

**WASTEWATER COLLECTION SYSTEM, PHASES 1 AND 2
BURROWING OWL FOCUSED SURVEY**



CITY OF TWENTYNINE PALMS, SAN BERNARDINO COUNTY, CALIFORNIA

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1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) was contracted by Terra Nova Planning and Research to conduct a biological resources assessment at the site of Phases 1 and 2 of a proposed wastewater collection system project (project) in Twentynine Palms, San Bernardino County, California. The assessment (Wood 2022) identified extensive potential burrowing owl habitat. Therefore, focused surveys were conducted for the burrowing owl. The results of those surveys are presented here.

1.1 Project Location and Topography

The project is entirely within the City of Twentynine Palms, San Bernardino County, California (see Figure 1). It is located primarily on the 7.5-minute Twentynine Palms, Calif. United States Geological Survey (USGS) quadrangle extending slightly south into the Queen Mountain, Calif. USGS quadrangle. It is in Township 1 North, Range 9 East, in portions of Sections 15, 16, 20-22, 27-29, 32 and 33 (see Figure 2). Project topography is roughly level overall, with some low hills in the southwestern area. Elevations range from approximately 1,795 feet (547 meters) in the northeast to 2,140 feet (652 meters) in the southwest. The land within the study area generally slopes from the southwest to the northeast (NV5 2022).

1.2 Project Description

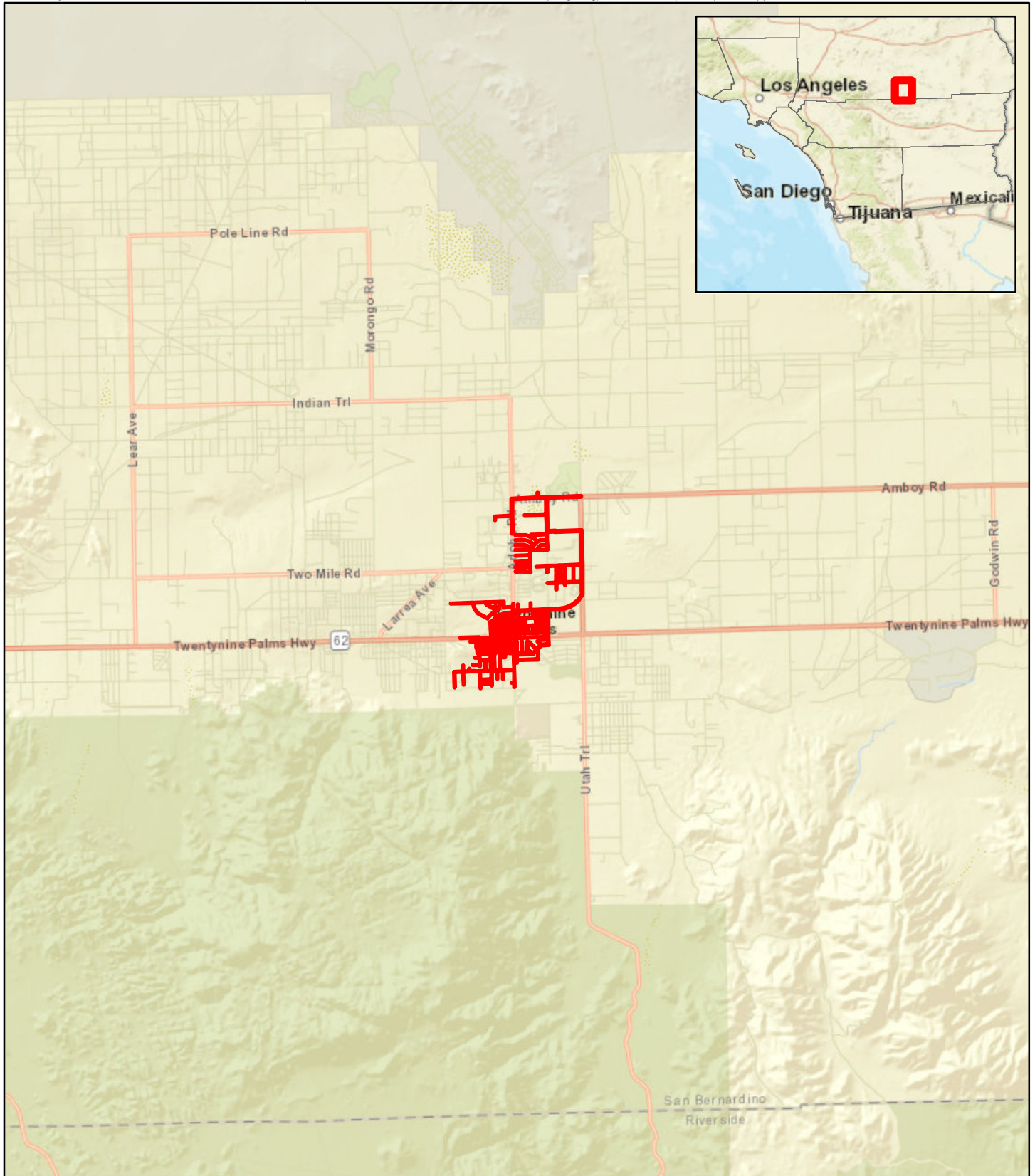
Phase 1 includes:

- Trunk sewers for Phase 1.
- Collector sewers for Phase 1.
- Two existing package treatment plants for the Turtle Rock and Desert Knoll Developments.
- The two large dense military housing developments on Two Mile Road and Joe Davis Drive.
- The residential area northeast of the Adobe Road – Two Mile Road intersection.
- The commercial area on Adobe Road and Amboy Road north of Samarkand Drive.

Phase 2 includes:

- Trunk sewers for Phase 2.
- Collector sewers for Phase 2.
- Two planned package treatment plants for project Phoenix and the Wander Hotel.
- The dense downtown area east of Donnell Hill. This area has a balanced mix of both residential and commercial land use.

See Figure 3 for a project overview.



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wood.

 Project Area


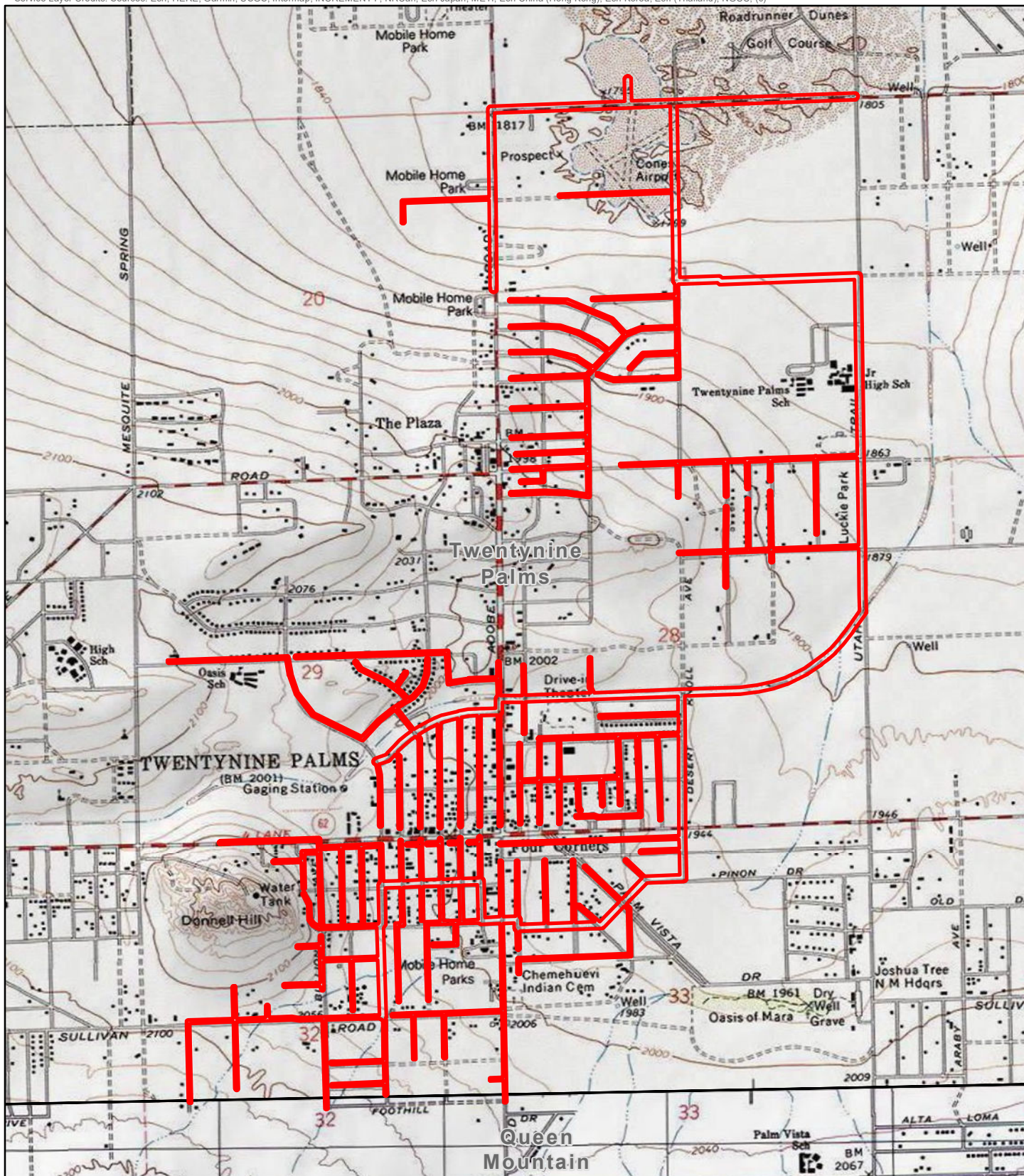
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FIGURE 1
Regional Vicinity
Twentynine Palms Wastewater Collection System
Phases 1 and 2
Burrowing Owl Focused Survey
Twentynine Palms, CA

