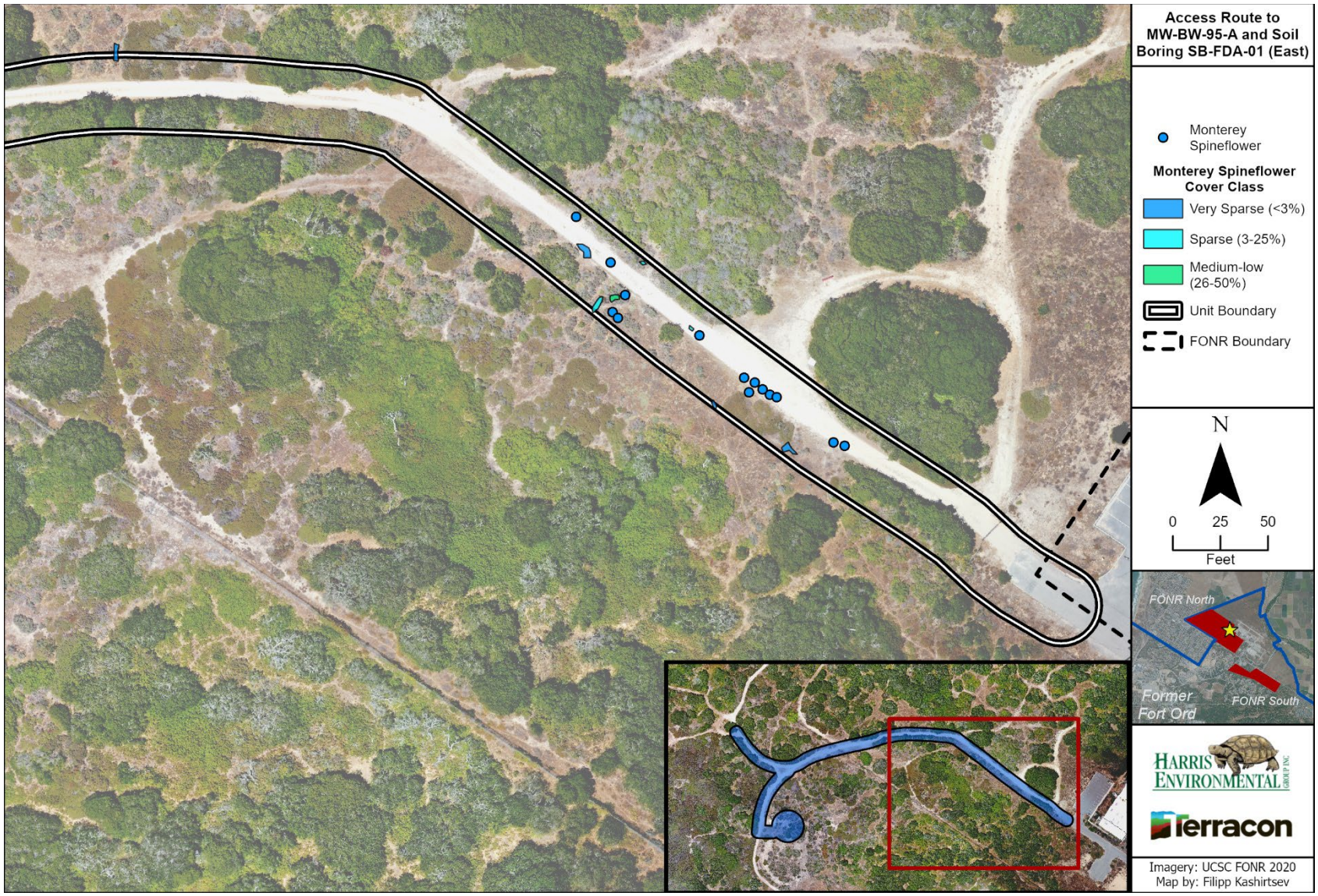

Figure 3-7. 2025 Monterey gilia and Monterey spineflower populations within the access route to MW-BW-95-A and SB-FDA-01 (east portion of survey area).

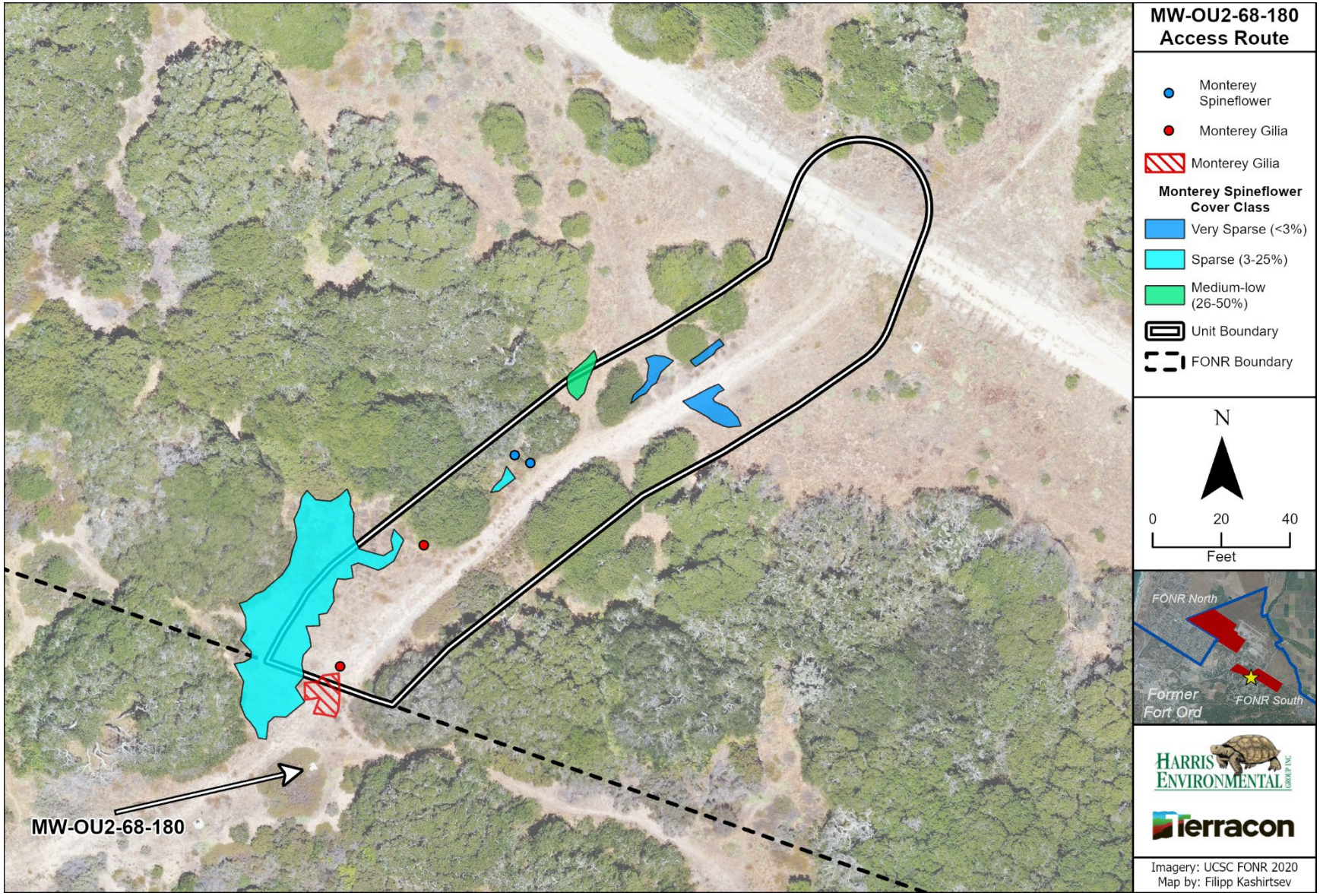

Figure 3-8. 2025 Monterey gilia and Monterey spineflower populations within the access route to MW-OU2-68-180.

