BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Certificate of Public Convenience and Necessity for the Coolwater-Lugo Transmission Project	)))))	A.13-08-XXX

PROPONENT'S ENVIRONMENTAL ASSESSMENT

COOLWATER-LUGO TRANSMISSION PROJECT

Volume 6 of 7

This PEA is being filed separately from the application and is being submitted as an archival DVD and CD ROM

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Volume 6 of 7

APPENDIX D

BIOLOGICAL RESOURCE SURVEY REPORTS

APPENDIX D
TABLE OF CONTENTS

GENERAL HABITAT ASSESSMENT REPORT FOR THE COOLWATER-LUGO TRANSMISSION PROJECT SAN BERNARDINO COUNTY, CALIFORNIA

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Table of Contents

List of Tables

List of Figures

List of Attachments

1.0 INTRODUCTION

This report documents and describes the existing conditions and biological resources in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to biological resources that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

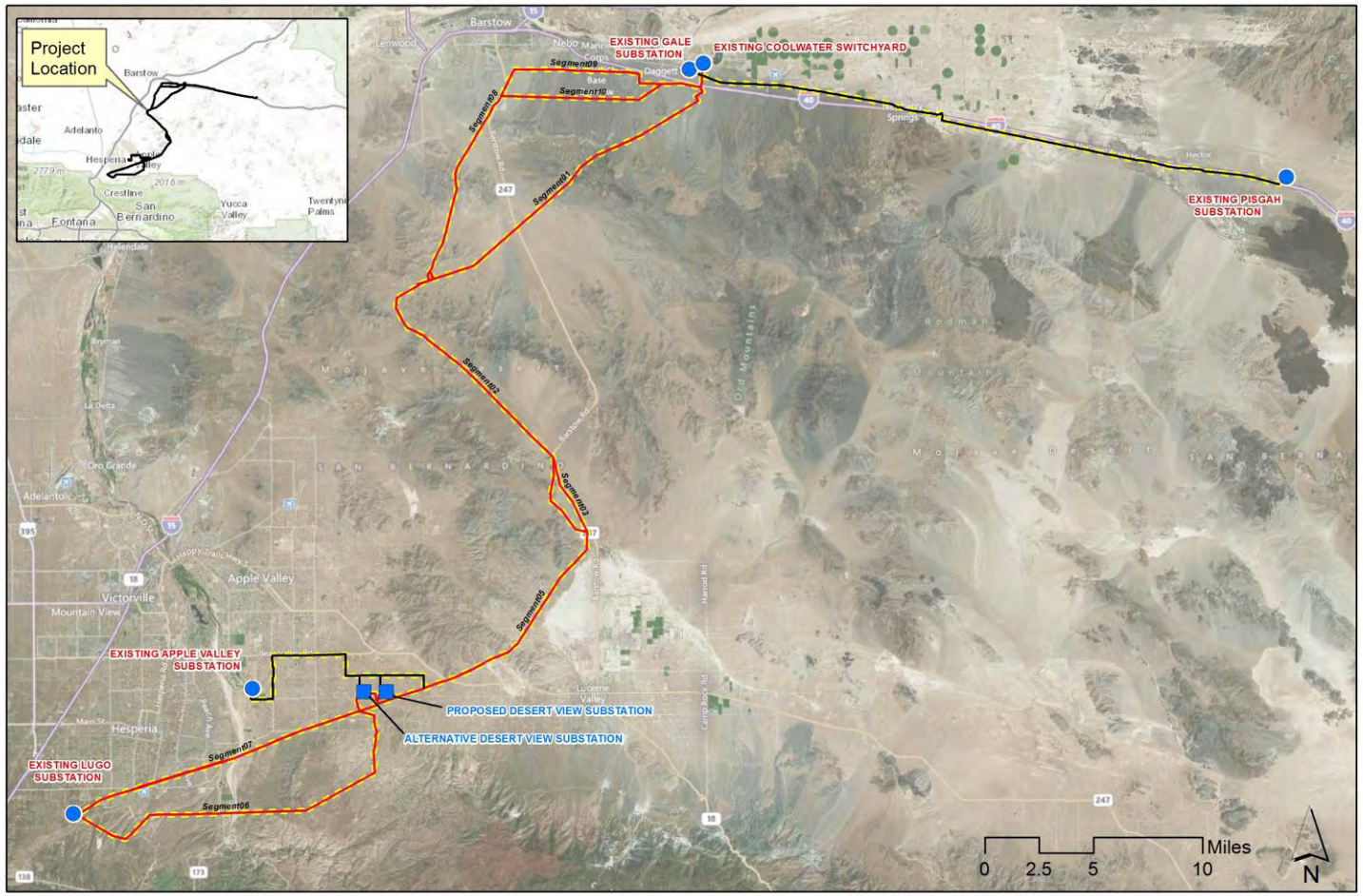
1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

Figure 1. Project Location



1.3 Regulatory Setting

1.3.1 Federal Regulations

Endangered Species Act (16 United States Code [U.S.C.] § 1531 et seq.)

The Endangered Species Act of 1973 ("ESA") provides for the protection of plant and wildlife species listed by the federal government as "endangered" or "threatened", and "the ecosystems upon which they depend." An "endangered" species is one that is "in danger of extinction" throughout all or a significant portion of its range. A "threatened" species is one that is "likely to become endangered" within the foreseeable future. Pursuant to Section 9 of the ESA, it is unlawful for any person to "take" a federally listed species. "Take," as defined by the ESA, "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." This can also include the modification of a species' habitat. For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land, and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S.C. § 1538(c)).

When non-federal entities such as states, counties, local governments, and private landowners wish to conduct an otherwise lawful activity that might incidentally, but not intentionally, "take" a listed species, an incidental take permit (ESA § 10(a)(1)(B)) must first be obtained following formal consultation with the USFWS, through the development of a habitat conservation plan.

Endangered Species Act Section 7 Consultation

Section 7 of the ESA requires that Federal agencies develop a conservation program for listed species and that they avoid actions that will further harm species and their critical habitat. Section 7 directs all Federal agencies to insure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat. The implementing regulations, 50 CFR 402, specify how Federal agencies are to fulfill their section 7 consultation requirements. Federal agencies must review their actions and determine whether the action may affect federally listed and proposed species or proposed or designated critical habitat. To accomplish this, agencies must request from the Service a list of species and critical habitat that may be in the project area or they can request our concurrence with their species list. Once a species list is obtained or verified as accurate, agencies need to determine whether actions may affect any of those species or their critical habitat. This consultation will conclude either informally with written concurrence from the Service or through formal consultation with a biological opinion provided to the Federal agency.

Migratory Bird Treaty Act (16 U.S.C. §§ 703 - 712)

The Migratory Bird Treaty Act of 1918 ("MBTA") protects species of native, non-game, migratory birds. Specific provisions in the statute include a federal prohibition, except as allowed under specific conditions, to:

> "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by

any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." (16 U.S.C. § 703).

Bald and Golden Eagle Protection Act (16 U.S.C. § 668)

The Bald and Golden Eagle Protection Act of 1940 ("BGEPA") provides for the protection of bald and golden eagles. The BGEPA establishes criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Clean Water Act of 1972

Enacted in 1972, the federal Clean Water Act ("CWA") and subsequent amendments outline the basic protocol for regulating discharges of pollutants to waters of the U.S. It is the primary federal law applicable to water quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. Enforced by the U.S. Environmental Protection Agency ("USEPA"), it was enacted "… to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA authorizes states to adopt water quality standards and includes programs addressing both point and non-point pollution sources. The CWA also established the established the National Pollutant Discharge Elimination System ("NPDES"), and provides the USEPA the authority to implement pollution-control programs, such as setting wastewater standards for industry and water quality standards for surface waters (see below for a discussion of the NPDES program).

In California, programs and regulatory authority under the CWA have been delegated by USEPA to the State Water Resources Control Board ("SWRCB") and its nine Regional Water Quality Control Boards ("RWQCBs"). Under Section 402 of the CWA, potential discharges are regulated by the NPDES permit process, which requires projects that disturb 1 or more acres to obtain NPDES coverage under the General Permit for each state (CWA Section 402).

The SWRCB and RWQCBs have also developed numeric and narrative water quality criteria to protect beneficial uses of State waters and waterways.

Section 401 – Water Quality Certification

Section 401 of the CWA specifies that, for any activity that may result in a discharge into waters of the U.S., the SWRCB or applicable RWQCB must certify that the discharge will comply with state water quality standards, including beneficial uses (23 CCR 3830, et seq.). Under California's policy of no net loss of wetlands, the SWRCB and RWQCBs require mitigation for dredge and fill impacts to wetlands and waterways. Dredge and fill activities in wetlands and waterways that impact waters of the U.S. require a federal Section 404 permit from the U.S. Army Corps of Engineers ("USACE"). Before a Section 404 permit can be issued, a Section 401 certification must first be obtained from the RWQCB.

Section 404 – Permitting for Dredge and Fill Activities in Wetlands and Waters of the U.S.

The USACE is responsible for issuing permits under CWA Section 404 for placement of fill or dredged material in waters of the U.S. and jurisdictional wetlands. Waters of the U.S. refers to oceans, bays, rivers, streams (including non-perennial streams with a defined bed and bank), lakes, ponds, and seasonal and perennial wetlands.

Project proponents must obtain a permit from the USACE for all discharges of fill or dredged material before proceeding with a proposed activity. The USACE may issue either an individual permit or a general permit. General permits are preauthorized at the regional or national level and are issued to cover activities expected to result in only minimal adverse environmental effects (e.g., LA District Regional General Permit No. 63 for Repair and Protection Activities in Emergency Situations). Nationwide Permits ("NWP") are a type of general permit issued to cover activities that the USACE has determined to have minimal adverse effects, such as routine maintenance (Nationwide Permit 3) or utility line activities (Nationwide Permit 12). Each NWP specifies particular conditions that must implemented by the permittee.

Bureau of Land Management Desert Conservation Plan

In 1976 Congress passed the Federal Land Policy Management Act to direct the management of the public lands of the United States. In that law a special section, Section 601, was included to give direction about the California Desert Conservation Area. Section 601 required the preparation of a comprehensive long-range plan for the area. The purpose of the Desert Conservation Plan is to establish guidance for BLM management of the public lands in the California Desert, in accordance with the intent of the Federal Land Policy Management Act. The Proposed Project is located within the California Desert Conservation Area.

Bureau of Land Management West Mojave Plan

The West Mojave Plan ("Plan") is a habitat conservation plan and federal land use plan amendment that (1) presents a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel ("MGS") and nearly 100 other sensitive plants and wildlife and the natural communities of which they are a part, and (2) provides a streamlined program for complying with the requirements of the California and Federal Endangered Species Acts (CESA and FESA, respectively). The 9,359,070 acre planning area is located to the north of the Los Angeles metropolitan area. The Plan's conservation program applies to both public and private lands within this area. These lands include 3,263,874 acres of BLM administered public lands, 3,029,230 acres of private lands, and 102,168 acres of lands administered by the State of California. The Plan will be consistent with the integrated natural resource management plans that have been adopted for 2,667,445 acres of military lands, and with programs being implemented on nearly 300,000 acres of lands within Joshua Tree National Park.

1.3.2 State Regulations

California Fish and Game Code Sections 1600-1616, Lake and Streambed Alteration Program

If a project includes alteration of the bed, banks or channel of a stream, or the adjacent riparian vegetation, then a Streambed Alteration Agreement ("SAA") may be required from CDFW. California Fish and Game Code ("FGC") Sections 1600-1616, regulate activities that could alter

the flow, bed, banks, channel or associated riparian areas of a river, stream or lake—all considered "waters of the state." The law requires any person, state or local governmental agency or public utility to notify CDFW before beginning an activity that will substantially modify a river, stream, or lake.

California Endangered Species Act (California Fish and Game Code § 2050, et seq.)

The CESA generally parallels the provisions of the federal ESA, and states that "all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved." The CDFW administers the CESA and has committed itself to work with all interested persons, agencies, and organizations to protect and preserve such sensitive resources and their habitats.

Under the CESA, "endangered" is defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range" and "threatened" is defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts." "Take" is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" an individual of a species, but the definition does not include "harm" or "harass," as the ESA does. As a result, the threshold for a take under the CESA is higher than that under the ESA.

Consistent with the CESA, CDFW has established lists of endangered, threatened, and candidate species that may or may not also be included on an ESA list. Pursuant to FGC Section 2081, CESA allows for incidental take permits to otherwise lawful development projects that could result in the take of a state-listed threatened or endangered species. The application for an incidental take permit under Section 2081(b) has a number of requirements including the preparation of a conservation plan, generally referred to as a habitat conservation plan. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project-caused losses of listed species.

Native Plant Protection Act (California Fish and Game Code §§ 1900 - 1913, § 2062 and § 2067)

The Native Plant Protection Act identifies the types of plant species eligible for state listing. Eligible species include those identified on California Native Plant Society ("CNPS") Rare Plant Ranks ("RPR") 1A, 1B, and 2 meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or sections 2062 and 2067 ("CESA") of the Fish and Game Code. Plants with CNPS listings 3 and 4 do not explicitly qualify for legal protection, but can be addressed in California Environmental Quality Act ("CEQA") documents depending on the circumstances and opinion of the biologist conducting the assessment. RPR definitions are as follows:

1A: Plants presumed to be extinct because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct in California, as well as those plants that are presumed extirpated in California. A plant is extinct in California

if it no longer occurs in or outside of California. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

1B: Plants that are rare throughout their range with the majority of them endemic to California. Most of the plants of RPR 1B have declined significantly over the last century.

2: Plants that are rare throughout their range in California, but are common beyond the boundaries of California. RPR 2 recognizes the importance of protecting the geographic range of widespread species (CNPS 2010).

3: A review list for plants for which there is inadequate information to assign them to one of the other lists or to reject them.

4: A watch list for plants that are of limited distribution or infrequent throughout a broader area in California and their vulnerability or susceptibility to threat appears relatively low at this time.

California Fish and Game Code Sections 3500-3516, and 3800

FGC 3513 furthers the intent of the MBTA by prohibiting any take or possession of birds in California that are designated by the MBTA as migratory nongame birds, except as allowed by federal rules and regulations promulgated pursuant to the MBTA. In addition, FGC Sections 3503, 3503.5, 3511, and 3800 further protect nesting birds and their parts, including passerine birds, raptors, and state "fully protected" birds. These regulations protect almost all native nesting birds, not just special-status birds.

California Fish and Game Code Sections 3511, 4700, 5050, and 5515

FGC Sections 3511, 4700, 5050, and 5515 list the bird, mammal, reptile, amphibian, and fish species that are identified as "fully protected." Fully protected wildlife may not be harmed, taken, or possessed. The classification of "fully protected" was the state's initial effort to identify and provide additional protection to those wildlife that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts; white-tailed kite, golden eagle, trumpeter swan, northern elephant seal and ring-tailed cat are the exceptions. The white-tailed kite and the golden eagle are tracked in the CNDDB; the trumpeter swan, northern elephant seal and ring-tailed cat are not.

California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation (2012)

This document provides CDFW's comprehensive conservation and mitigation strategy for burrowing owls, a California species of concern. CDFW determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, including developing more rigorous burrowing owl survey methods; working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level. The 2012 Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the earlier 1995 Staff Report.

California Public Resources Code Sections 4292 and 4293

Section 4292 directs the owner, controller, operator, or maintainer of electrical transmission lines in mountainous land, or forest-covered land, brush-covered land, or grass-covered land to maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower, and to maintain a clearance of 4 feet from any line which is operating at 2,400 or more volts, but less than 72,000 volts.

Section 4293 directs the owner, controller, operator, or maintainer of electrical transmission lines in mountainous land, or forest-covered land, brush-covered land, or grass-covered land to maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:

- For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
- For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
- For any line which is operating at 110,000 or more volts, 10 feet.

In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard.

California Public Utilities Commission, General Order 95, Rule 35, Vegetation Management

Rule 35 mandates that certain vegetation management activities be performed in order to establish necessary and reasonable clearances, and establishes minimum clearances between line conductors and vegetation that under normal conditions shall be maintained. These requirements apply to all overhead electrical supply and communication facilities that are covered by General Order 95, including facilities on lands owned and maintained by California state and local agencies.

California Desert Native Plants Act, Food and Agricultural Code Section 80071-80075

The California Desert Native Plants Act was passed in 1981 to protect non-listed California desert native plants from unlawful harvesting on both public and privately owned lands. Harvest, transport, sale, or possession of specific native desert plants is prohibited unless a person has a valid permit, or wood receipt, and the required tags and seals.

1.3.3 Local Regulations

The California Public Utilities Commission ("CPUC") has sole exclusive state jurisdiction over the siting and design of Coolwater-Lugo because the CPUC regulates and authorizes the construction of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section XIV.B

requires "the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain a nondiscretionary local permit." As part of its environmental review process, Southern California Edison ("SCE") considers local and State land use plans, and policies, and local land use priorities and concerns.

County of San Bernardino General Plan Conservation Element

The Conservation Element provides direction regarding the conservation, development, and utilization of the San Bernardino County's natural resources. Its objective is to prevent the wasteful exploitation, destruction and neglect of resources. The Conservation Element is distinguished by being primarily oriented toward natural resources. Population growth and development continually require the use of both renewable and nonrenewable resources. One role of the Conservation Element is to establish policies that reconcile conflicting demands on those resources. The Conservation Element involves both identification of a community's natural resources and adoption of policies for their preservation, development, and wise use.

City of Hesperia General Plan Conservation Element

The purpose of the Conservation Element is to provide the public, decision makers, and staff a guide to set policy that will identify resources that should be preserved, and set the foundation for preservation of these resources by utilizing a variety of tools that will promote the sustainability and environmental integrity of the City of Hesperia. This element establishes the City's priorities as they relate to natural, historical and paleontological resources and outline the means for their preservation.

Apple Valley Multi Species Habitat Conservation Plan

The Apple Valley Multi-Species Habitat Conservation Plan ("MSHCP") is under development and is intended to guide the Town's conservation efforts; allowing the Town to preserve its open space, protect threatened and endangered species, and maintain its high-desert character. The plan will safeguard features and areas that warrant protection; plus assure that future development within the Town and its Sphere of Influence is compliant with Federal & State Endangered Species Acts. The MSHCP will also streamline the environmental permitting process.

2.0 METHODOLOGY

Prior to field surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain a list of federal- and state-listed resources, including sensitive plants and wildlife in the region. The results of these preliminary database searches provided a basis for addressing the appropriate special-status resources in the footprint of the Proposed Project components and immediate surroundings (collectively referred to as the Biological Resources Project Area). The biological resources assessment included general biological surveys and habitat suitability assessments for special-status plant and wildlife species within the Project Area and a 500-foot buffer on either side of the alignment ("Survey Area"). Non-linear features such as substations were surveyed within boundary of the feature. Additionally, literature was reviewed to identify potential special-status plants or wildlife within 5 miles of the

Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area.

2.1 Literature and Database Review

Information about documented special-status plant and animal species, as well as sensitive habitats known to occur in the vicinity of the Project, was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include: California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2010); *The Jepson Manual: Higher Plants of California* (Baldwin 2012); *A Manual of California Vegetation* (Sawyer et al. 2009); *The CalFlora Database* (CalFlora 2012); *The Sibley Field Guide to Birds of Western North America* (Sibley 2003); the *eBird* website (Cornell Lab of Ornithology and National Audubon Society, Inc. 2012); the *California Fish Species* website (University of California 2012); the *California Herps: A Guide to the Amphibians and Reptiles of California* website (California Herps. 2012); the *USFWS Critical Habitat Portal* website (USFWS 2012); *Fish Species of Special Concern* (Moyle et al. 1995), and *California Wildlife Habitat Relationships* software (CDFW 2005).

2.2 Survey Methodology

Biological reconnaissance surveys were conducted to describe and map the vegetation present in the Study Area and to evaluate the potential of the habitats to support special-status plant and wildlife species.

Surveys from March 28 to April 27, 2012 were conducted by walking 45-meter-wide transects. Surveys were conducted out to 150 meters (~500 feet) from either side of the center line of the Project. Surveys from May 21 to June 7, 2013 were conducted by a combination of driving and walking new/revised areas of the Project alignment. Vegetation was mapped in the field using aerial photographs to delineate the extent of each vegetation community within the Survey Area.

Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993) or Baldwin (2012). Nomenclature generally follows Sawyer et al. (2009) for vegetation types and communities, and Calflora (2012), Baldwin (2012), and current scientific data (e.g., scientific journals) for individual plant species.

Surveys for wildlife species included searching for and identifying species' diagnostic signs including audible calls, prints, scat, nests, skeletal remains, and burrows, and habitat features (rock or debris piles, cavities, and rock outcrops) that may attract and/or support special-status

species. Taxonomy and nomenclature for wildlife generally follows Collins and Taggert (2009) for amphibians and reptiles, American Ornithologists Union (AOU 1998) for birds, and Baker et al. (2003) for mammals.

Special-status Plants and Wildlife

Plants or wildlife may be considered to have special status due to declining populations, vulnerability to habitat change, restricted distributions, or insufficient knowledge of the species biological status. Species are considered to have special status if they meet one or more of the criteria detailed in Section 1.3 (Regulatory Setting). Special-status plant and animal species known to occur, or with the potential to occur, are listed in Tables 1 and 2, and occurrences documented in CNDDB are shown on **Figure 2 (Attachment A)**.

Using information from the various listed sources and floral and faunal surveys of the area, the potential for special-status species to occur within the Project Area was assessed as high, medium, or low based on the following criteria:

- **High:** CNDDB or other documented occurrences have been recorded within 1.0 mile of the Project and suitable habitat is present (suitable nesting or roosting habitat for bird and bat species). Individuals were observed during field surveys, or the species could be present.
- **Medium:** CNDDB or other documented occurrences have been recorded within 5 miles of the Project Area and suitable habitat is present (suitable nesting or roosting habitat or high quality foraging areas for bird and bat species). Individuals were not observed during field surveys; however, the species could be present.
- **Low:** Suitable or marginal habitat may occur in the Project Area but: no CNDDB records of the species have been recorded within recent years, records of the species within 5 miles of the Project Area are suspected to be now extirpated or potentially misidentified with other species, or individuals were not observed during field surveys and are not anticipated to be present. For bird and bat species, this category may be used for species that are documented, but likely to be only transient through the area during foraging or migratory movements, no suitable nesting or roosting habitat is present.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
desert sand verbena (*Abronia villosa* var. *aurita*)	1B.1, BLM, USFS	Occurs in chaparral, coastal scrub, and desert dunes or sandy areas. Found at elevations of 75 - 1600 meters. Blooming Period January – September.	Low	CNDDB occurrences and suitable habitat present within project area.
Cienega Seca oxytheca (*Acanthoscyphus parishii* var. *cienegensis*)	1B.3, USFS	Occur in Joshua tree woodland, Pinyon/ juniper woodland, Upper montane coniferous forest habitats with sandy or granitic soils. Found at elevations of 2105 - 2450 meters Known blooming period is June – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Cushenbury oxytheca (*Acanthoscyphus parishii* var. *goodmaniana*)	FE, 1B.1, USFS	Found in Pinyon and juniper woodlands with carbonate, or talus, or sandy soils). Found at elevations of 1219 - 2377 meters. Species is only known from occurrences in San Bernardino County. Known Blooming period is from May - October.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Scrub lotus (*Acmispon argyraeus* var. *multicaulis*)	BLM	Occurs in Pinyon and juniper woodlands with granitic soils. Found at elevations from 1200 - 1500 meters. Species is only known form occurrences in San Bernardino County. Known blooming period is from April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Utah agave (*Agave utahensis* var. *eborispina*)	BLM	Found in Mojavean desert scrub habitat with rocky slopes at elevations ranging from 945 - 1370 meters. Known blooming period is from May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Small-flowered androstephium (*Androstephium breviflorum*)	2B.2	Occurs in Desert Dunes and Mojavean desert scrub. Blooms March – April.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
San Bernardino milk-vetch (*Astragalus bernardinus*)	1B.2, BLM	Found in Pinyon/juniper woodland and Joshua tree woodland habitats with granitic or carbonate soils. Found at elevations from 900 - 2000 meters. Blooming period is from April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
black milk-vetch (*Astragalus funereus*)	BLM	Found in gravelly or rocky areas of Mojavean desert scrub habitat with clay soils at elevations from 1280 - 2100 meters. Known blooming period is from March – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Lane Mountain milk-vetch (*Astragalus jaegerianus*)	BLM	Occurs in Joshua tree woodland, Mojavean desert scrub with granitic, sandy or gravelly soils. Found at elevations of 900 - 1200 meters. Species is only known from San Bernardino County. Known blooming period April – June.	**Medium**	Potential suitable habitat present, but no CNDDB occurrences near project area.
Fish Slough milk-vetch (*Astragalus lentiginosus* var. *piscinensis*)	FT, 1B.1	Occurs in alkaline Playas at elevation of 1130 - 1300 meters. Known blooming period is from June – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *sierrae*)	1B.2, USFS	Found in Mojavean desert scrub, Meadows and seeps, Pinyon/juniper woodland, Upper montane coniferous forest habitat with gravelly or rocky soils. Found at elevations of 1800 - 2600 meters. Known blooming period is from April – August.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Tidestrom's milk-vetch (*Astragalus tidestromii*)	2.2	Occurs on sandy or gravelly soils of Mojavean desert scrub at elevations of 600 - 1585 meters. Known blooming period is from April – July.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
triple ribbed milk-vetch (*Astragalus tricarinatus*)	FE, 1B.2, USFS	Found in Joshua tree woodland and Sonoran desert scrub habitats with sandy or gravelly soils. Occurs at elevations from 450 - 1190 meters Known blooming period is from February – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Pahrump orache (*Atriplex argentea* var. *longitrichoma*)	1.B1, BLM	Found in disturbed areas of Mojavean desert scrub habitat with alkaline soils. Known blooming period is from April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Parish's brittlescale (*Atriplex parishii*)	1B.1, USFS	Occurs in disturbed areas of Mojavean desert scrub with alkaline soils at elevations from 700 - 850 meters. Known blooming period is from April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Harrison's barberry (*Berberis harrisoniana*)	1B.2, BLM	Usually found on north-facing talus slopes of Chaparral and	Low	No CNDDB occurrences near project area. No suitable habitat in project area.
pinyon rock cress (*Boechera dispar*)	2.3	Occurs in Joshua tree woodland, Mojavean desert scrub, and Pinyon/juniper woodland habitats with granitic, gravelly soils at elevations of 1200 - 2540 meters. Known blooming period is March – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Shockley's rock-cress (*Boechera shockleyi*)	2.2, USFS	Found in Pinyon/juniper woodlands with rocky or gravelly soils at elevations of 875 - 2310 meters. Known blooming period is from May – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
alkali mariposa lily (*Calochortus striatus*)	1B.2, BLM, USFS	Found in mesic chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps habitats with alkaline soils. Found at elevations of 70 - 1595 meters. Known blooming period of April – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Booth's evening primrose (*Camissonia boothii* ssp.*boothii*)	2.3	Occurs in Joshua tree woodland and Pinyon and juniper woodland. Found at elevations ranging from 900 - 2,400 meters. Known blooming period of April – September.	**High**	Observed within project area. Suitable habitat present within project area.
white pygmy-poppy (*Canbya candida*)	4.2, USFS	Found in sandy places in Joshua tree woodland, Mojavean scrub, and pinyon/juniper woodland. Mojave desert adjacent to the Sierra Nevadas Found at elevations of 610 - 1200 meters. Known blooming period April – September.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
Crucifixion thorn (*Castela emoryi*)	2.3	Occurs in areas of Mojavean desert scrub, Playas, Sonoran desert scrub habitats with gravelly soils. Found at elevations of 90 - 670 meters. Known blooming period of April – September.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
ashgray Indian paintbrush (*Castilleja cinerea*)	FT, 1B.2, USFS	Found in openings within Mojavean desert scrub, Meadows, seeps, Pebble (Pavement) plain, Pinyon/juniper woodland, and Upper montane coniferous forest habitats with clay soils at elevations of 1800 - 2960 meters. Known blooming period of June – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Wheeler's skeletonweed (*Chaetadelpha wheeleri*)	2.2	Occurs in Desert dunes, Great Basin scrub, and Mojavean desert scrub habitats with sandy soils at elevations of 850 - 1900 meters. Known blooming period of April – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Tecopa bird's beak (*Chloropyron tecopense*)	1B.2	Found in mesic Mojavean desert scrub, meadows and seeps with alkaline soils. Found at elevations of 60 - 900 meters. Known blooming period of July – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
white bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)	1B.2, BLM	Found in coastal scrub, Mojavean desert scrub, Pinyon/juniper woodland habitats with sandy or gravelly soils at elevations of 300 - 1200 meters. Known blooming period of April – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Hall's meadow hawksbeard (*Crepis runcinata* ssp. *hallii*)	2.1	Found in mesic areas of Mojavean desert scrub and Pinyon/ juniper woodland habitats with alkaline soils at elevations of 1250 - 1978 meters. Known blooming periods of May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Clokey's cryptantha (*Cryptantha clokeyi*)	1B.2, BLM	Found in Mojavean desert scrub habitat at elevations of 725 - 1365 meters. Known blooming period of April.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
desert cymopterus (*Cymopterus deserticola*)	1B.2, BLM	Found in Joshua tree woodland and Mojave desert scrub habitats with sandy soils. Occurs at elevation of 630 - 1500 meters. Known only to occur in Kern, Los Angeles, and San Bernardino Counties. Known blooming period of March – May.	Low	CNDDB occurrences and suitable habitat present within project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Arizona cymopterus (*Cymopterus multinervatus*)	2.2	Found in Mojavean desert scrub, Pinyon/juniper woodland habitats with sandy or gravelly soils at elevations of 790 - 1800 meters. Known blooming period March – April.	**High**	CNDDB occurrences and suitable habitat present within project area.
San Bernardino Mountains dudleya (*Dudleya abramsii* ssp.*affinis*)	1B.2, USFS	Found in Pebble (Pavement) plain, Pinyon/juniper woodland, and Upper montane coniferous forest habitats with granitic or carbonate soils at elevations of 1250 - 2600 meters. Known blooming period of April – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Howe's hedgehog cactus (*Echinocereus engelmannii* var. *howei*)	1B.1, BLM	Found in Mojavean desert scrub habitat at elevations of 430 - 775 meters. Known blooming period of April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Big Bear Valley sandwort (*Eremogone ursina*)	FT, 1B.2, USFS	Occurs in mesic, rocky areas within Meadows, Seeps, Pebble (Pavement) plain, Pinyon/juniper woodland at elevations of 1800 - 2900 meters. Known blooming period of May – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Harwood's eriastrum (*Eriastrum harwoodii*)	1B.2, BLM	Occurs in Desert dunes at elevations of 200 - 915 meters. Known blooming period March – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Parish's daisy (*Erigeron parishii*)	FT, 1B.1, USFS	Found in Mojavean desert scrub and Pinyon/juniper woodland habitats at elevation of 800 - 2000 meters. Known blooming period May – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
limestone daisy (*Erigeron uncialis* var. *uncialis*)	1B.2, USFS	Found in Great Basin scrub, Pinyon/juniper woodland, and Subalpine coniferous forest habitats at elevations of 1900 - 2900 meters. Known blooming period of May – July.	Low	No CNDDB occurrences near project area. Project is outside of species range

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*)	FE, 1B.1, USFS	Found in Joshua tree woodland, Mojavean desert scrub, and pinyon/ juniper woodland habitats. Found at elevations of 1400 - 2440 meters. Known blooming period is May – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Thorne's buckwheat (*Eriogonum thornei*)	SE, 1B.2, BLM	Occurs in Pinyon/juniper woodlands with gravelly soils at elevations of 1800 - 1830 meters. Known blooming period is July – August.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Barstow woolly sunflower (*Eriophyllum mohavense*)	1B.2, BLM	Occurs in desert dunes, great basin scrub, and sonorant desert scrub. Found at elevations of 500 - 960 meters. Known blooming period is March – May.	**High**	CNDDB occurrences and suitable habitat present within project area.
pungent glossopetalon (*Glossopetalon pungens*)	1B.2, BLM	Found in Chaparral and Pinyon/juniper woodland habitats with carbonate soils at elevations of 1675 - 2000 meters. Known blooming period is May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Jaeger's ivesia (*Ivesia jaegeri*)	1B.3, BLM	Found in Pinyon/juniper woodland and Upper montane coniferous forest habitats with carbonate, or rocky soils at elevations of 1830 - 3600 meters. Known blooming period is June – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Kingston Mountains ivesia (*Ivesia patellifera*)	1B.3	Occurs in Pinyon and juniper woodland with rock soils at elevation of 1400 - 2100 meters. Species is only known from San Bernardino County. Known blooming period is June – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
hillside wheat grass (*Leymus salinus* ssp. *mojavensis*)	2.3	Found in rocky areas of Pinyon and juniper woodlands at elevation of1350 - 2135 meters. Known blooming period is May – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Baldwin Lake linanthus (*Linanthus killipii*)	1B.2, USFS	Found in Joshua tree woodland, Meadows and seeps, Pebble (Pavement) plain, and Pinyon/juniper woodland habitats at elevations of1700 - 2400 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Little San Bernardino Mtns. linanthus (*Linanthus maculatus*)	1B.2, BLM	Found in desert dunes, Joshua tree woodland, Mojavean desert scrub, and Sonoran desert scrub habitat. Occurs at elevation from 195 - 2075 meters. Blooming Period March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)	2.2, BLM	Occurs in desert dunes, Great Basin scrub, Sonoran desert scrub habitats with sandy soils Elevation range of species is 700 - 1615 meters. Known blooming period is April – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Parish's desert thorn (*Lycium parishii*)	2.3	Found in Coastal scrub and Sonoran desert scrub habitats at elevations of 305 - 1000 meters. Known blooming period is March – April.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
spearleaf (*Matelea parvifolia*)	2.3, USFS	Occurs in rocky areas of Mojavean desert scrub and Sonoran desert scrub habitats at elevations of 440 - 1095 meters. Known blooming period is March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Mojave menodora (*Menodora spinescens* var. *mohavensis*)	1B.2	Occurs on Andesite gravel, rocky hillsides, and canyons in Mojavean desert scrub. Found at elevations of 690 - 2000 meters. Species is only known from 13 occurrences in San Bernardino and Riverside Counties. Known blooming period is April to May.	**High**	CNDDB occurrences and suitable habitat present within project area.
polished blazingstar (*Mentzelia polita*)	1B.2, BLM	Found in Mojavean desert scrub with carbonate soils at elevations of 1200 - 1500 meters. Known blooming period is April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Argus blazing star (*Mentzelia puberula*)	2.2	Found in Mojavean desert scrub and Sonoran desert scrub habitats with sandy or rocky soils at elevations of 90 - 1280 meters. Known blooming period is March – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
spinyhair blazing star (*Mentzelia tricuspis*)	2.1	Known to occur in sandy, gravelly, slopes, and washes of Mojavean desert scrub. Found at elevations of 150 - 1280 meters. Known blooming period is March – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
threetooth blazing star (*Mentzelia tridentata*)	1B.3, BLM	Occurs in rocky, gravelly, and sandy areas Mojavean desert scrub habitat. Found at elevation of 700 - 1160 meters Known blooming period is March – May.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
San Bernardino Mountains monkeyflower (*Mimulus exiguus*)	1B.2, USFS	Found on sandy or gravelly soils, often in washes, of Joshua tree woodland, and Mojavean desert scrub habitats. Occurs at elevation of 600 - 1200 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Mojave monkeyflower (*Mimulus mohavensis*)	1B.2, BLM	Found on sandy or gravelly soils, often in washes, of Joshua tree woodland, and Mojavean desert scrub habitats. Occurs at elevation of 600 - 1200 meters. Known blooming period is April – June.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
Boyd's monardella (*Monardella boydii*)	1B.2	Found in Mojavean desert scrub, Pinyon/juniper woodland, and Riparian scrub habitats. Usually occurs in alluvial soils and cracks of bedrock in washes on canyon bottoms and rocky slopes at elevations of 1400 - 1650 meters. Known blooming period is Aug-Oct.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Robinson's monardella (*Monardella robisonii*)	1B.3	Occurs in Pinyon/juniper woodland habitat. Found at elevations of 610 - 1500 meters. Known blooming period is February – October.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
appressed muhly (*Muhlenbergia appressa*)	2.2	Found in rocky areas of Coastal scrub, Mojavean desert scrub, and Valley/foothill grassland habitats at elevations of 20 - 1600 meters. Known blooming period is April – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Baja navarretia (*Navarretia peninsularis*)	USFS	Occurs in mesic areas with openings within Chaparral, Lower montane coniferous forest, Meadows and seeps, and Pinyon/juniper woodland at elevations of 1500 - 2300 meters. Known blooming period is June – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Amargosa niterwort (*Nitrophila mohavensis*)	FE, SE	Occurs in Playas (mesic, clay) Found at elevations 425 - 750 meters. Known blooming period is May – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)	1B.2, USFS	Occurs in chaparral, Joshua tree woodland, pinyon/juniper woodland, and Mojavean desert scrub habitats. Found in areas of 1225-2300 meters. Known blooming period is April – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Rock Creek broomrape (*Orobanche valida* ssp.*valida*)	1B.2, USFS	Found in Chaparral, Pinyon/juniper woodland habitats with granitic soils at elevations of 1250 - 2000 meters. Known blooming period is May – September.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
San Bernardino ragwort (*Packera bernardina*)	1B.2, USFS	Found in mesic areas of Meadows and seeps, Pebble (Pavement) plain, and Upper montane coniferous forest habitats at elevations of 1800 - 2300 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Indian breadroot (*Pediomelum castoreum*)	1B.2, BLM	Occurs on sandy soils of washes and road cuts of Joshua tree woodland Mojavean desert scrub habitats. Found at elevation 610 - 1525 meters. Known blooming period is April - May	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
white margined beardtongue (*Penstemon albomarginatus*)	1B.1	Occurs in Desert dunes and Mojavean desert scrub habitats with sandy soils. Found at elevation of 640 - 1065 meters. Known blooming period is March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
pinto beardtongue (*Penstemon bicolor* ssp. *roseus)*	1B.1, BLM	Occurs in rocky or gravelly, sometimes disturbed areas of Joshua tree woodland and Mojavean desert scrub habitats at elevations of 700 - 1500 meters. Known blooming period is May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Death Valley beardtongue (*Penstemon fruticiformis* var. *amargosae*)	1B.3	Found in Mojavean desert scrub habitat at elevations of 850 - 1400 meters. Known blooming period is April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Stephens' beardtongue (*Penstemon stephensii*)	1B.3	Found in Mojavean desert scrub and Pinyon/ juniper woodland habitat with rocky soils. Occurs at elevation of 1160 - 1850 meters Known blooming period is April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Death Valley sandpaper plant (*Petalonyx thurberi* ssp.*gilmanii*)	1B.3	Occurs in Desert dunes and Mojavean desert scrub habitats. Found at elevations of 260 - 1445 meters. Known blooming period is May – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Death Valley round leaved phacelia (*Phacelia mustelina*)	1B.3, BLM, USFS	Found in Mojavean desert scrub and Pinyon/juniper woodland habitats with gravelly or rocky soils at elevations of 730 - 2620 meters. Known blooming period is May – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Parish's phacelia (*Phacelia parishii*)	1B.1, BLM	Found in Mojavean desert scrub and Playas habitats with clay or alkaline soils. Occur at elevation of 540 - 1200 meters. Known blooming period is April – July.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Parish's popcorn flower (*Plagiobothrys parishii*)	1B.1	Occurs on alkaline, mesic areas of Great Basin scrub and Joshua tree woodland habitats at elevations of 750 - 1400 meters. Known blooming period is March – November.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Latimer's woodland gilia (*Saltugilia latimeri*)	1B.2, BLM, USFS	Found in Chaparral, Mojavean desert scrub, and Pinyon and juniper woodland habitats with rocky or sandy soils at elevations 400 - 1900 meters. Known blooming period March – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Rusby's desert-mallow (*Sphaeralcea rusbyi* var. *eremicola*)	1B.2, BLM	Found in Joshua tree woodland and Mojavean desert scrub habitats at elevations of 975 - 1645 meters. Known blooming period is March – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
southern jewel flower (*Streptanthus campestris*)	1B.3, USFS	Found in rocky areas of Chaparral, Lower montane coniferous forest, and Pinyon and juniper woodland habitats at elevations of 900 - 2300 meters. Known blooming period is April – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
rigid fringepod (*Thysanocarpus rigidus*)	1B.2, BLM	Occurs on dry, rocky slopes of Pinyon and juniper woodlands at elevations of 600 - 2200 meters. Known blooming period February – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
jackass clover (*Wislizenia refracta* ssp. *refracta*)	2.2	Found in Desert dunes, Mojavean desert scrub, Playas, and Sonoran desert scrub habitat at elevations of 600 - 800 meters. Known blooming period is April – November.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Key:

BLM = Bureau of Land Management listed as Sensitive
USFS = United States Forest Service Sensitive
FE = Federally listed as Endangered
FT = Federal listed as Threatened
FC = Federal candidate for listing under the Endangered Species Act
FD = Federally delisted
FPE = Federally proposed for listing as Endangered

Table 1. Special-status Plant Species Known to Occur, or with the Potential to Occur in the Project Area (continued)

FPT = Federally proposed for listing as Threatened
SC = State proposed for listing
SE = State-listed as Endangered
ST = State-listed as Threatened
SWL= California Department of Fish and Game (CDFW) Watch List Species
SSC = California Department of Fish and Game (CDFW) Species of Special Concern
SFP = California Department of Fish and Game (CDFW) Fully Protected Species
SR = State Rare
BCC= United States Fish and Wildlife Service_ Birds of Conservation Concern
California Native Plant Society System:
1A = Presumed extinct in California
1B = Rare or Endangered in California and elsewhere
2 = Rare or Endangered in California, more common elsewhere
3 = Plants for which we need more information - Review list
4 = Plants of limited distribution - Watch list
.1 = Seriously endangered in California (over 80% of occurrences threatened)
.2 = Fairly endangered in California (20-80% occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Invertebrates				
Andrew's marble butterfly *(Euchloe hyantis andrewsi)*	None	Occurs in rocky canyons, cliffs, moraines, gravelly flats of lower montane coniferous forest.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
westfork shoulderband *(Helminthoglypta taylori)*	None	Found in riparian woodland habitat	Low	No CNDDB occurrences near project area. Project is outside of species range.
simple hydroporus diving beetle (*Hydroporus simplex*)	None	Found in aquatic areas, primarily flowing water.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
desert monkey grasshopper (*Psychomastax deserticola*)	None	Found in primarily in areas dominated by chaparral.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Fish Slough Springsnail (*Pyrgulopsis perturbata*)	None	Found in aquatic areas, primarily flowing water of the Great basin.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Fish				
Amargosa river pupfish (*Cyprinodon nevadensis amargosae*)	BLM, SSC	Found only in deep and shallow springs and seeps of desert wetlands of the Ash Meadows region.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Owens pupfish	FE, SE, SFP	Found in pools and shallow, clear, warm (about 10–25°C) sloughs, spring pools, irrigation ditches, marshes with emergent bulrushes and Chara mats, and flooded pastures along the Owens River.	Low	No CNDDB occurrences near project area. Project is outside of species range.

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
(*Cyprinodon radiosus*)				
unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)	FE, SE, SFP	Found along warm, shallow water areas with dense emergent and bank vegetation of slow moving streams of the Santa Clara, Los Angeles, San Gabriel, and Santa Ana Rivers.	Low	No CNDDB occurrences near project area. Project is outside of species range.
arroyo chub (*Gila orcuttii*)	SSC, USFS	Found primarily in warm streams of the Los Angeles Plain,. Inhabits sandy and muddy bottoms in flowing pools and runs of headwaters creeks and small to medium rivers generally deeper than 40 cm. Often found in intermittent streams.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Amargosa Canyon speckled dace (*Rhinichthys osculus* ssp.1)	BLM, SSC	Inhabits small, clear streams with pool-like habitat characterized by deep pools (0.45-0.75 m), and slow moving water and fine sand/silt substrates. Preferred water temperatures of 21-28°C.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Owens speckled dace (*Rhinichthys osculus* ssp. 2)	SSC	Occupy a variety of habitats ranging from small coldwater streams, hot-spring systems and irrigation ditches.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Santa Ana speckled dace (*Rhinichthys osculus* ssp. 3)	SSC, USFS	Found in small, shallow, permanent flowing streams with summer water and shallow cobble and gravel riffles, which flow through a steep, rocky canyon with chaparral-covered walls. Overhanging riparian plants, mainly alders and sedges.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Mohave tui chub (*Siphateles bicolor mohavensis*)	FE, SE, SFP	Found within deep pools and slough like areas of the Mojave River. This is species only known to occur at 3 sites in Soda Springs and Lake Tuendoe.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Owens tui chub (*Siphateles bicolor snyderi*)	FE, SE	Inhabits streams with low current, muddy bottom, and dense aquatic vegetation providing adequate cover and food supply. Elements of the habitat include high quality, cool water, adequate cover, undercut banks, or aquatic vegetation, and a sufficient insect food base.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Amphibians				

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
arroyo toad (*Anaxyrus californicus*)	FE, SSC	Found in semi-arid regions near washes or intermittent streams. Habitats used include valley-foothill and desert riparian as well as a variety of more arid habitats including desert wash, palm oasis, and Joshua tree, mixed chaparral and sagebrush. Often found near rivers with sandy banks, willows, cottonwoods, and sycamores in valley-foothill and desert riparian habitats. Found in loose gravelly areas of streams in drier portions of its range.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
San Gabriel slender salamander (*Batrachoseps gabrieli*)	USFS	Occurs on talus slopes surrounded by a variety of conifer and montane hardwood species, including big cone spruce, pine, white fir, incense cedar, canyon live oak, black oak, and California laurel.	Low	No CNDDB occurrences near project area. Project is outside of species range.
large-blotched salamander (*Ensatina eschscholtzii klauberi*)	SSC, USFS	Occurs in moist areas of forested habitats in the San Bernardino, San Gabriel, San Jacinto and Transverse mountains of Southern California.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
California red-legged frog (*Rana draytonii*)	FT, SSC	Generally found in riparian woodland and aquatic habitats with heavily vegetated areas of streams and ponds from sea level to 1,500 meters.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Sierra Madre yellow-legged frog (*Rana muscosa*)	FE, SC, SSC, USFS	Occurs in areas associated with rocky streams, lakes and ponds in montane riparian, lodge pole pine, subalpine conifer, and wet meadow habitats. In southern California, populations are restricted to streams in ponderosa pine, montane hardwood-conifer, and montane riparian habitats.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Pacific pond turtle *(Actinemys marmorata)*	BLM, SFP, USFS	Permanent and intermittent waters, including marshes, streams, rivers, ponds, and lakes.	Low	No CNDDB occurrences near project area. Project is outside of species range and no suitable habitat within Project area.
Reptiles				
silvery legless lizard	SSC, USFS	Warm lose soil with plant cover. Moisture is essential for the habitat.	Low	No CNDDB occurrences near project area. Project is outside

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
(*Anniella pulchra pulchra*)				of species range.
coastal whiptail (*Aspidoscelis tigris stejnegeri*)	None	Hot and open areas with sparse foliage. Chaparral, woodlands, and riparian corridors.	Low	No CNDDB occurrences near project area. Project is outside of species range.
rosy boa (*Lichanura trivirgata*)	USFS	Species inhabits coastal sage scrub and chaparral dominated communities that contain large rocks and boulders for cover and refuge. Generally found near permanent or intermittent streams. Occur from sea level to 2,070 meters.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
desert tortoise (*Gopherus agassizii)*	FE, SE	A desert species found in arid sandy or gravelly locations along riverbanks, washes, sandy dunes, creosote flats/hillsides, and rocky hillsides. In California tortoises are found throughout the Mojave Desert.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
coast horned lizard (*Phrynosoma blainvillii*)	BLM, SSC, USFS	Species requires loose, fine soils with a high sand fraction, abundance of native ants or other insects, open areas with limited overstory for basking and areas with low, dense shrubs for refuge. Elevational range is 10 - 2,130 meter.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
two-striped garter snake (*Thamnophis hammondii*)	BLM, SSC, USFS	Generally found near permanent fresh water with rocky substrates. Mountain slopes and desert oases.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Mohave fringe-toed lizard (*Uma scoparia*)	BLM, SSC	Species is restricted to fine, loose, wind-blown deposits in sand dunes, dry lakebeds, riverbanks, desert washes, and sparse alkali scrub and desert shrub habitats. Elevational range extends from near sea level up to 1000 meters.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Birds				
Cooper's hawk (*Accipiter cooperii*)	SWL	Breeds in areas of dense stands of live oak, riparian deciduous or other forest habitats near water.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
tricolored blackbird (*Agelaius tricolor*)	SSC, BLM, BCC	Fresh water marshes of cattails.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
golden eagle (*Aquila chrysaetos*)	BLM, SWL, SFP, BCC	Generally open country, prairies, tundra, open wooden country, and hilly or mountainous regions.	**Medium**	Potential suitable habitat present within project area.
long-eared owl (*Asio otus*)	SSC	Frequents dense, riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats. Also found in dense conifer stands at higher elevations. Winters in the desert habitats.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
burrowing owl (*Athene cunicularia*)	BLM, SSC, BCC	Found mainly in grassland and open scrub from the seashore to foothills. Strongly associated with ground squirrel burrows.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
Swainson's hawk (*Buteo swainsoni*)	ST, BLM, USFS	Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nests in scattered trees within grasslands, shrublands, or agricultural landscapes.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC, SE, BLM, USFS	Found in valley foothill and desert riparian habitats. Typically in areas of Densely foliaged, deciduous trees and shrubs, especially willows, required for roosting sites.	Low	Potential suitable habitat present within project area. CNDDB occurrences near project area.
Brewster's yellow warbler (*Setophaga petechia brewsteri*)	SSC, BCC	Breeds in mature riparian woodlands that consist of cottonwood, willow, alder, and ash trees.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
white-tailed kite (*Elanus leucurus*)	SFP	Savanna, open woodland, marshes, and open agriculture lands.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
southwestern willow flycatcher (*Empidonax traillii extimus*)	FE, SE	Riparian woodlands with current or evidence of recent water flow and scouring. Riparian corridors must be at least 33 feet wide, closed canopy, relatively dense understory, and open mid-story.	Low	No potential suitable habitat present within project area. No CNDDB occurrences near project area.
prairie falcon (*Falco mexicanus*)	SWL, BCC	Found in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Requires sheltered cliff ledges for cover and nesting.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
bald eagle (*Haliaeetus leucocephalus*)	FD, SE, BLM, SFP, USFS	Breeding areas are usually found by water.	Low	No potential suitable habitat present within project area. No CNDDB occurrences near project area.
yellow-breasted chat (*Icteria virens*)	SSC	Found in valley foothill riparian, and desert riparian habitats. Requires riparian thickets of willow and other brushy tangles near watercourses for cover.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
loggerhead shrike (*Lanius ludovicianus*)	SSC, BCC	Breeds in areas of scrub and annual grasslands with scattered shrubs for nesting.	**High**	CNDDB occurrences and suitable habitat present within project area.
California black rail (*Laterallus jamaicensis coturniculus*)	ST, BLM, SSC, BCC, SFP	High coastal marshes, freshwater marshes.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Gila woodpecker (*Melanerpes uropygialis*)	SE, BLM, BCC	Deserts that have large cacti or suitable trees for nesting, riparian woodlands, and residential areas.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Lucy's warbler (*Oreothlypis luciae*)	SSC, BCC	Riparian mesquite woodlands.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
summer tanager (*Piranga rubra*)	SSC	Occurs in mature, desert riparian habitat dominated by cottonwoods and willows. Cottonwoods and willows, especially older, dense stands along rivers and streams, provide nesting, feeding cover.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
vermilion flycatcher (*Pyrocephalus rubinus*)	SSC	Found in desert scrub, savanna, riparian woodlands.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Bendire's thrasher (*Toxostoma bendirei*)	BLM, SSC, BCC	Occurs in areas of desert succulent shrub and Joshua tree habitats in Mojave Desert area. Frequents flat desert areas with scattered stands of thorny shrubs and cactus for cover, foraging, and nesting.	**High**	CNDDB occurrences and suitable habitat present within project area.
Le Conte's thrasher (*Toxostoma lecontei*)	SSC, BCC	Occurs in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
least Bell's vireo (*Vireo bellii pusillus*)	FE, SE	Found in areas of valley foothill riparian habitat and along the western edge of the deserts in desert riparian habitat. Thickets of willow and other low shrubs afford nesting and roosting cover.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
gray vireo (*Vireo vicinior*)	BLM , SSC, BCC	Found in arid pinyon-juniper, and juniper, woodlands and chaparral habitats from 600 - 2,000 meters.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Mammals				
pallid bat (*Antrozous pallidus*)	BLM, USFS, SSC	Arid deserts and grasslands, and often near rock outcrops and water.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
pallid San Diego pocket mouse	SSC	Deserts and coastal habitats.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
(*Chaetodipus fallax pallidus*)				within project area.
Townsend's big-eared bat (*Corynorhinus townsendii*)	BLM, SSC, USFS	Occurs in sandy herbaceous areas, with rocks or course gravel. Found in coastal scrub, chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland habitats.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
spotted bat (*Euderma maculatum*)	BLM, SSC	Found in various habitats, open ponderosa pine forests, pinyon/juniper woodlands, canyon bottoms, agriculture land.	Low	Potential suitable habitat present wihin project area. No CNDDB occurrences near project area.
western mastiff bat (*Eumops perotis californicus*)	BLM, SSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
San Bernardino flying squirrel (*Glaucomys sabrinus californicus*)	SSC, USFS	White fir and Jeffery pine mixed conifer forests with black oak.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
silver-haired bat (*Lasionycteris noctivagans*)	None	Habitats include coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Range is generally below 2,750 meters. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
California leaf-nosed bat (*Macrotus californicus*)	BLM, USFS, SSC	Lowland desert scrub.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
western small-footed myotis (*Myotis ciliolabrum*)	BLM	Normally inhabits deserts and semiarid habitats, and chaparral.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
long-eared myotis (*Myotis evotis*)	BLM	Broad range of mixed forests and woodlands, areas with rock outcrops, meadows, and riparian corridors.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
fringed myotis (*Myotis thysanodes*)	BLM	Deserts, grasslands, and woodland habitats.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
cave myotis (*Myotis velifer*)	BLM, SSC	Deserts and grasslands, Also found in areas of water.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
long-legged myotis (*Myotis volans*)	None	Usually found in montane coniferous forest, also deserts and riparian areas.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Yuma myotis (*Myotis yumanensis*)	BLM	Desert, conifer forest, grasslands, chaparral, and urban areas, and found by water.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
lodge pole chipmunk (*Neotamias speciosus speciosus*)	None	Open mixed coniferous and forests mixed with chaparral, forests of lodge pole pine, Jeffery pine, and red fir. Found in some meadow areas.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Nelson's bighorn sheep (*Ovis canadensis nelsoni*)	BLM, USFS	Steep rocky terrain above desert floors.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
white-eared pocket mouse	SSC, BLM	Desert, shrubland/chaparral, coniferous woodlands.	**Medium**	CNDDB occurrences and suitable habitat present within

Table 2. Special-status Animal Species Known to Occur or with the Potential to Occur Within the Project Area (continued)

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
(*Perognathus alticolus alticolus*)				project area.
Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	SSC, USFS	Deserts with sandy soils, arid grasslands, and coastal sage scrub.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
American badger (*Taxidea taxus*)	SSC	Coastal sage scrub, mixed chaparral, grassland, oak woodland, chaparral, mixed conifer, pinyon-juniper, desert scrub, desert wash, montane meadow, and open areas, with sandy soils	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Mohave ground squirrel (*Xerospermophilus mohavensis*)	ST, BLM	Mojave desert scrub, alkali scrub, and Joshua tree woodland between 1,800 and 5,000 feet. Sandy to gravelly soils.	**Medium**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.

Key:

BLM = Bureau of Land Management listed as Sensitive
USFS = United States Forest Service Sensitive
FE = Federally listed as Endangered
FT = Federal listed as Threatened
FC = Federal candidate for listing under the Endangered Species Act
FD = Federally delisted
FPE = Federally proposed for listing as Endangered
FPT = Federally proposed for listing as Threatened
SC = State proposed for listing
SE = State-listed as Endangered
ST = State-listed as Threatened
SWL= California Department of Fish and Game (CDFW) Watch List Species
SSC = California Department of Fish and Game (CDFW) Species of Special Concern
SFP = California Department of Fish and Game (CDFW) Fully Protected Species
SR = State Rare
BCC= United States Fish and Wildlife Service_ Birds of Conservation Concern

3.0 RESULTS

3.1 Vegetation Communities

Based on the reconnaissance-level survey of the entire Project Area, 14 plant communities, characterized and named according to the vegetation's dominant species, were identified. Vegetation community maps delineating the extent of each vegetation community within the Project Area are provided on **Figure 3 (Attachment A)**.

Table 3. Vegetation Types and Communities Found Within the Project Area.

