11258 S. RIVERSIDE AVENUE

CITY OF RIALTO, SAN BERNARDINO COUNTY, CALIFORNIA

Delhi Sands Flower-Loving Fly Habitat Suitability Assessment

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The undersigned certify that the statements furnished in this report and exhibits present data and information required for this biological evaluation, and the facts, statements, and information presented is a complete and accurate account of the findings and conclusions to the best of our knowledge and beliefs.

Thomas J. McGill, Ph.D.
Managing Director
ELMT Consulting

January 2023

Executive Summary

This report contains the findings of an updated habitat suitability assessment for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*; DSF), a federally endangered species, for the proposed Project Site located at 11258 S. Riverside Avenue within Assessor Parcel Number (APN) 0258-121-34 in the City of Rialto, San Bernardino County, California. The purpose of this assessment was to examine the existing conditions on the proposed Project site and determine if the site supported clean Delhi Sand soils capable of supporting DSF. The habitat suitability assessment fieldwork was conducted by Thomas J. McGill, Ph.D. (ELMT Consulting) on November 7, 2022.

The site is mapped by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey as supporting Delhi fine sand soils. The majority of the project site has been paved or covered with gravel for several decades and is used as a trucking storage and maintenance yard. There are no building or facilities on the property. The paved or covered areas are highly compacted and do not provide suitable habitat for DSF.

The open Delhi Sand soils found along the western and southern boundaries. The open habitat along the southern boundary is contiguous with the open Delhi Sands habitat in the SCE corridor. However, this open Delhi Sands habitat has subjected to grading and stockpiling of soils mixed with gravel. Similarly, the open Delhi Sands habitat along the southern boundary has been subject to grading and is also contaminated with gravel. Although not clean, there is sufficient Delhi sand soils in these two areas to prevent soil compaction. The quality of the Delhi Sands along the southern and western boundaries was considered low quality and was assigned a suitability rating of 3.

Focused surveys for DSF in 2022 were negative. Given the negative results from the focused survey in 2022 and negative surveys on the surrounding properties (11190 Riverside Avenue and 2830 S. Riverside Avenue) since 2017, it is reasonable to assume the open area along the southern and western boundaries will remain unoccupied by DSF.