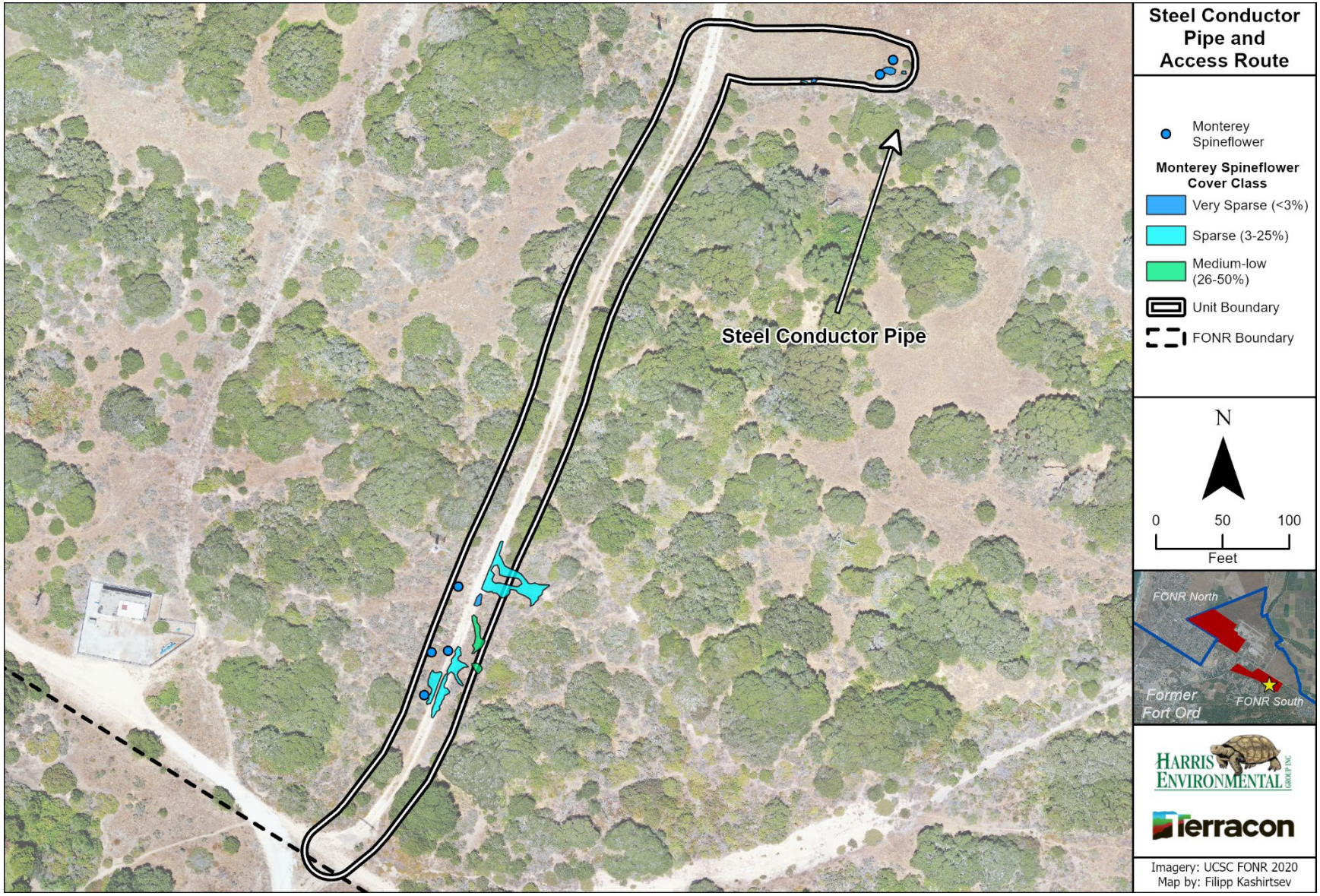

Figure 3-9. 2025 Monterey gilia and Monterey spineflower populations within the access route to the steel conductor pipe.