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1 inch = 2,000 feet

0 1,000 2,000 Feet



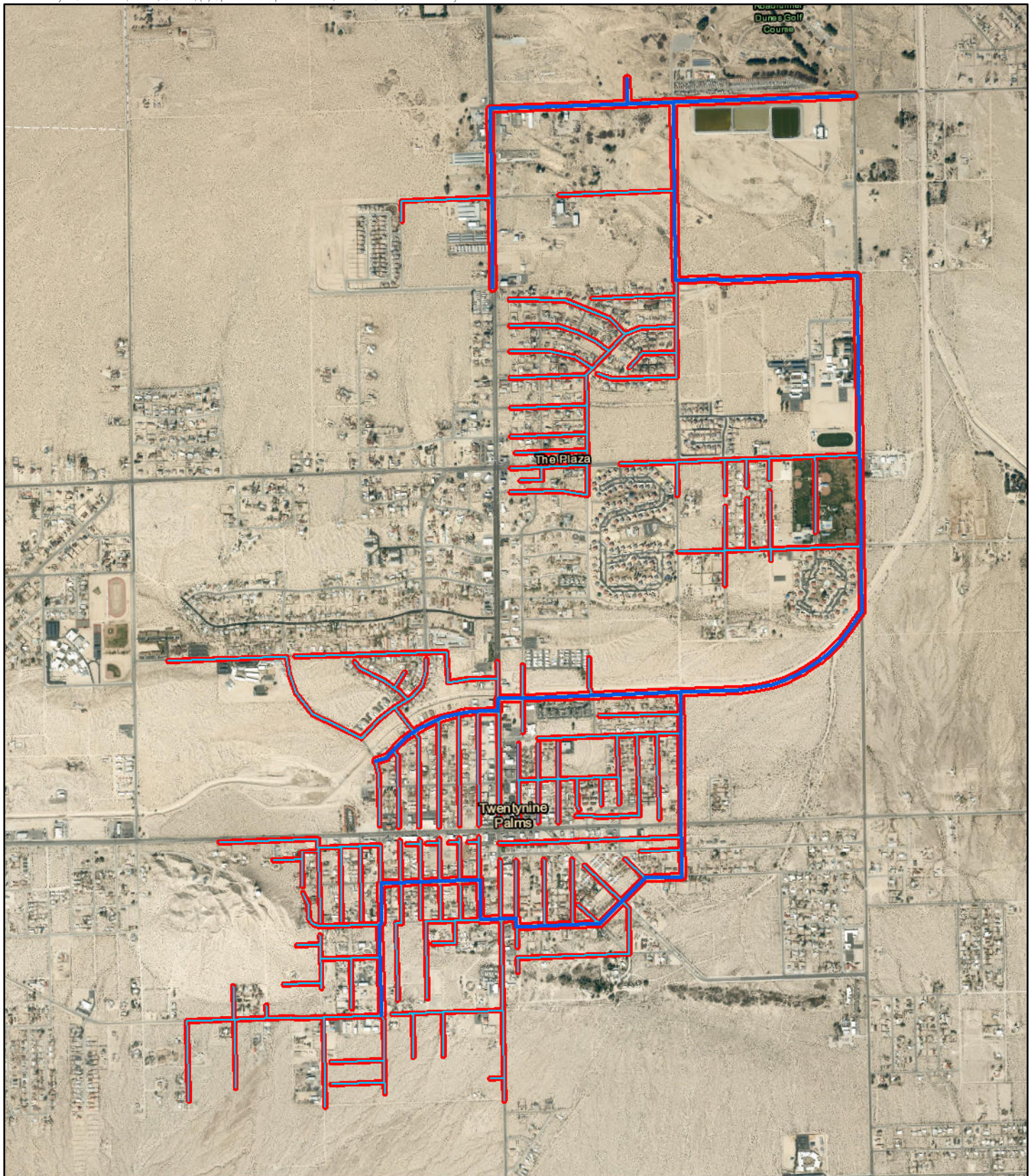
wood.

Project Area

FIGURE 2

USGS 7.5" Topo Quad: Twentynine Palms
Twentynine Palms Sanitation
Sewer Trunk Line Project
Burrowing Owl Focused Survey
Twentynine Palms, CA

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- Proposed Trunk Sewer
- Proposed Collector Sewer
- Project Area

1 inch = 2,000 feet
0 1,000 2,000 Feet



FIGURE 3
Project Overview
Twentynine Palms Sanitation
Sewer Trunk Line Project
Burrowing Owl Focused Survey
Twentynine Palms, CA

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2.0 REGULATORY FRAMEWORK

2.1 Federal

Migratory Bird Treaty Act (MBTA) – Treaties signed by the U.S., Great Britain, Mexico, Japan, and the republics of the former Soviet Union make it unlawful to pursue, capture, kill, and/or possess, or attempt to engage in any such conduct to any migratory bird, nest, egg or parts thereof listed in this document. The MBTA allows the Secretary of the Interior to grant permits for the incidental take of these protected migratory bird species. Impacts include direct disturbance to/destruction of nests, eggs, and birds as well as indirect effects such as loud construction noises (e.g., drilling, operation of heavy equipment, etc. in excess of 60 dB at the nest site) and increased site activities (e.g., moving vehicles, use of guard dogs, presence of personnel) in close proximity to active nests.

National Environmental Policy Act (NEPA) – Portions of the proposed project could fall under the jurisdiction of a federal agency (i.e., U.S. Army Corps of Engineers). The NEPA establishes certain criteria that must be adhered to for any project that is "financed, assisted, conducted or approved by a federal agency. The federal lead agency is required to "determine whether the proposed action will significantly affect the quality of the human environment."

2.2 State of California

California Environmental Quality Act (CEQA) – The basic goal of the CEQA is to retain a high-quality environment now and in the future. The specific goals are for California's public agencies to:

- Identify the significant environmental effects of their actions; and, either
- Avoid those significant environmental effects, where feasible; or
- Mitigate those significant environmental effects, where feasible.

The CEQA applies to "projects" proposed to be undertaken or requiring approval by State and/or local governmental agencies. projects are activities which have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits and the approval of tentative subdivision maps. Where a project requires approvals from more than one public agency, the CEQA requires one of these public agencies to serve as the "lead agency."

A "lead agency" must complete the environmental review process required by the CEQA. The most basic steps of the environmental review process are:

- Determine if the activity is a "project" subject to the CEQA;
- Determine if the "project" is exempt from the CEQA;
- Perform an Initial Study to identify the environmental impacts of the project and determine whether the identified impacts are "significant". Based on its findings of

"significance", the lead agency prepares one of the following environmental review documents:

- Negative Declaration if it finds no "significant" impacts;
- Mitigated Negative Declaration if it finds "significant" impacts but revises the project to avoid or mitigate those significant impacts;
- Environmental Impact Report (EIR) if it finds "significant" impacts.

While there is no ironclad definition of "significance", Article 5 of the CEQA Guidelines provides criteria to lead agencies in determining whether a project may have significant effects.

The purpose of an EIR is to provide state and local agencies and the public with detailed information on the potentially significant environmental effects which a proposed project is likely to have and to provide ways in which those effects may be minimized and indicate alternatives to the project.

Sections of the State Fish and Game Code pertaining to the protection of birds – Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3505.5 makes it unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds-of-prey, i.e.: owls, hawks, eagles, etc.) or to take, possess, or destroy the nest or eggs of any bird-of-prey. Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA.

3.0 BACKGROUND ON THE BURROWING OWL

The burrowing owl, a member of the Strigidae (the typical owls' family), is a small, tan, short-tailed, ground-dwelling owl. Since it both nests and roosts underground it is uniquely vulnerable to ground disturbing activities. The burrowing owl is federally designated as a Bird of Conservation Concern and state designated as a Species of Special Concern. Burrowing owl is protected by the federal Migratory Bird Treaty Act (U.S. Fish and Wildlife Service "USFWS" 2022), and California Fish and Game Code Sections 3503, 3503.5, 3513, & 3800 (California Legislative Information 2022).

It occurs in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation (Haug et al. 2011). In southern California, burrowing owls are not only found in undisturbed natural areas, but also fallow agricultural fields, margins of active agricultural areas, livestock farms, airports, and vacant lots. Burrowing owls are opportunistic in their selection of burrows, typically utilizing the burrows of small mammal burrows, drainpipes, culverts, and other suitable natural or manmade cavities at or below ground level. In the project area, California ground squirrel (*Otospermophilus beecheyi*) and kit fox (*Vulpes macrotis*) burrows are important natural burrow sources. Burrows and other areas occupied by burrowing owls can be recognized by sign including tracks, molted feathers, cast pellets, prey remains, eggshell fragments, owl white wash, and nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other

animal manure, etc.) (California Department of Fish and Game "CDFG" 2012). The species may be active both day and night and may be seen perching conspicuously on fence posts or standing at the entrance of their burrows. Due to the characteristic fossorial habits of burrowing owls, nesting and roosting burrows are a critical component of their habitat.

Analyses of regional patterns for breeding populations of burrowing owls have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced breeding range retraction. Threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter. Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land

4.0 METHODS

4.1 Literature Review and Records Search

A literature review and record search were conducted to identify burrowing owl occurrences in the project vicinity. The review included:

- A report from the California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB) for a five-mile radius of the project site (CDFW 2022),
- Aerial photographs, and
- Pertinent documents from the Wood library and project files (*e.g.*, other biological surveys from the general vicinity).