Plant Community Name	Class Code	Segment(s) of Occurrence	Acreage within Survey Area
Basalt Rock	BR	North Telecom	217
Big Sagebrush Scrub	BSS	6, 7	442
Creosote Bush Scrub	CBS	4, 5a, 5b, 6, 7, North Telecom, South Telecom	5,532
Creosote Bush Scrub- White Bursage Scrub	CBBS	1, 2, 5a, 5b, 6, 7, 8, 9, 10	8,895
California Buckwheat Scrub	CBUS	6	936
California Juniper Woodland	CJW	6	936
Dry Lake Bed	DLB	1, South Telecom	850
Fourwing Saltbush Scrub	FWSS	5	285
Joshua Tree Woodland	JTW	1, 2	4323
Mojave River	MR	6, 7	179
Rabbit brush scrub	RBS	7	596
Rock Outcrop	RC	4, 5	200
Willow Riparian	Not mapped	-	-
Desert Ephemeral Wash	Not mapped	-	-

Basalt Rock ("BR")

Basalt Rock lacks a dominance of vegetation and is characterized by volcanic rock and boulders with occurrences of creosote bush *(Larrea tridentata)* and desert tea *(Ephedra californica)*. This community occurs primarily in the northeast portion of the Project.

Big Sagebrush Scrub ("BSS")

This community is dominated by big sagebrush (*Artemisia tridentata*) and is typically found on plains, alluvial fans, and bajadas with sandy soils with an open canopy and the herbaceous layer is spare to intermittent with non-native grasses. This community occurs on the western end of Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 near the Lugo Substation. Other species that occur within this community include yellow rabbit brush *(Chyrsothamnus viscidiflorus)*, mormon tea *(Ephedra viridis)*, rubber rabbit brush *(Ericameria nauseosa)*, and California juniper *(Juniperus californicas)*.

Creosote Bush Scrub ("CBS")

Creosote Bush Scrub is dominated by creosote bush with an intermittent to open canopy with an herbaceous layer of seasonal annuals or perennial grasses. This community is found on alluvial fans, bajadas, upland slopes, and washes. The soils are well drained, sometimes with desert pavement. Along the Project alignment, this community is found scattered throughout. Other species that occur within this community include white bursage *(Ambrosia dumosa)*, fourwing saltbush *(Atriplex canescens)*, allscale *(Atriplex polycarpa)*, brittlebush *(Encelia farinosa)*, Anderson's desert thorn *(Lycium andersonii)* and Joshua tree *(Yucca brevifolia)*.

Creosote Bush Scrub-White Bursage Scrub ("CBBS")

This community is dominated by creosote bush and co-dominated by white bursage with an intermittent to open canopy. The herbaceous layer is dominated by seasonal annuals. This community typically occurs within small washes, rills, alluvial fans, and bajadas. This is the most common community occurring along the majority of the Project. Other species within this community include fourwing saltbush, allscale, brittlebush, Anderson's desert thorn, Joshua tree, California barrel cactus (*Ferrocactus cylindraceus var. cylindraceus*), beavertail cactus desert (*Opuntia basilaris*), desert straw (*Stephanomeria pauciflora*), and desert trumpet (*Eriogonum inflatum*).

California Buckwheat Scrub ("CBUS")

The California Buckwheat Scrub along the Project alignment is considered the transmontane stand and is dominated by California buckwheat *(Eriogonum fasciculatum)* with white bursage, creosote, mormon tea, brittlebush with occurrences of California juniper). This community occurs in transition with California Juniper Woodland and Creosote Bush Scrub or Creosote Bush-White Bursage Scrub. The California Buckwheat Scrub only occurs within the western portion of the alignment within Alternative Transmission Line Segment 6.

California Juniper Woodland ("CJW")

The California Juniper Woodland is dominated by California juniper and is associated with species of the California Buckwheat Scrub and Big Sagebrush Scrub. This community is only found on the western portion of the Project within Alternative Transmission Line Segment 6.

Dry Lake Bed ("DLB")

This community is dominated by Parry's saltbush *(Atriplex parryi)* with fourwing saltbush, and bud sage *(Artemisia spinescens)*. The canopy cover is open with a lack of herbaceous species.

The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs on dry lake beds within the Proposed Transmission Line Segments 1 and 5a and the Apple Valley to Desert View Telecommunication Route.

Fourwing Saltbush Scrub ("FWSS")

Fourwing Saltbush Scrub is dominated by fourwing saltbush with allscale, creosotebush, Mormon tea as co-dominates. The canopy cover is open with a lack of herbaceous species. This community occurs on playas, dry lake beds, alluvial fans and rolling hills. The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs at scattered locations along the alignment primarily within the Proposed and Alternative Transmission Line Segment 5.

Joshua Tree Woodland ("JTW")

The Joshua Tree Woodland is dominated by Joshua tree (Y*ucca brevifolia*) co-dominated by species of the Creosote Bush Scrub or Creosote Bush-White Bursage Scrub including creosote bush, white bursage, Mormon tea, Anderson's desert thorn, cheese bush *(Hymenoclea salsola),* beavertail cactus, and California barrel cactus. The understory is dominated by herbaceous seasonal annuals and grasses. This community is scattered throughout the Project, typically on rocky soils on ridges and moderate slopes.

Mojave River ("MR")

The Mojave River is the primary surface drainage of the region and the Project Area. The Mojave River generally lacks dominance of vegetation and consists of braided sandy channels within a wide floodplain. The Mojave River within the region has surface flow during storm events but generally has an underground flow. Along the edges of the river seasonal annuals are prevalent. Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River.

Rabbit Brush Scrub ("RBS")

Rabbit Brush Scrub is dominated by rubber rabbit bush and yellow rabbit brush with a co-dominance of non-native ruderal species including Russian thistle *(Salsola tragus),* mustards *(Brassica nigra),* and *(Hirschfeldia incana).* This community transitions into Big Sagebrush Scrub and is found along the alignment in disturbed areas of residential development within the western portion of the proposed Project Area including Proposed Transmission Line Segment 7 and the Apple Valley to Desert View Telecommunication Route.

Rock Outcrop ("RC")

Rock Outcrop lacks a dominance of vegetation and is characterized by steep slopes with volcanic rock and boulders with occurrences of brittlebush and creosote bush. This community occurs sporadically within the Project alignment.

Willow Riparian (not mapped)

The Willow Riparian community occurs along canyon drainages and the Mojave River in the western portion of the Project Area within Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6. This community is dominated by arroyo willow (*Salix lasiolepis)*, red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), and elderberry (*Sambucus nigra*). This habitat community was not mapped due to its extremely localized and limited distribution within the Project Area.

Desert Ephemeral Wash (not mapped)

Desert ephemeral washes occur throughout the Project alignment. The washes typically are characterized by a sandy to gravel channel from 4 to 50 feet wide and lack a predominance of vegetation. When vegetation does occur, species are typical of the surrounding upland habitat. Desert ephemeral washes only have flow during major storm events. This habitat community was not mapped due to its extremely localized and limited distribution within the Project Area.

3.2 Plant Species

A total of 81 species were identified during surveys including 11 non-native species and 1 special-status species. A list of plant species observed in the Project Area is provided in **Attachment A**.

3.3 Wildlife Species

A total of 89 species were identified during surveys including, 1 amphibian, 15 reptile, 66 bird, and 7 mammal species, which includes 9 special-status species. Additional wildlife are likely to be observed during the focused survey. A full list of species observed in the Project Area is provided in **Attachment A**.

3.4 Special-status Biological Resources

3.4.1 Special-status Vegetation Communities

Resource agencies generally consider vegetation types to have special status if they support concentrations of special-status plant or wildlife species, are of relatively limited distribution, or offer particular value to wildlife. While some special-status vegetation types are not afforded legal protection unless they support protected species, others may be protected by an ordinance, code, or regulation under which conformance typically requires a permit or other discretionary action prior to impacting the vegetation. No special-status vegetation communities exist within the Project Area therefore no further discussion of this topic is required.

3.4.2 Protected Trees

California Desert Native Plants Act, Food and Agricultural Code Section 80071-80075, protects Joshua trees from removal, transplant, and harvest without appropriate permitting. In addition the County of San Bernardino has an ordinance regulating the transplant of Joshua trees. This species occurs scattered throughout the Project alignment typically on rocky soils on ridges and moderate slopes. Joshua trees have the potential to be impacted by Project implementation.

3.4.3 Jurisdictional Areas

The Project Area crosses ephemeral drainages and the Mojave River, which fall under the jurisdiction of the USACE and/or the CDFW. The Project's potential impacts to jurisdictional areas are discussed in detail in the report Wetland and Other Waters Delineation Report for the SCE Coolwater-Lugo Transmission Project (BioResource Consultants, Inc. 2013). However, from a biological perspective, the jurisdictional area of the Mojave River has suitable habitat for the arroyo toad (*Anaxyrus californicus*), a special-status species. Based on database searches and observation of habitat along the Project alignment, the arroyo toad was determined to have a medium likelihood of occurrence within the area of the Mojave River (Segment 7 and Alternative Segment 6). However, due to low rainfall and survey timing (daytime hours), this species was not observed.

3.4.4 Special-status Plants

Special-status plant species with the potential to occur in the Project vicinity are listed in **Table 1**, along with their habitat suitability and an indication of their known presence, or assessment of their potential to occur, within the Project Area. Nine special-status plant species have a high likelihood of occurring within the Project Area, and 18 special-status species have a medium likelihood of occurring within the Project Area. Most special-status plant species known to occur within the Project Area were not encountered during the reconnaissance surveys because of the very low rainfall both survey years and because the surveys were conducted outside of the seasonal window to properly identify some annual species. Only 1 special-status plant species, Booth's evening-primrose *(Camissonia boothii ssp. Boothii)*, was observed during the surveys in 2012 along Segment 7 on the east side of the Mojave River. No special-status species were observed during surveys in 2013.

The following are detailed descriptions of observed special-status plant species:

Booth's evening-primrose (Camissonia boothii (Dougl.) Raven ssp. boothii)

STATUS		
Federal	**State / NDDB**	**CNPS** (CNPS 2012)
None	None / G5T4, S2	2.3 - rare, threatened, endangered in CA and elsewhere

Booth's evening-primrose (*Camissonia boothii (Dougl.) Raven ssp. boothii*) is an annual herb which blooms April-September. It's occurs in Joshua tree woodland and Pinyon and juniper woodland habitat. Found at elevations ranging from 900 - 2,400 meters.

3.4.5 Special-status Wildlife

Special-status animal species with the potential to occur in the Project Area are listed in **Table 2**, along with their habitat suitability and an indication of their known presence, or assessment of their potential to occur, within the Project Area. Eight special-status species were determined to have a high likelihood of occurring within the Project Area and 14 special-status species were determined to have a medium likelihood of occurring within the Project Area. Of these species, 10 were observed during surveys. Special-status species observed included: desert tortoise, Cooper's hawk, golden eagle, burrowing owl, Swainson's hawk, prairie falcon, loggerhead

shrike, Bendire's thrasher, Le Conte's thrasher, and coast horned lizard. **Figure 4 (Attachment A)** shows the locations of sensitive species found in the vicinity of the Project Area.

Suitable bird nesting habitat is present throughout much of the Project Area and along the access routes. Nesting birds are protected under the MBTA and the California FGC and could be impacted by Project activities. Additional discussion of the special-status wildlife species potentially occurring in the Project Area, including their natural history and habitat suitability, are provided in Section 4.

The following are detailed descriptions of observed special-status wildlife species:

Desert tortoise (Gopherus agassizii)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
Threatened	Threatened / G4, S2	FE – federally endangered SE – CA state endangered

The desert tortoise is 8-15 inches in shell length. They are a large slow-moving, terrestrial desert turtle with a high-domed shell composed of large scutes marked with many growth lines, and large hind feet. Desert tortoise forelimbs are stocky with large conical scales, and the carapace is unkeeled, with a serrated rear rim. The color is tan, brown, grayish brown, to blackish and usually without a pattern. Males are larger than females and have a concave plastron and larger chin glands on each side of the lower mandible.

The desert tortoise spends most of its time in underground burrows. The active period is very short, and mostly restricted to spring when the sprouting annual flowers bloom. Winter hibernation begins from October to November. Tortoises often dig burrows in dry, gravelly, or sandy soil, often at the base of a bush; burrow entrances are often half-circle shaped. Breeding occurs in March and April. In California tortoises are found throughout the Mojave Desert.

Cooper's hawk (Accipiter cooperii)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G5, S3	SWL – Watch List Species

Resident throughout most of the state, Cooper's hawk habitat consists of stands of live oak, riparian deciduous, or other forest habitats near water are used most frequently. When hunting and feeding, Cooper's hawks will catch small birds and small mammals, but will also take reptiles and amphibians. Cooper's hawks hunt in broken woodland and habitat edges, catching prey in air, on ground, and in vegetation. They often use patchy woodlands and edges with snags for perching.

Dense stands of vegetation with moderate crown-depths are used for nesting. Males defend an area about 100 meters (330 feet) around potential nest sites prior to pair formation. Coopers hawks breed March through August, but peak activity occurs from May through July.

Golden eagle (Aquila chrysaetos)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012), **BLM, USFWS**
None	None / G5 S3	BLMS – Bureau of Land Management Sensitive Species SWL – Watch List Species for CA SFP – Fully protected by CA BCC – Birds of conservation concern

Golden eagles can be up to 35 inches in height with a wing span of eight feet. Adult plumage is dark brown and golden, with a golden nape. Tail feathers are faintly banded and juveniles have white patches along wings and tail.

Golden eagles are usually found in mountainous areas, as well as open country with broken woodlands, grasslands, chaparral, sagebrush edges, and desert edges. Nesting habitat is mainly in steep cliffs and ledges and less often in medium to tall trees adjacent to open country. While hunting, these raptors soar high in the air, contouring the terrain and also hunt from prominent perches. Diet consists primarily of rabbits, hares, ground squirrels, and prairie dogs.

Burrowing owl (Athene cunicularia)

STATUS		
Federal	**State / NDDB**	**CDFW (CDFW 2012), BLM, USFWS**
None	None / G4 S2	BLMS – Sensitive species SSC – CA Species of Special Concern BCC – Birds of Conservation Concern

Burrowing owls are a small round-headed species of owl with short tails, no ear tufts, long slim bare legs, and small facial discs. They have barred underparts, spotted upper sides, white throats and arched white "eyebrows". Habitat consists of open, dry grasslands, agricultural and range lands, and desert habitats of low-growing vegetation. They are nocturnal and primarily hunt small rodents.

Nests are located in underground burrows. Burrowing owls collect mammal dung to put in and around their burrows; dung attracts dung beetles, which the owls then capture and eat. They are often seen on the ground or fence posts during the day, suggesting they are diurnal. Unlike most owls, female burrowing owls are smaller than males.

Swainson's Hawk (Buteo swainsoni)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
Sensitive	Threatened / G3	BLMS – Sensitive species

The Swainson's hawk is a medium-sized raptor with relatively long, pointed wings. The Swainson's hawk breeds in the western United States and Canada and winters in South America as far south as Argentina. Adapted to open grasslands, this raptor has become increasingly dependent on agriculture, especially alfalfa crops, as native communities are converted to

agricultural lands. The diet of the Swainson's hawk in California is varied, but mainly consists of small rodents called voles. Other small mammals, birds, and insects are also taken. Swainson's hawks often nest near riparian systems. They will also use lone trees in agricultural fields or pastures and roadside trees when adjacent to suitable foraging habitat. Swainson's hawks may occupy Juniper communities, if they are present in the area.

Prairie falcon (Falco mexicanus)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G5, S3	LC – Least Concern

The prairie falcon is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed ranges include annual grasslands to alpine meadows, but are associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. The prairie falcon requires sheltered cliff ledges for cover, and usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area. In California, average home range size is between 59 and 288 square kilometers. Prairie falcons migrate from the north and winter in California. Prairie falcons forage mostly in the early morning and late afternoon. The breeding season ranges from mid-February through mid-September, with peak between April and early August.

Loggerhead shrike (Lanius ludovicianus)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012), **BLM, USFS**
None	None / G4, S4	SCC – CA Species of Special Concern

The loggerhead shrike is a small gray, black, and white bird with a hooked beak. A common resident and winter visitor in lowlands and foothills throughout California, it prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. The loggerhead shrike eats mostly large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. It searches for prey from a perch at least 0.6 meters (2 feet) above ground, often much higher. Nests can be found on stable branches in densely foliaged shrubs or trees, usually well concealed. Breeding season is from March to May.

Bendire's thrasher (Toxostoma bendirei)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G4G5, S3	SSC – CA Species of Special Concern

Bendire's thrasher is a spring and summer resident and breeder in flat areas of desert succulent shrub and Joshua tree habitats in the Mojave Desert area. The bird occurs primarily in San Bernardino County and western Kern County. Migrants appear in California in February. Most have left breeding grounds by August. Bendire's thrasher forages on flat desert floors with

scattered clumps of cactus, yucca, and thorny scrub, and seeks cover in stands of thorny shrubs and cactus in flat desert areas. Potentially serious threats to this species include harvesting of Joshua tree and other yuccas, grazing by domestic livestock, urbanization, and off-road vehicle activity within its limited breeding range.

Le Conte's thrasher (Toxostoma lecontei)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G3, S3	SSC – CA Species of Special Concern

Le Conte's thrasher is an uncommon to rare local resident in southern California deserts from southern Mono County south to the Mexican border, and in western and southern San Joaquin Valley. The bird occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats, though it also occurs in Joshua tree habitat with scattered shrubs.

Le Conte's thrasher uses scattered desert shrubs and cactus frequently saltbush and cholla, for cover. It frequents desert washes and flats with scattered shrubs and large areas of open, sandy, or alkaline terrain in desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats. It commonly nests in dense, spiny shrubs or densely branched cactii in desert wash habitat. Le Conte's thrasher is not migratory, and its home range averages 100 acres in saltbrush-cholla scrub. Its breeding season extends from late January into early June, with peak activity between mid-March and mid-April.

Coast (Blainville's) Horned Lizard (Phrynosoma blainvillii)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
Sensitive	None / G4	SSC – CA Species of Special Concern

The coast horned lizard is a flat-bodied lizard with a wide, oval-shaped body, scattered enlarged pointed scales on the upper body and tail, and a large crown of horns or spines on the head. It is found along the Pacific coast from Baja California west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir. It also ranges up onto the Kern Plateau east of the crest of the Sierra Nevada (California Herps. 2013). It inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 8,000 feet in elevation and is found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. The coast horned lizard is also found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills. Eggs are laid from May to June, and hatch from August to September.

4.0 DISCUSSION

4.1 Protected Trees

Though final engineering plans for access routes and pads are still in the design phase, Joshua trees, protected under the California Desert Native Plants Act, can reasonably be expected to be

impacted by construction activities where this species occurs along the Project alignment. Impacts to trees will be avoided when practicable; however, Joshua trees will be impacted by construction. These impacts are adverse and will require appropriate permitting and mitigation from various jurisdictions.

4.2 Jurisdictional Areas

The Project would utilize multiple existing crossings of ephemeral drainages and one crossing of the Mojave River that fall under the jurisdiction of the USACE and/or the CDFW. Though final engineering plans for access routes and pads are still in the design phase, it can reasonably be assumed that some vegetation will need to be removed at these locations. Many of these impacts are expected to be temporary as plants grow and become reestablished in disturbed areas. Formal delineation of these drainages has been performed (BioResource Consultants, Inc. 2013) and indicates several sites may be considered waters of the state, and waters of the U.S. As such, a Streambed Alteration Agreement from CDFW, and permitting under Section 404 of the CWA under jurisdiction of the USACE, will be required for work in these drainages. Any native vegetation removed will be mitigated as required by the CDFW and USACE.

4.3 Special-status Plants

Due to very low winter rainfall during both survey years (2012, 2013), only one special-status plant species, Booth's evening-primrose, was observed during surveys. This species was located within the Project Area along Segment 7. However, database searches and habitat surveys indicate that nine special-status plant species have a high likelihood of occurring within the Project Area, and 18 special-status species have a medium likelihood of occurring within the Project Area. Impacts are not expected at a population level for any species, however some individuals of these species may be adversely impacted during grading of access roads, tower pads, or other workspaces. Impacts to the existing access roads and pads are not expected to be greater than what normally occurs during regular maintenance, though new access spur roads and tower pads will also be developed. Weeds that may out-compete native species may be more likely to spread and colonize disturbed areas following construction, causing indirect impacts to special-status plant populations. Therefore, further focused rare plant surveys are warranted to document the potential for Project implementation to impact special-status plants.

4.4 Special-status Wildlife Species

As discussed in Section 3.4.5, eight special-status species were determined to have a high likelihood of occurring within the Project Area and 14 special-status species were determined to have a medium likelihood of occurring within the Project Area. Of these species, only 10 were observed during surveys. Special-status species observed included: desert tortoise, Cooper's hawk, golden eagle, burrowing owl, Swainson’s hawk, prairie falcon, loggerhead shrike, Bendire's thrasher, Le Conte's thrasher, and the coast horned lizard.

4.4.1 Desert Tortoise (*Gopherus agassizii*)

Due to the federal- and state-endangered status of the desert tortoise, impacts to this species would be considered significant. Desert tortoise or their sign was observed along most Segments of the Project. Any activity that results in the incidental loss of individual tortoises or their fertile eggs is considered take by USFWS under the ESA, as well as by CDFW under the CESA. This

species is particularly at risk of injury during construction activities. The tortoise's slow rate of movement combined with its cryptic coloration and tendency to seek shade under vehicles creates high potential for this species to be crushed by construction equipment. In addition, tortoises or their eggs in burrows may also be crushed if their burrow is collapsed during construction activities. Therefore, to fully identify the potential extent of Project impacts, a focused survey for desert tortoise should be performed to ascertain the actual population of this species and their distribution throughout the Project Area.

4.4.2 Burrowing Owl (*Athene cunicularia)*

Due to the special status of the burrowing owl, impacts to this species would result in significant impacts. Burrowing owl or their sign was observed along many Segments of the Project. This species is particularly at risk of injury during construction activities because they nest and rear their young in burrows that may be crushed during construction activities. Construction disturbance during the breeding season (February 1–August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment, is considered take by USFWS under the MBTA, as well as by CDFW under FGCs 3503, 3503.5, and 3513. Therefore, to fully identify the potential impacts, a focused survey for burrowing owl should be performed to ascertain the actual population of this species and its distribution throughout the Project Area.

4.4.3 Mojave Ground Squirrel *(Xerospermophilus mohavensis)*

Mojave Ground Squirrel was determined to have a medium chance of occurring within the Project Area, but the species was not documented during surveys. Suitable habitat was identified along portions of all Segments of the Project alignment. Although impacts to Mojave ground squirrel caused by habitat loss would be minimal, impacts could occur during construction through accidental take. Due to the state-threatened and BLM Sensitive listing of this species, the presence of suitable habitat, and the potential for impacts associated with construction activities, a focused survey for Mojave ground squirrel should be performed to ascertain the actual population and distribution within the Project Area.

4.4.4 Avian Species

As shown above, 7 special-status avian species (not including burrowing owl) were documented along the Project alignment. These species included Cooper's hawk, golden eagle, Swainson's hawk, prairie falcon, loggerhead shrike, Bendire's thrasher, and Le Conte's thrasher. An additional four avian species were determined to have a medium potential to occur within the Project Area but were not documented during surveys. These species include long-eared owl *(Asio otus),* yellow warbler *(Dendroica petechia brewsteri),* yellow-breasted chat *(Icteria virens),* and gray vireo *(Vireo vicinior).*

Suitable bird nesting habitat is present throughout much of the Project Area and along Project access routes. Activities such as grading, vegetation trimming or removal, and general project noise or vibration could result in construction-related impacts to nesting birds, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1–August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment, is considered take by USFWS under the MBTA, as well as by CDFW under the FGCs 3503, 3503.5, and 3513. Due to the potential for impacts, and the presence of special-status avian species, a focused avian survey should be

performed to better ascertain the species diversity, and estimate population numbers and distribution within the Project Area.

4.4.5 Reptile Species

Two special-status reptile species (not including desert tortoise) were determined to have the potential to occur within the Project Area: coast horned lizard *(Phrynosoma blainvillii),* and Mojave fringe-toed lizard *(Uma scoparia).* Coast horned lizard was documented along Alternative Segment 6. Mojave fringe-toed lizard was not observed during surveys but suitable habitat was present within much of the Project, Area particularly along the easternmost portion of the North Telecom route.

4.4.6 Arroyo Toad

The arroyo toad was determined to have a medium likelihood of occurrence near the Mojave River (Segment 7 and Alternative Segment 6). However, due to low rainfall and survey timing (daytime hours), this species was not observed. Therefore, to determine the presence of this species and to better determine potential impacts of the Project, a focused survey for arroyo toad is required.

5.0 LITERATURE CITED

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ATTACHMENT A:

Data and Maps

Plant Species and Wildlife Compendiums

Plant Species Observed Along Project Alignment
(Bold print signifies a special-status species)

Scientific Name	Common Name	Family	Native –Non-Native
Achnatherum hymenoides	Indian rice grass	*Poaceae*	Native
Allium fimbriatum	Wild onion	*Alliaceae*	Native
Ambrosia acanthicarpa	Burrweed	*Asteraceae*	Native
Ambrosia dumosa	White bursage	*Asteraceae*	Native
Amsinckia tessellata	Fiddleneck	*Baraginaceae*	Native
Argemone corymbosa	Mojave prickly poppy	*Papaveraceae*	Native
Artemisia californica	California sagebrush	*Asteraceae*	Native
Artemisia spinescens	Budsage	*Asteraceae*	Native
Atriplex canescens	Fourwing saltbush	*Chenopodiaceae*	Native
Atriplex parryi	Parry's saltbush	*Chenopodiaceae*	Native
Atriplex polycarpa	Allscale	*Chenopodiaceae*	Native
Atriplex hymenlytra	Desert holly	*Chenopodiaceae*	Native
Brassica nigra	Black mustard	*Brassicaceae*	Non-Native
Bromus rubens	Red brome	*Poaceae*	Non-Native
Bromus tectorum	Cheatgrass	*Poaceae*	Non-Native
Camissonia boothii	**Booth's evening-primrose**	***Onagraceae***	**Native**
Camissonia campestris	Mojave suncup	*Onagraceae*	Native
Camissonia claviformis	Brown eyed primrose	*Onagraceae*	Native
Chaenactis fremontii	Pincusion flower	*Asteraceae*	Native
Chrysothamnus viscidiflorus	Yellow rabbit brush	*Asteraceae*	Native
Cleomella obtusifolia	Bluntleaf stinkweed	*Cleomaceae*	Native
Croton californicus	Croton	*Euphorbiaceae*	Native
Cryptantha circumscissa	Forget me not	*Boraginaceae*	Native
Cylindropuntia ramosissima	Branched pencil cholla	*Cactaceae*	Native
Descurainia pinnata	Tansy mustard	*Brassicaceae*	Native
Dieteria canescens	Hoary aster	*Asteraceae*	Native
Echinocactus polycephalus	Cottontop cactus	*Cactaceae*	Native

Scientific Name	Common Name	Family	Native –Non-Native
Encelia actoni	Acton's encelia	*Asteraceae*	Native
Encelia farinosa	Brittlebush	*Asteraceae*	Native
Encelia frutescens	Bush encelia	*Asteraceae*	Native
Ephedra californica	Desert tea	*Ephedraceae*	Native
Ephedra viridis	Mormon tea	*Ephedraceae*	Native
Ephedra nevadensis	Nevada joint fir	*Ephedraceae*	Native
Eriastrum eremicum	Desert wooly star	*Polemoniaceae*	Native
Ericameria laricifolia	Trupentine bush	*Asteraceae*	Native
Ericameria nauseosa	Rubber rabbit brush	*Asteraceae*	Native
Eriodictyon trichocalyx	Hairy yerba santa	*Boraginaceae*	Native
Eriogonum fasciculatum	California buckwheat	*Polygonaceae*	Native
Eriogonum inflatum	Desert trumpet	*Polygonaceae*	Native
Eriogonum sp.	Buckwheat	*Polygonaceae*	Unknown
Eriophyllum wallacei	Wallace eriophyllum	*Asteraceae*	Native
Erodium cicutarium	Storksbill	*Geraniaceae*	Non-Native
Eschscholzia minutiflora	Pygmy poppy	*Papaveraceae*	Native
Euphorbia albomarginata	Rattlesnake spruge	*Euphorbiaceae*	Non-Native
Ferocactus cylindraceus var. cylindraceus	California barrel cactus	*Cactaceae*	Native
Grayia spinosa	Hopsage	*Chenopodiaceae*	Native
Hesperoyucca whipplei	Chaparral yucca	*Agavaceae*	Native
Hirschfeldia incana	Sahara mustard	*Brassicaceae*	Non-Native
Hymenoclea salsola	Cheese bush	*Asteraceae*	Native
Juniperus Californica	California Juniper	*Cupressaceae*	Native
Larrea tridentata	Creosote bush	*Zygophylaceae*	Native
Lupinus sp.	Lupine	*Fabaceae*	Unknwon
Lycium andersonii	Anderson's thorn bush	*Solanaceae*	Native
Malacothrix glabrata	Desert dandelion	*Asteraceae*	Native

Scientific Name	Common Name	Family	Native –Non-Native
Mentzelia albicaulis	Small flowered blazing star	*Loasaceae*	Native
Mirabilis multiflora	Desert four o clock	*Nyctaginaceae*	Native
Nama demissum	Purple mat	*Hyrophllaceae*	Native
Opuntia basilaris	Beavertail cactus	*Cactaceae*	Native
Opuntia echinocarpa	Silver cholla	*Cactaceae*	Native
Pectocarya penicillata	Baja pectocarya	*Boraginaceae*	Native
Pectocarya platycarpa	Broad nutted comb bur	*Boraginaceae*	Native
Phacelia distans	Common phaceila	*Hyrophyllaceae*	Native
Phacelia sp.	Phaceila	*Hydrophyllaceae*	Unknown
Platanus racemosa	Sycamore	*Platanaceae*	Native
Populus fremontii	Freemont cottonwood	*Salicaceae*	Native
Psorothamnus schottii	Indigo bush	*Fabaceae*	Native
Salix exigua	Narrow leaved willow	*Salicaceae*	Native
Salix laevigata	Red willow	*Salicaceae*	Native
Salix lasiolepis	Arroyo willow	*Salicaceae*	Native
Salsola tragus	Russian thistle	*Chenopdiaceae*	Non-Native
Sambucus nigra	Black elderberry	*Adoxaceae*	Native
Schinus molle	Peruvian pepper tree	*Anacardiaceae*	Non-Native
Schismus barbatus	Mediterranean grass	*Poaceae*	Non-native
Solanum sp.	Nightshade	*Solanaceae*	Unknown
Stephanomeria pauciflora	Desert straw	*Asteraceae*	Native
Suaeda moquinii	Mojave seablite	*Chenopodaceae*	Native
Tamarix sp.	Salt cedar	*Tamaricaceae*	Non-Native
Vulpia myuros	Rattail fescue	*Poaceae*	Non-Native
Xylorhiza tortifolia	Mojave woodystar	*Asteraceae*	Native
Yucca brevifolia	Joshua tree	*Agavaceae*	Native
Yucca schidigera	Mojave yucca	*Agavaceae*	Native

Animal Species Observed During Surveys Along Prefered Project Alignment
(Bold print indicates a special-status species)

Common Name	Scientific Name
Amphibians	
American bullfrog	*Lithobates catesbeianus*
Reptiles	
Glossy snake	*Arizona elegans*
Great basin whiptail	*Aspidoscelis tigris tigris*
Western Zebra-tailed Lizard	*Callisaurus draconoides rhodostictus*
Red racer	*Coluber flagellum piceus*
Mojave desert sidewinder	*Crotalus cerastes cerastes*
Northern mohave rattlesnake	*Crotalus scutulatus scutulatus*
Northern desert iguana	*Dipsosaurus dorsalis dorsalis*
Desert tortoise	***Gopherus agassizii***
Southern desert horned lizard	*Phrynosoma platyrhinos calidiarum*
Great basin gopher snake	*Pituophis catenifer deserticola*
Mojave patched-nosed snake	*Salvadora hexalepis mojavensis*
Common chuckwalla	*Sauromalus ater*
Desert spiny lizard	*Sceloporus magister*
Western Side-blotched Lizard	*Uta stansburiana elegans*
Desert night lizard	*Xantusia vigilis*
Birds	
Cooper's hawk	***Accipiter cooperii***
White-throated swift	*Aeronautes saxatalis*
Red-winged blackbird	*Agelaius phoeniceus*
Chukar	*Alectoris chukar*
Sage sparrow	*Amphispiza belli*
Black-throated sparrow	*Amphispiza bilineata*
Western scrub-jay	*Aphelocoma californica*

Common Name	Scientific Name
Golden eagle	***Aquila chrysaetos***
Burrowing owl	***Athene cunicularia***
Verdin	*Auriparus flaviceps*
Juniper titmouse	*Baeolophus ridgwayi*
Bufflehead	*Bucephala albeola*
Red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	***Buteo swainsonii***
California quail	*Callipepla californica*
Anna's hummingbird	*Calypte anna*
Cactus wren	*Campylorhynchus brunneicapillus*
Lesser goldfinch	*Carduelis psaltria*
House finch	*Carpodacus mexicanus*
Turkey vulture	*Cathartes aura*
Canyon wren	*Catherpes mexicanus*
Killdeer	*Charadrius vociferus*
Lark sparrow	*Chondestes grammacus*
Northern flicker	*Colaptes auratus*
Rock pigeon	*Columba livia*
Common raven	*Corvus corax*
Yellow-rumped warbler	*Dendroica coronata*
Horned lark	*Eremophila alpestris*
Brewer's blackbird	*Euphagus cyanocephalus*
Prairie falcon	***Falco mexicanus***
American kestrel	*Falco sparverius*
American coot	*Fulica americana*
Barn swallow	*Hirundo rustica*
Bullock's oriole	*Icterus bullockii*
Loggerhead shrike	***Lanius ludovicianus***

Common Name	Scientific Name
Ring-billed gull	*Larus delawarensis*
California towhee	*Melozone crissalis*
Northern mockingbird	*Mimus polyglottos*
Ash-throated flycatcher	*Myiarchus cinerascens*
Sage thrasher	*Oreoscoptes montanus*
House sparrow	*Passer domesticus*
American white pelican	*Pelecanus erythrorhynchos*
Cliff swallow	*Petrochelidon pyrrhonota*
Nuttal's woodpecker	*Picoides nuttallii*
Ladder-backed woodpecker	*Picoides scalaris*
Blue-gray gnatcatcher	*Polioptila caerulea*
Bushtit	*Psaltriparus minimus*
Rock wren	*Salpinctes obsoletus*
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
Rufous hummingbird	*Selasphorus rufus*
Mountain bluebird	*Sialia currucoides*
Western bluebird	*Sialia mexicana*
Brewer's sparrow	*Spizella breweri*
Chipping sparrow	*Spizella passerina*
Western meadowlark	*Sturnella neglecta*
European starling	*Sturnus vulgaris*
Violet-green swallow	*Tachycineta thalassina*
Bewick’s wren	*Thryomanes bewickii*
Bendire's thrasher	***Toxostoma bendirei***
Le Conte's thrasher	***Toxostoma lecontei***
Californa thrasher	*Toxostoma redivivum*
Western kingbird	*Tyrannus verticalis*

Common Name	Scientific Name
Warbling vireo	*Vireo gilvus*
Mourning dove	*Zenaida macroura*
White-crowned sparrow	*Zonotrichia leucophrys*
Mammals	
Antelope ground squirrel	*Ammospermophilus leucurus*
Coyote	*Canis latrans*
Black-tailed jackrabbit	*Lepus californicus*
Desert woodrat	*Neotoma lepida*
California ground squirrel	*Otospermophilus beecheyi*
Desert cottontail	*Sylvilagus audubonii*
Desert kit fox	*Vulpes macrotis arsipus*

Animal Species Observed During Surveys Along Alternative Project Segments (Bold print indicates a special-status species)

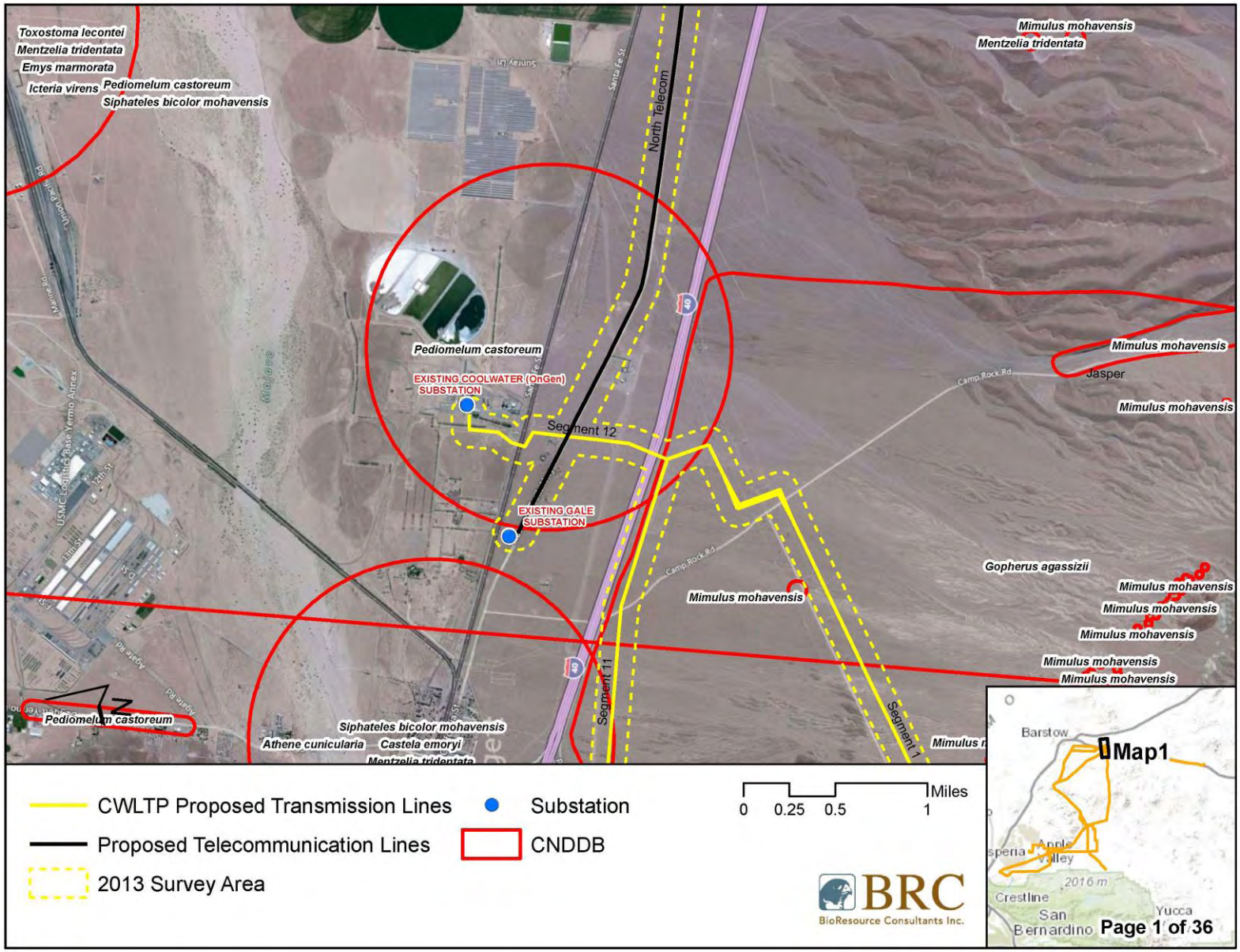
Common Name	Scientific Name
Reptiles	
Great basin whiptail	*Aspidoscelis tigris tigris*
Western Zebra-tailed Lizard	*Callisaurus draconoides rhodostictus*
Red racer	*Coluber flagellum piceus*
Mohave desert sidewinder	*Crotalus cerastes cerastes*
Northern mohave rattlesnake	*Crotalus scutulatus scutulatus*
Great basin collared lizard	*Crotaphytus bicinctores*
Northern desert iguana	*Dipsosaurus dorsalis dorsalis*
Desert tortoise	***Gopherus agassizii***
Coast (Blainville's) horned lizard	***Phrynosoma blainvillii***
Southern desert horned lizard	*Phrynosoma platyrhinos calidiarum*
Great basin gopher snake	*Pituophis catenifer deserticola*
Common chuckwalla	*Sauromalus ater*
Desert spiny lizard	*Sceloporus magister*
Western side-blotched lizard	*Uta stansburiana elegans*
Birds	
Spotted sandpiper	Actitis macularius
White-throated swift	Aeronautes saxatalis
Red-winged blackbird	Agelaius phoeniceus
Sage sparrow	Amphispiza belli
Black-throated sparrow	Amphispiza bilineata
Mallard	Anas platyrhynchos
Western scrub-jay	Aphelocoma californica
Golden eagle	***Aquila chrysaetos***
Burrowing owl	***Athene cunicularia***
Verdin	*Auriparus flaviceps*

Common Name	Scientific Name
Red-tailed hawk	***Buteo jamaicensis***
California quail	*Callipepla californica*
Anna's hummingbird	*Calypte anna*
Cactus wren	*Campylorhynchus brunneicapillus*
Wilson's warbler	*Cardellina pusilla*
Lesser goldfinch	*Carduelis psaltria*
House finch	*Carpodacus mexicanus*
Turkey vulture	*Cathartes aura*
Canyon wren	*Catherpes mexicanus*
Killdeer	*Charadrius vociferus*
Lark sparrow	*Chondestes grammacus*
Rock pigeon	*Columba livia*
Common raven	*Corvus corax*
Horned lark	*Eremophila alpestris*
Brewer's blackbird	*Euphagus cyanocephalus*
American kestrel	*Falco sparverius*
American coot	*Fulica americana*
Macgillivray's Warbler	*Geothlypis tolmiei*
Barn swallow	*Hirundo rustica*
Loggerhead shrike	***Lanius ludovicianus***
California towhee	*Melozone crissalis*
Northern mockingbird	*Mimus polyglottos*
Ash-throated flycatcher	*Myiarchus cinerascens*
Orange-crowned warbler	*Oreothlypis celata*
Nashville warbler	*Oreothlypis ruficapilla*
House sparrow	*Passer domesticus*
Cliff swallow	*Petrochelidon pyrrhonota*
Western tanager	*Piranga ludoviciana*

Common Name	Scientific Name
Bushtit	*Psaltriparus minimus*
Rock wren	*Salpinctes obsoletus*
Say's phoebe	*Sayornis saya*
Black-throated gray warbler	*Setophaga nigrescens*
Townsend's warbler	*Setophaga townsendi*
Western bluebird	*Sialia mexicana*
Brewer's sparrow	*Spizella breweri*
Chipping sparrow	*Spizella passerina*
Western meadowlark	*Sturnella neglecta*
European starling	*Sturnus vulgaris*
Violet-green swallow	*Tachycineta thalassina*
Bewick's wren	*Thryomanes bewickii*
Le Conte's thrasher	***Toxostoma lecontei***
California thrasher	*Toxostoma redivivum*
Mourning dove	*Zenaida macroura*
Mammals	
Antelope ground squirrel	*Ammospermophilus leucurus*
Coyote	*Canis latrans*
Black-tailed Jackrabbit	*Lepus californicus*
Desert Woodrat	*Neotoma lepida*
California ground squirrel	*Otospermophilus beecheyi*
Desert Cottontail	*Sylvilagus audubonii*
Desert Kit Fox	*Vulpes macrotis arsipus*

Figure 2:

CNDDB Documented Listed Plant and Animal Species in the Project Vicinity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Emys marmorata
Icteria virens
Pediomelum castoreum
Siphateles bicolor mohavensis
Mimulus mohavensis
Mentzelia tridentata
North Telecom
Pediomelum castoreum
EXISTING COOLWATER (OnGen) SUBSTATION
Segment 12
EXISTING GALE SUBSTATION
Jasper
Camp Rock Rd
Mimulus mohavensis
Gopherus agassizii
Segment 11
Segment 1
Pediomelum castoreum
Siphateles bicolor mohavensis
Athene cunicularia
Castela emoryi
Mentzelia tridentata
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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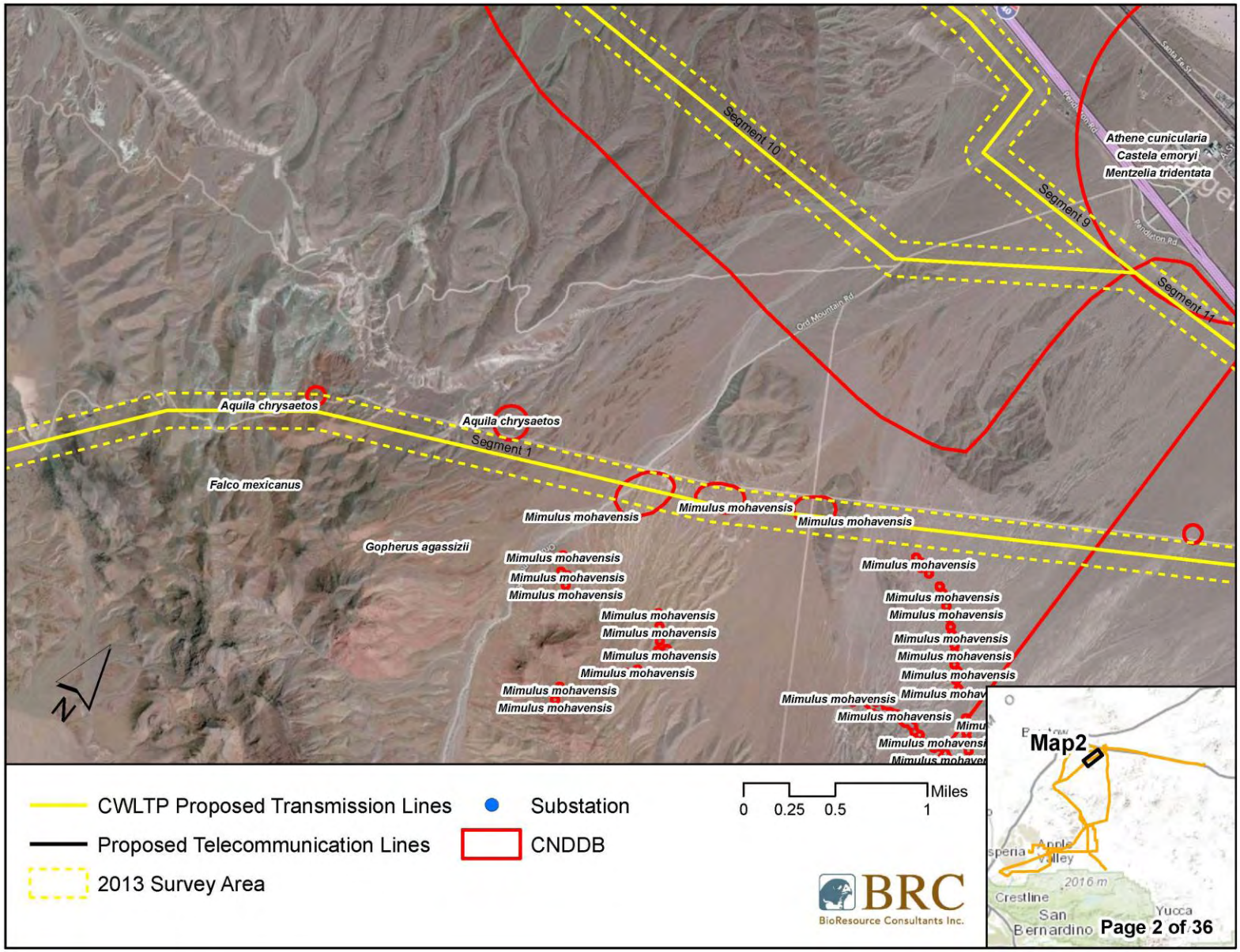
BioResource Consultants Inc.
Barstow
Map1
Apple Valley
Crestline
San Bernardino
Yucca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Segment 9
Segment 11
Segment 1
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Castela emoryi
Mentzelia tridentata
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Aquila chrysaetos
Falco mexicanus
Gopherus agassizii
Mimulus mohavensis
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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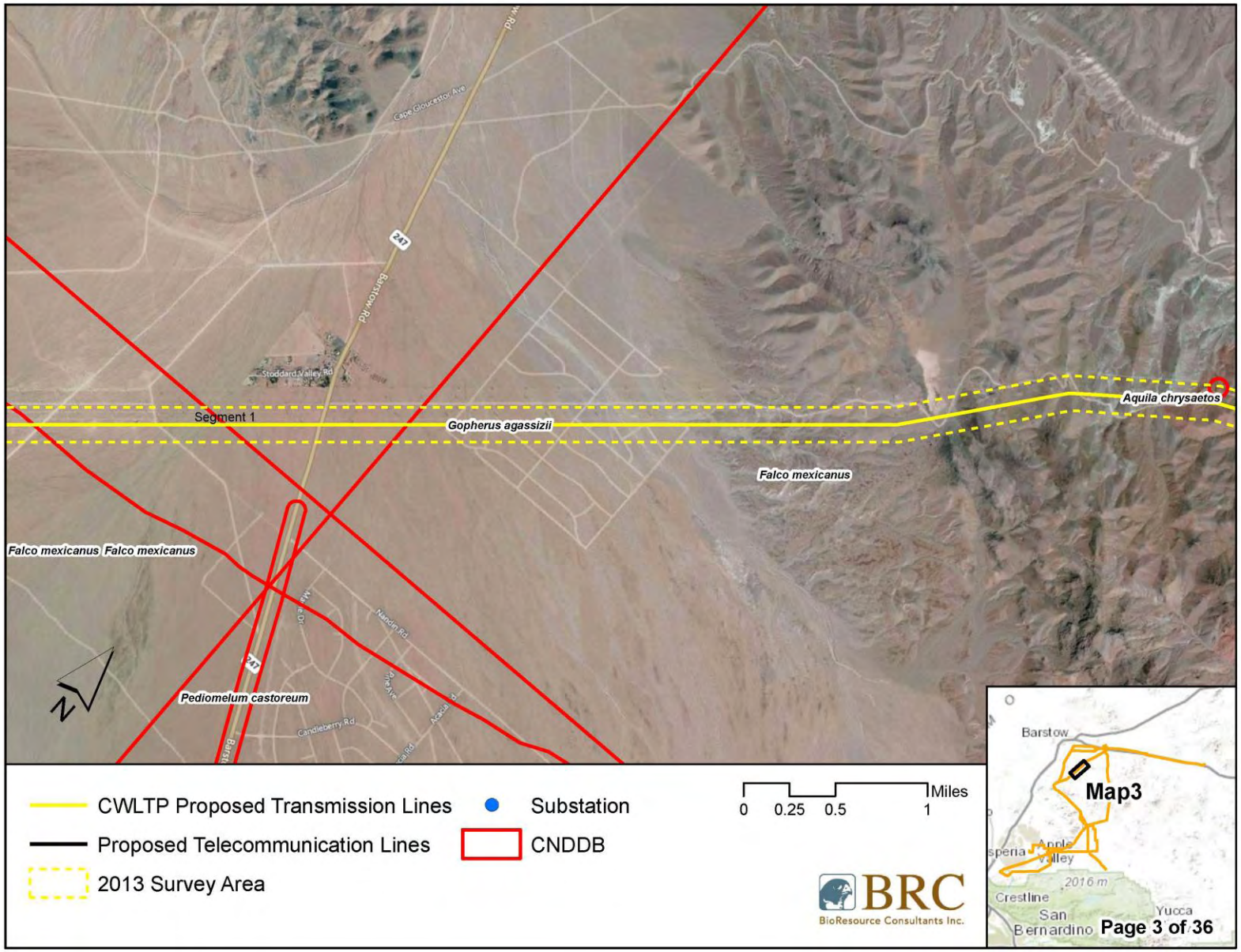
BioResource Consultants Inc.
Map2
Apple Valley
Crestline
San Bernardino
Yucca
2016 m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Barstow Rd
Stoddard Valley Rd
Cape Gloucester Ave
Nandin Rd
Candleberry Rd
247
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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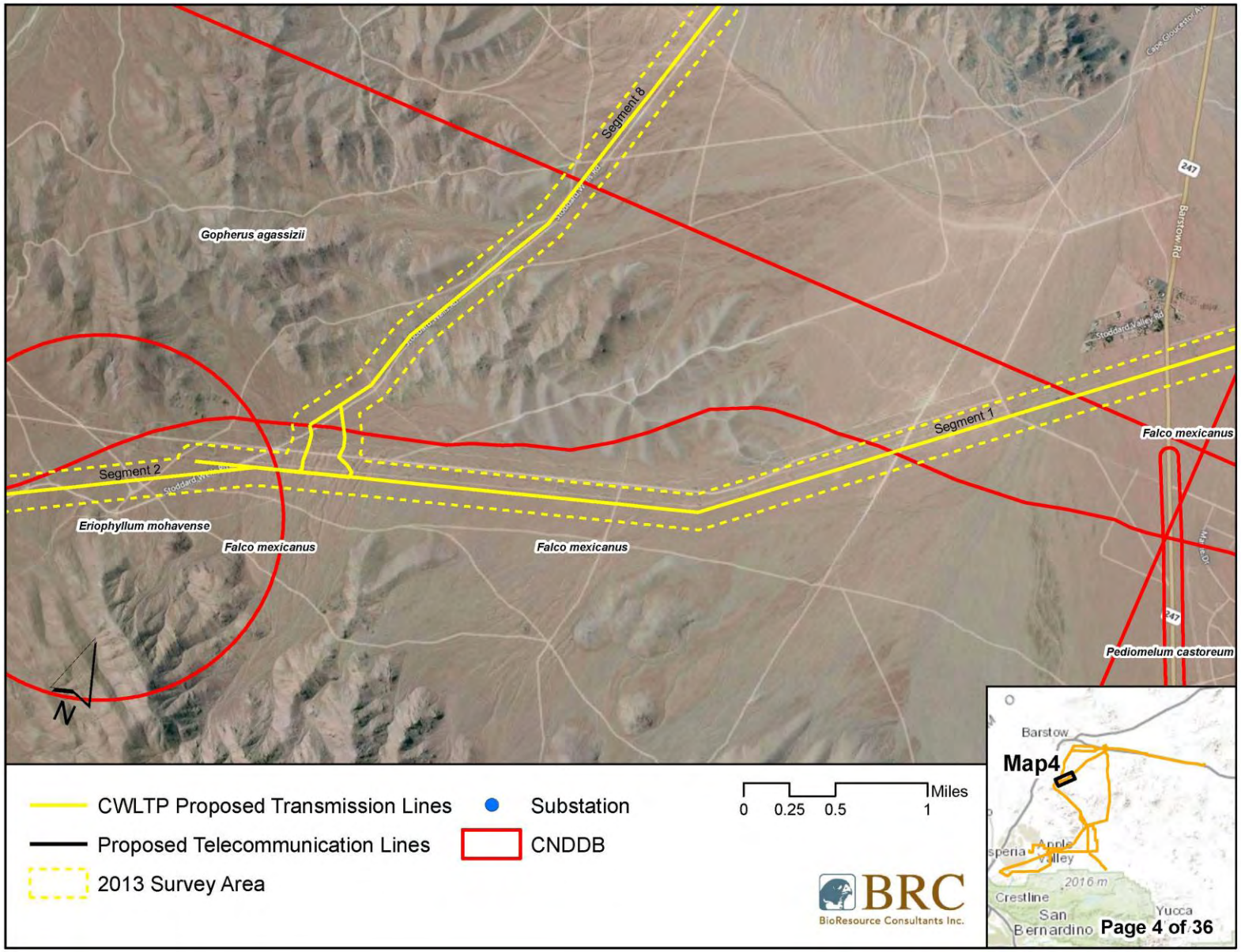
BRC
BioResource Consultants Inc.
Barstow
Map3
Apple Valley
Crestline
San Bernardino
Yucca
2016 m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Segment 2
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Eriophyllum mohavense
Falco mexicanus
Falco mexicanus
Pediomelum castoreum
Barstow Rd
247
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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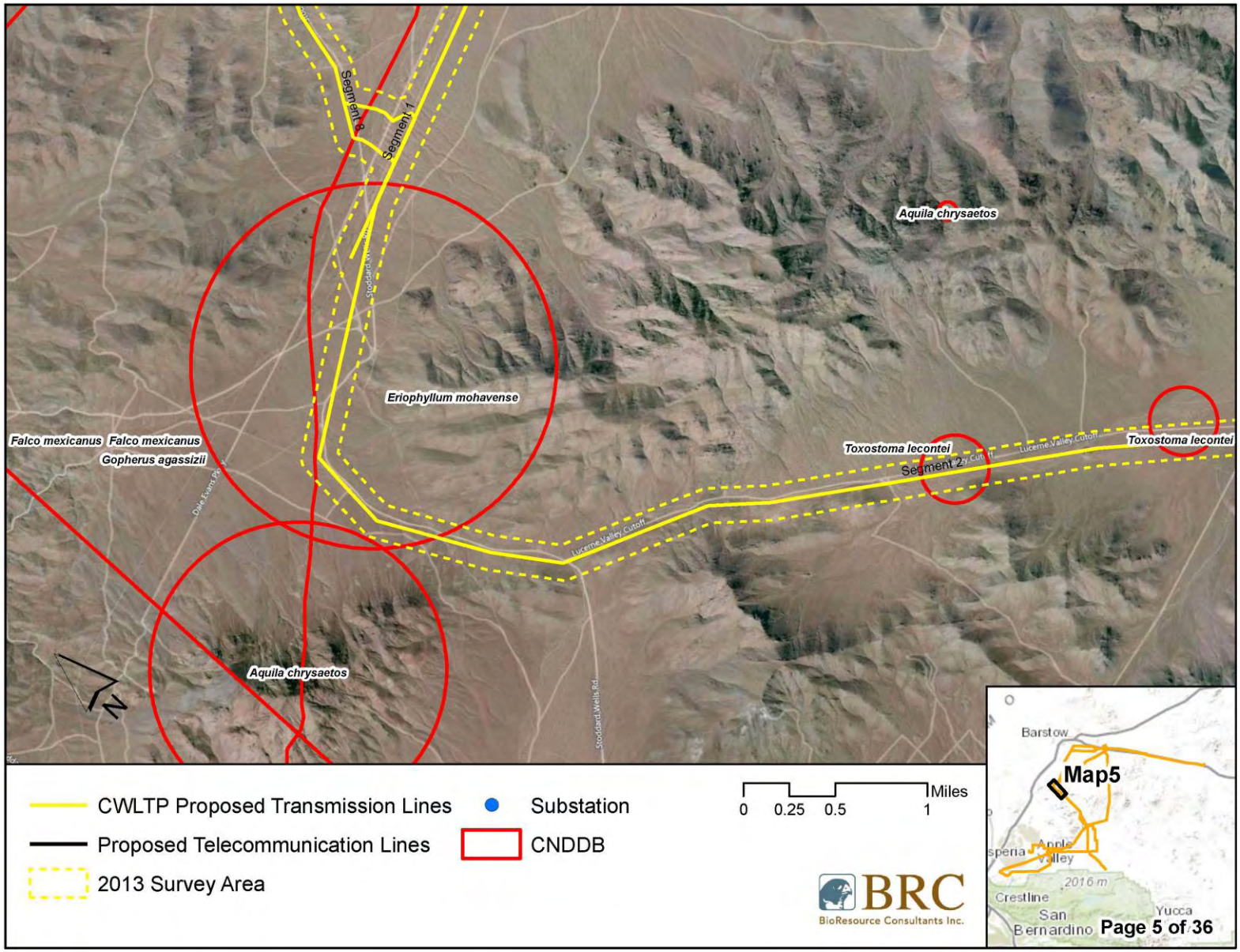
BRC
BioResource Consultants Inc.
Barstow
Map4
Apple Valley
Crestline
San Bernardino
Yucca
2016 m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Falco mexicanus
Gopherus agassizii
Toxostoma lecontei
Toxostoma lecontei
Segment 2
Lucerne Valley Cutoff
Aquila chrysaetos
Stoddard Wells Rd
Dale Evans Pkwy
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
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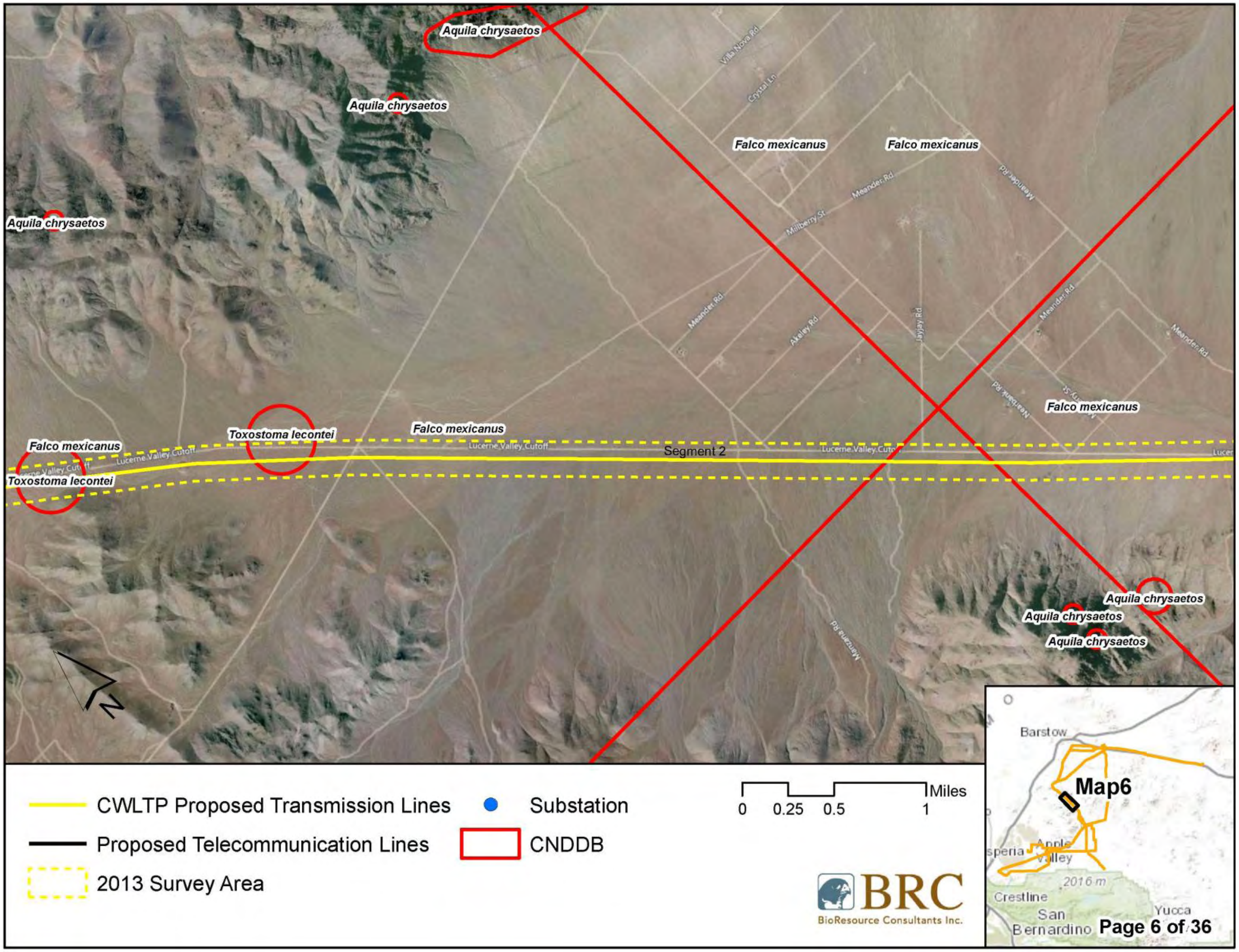
BRC
BioResource Consultants Inc.
Barstow
Map5
Apple Valley
Crestline
San Bernardino
Yucca
2016 m