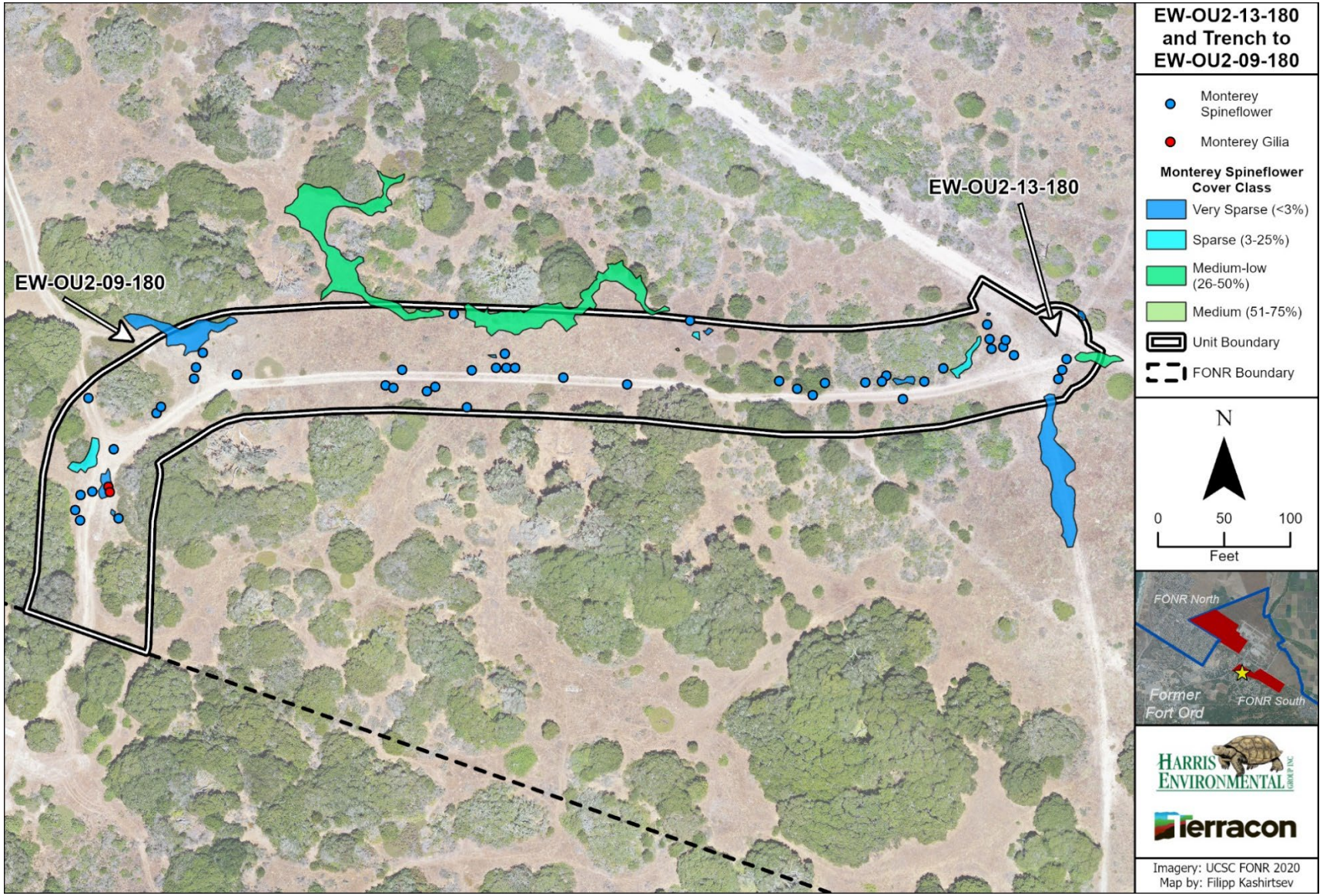

Figure 3-10. 2025 Monterey gilia and Monterey spineflower populations within the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180.

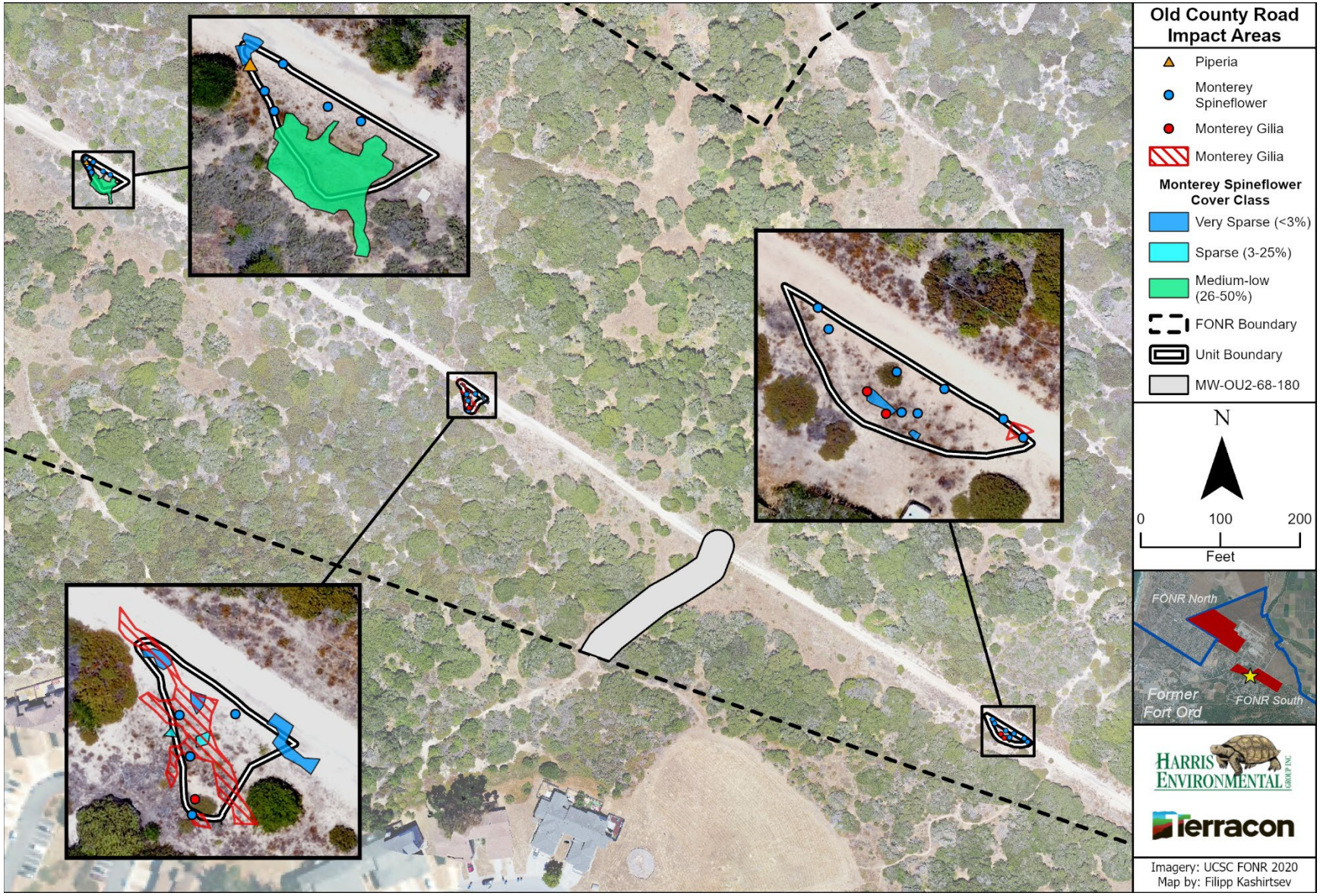

Figure 3-11. 2025 Monterey gilia, Monterey spineflower, and piperia populations within the Old County Road sites.

This page intentionally left blank

4. SUCCESS CRITERIA

Rare plant surveys are conducted for three years after a disturbance occurs during the remediation effort as required by the HMP and the 2017 PBO (USACE, 1997; USFWS, 2017). The following sections compare year-to-year survey area population changes. Rare plant survey data are compared to the 2017 PBO Success Criteria in the following sections to assess the impact of remediation activities on rare plant populations within the OUCTP and PFAS survey areas. The 2017 PBO identifies the Success Criteria as follows:

1) "Densities and acreage of HMP annual species are within a normal range compared with information from reference sites" (USFWS, 2017).
2) "The number of wells where HMP annual species are detected in follow up surveys will be the same or greater than the number of wells where these species were found in baseline surveys" (USFWS, 2017).

4.1 Monterey Gilia

In 2025, the Monterey gilia populations showed mixed year-to-year trends across survey areas and reference sites. For the PFAS sites, the access route to MW-BW-95-A was within a normal range for Monterey gilia when compared to Reference Site 1 and the F3 Plots, as all sites saw a decrease in both population area and number of individuals from 2024 (Year 2) to 2025 (Year 3) (Table 4-1). Though there was a decrease in number of individuals within the MW-BW-95A site, the 2025 (Year 3) population returned to a similar level as 2023 (Year 1), which is still a 280% increase from 2022 (Baseline), when there were only 20 individuals recorded. Similarly, though there was a decrease in individuals at Reference Site 1 from 2024 (2,017 individuals) to 2025 (1,046 individuals), this is still an increase from the lowest recorded numbers (40 individuals) in 2022 (Table 3-2).