4.2 Focused Surveys

Habitat was assessed for the burrowing owl by Wood senior biologist John F. Green on 22 and 28 March 2022. The habitat assessment included visually inspecting and noting all areas of the site and adjacent areas (a 150-meter buffer around the site) for components of burrowing owl habitat. Habitat was present, so a burrow survey was conducted from 5 through 12 April 2022. The four focused surveys were conducted on 11-12 April, 4 & 27 May, and 6 July 2022. The focused survey visits were all conducted between morning civil twilight sunrise and 10:00 AM.

Straight line transects spaced no more than 20 meters apart (ten meters apart on the project site) were walked throughout all suitable areas of the site and buffers in order to identify occupiable habitat. Where access was not possible, binoculars were used to scan for owls and habitat. Burrows suitable for burrowing owl occupation were recorded with a Global Positioning System (GPS), and closely monitored and inspected during each subsequent visit for evidence of burrowing owl sign.

Binoculars were used to identify birds and to survey perches and potential burrows prior to closer approach. Survey personnel, dates, times, and weather conditions are presented in Table 1 below.

Table 1. Burrowing Owl Survey Data

Date (2022)	Surveyor(s)	Time	% Cloud Cover, Wind miles per hour (mph)	Temperature °Fahrenheit	Burrowing Owl Observed?
Burrow Survey 5-12 April	See below*	Full day	Suitable for detection of burrows	N/A	No
Focused Survey 1 11 April	John Green	0700-1000	Clear (0%), winds 1-3 mph	60-71°F	No
Focused Survey 1 12 April	John Green	0700-1000	Clear (0%), winds 4-12 mph	46-54°F	No
Focused Survey 2 4 May	John Green	0535-0850	Clear (0%), winds 0-3 mph	62-73°F	No
Focused Survey 3 27 May	John Green	0500-0910	0-5% cover, winds 3-8 mph	72-81°F	No
Focused Survey 4 6 July	John Green	0540-0940	Clear (0%), winds 5-6 mph	74-86°F	No

*John Green, Nathan Moorhatch, Michael Wilcox, Alec Williams, Phil Clevinger, Lauryn Duoto, Emily Urquidi, Kevin Salgado, and Melanie Bukovac.

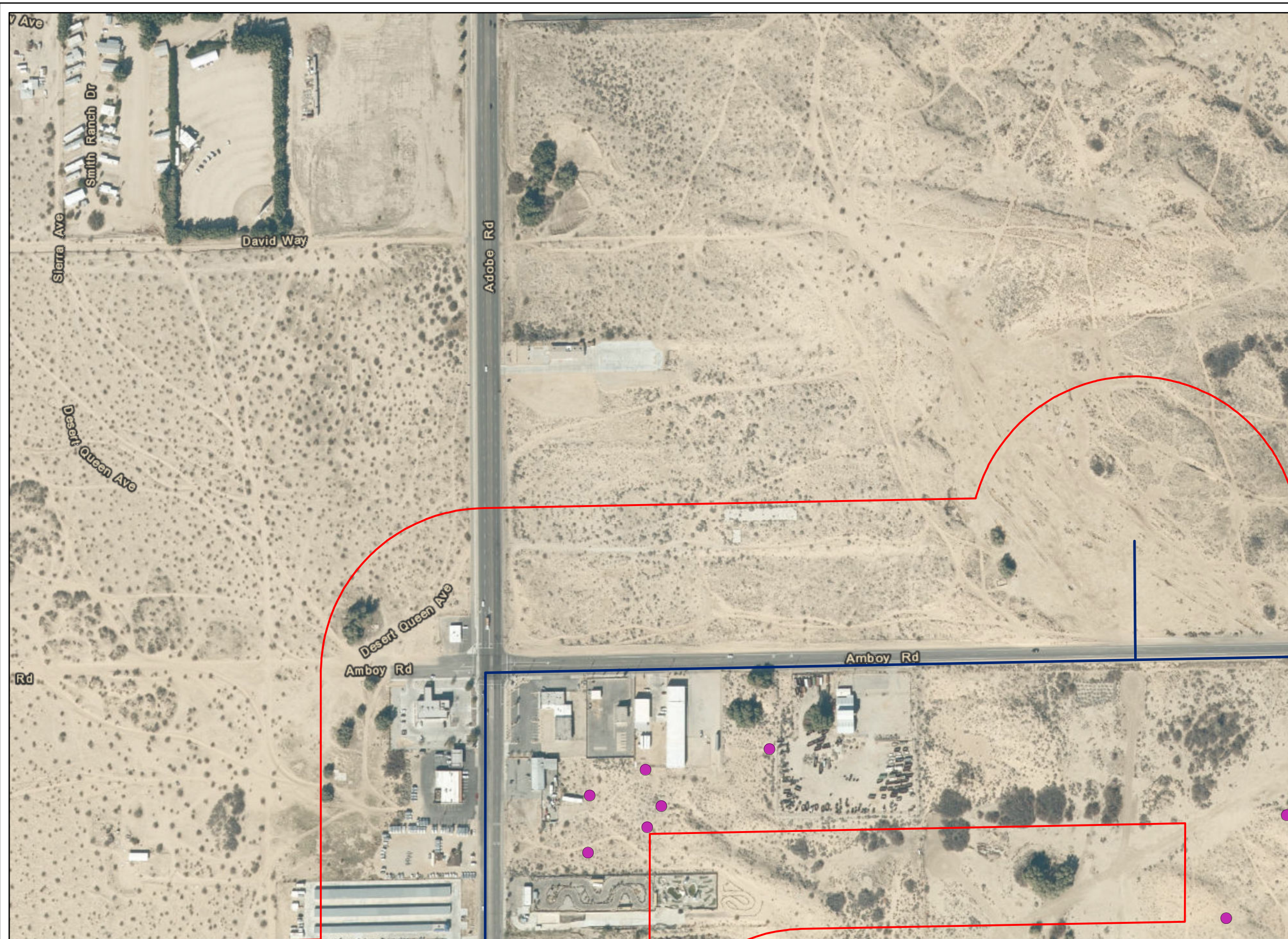
5.0 RESULTS

5.1 Literature Review and Records Search

The nearest known record of burrowing owl is approximately five miles northeast of the project site.

5.2 Focused Surveys

Potential burrows and burrow surrogates are shown on Figure 4. No burrowing owls or their sign were detected. All vertebrate species detected were recorded in field notes and are included in Appendix A. Photographs of potential burrowing habitat were taken. A sample of these can be seen in Appendix B and on the cover page of this report.



- Survey Area
- Proposed Trunk Sewer - Phase 1
- potential burrowing owl burrow

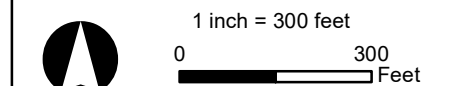
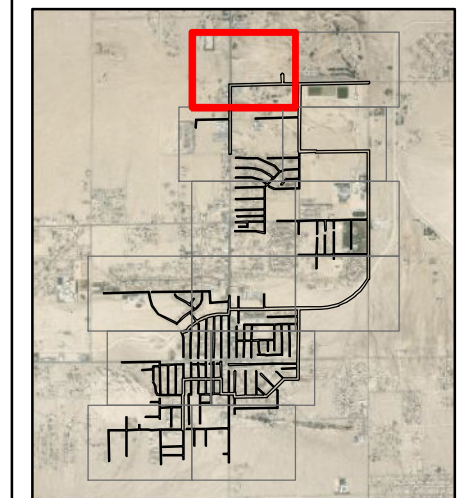
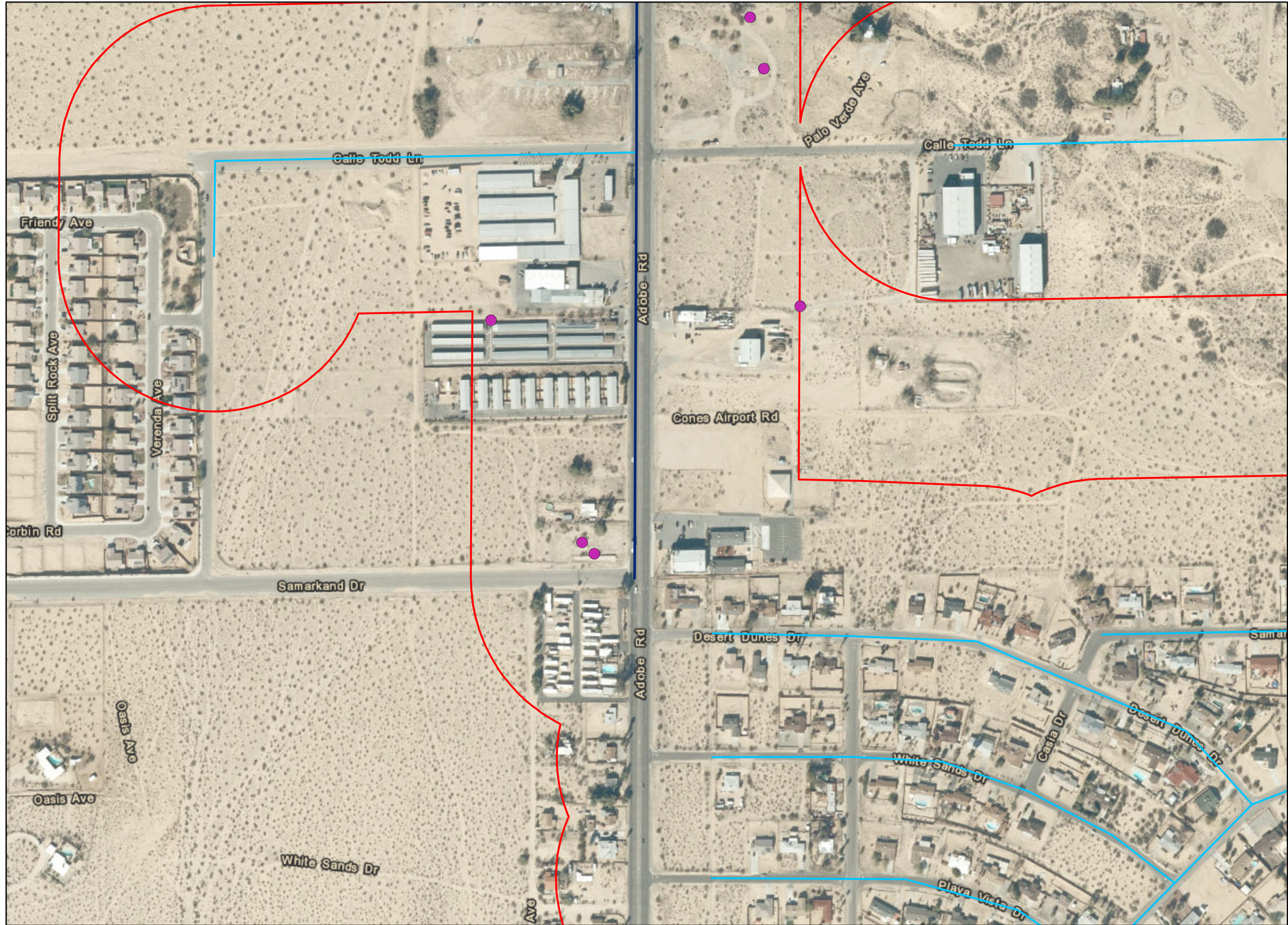