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Section 1 Introduction

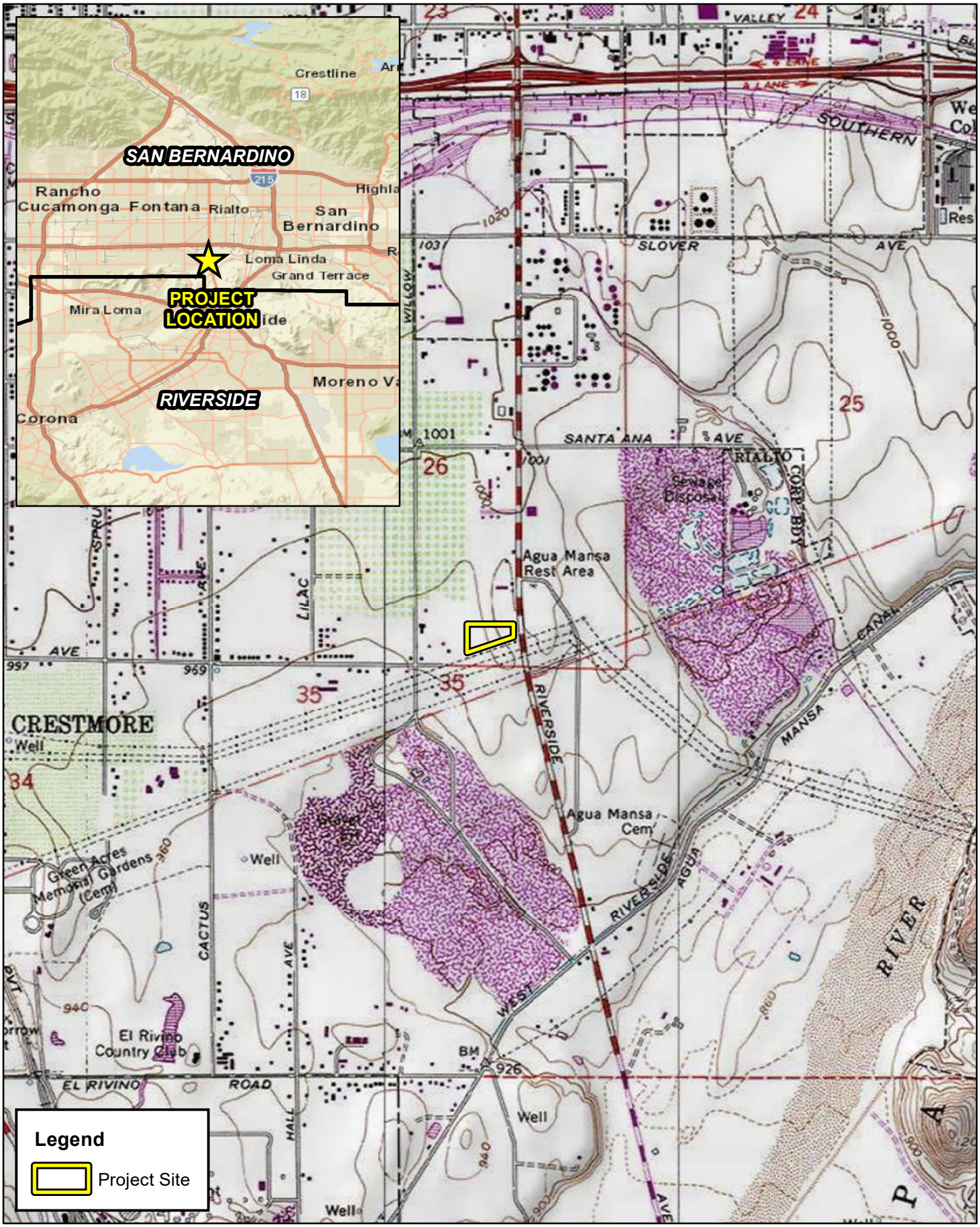
ELMT Consulting (ELMT) conduced a Delhi Sands Flower-loving Fly (DSF) Habitat Suitability Assessment for a proposed project site at TBD Archibald Avenue in the City of Ontario, San Bernardino County, California. Thomas J. McGill, Ph.D., inventoried the project site to determine the suitability ratings of the Delhi Sands habitats on November 7, 2022. This assessment was conducted to determine the extent to which the soils on the project site support clean Delhi fine sand soils capable of providing suitable habitat for DSF, quantify the amount of such habitat, and determine the general location and distribution of such soils within the project site boundaries.

1.1 PROJECT LOCATION

The project site is generally located on the west side of Riverside Drive, north of Santa Ana Avenue, in the City of Rialto, San Bernardino County, California. The site is depicted on San Bernardino South quadrangle of the United States Geological Survey's (USGS) 7.5-minute map series within Section 26 of Township 1 South, Range 5 West (Exhibit 1, *Site Vicinity*). Specifically, the project site is located southwest of the intersection of Riverside Avenue and Industrial Drive within Assessor Parcel Number (APNs 0258-121-34) (Exhibit 2, *Project Site*).

1.2 PROJECT DESCRIPTION

The project is the conversion of this industrial site and the two adjacent sites (2830 S. Riverside Avenue and 11190 S. Riverside Avenue) to commercial use though the construction of a concrete tilt-up warehouse building with office component totaling approximately 219,000 square feet on the combined 10.11 gross acres of land with secured loading dock area and truck trailer stalls within secured yard. Building allows for a multi-tenant with truck and auto entries located on Riverside Ave.