Table 4-1. Year-to-year Monterey gilia population trends across PFAS survey areas and associated reference sites.

Region	MBEST Drive		FONR North			
Site	Reference Site 1		Reference F3 Plots		MW-BW-95-A (access route) and SB-FDA-01	
Metric	Number of Individuals	Population Area	Number of Individuals	Population Area	Number of Individuals	Population Area
2022 -> 2023	↑	↑	——	——	↑	↓
2023 -> 2024	↑	↑	↑	N/A*	↑	↑
2024 -> 2025	↓	↓	↓	↓	↓	↓

*No polygon/population area data collected in 2023

The OUCTP survey areas showed varying degrees of increases/decreases across both survey areas and reference sites (Table 4-2). It should be noted that a wide range of variables could be contributing to the gilia population dynamics in these sites, including competition from other plants, differences in soil moisture retention, or sunlight availability.

Within the access route to MW-OU2-68-180, populations increased from 44 individuals in 2024 (Year 1) to 67 in 2025 (Year 2); and population area also expanded from 54 ft² to 90 ft², an increase from the baseline conditions in 2023 when no individuals were detected (Table 3-2). These population increases exceeded those seen within Reference Site 1 and the V1 Plots. Within the steel conductor pipe survey area, there was no Monterey gilia observed from 2023 (Baseline) to 2025 (Year 2). Given that Monterey gilia was not detected in Baseline, this is within a normal range for the site. Within the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180, there was a decrease in both Monterey gilia individuals (31 to 7 individuals) and population area from 2024 (Baseline) to 2025 (Year 1) (Table 3-2). This is commensurate with the 48% decrease in individuals seen in Reference Site 1 from 2024 to 2025 (Table 3-1).

The Old County Road sites are not included in the table below because our analysis is based on sporadic data from multiple survey years going back to 2010. Although the Old County Road sites technically had a decrease in the number of individuals from 2010 (Baseline) to 2025 (Year 1), surveys in intermediate years show the gilia population decline in these areas and then continue to rebound in 2025 (Year 1) (Table 3-3).

Table 4-2. Year-to-year Monterey gilia population trends across OUCTP survey areas and associated reference sites.

Region	MBEST Drive		FONR South							
Site	Reference Site 1		Reference V1 Plots		MW-OU2-68-180 (access route only)		Steel Conductor Pipe (and access route)		EW-OU2-13-180 (access route & EW-OU2-09-180 trench)	
Metric	Number of Indiv.	Pop Area	Number of Indiv.	Pop Area	Number of Indiv.	Pop Area	Number of Indiv.	Pop Area	Number of Indiv.	Pop Area
2022 -> 2023	↑	↑	——	——	——	——	——	——	——	——
2023 -> 2024	↑	↑	↓	↓	↑	↑	N/A*	N/A*	——	——
2024 -> 2025	↓	↓	↓	↑	↑	↑	N/A*	N/A*	↓	↓

*No populations found in either survey year

Overall, although there were varying shifts in abundance of Monterey gilia across the PFAS and OUCTP survey areas, the results indicate the overall gilia abundance has not been adversely impacted in 2025. Given the discussion above, the following Success Criteria have been met for these sites:

Success Criterion 1 was met for Monterey gilia for all survey areas in 2025: population densities and areas were within the normal range.

Success Criterion 2 of the 2017 PBO was met for Monterey gilia in 2025: all survey areas where Monterey gilia was detected in Baseline still contained the species in 2025.

4.2 Monterey Spineflower

In 2025, Monterey spineflower experienced variable population growth across survey areas and reference sites (Table 4-3). For the PFAS sites, within the access route to MW-BW-95-A, Monterey spineflower population area remained stable from 2024 (Year 2) to 2025 (Year 3), increasing by just 1%, and up by 84% since 2022 (Baseline) (Table 3-5). This is similar to the results seen at Reference Site 1, where there was a 27% increase in area from 2024 to 2025. The F3 plots had a very slight decrease in number of individuals in 2025 but still exceeded the number of individuals in 2023 (Table 3-4).

Monterey spineflower in the OUCTP survey areas remained stable or increased in area from 2024 to 2025 (Table 4-3). Within the access route to MW-OU2-68-180, Monterey spineflower decreased in population area by just 19 ft^2 (-1% change), essentially remaining unchanged from 2024 (Year 1) to 2025 (Year 2) (Table 3-5). This is consistent with the very slight decline in population area in the V1 Plots. Within the access route to the steel conductor pipe, population area increased by 55% from 2024 (Year 1) to 2025 (Year 2) – a similar increase to that of Reference Site 1 (27% increase from 2024) (Table 3-4). Within the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180, there was a substantial increase (171%) in population area of Monterey spineflower from 2024 (Baseline) to 2025 (Year 1) (Table 3-5). This is generally consistent with increases seen in Reference Site 1 (Table 4-3).

Table 4-3. Year-to-year Monterey spineflower population trends across survey areas and associated reference sites (based on population area).

Region	MBEST Drive	FONR North		FONR South			
Site	Reference Site 1	Reference F3 Plots*	MW-BW-95-A (access route) and SB-FDA-01	Reference V1 Plots	MW-OU2-68-180 (access route only)	Steel Conductor Pipe (and access route)	EW-OU2-13-180 (access route & EW-OU2-09-180 trench)
2022 -> 2023	↑	——	↓	——	——	——	——
2023 -> 2024	↑	↑	↑	↓	↓	↓	——
2024-> 2025	↑	↓	↑	↓	↓	↑	↑

*F3 Plot trend based on number of individuals

Overall, these results indicate that Monterey spineflower abundance has not been adversely impacted in the PFAS or OUCTP survey areas in 2025. Given the discussion above, the following Success Criteria have been met for these sites:

Success Criterion 1 was met for Monterey spineflower for all survey areas in 2025: population densities and areas were within the normal range.

Success Criterion 2 of the 2017 PBO was met for Monterey spineflower in 2025: all survey areas where Monterey spineflower was detected in Baseline still contained the species in 2025.

This page intentionally left blank

5. CONCLUSIONS

In accordance with the HMP and PBO, monitoring is complete after three years if Monterey gilia and Monterey spineflower populations meet both Success Criteria outlined in the 2017 PBO. The PFAS survey area (MW-BW-95-A and SB-FDA-01) has been monitored for three years and has successfully met Success Criteria 1 and 2 for Monterey gilia and Monterey spineflower. Per the HMP and PBO, this concludes the monitoring for the access route to MW-BW-95-A and soil boring location SB-FDA-01, and the site will be removed from the monitoring schedule, unless additional groundwater of PFAS remediation activities are necessary.

The access route to MW-OU2-68-180 and the steel conductor pipe (OUCTP survey areas), have been monitored for Monterey gilia and Monterey spineflower for two years and have successfully met Success Criteria 1 and 2 in both years. Although Monterey spineflower population size declined in the access route to MW-OU2-68-180, the year-to-year population variations were generally consistent with associated reference sites, suggesting the declines are likely due to natural variability rather than project-related impacts.