FIGURE 4a
Burrowing Owl Focused Survey
Twentynine Palms Wastewater
Collection System, Phases 1 & 2
Twentynine Palms, CA

wood.

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



-  Survey Area
-  Proposed Trunk Sewer - Phase 1
-  Proposed Collector Sewer
-  potential burrowing owl burrow

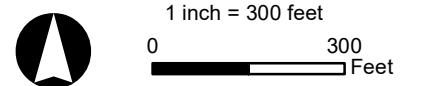
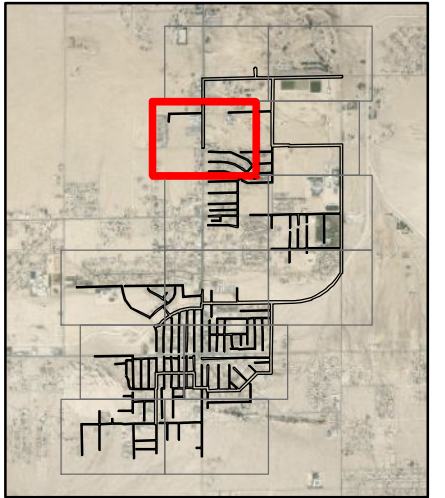
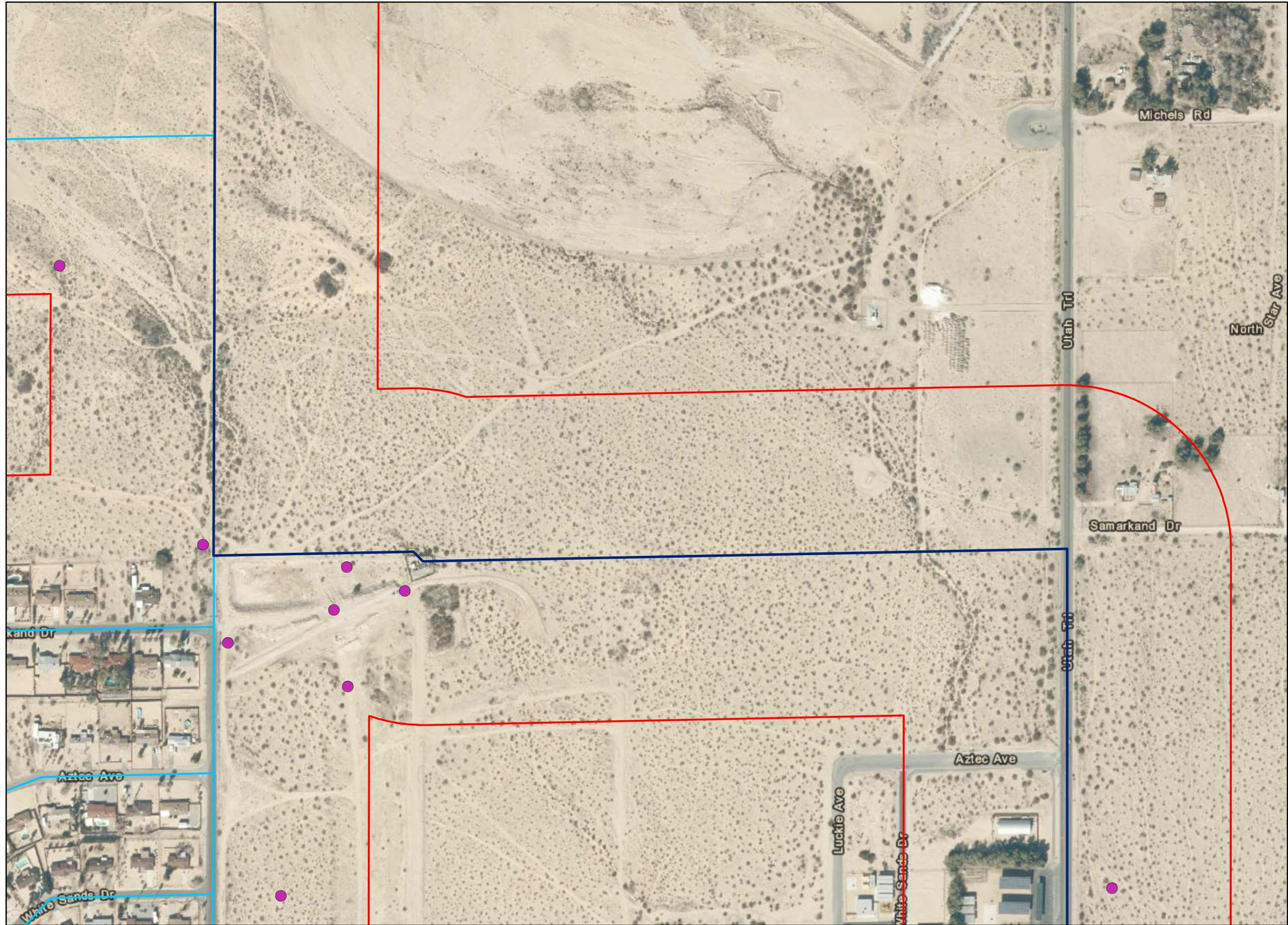


FIGURE 4b
Burrowing Owl Focused Survey
Twentynine Palms Wastewater
Collection System, Phases 1 & 2
Twentynine Palms, CA



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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

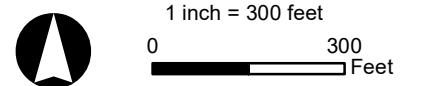
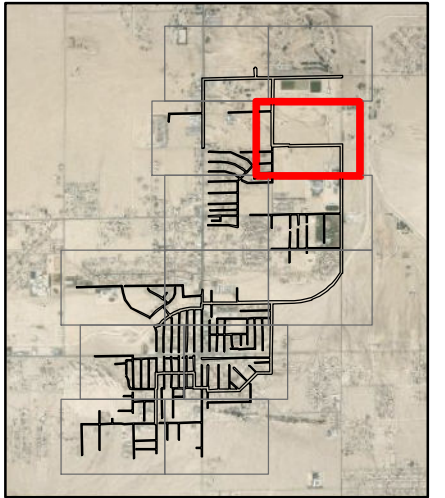
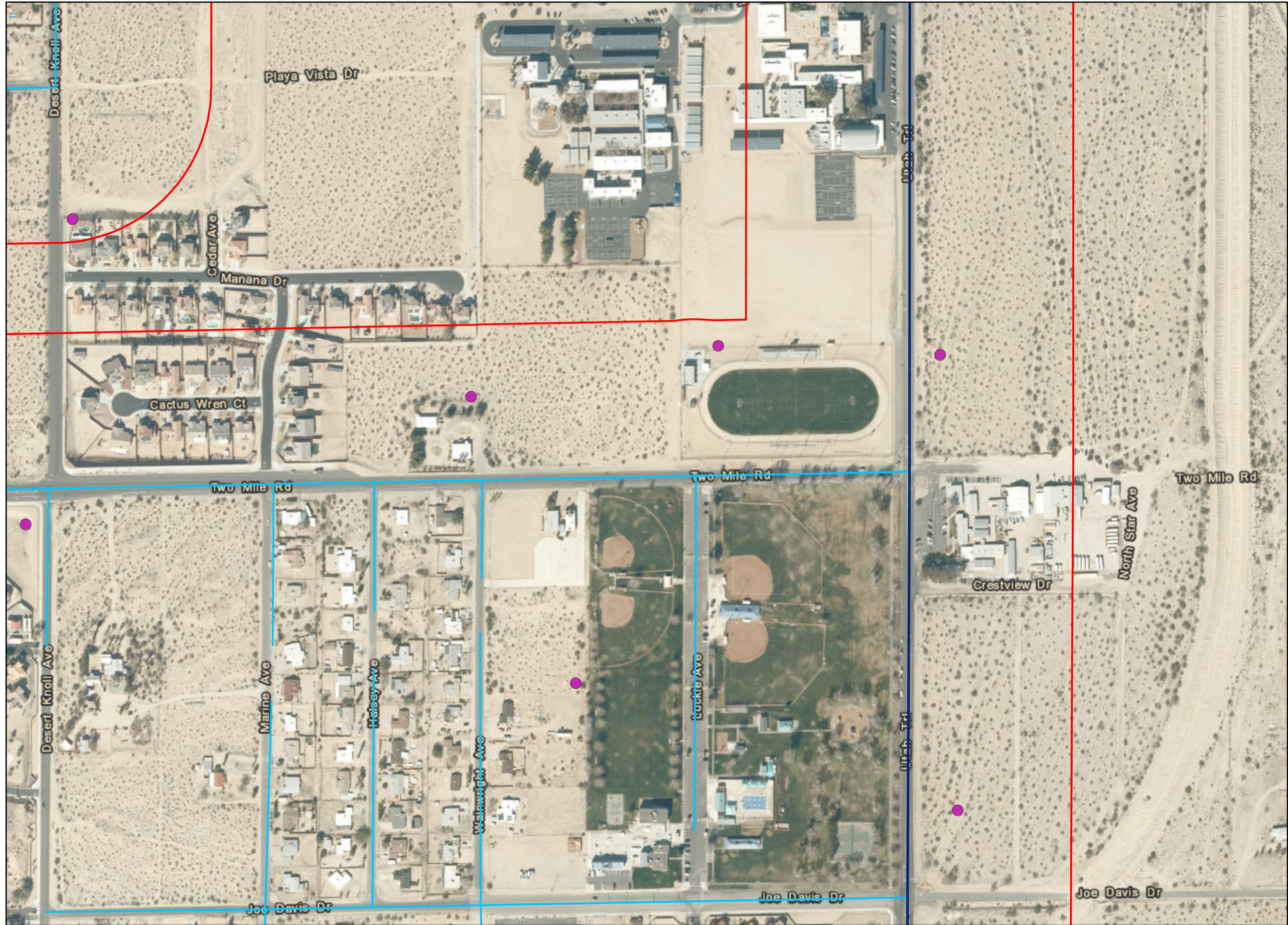