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Falco mexicanus
Falco mexicanus
Falco mexicanus
Toxostoma lecontei
Toxostoma lecontei
Segment 2
Lucerne Valley Cutoff
Aquila chrysaetos
Aquila chrysaetos
Aquila chrysaetos
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
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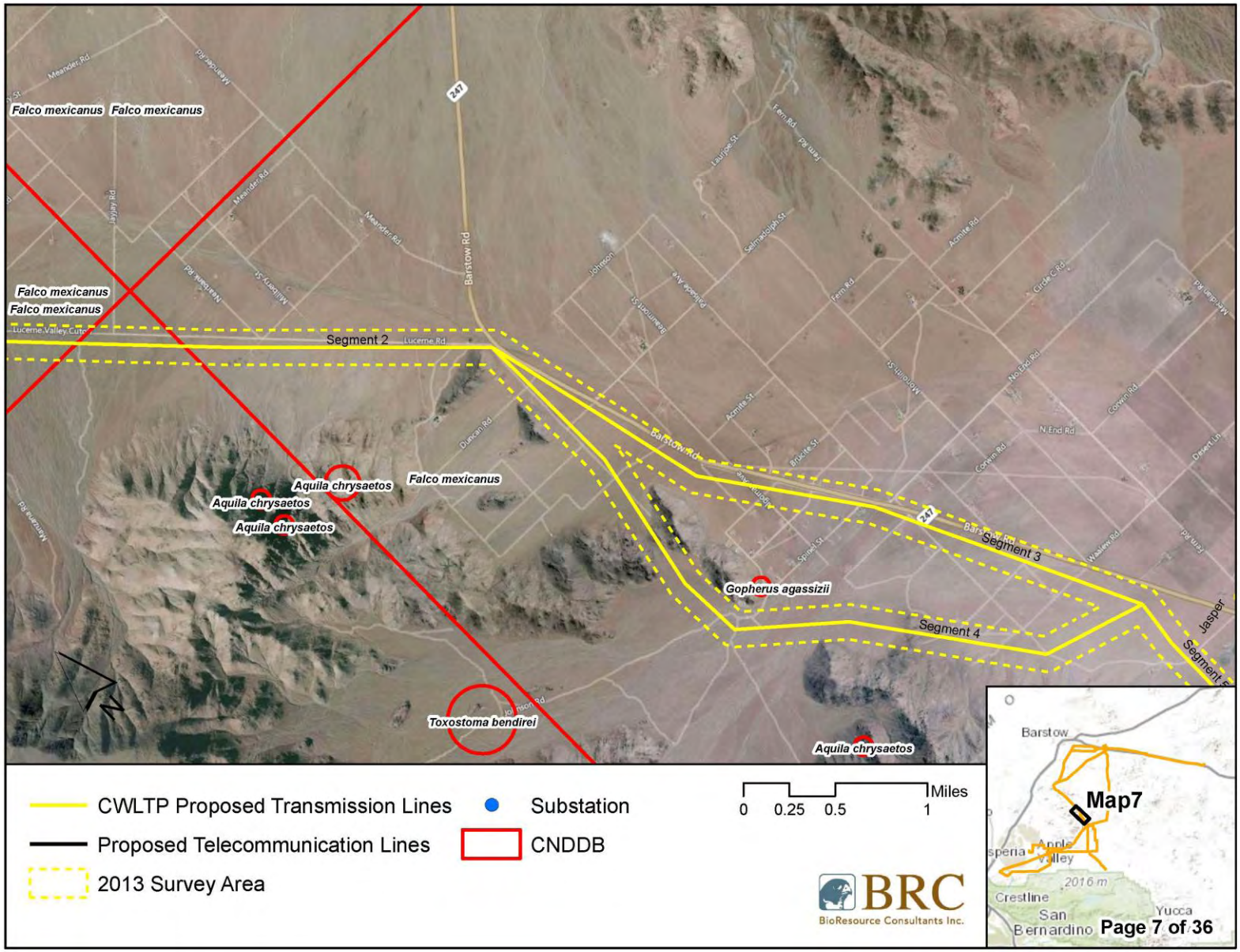
BRC
BioResource Consultants Inc.
Barstow
Map6
Apple Valley
Crestline
San Bernardino
Yucca
Page 6 of 36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Falco mexicanus
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Aquila chrysaetos
Falco mexicanus
Gopherus agassizii
Segment 3
Segment 4
Segment 5
Toxostoma bendirei
Aquila chrysaetos
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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Miles
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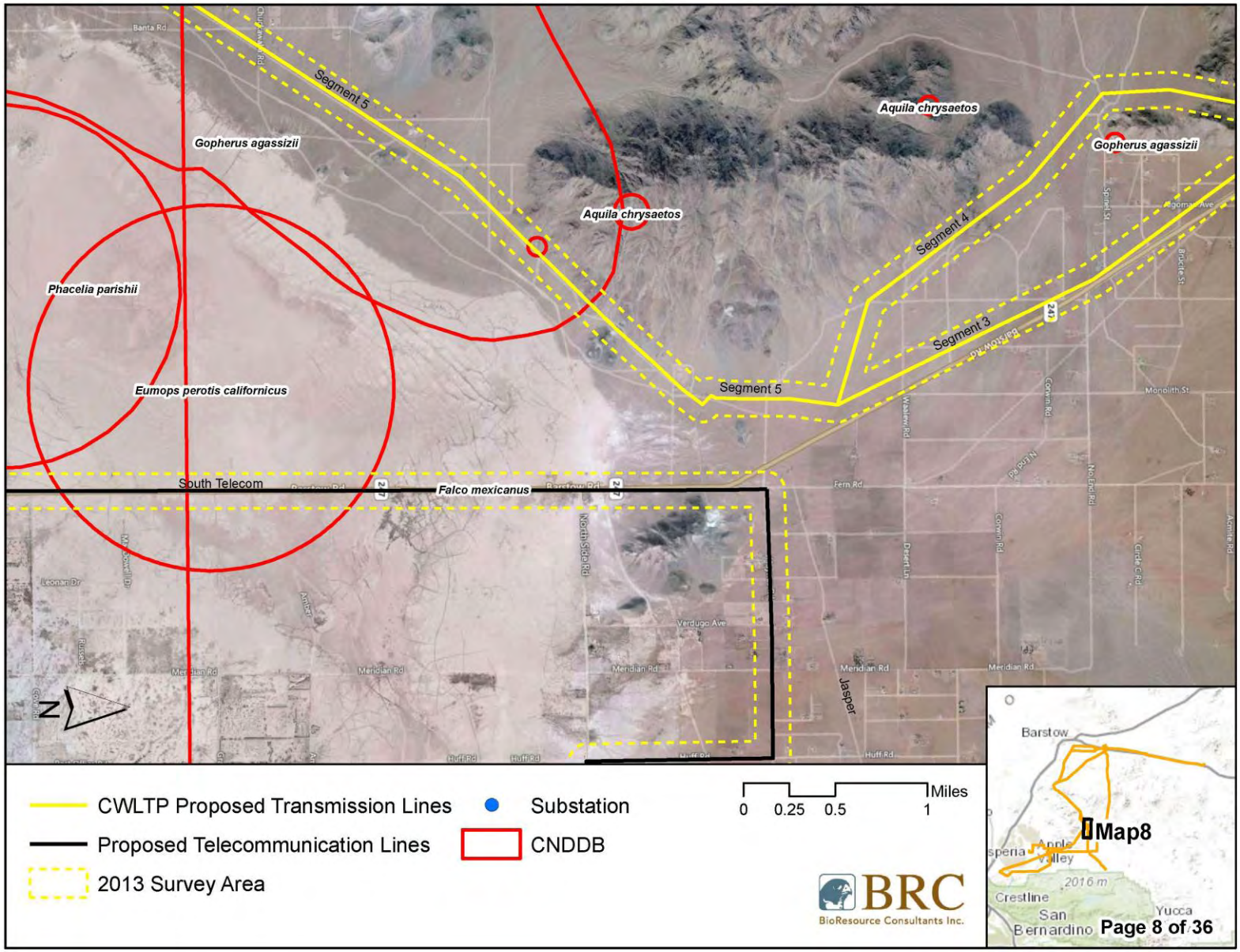
BioResource Consultants Inc.
Barstow
Map7
Apple Valley
Crestline
San Bernardino
Yucca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Segment 4
Segment 3
Segment 5
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Eumops perotis californicus
South Telecom
Falco mexicanus
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
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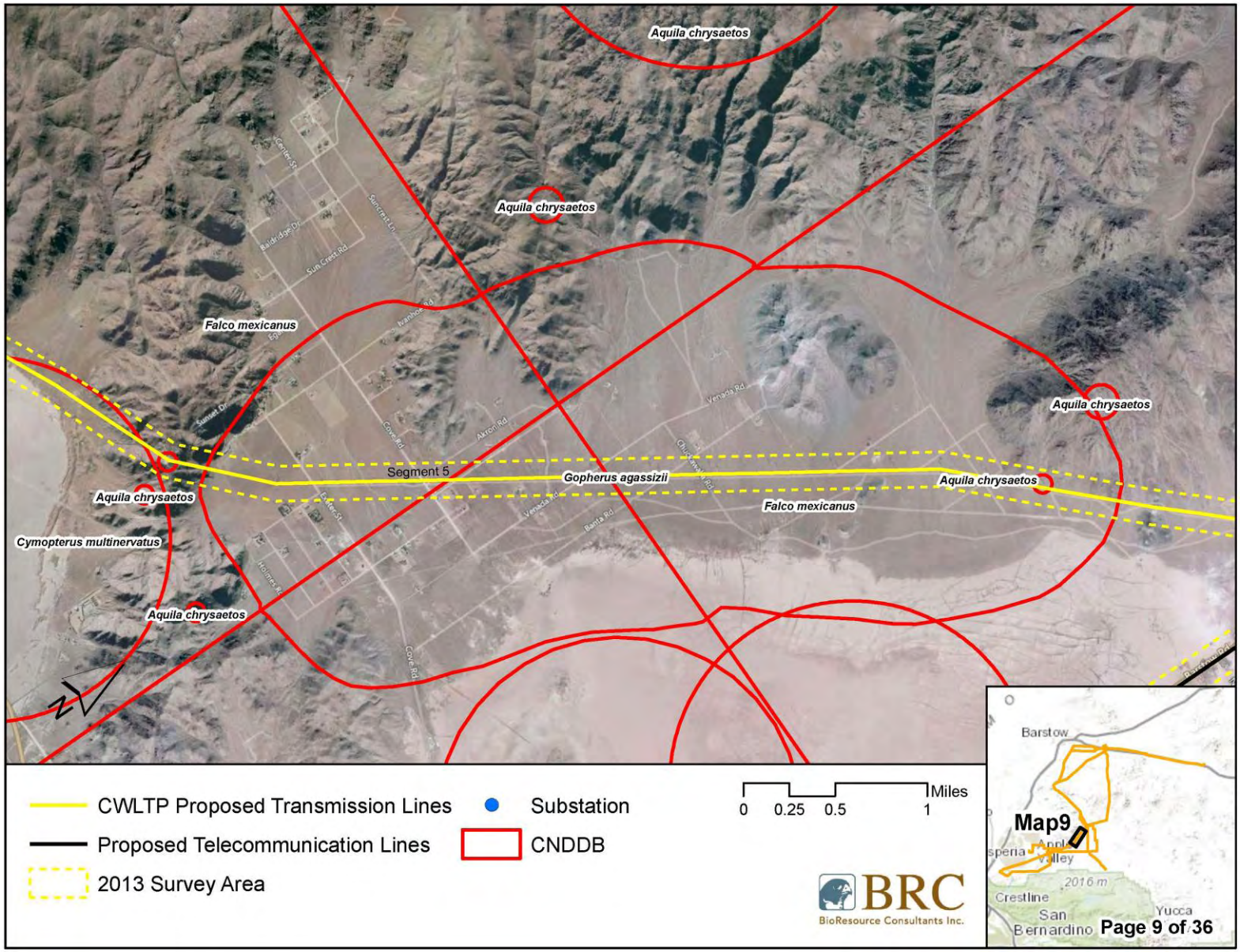
BioResource Consultants Inc.
Map8
Barstow
Apple Valley
Crestline
San Bernardino
Yucca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Falco mexicanus
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Gopherus agassizii
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Falco mexicanus
Cymopterus multinervatus
Aquila chrysaetos
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
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BRC
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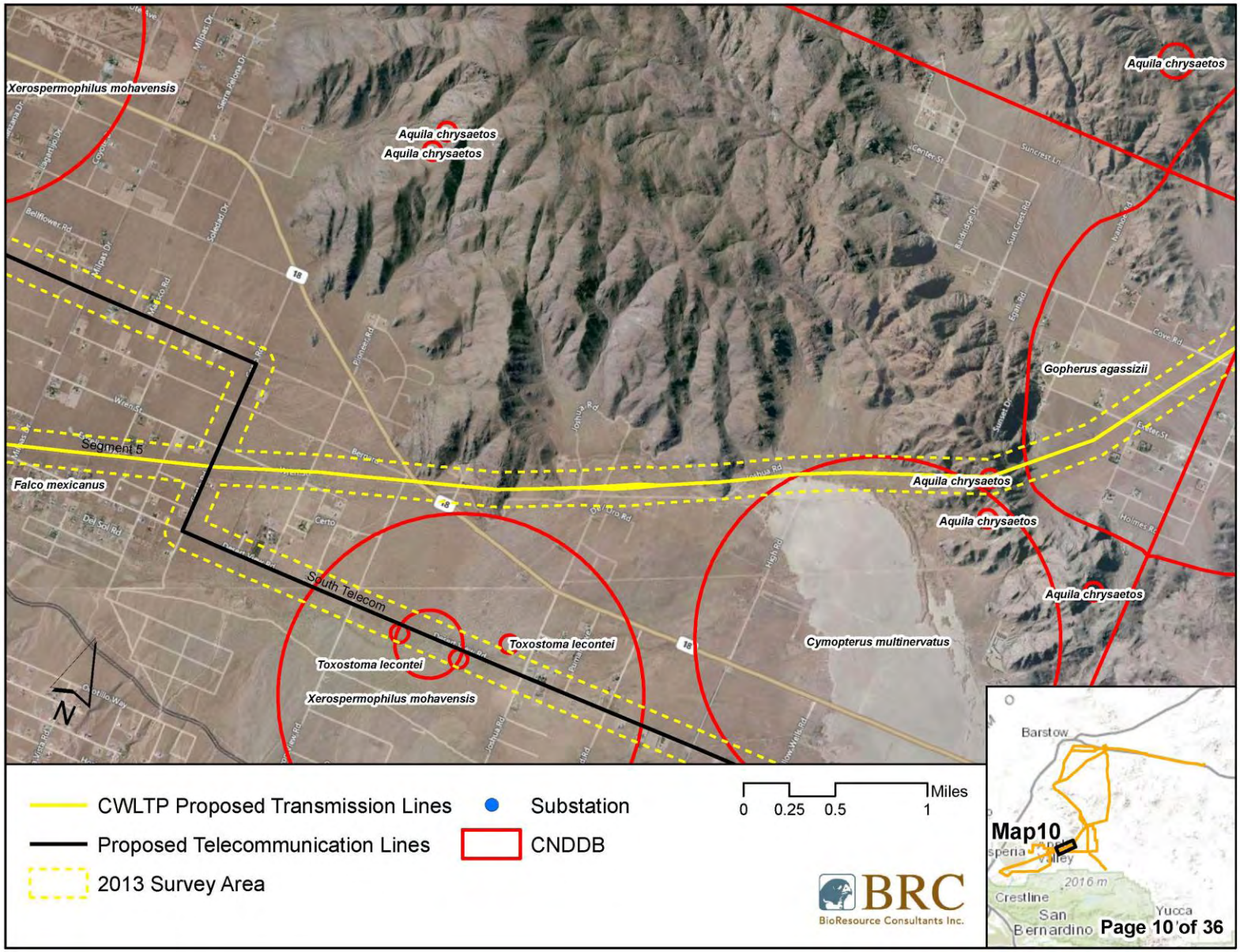
Barstow
Map9
Crestline
San Bernardino
Yucca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Aquila chrysaetos
Gopherus agassizii
Segment 5
Falco mexicanus
Aquila chrysaetos
Aquila chrysaetos
Aquila chrysaetos
South Telecom
Toxostoma lecontei
Toxostoma lecontei
Xerospermophilus mohavensis
Cymopterus multinervatus
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
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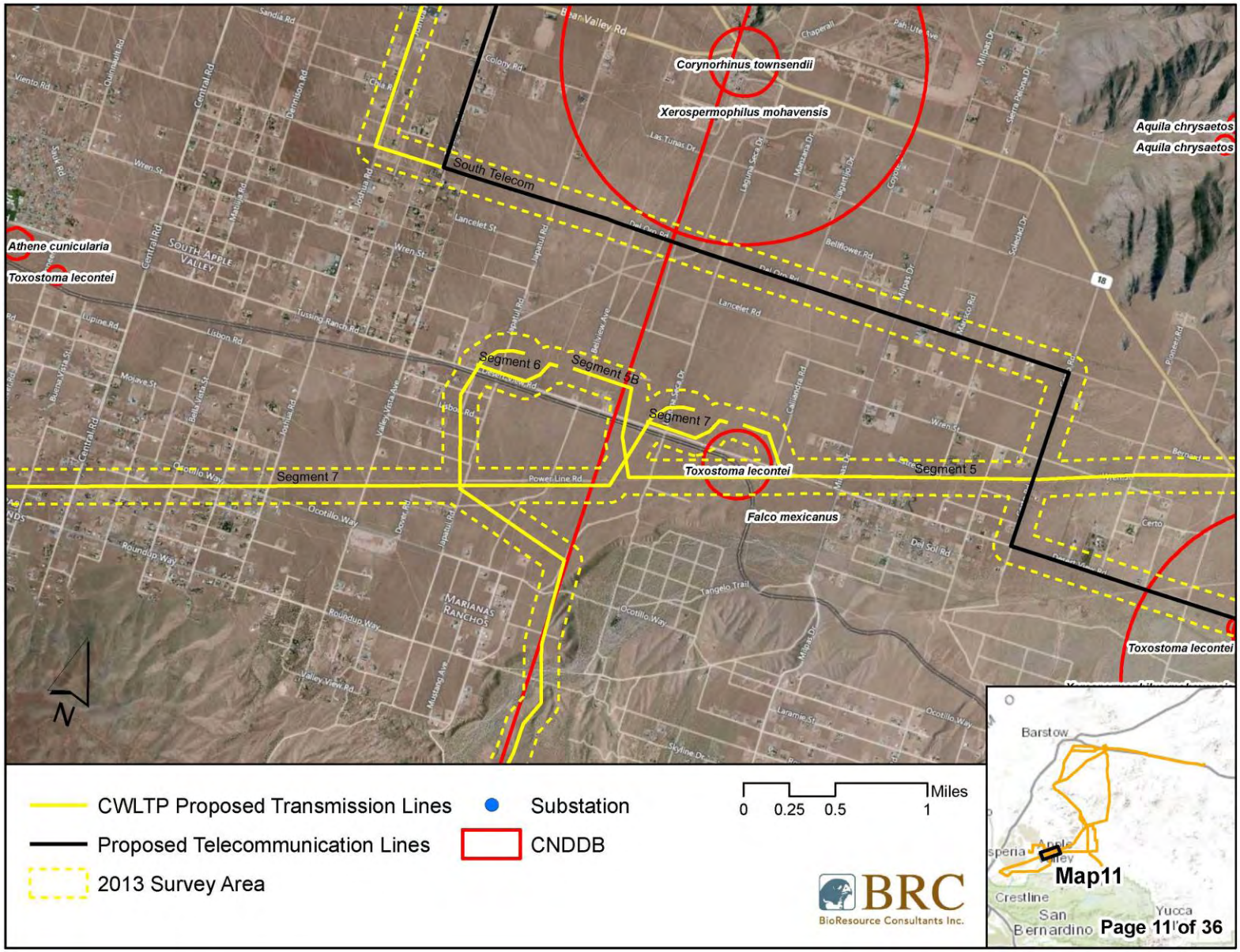
BRC
BioResource Consultants Inc.
Barstow
Map10
Crestline
San Bernardino
Yucca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Xerospermophilus mohavensis
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Aquila chrysaetos
South Telecom
Athene cunicularia
Toxostoma lecontei
Segment 6
Segment 5B
Segment 7
Segment 7
Segment 5
Toxostoma lecontei
Falco mexicanus
Toxostoma lecontei
SOUTH APPLE VALLEY
MARIANAS RANCHOS
Barstow
Crestline
San Bernardino
Yucca
Map11
CWLTP Proposed Transmission Lines
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Proposed Telecommunication Lines
CNDDB
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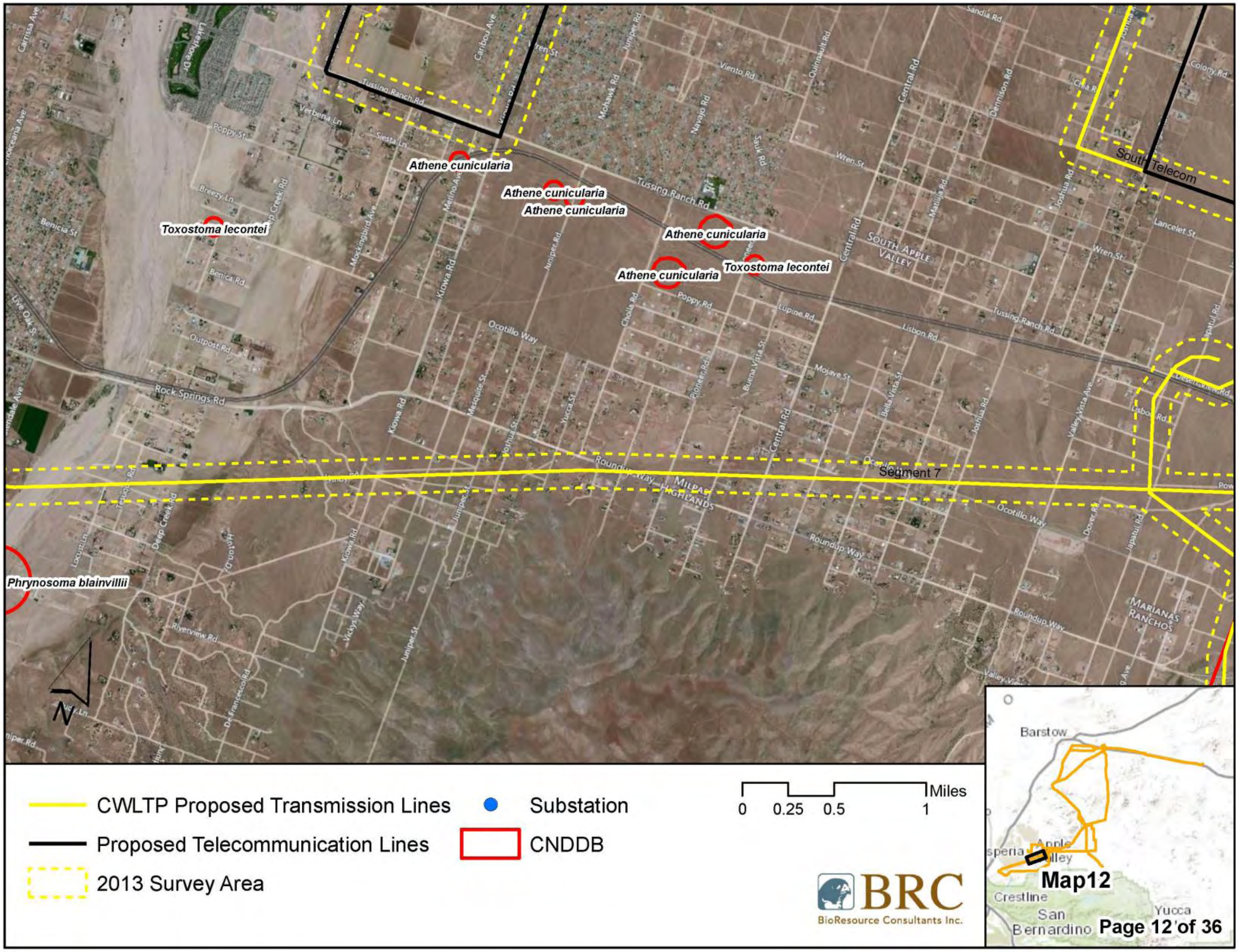
BRC
BioResource Consultants Inc.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Phrynosoma blainvillii
South Telecom
Segment 7
South Apple Valley
Milpas Highlands
Marianas Ranchos
Tussing Ranch Rd
Rock Springs Rd
Central Rd
Ocotillo Way
Roundup Way
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CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
CNDDB
0
0.25
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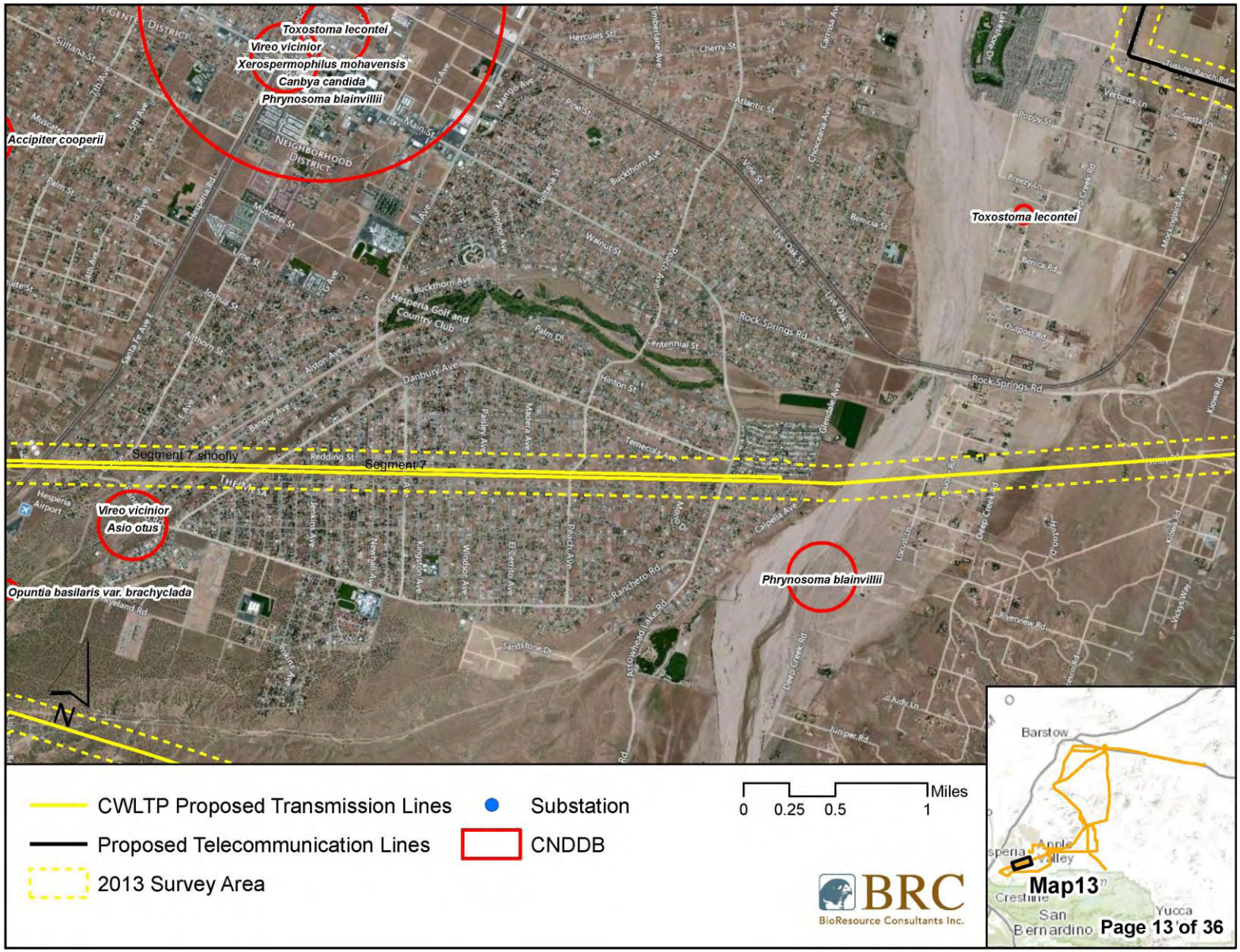
Miles
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crestline
San Bernardino
Yucca
Map12
Page 12 of 36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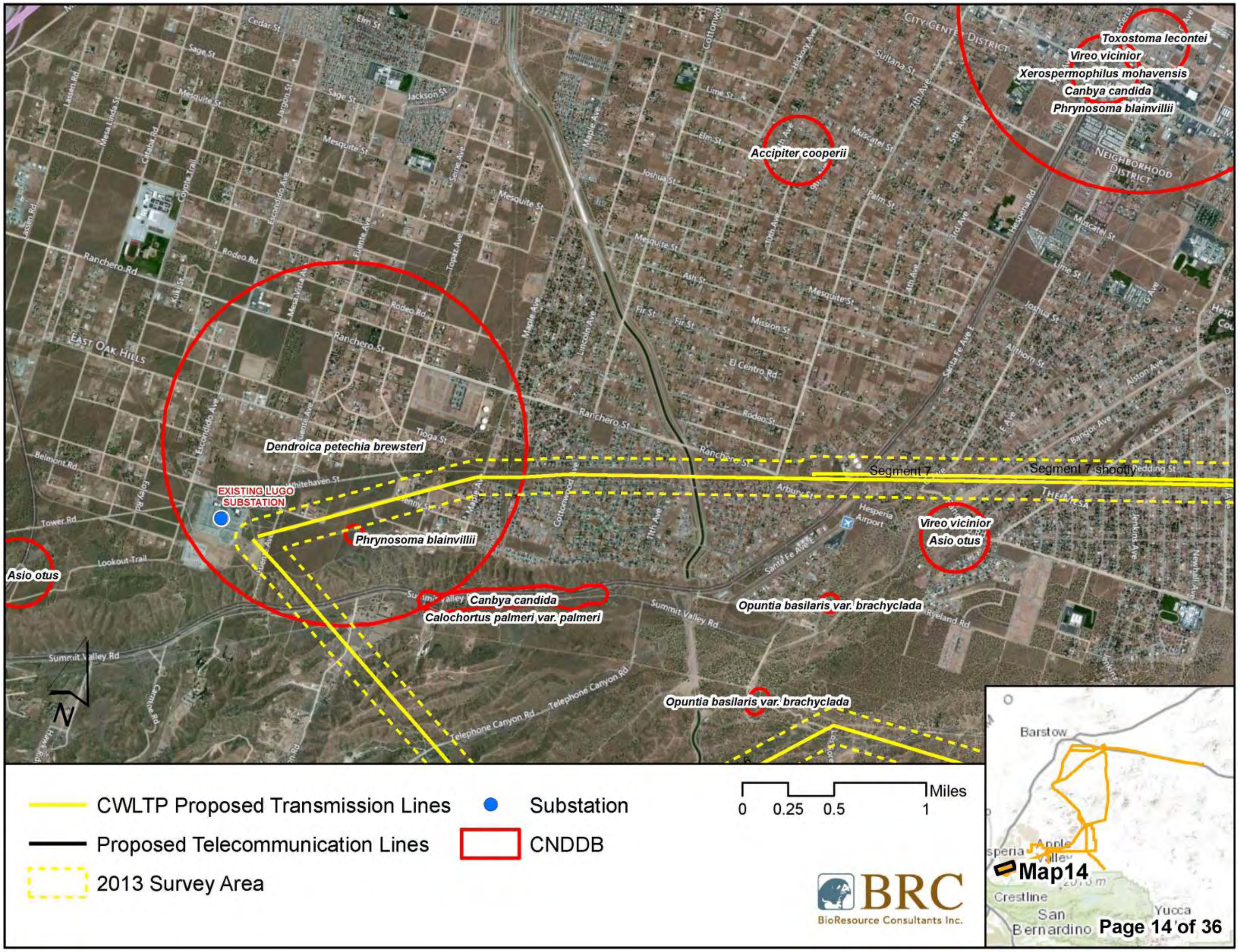
Accipiter cooperii
Toxostoma lecontei
Segment 7 snoofly
Segment 7
Vireo vicinior
Asio otus
Opuntia basilaris var. brachyclada
Phrynosoma blainvillii
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Map13
San Bernardino
Yucca
Page 13 of 36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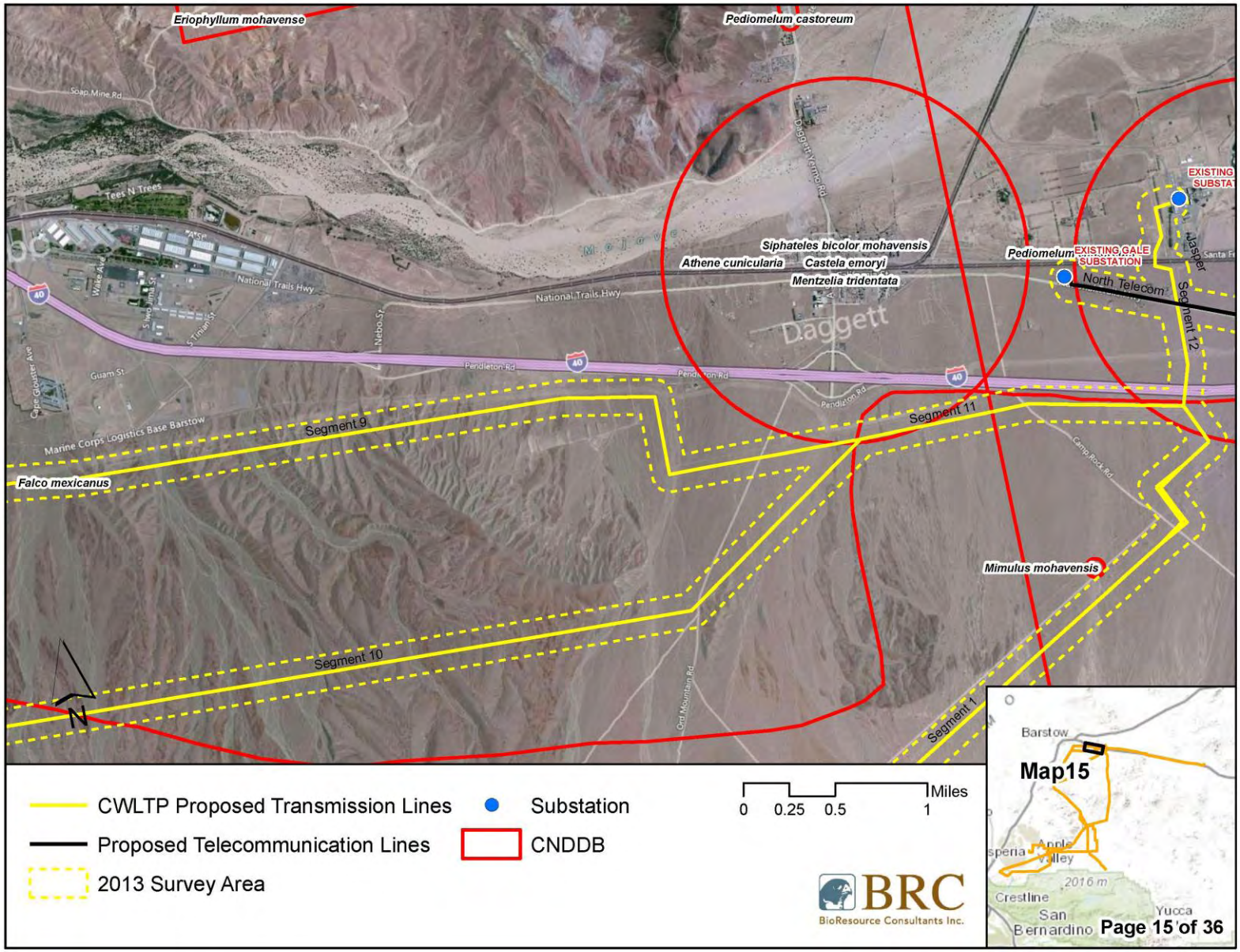
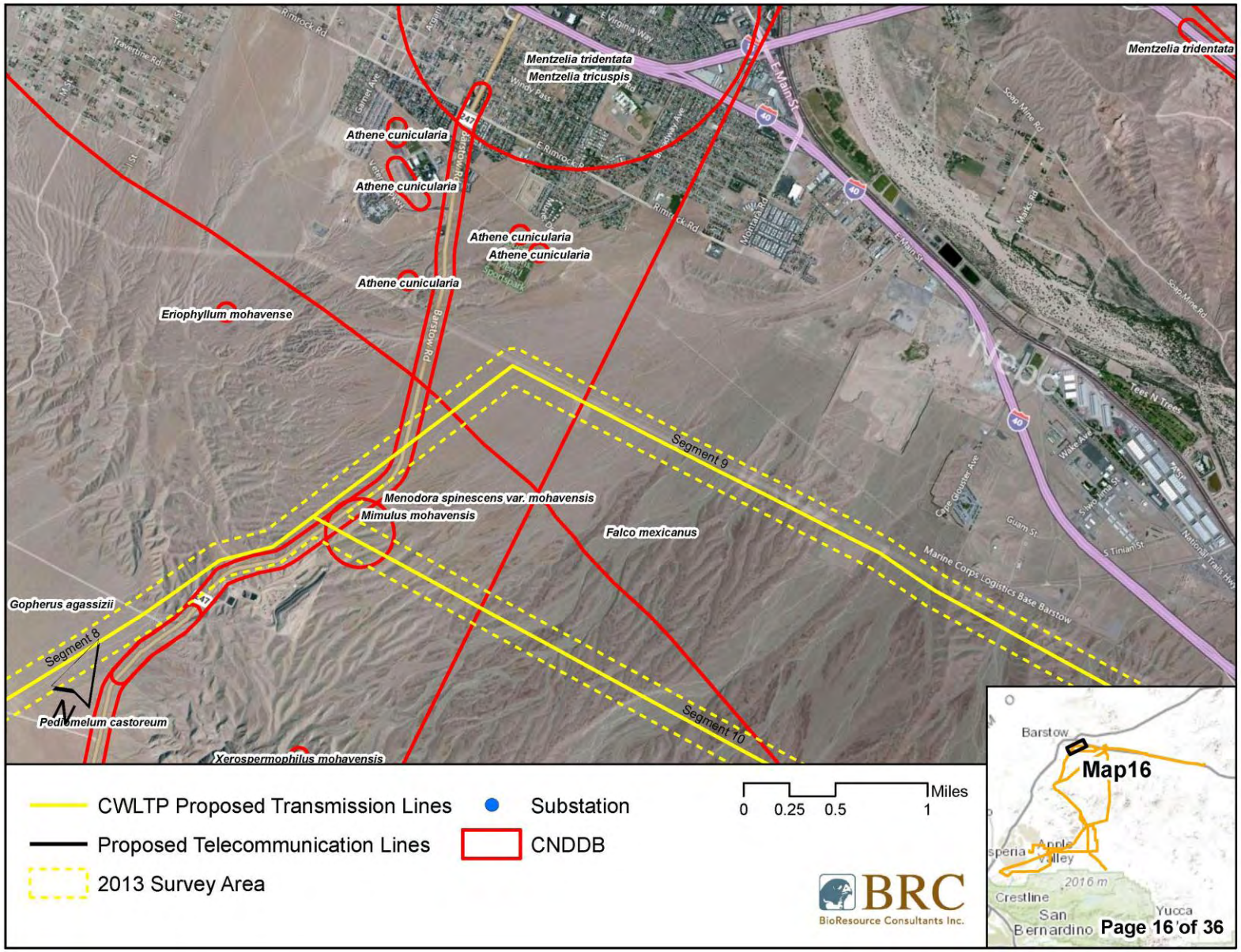
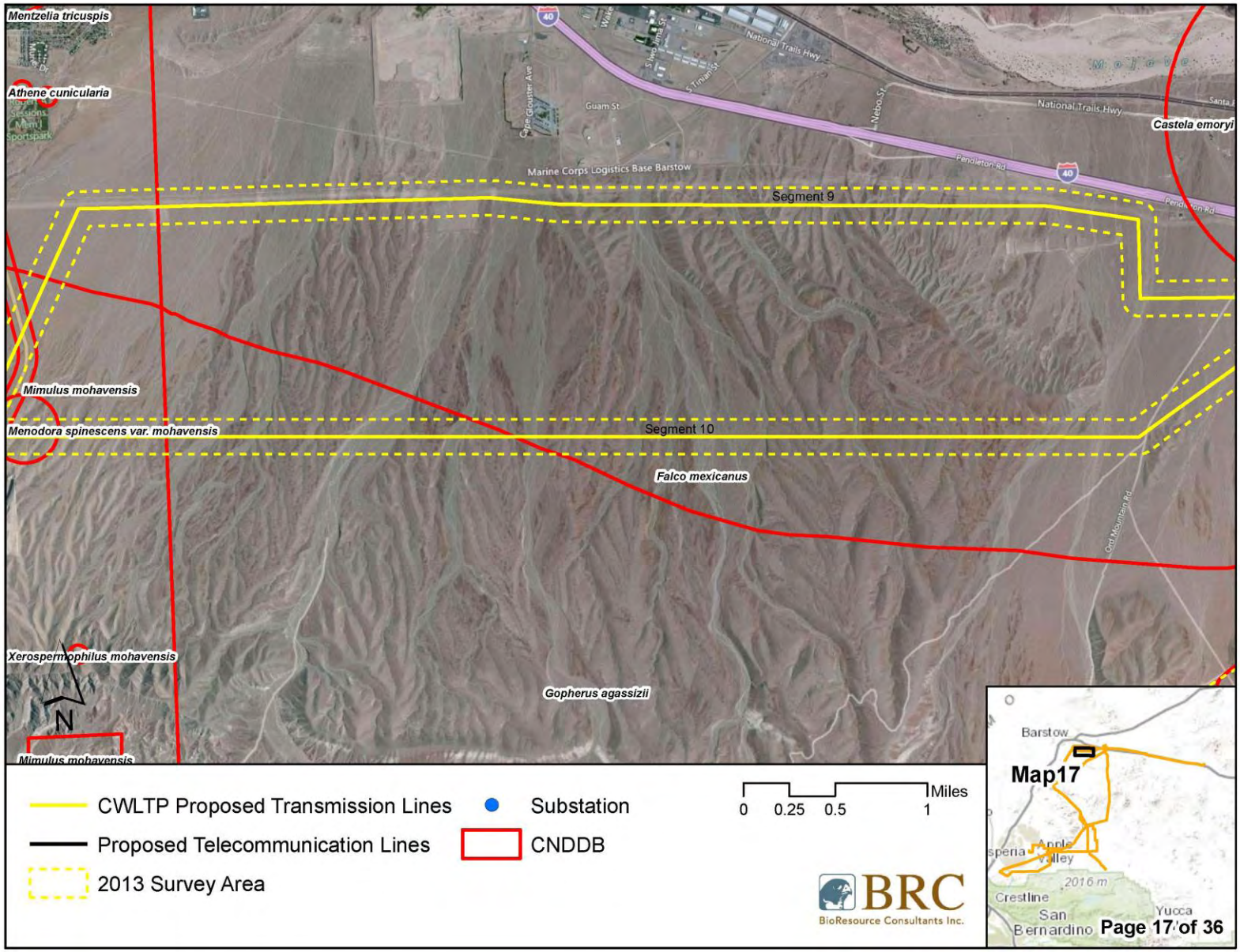
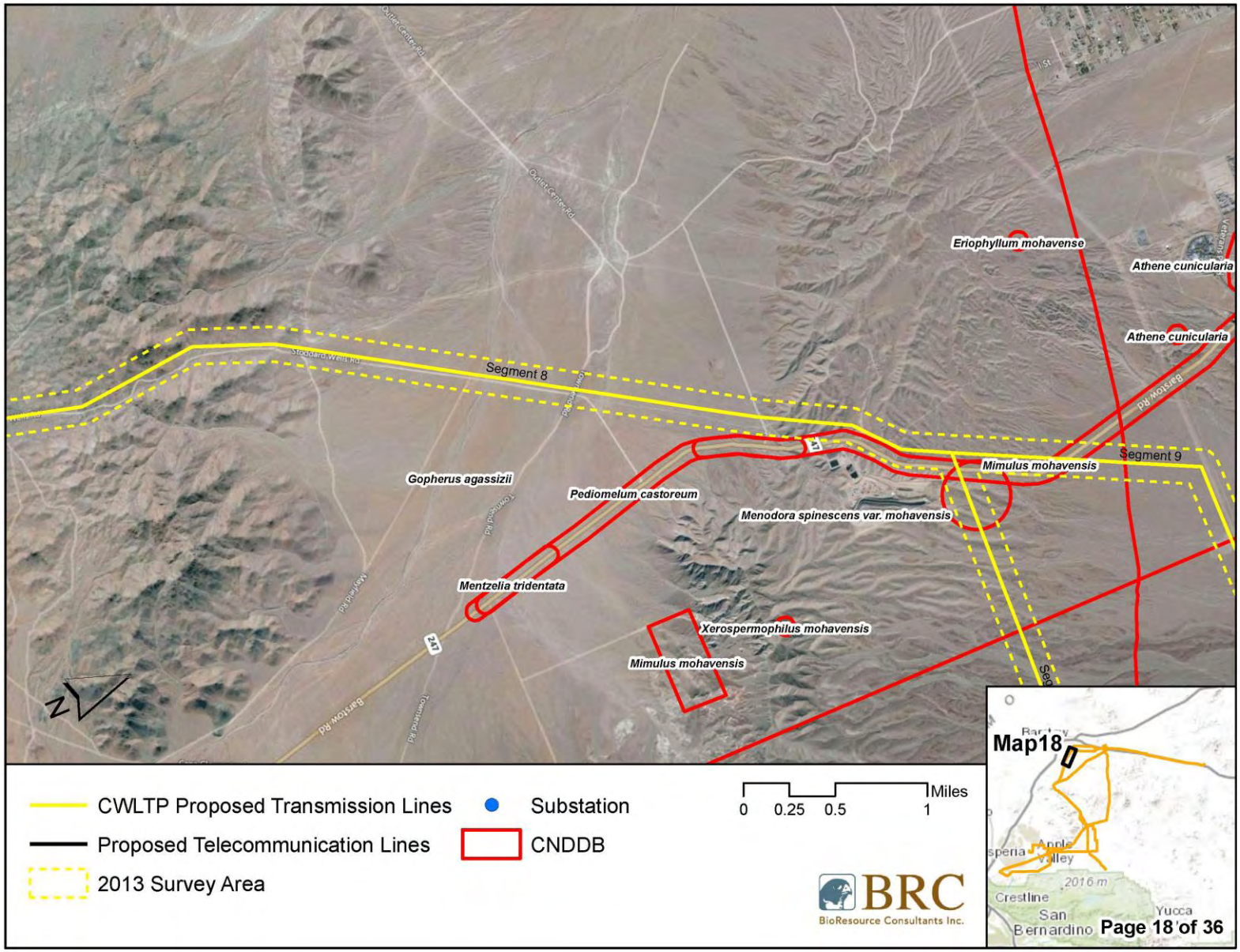
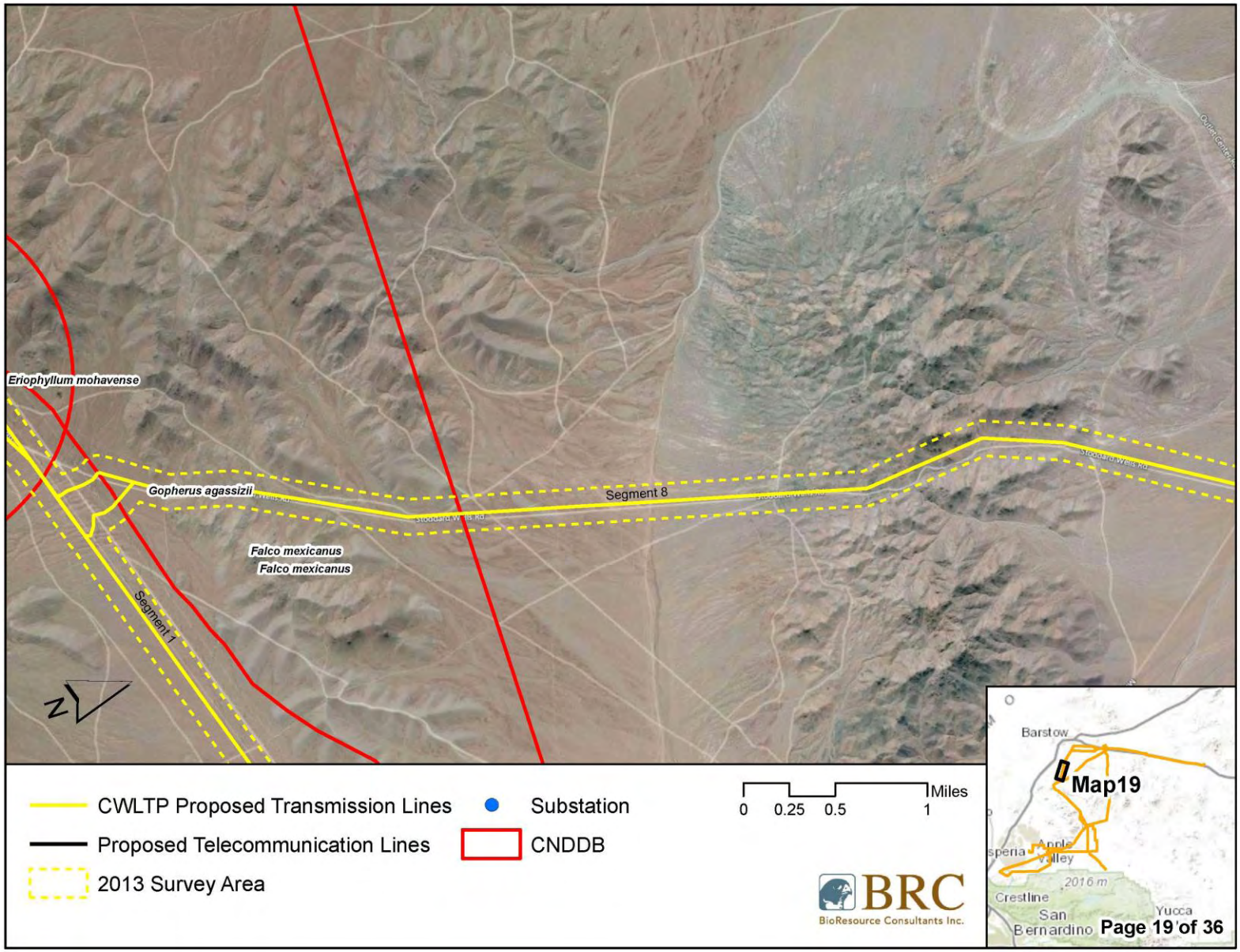
Vireo vicinior
Xerospermophilus mohavensis
Canbya candida
Phrynosoma blainvillii
Accipiter cooperii
Dendroica petechia brewsteri
EXISTING LUGO SUBSTATION
Phrynosoma blainvillii
Asio otus
Canbya candida
Calochortus palmeri var. palmeri
Opuntia basilaris var. brachyclada
Vireo vicinior
Asio otus
Opuntia basilaris var. brachyclada
Segment 7
Segment 7 shoofly
East Oak Hills
Ranchero Rd
Summit Valley Rd
Telephone Canyon Rd
Hesperia Airport
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crestline
San Bernardino
Yucca
Map14
Page 14 of 36