The access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180 (OUCTP survey area) has been monitored for one year and has successfully met Success Criteria 1 and 2 in 2025. Although Monterey gilia population size declined at this site, the year-to-year population variations were generally consistent with associated reference sites. The Old County Road sites have been monitored for one year, and based on various data collected in years past, we can conclude that the site has successfully met Success Criteria 1 and 2 in 2025.

In 2026, Year 2 surveys will be conducted along the access route to well EW-OU2-13-180 and the trench to well EW-OU2-09-180; and at the Old County Road sites. Year 3 surveys will be conducted along the access route to MW-OU2-68-180 and the access route to the steel conductor pipe.

This page intentionally left blank

6. REFERENCES

Ackerman JD, Lauri R. 2013. *Piperia yadonii*, in Jepson Flora Project (eds.). Jepson eFlora. Available at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=38361.

[Ahtna] Ahtna Global, LLC. 2023. Site Inspection Narrative Report Per- and Polyfluoroalkyl Substances, Former Fort Ord, California. Prepared for USACE. AR# BW-2942A.

[Burleson] Burleson Consulting, Inc. 2020. 2020 Annual Rare Plant Survey. Fort Ord Natural reserve Operable Unit 1, Operable Unit Carbon Tetrachloride Plume, Operable Unit 2, & Fort Ord Dunes State Park Sites 2/12. Former Fort Ord, California. Prepared for US Army Corps of Engineers. AR# BW-2897.

Calflora [web application]. 2025. Berkeley, California: The Calflora Database [a non-profit organization]. Available at: https://www.calflora.org/app/taxon?crn=2358.

[DD&A] Denise Duffy & Associates. 2013. 2012 Biological Monitoring Report. Former Fort, Ord California. Worldwide Environmental Remediation Services. Prepared for Ahtna Global, LLC. AR# BW-2644.

[DD&A] Denise Duffy & Associates. 2014. 2013 Biological Monitoring Report. Former Fort, Ord California. Worldwide Environmental Remediation Services. Prepared for Ahtna Global, LLC. AR# BW-2686.

[DD&A] Denise Duffy & Associates. 2023. 2022 Biological Monitoring Completion Report for the Fort Ord Natural Reserve (FONR) at the Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection Former Fort, Ord California. Prepared for Ahtna Global, LLC. AR# BW-2934.

[DD&A] Denise Duffy & Associates. 2025. 2024 Biological Monitoring Completion Report for the Fort Ord Natural Reserve (FONR) at the Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection Former Fort, Ord California. Prepared for Ahtna Global, LLC. AR# OUCTP-0115.

Dorrell-Canepa J. 1994. Population Biology of *Gilia tenuiflora* ssp*. arenaria* (Polemoniaceae). Master's Thesis. 904. Available at: http://scholarworks.sjsu.edu/etd_theses/904.

[ESRI] Environmental Systems Research Institute. 2025. ArcGIS Pro: Version 3.5.2.

Fox LR, Steele HN, Holl KD, Fusari MH. 2006. Contrasting Demographies and Persistence of Rare Annual Plants in Highly Variable Environments. Plant Ecology 183(1):157-170.

Fox LR. 2007. Climatic and Biotic Stochasticity: Disparate Causes of Convergent Demographies in Rare, Sympatric Plants. Conservation Biology 21(6):1556-1561.

[Harris-Terracon] Harris Environmental Group, Inc. and Terracon Consultants, Inc. 2024. 2024 Biological Monitoring Completion Report for Operable Unit Carbon Tetrachloride Plume (OUCTP) & Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection, at the Fort Ord Natural Reserve (FONR). Prepared for US Army Corps of Engineers, Sacramento District. AR# OUCTP-0120

[HGL] HydroGeoLogic, Inc. 2011. 2010 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California. AR# OU1-585.

[NCEI NOAA] National Centers for Environmental Information of the National Oceanic and Atmospheric Administration. 2025. 30-Year Normal Precipitation Data for the Monterey Weather Forecast Office. Available at: https://www.ncei.noaa.gov/access/past-weather/

Porter JM. 2018. *Gilia tenuiflora* ssp. *arenaria*, in Jepson Flora Project (eds.). Jepson eFlora. Available at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=50823.

Reveal JL, Rosatti TJ. 2014. *Chorizanthe pungens* var. *pungens*, in Jepson Flora Project (eds.). Jepson eFlora. Available at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=56501.

Shaw Environmental, Inc. 2011. Annual Biological Monitoring Report, 2010. Former Fort Ord, California. AR# BW-2568.

[USACE] United States Army Corps of Engineers. 1997. Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California. April 1997. Sacramento, CA.

[USACE] United States Army Corps of Engineers. 2024. 2023 Annual Rare Plant Survey for the Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection, Former Fort Ord, California. AR# BW-2955.

[USFWS] United States Fish and Wildlife Service. 2015. Programmatic Biological Opinion for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (8-8-09-F-74) (2015 Biological Opinion). May 28. AR# BW-2747.

[USFWS] United States Fish and Wildlife Service. 2017. Reinitiation of Formal Consultation for Cleanup and Property Transfer Actions Conducted at the Former Fort Ord, Monterey County, California (Original Consultation #8-8-09-F-74, 81440-2009-5-00334). June 7. AR# BW-2747A.

Wetherwax M, DC Tank. 2013. *Cordylanthus rigidus* subsp. *littoralis*, in Jepson Flora Project (eds.). *Jepson eFlora*. Available at: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=49980

Yeager RM, Mitchell M. 2016. Monterey County Wildflowers – A Field Guide. Sacramento: CNPS Press, 2016. ISBN: 978-0-943460-58-1.

APPENDIX A

2025 Rare Plant Survey Results

This page intentionally left blank

Table A-1. 2025 Monterey gilia populations recorded within Reference Site 1.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
10	Reference Site 1	168	72.41	Polygon	4/22/2025
11	Reference Site 1	11	6.96	Polygon	4/22/2025
12	Reference Site 1	83	51.10	Polygon	4/22/2025
13	Reference Site 1	41	31.91	Polygon	4/22/2025
16	Reference Site 1	275	316.14	Polygon	4/23/2025
17	Reference Site 1	408	484.06	Polygon	4/23/2025
18	Reference Site 1	7	5.04	Polygon	4/23/2025
19	Reference Site 1	21	10.11	Polygon	4/23/2025
20	Reference Site 1	6	5.47	Polygon	4/23/2025
166	Reference Site 1	3	-	Point	4/22/2025
167	Reference Site 1	5	-	Point	4/22/2025
168	Reference Site 1	1	--	Point	4/22/2025
169	Reference Site 1	2	--	Point	4/22/2025
170	Reference Site 1	3	-	Point	4/22/2025
171	Reference Site 1	1	-	Point	4/22/2025
172	Reference Site 1	1	-	Point	4/22/2025
173	Reference Site 1	1	-	Point	4/22/2025
174	Reference Site 1	5	-	Point	4/22/2025
175	Reference Site 1	1	-	Point	4/22/2025
185	Reference Site 1	3	-	Point	4/23/2025