DELHI SANDS FLOWER-LOVING FLY SUITABILITY ASSESSMENT
11258 S. RIVERSIDE AVENUE

Regional Vicinity

ELMT CONSULTING

0 0.25 0.5 1 Miles

Source: USA Topographic Map, San Bernardino County

Exhibit 1

DELHI SANDS FLOWER-LOVING FLY SUITABILITY ASSESSMENT
11258 S. RIVERSIDE AVENUE

Project Site

ELMT CONSULTING

0 125 250 500 Feet

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 2

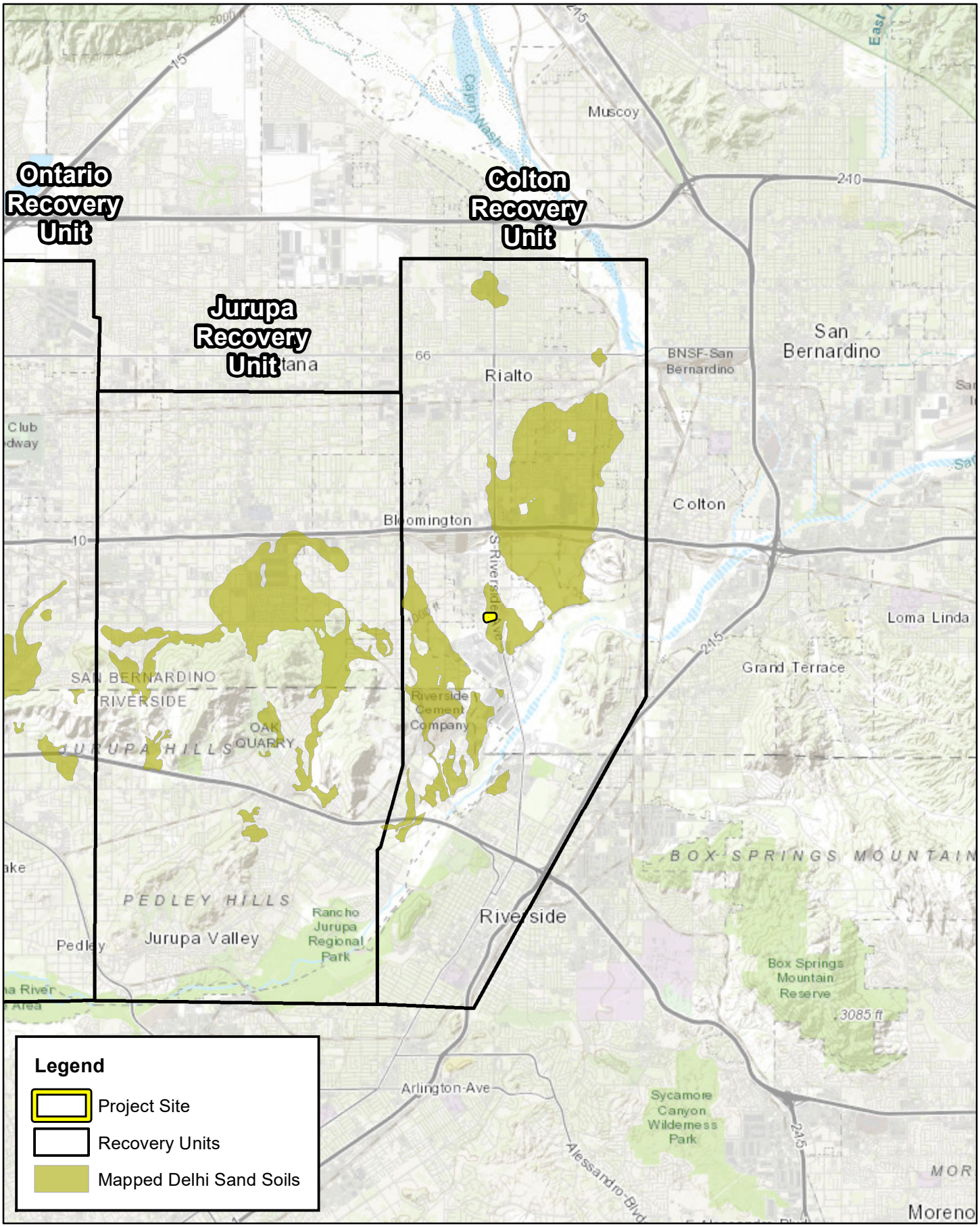
Section 2 Background

It has been generally acknowledged that DSF can be found to occur in Delhi sand soils, particularly clean dune formations composed of Aeolian sands. Conversely, soils and sands deposited by fluvial processes from the surrounding alluvial fans do not support DSF. These alluvial soils are composed of course sands, cobble and gravel (Tujunga soils) or coarse sands, silts and clays (Cieneba soils). In this part of San Bernardino County, the separation of soil types has been lost due to the mixing and cross contamination from years of agricultural activities, development, and other man-made disturbances.