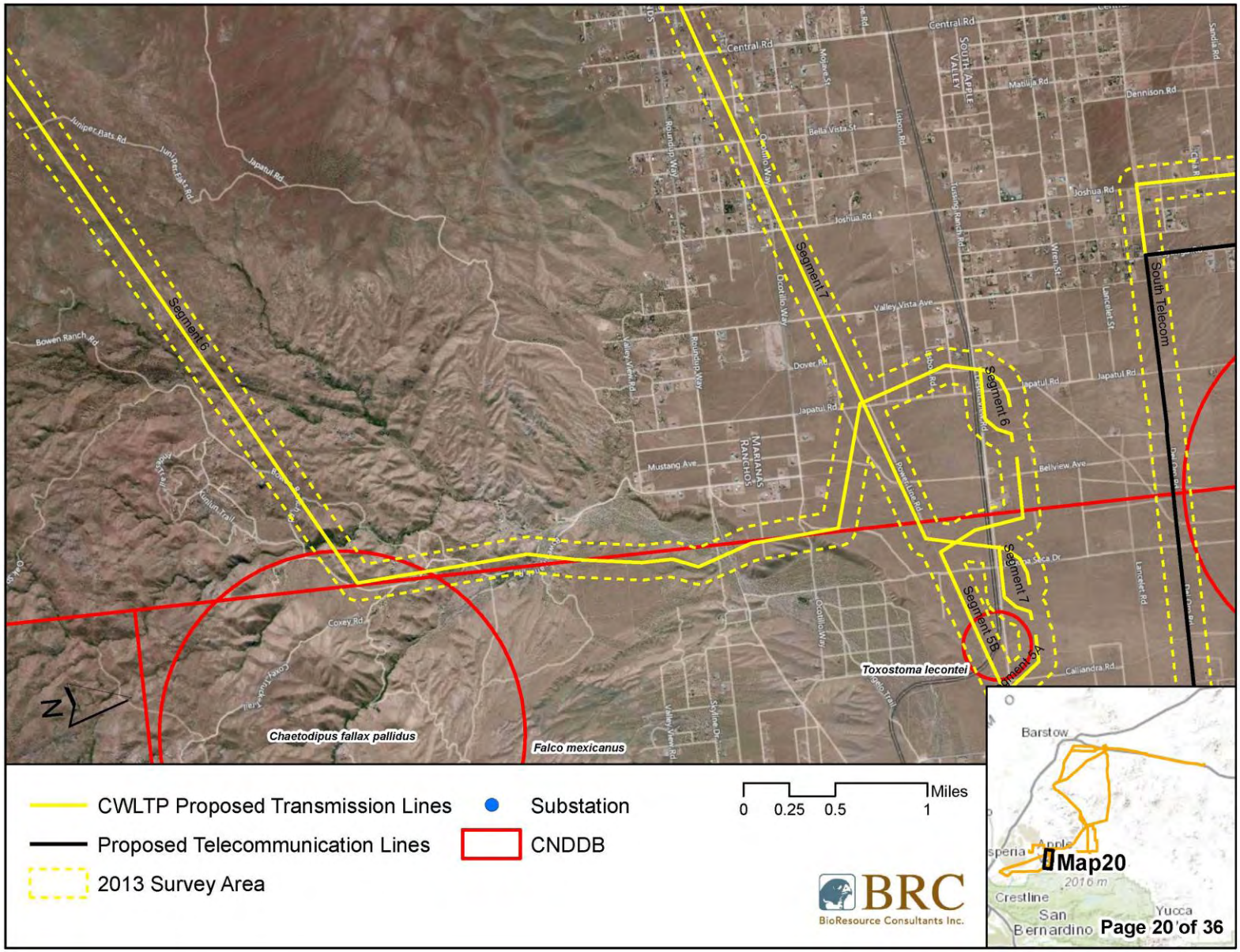

Eriophyllum mohavense
Pediomelum castoreum
Siphateles bicolor mohavensis
Athene cunicularia
Castela emoryi
Mentzelia tridentata
Pediomelum
EXISTING GALE SUBSTATION
North Telecom
EXISTING SUBSTA
Segment 12
Segment 9
Segment 10
Segment 11
Segment 1
Falco mexicanus
Mimulus mohavensis
Marine Corps Logistics Base Barstow
Daggett
National Trails Hwy
Pendleton Rd
Soap Mine Rd
Tees N Trees
Guam St
Nebo St
Camp Rock Rd
Ord Mountain Rd
Daggett-Yermo Rd
Jasper
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map15
Apple Valley
Crestline
San Bernardino
Yucca
2016 m

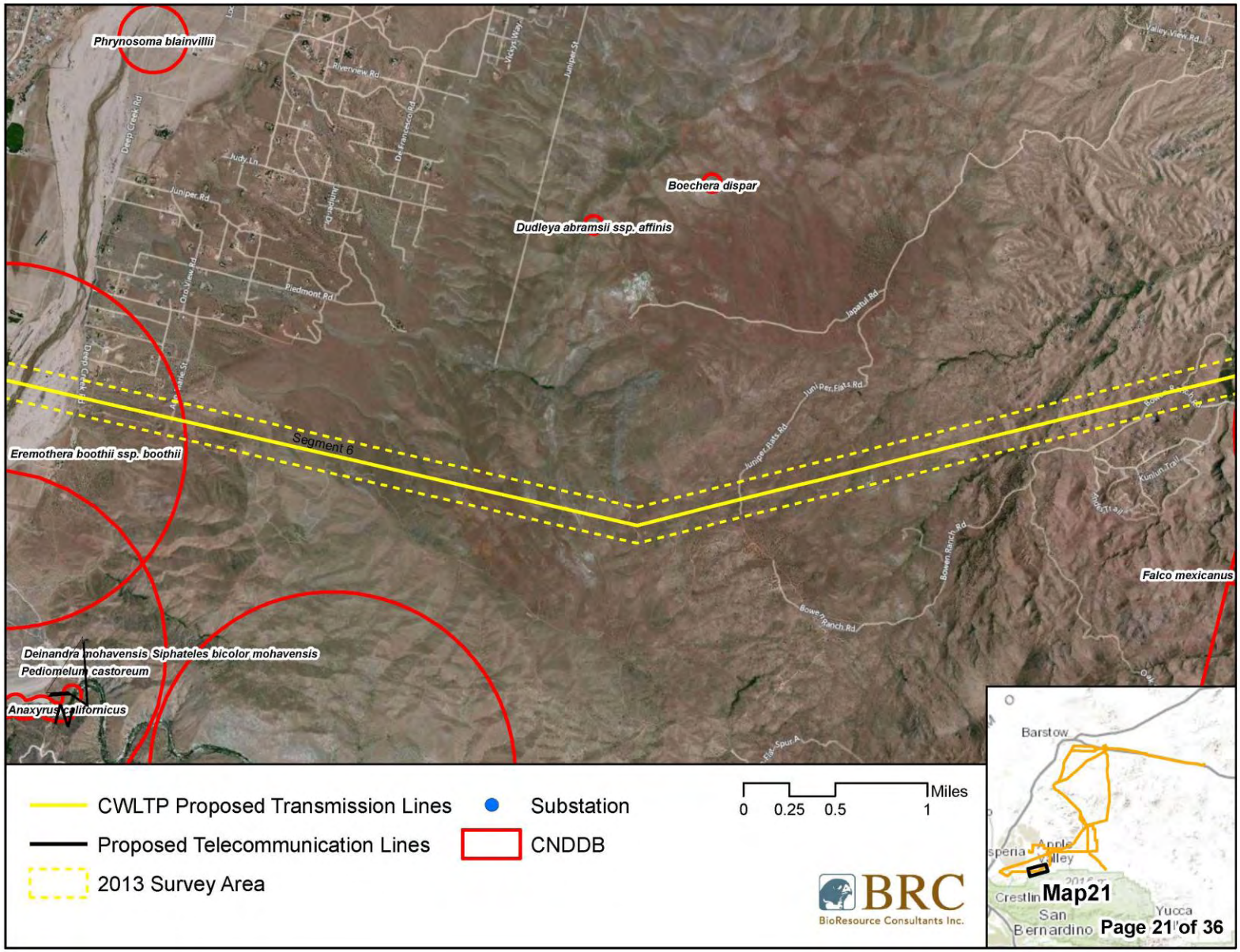

Mentzelia tridentata
Mentzelia tricuspis
Mentzelia tridentata
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Eriophyllum mohavense
Menodora spinescens var. mohavensis
Mimulus mohavensis
Falco mexicanus
Gopherus agassizii
Pediomelum castoreum
Xerospermophilus mohavensis
Segment 8
Segment 9
Segment 10
Marine Corps Logistics Base Barstow
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map16
Apple Valley
Crestline
San Bernardino
Yucca
2016 m

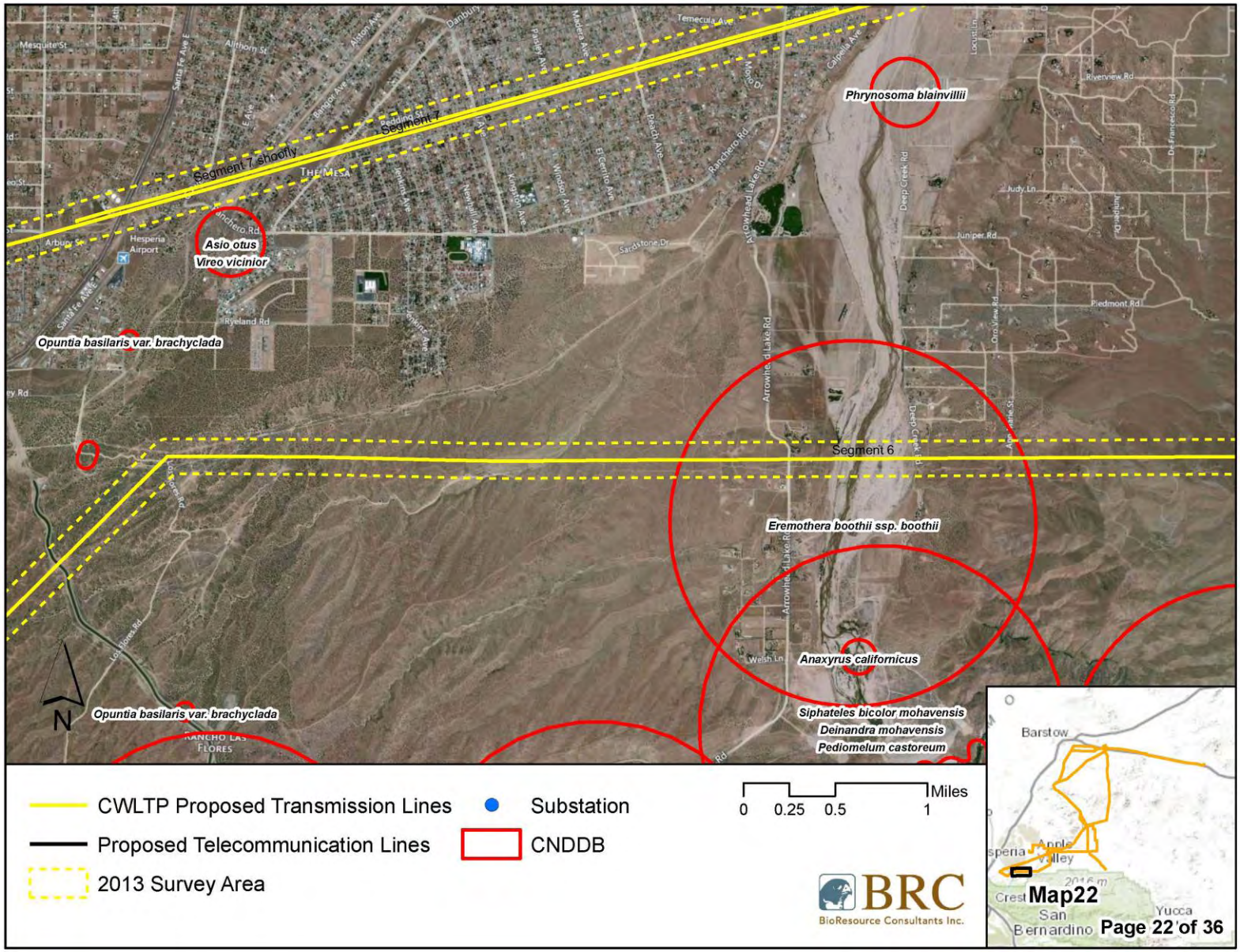

Mentzelia tricuspis
Athene cunicularia
Castela emoryi
Marine Corps Logistics Base Barstow
Segment 9
Segment 10
Mimulus mohavensis
Menodora spinescens var. mohavensis
Falco mexicanus
Xerospermophilus mohavensis
Gopherus agassizii
Mimulus mohavensis
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Map17
Barstow
Apple Valley
Crestline
San Bernardino
Yucca

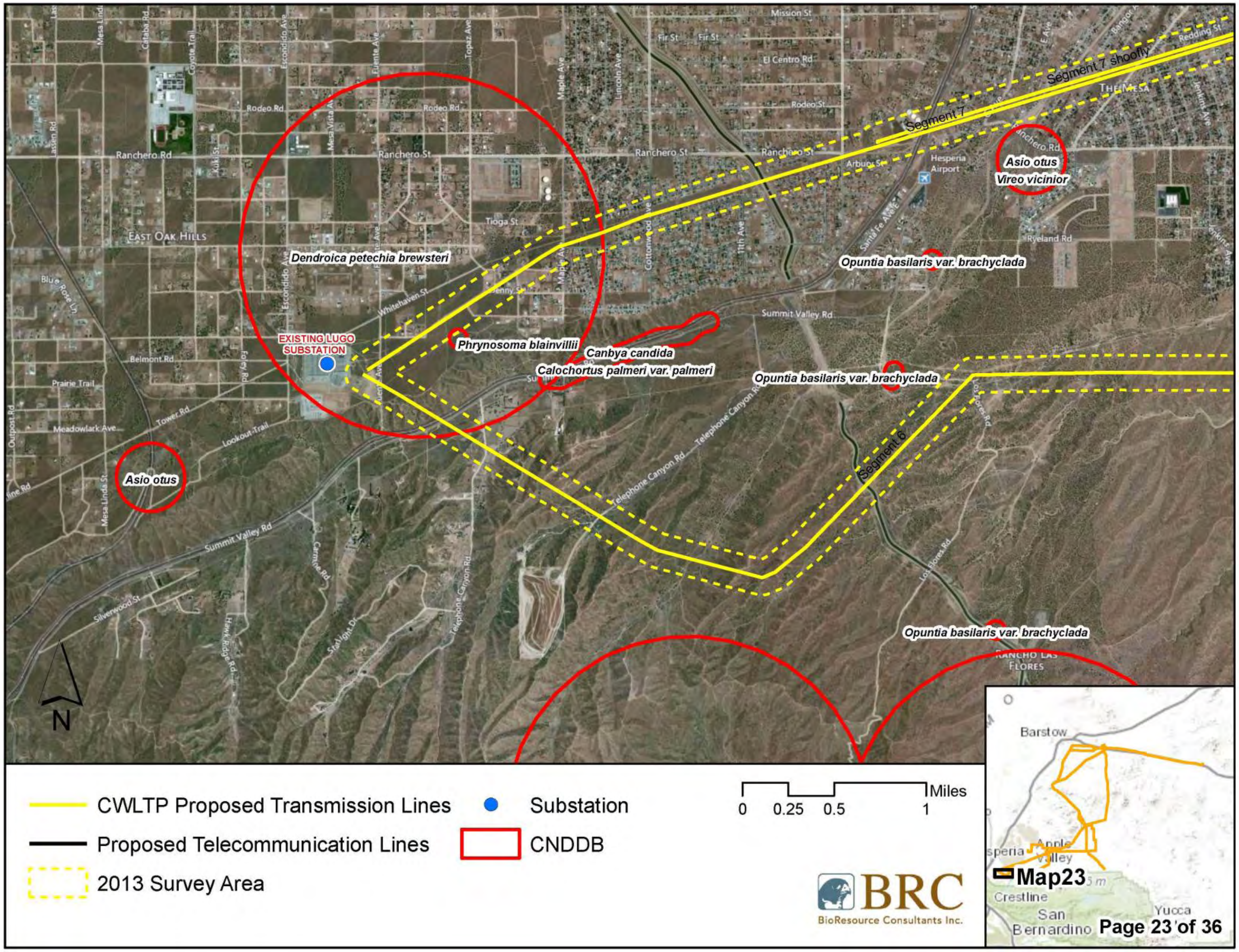

Eriophyllum mohavense
Athene cunicularia
Athene cunicularia
Segment 8
Segment 9
Mimulus mohavensis
Gopherus agassizii
Pediomelum castoreum
Menodora spinescens var. mohavensis
Mentzelia tridentata
Xerospermophilus mohavensis
Mimulus mohavensis
Barstow Rd
Outlet Center Rd
Stoddard Wells Rd
Townsend Rd
Map18
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Apple Valley
Crestline
San Bernardino
Yucca

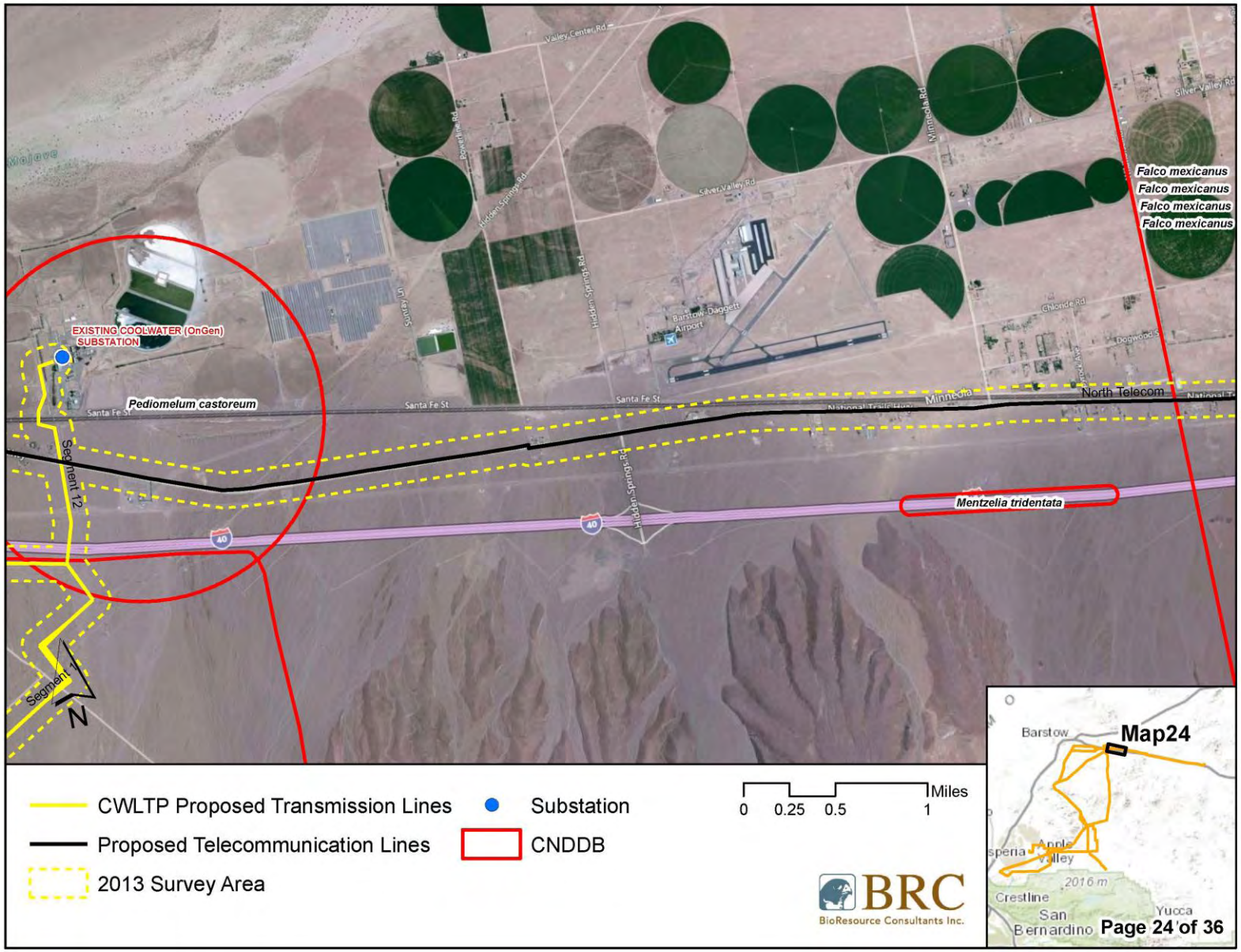

Eriophyllum mohavense
Gopherus agassizii
Segment 8
Falco mexicanus
Falco mexicanus
Segment 1
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map19
Apple Valley
2016 m
Crestline
San Bernardino
Yucca

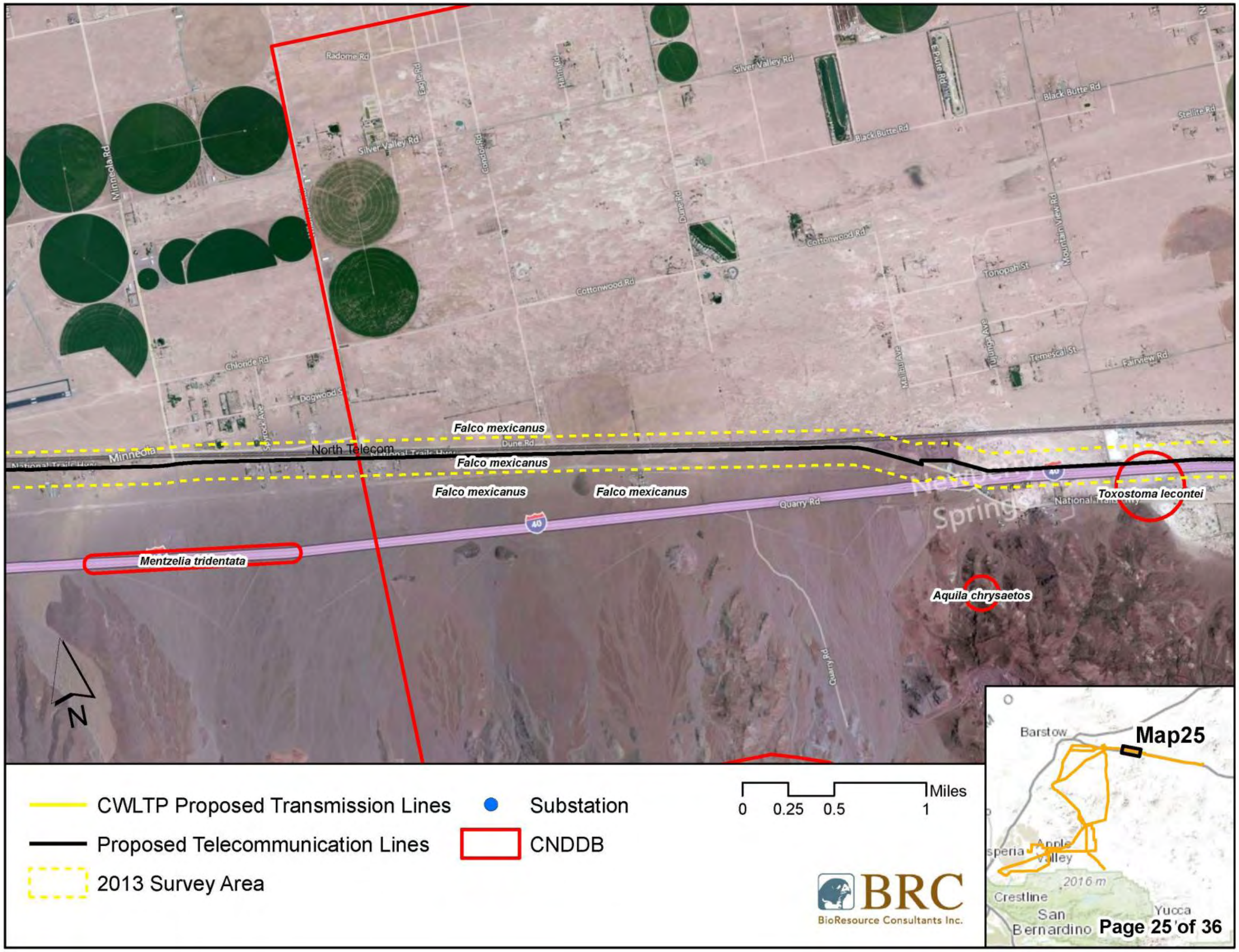

Segment 6
Segment 7
Segment 6
Segment 7
Segment 5B
Segment 5A
South Telecom
Central Rd
Japatul Rd
Joshua Rd
Dennison Rd
Valley Vista Ave
Dover Rd
Mustang Ave
Bellview Ave
Coxey Rd
Bowen Ranch Rd
Juniper Flats Rd
Lancelet Rd
Calliandra Rd
MARIANAS RANCHOS
SOUTH APPLE VALLEY
Chaetodipus fallax pallidus
Falco mexicanus
Toxostoma lecontei
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
CNDDB
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Apple
Crestline
San Bernardino
Yucca
Map20
2016 m

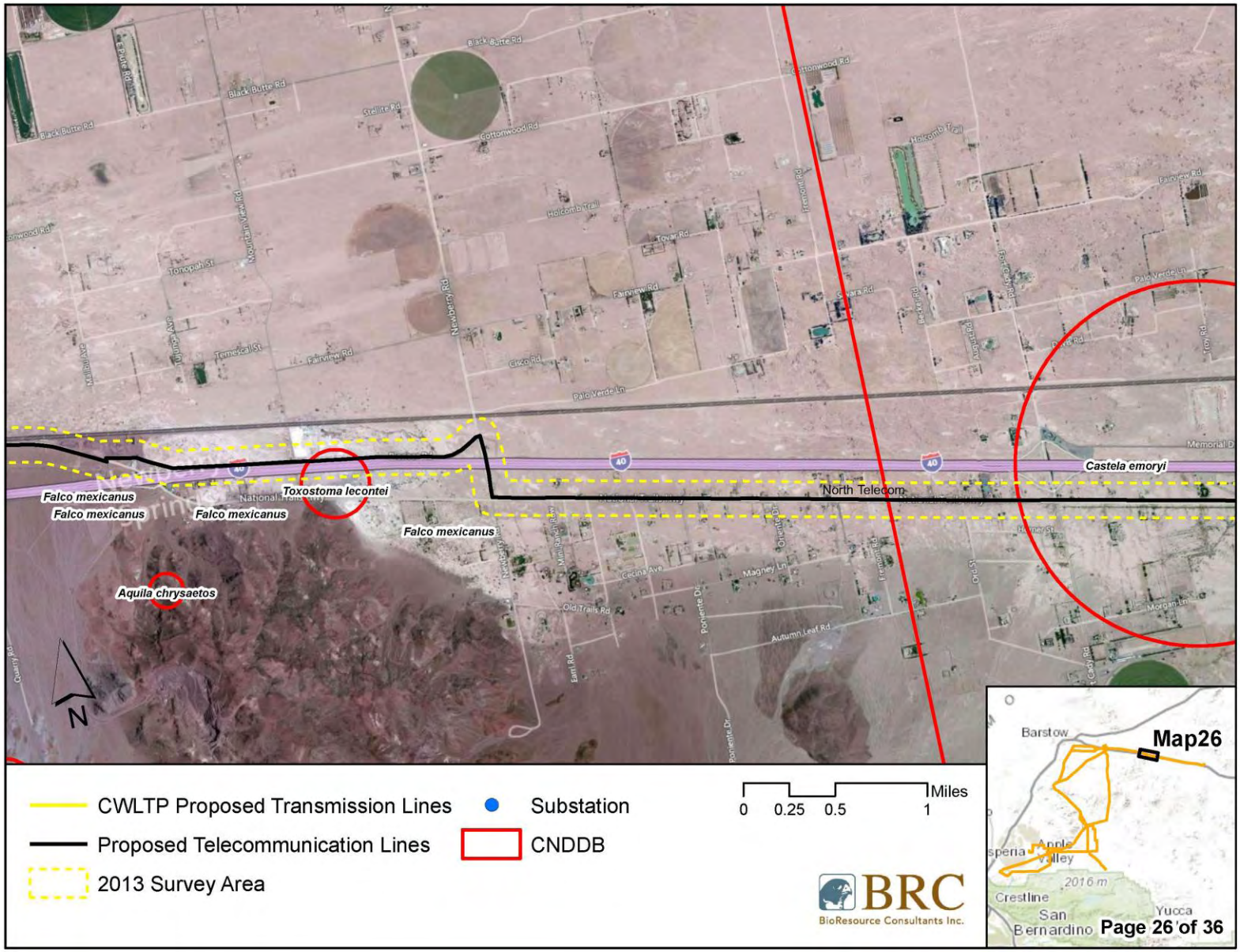

Phrynosoma blainvillii
Boechera dispar
Dudleya abramsii ssp. affinis
Segment 6
Eremothera boothii ssp. boothii
Falco mexicanus
Deinandra mohavensis, Siphateles bicolor mohavensis
Pediomelum castoreum
Anaxyrus californicus
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crestline
San Bernardino
Yucca
Map21

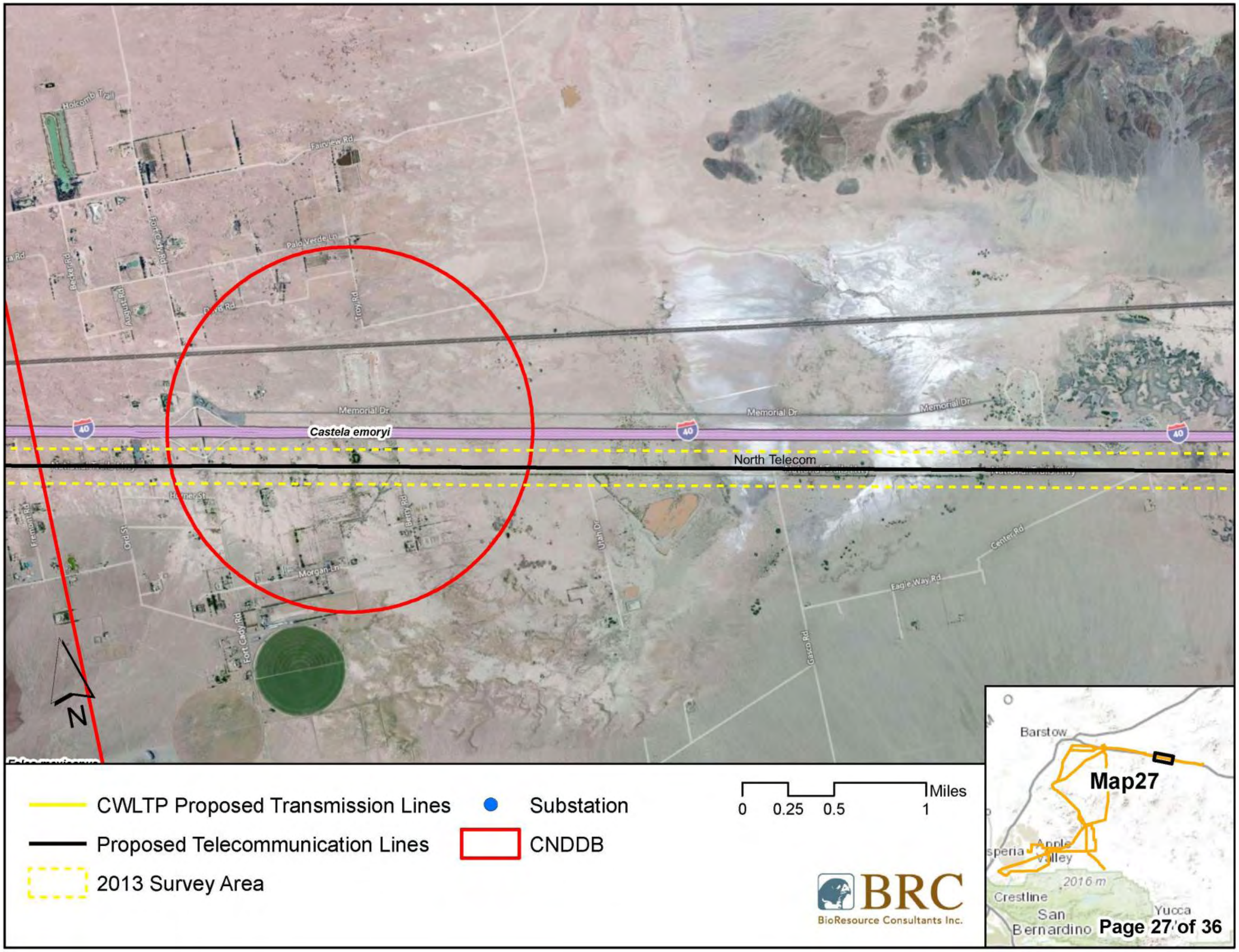

Segment 7 shoofly
Segment 7
Segment 6
Phrynosoma blainvillii
Asio otus
Vireo vicinior
Opuntia basilaris var. brachyclada
Eremothera boothii ssp. boothii
Anaxyrus californicus
Siphateles bicolor mohavensis
Deinandra mohavensis
Pediomelum castoreum
Opuntia basilaris var. brachyclada
Hesperia Airport
THE MESA
RANCHO LAS FLORES
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crest
San Bernardino
Yucca
Map22

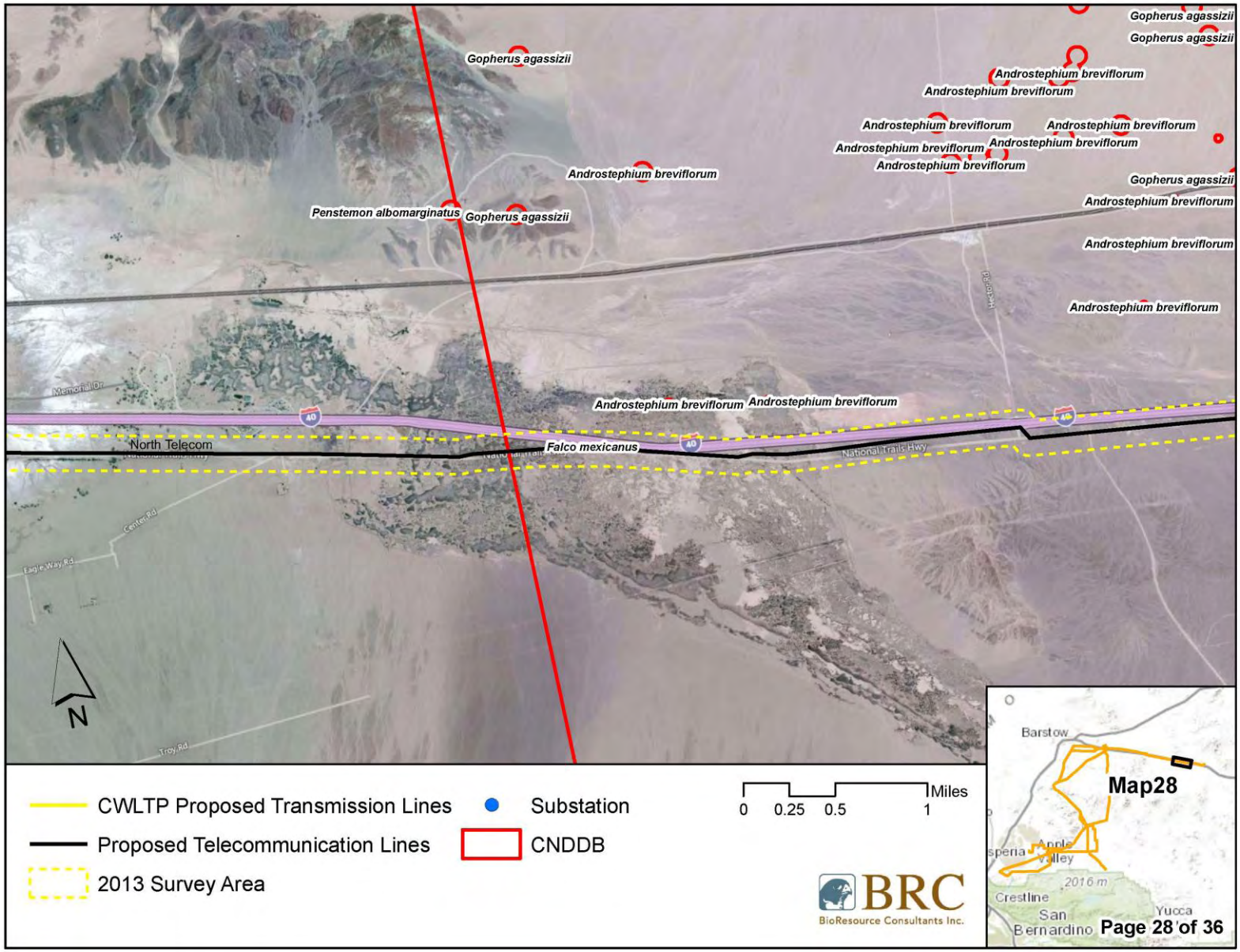

Segment 7 shoofly
Segment 7
Segment 6
EXISTING LUGO SUBSTATION
Dendroica petechia brewsteri
Phrynosoma blainvillii
Canbya candida
Calochortus palmeri var. palmeri
Opuntia basilaris var. brachyclada
Opuntia basilaris var. brachyclada
Opuntia basilaris var. brachyclada
Asio otus
Vireo vicinior
Asio otus
EAST OAK HILLS
Hesperia Airport
N
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
CNDDB
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Map23
Crestline
San Bernardino
Yucca
Page 23 of 36

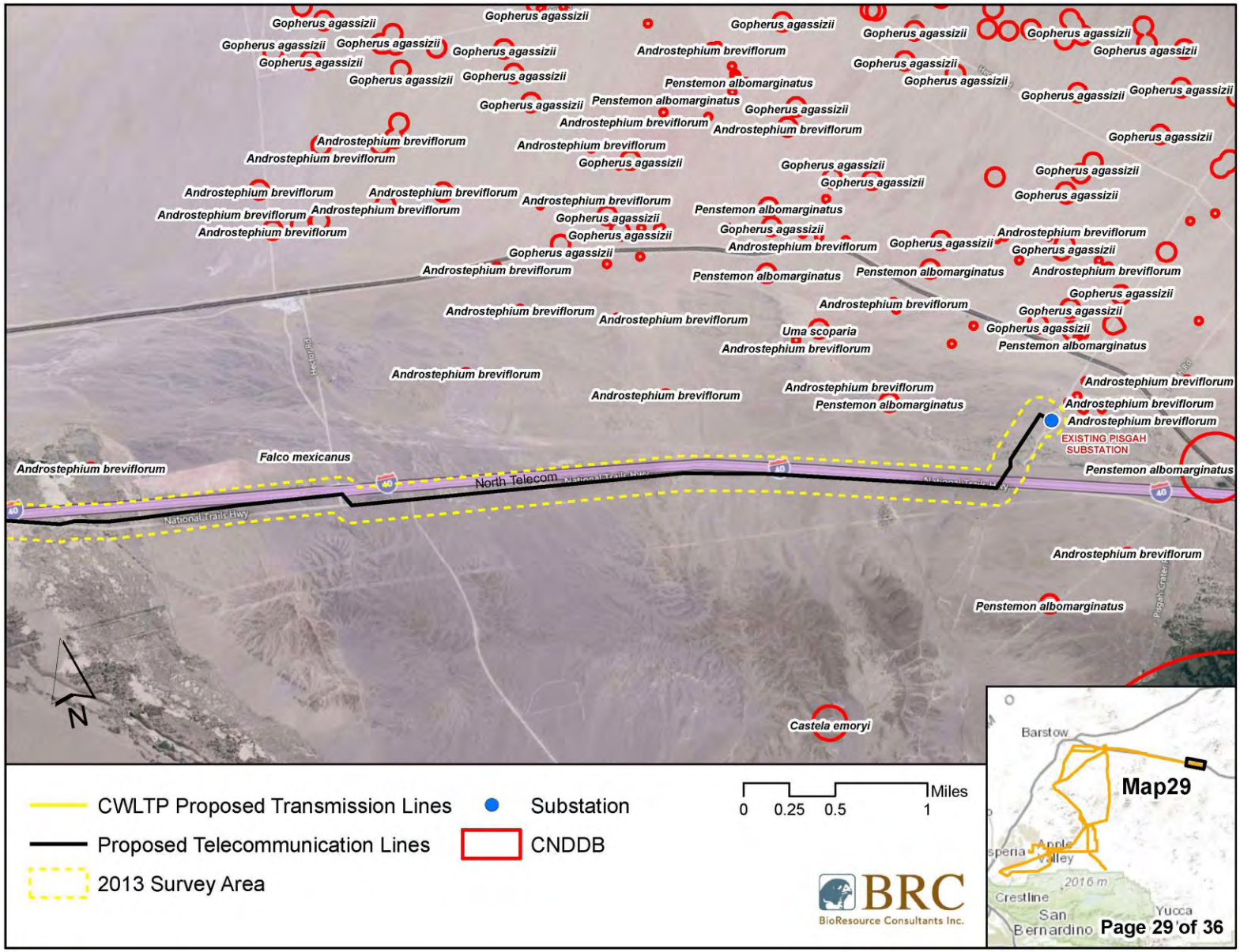

Falco mexicanus
Falco mexicanus
Falco mexicanus
Falco mexicanus
EXISTING COOLWATER (OnGen) SUBSTATION
Pediomelum castoreum
Mentzelia tridentata
North Telecom
Segment 12
Segment 1
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Map24
Barstow
Apple Valley
Crestline
San Bernardino
Yucca

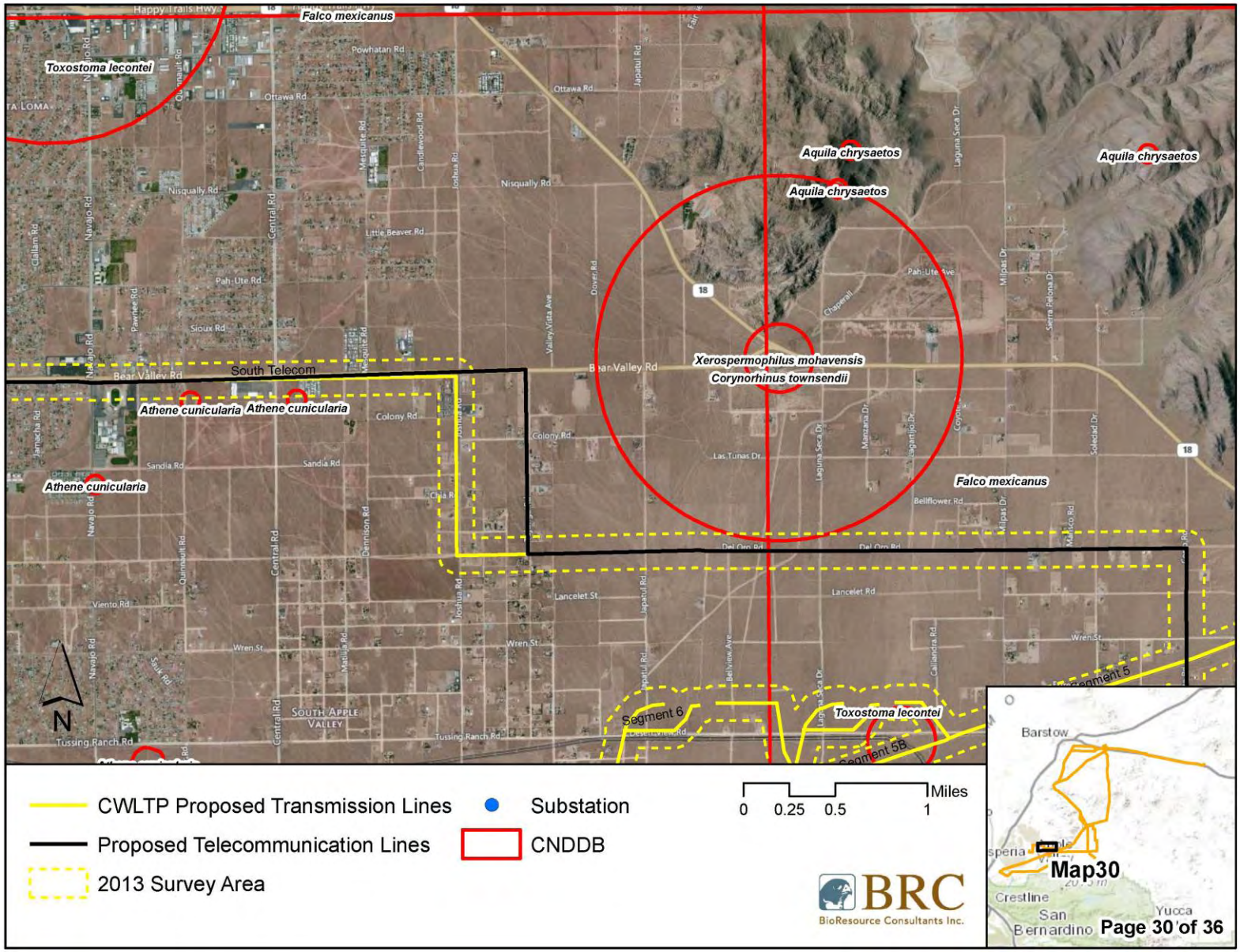

Falco mexicanus
North Telecom
Falco mexicanus
Falco mexicanus
Falco mexicanus
Toxostoma lecontei
Mentzelia tridentata
Aquila chrysaetos
N
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
CNDDB
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map25
Apple Valley
Crestline
San Bernardino
Yucca
Page 25 of 36

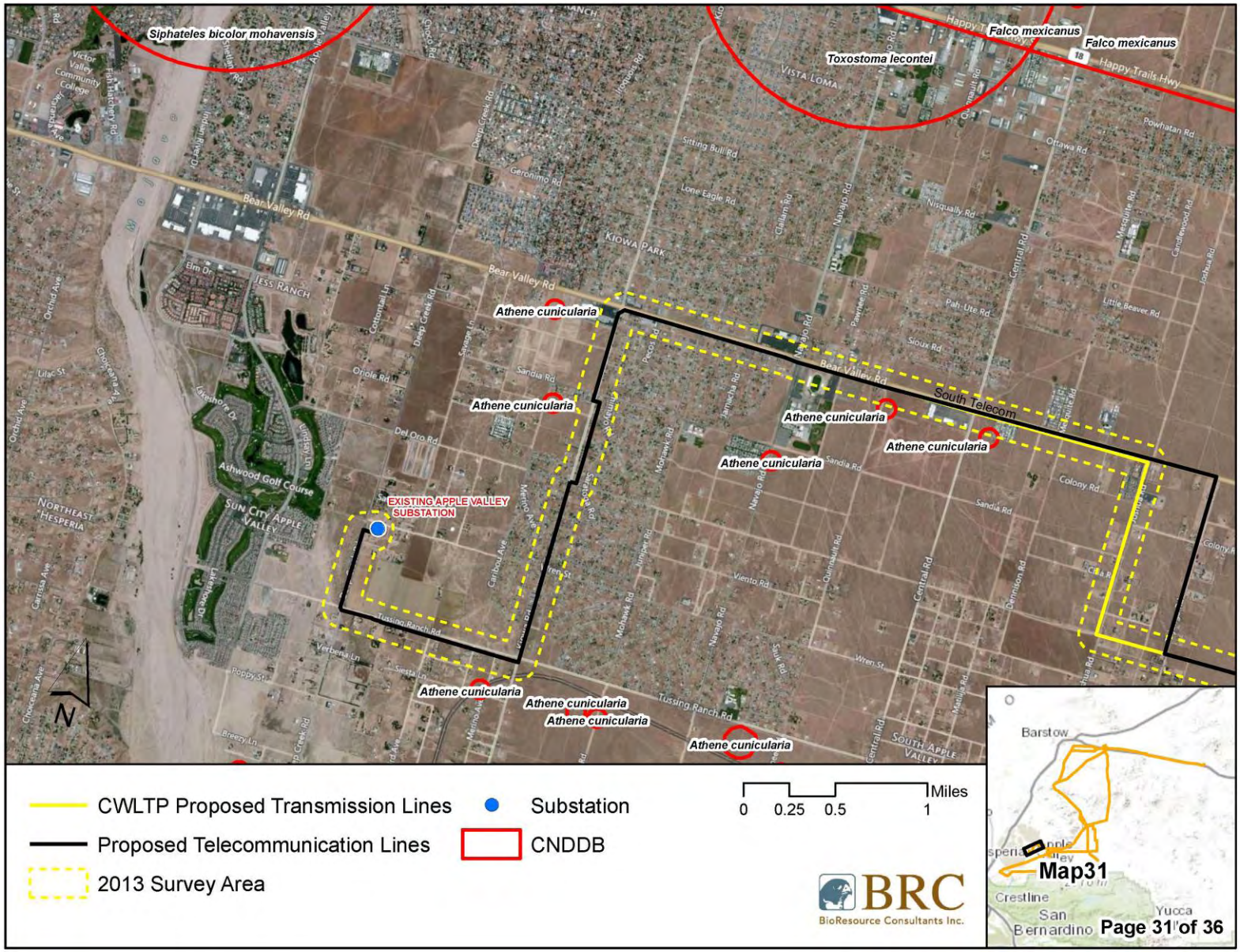

Falco mexicanus
Falco mexicanus
Falco mexicanus
Toxostoma lecontei
Falco mexicanus
Aquila chrysaetos
Castela emoryi
North Telecom
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Map26
Barstow
Apple Valley
Crestline
San Bernardino
Yucca

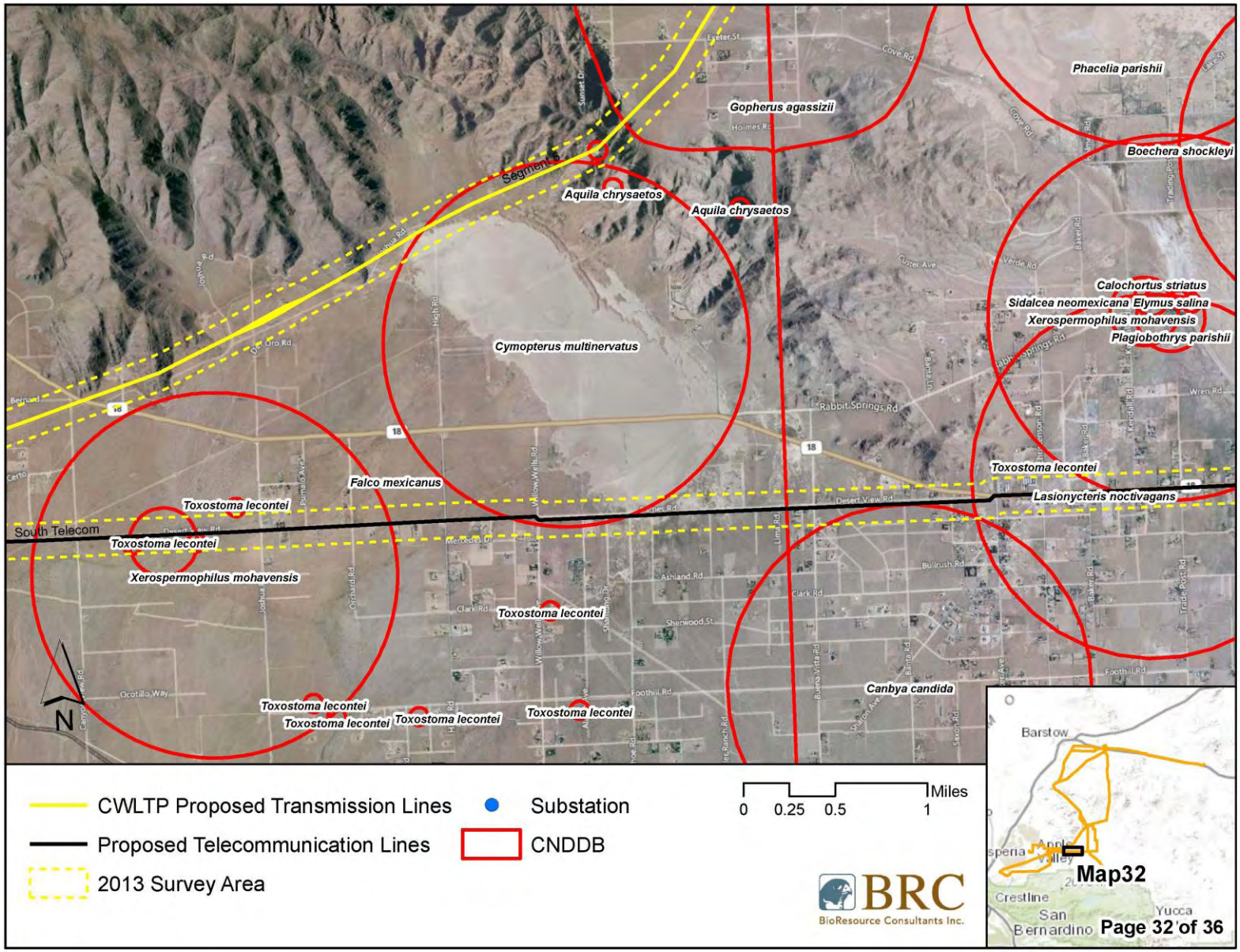

Holcomb Trail
Fairview Rd
Palo Verde Ln
Troy Rd
Memorial Dr
Memorial Dr
Memorial Dr
Castela emoryi
North Telecom
Berry Rd
Utah Dr
Morgan Ln
Fort Cady Rd
Gasco Rd
Eagle Way Rd
Center Rd
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Map27
Barstow
Apple Valley
2016 m
Crestline
San Bernardino
Yucca
Page 27 of 36

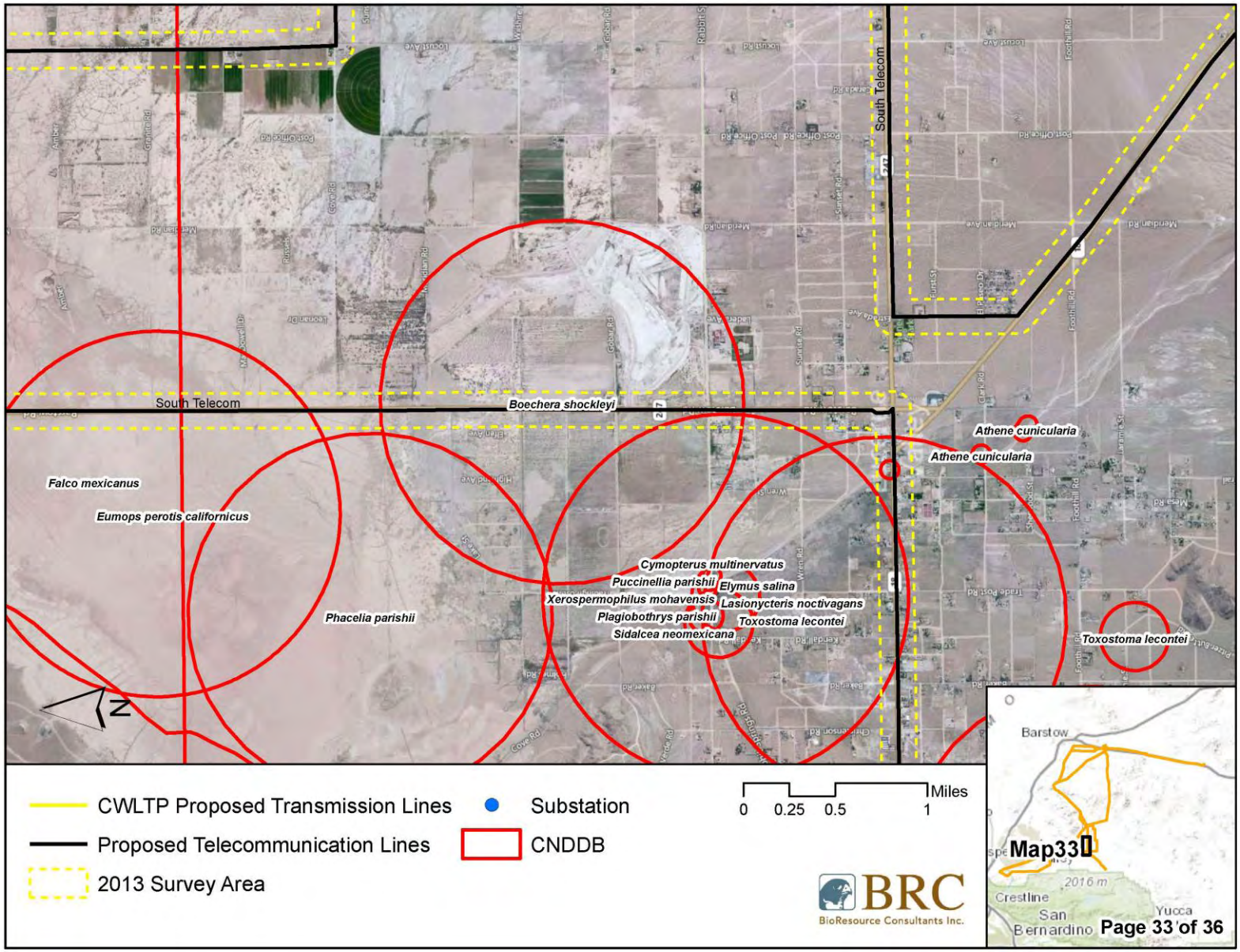

Gopherus agassizii
Gopherus agassizii
Gopherus agassizii
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Penstemon albomarginatus
Gopherus agassizii
Gopherus agassizii
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Androstephium breviflorum
Falco mexicanus
North Telecom
Memorial Dr
Center Rd
Eagle Way Rd
Troy Rd
National Trails Hwy
Big Dalton
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map28
Apple Valley
2016 m
Crestline
San Bernardino
Yucca