Table A-2. 2025 Monterey gilia populations recorded within the reference V1 Plots.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
2	V1 Plot 1	15	29.54	Polygon	4/16/2025
3	V1 Plot 1	65	21.60	Polygon	4/16/2025
4	V1 Plot 1	22	35.71	Polygon	4/16/2025
151	V1 Plot 1	1	-	Point	4/16/2025
152	V1 Plot 1	1	-	Point	4/16/2025
153	V1 Plot 1	1	--	Point	4/16/2025
154	V1 Plot 1	4	--	Point	4/16/2025
155	V1 Plot 1	1	-	Point	4/16/2025
156	V1 Plot 1	2	-	Point	4/16/2025
157	V1 Plot 1	4	-	Point	4/16/2025
158	V1 Plot 1	1	-	Point	4/16/2025
5	V1 Plot 2	21	20.75	Polygon	4/16/2025
159	V1 Plot 2	1	-	Point	4/16/2025

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
160	V1 Plot 2	2	-	Point	4/16/2025
340	V1 Plot 2	1	-	Point	5/21/2025
1	V1 Plot 3	18	18.65	Polygon	4/16/2025
125	V1 Plot 3	2	-	Point	4/16/2025
126	V1 Plot 3	1	-	Point	4/16/2025
127	V1 Plot 3	2	-	Point	4/16/2025
128	V1 Plot 3	1	-	Point	4/16/2025
131	V1 Plot 3	5	-	Point	4/16/2025
132	V1 Plot 3	2	-	Point	4/16/2025
133	V1 Plot 3	2	-	Point	4/16/2025
135	V1 Plot 3	5	-	Point	4/16/2025
136	V1 Plot 3	5	-	Point	4/16/2025
137	V1 Plot 3	1	-	Point	4/16/2025
138	V1 Plot 3	1	-	Point	4/16/2025
139	V1 Plot 3	3	-	Point	4/16/2025
140	V1 Plot 3	1	-	Point	4/16/2025
141	V1 Plot 3	4	-	Point	4/16/2025
142	V1 Plot 3	2	-	Point	4/16/2025
143	V1 Plot 3	1	-	Point	4/16/2025
144	V1 Plot 3	3	-	Point	4/16/2025
145	V1 Plot 3	3	-	Point	4/16/2025
146	V1 Plot 3	1	-	Point	4/16/2025
147	V1 Plot 3	5	-	Point	4/16/2025
150	V1 Plot 3	4	-	Point	4/16/2025

Table A-3. 2025 Monterey gilia populations recorded within the reference F3 Plots.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
186	F3 Plot 1	1	-	Point	4/29/2025
187	F3 Plot 1	1	-	Point	4/29/2025
188	F3 Plot 1	2	-	Point	4/29/2025
189	F3 Plot 2	1	-	Point	4/29/2025
190	F3 Plot 2	1	-	Point	4/29/2025
191	F3 Plot 2	5	-	Point	4/29/2025
192	F3 Plot 2	1	-	Point	4/29/2025
193	F3 Plot 2	1	-	Point	4/29/2025
194	F3 Plot 2	2	-	Point	4/29/2025
195	F3 Plot 2	1	-	Point	4/29/2025
196	F3 Plot 3	1	-	Point	4/29/2025

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
197	F3 Plot 3	1	-	Point	4/29/2025
198	F3 Plot 3	2	-	Point	4/29/2025
199	F3 Plot 3	2	-	Point	4/29/2025
200	F3 Plot 3	1	-	Point	4/29/2025
201	F3 Plot 3	1	-	Point	4/29/2025
202	F3 Plot 3	1	-	Point	4/29/2025
203	F3 Plot 3	1	-	Point	4/29/2025
204	F3 Plot 3	1	-	Point	4/29/2025
205	F3 Plot 3	2	-	Point	4/29/2025
206	F3 Plot 3	1	-	Point	4/29/2025
207	F3 Plot 3	1	-	Point	4/29/2025

Table A-4. 2025 Monterey gilia populations recorded within the access route to MW-OU2-68-180.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
9	MW-OU2-68-180	65	89.91	Polygon	4/21/2025
289	MW-OU2-68-180	1	-	Point	5/15/2025
290	MW-OU2-68-180	1	-	Point	5/15/2025

Table A-5. 2025 Monterey gilia populations recorded within the access route to MW-BW-95-A and soil boring location SB-FDA-01.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
14	MW-BW-95-A & SB-FDA-01	46	28.51	Polygon	4/22/2025
15	MW-BW-95-A & SB-FDA-01	7	2.05	Polygon	4/22/2025
176	MW-BW-95-A & SB-FDA-01	1	-	Point	4/22/2025
177	MW-BW-95-A & SB-FDA-01	3	-	Point	4/22/2025
178	MW-BW-95-A & SB-FDA-01	2	-	Point	4/22/2025
179	MW-BW-95-A & SB-FDA-01	1	-	Point	4/22/2025
180	MW-BW-95-A & SB-FDA-01	5	-	Point	4/22/2025
181	MW-BW-95-A & SB-FDA-01	4	-	Point	4/22/2025
182	MW-BW-95-A & SB-FDA-01	1	-	Point	4/22/2025
183	MW-BW-95-A & SB-FDA-01	5	-	Point	4/22/2025
184	MW-BW-95-A & SB-FDA-01	1	-	Point	4/22/2025

Table A-6. 2025 Monterey gilia populations recorded within the access route to EW-OU2-13-180 and trench to EW-OU2-09-180.

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
164	EW-OU2-13-180 & EW-OU2-09-180	5	-	Point	4/21/2025
165	EW-OU2-13-180 & EW-OU2-09-180	2	-	Point	4/21/2025

Table A-7. 2025 Monterey gilia populations recorded within the Old County Road Sites

Population Number	Location	Individuals (#)	Area (ft^2)	GIS Feature Type	Survey Date
6	Old County Road	169	224.24	Polygon	4/16/2025
7	Old County Road	7	6.92	Polygon	4/16/2025
8	Old County Road	6	9.98	Polygon	4/21/2025
161	Old County Road	2	-	Point	4/16/2025
162	Old County Road	1	-	Point	4/21/2025
163	Old County Road	4	-	Point	4/21/2025

Table A-8. 2025 Monterey spineflower populations recorded within Reference Site 1.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
84	Reference Site 1	<3%	Very sparse	47.88	Polygon	5/13/2025
86	Reference Site 1	<3%	Very sparse	2.50	Polygon	5/13/2025
87	Reference Site 1	<3%	Very sparse	26.22	Polygon	5/13/2025
85	Reference Site 1	3-25%	Sparse	1.98	Polygon	5/13/2025
88	Reference Site 1	3-25%	Sparse	1,175.42	Polygon	5/13/2025
94	Reference Site 1	3-25%	Sparse	17.05	Polygon	5/13/2025
95	Reference Site 1	3-25%	Sparse	293.17	Polygon	5/13/2025
91	Reference Site 1	26-50%	Medium-low	567.65	Polygon	5/13/2025
93	Reference Site 1	26-50%	Medium-low	229.40	Polygon	5/13/2025
96	Reference Site 1	26-50%	Medium-low	3,317.18	Polygon	5/13/2025
283	Reference Site 1	1	-	-	Point	5/13/2025
284	Reference Site 1	3	-	-	Point	5/13/2025
285	Reference Site 1	1	-	-	Point	5/13/2025
286	Reference Site 1	1	-	-	Point	5/13/2025
287	Reference Site 1	1	-	-	Point	5/13/2025
288	Reference Site 1	1	-	-	Point	5/13/2025