Depending on the extent of mixing and contamination, some areas formally mapped as Delhi sand soils no longer have potential to support DSF populations. Conversely, some areas formally mapped as Cieneba soils may now supported wind deposited Delhi sand soils and have potential to support DSF. Six DSF experts (Ken Osborne, Greg Ballmer, Rudy Matoni, Karin Cleary-Rose, Alison Anderson and Tom McGill) used this criterion, the relative abundance of clean Delhi sand soils versus the amount of Cienba or other alluvial soils, to rate the suitability of the habitat to support DSF (Michael Brandman Associates, 2003). Soils high in gravel and alluvial materials, or high in fine materials such as silts and clays, were rated low, while soils that appear to be high in Aeolian deposited sands were rated high. This qualitative assessment of DSF habitat was further refined by considering the relative degree of soil compaction. Alluvial soils have a tendency to solidify to a hard surface pavement, while Aeolian soils are easier to penetrate and provide good substrate for DSF.

Although it has been common to attribute the presence of four common plant species California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), deer weed (*Acmispon glaber*), and telegraph weed (*Heterotheca grandiflora*) as indicators of habitat suitability, for the assessment, vegetation composition was not given much weight in making this habitat evaluation. These dominant plant species, and plant species composition of habitats, may not be directly relevant to larval development (due to likely predatory or parasitic nature of DSF larvae) (Osborne, et al. 2003). The known immature life histories of the nine asiloid fly families, including that to which the DSF is classified, are primarily predatory and/or parasitic on other invertebrate species (mainly insects) and the presence or absence of plant species appears not to be relevant to the life history of these flies.

Land with suitable DSF habitat includes only those areas with open, clean and unconsolidated Delhi Series soils that have not been permanently altered by residential, commercial, or industrial development, or other human actions. Areas known to contain Delhi sand soils and/or to be occupied by DSF have been divided by USFWS into three recovery units (Colton, Jurupa, and Ontario Recovery Units (USFWS, 1997)). These recovery units are defined as large geographic areas based on geographic proximity, similarity of habitat, and potential genetic exchange. The project site is located within the Colton Recovery Unit The Project Site.



DELHI SANDS FLOWER-LOVING FLY SUITABILITY ASSESSMENT
11258 S. RIVERSIDE AVENUE

DSF Recovery Units

ELMT CONSULTING

0 1 2 4 Miles

Source: World Topographic Map, Riverside County

Exhibit 3

Section 3 Methodology

The criteria discussed in detail below were used to rate the relative abundance of clean Delhi sand soils verses the amount of Cieneba Tujunga, or other alluvial soils, to rate the suitability of the habitat to support DSF. Soils high in gravel and alluvial materials, or high in fine materials such as silts and clays, were rated low, while soils that appear to be high in Aeolian deposited sands were rated high. This qualitative assessment of DSF habitat was further refined by considering the relative degree of soil compaction. Alluvial soils have a tendency to solidify to a hard surface pavement, while Aeolian soils are loose sandy soils that are easier to penetrate and provide good substrate for DSF.

3.1 SOIL

Onsite and adjoining soils were researched prior to the field visit using the United States Department of Agricultural (USDA) Natural Resources Conservation Survey (NRCS) Soil Survey for San Bernardino County, California. In particular, the USDA NRCS was reviewed to determine the location of mapped Delhi fine sand soils on or within the immediate vicinity of the project site.

3.2 VEGETATION

Vegetative resources and surrounding land uses were also assessed as part of determining baseline conditions by walking meander transects and recording all species observed and adjacent land uses. Common plant species observed during the field investigation were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less-familiar plants were photographed in the field and identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual (Hickman 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

3.3 HABITAT SUITABILITY ASSESSMENT

The scope of the updated habitat suitability assessment was to determine the continued presence and distribution of consolidated and unconsolidated soils and to further evaluate the quality of Delhi Sands across the site as it pertains to DSF. ELMT biologist Tom McGill surveyed the project site on October 31, 2022.