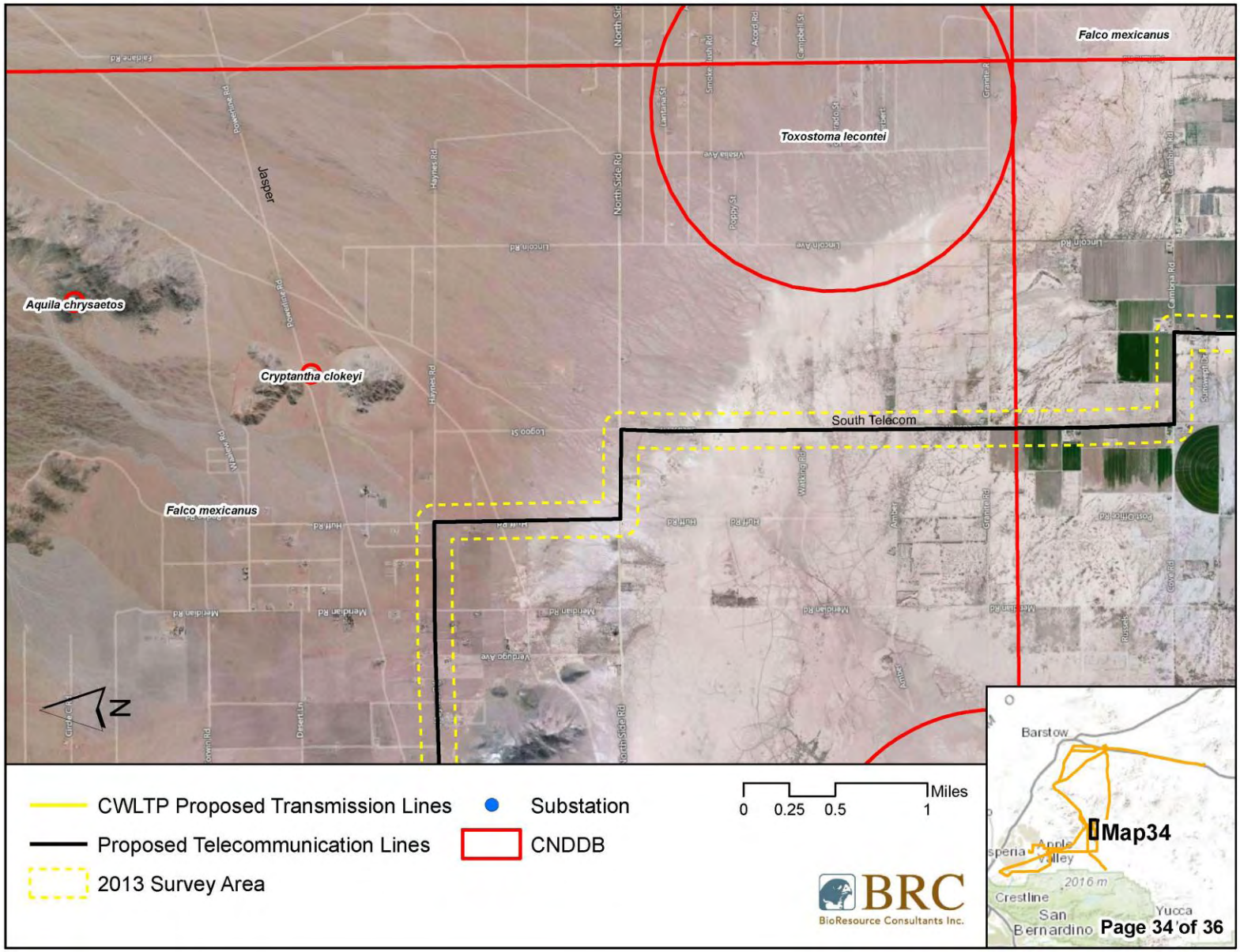

Gopherus agassizii
Androstephium breviflorum
Penstemon albomarginatus
Uma scoparia
Falco mexicanus
Castela emoryi
North Telecom
National Trails Hwy
EXISTING PISGAH SUBSTATION
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Map29
Barstow
Apple Valley
Crestline
San Bernardino
Yucca

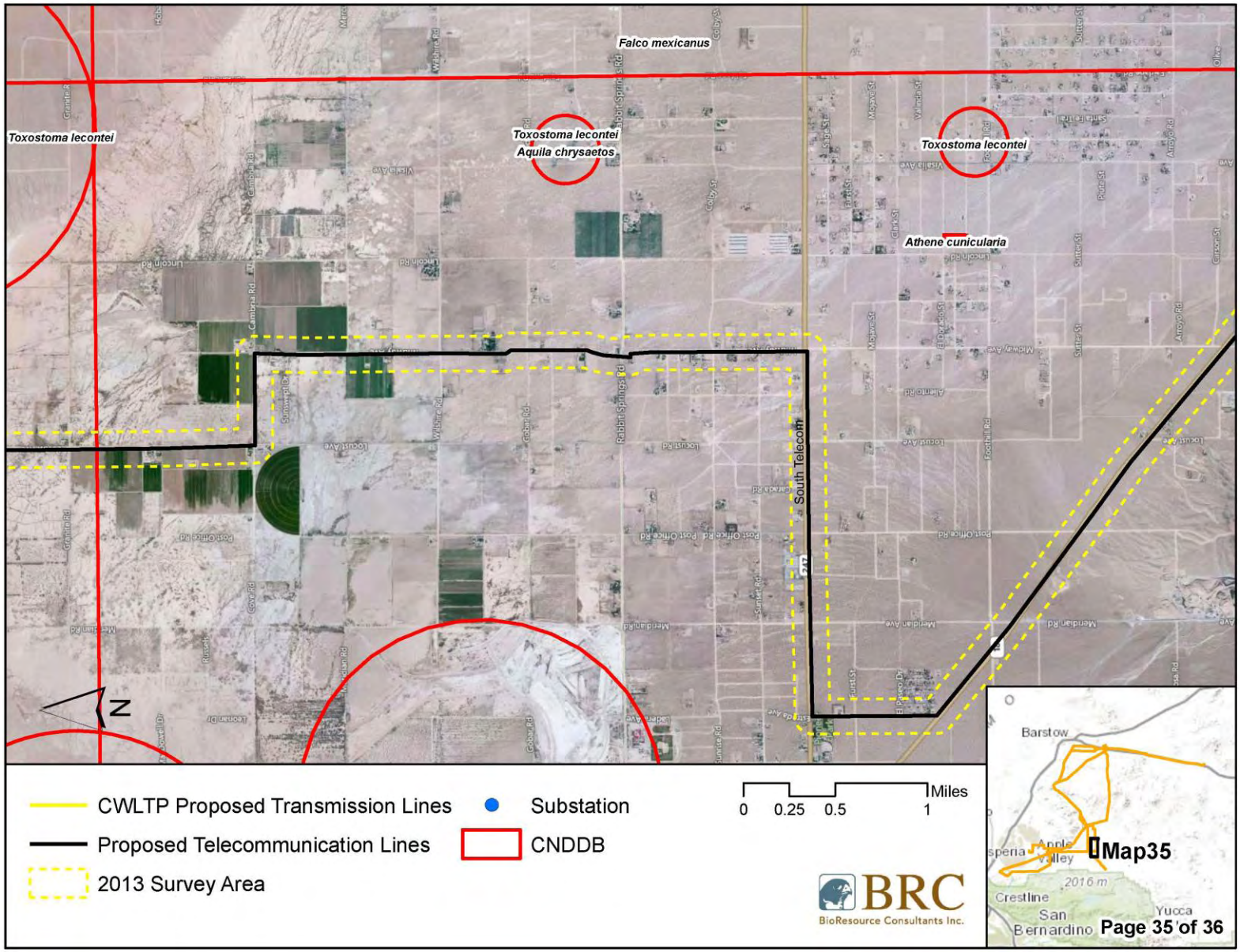

Falco mexicanus
Toxostoma lecontei
Aquila chrysaetos
Aquila chrysaetos
Aquila chrysaetos
Xerospermophilus mohavensis
Corynorhinus townsendii
Falco mexicanus
Athene cunicularia
Athene cunicularia
Athene cunicularia
Toxostoma lecontei
South Telecom
Segment 6
Segment 5
Segment 5B
Bear Valley Rd
Nisqually Rd
Ottawa Rd
Powhatan Rd
Colony Rd
Sandia Rd
Lancelet Rd
Wren St
Tussing Ranch Rd
Las Tunas Dr
Bellflower Rd
Del Oro Rd
Pah-Ute Rd
Sioux Rd
Little Beaver Rd
Viento Rd
SOUTH APPLE VALLEY
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Crestline
San Bernardino
Yucca
Map30


Siphateles bicolor mohavensis
Falco mexicanus
Falco mexicanus
Toxostoma lecontei
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
Athene cunicularia
South Telecom
EXISTING APPLE VALLEY SUBSTATION
Bear Valley Rd
Tussing Ranch Rd
Ashwood Golf Course
SUN CITY APPLE VALLEY
NORTHEAST HESPERIA
KIOWA PARK
VISTA LOMA
JESS RANCH
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
N
BRC
BioResource Consultants Inc.
Barstow
Crestline
San Bernardino
Yucca
Map31


Segment 5
Phacelia parishii
Gopherus agassizii
Boechera shockleyi
Aquila chrysaetos
Aquila chrysaetos
Calochortus striatus
Sidalcea neomexicana Elymus salina
Xerospermophilus mohavensis
Plagiobothrys parishii
Cymopterus multinervatus
Rabbit Springs Rd
Toxostoma lecontei
Falco mexicanus
Lasionycteris noctivagans
Toxostoma lecontei
South Telecom
Toxostoma lecontei
Xerospermophilus mohavensis
Toxostoma lecontei
Canbya candida
Toxostoma lecontei
Toxostoma lecontei
Toxostoma lecontei
Toxostoma lecontei
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Crestline
San Bernardino
Yucca
Map32


South Telecom
South Telecom
Boechera shockleyi
Athene cunicularia
Athene cunicularia
Falco mexicanus
Eumops perotis californicus
Cymopterus multinervatus
Puccinellia parishii
Elymus salina
Xerospermophilus mohavensis
Lasionycteris noctivagans
Plagiobothrys parishii
Toxostoma lecontei
Sidalcea neomexicana
Phacelia parishii
Toxostoma lecontei
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Map33
2016 m
Crestline
San Bernardino
Yucca


Falco mexicanus
Toxostoma lecontei
Aquila chrysaetos
Cryptantha clokeyi
Falco mexicanus
South Telecom
Jasper
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Map34
Apple Valley
Crestline
San Bernardino
Yucca
2016 m


Falco mexicanus
Toxostoma lecontei
Toxostoma lecontei
Aquila chrysaetos
Toxostoma lecontei
Athene cunicularia
South Telecom
N
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
Miles
0 0.25 0.5 1
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crestline
San Bernardino
Yucca
Map35

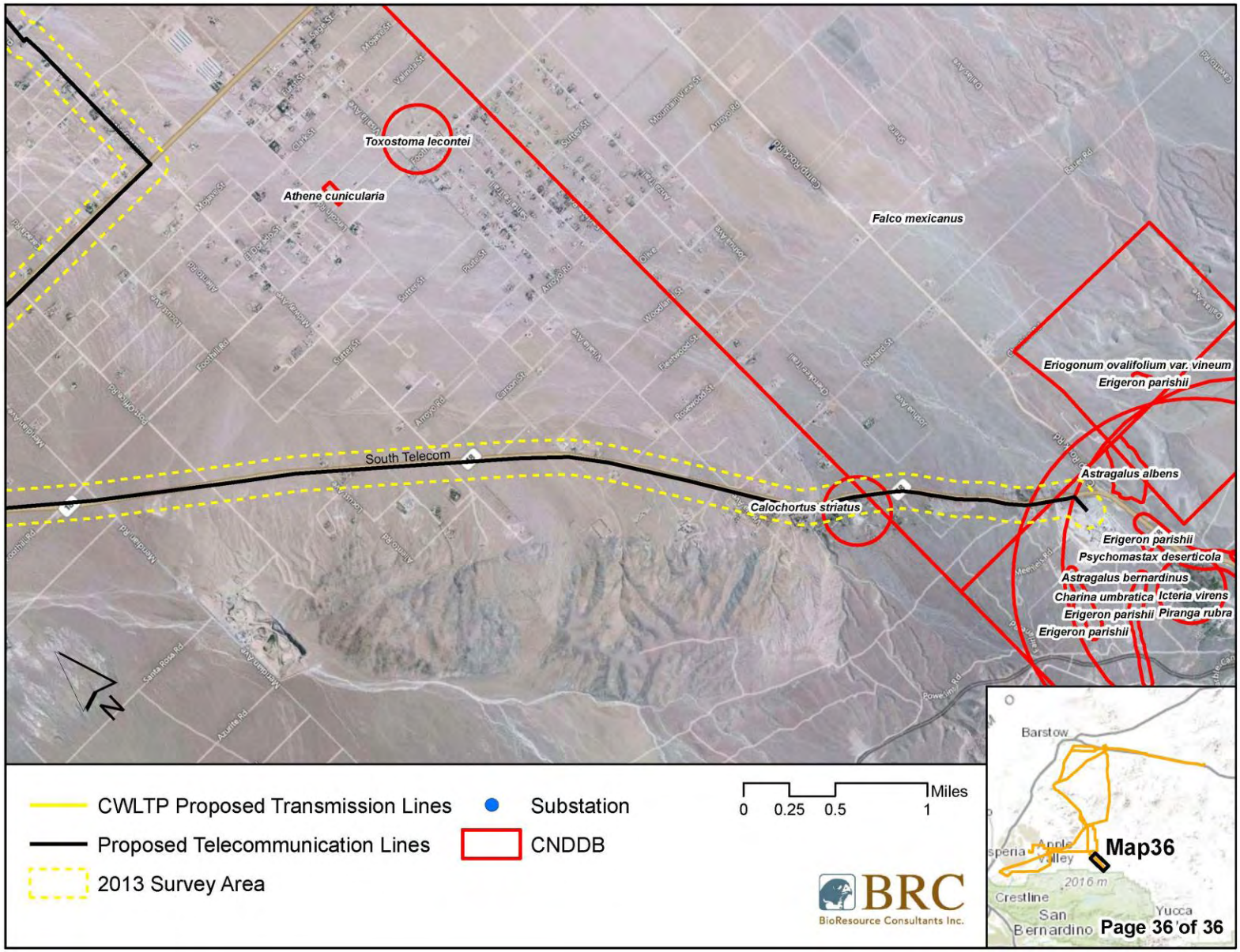
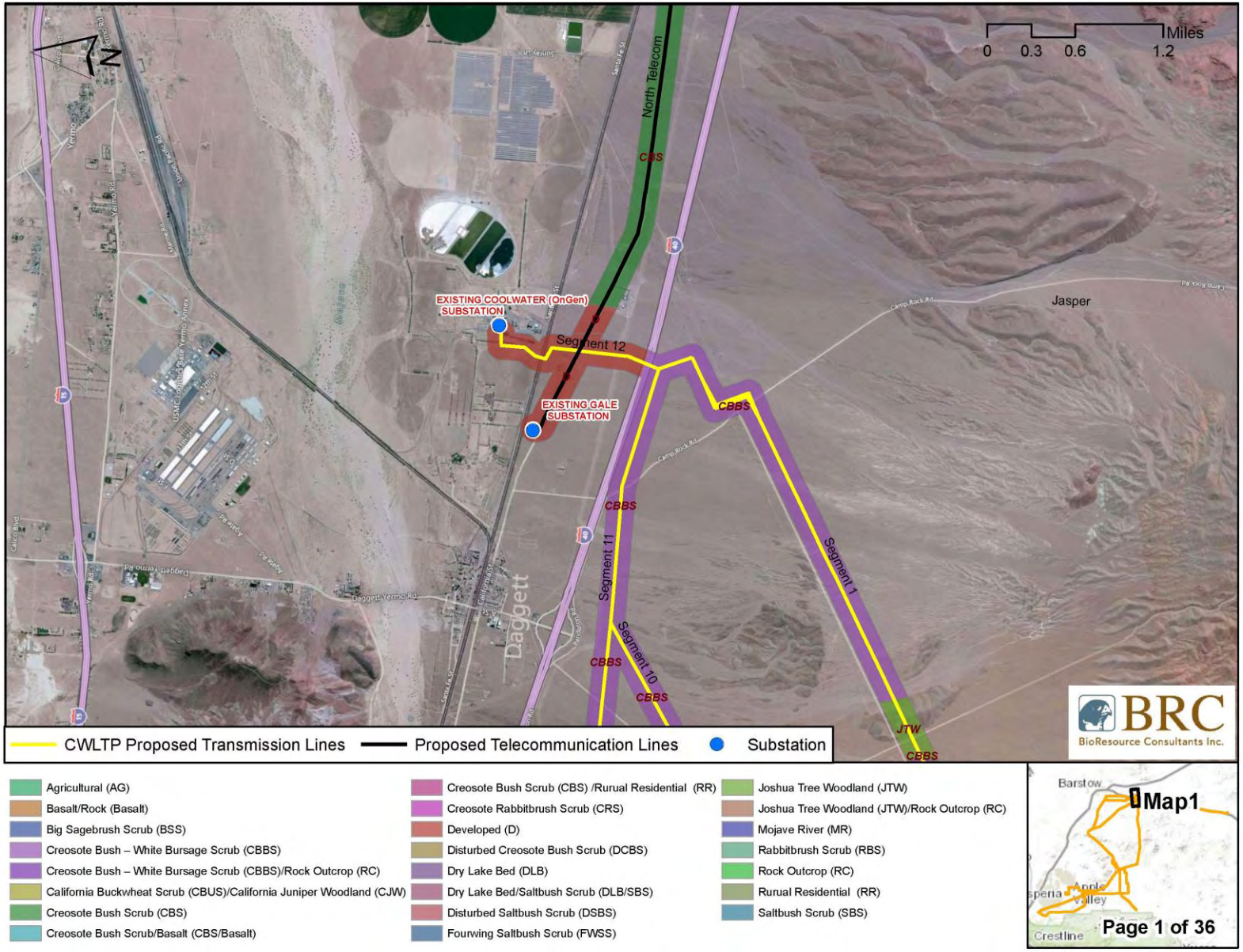
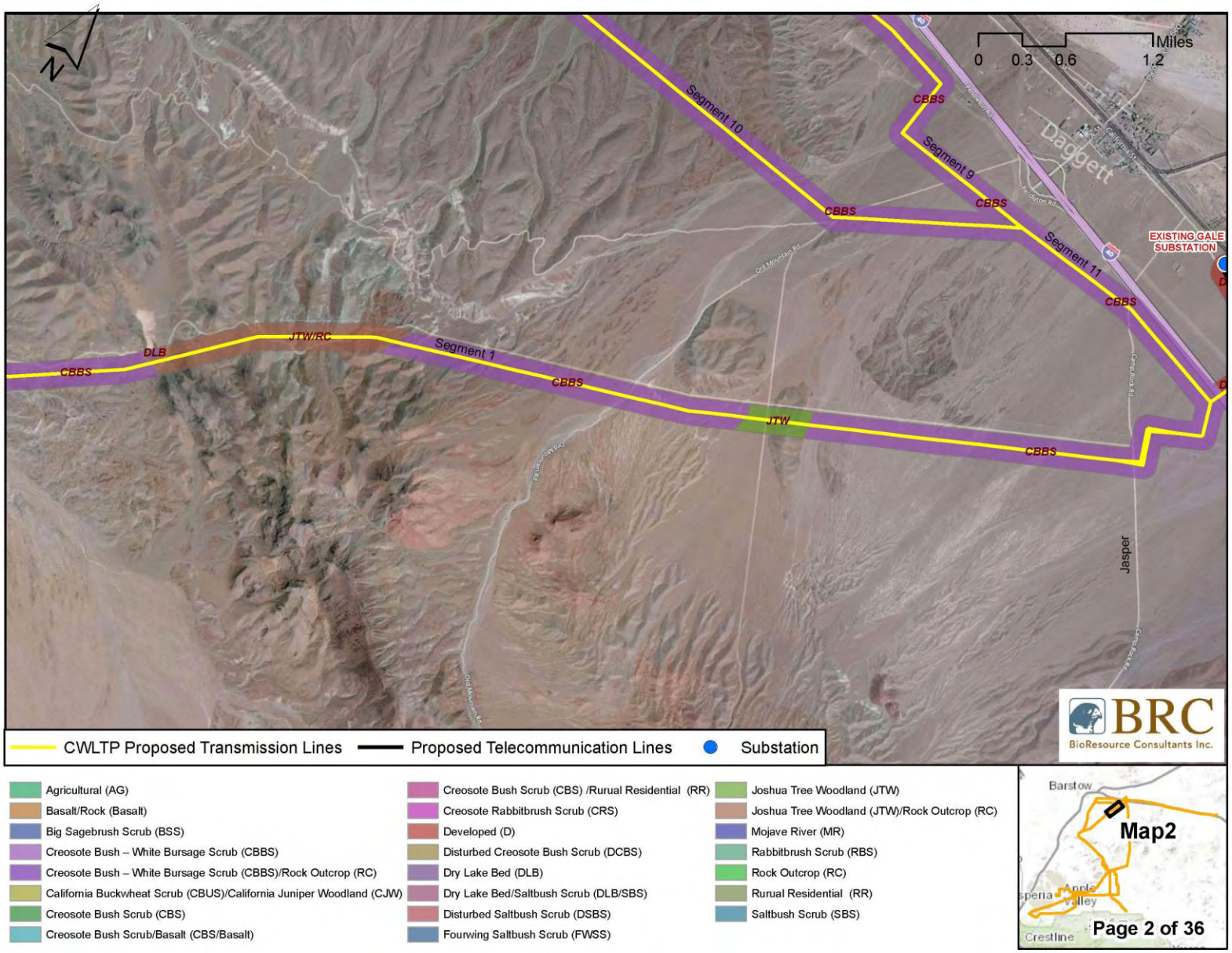
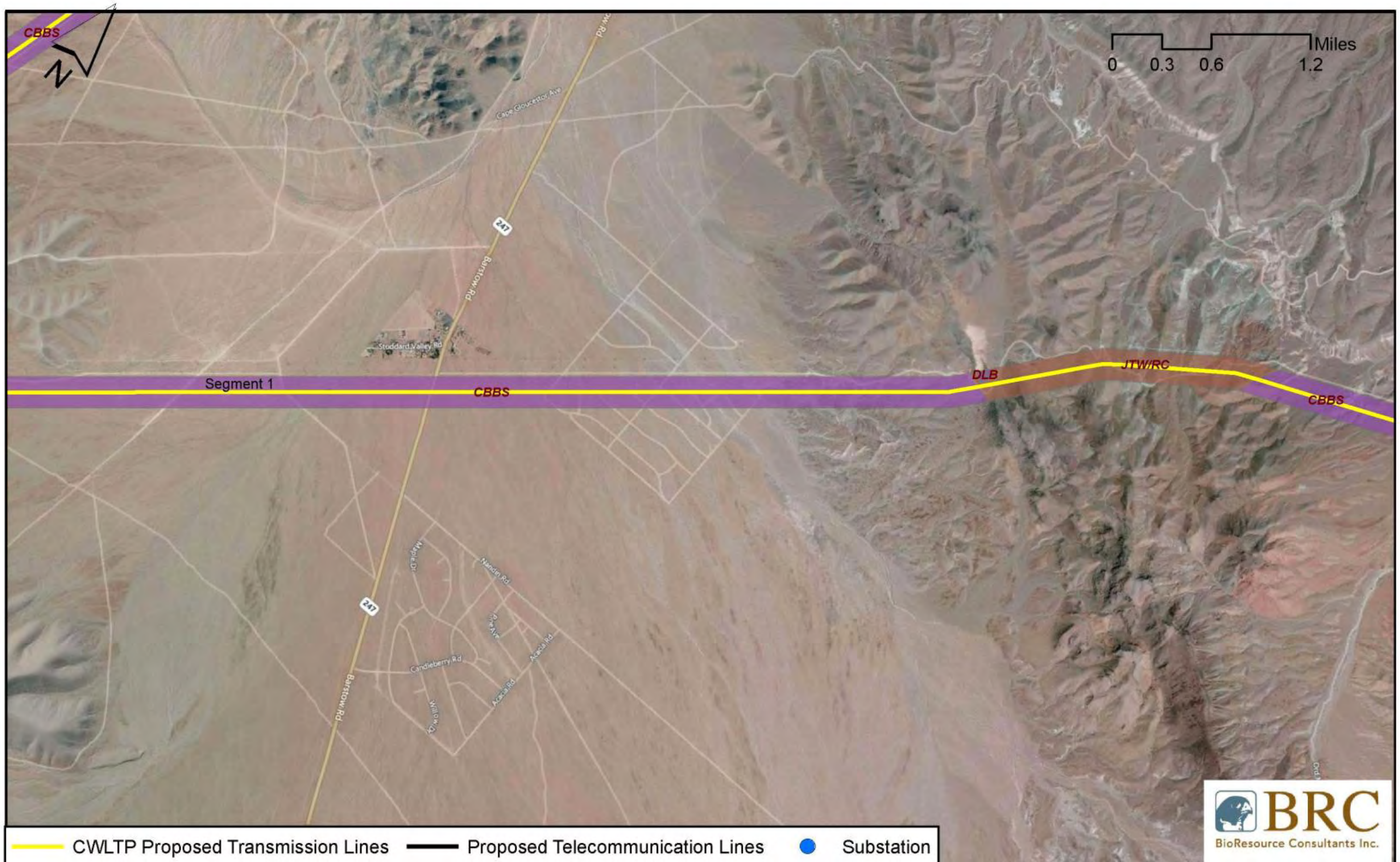

Toxostoma lecontei
Athene cunicularia
Falco mexicanus
Eriogonum ovalifolium var. vineum
Erigeron parishii
Astragalus albens
Calochortus striatus
Erigeron parishii
Psychomastax deserticola
Astragalus bernardinus
Charina umbratica
Icteria virens
Erigeron parishii
Piranga rubra
Erigeron parishii
South Telecom
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
CNDDB
2013 Survey Area
0 0.25 0.5 1 Miles
BRC
BioResource Consultants Inc.
Barstow
Apple Valley
Crestline
San Bernardino
Yucca
Map36
Page 36 of 36

Figure 3:

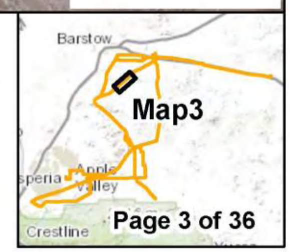
Vegitation Community Maps

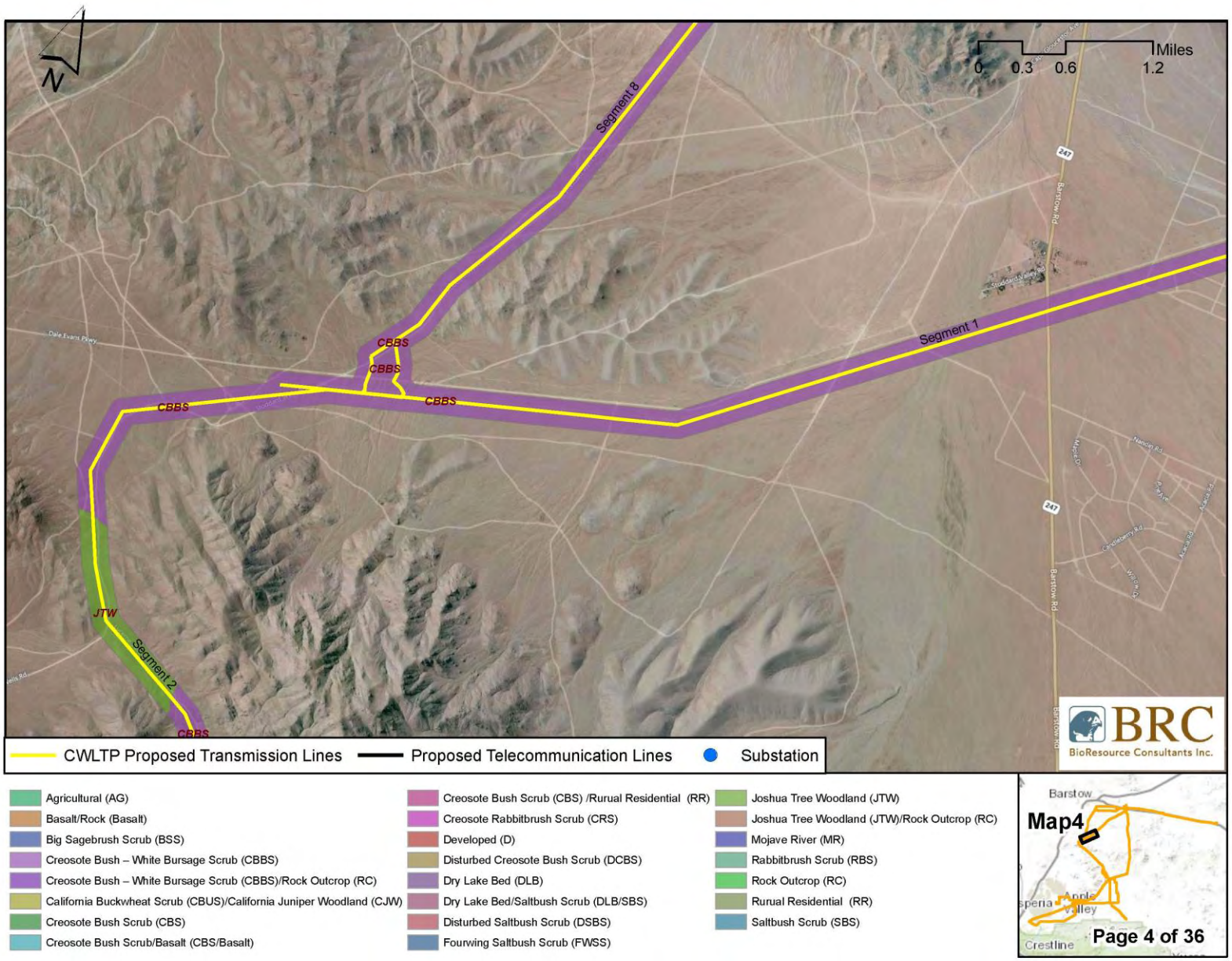

N
0 0.3 0.6 1.2 Miles
North Telecom
CBS
EXISTING COOLWATER (OnGen) SUBSTATION
Segment 12
EXISTING GALE SUBSTATION
CBBS
Segment 11
Segment 10
Segment 1
JTW
Jasper
Daggett
Daggett-Yermo Rd
Camp Rock Rd
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map1
Apple Valley
Crestline
Page 1 of 36

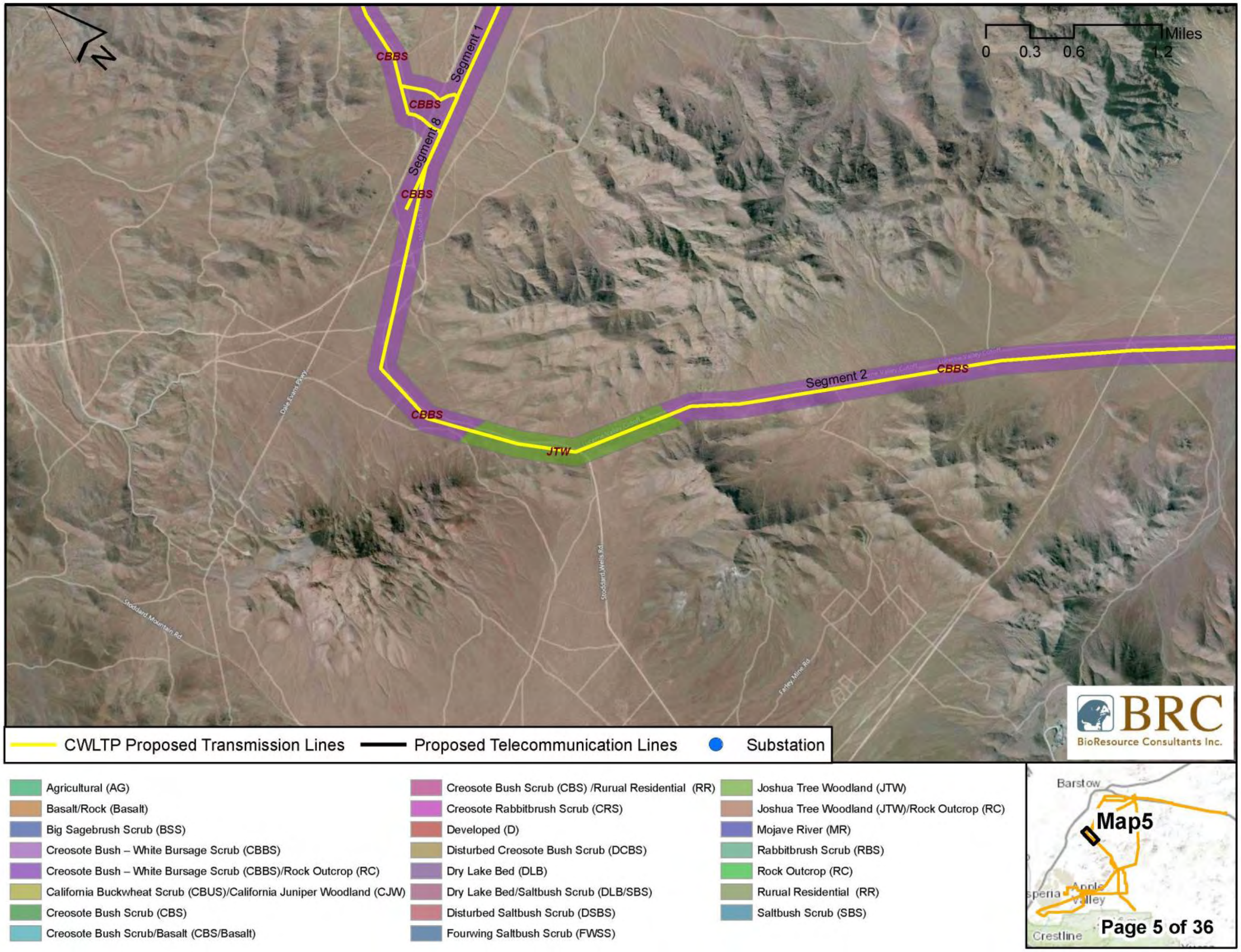

N
0 0.3 0.6 1.2 Miles
Segment 10
Segment 9
Segment 11
Segment 1
CBBS
DLB
JTW/RC
JTW
EXISTING GALE SUBSTATION
Daggett
Jasper
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map2
Apple Valley
Crestline



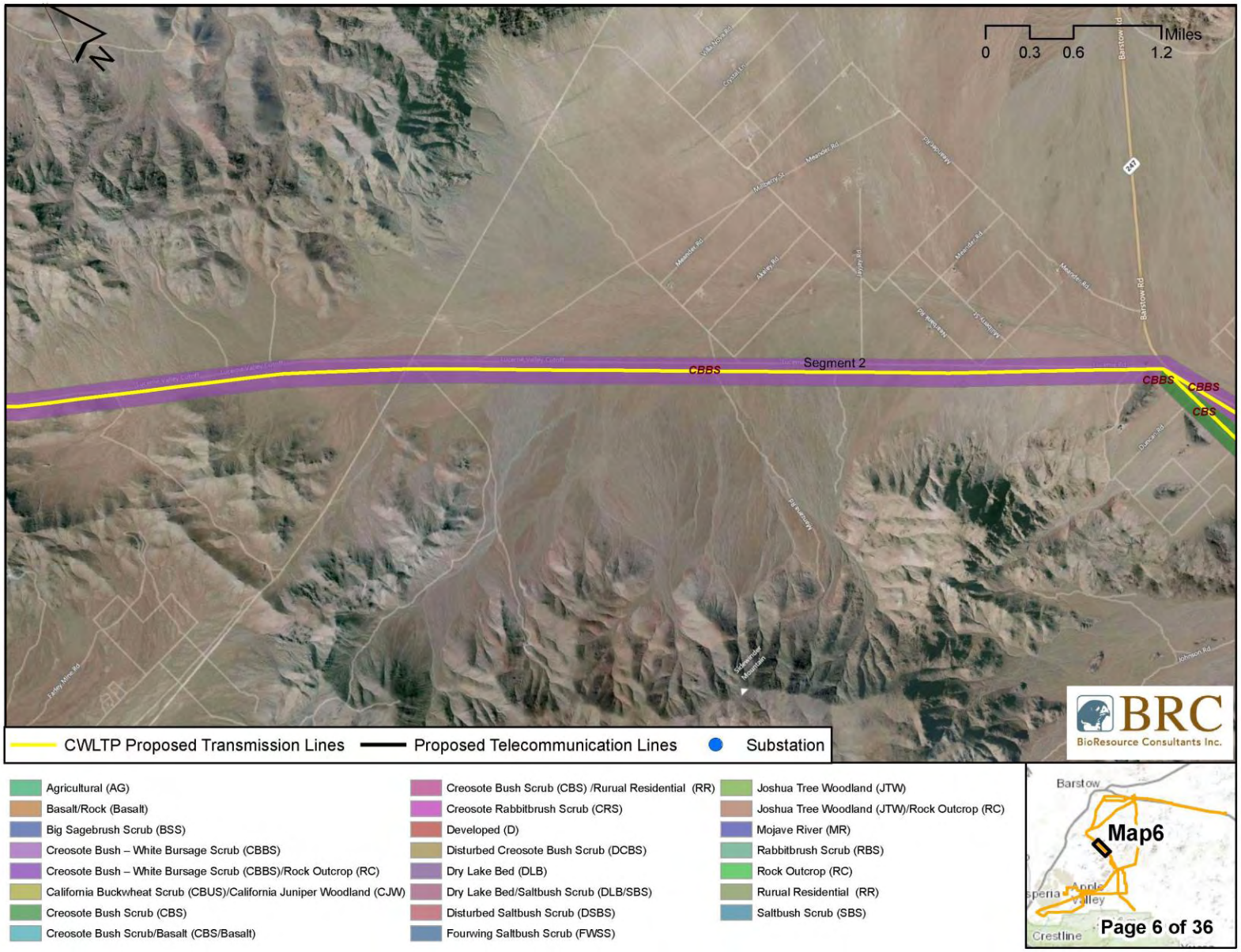
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)




N
0 0.3 0.6 1.2 Miles
Segment 8
Segment 1
Segment 2
CBBS
CBBS
CBBS
CBBS
JTW
CBBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map4
Apple Valley
Crestline
Page 4 of 36



Segment 1
Segment 8
Segment 2
CBBS
CBBS
CBBS
CBBS
CBBS
JTW
0 0.3 0.6 1.2 Miles
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map5
Apple Valley
Crestline
Page 5 of 36


N
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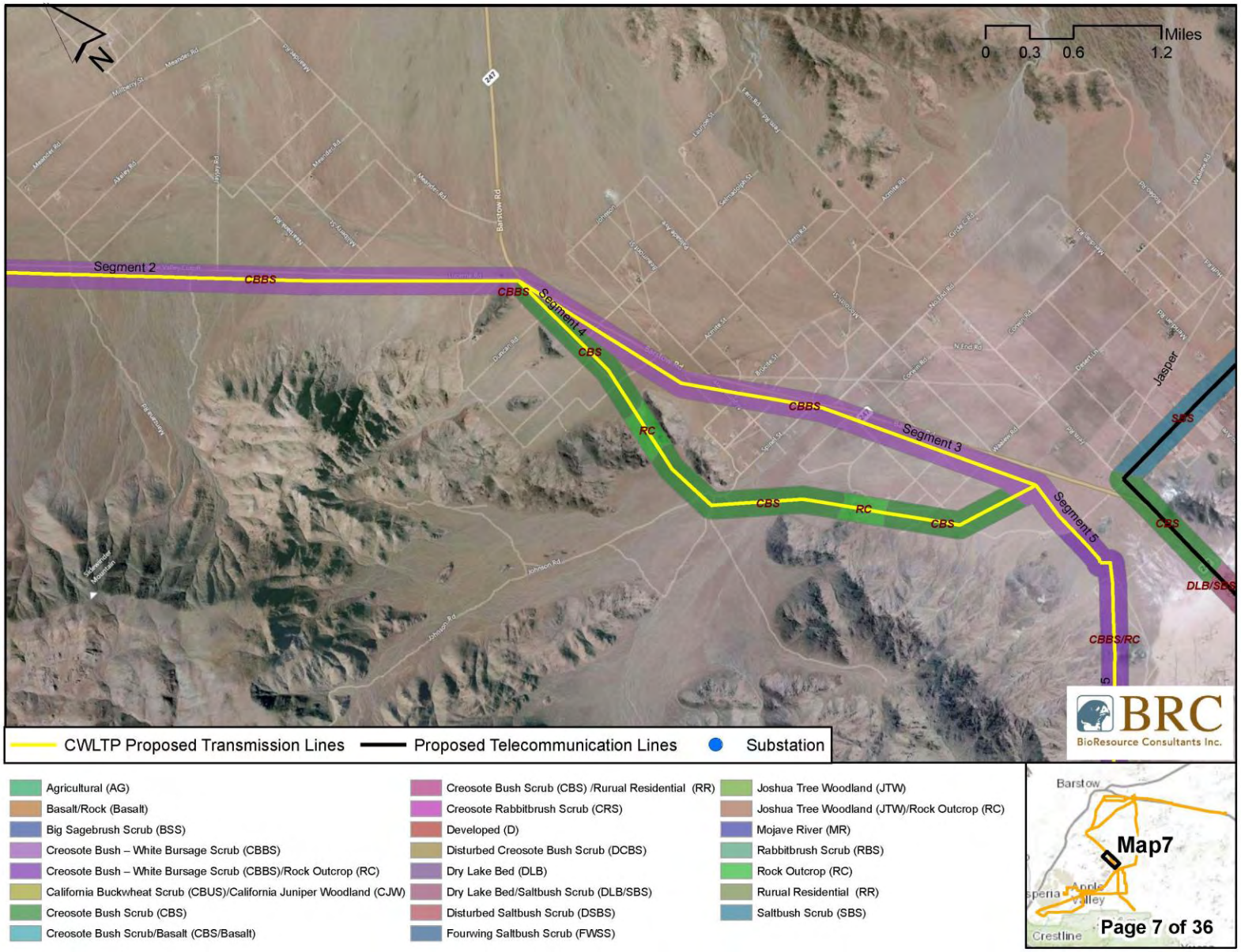
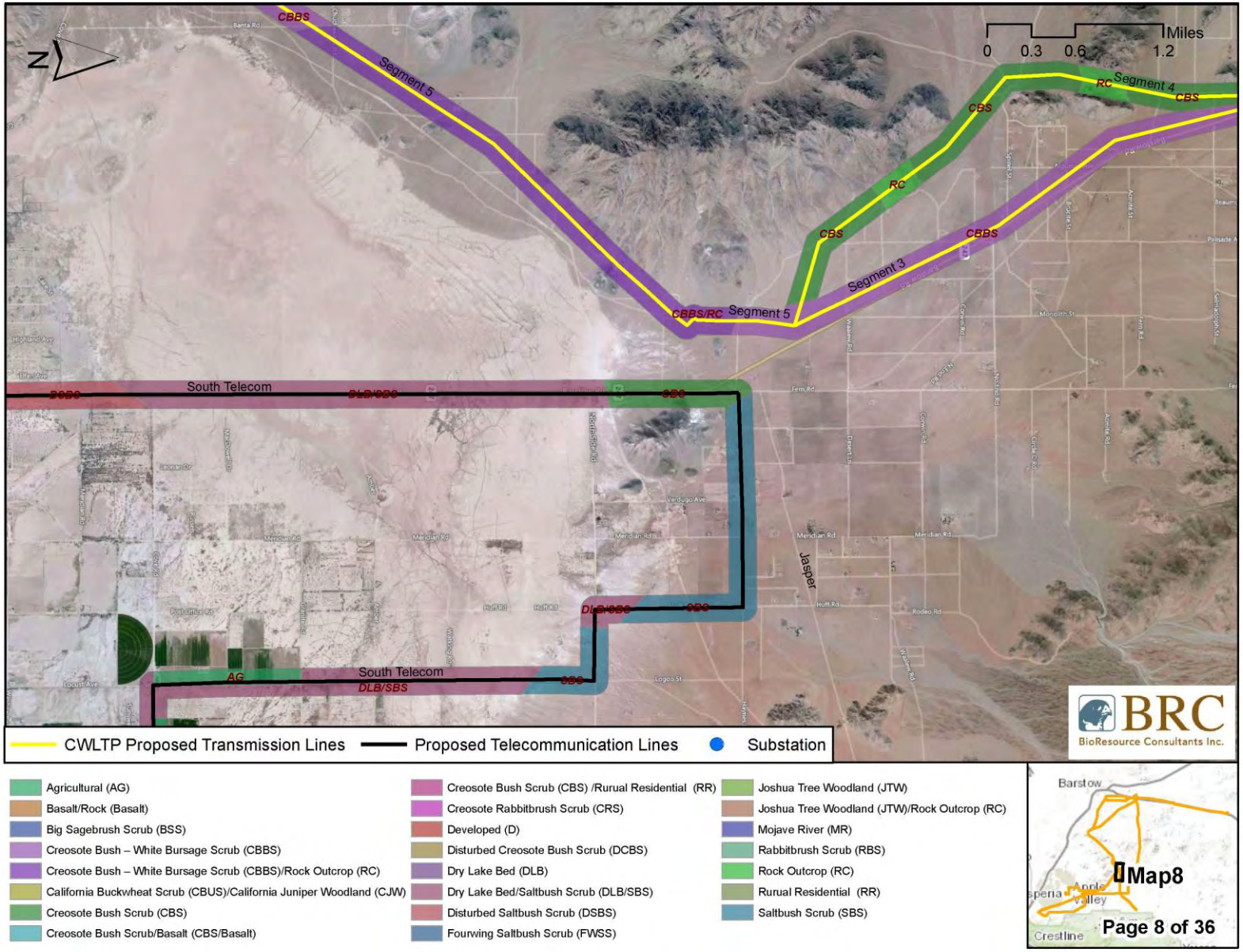
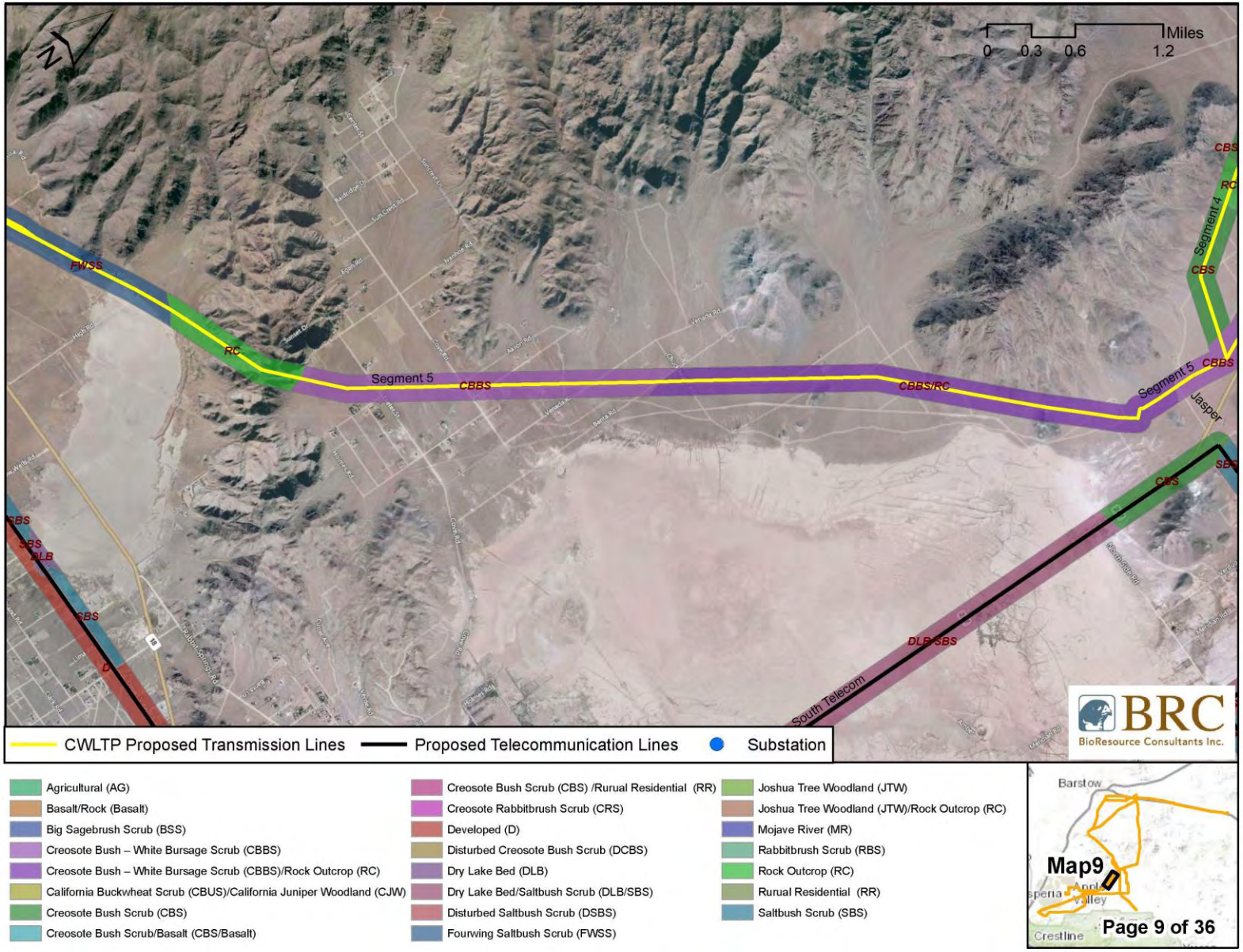
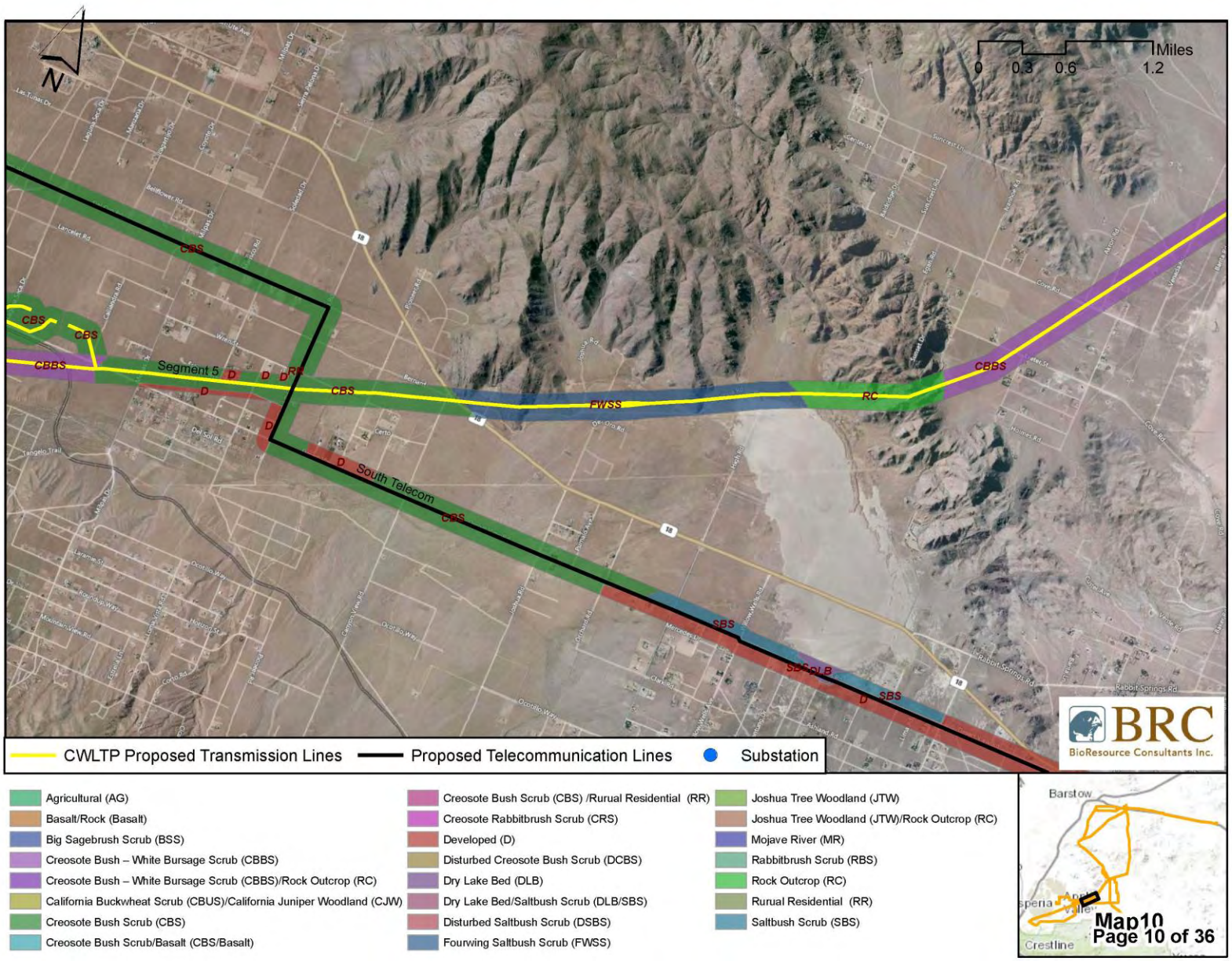
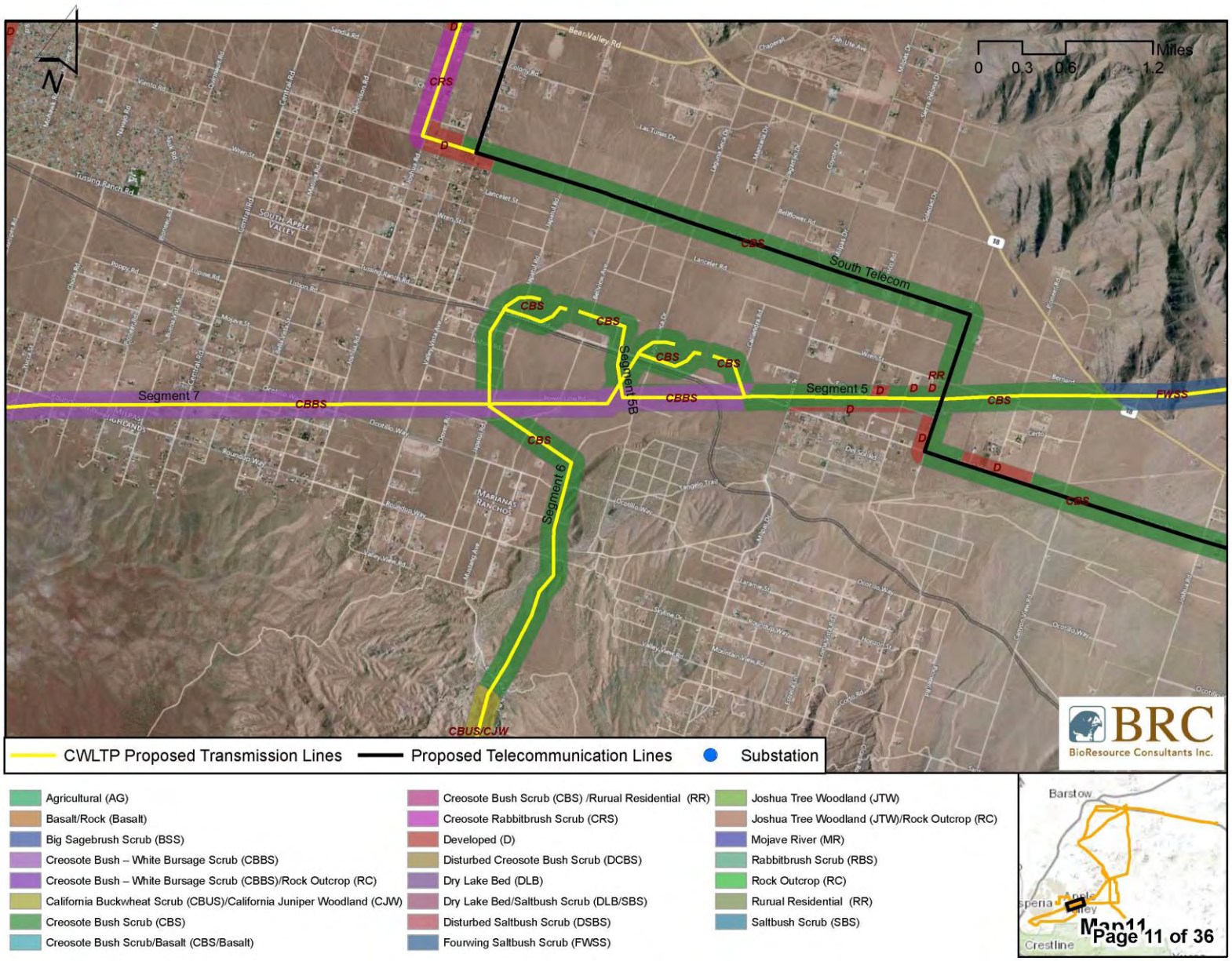
Segment 2
CBBS
CBBS
CBBS
CBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map6
Apple Valley
Crestline
Page 6 of 36