Table A-9. 2025 Monterey spineflower populations recorded within reference V1 Plots.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
122	V1 Plot 1	<3%	Very sparse	500.84	Polygon	5/21/2025
124	V1 Plot 2	<3%	Very sparse	3.40	Polygon	5/21/2024
341	V1 Plot 2	2	-	-	Point	5/21/2024
342	V1 Plot 2	2	-	-	Point	5/21/2024
343	V1 Plot 2	1	-	-	Point	5/21/2024
344	V1 Plot 2	2	-	-	Point	5/21/2024
345	V1 Plot 2	1	-	-	Point	5/21/2024
346	V1 Plot 2	1	-	-	Point	5/21/2024
119	V1 Plot 3	3-25%	Sparse	408.89	Polygon	5/21/2024

Table A-10. 2025 Monterey spineflower populations recorded within reference F3 Plots.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
23	F3 Plot 1	<3%	Very sparse	2.15	Polygon	5/07/2025
24	F3 Plot 1	<3%	Very sparse	3.73	Polygon	5/07/2025
25	F3 Plot 1	<3%	Very sparse	15.98	Polygon	5/07/2025
22	F3 Plot 1	3-25%	Sparse	172.52	Polygon	5/07/2025
208	F3 Plot 1	1	-	-	Point	5/07/2025
209	F3 Plot 1	1	-	-	Point	5/07/2025
210	F3 Plot 1	1	-	-	Point	5/07/2025
27	F3 Plot 2	<3%	Very sparse	21.82	Polygon	5/07/2025
28	F3 Plot 2	<3%	Very sparse	27.23	Polygon	5/07/2025
30	F3 Plot 2	<3%	Very sparse	20.60	Polygon	5/07/2025
32	F3 Plot 2	<3%	Very sparse	45.32	Polygon	5/07/2025
33	F3 Plot 2	<3%	Very sparse	14.04	Polygon	5/07/2025
26	F3 Plot 2	3-25%	Sparse	123.30	Polygon	5/07/2025
29	F3 Plot 2	3-25%	Sparse	59.12	Polygon	5/07/2025
31	F3 Plot 2	3-25%	Sparse	13.45	Polygon	5/07/2025
211	F3 Plot 2	1	-	-	Point	5/07/2025
212	F3 Plot 2	3	-	-	Point	5/07/2025
34	F3 Plot 3	<3%	Very sparse	8.60	Polygon	5/07/2025
213	F3 Plot 3	1	-	-	Point	5/07/2025
214	F3 Plot 3	1	-	-	Point	5/07/2025
215	F3 Plot 3	5	-	-	Point	5/07/2025
216	F3 Plot 3	2	-	-	Point	5/07/2025
217	F3 Plot 3	1	-	-	Point	5/07/2025
218	F3 Plot 3	1	-	-	Point	5/07/2025

Table A-11. 2025 Monterey spineflower populations recorded within the access route to MW-OU2-68-180.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
100	MW-OU2-68-180	<3%	Very sparse	50.31	Polygon	5/15/2025
101	MW-OU2-68-180	<3%	Very sparse	90.84	Polygon	5/15/2025
102	MW-OU2-68-180	<3%	Very sparse	23.71	Polygon	5/15/2025
97	MW-OU2-68-180	3-25%	Sparse	1273.86	Polygon	5/15/2025
98	MW-OU2-68-180	3-25%	Sparse	18.83	Polygon	5/15/2025
99	MW-OU2-68-180	26-50%	Medium-low	60.93	Polygon	5/15/2025
291	MW-OU2-68-180	2	-	-	Point	5/15/2025
292	MW-OU2-68-180	3	-	-	Point	5/15/2025

Table A-12. 2025 Monterey spineflower populations recorded within the access route to MW-BW-95-A and soil boring location SB-FDA-01.

Pop Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
61	MW-BW-95-A & SB-FDA-01	<3%	Very Sparse	28.60	Polygon	5/12/2025
55	MW-BW-95-A & SB-FDA-01	<3%	Very Sparse	21.60	Polygon	5/12/2025
62	MW-BW-95-A & SB-FDA-01	<3%	Very Sparse	18.82	Polygon	5/12/2025
56	MW-BW-95-A & SB-FDA-01	<3%	Very Sparse	6.51	Polygon	5/12/2025
80	MW-BW-95-A & SB-FDA-01	<3%	Very Sparse	3.13	Polygon	5/12/2025
63	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	432.05	Polygon	5/12/2025
60	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	21.00	Polygon	5/12/2025
79	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	19.86	Polygon	5/12/2025
75	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	10.25	Polygon	5/12/2025
77	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	8.09	Polygon	5/12/2025
64	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	5.49	Polygon	5/12/2025
67	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	4.31	Polygon	5/12/2025
58	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	4.15	Polygon	5/12/2025
57	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	3.66	Polygon	5/12/2025
69	MW-BW-95-A & SB-FDA-01	3-25%	Sparse	2.38	Polygon	5/12/2025
72	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	1,489.86	Polygon	5/12/2025
68	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	188.89	Polygon	5/12/2025
66	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	141.27	Polygon	5/12/2025
81	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	36.37	Polygon	5/12/2025
59	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	13.38	Polygon	5/12/2025
82	MW-BW-95-A & SB-FDA-01	26-50%	Medium-low	8.68	Polygon	5/12/2025
65	MW-BW-95-A & SB-FDA-01	51-75%	Medium	1,899.33	Polygon	5/12/2025

Pop Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
78	MW-BW-95-A & SB-FDA-01	51-75%	Medium	16.43	Polygon	5/12/2025
83	MW-BW-95-A & SB-FDA-01	51-75%	Medium	6.41	Polygon	5/12/2025
71	MW-BW-95-A & SB-FDA-01	51-75%	Medium	1.12	Polygon	5/12/2025
70	MW-BW-95-A & SB-FDA-01	76-97%	Medium-high	23.00	Polygon	5/12/2025
243	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
244	MW-BW-95-A & SB-FDA-01	5	-	-	Point	5/12/2025
245	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
246	MW-BW-95-A & SB-FDA-01	4	-	-	Point	5/12/2025
247	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
248	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
249	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
250	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
251	MW-BW-95-A & SB-FDA-01	3	-	-	Point	5/12/2025
252	MW-BW-95-A & SB-FDA-01	4	-	-	Point	5/12/2025
253	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
254	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
255	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
256	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
257	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
258	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
259	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
260	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
261	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
262	MW-BW-95-A & SB-FDA-01	4	-	-	Point	5/12/2025
263	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
264	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
265	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
266	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
267	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
268	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
269	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
270	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
271	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
272	MW-BW-95-A & SB-FDA-01	3	-	-	Point	5/12/2025
273	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
274	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
275	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
276	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025