The habitat suitability assessment consisted of a visual and tactile inspection of all areas on the project site that contain Delhi sand soils. The underlying soils within the project site are mapped as Delhi fine sands (Exhibit 2, *Project Site*). The site was evaluated for the quality or purity of Delhi Sands and for its potential to support DSF. Areas were assigned one or more ratings ranging between 1 and 5, with 5 being the best quality and most suitable habitat:

1. Soils dominated by heavy deposits of alluvial material including coarse sands and gravels with little or no Delhi sand soils and evidence of soil compaction. Developed areas, non-Delhi sands

soils with high clay, silt, and/or gravel content. Delhi sands extensively and deeply covered by dumping of exotic soils, rubble, trash or organic debris. *Unsuitable.*

2. Delhi sand soils are present, but the soil characteristics include a predominance of alluvial materials (Tujunga Soils and Hilmar loamy sand), or predominance of other foreign contamination. Sever and frequent disturbance (such as maintenance yard or high use roadbed). *Very Low Quality*.

3. Although not clean, sufficient Delhi sand soils are present to prevent soil compaction. Moderately contaminated Delhi sands. Delhi sands with moderate to high disturbance (such as annual disking). Sufficient Delhi sands are present to prevent soil compaction (related to contamination by foreign soils). Some sandy soils exposed on the surface due to fossorial animal activity. *Low Quality*.

4. Abundant clean Delhi sand soils with little or no foreign soils (such as alluvial material, Tujunga soils or Hilmar loamy sand) present. Moderate abundance of exposed sands on the soil surface. Low vegetative cover. Evidence of moderate degree of fossorial animal activity by vertebrates and invertebrates. May represent high quality habitat with mild or superficial disturbance. *Moderate Quality*.

5. Sand dune habitat with clean Delhi sand soils. High abundance of exposed sands on the soil surface. Low vegetative cover. Evidence (soil surface often gives under foot) of high degree of fossorial animal activity by vertebrates and invertebrates. Sand associated plant and arthropod species may be abundant. *High Quality*.

It should be noted that habitat qualities often vary spatially within a site so that conditions on a site fall within a range of qualities. Further, overall habitat quality is affected by the overall habitat value of a site.

DELHI SANDS FLOWER-LOVING FLY SUITABILITY ASSESSMENT
11258 S. RIVERSIDE AVENUE

Soils

ELMT CONSULTING

Source: ESRI Aerial Imagery, Soil Survey Geographic Databases, San Bernardino County

Exhibit 4

Section 4 Results

4.1 EXISTING CONDITIONS

The proposed project site is a developed property in the City of Rialto, southwest of intersection of Riverside Avenue and Industrial Way. The site is approximately 3.7 acres in size and trapezoidal in shape. The site is relatively flat, and its elevation is approximately 1,000 feet above sea level. To the north and west are industrial developments. South of the site is a Southern California Edison (SCE) 500 KV line easement and east across Riverside Avenue is an open field that supports Delhi Sands with native vegetation.

The majority of the site is covered with gravel, soil, and asphalt paving from its years of use as a truck storage yard. There are approximately 10 acres of open Delhi Sand habitat along the southern boundary, adjacent to the SCE corridor and along the western boundary, outside the developed area. These area of open Delhi Sand soils show topographical relief from previous grading activities and stock piling of soils.

The principal vegetative in the open Delhi Sands area is a mixture of native species and ruderal species typically found on sandy and loamy soils of the in open areas. Native species identified on site included telegraph weed (*Heterotheca grandiflora*), California croton (*Croton californicus*), annual bursage (*Ambrosia acanthicarpa*) and Brittlebush (*Encelia farinosa*). Ruderal vegetation included sunflower (*Helianthus annuus*), short-pod mustard (*Hirschfeldia incana*), tree tobacco (*Nicotiana glauca*), puncture vine (*Tribulus terrestris*), Peruvian peppertree (*Schinus molle*), and non-native grasses.