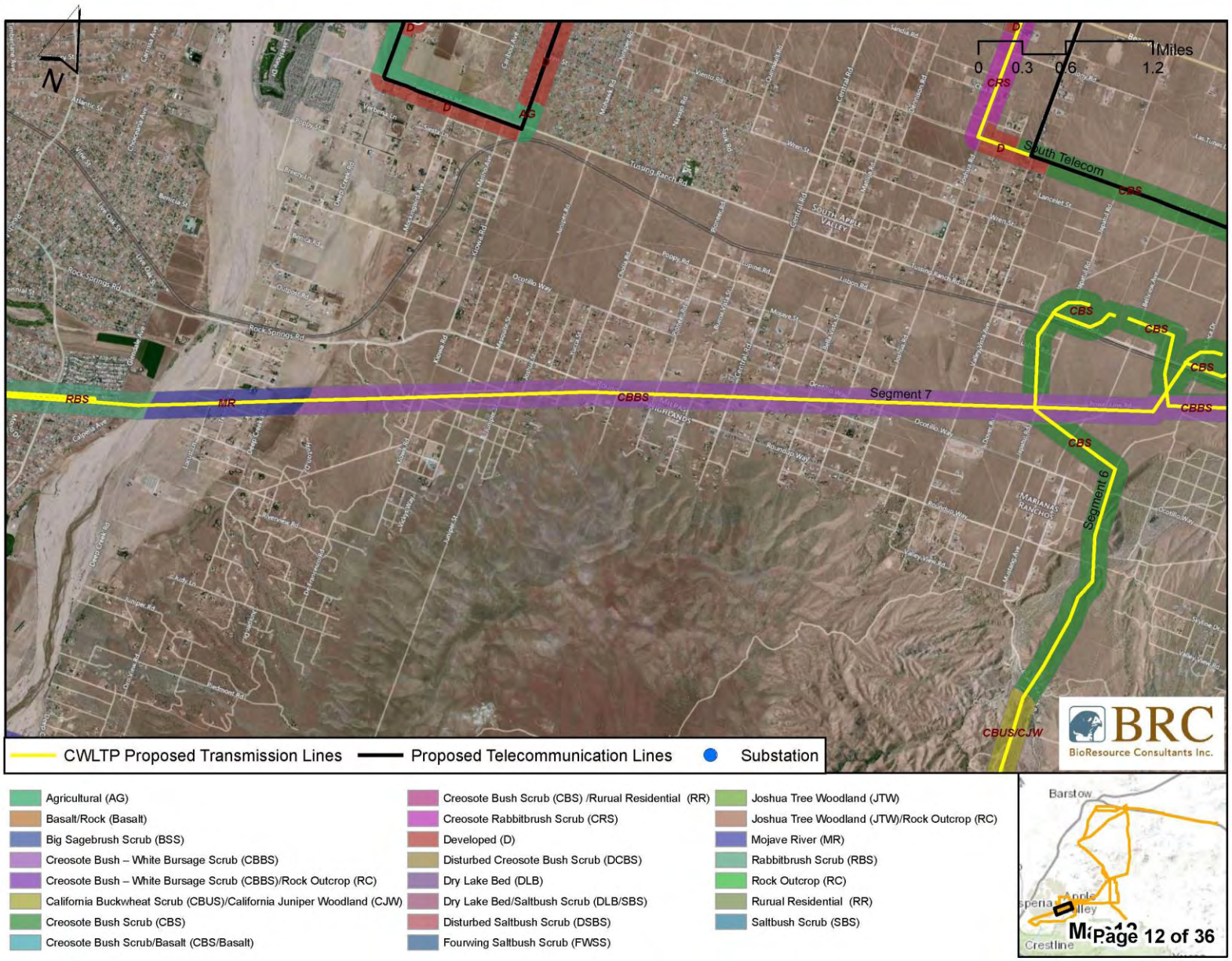

N
0 0.3 0.6 1.2 Miles
Segment 2
CBBS
CBBS
Segment 4
CBS
RC
CBBS
Segment 3
CBS
RC
CBS
Segment 5
CBS
DLB/SBS
CBBS/RC
Barstow Rd
Jasper
SBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map7
Apple Valley
Crestline


N
0 0.3 0.6 1.2 Miles
CBBS
Segment 5
RC
Segment 4
CBS
CBS
RC
CBS
CBBS
Segment 3
CBBS/RC
Segment 5
South Telecom
DLB/SBS
SBS
Jasper
AG
South Telecom
DLB/SBS
SBS
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map8
Apple Valley
Crestline
Page 8 of 36


N
0 0.3 0.6 1.2 Miles
FWSS
RC
Segment 5
CBBS
CBBS/RC
Segment 4
CBS
RC
CBS
CBBS
Segment 5
Jasper
CBS
SBS
SBS
DLB
SBS
DLB/SBS
South Telecom
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map9
Crestline
Page 9 of 36


N
0 0.3 0.6 1.2 Miles
Segment 5
South Telecom
CBS
CBBS
D
RR
FWSS
RC
SBS
SBSol B
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map10
Page 10 of 36


N
0 0.3 0.6 1.2 Miles
Segment 7
Segment 5B
Segment 6
Segment 5
South Telecom
CBS
CBBS
CRS
RR
FWSS
D
CBUS/CJW
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map 11
Page 11 of 36


N
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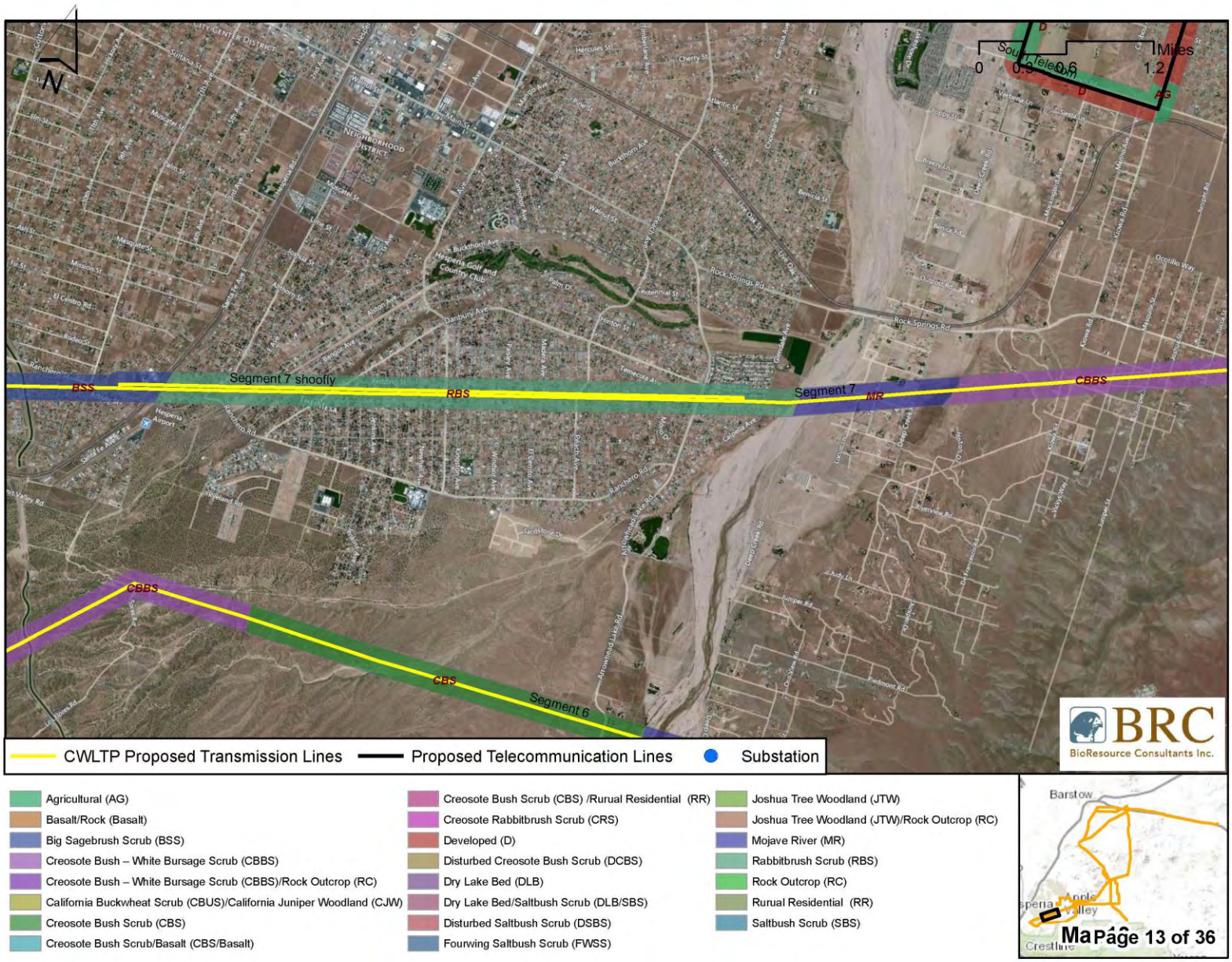
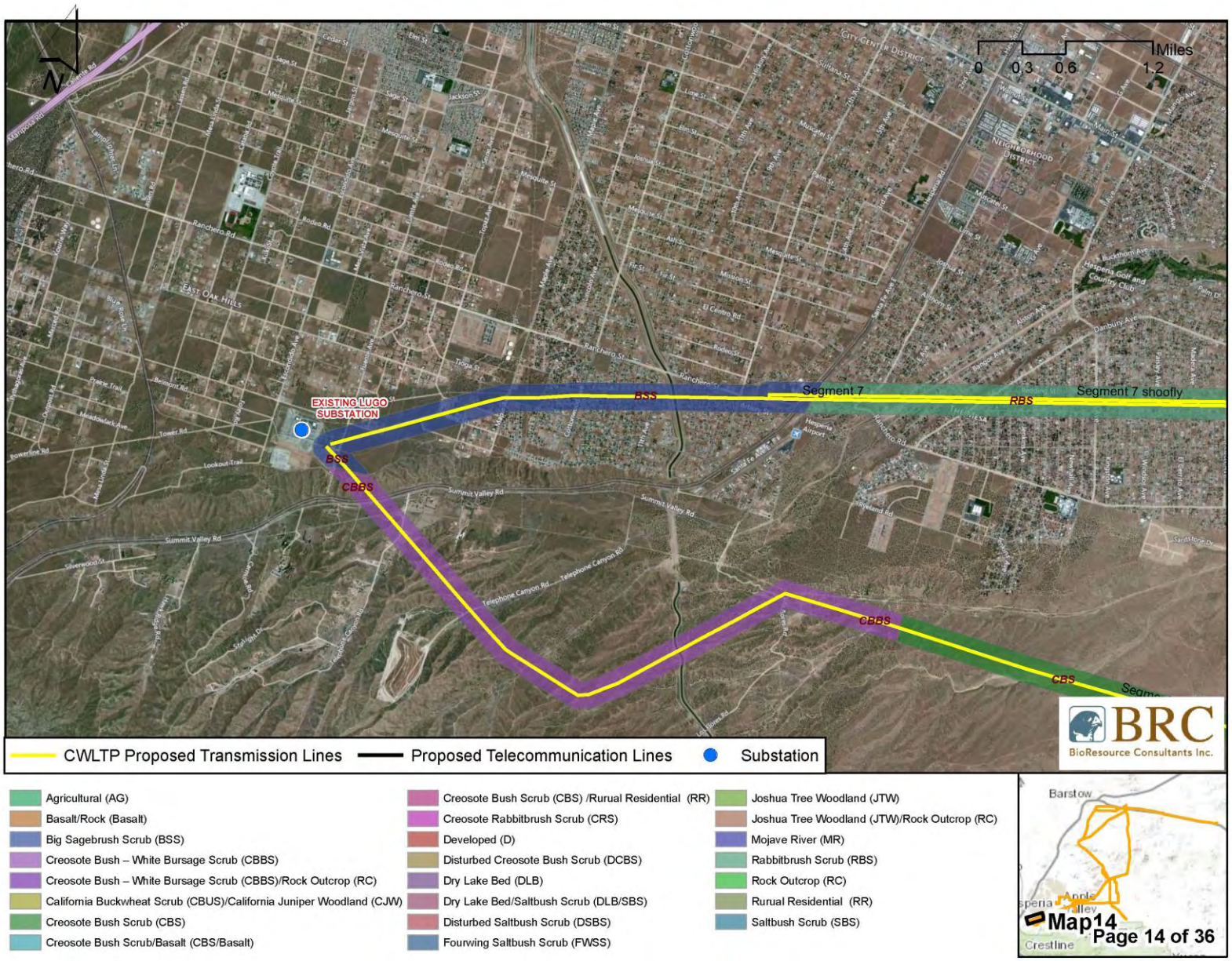
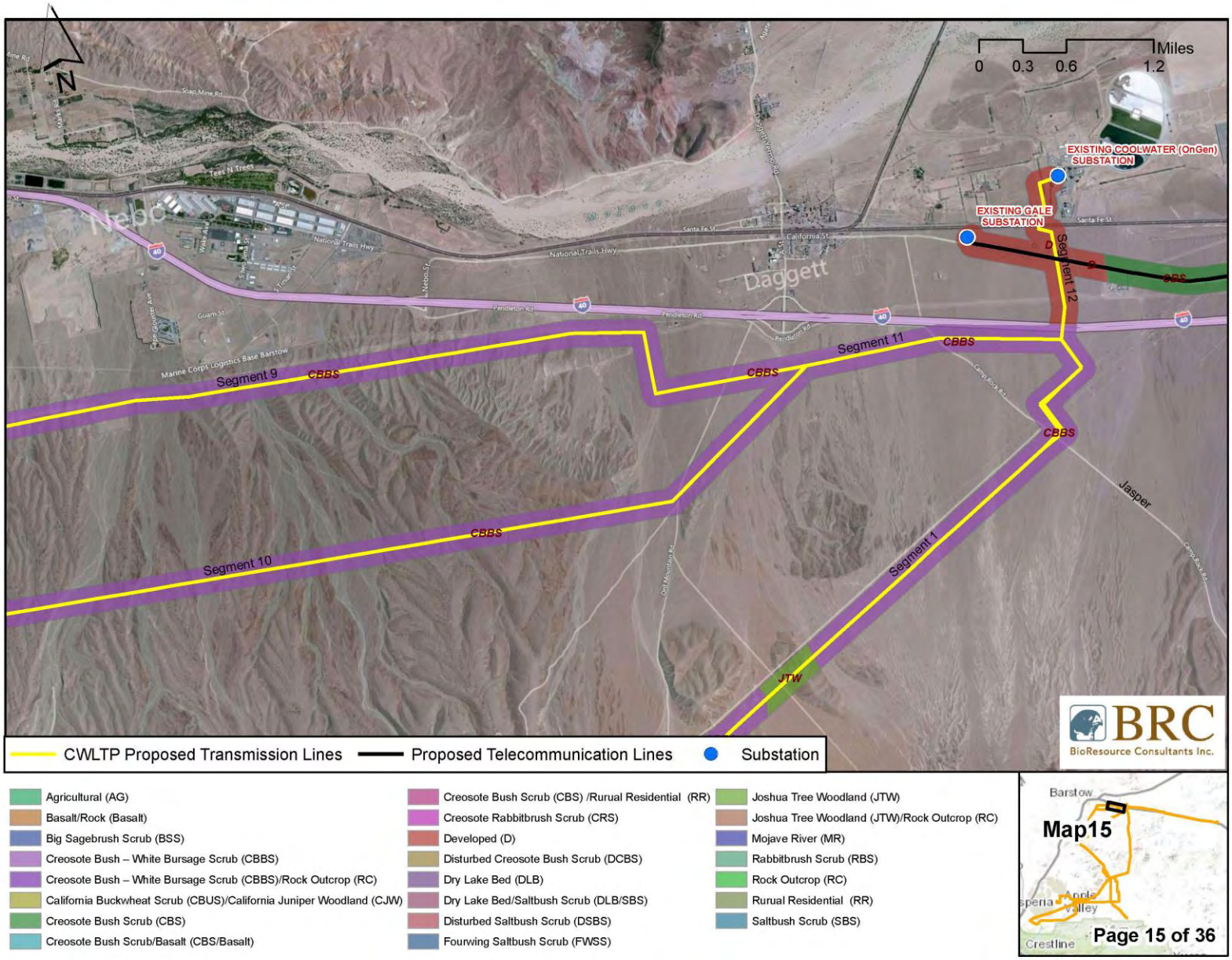
South Telecom
Segment 7
Segment 6
RBS
MR
CBBS
CBS
CRS
AG
D
CBUS/CJW
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
BRC
BioResource Consultants Inc.
Barstow
Crestline


N
0
0.3
0.6
1.2
Miles
Segment 7 shoofly
Segment 7
Segment 6
BSS
RBS
MR
CBBS
CBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline


N
0 0.3 0.6 1.2 Miles
EXISTING LUGO SUBSTATION
BSS
CBBS
RBS
CBS
Segment 7
Segment 7 shoofly
EAST OAK HILLS
Summit Valley Rd
Telephone Canyon Rd
Ranchero Rd
Rodeo Rd
Hesperia Airport
Hesperia Golf and Country Club
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map14
Page 14 of 36


N
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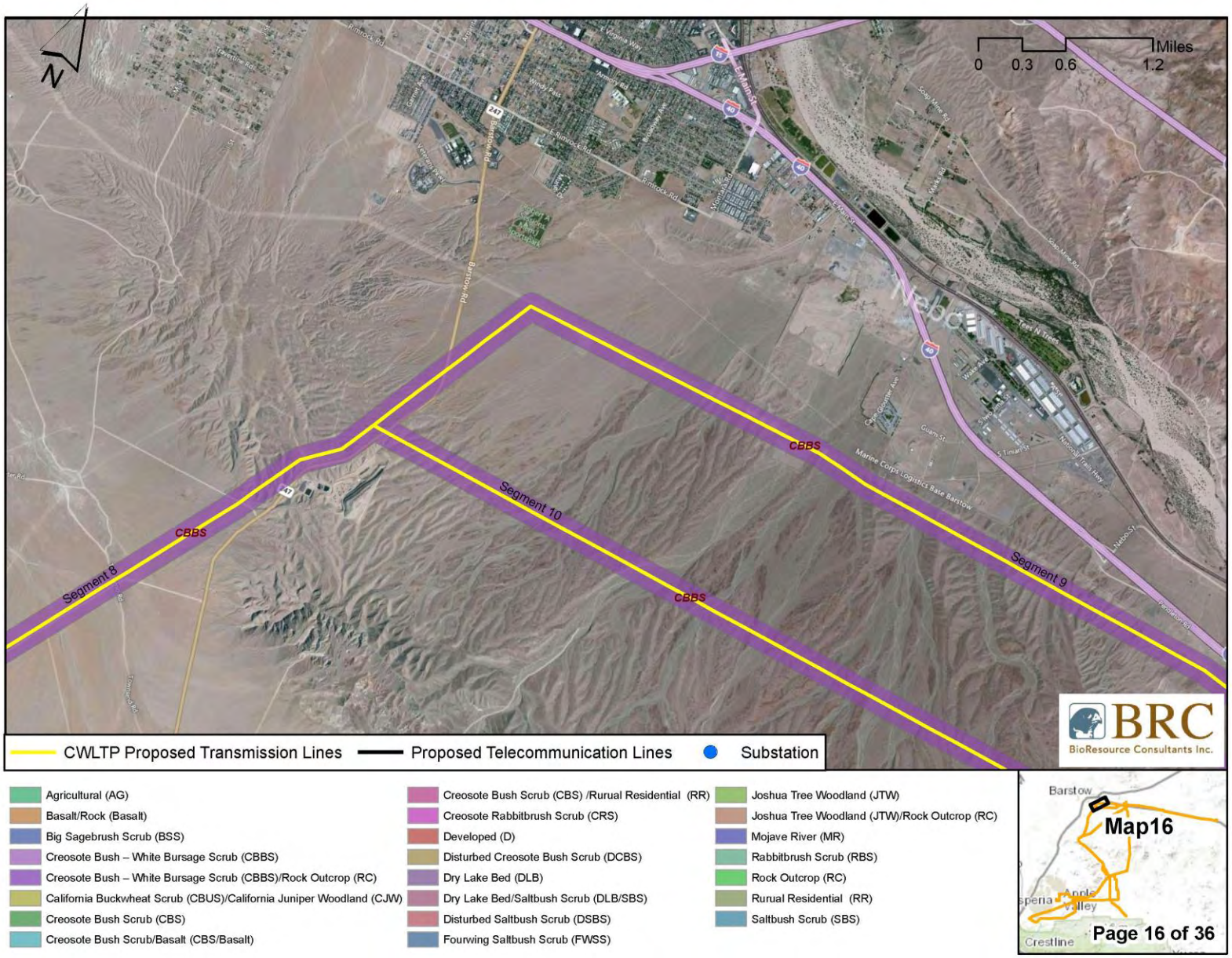
EXISTING COOLWATER (OnGen) SUBSTATION
EXISTING GALE SUBSTATION
Segment 12
Segment 11
Segment 10
Segment 9
Segment 1
CBBS
JTW
Daggett
Jasper
Marine Corps Logistics Base Barstow
National Trails Hwy
Santa Fe St
Pendleton Rd
Camp Rock Rd
Ord Mountain Rd
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map15
Apple Valley
Crestline
Page 15 of 36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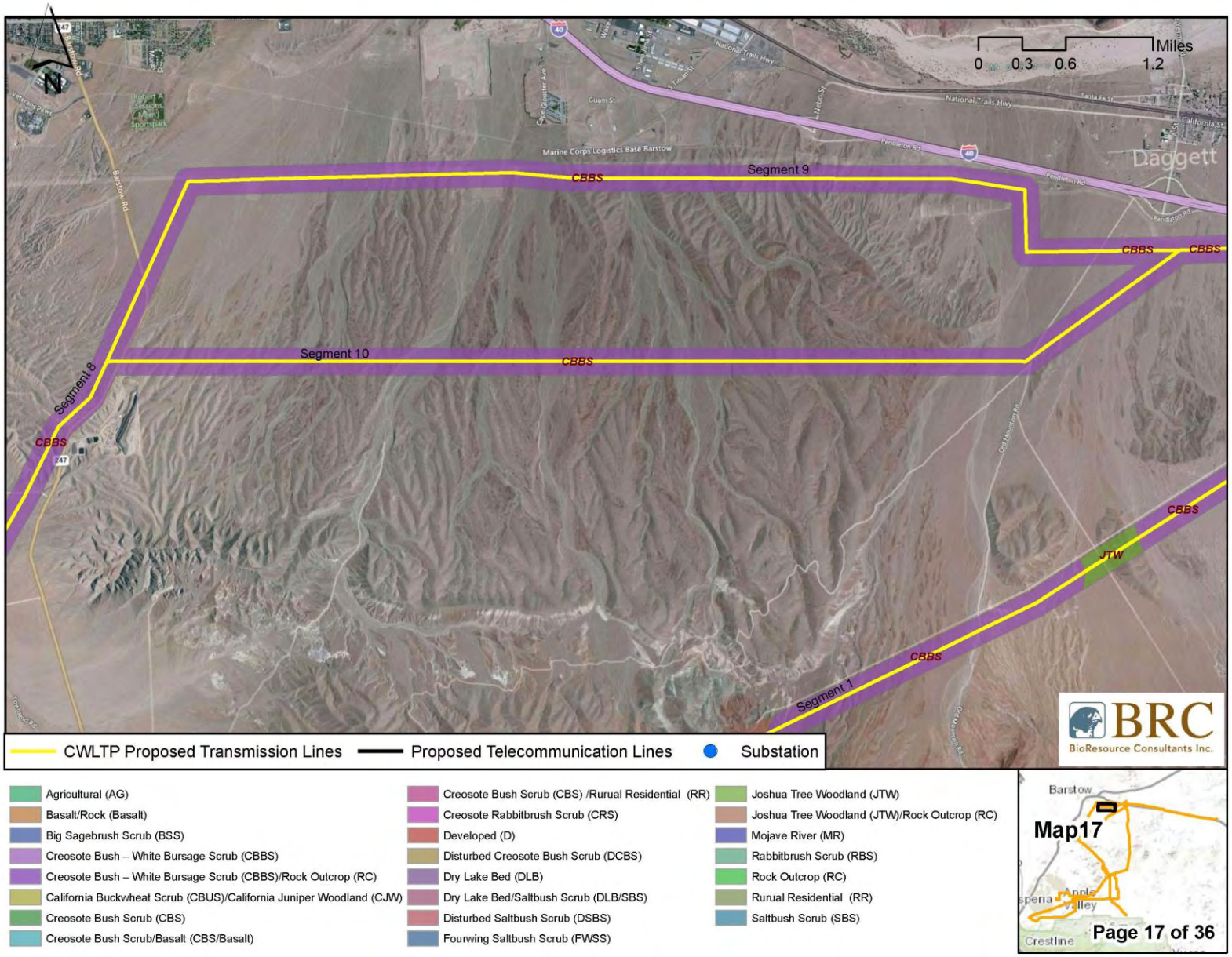
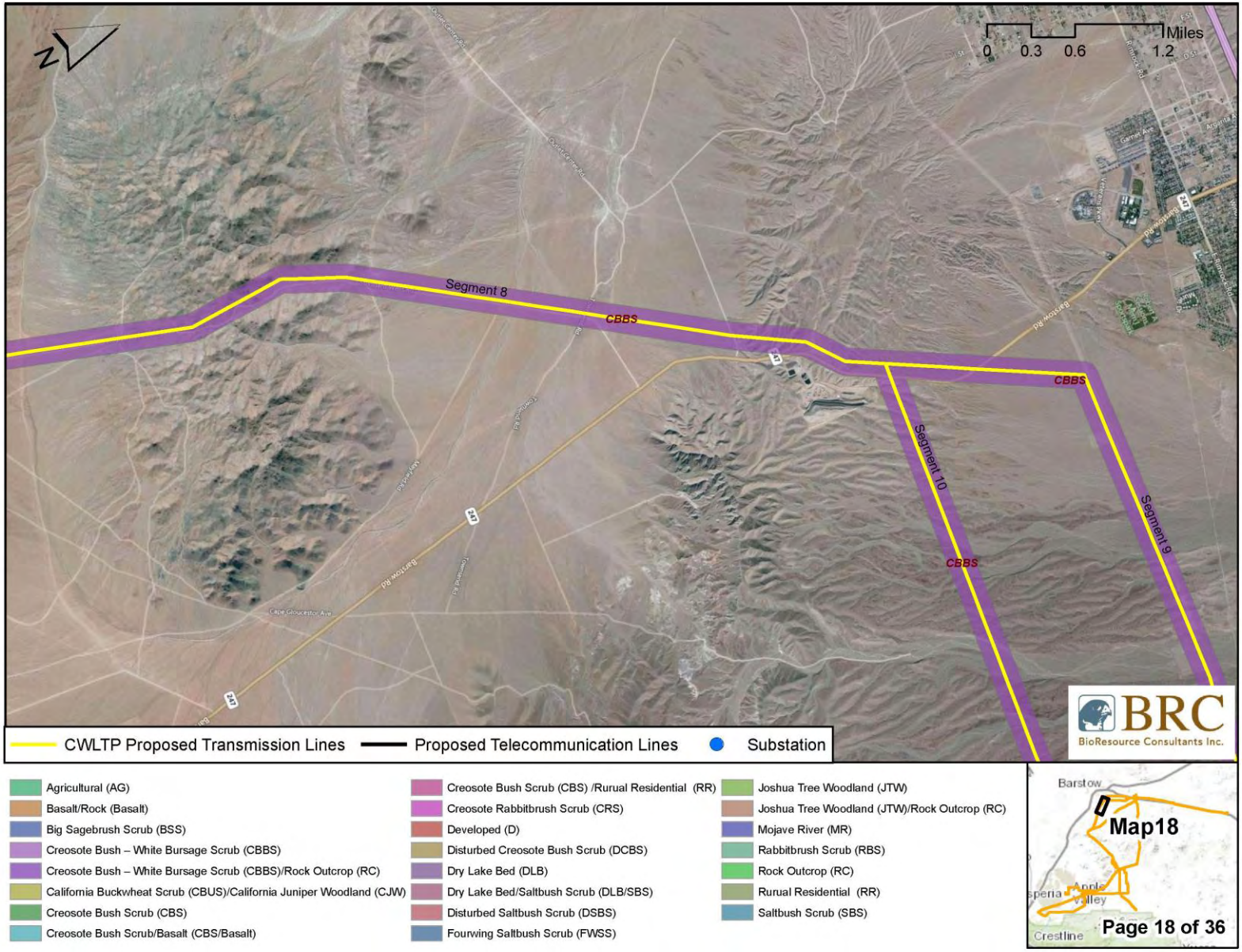
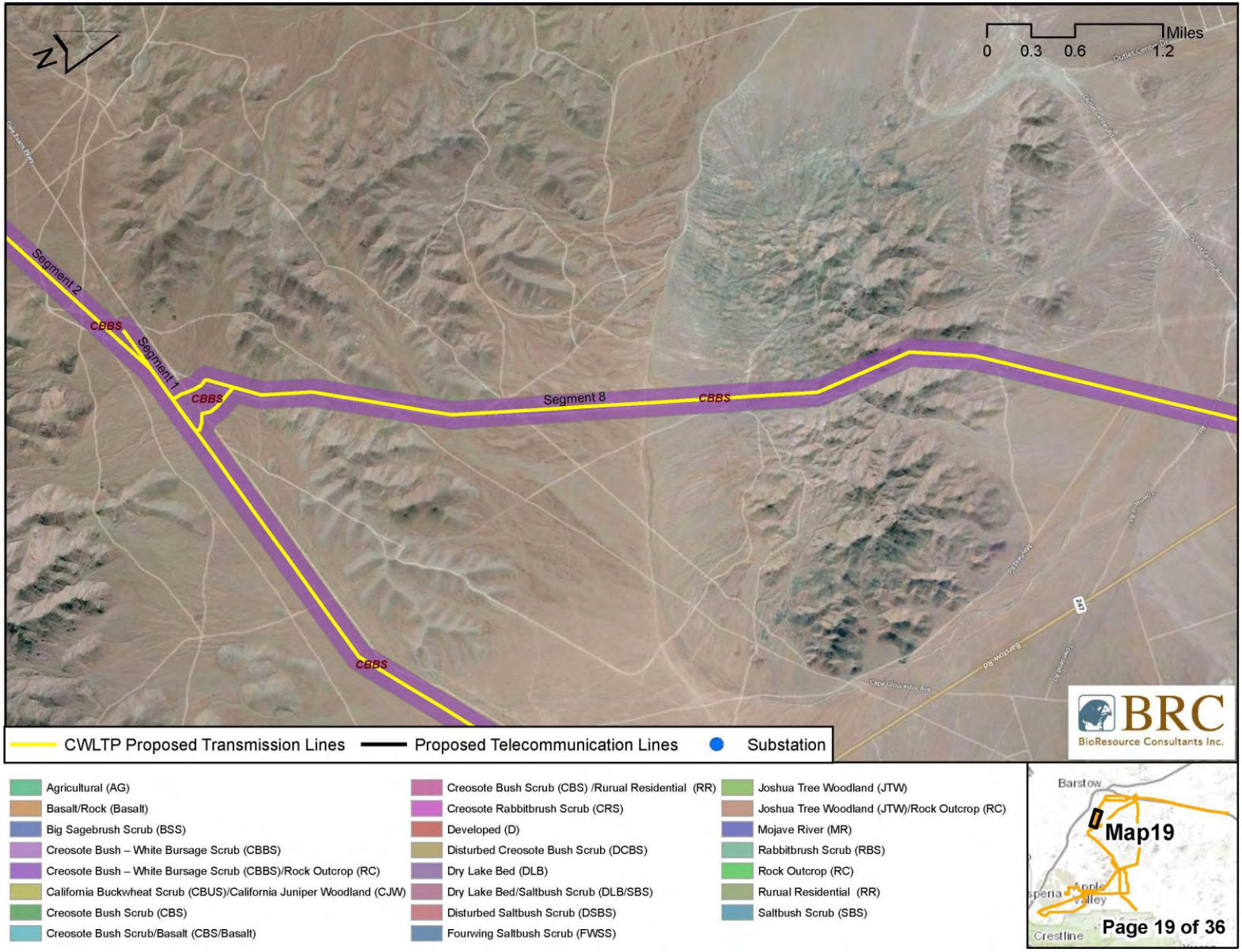
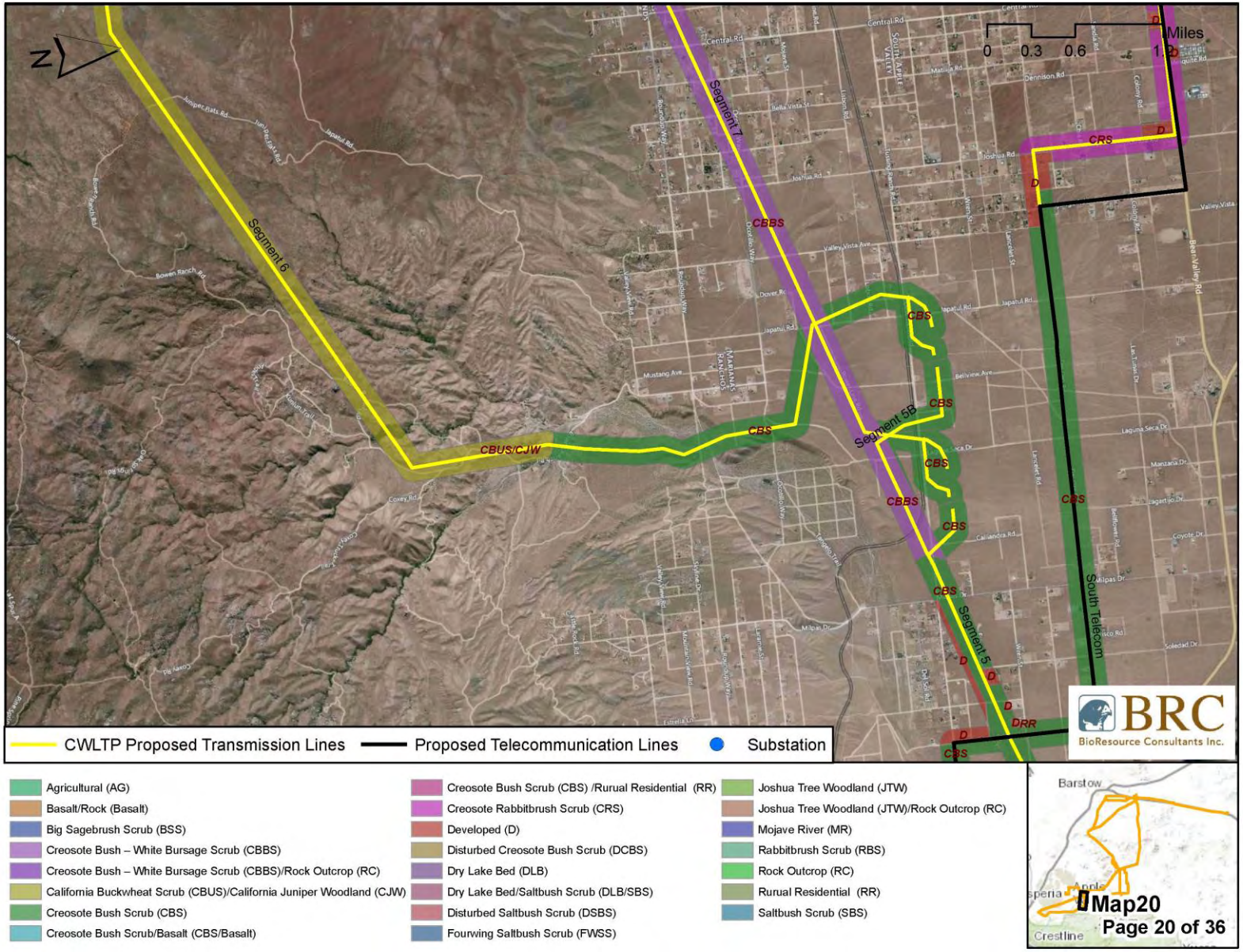
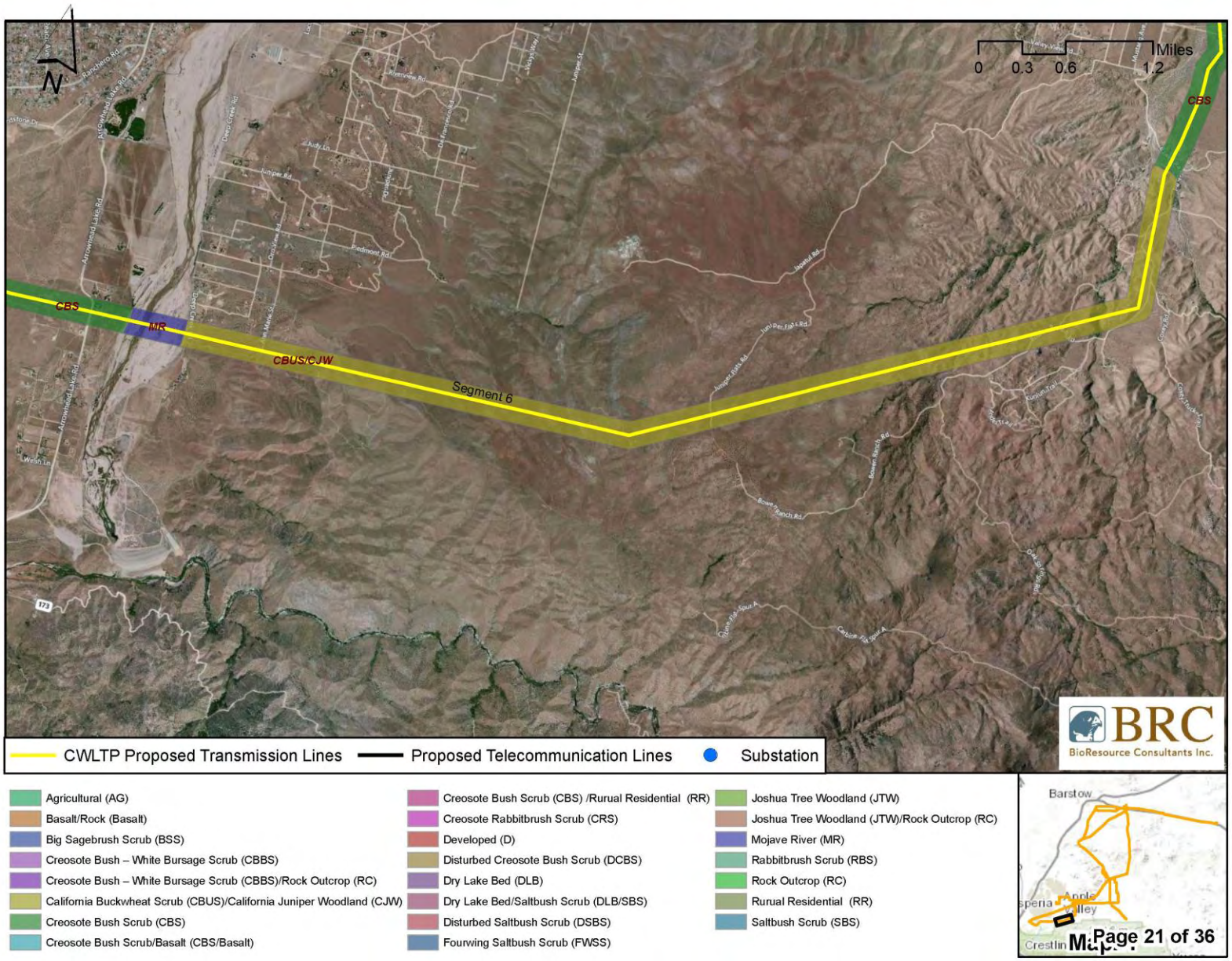
Segment 8
Segment 10
Segment 9
CBBS
CBBS
CBBS
Marine Corps Logistics Base Barstow
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map16
Apple Valley
Crestline
Page 16 of 36

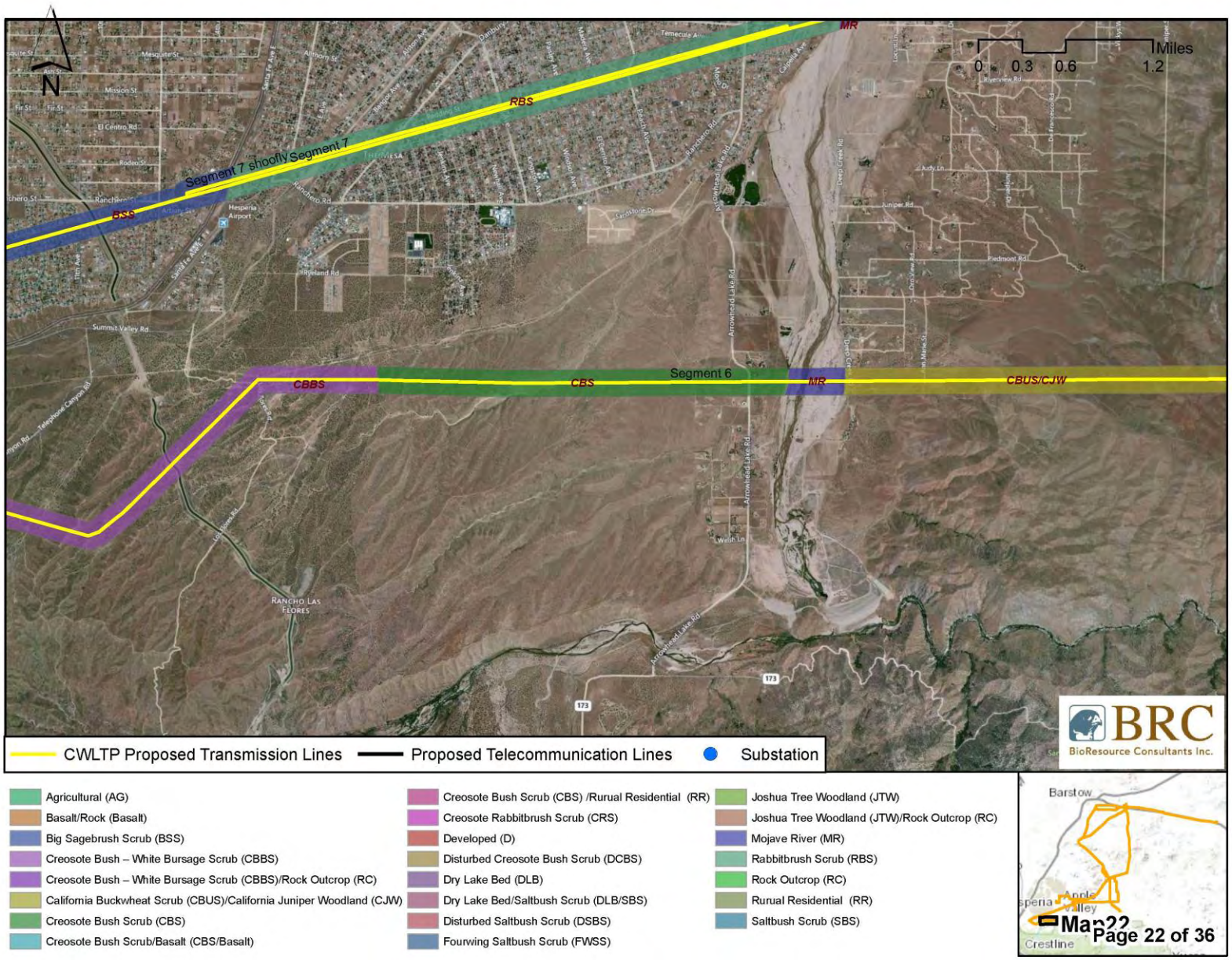

Miles
0 0.3 0.6 1.2
Segment 9
Segment 10
Segment 8
Segment 1
CBBS
JTW
Marine Corps Logistics Base Barstow
Barstow Rd
National Trails Hwy
Pendleton Rd
Daggett
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map17
Apple Valley
Crestline
Page 17 of 36

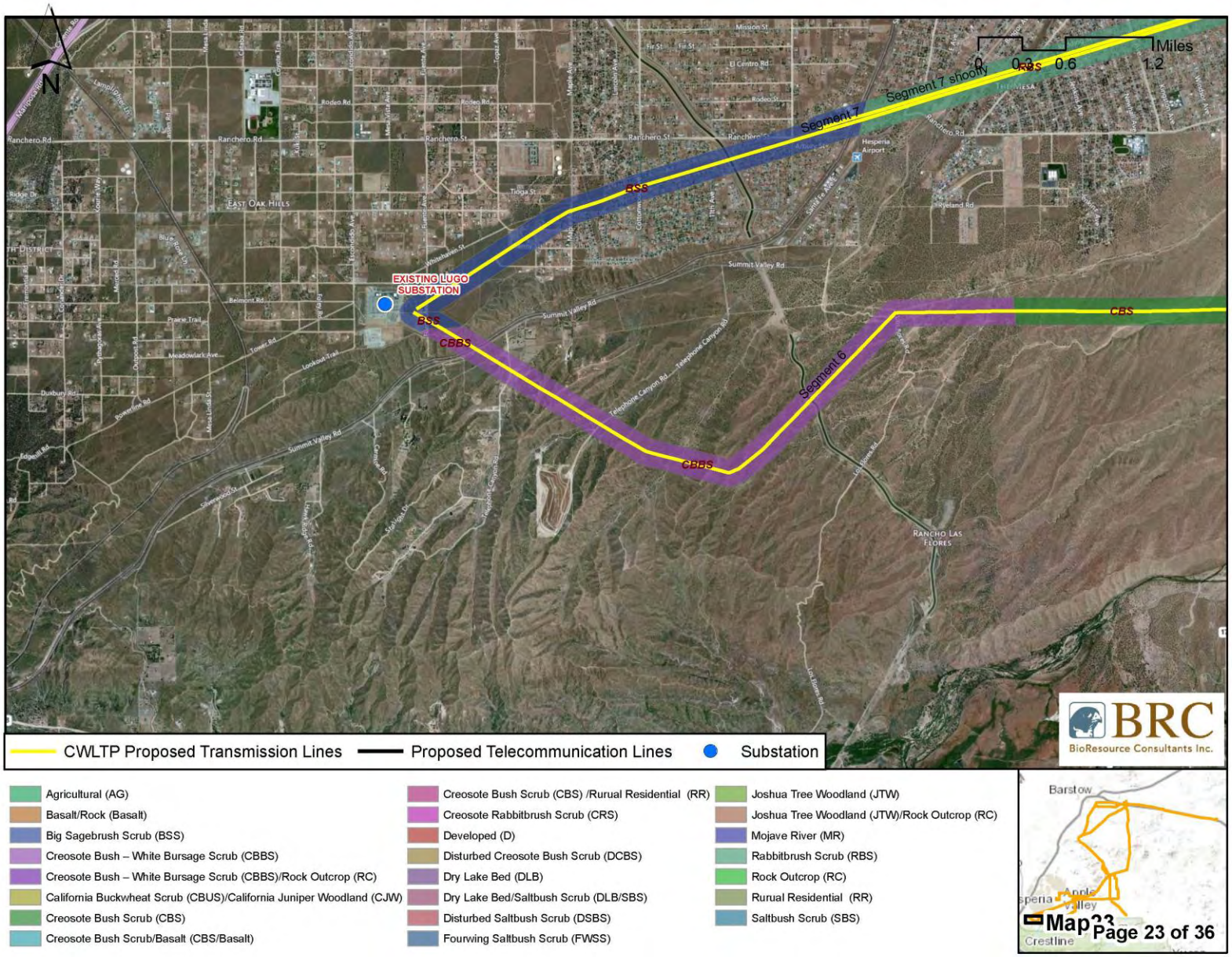

Miles
0 0.3 0.6 1.2
Segment 8
CBBS
CBBS
Segment 10
CBBS
Segment 9
Barstow Rd
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map18
Apple Valley
Crestline
Page 18 of 36

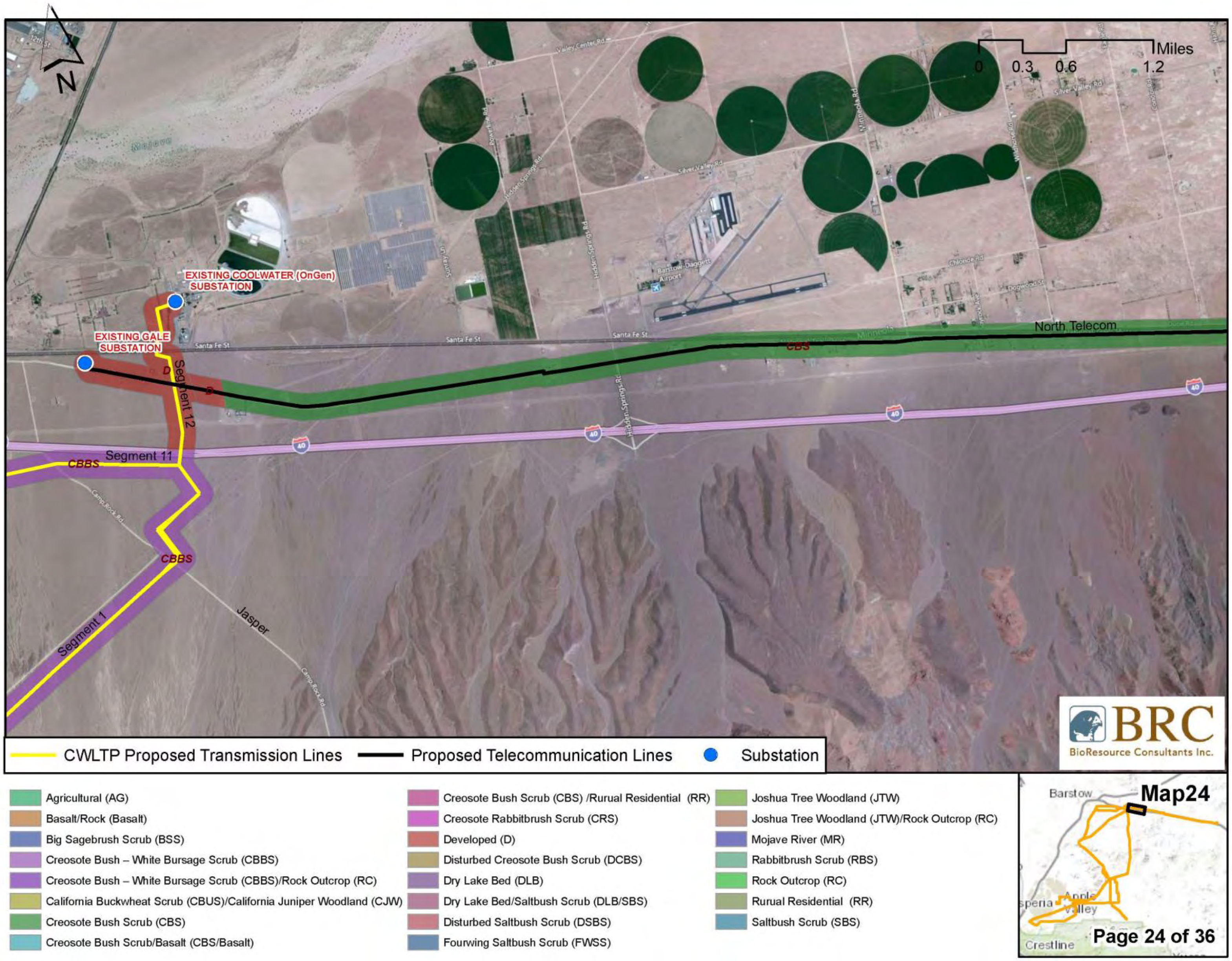

N
0 0.3 0.6 1.2 Miles
Segment 2
CBBS
Segment 1
CBBS
Segment 8
CBBS
CBBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map19
Apple Valley
Crestline
Page 19 of 36

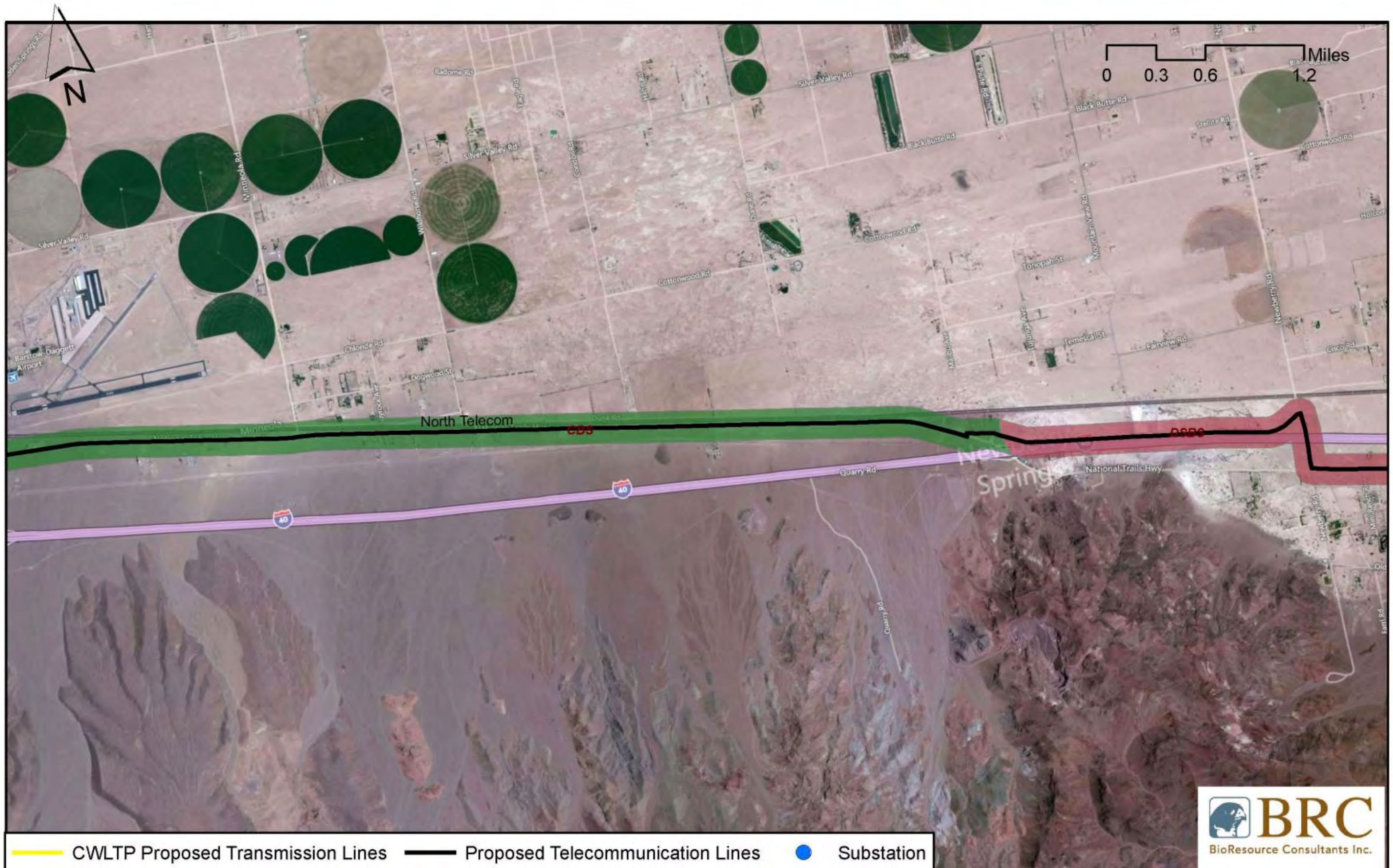

N
0 0.3 0.6 1.2 Miles
Segment 6
Segment 7
Segment 5B
Segment 5
South Telecom
CBUS/CJW
CBS
CBBS
CRS
DRR
D
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map20


N
0 0.3 0.6 1.2 Miles
CBS
MR
CBUS/CJW
Segment 6
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline

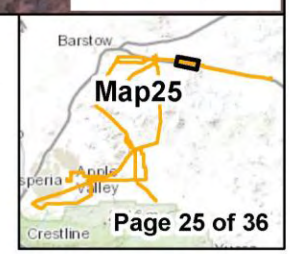

N
0 0.3 0.6 1.2 Miles
MR
RBS
Segment 7 shoofly
Segment 7
BSS
CBBS
CBS
Segment 6
MR
CBUS/CJW
Hesperia Airport
Summit Valley Rd
Ranchero Rd
Arrowhead Lake Rd
Juniper Rd
Piedmont Rd
Rancho Las Flores
173
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map 22