Pop Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
277	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
278	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
279	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
280	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025
281	MW-BW-95-A & SB-FDA-01	2	-	-	Point	5/12/2025
282	MW-BW-95-A & SB-FDA-01	1	-	-	Point	5/12/2025

Table A-13. 2025 Monterey spineflower populations recorded within the steel conductor pipe survey area and access route.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
48	Steel Conductor Pipe	<3%	Very Sparse	32.32	Polygon	5/08/2025
52	Steel Conductor Pipe	<3%	Very Sparse	10.03	Polygon	5/08/2025
53	Steel Conductor Pipe	<3%	Very Sparse	42.41	Polygon	5/08/2025
54	Steel Conductor Pipe	<3%	Very Sparse	6.72	Polygon	5/08/2025
44	Steel Conductor Pipe	3-25%	Sparse	133.43	Polygon	5/08/2025
45	Steel Conductor Pipe	3-25%	Sparse	307.46	Polygon	5/08/2025
49	Steel Conductor Pipe	3-25%	Sparse	650.00	Polygon	5/08/2025
51	Steel Conductor Pipe	3-25%	Sparse	8.50	Polygon	5/08/2025
46	Steel Conductor Pipe	26-50%	Medium-low	38.44	Polygon	5/08/2025
47	Steel Conductor Pipe	26-50%	Medium-low	125.98	Polygon	5/08/2025
237	Steel Conductor Pipe	2	-	-	Point	5/08/2025
238	Steel Conductor Pipe	1	-	-	Point	5/08/2025
239	Steel Conductor Pipe	3	-	-	Point	5/08/2025
240	Steel Conductor Pipe	1	-	-	Point	5/08/2025
241	Steel Conductor Pipe	2	-	-	Point	5/08/2025
242	Steel Conductor Pipe	1	-	-	Point	5/08/2025

Table A-14. 2025 Monterey spineflower populations recorded within the access route to EW-OU2-13-180 and trench to EW-OU2-09-180.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
104	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	25.91	Polygon	5/15/2025
105	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	3.39	Polygon	5/15/2025
107	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	1,469.68	Polygon	5/15/2025
108	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	62.32	Polygon	5/16/2025

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
111	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	18.97	Polygon	5/16/2025
114	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	911.00	Polygon	5/16/2025
115	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	9.05	Polygon	5/16/2025
116	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	11.05	Polygon	5/16/2025
117	EW-OU2-13-180 & EW-OU2-09-180	<3%	Very Sparse	146.91	Polygon	5/16/2025
106	EW-OU2-13-180 & EW-OU2-09-180	3-25%	Sparse	162.34	Polygon	5/15/2025
110	EW-OU2-13-180 & EW-OU2-09-180	3-25%	Sparse	22.36	Polygon	5/16/2025
118	EW-OU2-13-180 & EW-OU2-09-180	3-25%	Sparse	245.89	Polygon	5/16/2025
103	EW-OU2-13-180 & EW-OU2-09-180	26-50%	Medium-low	229.55	Polygon	5/15/2025
112	EW-OU2-13-180 & EW-OU2-09-180	26-50%	Medium-low	1,994.74	Polygon	5/16/2025
113	EW-OU2-13-180 & EW-OU2-09-180	26-50%	Medium-low	2,611.69	Polygon	5/16/2025
109	EW-OU2-13-180 & EW-OU2-09-180	51-75%	Medium	3.21	Polygon	5/16/2025
293	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/15/2025
294	EW-OU2-13-180 & EW-OU2-09-180	3	-	-	Point	5/15/2025
295	EW-OU2-13-180 & EW-OU2-09-180	3	-	-	Point	5/15/2025
296	EW-OU2-13-180 & EW-OU2-09-180	4	-	-	Point	5/15/2025
297	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/15/2025
298	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/15/2025
299	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/15/2025
300	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/15/2025
301	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/15/2025
302	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
303	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
304	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
305	EW-OU2-13-180 & EW-OU2-09-180	5	-	-	Point	5/16/2025
306	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
307	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
308	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
309	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
310	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
311	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
312	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
313	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
314	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
315	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
316	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
317	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
318	EW-OU2-13-180 & EW-OU2-09-180	3	-	-	Point	5/16/2025

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
319	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
320	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
321	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
322	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
323	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
324	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
325	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
326	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
327	EW-OU2-13-180 & EW-OU2-09-180	5	-	-	Point	5/16/2025
328	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
329	EW-OU2-13-180 & EW-OU2-09-180	3	-	-	Point	5/16/2025
330	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
331	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
332	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
333	EW-OU2-13-180 & EW-OU2-09-180	2	-	-	Point	5/16/2025
334	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
335	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
336	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
337	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
338	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025
339	EW-OU2-13-180 & EW-OU2-09-180	1	-	-	Point	5/16/2025

Table A-15. 2025 Monterey spineflower populations recorded within the Old County Road sites.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
35	Old County Road	<3%	Very Sparse	33.34	Polygon	5/08/2025
37	Old County Road	<3%	Very Sparse	14.66	Polygon	5/08/2025
39	Old County Road	<3%	Very Sparse	9.02	Polygon	5/08/2025
41	Old County Road	<3%	Very Sparse	38.07	Polygon	5/08/2025
42	Old County Road	<3%	Very Sparse	13.73	Polygon	5/08/2025
43	Old County Road	<3%	Very Sparse	3.08	Polygon	5/08/2025
38	Old County Road	3-25%	Sparse	2.45	Polygon	5/08/2025
40	Old County Road	3-25%	Sparse	6.29	Polygon	5/08/2025
36	Old County Road	26-50%	Medium-low	583.83	Polygon	5/08/2025
220	Old County Road	1	-	-	Point	5/08/2025
221	Old County Road	1	-	-	Point	5/08/2025
222	Old County Road	1	-	-	Point	5/08/2025

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
223	Old County Road	3	-	-	Point	5/08/2025
224	Old County Road	1	-	-	Point	5/08/2025
225	Old County Road	3	-	-	Point	5/08/2025
226	Old County Road	1	-	-	Point	5/08/2025
227	Old County Road	2	-	-	Point	5/08/2025
228	Old County Road	1	-	-	Point	5/08/2025
229	Old County Road	1	-	-	Point	5/08/2025
230	Old County Road	1	-	-	Point	5/08/2025
231	Old County Road	3	-	-	Point	5/08/2025
232	Old County Road	2	-	-	Point	5/08/2025
233	Old County Road	1	-	-	Point	5/08/2025
234	Old County Road	1	-	-	Point	5/08/2025
235	Old County Road	2	-	-	Point	5/08/2025
236	Old County Road	1	-	-	Point	5/08/2025

Table A-16. 2025 piperia populations recorded within access route to Old County Road sites (not identifiable to species)**.**

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
219	Old County Road	1	-	-	Point	5/08/2025

Table A-17. 2025 Seaside bird's beak populations recorded within access route to MW-BW-95-A and soil boring location SB-FDA-01.

Population Number	Location	Individuals (#) or % Cover	Cover Class	Area (ft^2)	GIS Feature Type	Survey Date
76	MW-BW-95-A & SB-FDA-01	10	-	8.93	Polygon	5/12/2025