FIGURE 4c

Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA



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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

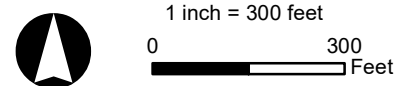
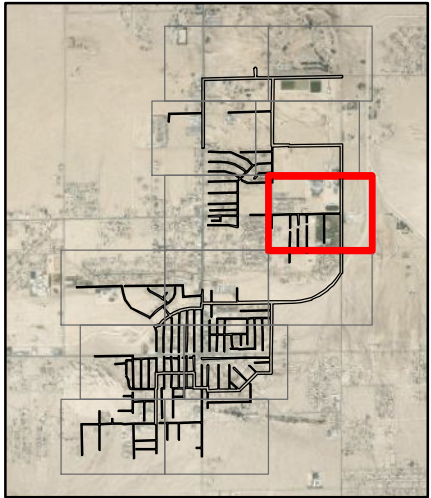
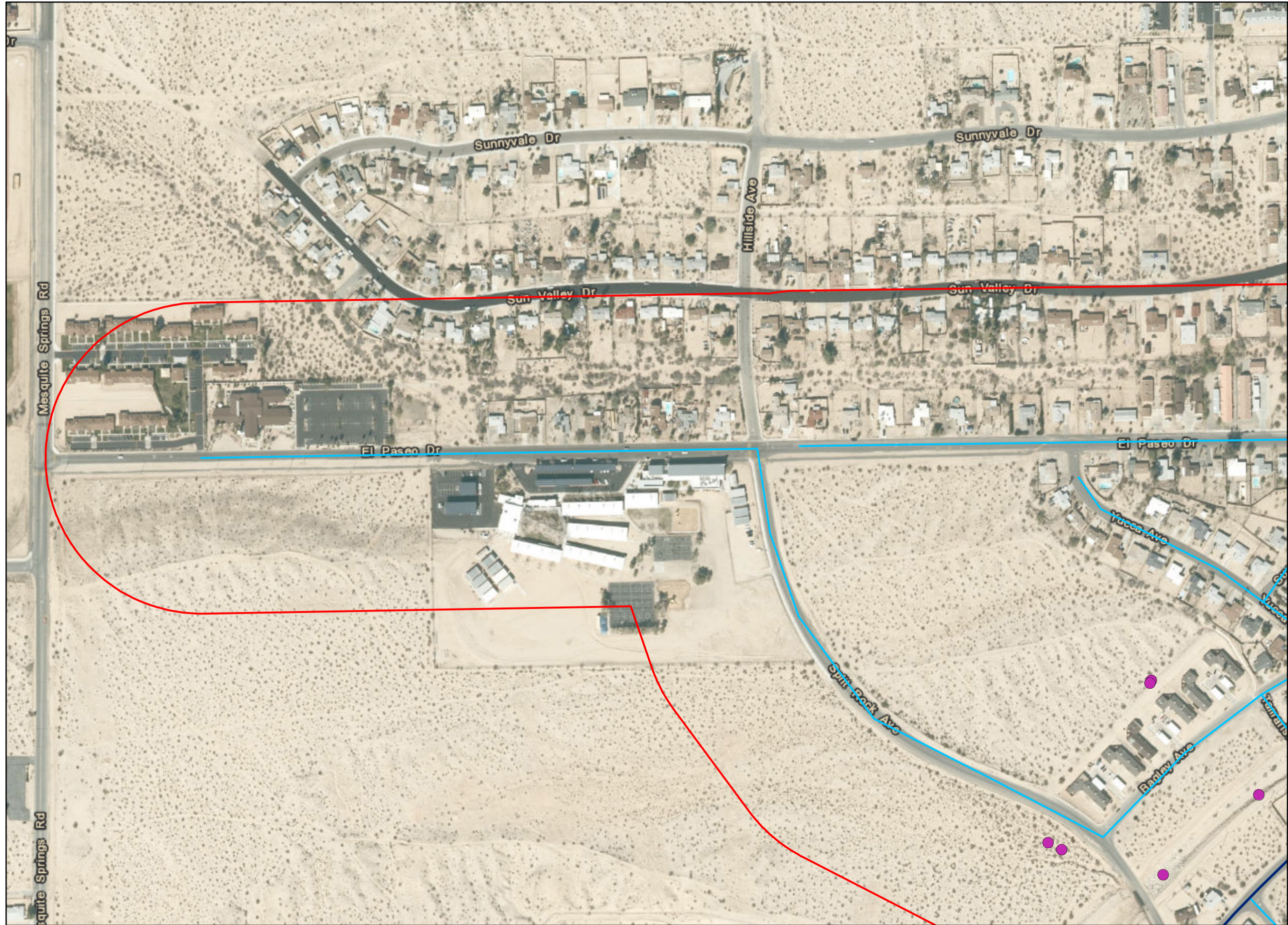


FIGURE 4b
 Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA

wood.

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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

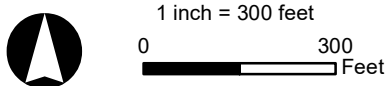
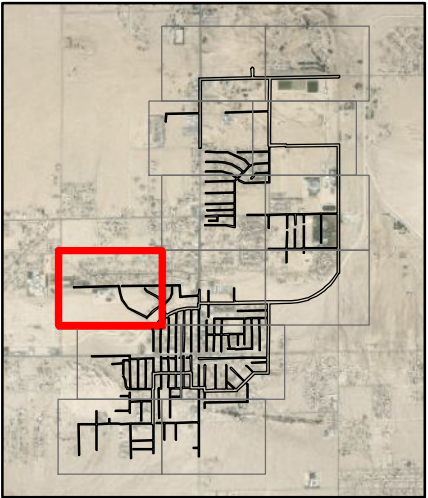
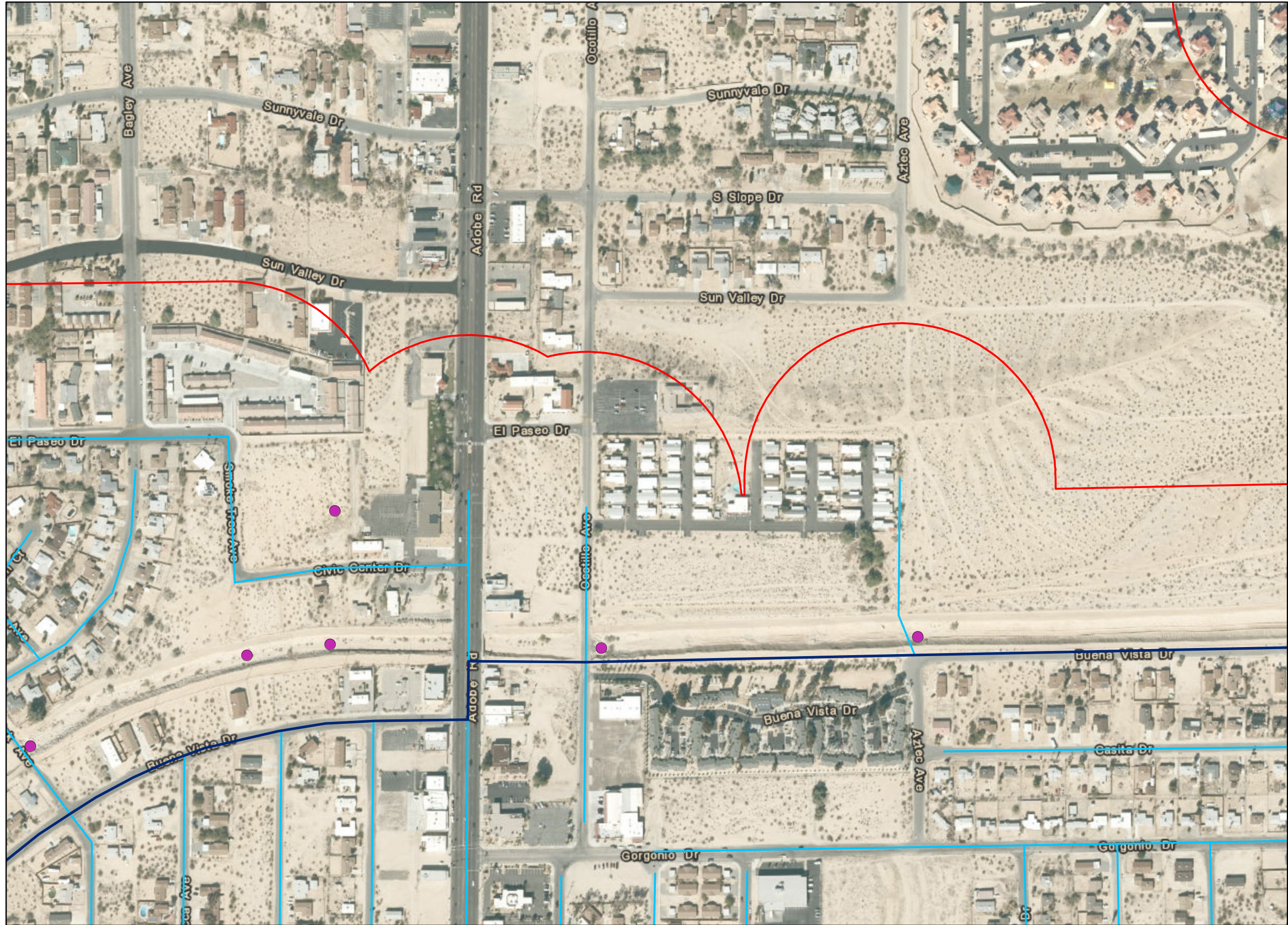