4.2 SUITABILITY ASSESSMENT

Dr. McGill examined of the soil quality on the project site on November 7, 2022, using the referenced DSF habitat suitability scale (Ballmer, Osborne, McGill 2003). The underlying soil at the project site is mapped by NRCS as Delhi Sand soils, the majority of which has been covered with asphalt or gravel for several decades and is highly compacted from storing trucks and does not provide open Delhi Sands habitat. Approximately, ten acres of open Delhi Sand soils occur western and southern boundaries. The property to the south is undeveloped land found in the SCE powerline corridor which supports open Delhi Sands habitat. Where this habitat extends into the project site, the soils have been graded and used to stockpile soils, often with gravel mixed in. An approximate 50-foot band of open Delhi Sands occurs along the western boundary of the site. As observed at the southern boundary, the Delhi Sands within this western area have gravel mixed in from previous grading of the site from maintenance. The quality of the Delhi Sands within both the western boundary and the southern boundary are a mixture of clean Delhi Sands and gravel from ongoing site maintenance. Although not clean, sufficient Delhi sand soils are present to prevent soil compaction. Native vegetation is scattered throughout both areas. These two areas were considered low quality and was assigned a suitability rating of 3.

DELHI SANDS FLOWER-LOVING FLY SUITABILITY ASSESSMENT
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DSF Habitat Suitability

ELMT CONSULTING

0 250 500 1,000 Feet

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 5

Section 5 Summary and Conclusion

The majority of the project site has been paved or covered with gravel for several decades and is used as a trucking storage and maintenance yard. There are no building or facilities on the property. The paved or covered areas are highly compacted and do not provide suitable habitat for DSF. The open Delhi Sand soils found along the western and southern boundaries was assessed on November 7, 2022, using the referenced DSF habitat suitability scale (Ballmer, Osborne, McGill 2003) to determine if any of these areas of open Delhi Sand soils capable of supporting a population of DSF. The open habitat along the southern boundary is contiguous with the open Delhi Sands habitat in the SCE corridor. However, this open Delhi Sands habitat has subjected to grading and stockpiling of soils mixed with gravel. Similarly, the open Delhi Sands habitat along the southern boundary has been subject to grading and is also contaminated with gravel. Although not clean, there is sufficient Delhi sand soils in these two areas to prevent soil compaction. The quality of the Delhi Sands along the southern and western boundaries was considered low quality and was assigned a suitability rating of 3.

Focused surveys for DSF in 2022 were negative. Given the negative results from the focused survey in 2022 and negative surveys on the surrounding properties (11190 Riverside Avenue and 2830 S. Riverside Avenue} since 2017, it is reasonable to assume the open area along the southern and western boundaries will remain unoccupied by DSF.

Section 6 References

Michael Brandman Associates. 2003. Delhi Sands Flower-loving Fly Habitat Assessment for the Fontana Business Center.

Osborne, K.H. 2002a. Focused surveys for the Delhi Sand giant flower-loving fly (*Rhaphiomidas terminatus abdominalis*) on a 125-acre portion of the Fontana Business Center site. Submitted to USFWS October 15, 2002.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2021. *Web Soil Survey.* Online at http://websoilsurvey.nrcs.usda.gov/app/.

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U.S. Fish and Wildlife Services. 1997. Final Recovery Plan for Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) U.S. Fish and Wildlife Services, Portland, Or. 51 pages.

U.S. Fish and Wildlife Service. 2019. Recovery Plan Amendment for Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*).

U.S. Fish and Wildlife Services. 2008. Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) 5-Year Review: Summary and Evaluation. Carlsbad, California. March 2008.

Appendix A Site Photographs

Photograph 1. Looking west from the center of the eastern boundary across the Project Site. The site is paved or covered with gravel. Open Delhi Sands occur at the base on the perimeter fence lines.

Photograph 2. Looking east from the center of the southern boundary. Open Delhi Sand habitat can be seen along the base of the fence line. The power line in the SCE corridor can be seen at the top of the photo.

Photograph 3. Looking east from the southwest corner of the Project Site.

Photograph 4. Southwest corner of the Project Site supports a small area of open Delhi Sands with a native Colton Dunes plant community. Note stockpiling of soils also occurs in this area.

Photograph 5. Looking west from the center of the Project Site at the western boundary. The fence line can be seen in the middle of the photo.

Photograph 6. Looking west along the northern boundary of the site. Open Delhi Sands, although present, are mixed with gravel and other contaminates in a narrow band.