FIGURE 4e
Burrowing Owl Focused Survey
Twentynine Palms Wastewater
Collection System, Phases 1 & 2
Twentynine Palms, CA



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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

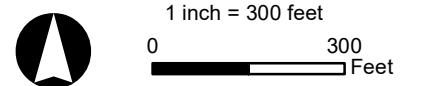
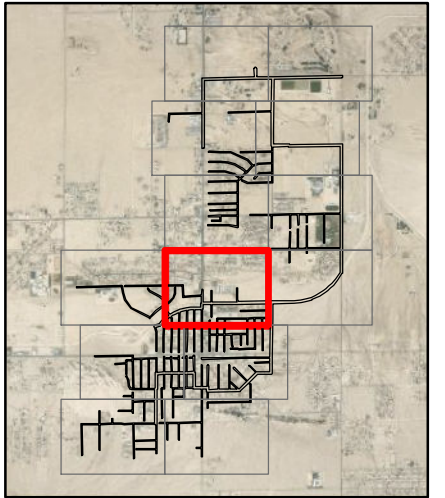
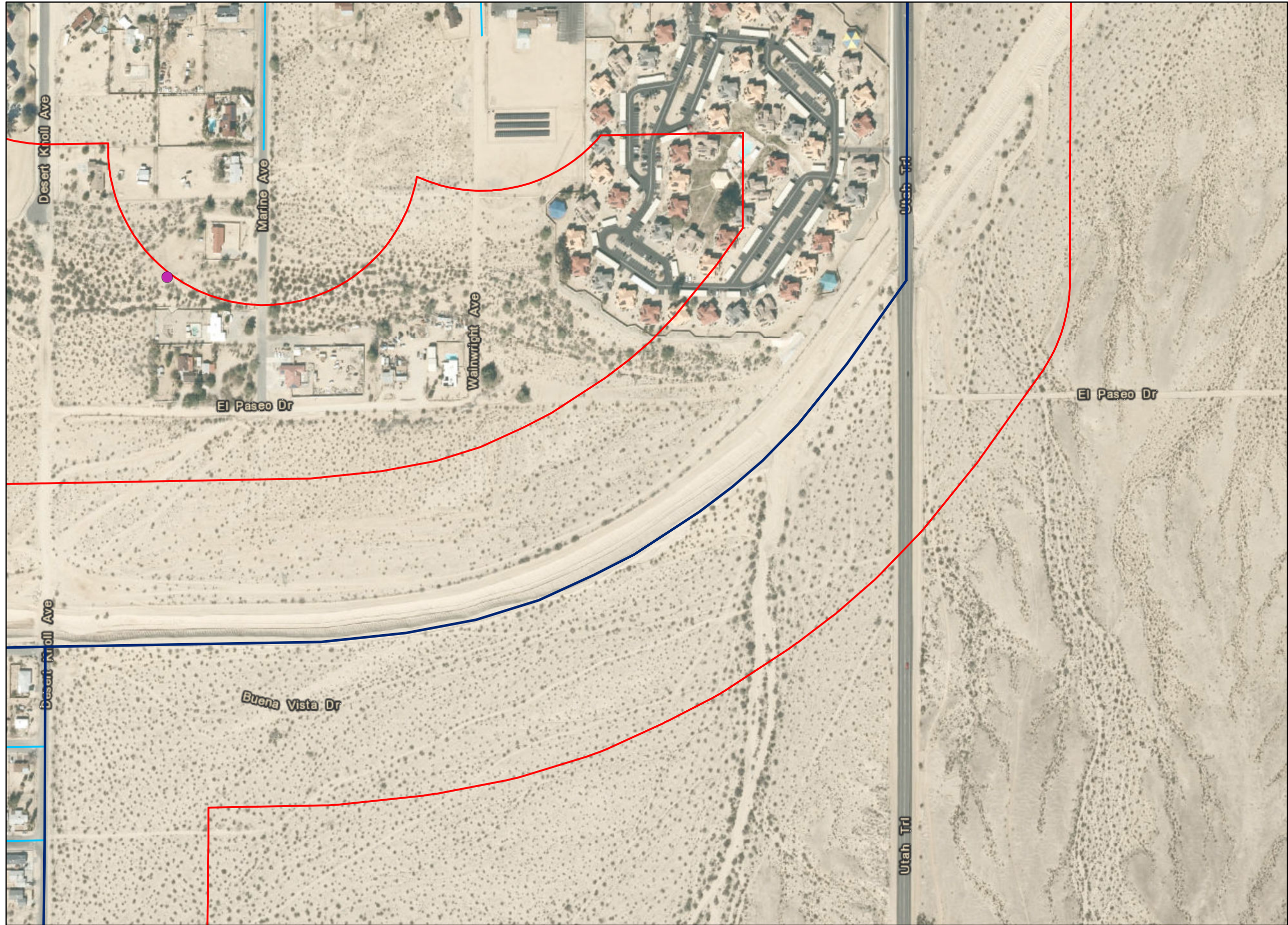


FIGURE 4f
 Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA



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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

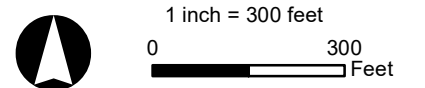
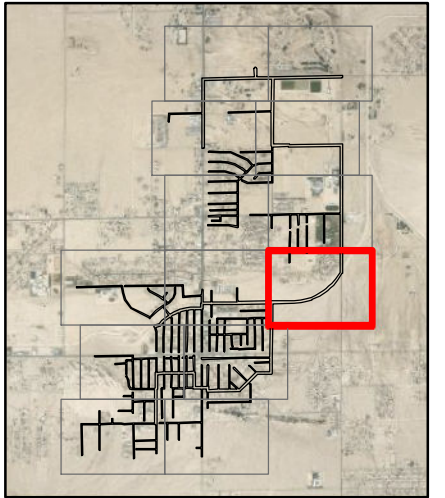
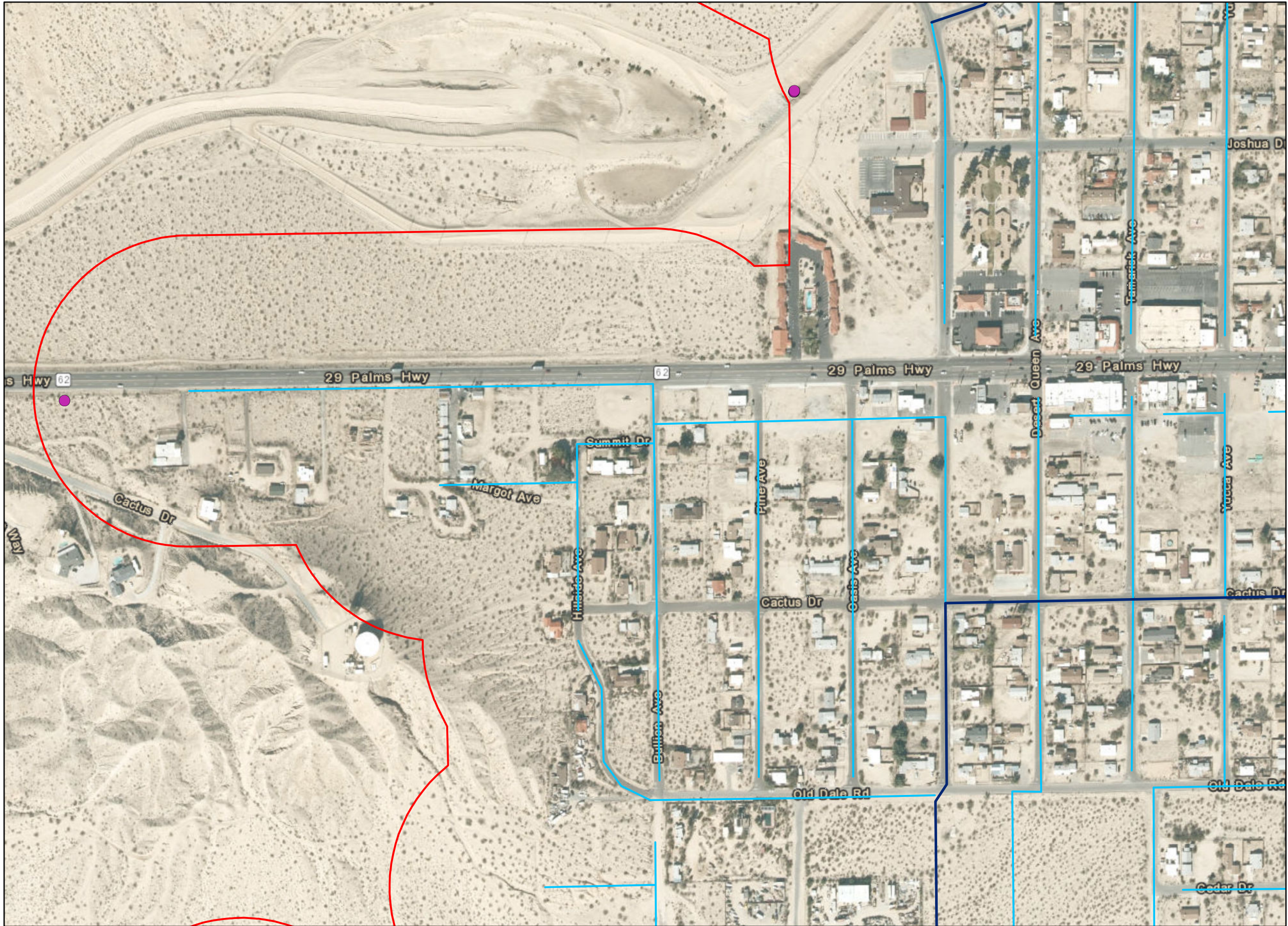


FIGURE 4g
 Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA

wood.

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 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

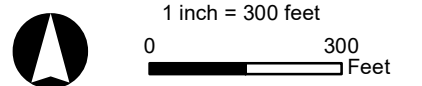
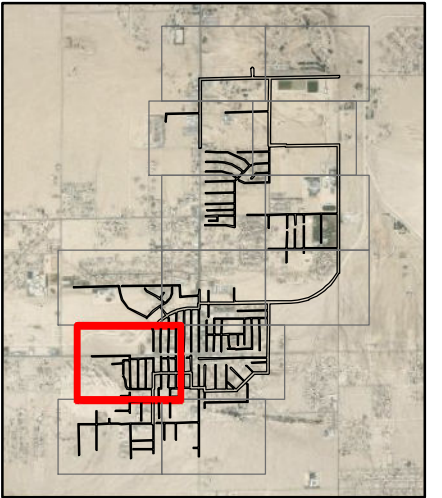
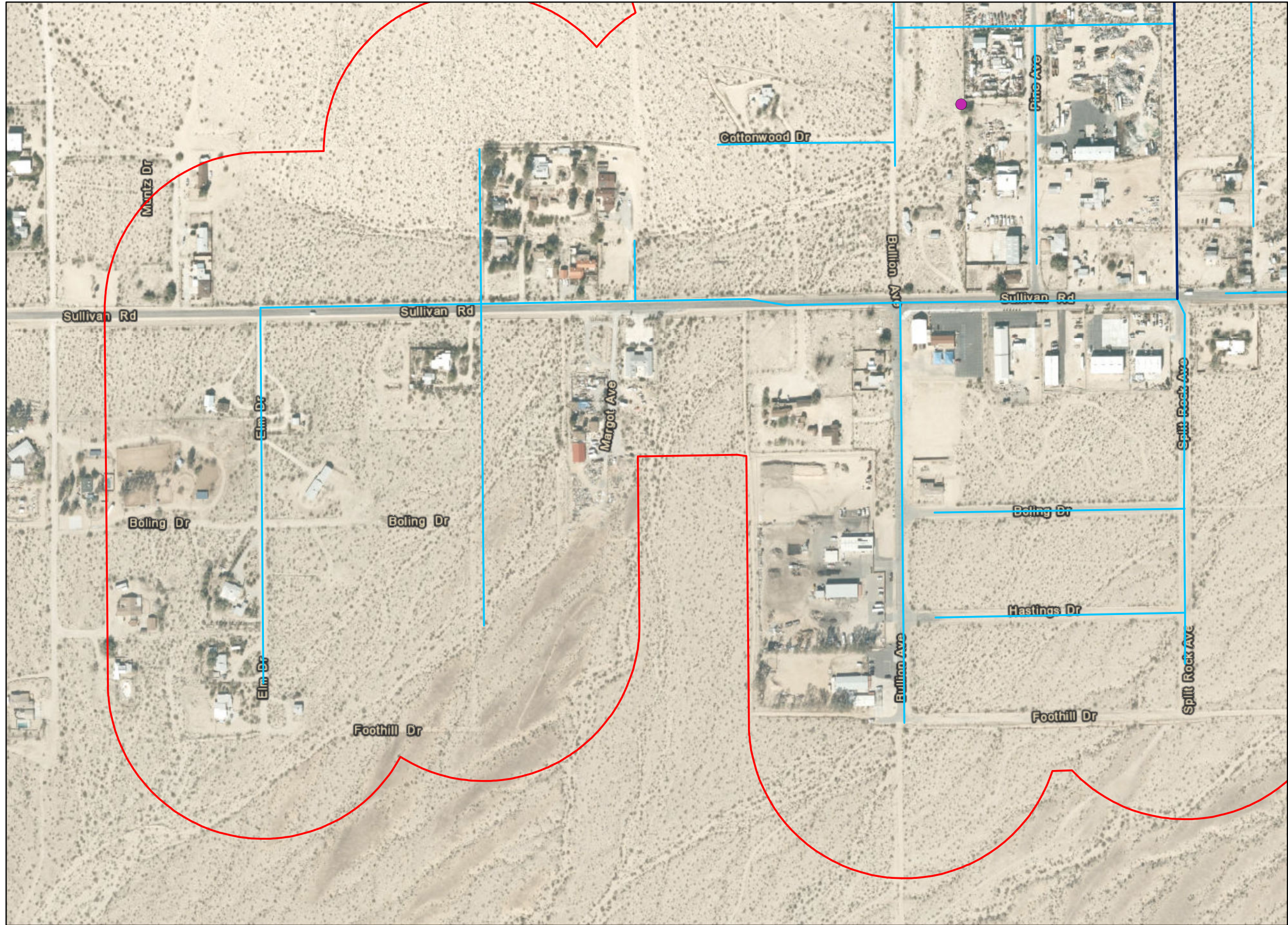


FIGURE 4c
 Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA

wood.

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- Survey Area
- Proposed Trunk Sewer - Phase 1
- Proposed Collector Sewer
- potential burrowing owl burrow

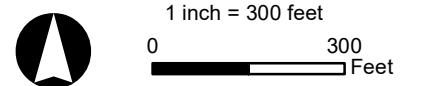
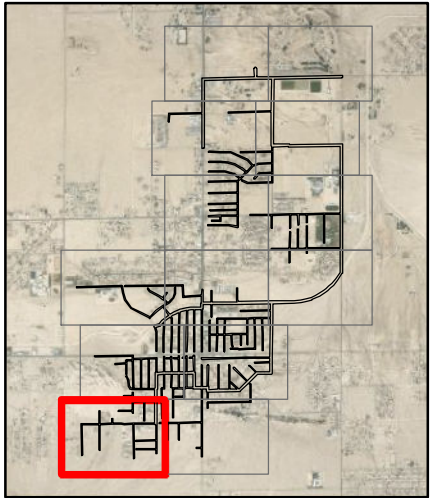
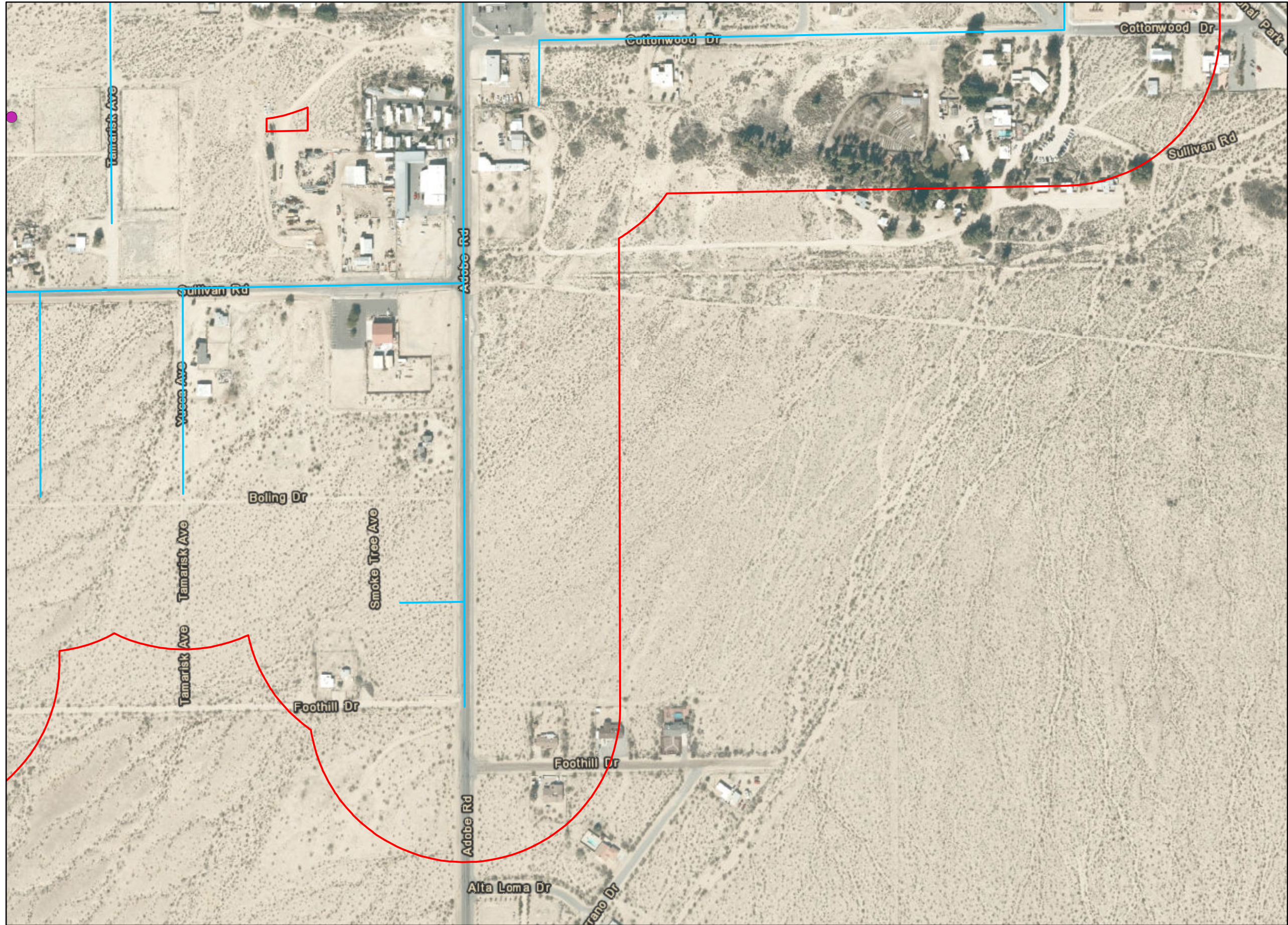


FIGURE 4d
 Burrowing Owl Focused Survey
 Twentynine Palms Wastewater
 Collection System, Phases 1 & 2
 Twentynine Palms, CA





- Survey Area
- Proposed Collector Sewer
- potential burrowing owl burrow

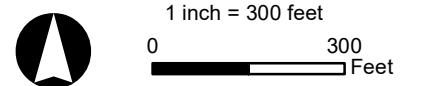
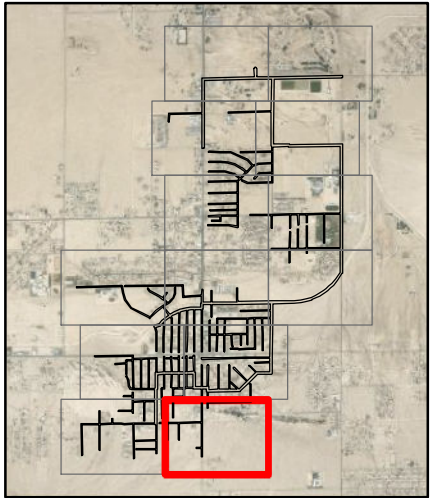


FIGURE 4j
Burrowing Owl Focused Survey
Twentynine Palms Wastewater
Collection System, Phases 1 & 2
Twentynine Palms, CA



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6.0 DISCUSSION

Focused surveys did not detect burrowing owls or their sign, but suitable habitat is present and widespread. Therefore, although burrowing owls are absent at this time, the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) requires preconstruction take avoidance surveys for burrowing owls in case the site has been occupied in the interim between the focused surveys and initiation of construction:

"Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls. Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance."

If burrowing owls are found during take avoidance surveys and are unavoidable, guidelines in CDFG (2012) will need to be followed and consultation with the CDFW may be required.

7.0 REFERENCES

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Appendix A Vertebrate Species Detected

REPTILIA

Eublepharidae

Coleonyx variegatus

Iguanidae

Dipsosaurus dorsalis

Phrynosomatidae

Uta stansburiana

Callisaurus draconoides

Sceloporus uniformis

Teiidae

Aspidoscelis tigris

Colubridae

Pituophis catenifer

Chionactis occipitalis

Viperidae

Crotalus cerastes

AVES

Odontophoridae

Callipepla gambelii

Columbidae

**Columba livia*

**Streptopelia decaocto*

Zenaida asiatica

Zenaida macroura

Cuculidae

Geococcyx californianus

Caprimulgidae

Chordeiles acutipennis

Trochilidae

Calypte anna

***Calypte costae*

***Selasphorus rufus*

Charadriidae

Charadrius vociferus

Cathartidae

Cathartes aura

Accipitridae

***Accipiter cooperii*

Buteo jamaicensis

REPTILES

Eyelid Geckos

western banded gecko

Iguanas

desert iguana

Spiny Lizards

common side-blotched lizard

zebra-tailed lizard

yellow-backed spiny lizard

Whiptails and Relatives

tiger whiptail

Colubrid Snakes

gopher snake

western shovel-nosed snake

Vipers

sidewinder

BIRDS

New World Quail

Gambel's quail

Pigeons and Doves

rock pigeon

Eurasian collared dove

white-winged dove

mourning dove

Cuckoos, Roadrunners, and Anis

greater roadrunner

Nightjars

lesser nighthawk

Hummingbirds

Anna's hummingbird

Costa's hummingbird

rufous hummingbird

Plovers

killdeer

New World Vultures

turkey vulture

Hawks and Eagles

Cooper's hawk

red-tailed hawk

Picidae

Colaptes auratus
Dryobates scalaris

Falconidae

Falco sparverius

Tyrannidae

Myiarchus cinerascens
Tyrannus verticalis
Contopus sordidulus
Sayornis nigricans
Sayornis saya
***Pyrocephalus rubinus*

Corvidae

Corvus corax

Remizidae

Auriparus flaviceps

Alaudidae

Eremophila alpestris

Hirundinidae

Tachycineta bicolor

Regulidae

Corthylio calendula

Ptilogonatidae

Phainopepla nitens

Poliophtilidae

Poliophtila caerulea
***Poliophtila melanura*

Troglodytidae

Thryomanes bewickii
Campylorhynchus brunneicapillus

Mimidae

***Toxostoma lecontei*
Mimus polyglottos

Sturnidae

**Sturnus vulgaris*

Turdidae

Catharus ustulatus
Turdus migratorius

Passeridae

**Passer domesticus*

Woodpeckers

northern flicker
ladder-backed woodpecker

Falcons

American kestrel

Tyrant Flycatchers

ash-throated flycatcher
western kingbird
western wood-pewee
black phoebe
Say's phoebe
vermillion flycatcher

Crows and Jays

common raven

Penduline Tits and Verdins

verdin

Larks

horned lark

Swallows

tree swallow

Kinglets

ruby-crowned kinglet

Silky-flycatchers

phainopepla

Gnatcatchers and Gnatwrens

blue-gray gnatcatcher
black-tailed gnatcatcher

Wrens

Bewick's wren
cactus wren

Mockingbirds and Thrashers

LeConte's thrasher
northern mockingbird

Starlings

European starling

Thrushes

Swainson's thrush
American robin

Old World Sparrows

house sparrow

Fringillidae

Haemorhous mexicanus
Spinus psaltria

Passerellidae

Amphispiza bilineata
***Spizella breweri*
Zonotrichia leucophrys
Passerculus sandwichensis

Icteridae

Icterus bullockii
Agelaius phoeniceus
Molothrus ater
Euphagus cyanocephalus
Quiscalus mexicanus

Parulidae

Leiothlypis celata
Setophaga coronata
Cardellina pusilla

Cardinalidae

Piranga ludoviciana

MAMMALIA

Leporidae

Lepus californicus
Sylvilagus audubonii

Muridae

Neotoma sp.

Sciuridae

Ammospermophilus leucurus
Otospermophilus beecheyi
Xerospermophilus tereticaudus

Canidae

Canis latrans

Rodentia

≥ one fossorial species (includes *Dipodomys* sp.)

Cricetidae

Neotoma sp.

Fringilline & Cardueline Finches & Allies

house finch
lesser goldfinch

New World Sparrows

black-throated sparrow
Brewer's sparrow
white-crowned sparrow
savannah sparrow

Blackbirds

Bullock's oriole
red-winged blackbird
brown-headed cowbird
Brewer's blackbird
great-tailed grackle

Wood-Warblers

orange-crowned warbler
yellow-rumped warbler
Wilson's warbler

Cardinals and Allies

western tanager

MAMMALS

Rabbits

black-tailed jackrabbit
desert cottontail

Mice, Rats, and Voles

wood rat (middens)

Squirrels

white-tailed antelope ground squirrel
California ground squirrel
round-tailed ground squirrel

Coyotes, Dogs and Wolves

coyote

Rodents

burrows

Mice, Rats and Voles

woodrat (middens)

KEY

- * = non-native species
- ** = special-status species
- cf. = compares favorably with
- sp. = identified to genus only

This list reports only vertebrate animals observed on the site by this study. Other species may have been overlooked or undetectable due to their activity patterns and/or subterranean habitats. Nomenclature and taxonomy for fauna follows California Bird Records Committee (2022) for avifauna and California Department of Fish and Wildlife (2016) for herpetofauna and mammals.

Appendix B Photographs



Photo 1. Example of potential burrowing owl habitat (mammal burrow).



Photo 2. Example of potential burrowing owl habitat (concrete rubble, abandoned pipes).



Photo 3. Examples of potential burrowing owl habitat (riprap, concrete slab with cavities beneath).



Photo 4. Example of potential burrowing owl habitat (construction debris).