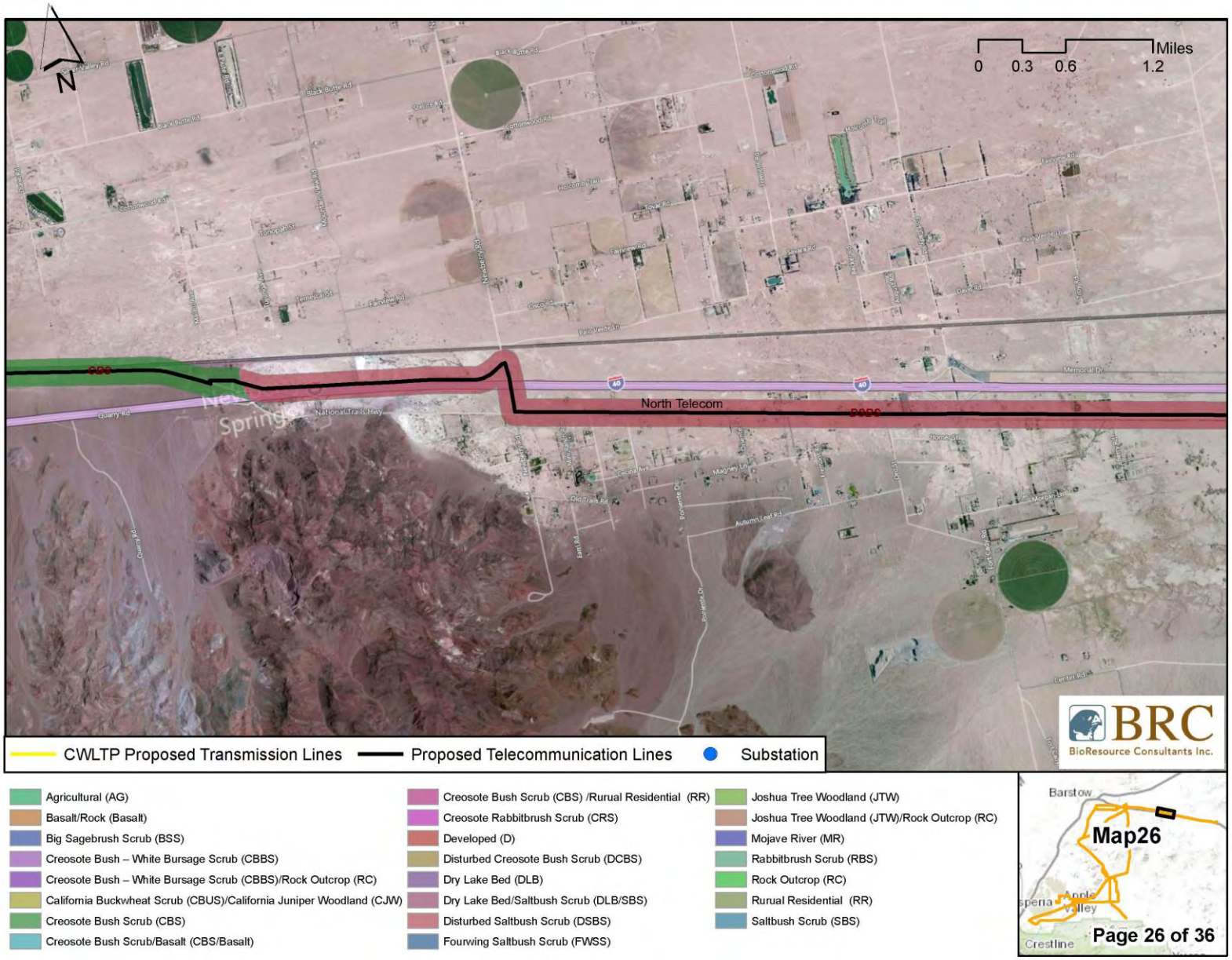

N
0 0.3 0.6 1.2 Miles
Segment 7 shoofly
Segment 7
Segment 6
BSS
CBBS
CBS
EXISTING LUGO SUBSTATION
Hesperia Airport
EAST OAK HILLS
RANCHO LAS FLORES
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map 23

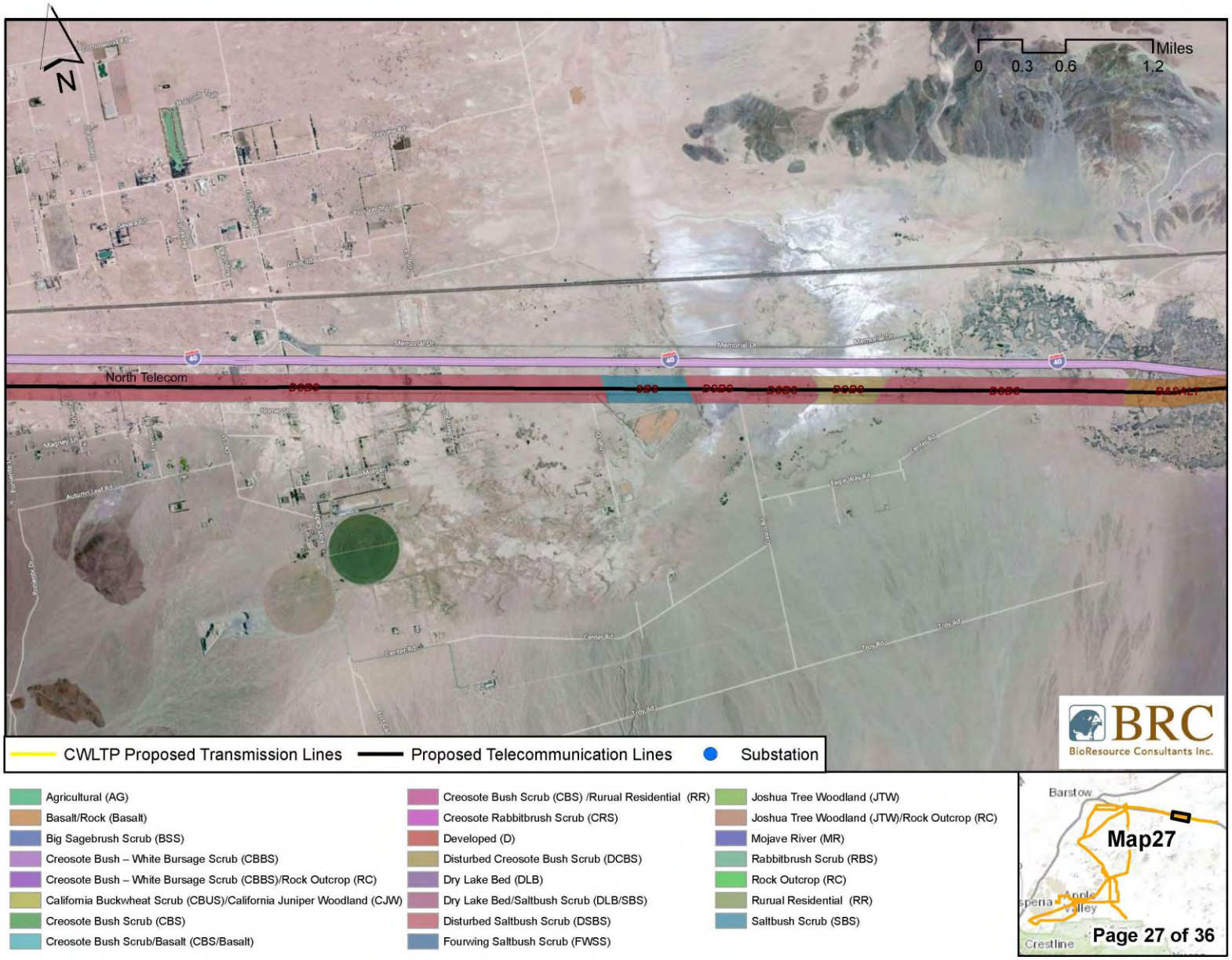

N
Miles
0 0.3 0.6 1.2
EXISTING COOLWATER (OnGen) SUBSTATION
EXISTING GALE SUBSTATION
Segment 12
Segment 11
Segment 1
CBBS
CBBS
CBS
D
North Telecom
Jasper
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map24
Crestline
Page 24 of 36



- Agricultural (AG)
- Basalt/Rock (Basalt)
- Big Sagebrush Scrub (BSS)
- Creosote Bush – White Bursage Scrub (CBBS)
- Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
- California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
- Creosote Bush Scrub (CBS)
- Creosote Bush Scrub/Basalt (CBS/Basalt)
- Creosote Bush Scrub (CBS) /Rurual Residential (RR)
- Creosote Rabbitbrush Scrub (CRS)
- Developed (D)
- Disturbed Creosote Bush Scrub (DCBS)
- Dry Lake Bed (DLB)
- Dry Lake Bed/Saltbush Scrub (DLB/SBS)
- Disturbed Saltbush Scrub (DSBS)
- Fourwing Saltbush Scrub (FWSS)
- Joshua Tree Woodland (JTW)
- Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
- Mojave River (MR)
- Rabbitbrush Scrub (RBS)
- Rock Outcrop (RC)
- Rurual Residential (RR)
- Saltbush Scrub (SBS)




N
0 0.3 0.6 1.2 Miles
North Telecom
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map26
Apple Valley
Crestline


N
Miles
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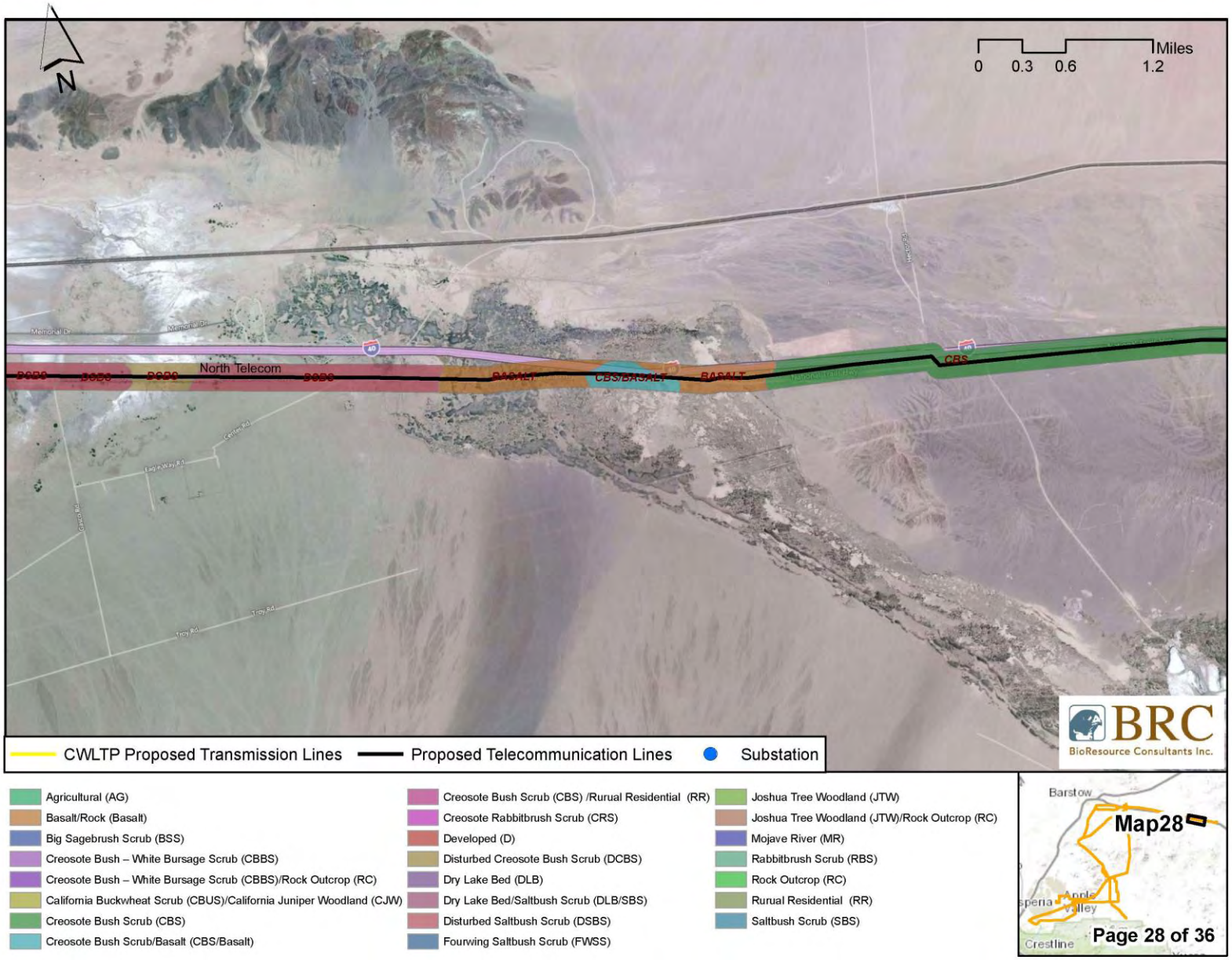
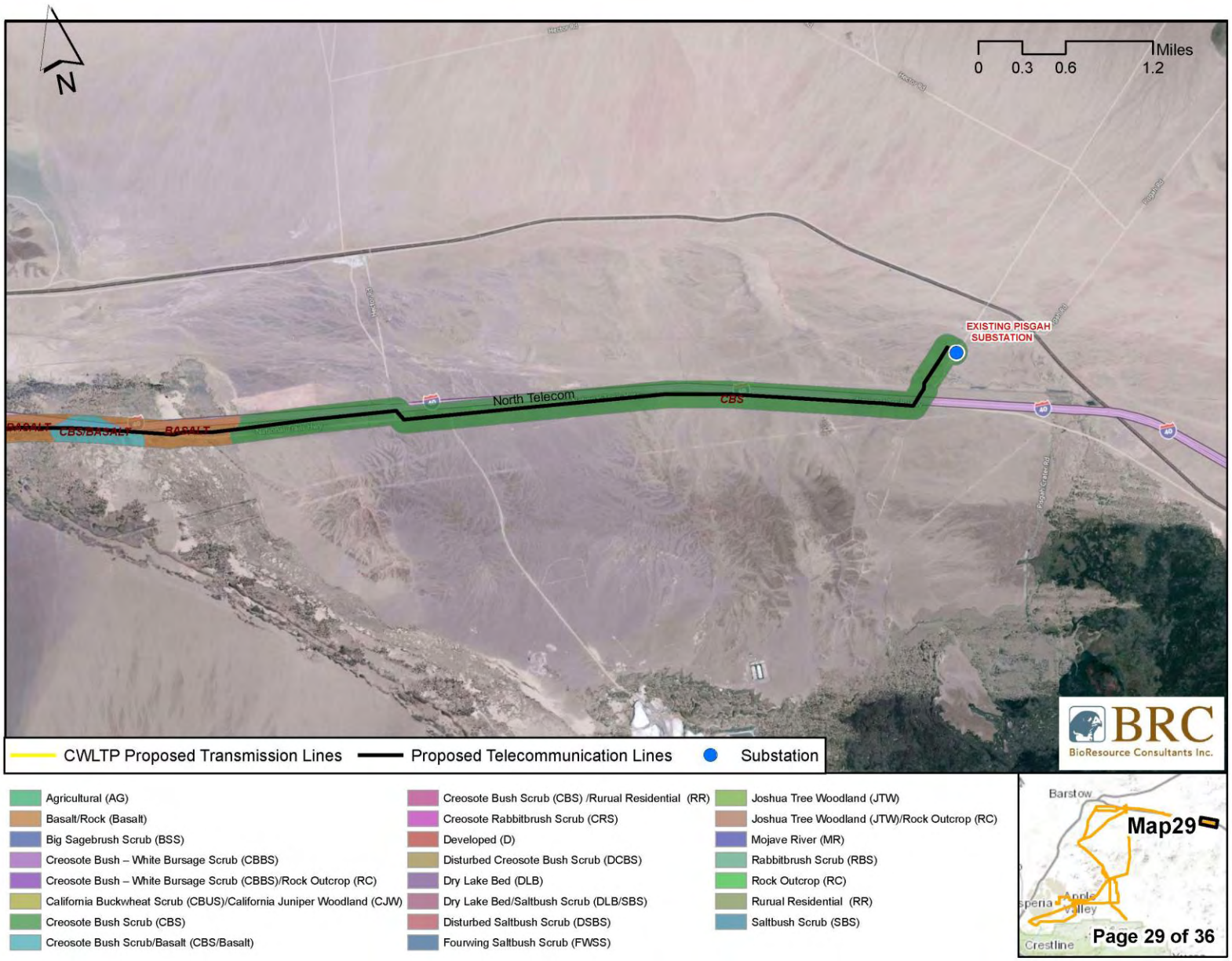
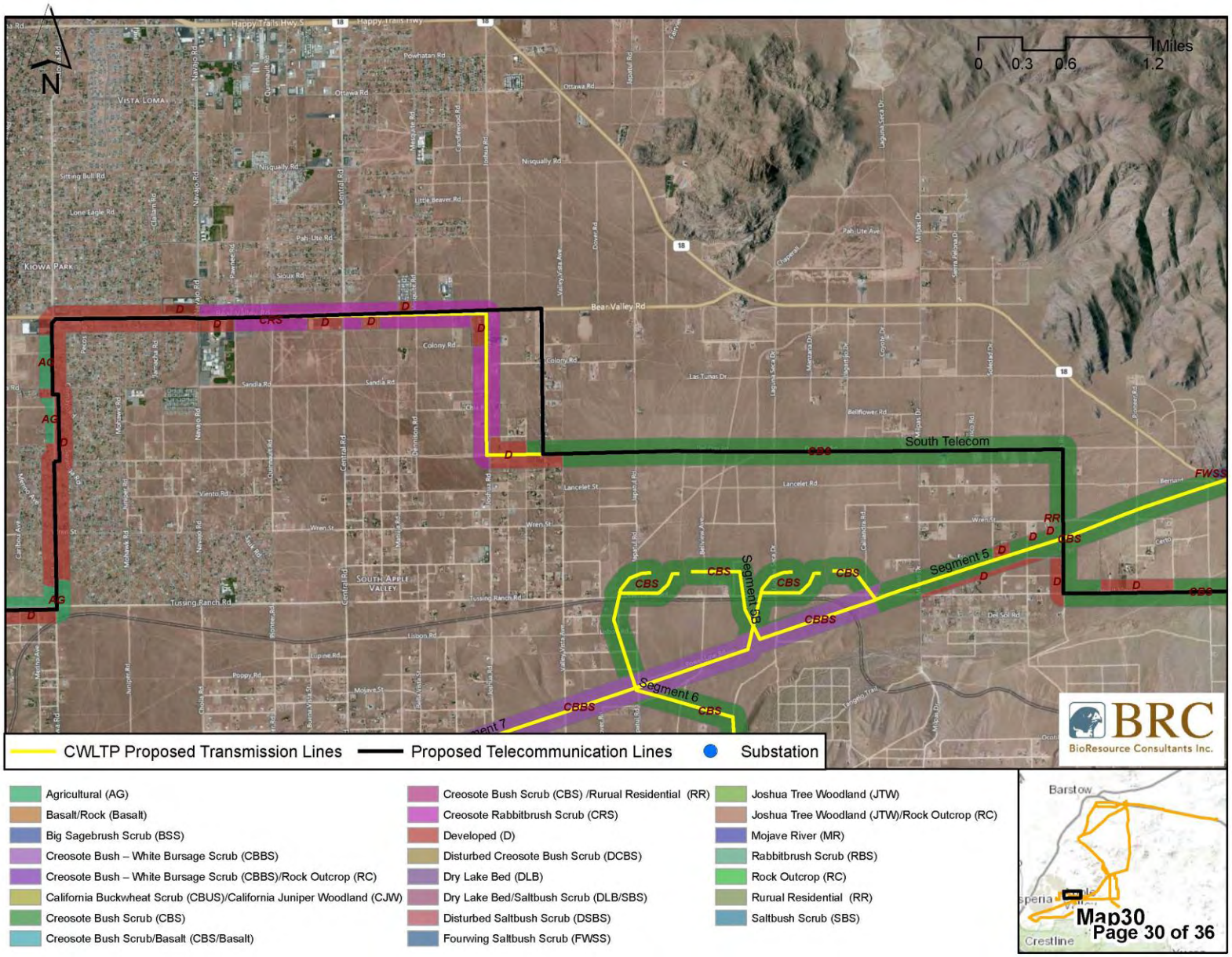
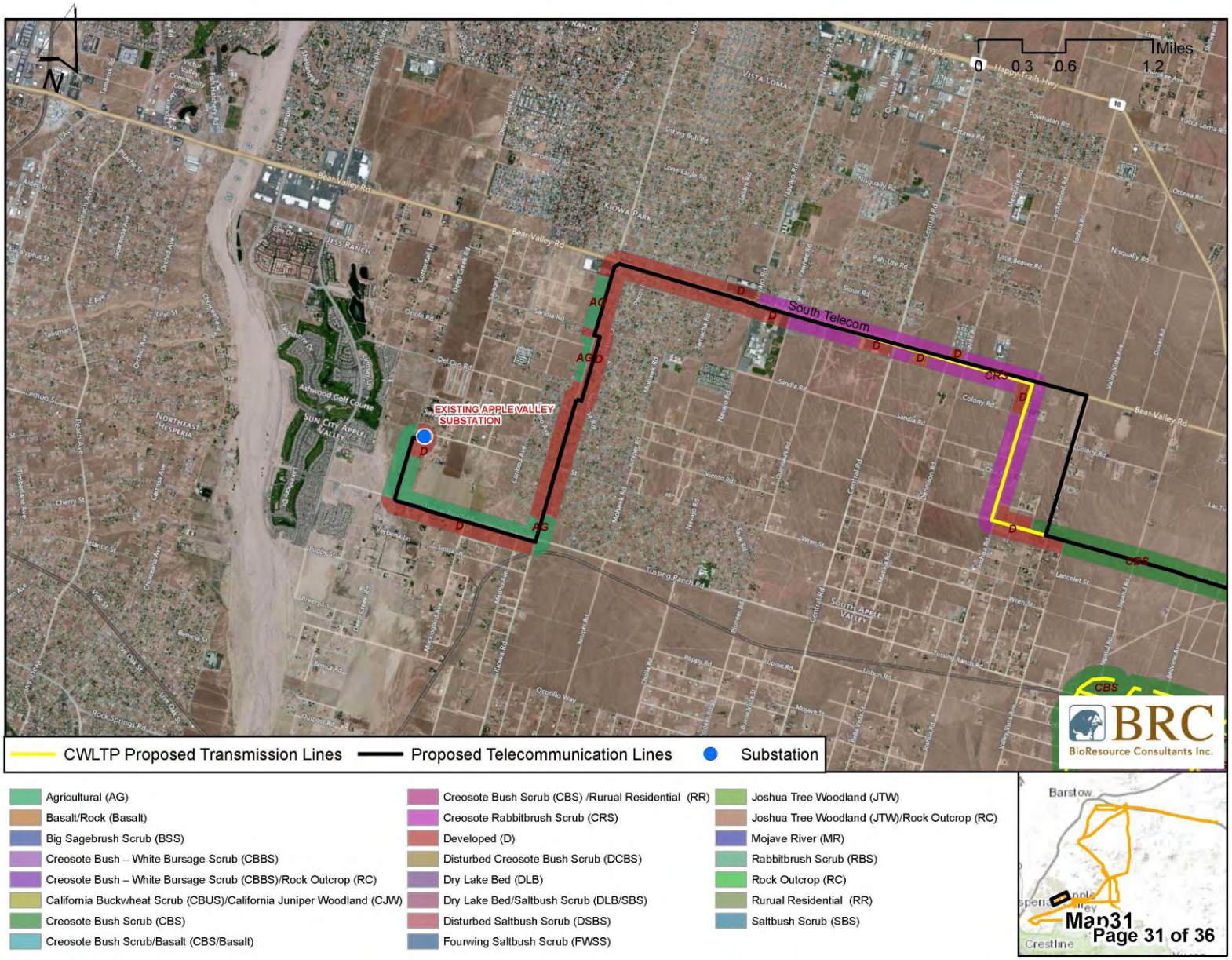
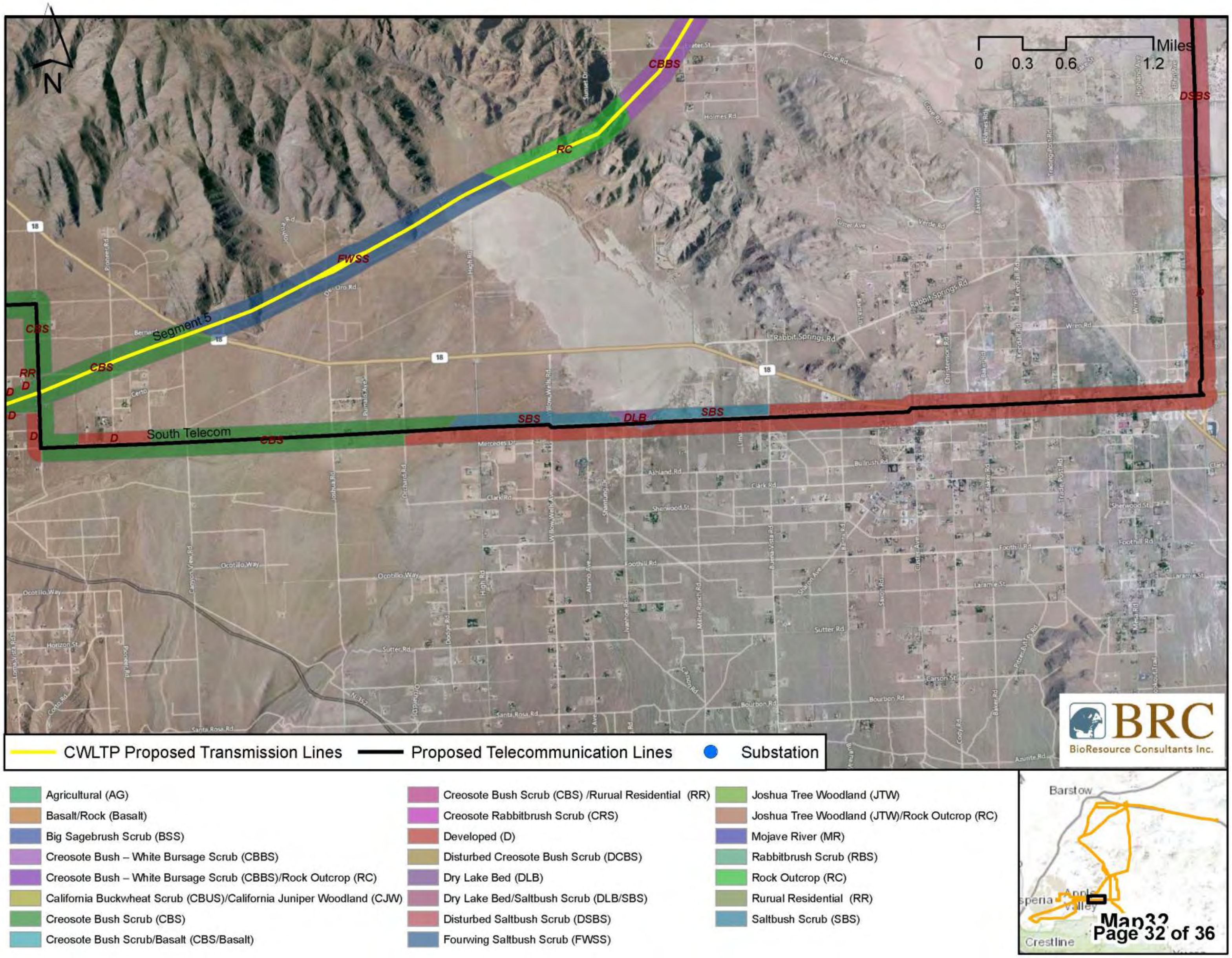
North Telecom
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map27
Apple Valley
Crestline
Page 27 of 36

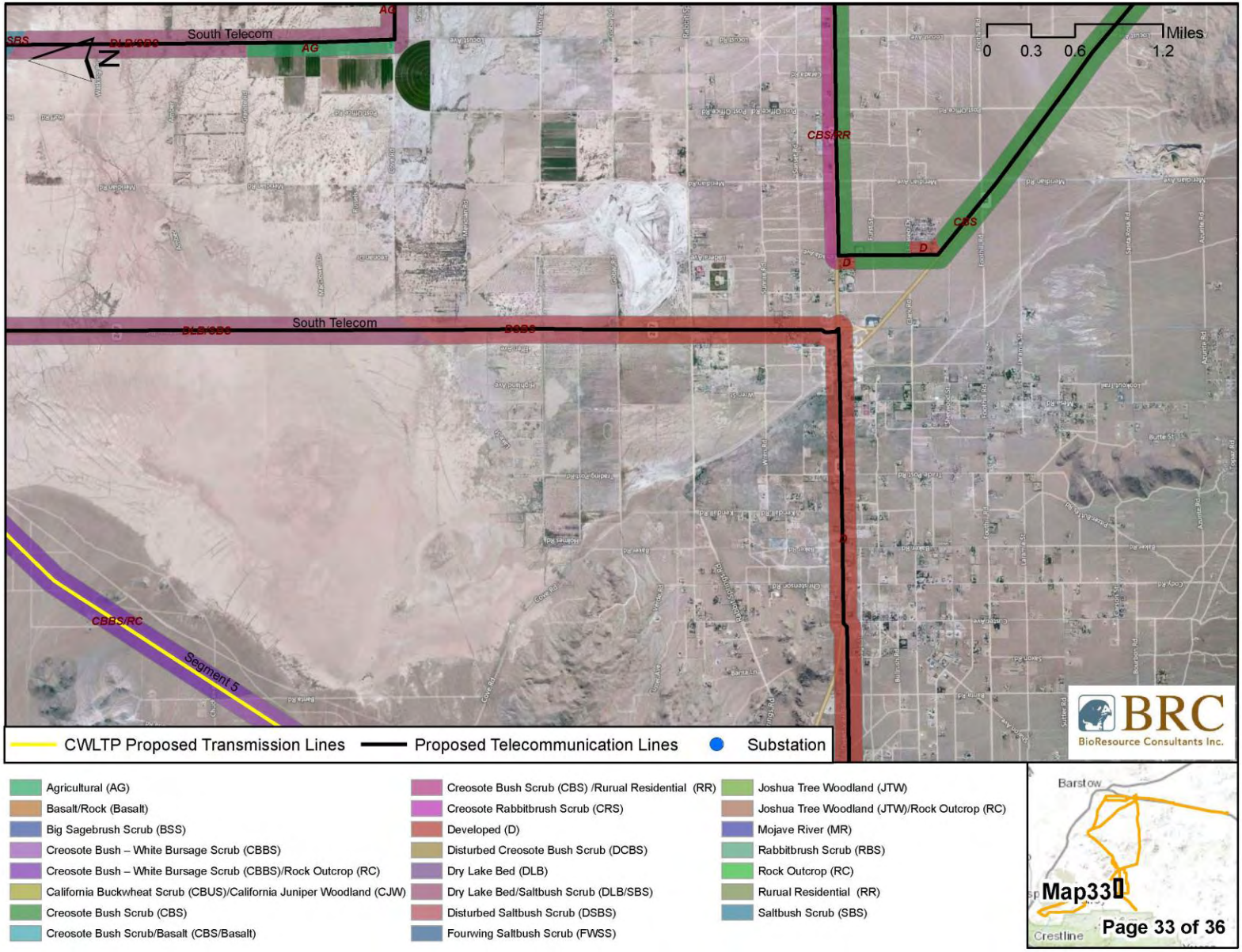

N
0 0.3 0.6 1.2 Miles
North Telecom
BASALT
CBS/BASALT
CBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map28
Apple Valley
Crestline

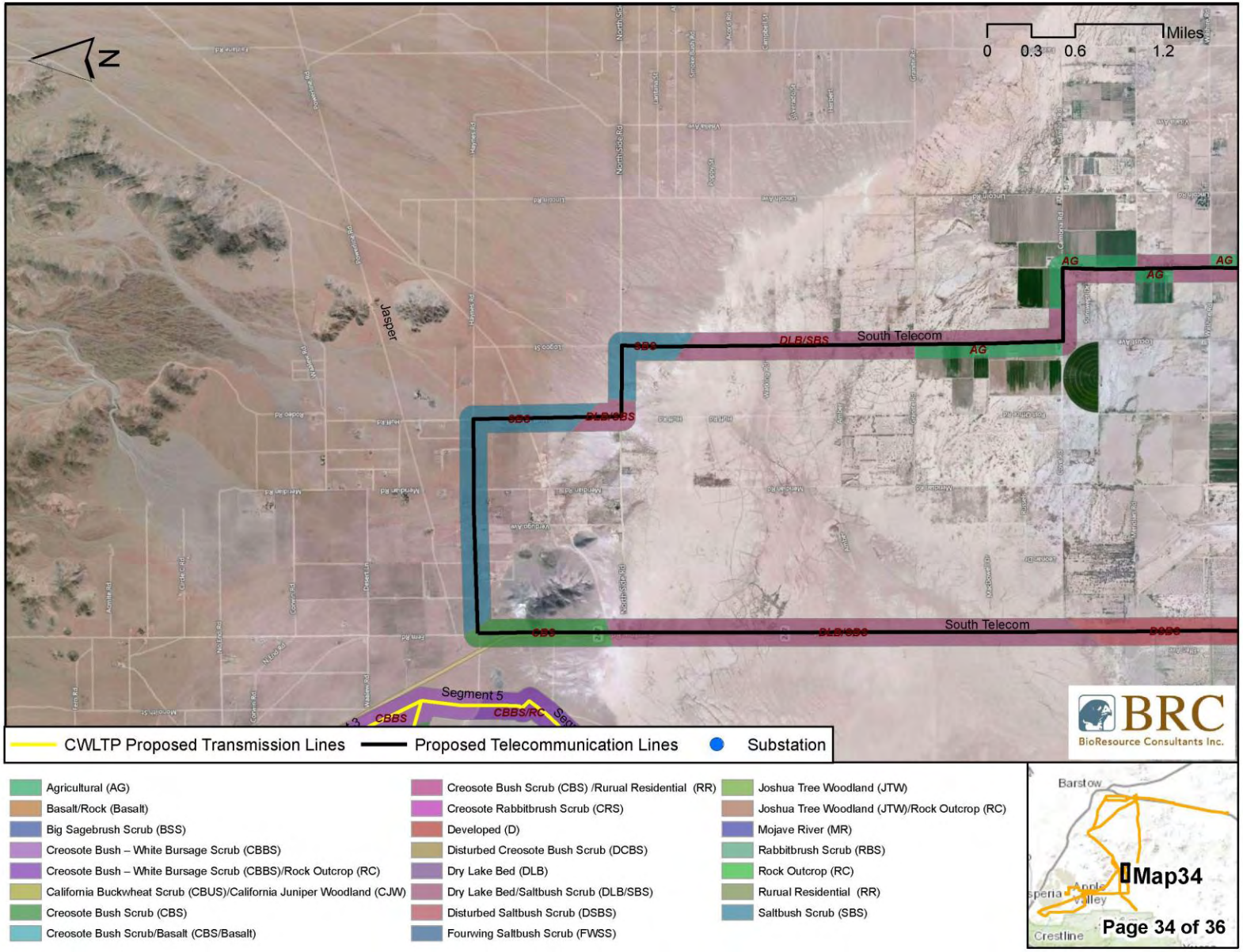

N
0 0.3 0.6 1.2 Miles
EXISTING PISGAH SUBSTATION
North Telecom
CBS
BASALT
CBS/BASALT
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map29
Apple Valley
Crestline
Page 29 of 36

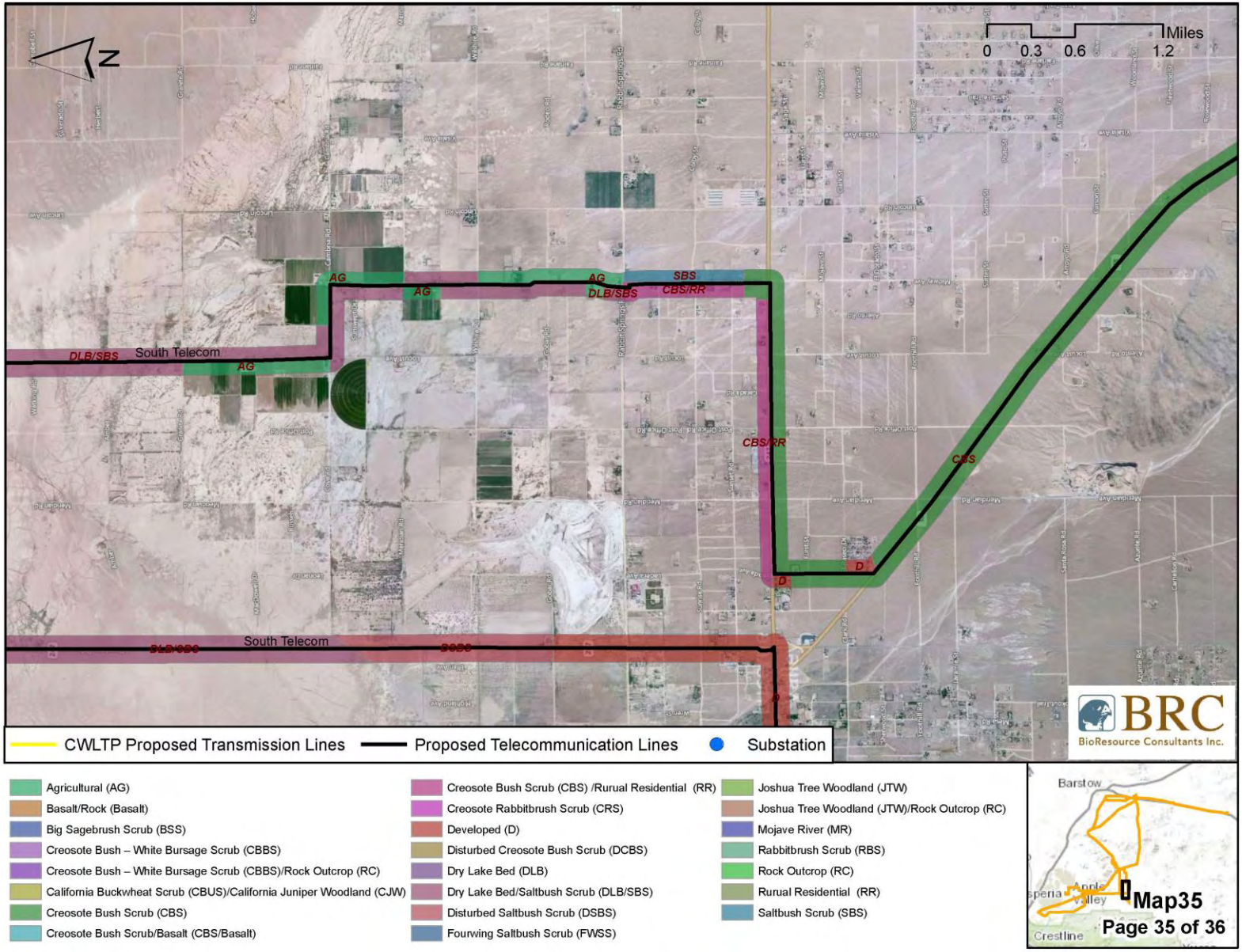

N
0 0.3 0.6 1.2 Miles
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
South Telecom
Segment 5
Segment 5a
Segment 6
Segment 7
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map30
Page 30 of 36


N
0 0.3 0.6 1.2 Miles
South Telecom
EXISTING APPLE VALLEY SUBSTATION
AG
AG/D
D
CRS
CBS
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map31
Page 31 of 36


N
Miles
0 0.3 0.6 1.2
Segment 5
South Telecom
CBBS
RC
FWSS
CBS
RR
D
SBS
DLB
DSBS
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Crestline
Map32
Page 32 of 36


South Telecom
South Telecom
AG
SBS
BLD/DSS
CBS/RR
CBS
D
CBBS/RC
Segment 5
0 0.3 0.6 1.2 Miles
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Map33
Crestline


N
0 0.3 0.6 1.2 Miles
Jasper
South Telecom
South Telecom
Segment 5
AG
DLB/SBS
DSBS
CBBS
CBBS/RC
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map34
Page 34 of 36


N
0 0.3 0.6 1.2 Miles
AG
AG
AG
SBS
CBS/RR
DLB/SBS
South Telecom
DLB/SBS
AG
CBS/RR
CBS
D
D
South Telecom
DLB/SBS
DSBS
D
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map35
Page 35 of 36

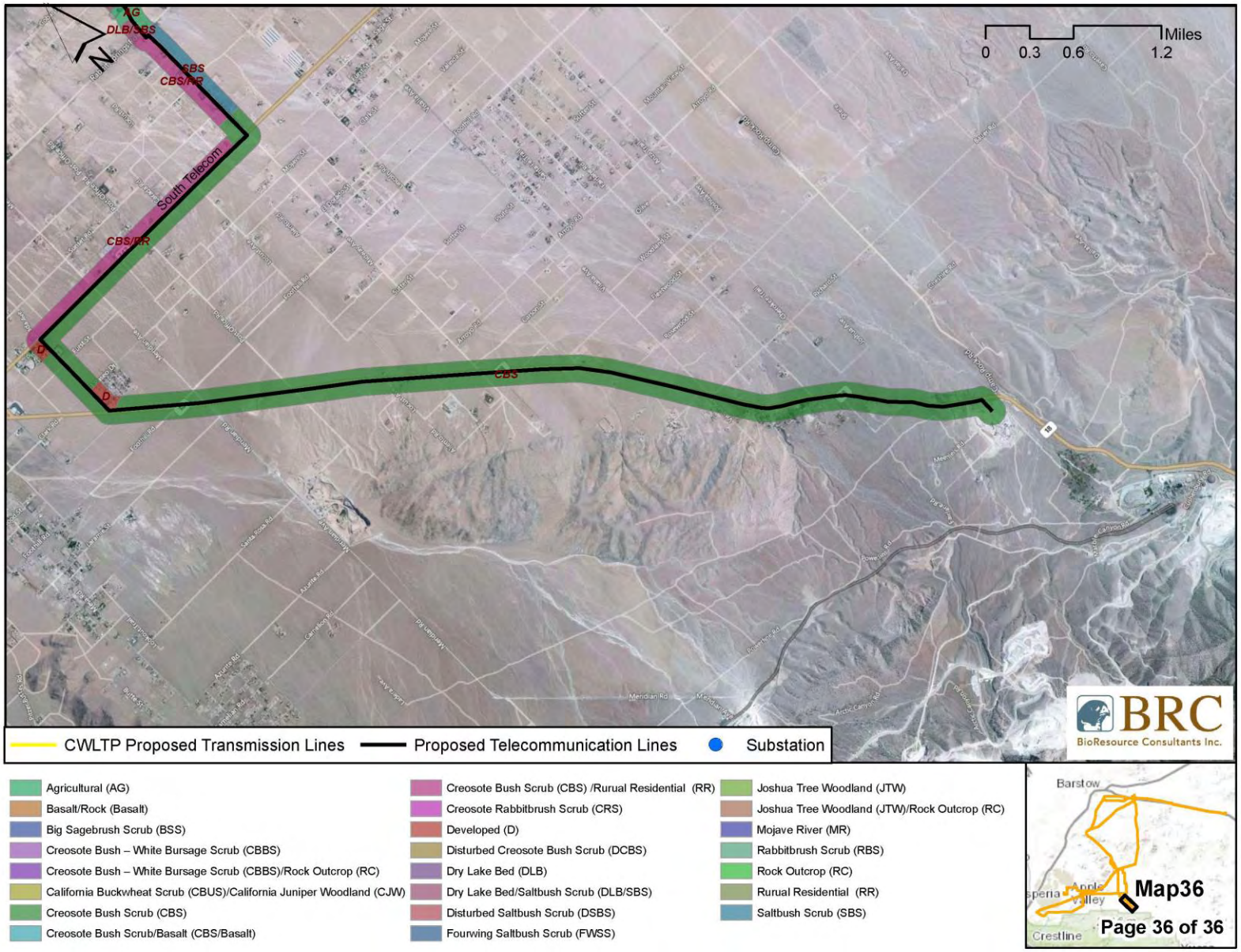
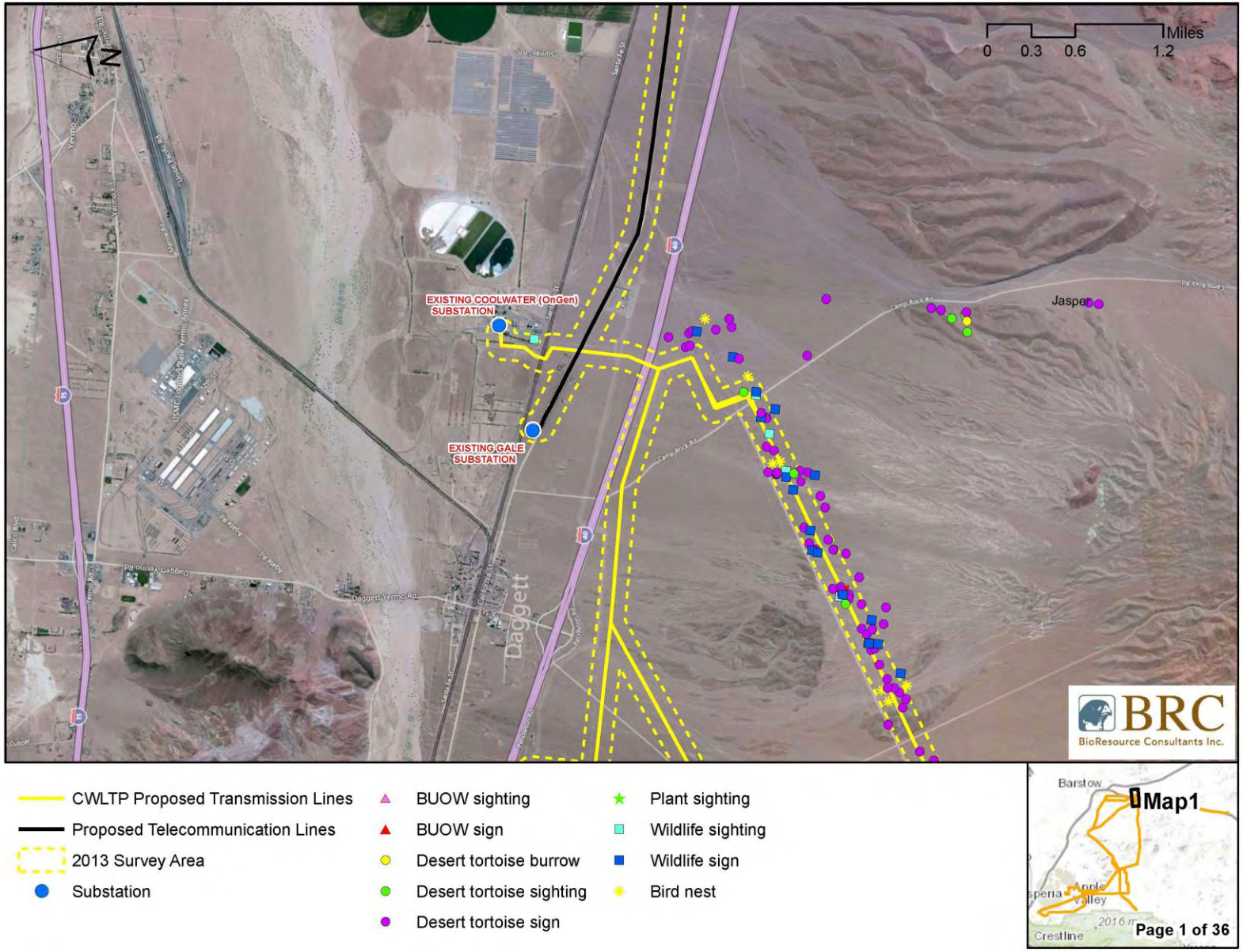
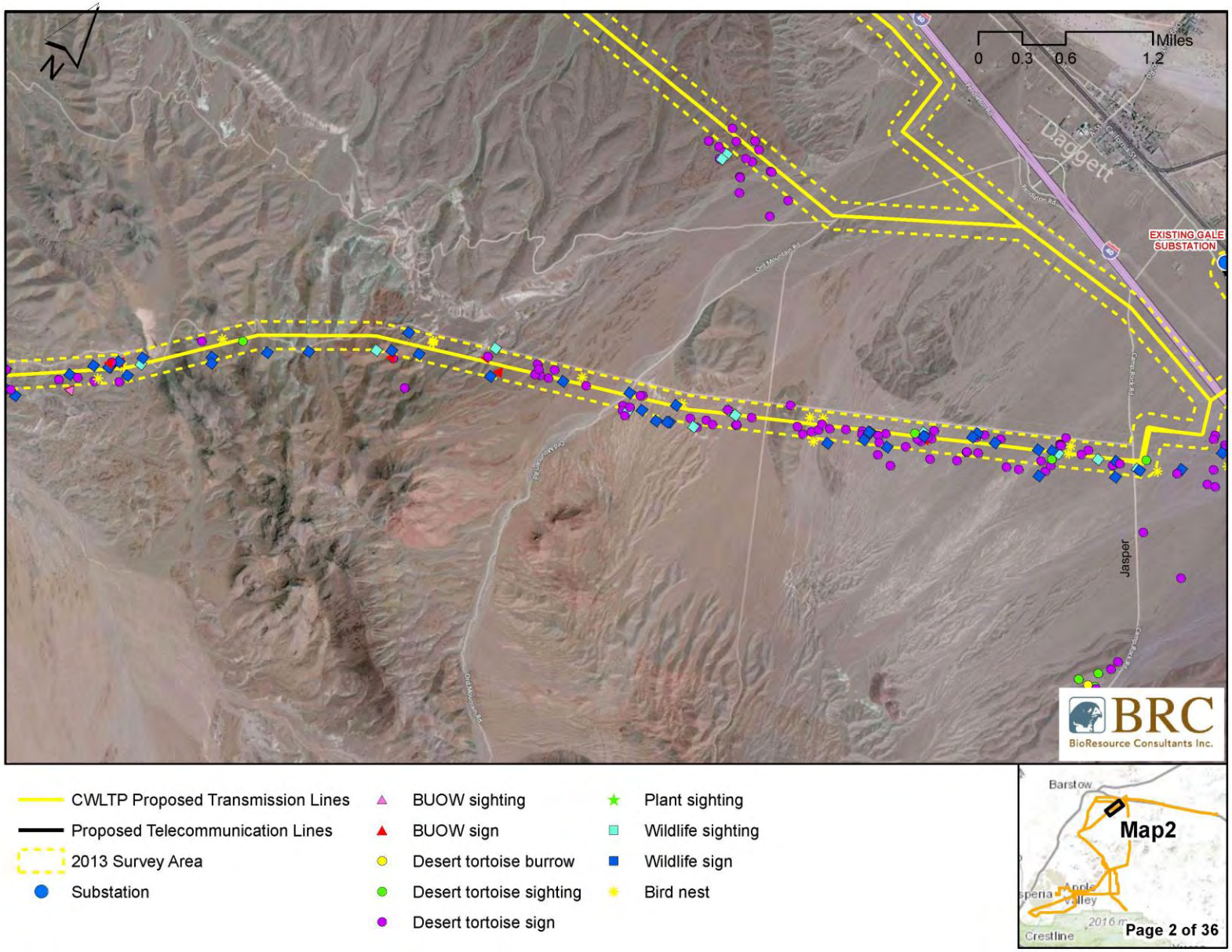
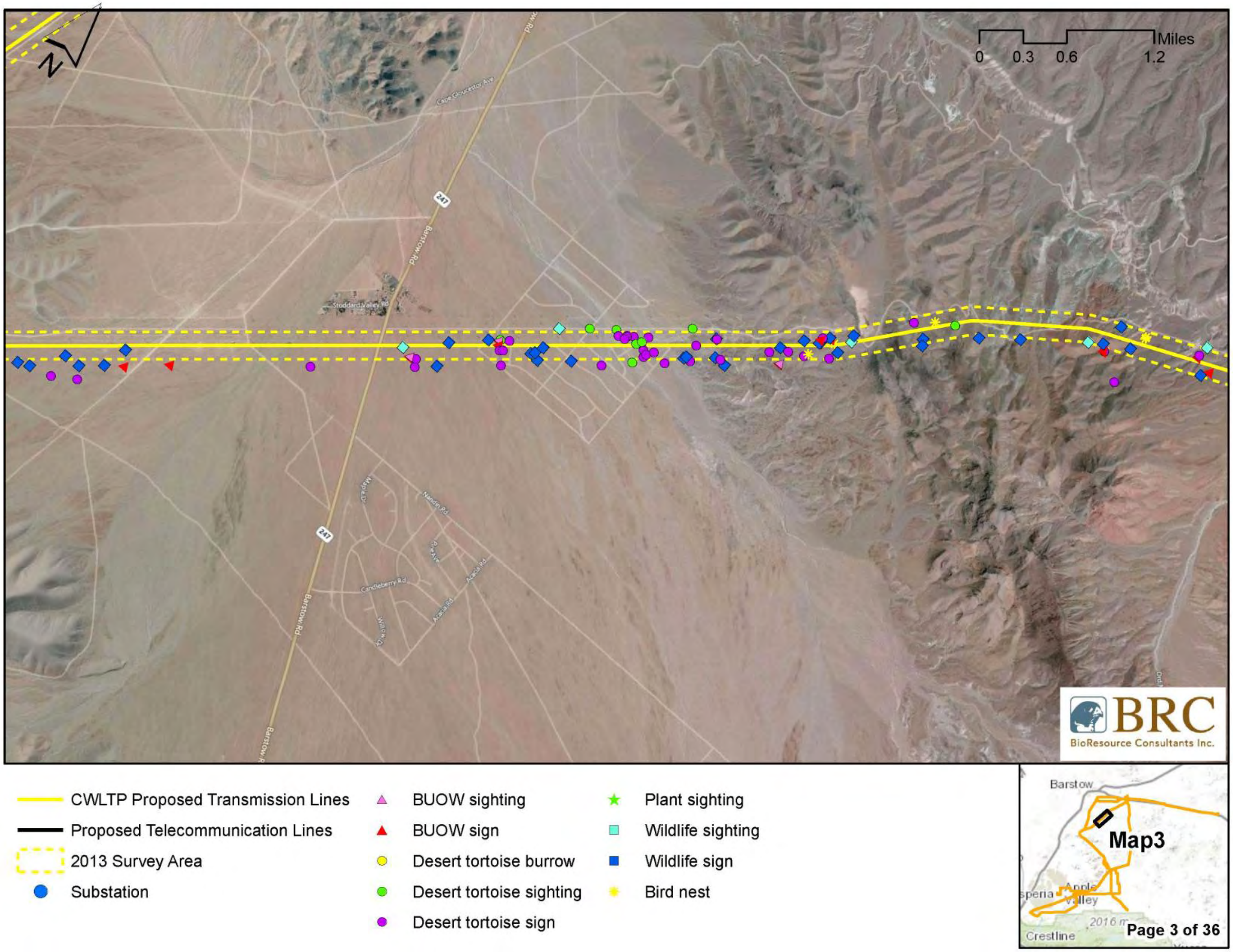

AG
DLB/SBS
CBS
CBS/RR
South Telecom
CBS/RR
D
D
CBS
N
0 0.3 0.6 1.2 Miles
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
Substation
BRC
BioResource Consultants Inc.
Agricultural (AG)
Basalt/Rock (Basalt)
Big Sagebrush Scrub (BSS)
Creosote Bush – White Bursage Scrub (CBBS)
Creosote Bush – White Bursage Scrub (CBBS)/Rock Outcrop (RC)
California Buckwheat Scrub (CBUS)/California Juniper Woodland (CJW)
Creosote Bush Scrub (CBS)
Creosote Bush Scrub/Basalt (CBS/Basalt)
Creosote Bush Scrub (CBS) /Rurual Residential (RR)
Creosote Rabbitbrush Scrub (CRS)
Developed (D)
Disturbed Creosote Bush Scrub (DCBS)
Dry Lake Bed (DLB)
Dry Lake Bed/Saltbush Scrub (DLB/SBS)
Disturbed Saltbush Scrub (DSBS)
Fourwing Saltbush Scrub (FWSS)
Joshua Tree Woodland (JTW)
Joshua Tree Woodland (JTW)/Rock Outcrop (RC)
Mojave River (MR)
Rabbitbrush Scrub (RBS)
Rock Outcrop (RC)
Rurual Residential (RR)
Saltbush Scrub (SBS)
Barstow
Apple Valley
Crestline
Map36
Page 36 of 36

Figure 4:

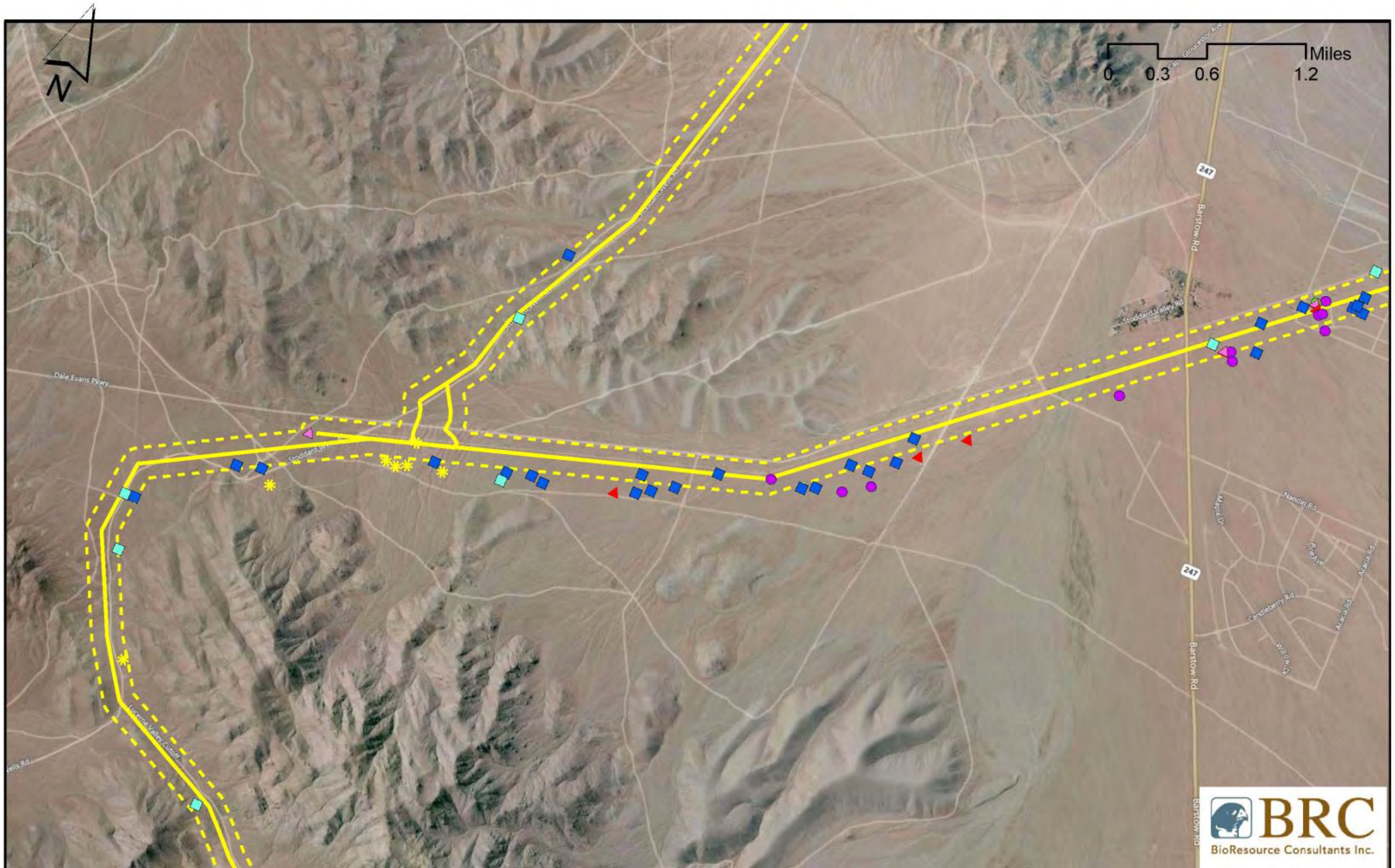
Documented Occurences of Special Status Species

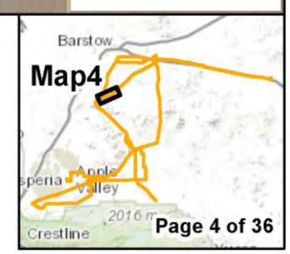

N
0 0.3 0.6 1.2 Miles
EXISTING COOLWATER (OnGen) SUBSTATION
EXISTING GALE SUBSTATION
Jasper
Daggett
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map1
Apple Valley
Crestline
Page 1 of 36


N
0 0.3 0.6 1.2
Miles
Daggett
EXISTING GALE SUBSTATION
Jasper
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map2
Apple Valley
Crestline
Page 2 of 36

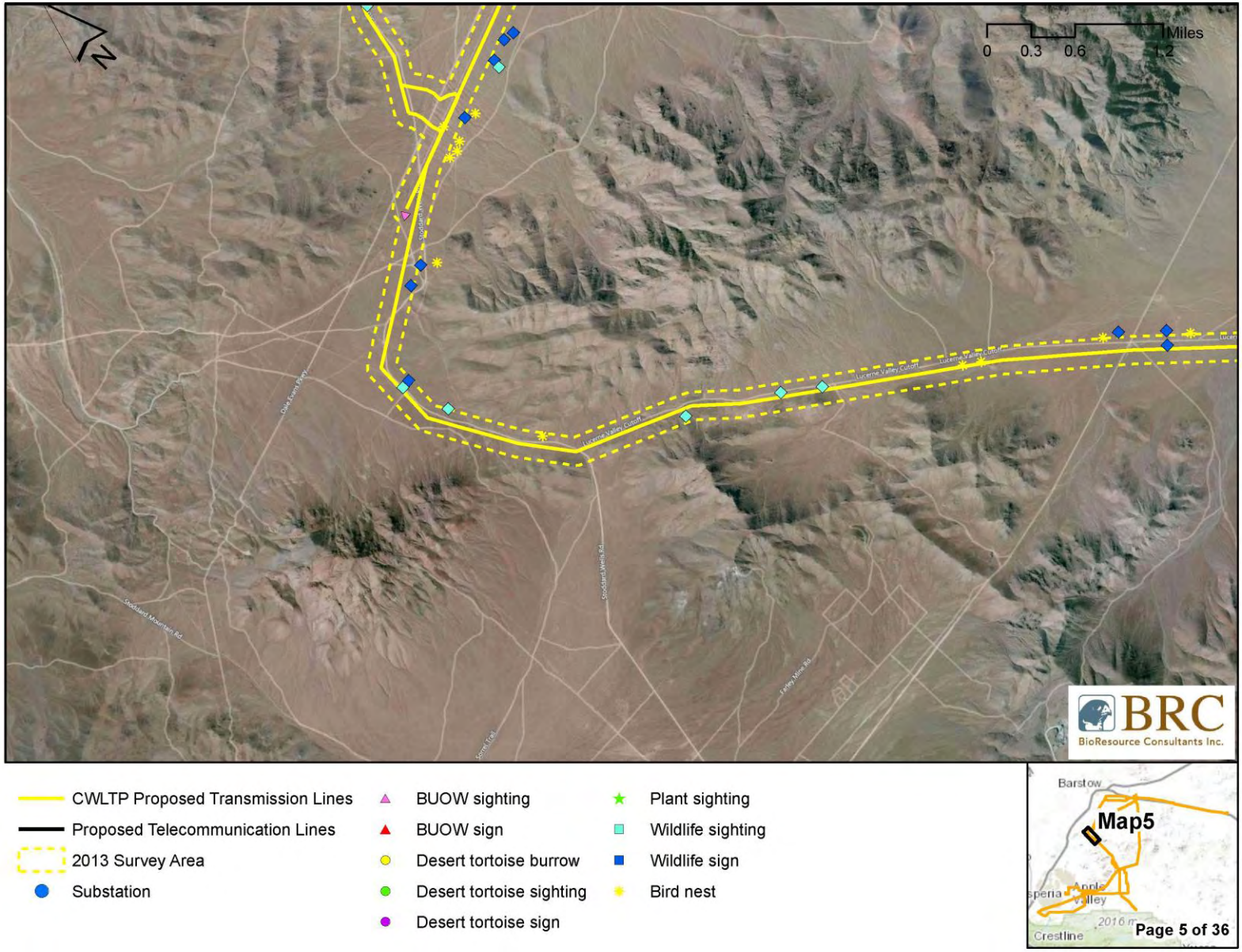


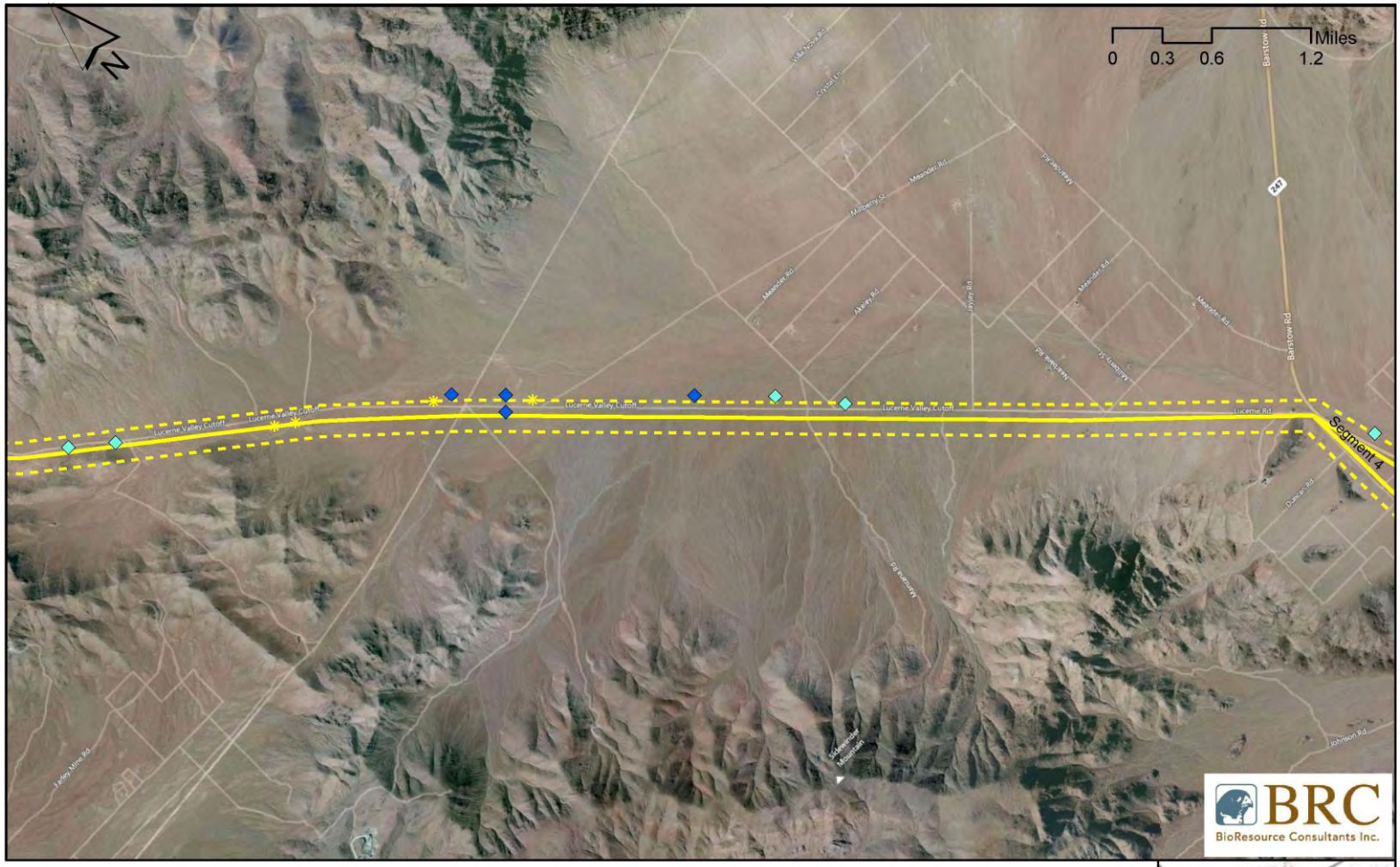
Miles
0
0.3
0.6
1.2
247
Barstow Rd
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map3
Crestline
Page 3 of 36

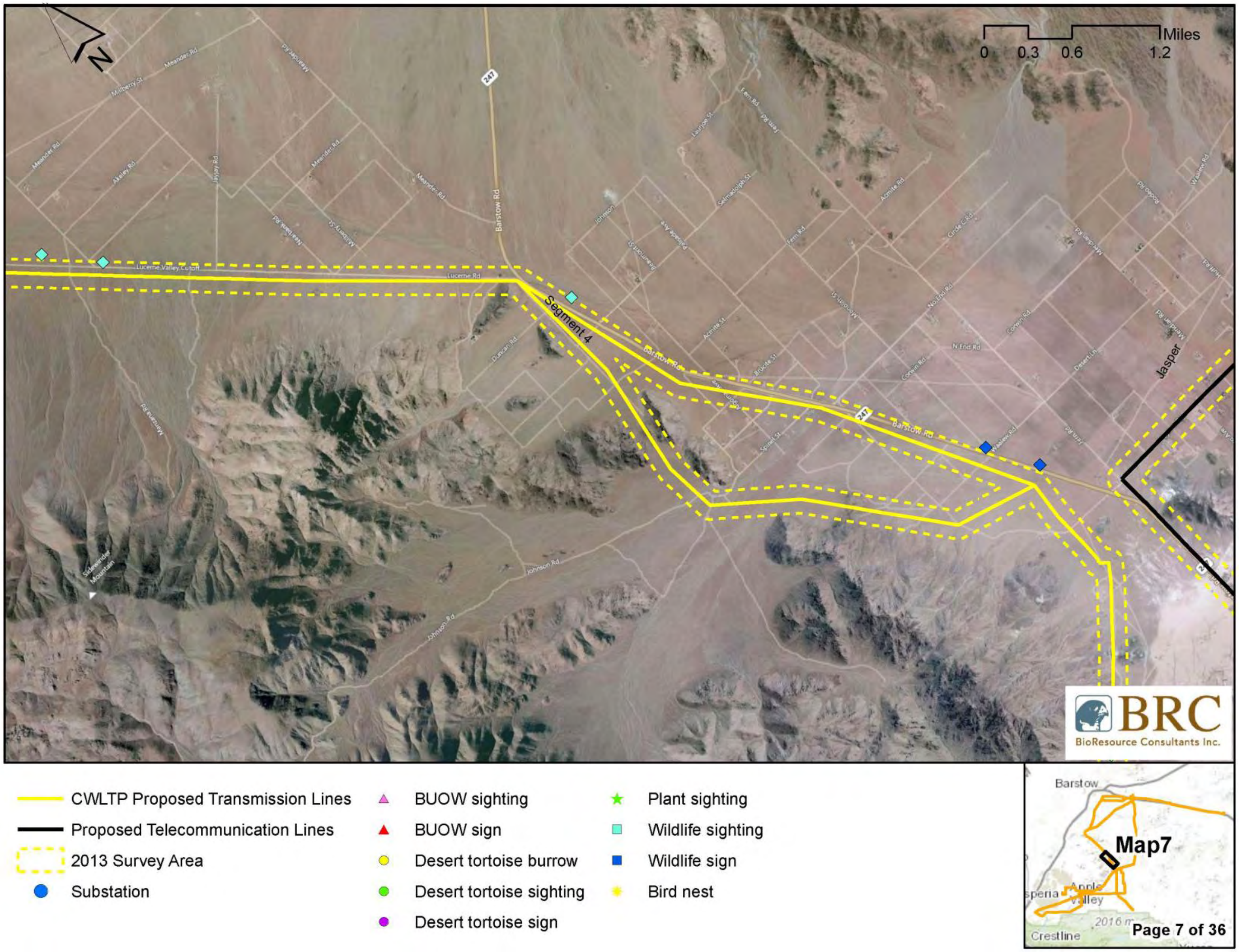


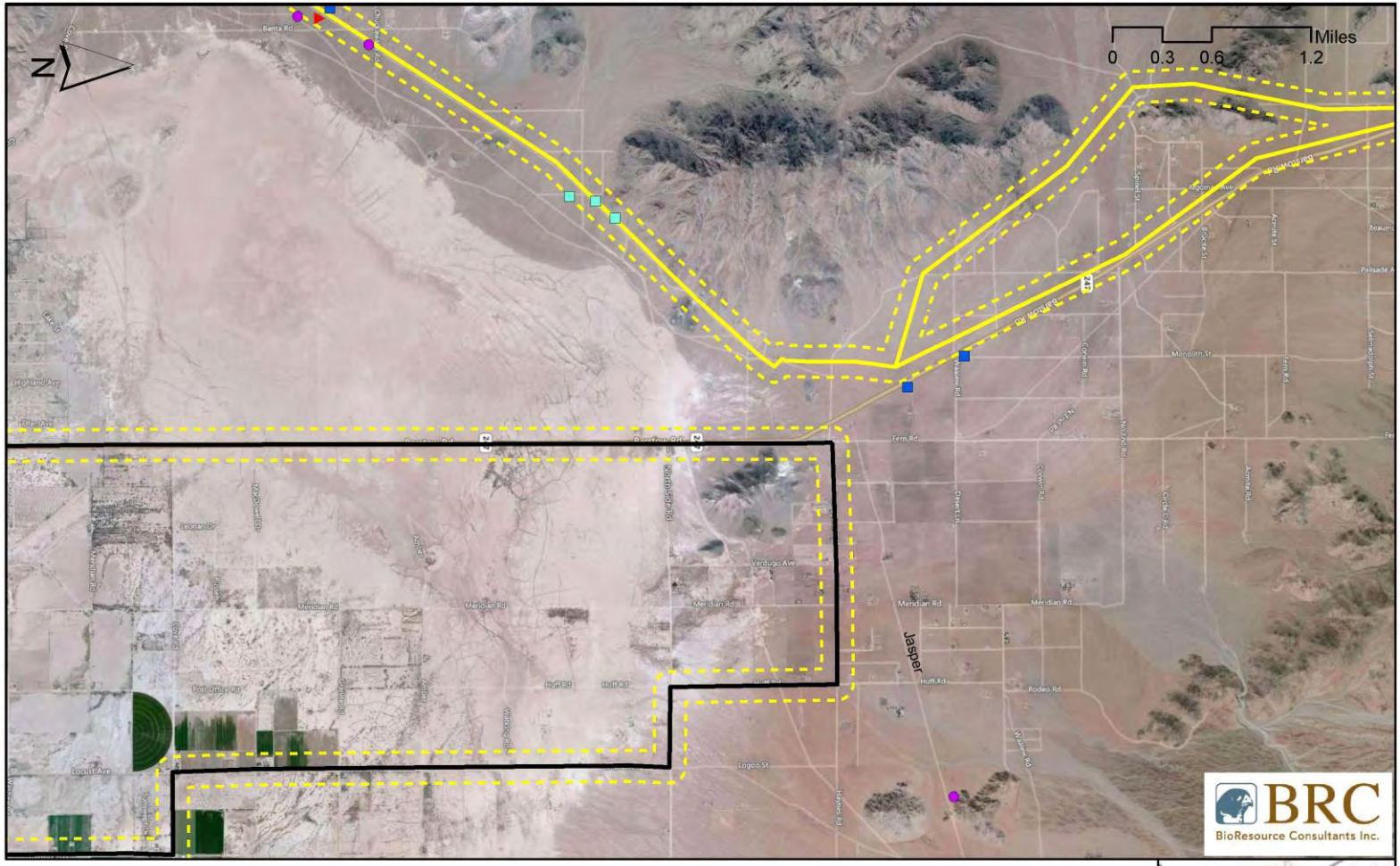


- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- BUOW sighting
- BUOW sign
- Desert tortoise burrow
- Desert tortoise sighting
- Desert tortoise sign
- Plant sighting
- Wildlife sighting
- Wildlife sign
- Bird nest


N
0 0.3 0.6 1.2 Miles
Lucerne Valley Cutoff
Stoddard Wells Rd
Dale Evans Pkwy
Stoddard Mountain Rd
Harley Mine Rd
Summit Trail
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map5
Apple Valley
Crestline
2016 m
Page 5 of 36


N
0 0.3 0.6 1.2 Miles
Segment 4
Lucerne Valley Cutoff
Meander Rd
Mulberry St
Oakley Rd
Barstow Rd
Lucerne Rd
Duncan Rd
Johnson Rd
Valley Mine Rd
Goldenrod Mountain
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map6
Apple Valley
Crestline
2016 m
Page 6 of 36

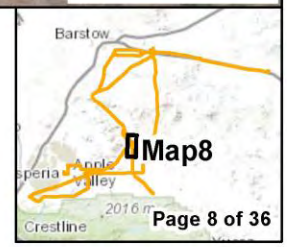

Miles
0
0.3
0.6
1.2
Segment 4
Jasper
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map7
Crestline

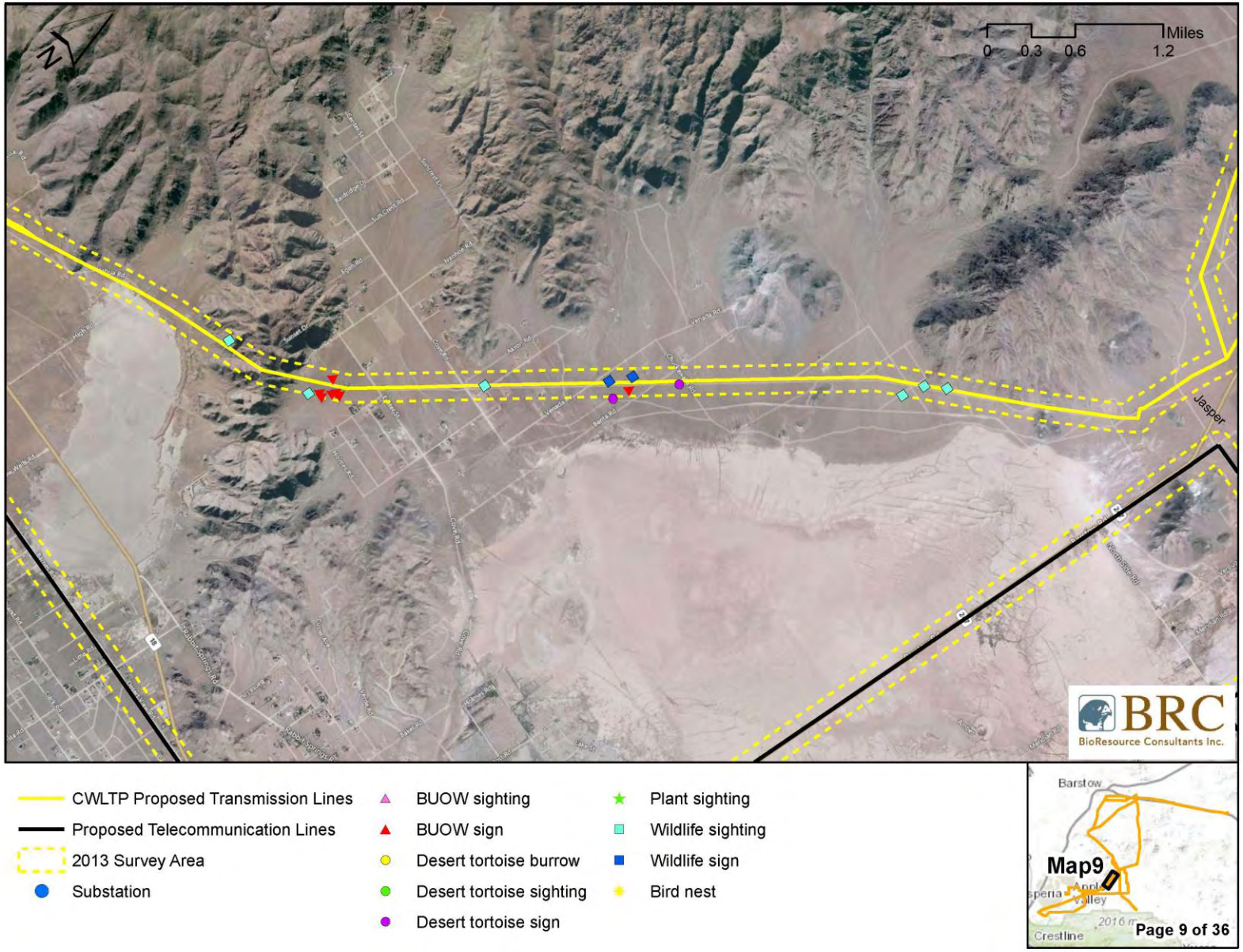


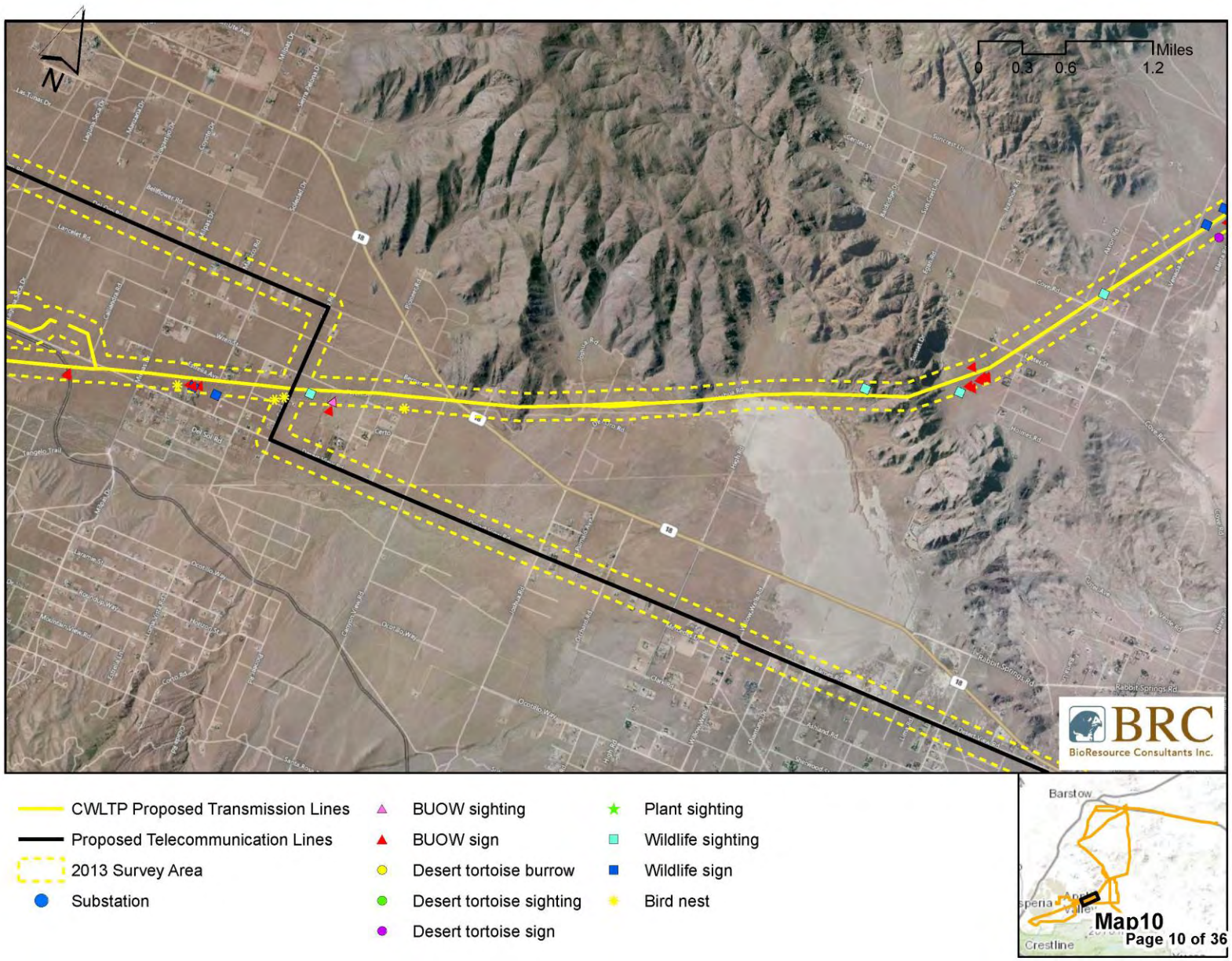
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation

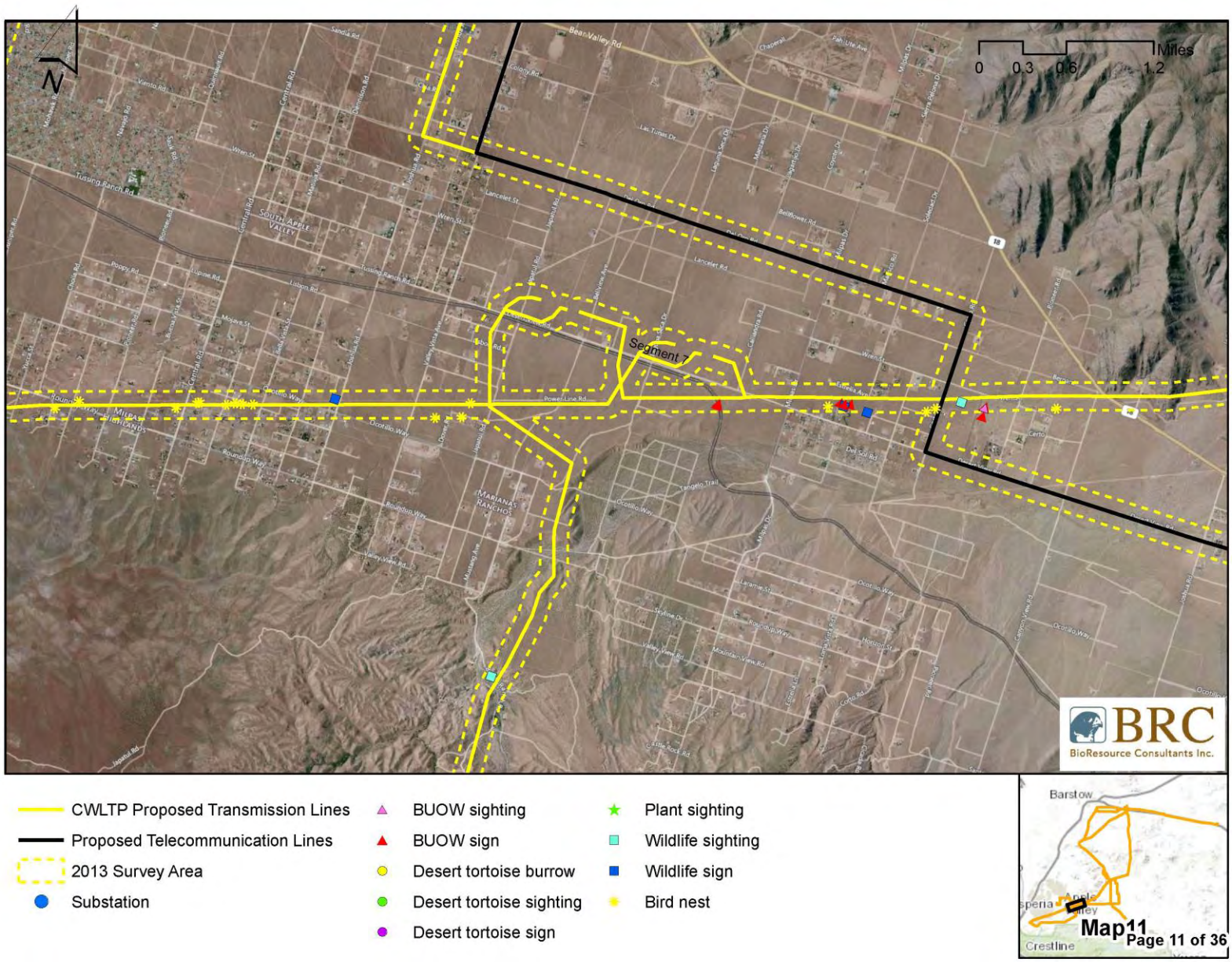
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign

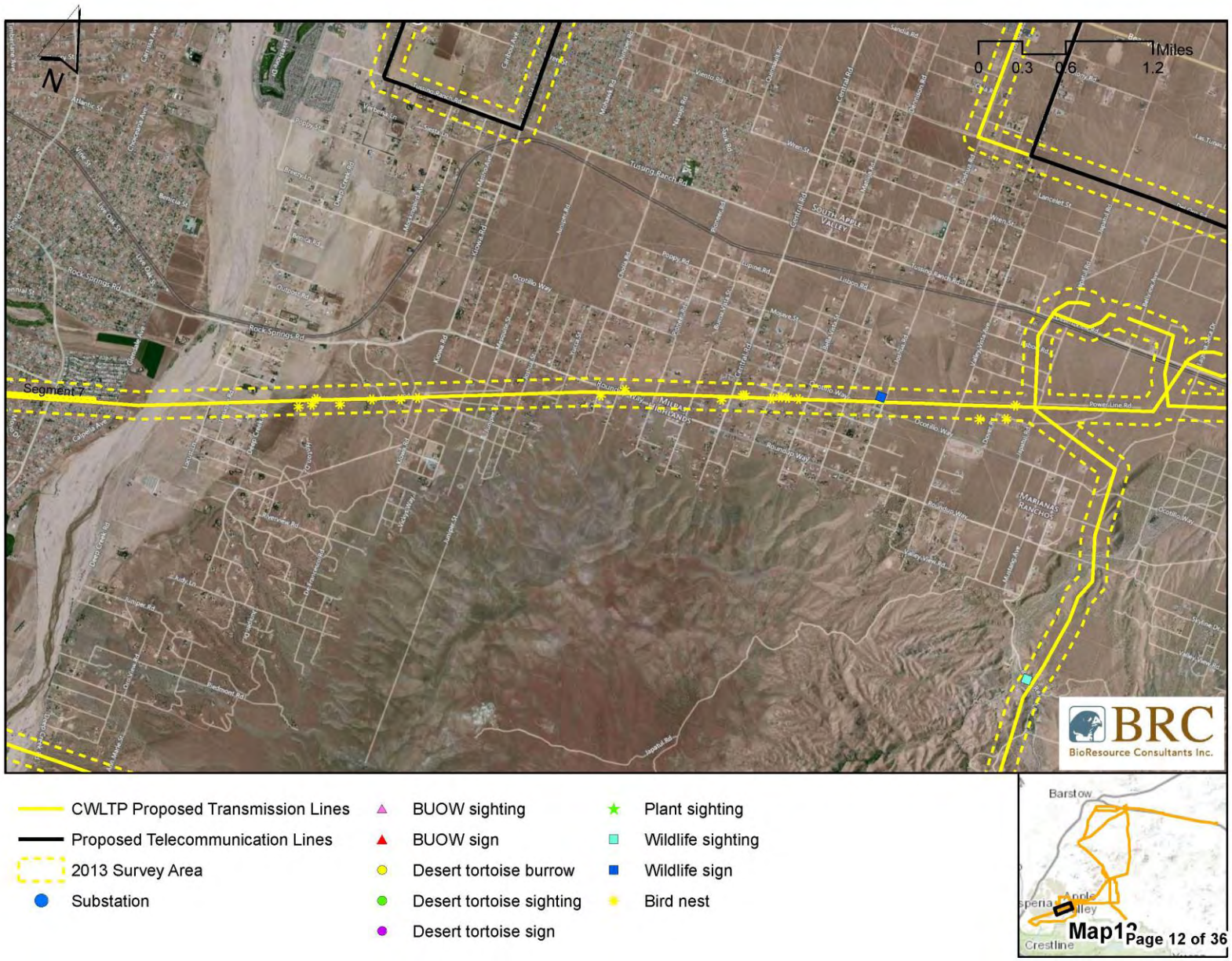
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest

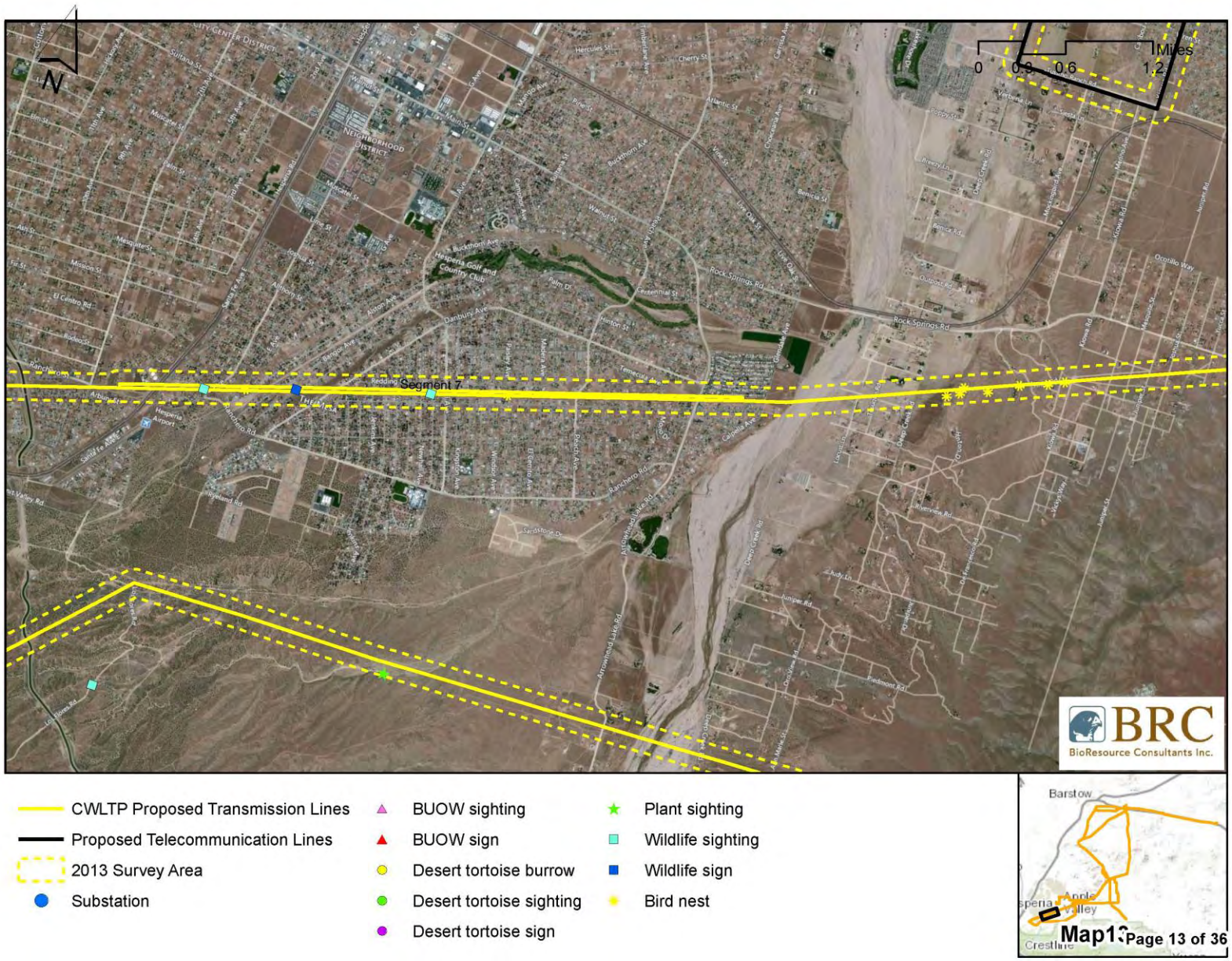



N
0 0.3 0.6 1.2 Miles
Jasper
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map9
Crestline
Page 9 of 36

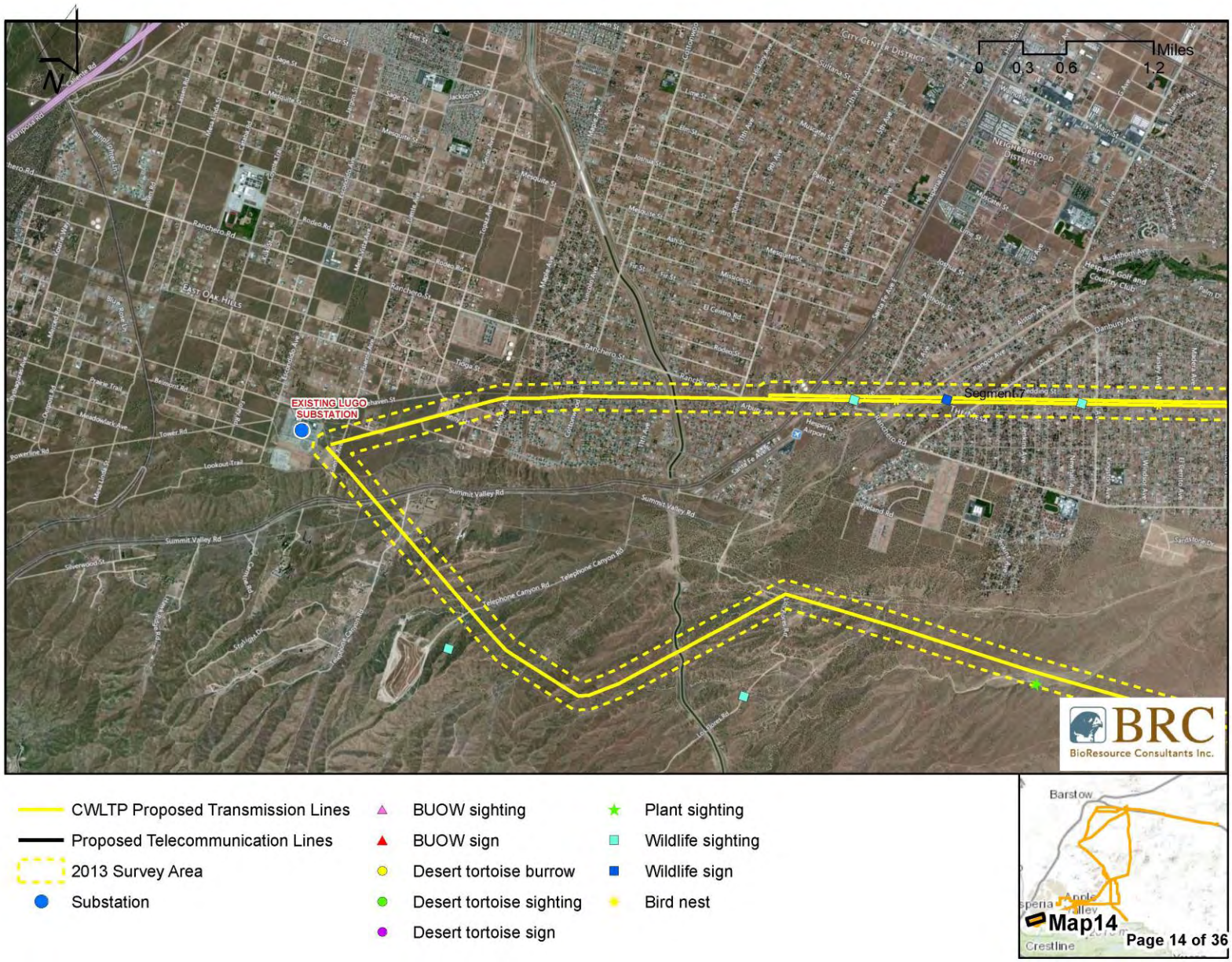

N
0 0.3 0.6 1.2 Miles
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Crestline
Map10
Page 10 of 36

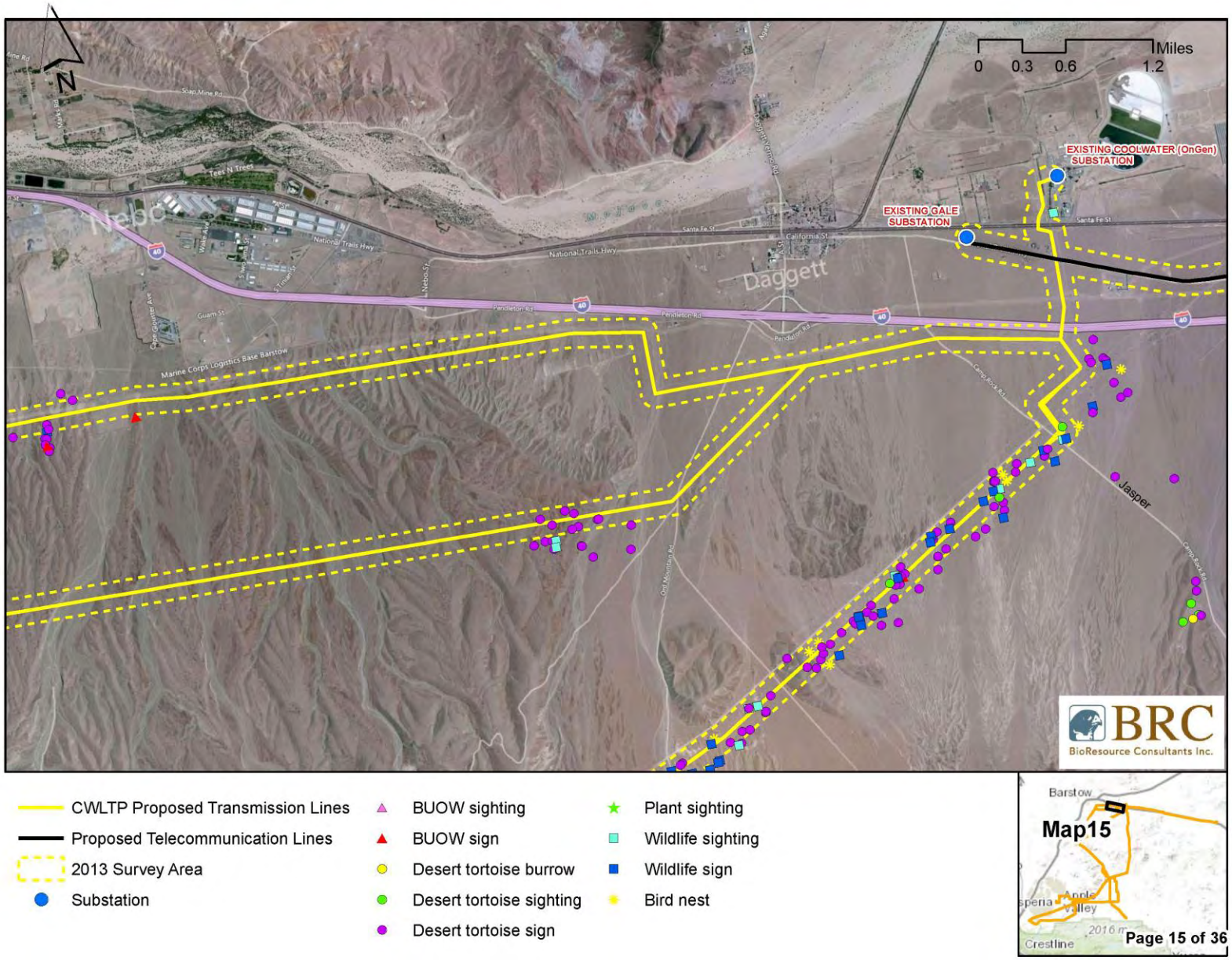

N
0 0.3 0.6 1.2 Miles
Segment 7
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Crestline
Map 11

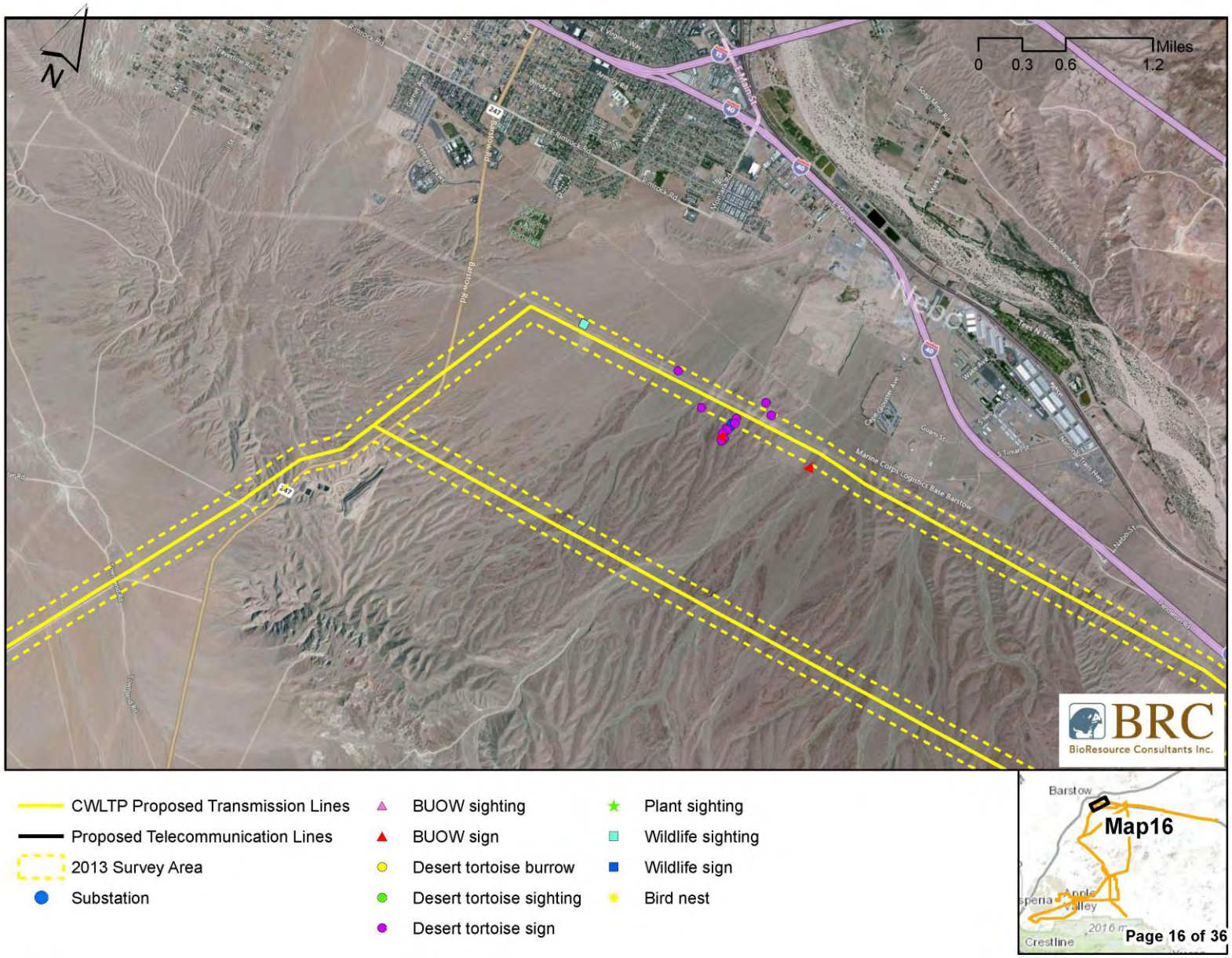

N
0
0.3
0.6
1.2
Miles
Segment 7
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Apple Valley
Crestline
Map13

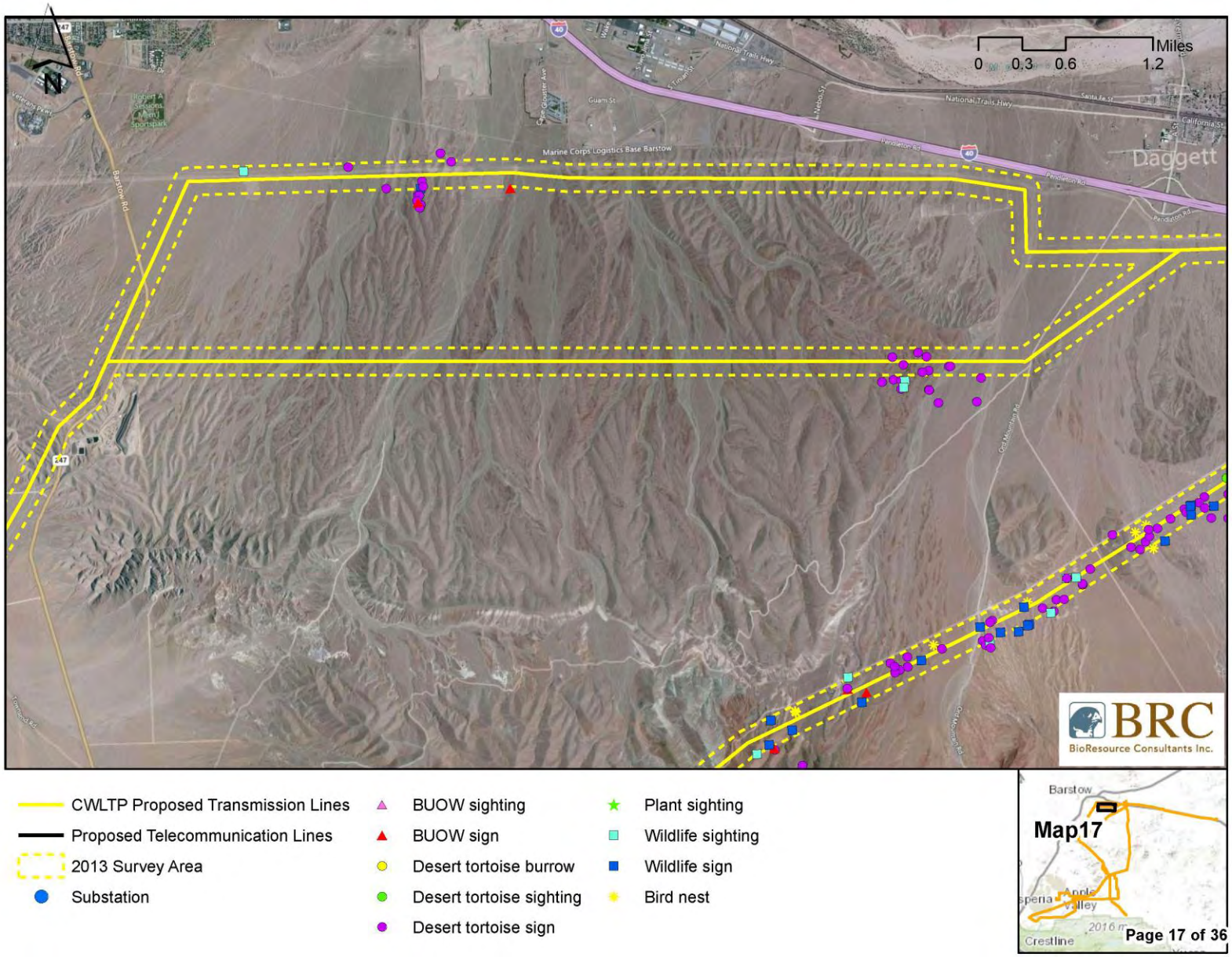

N
0
0.3
0.6
1.2
Miles
Segment 7
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Apple Valley
Crestline

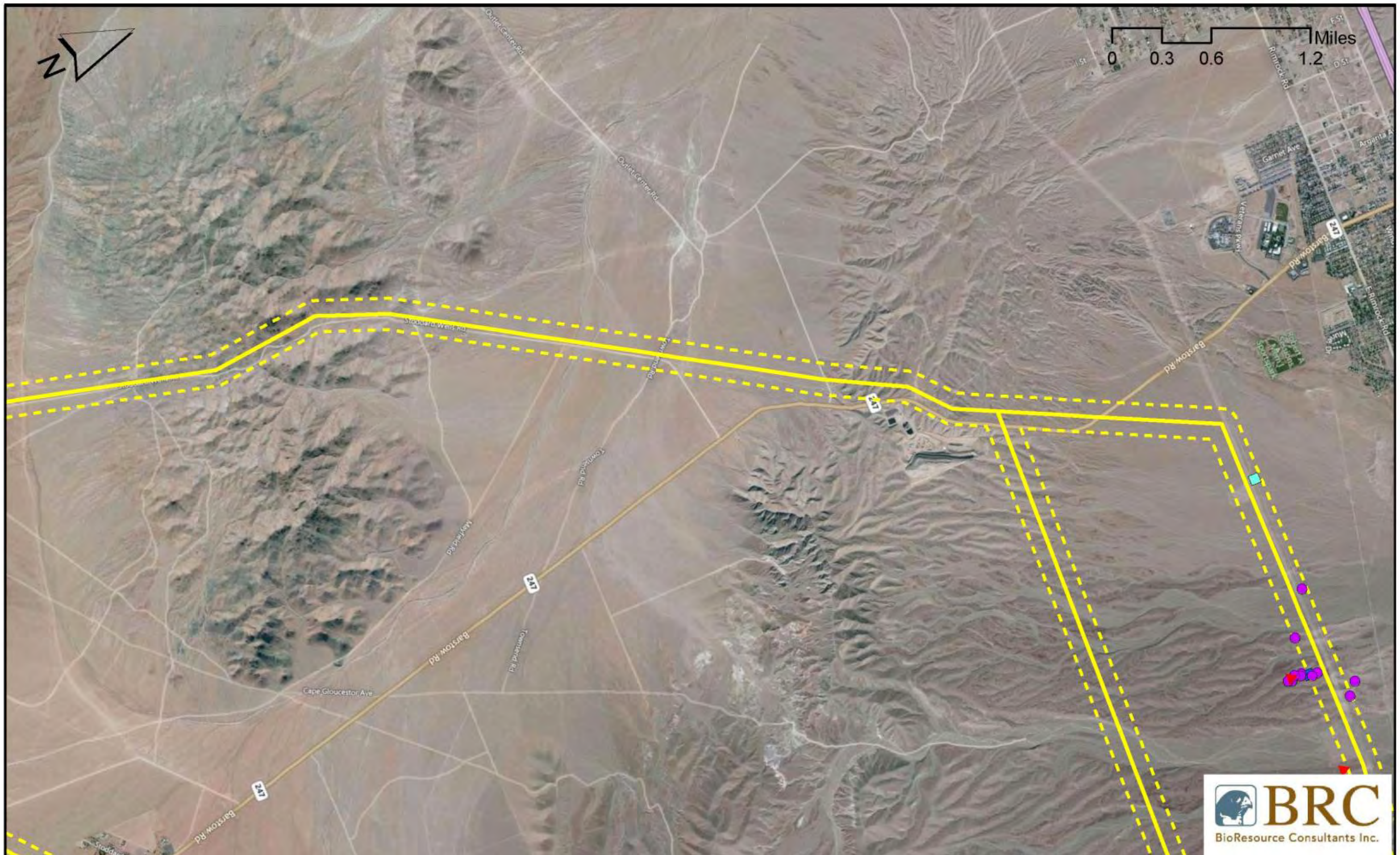
Map 1


N
0 0.3 0.6 1.2 Miles
EXISTING LUGO SUBSTATION
Segment 7
Ranchero Rd
Summit Valley Rd
Telephone Canyon Rd
EAST OAK HILLS
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Apple Valley
Crestline
Map14

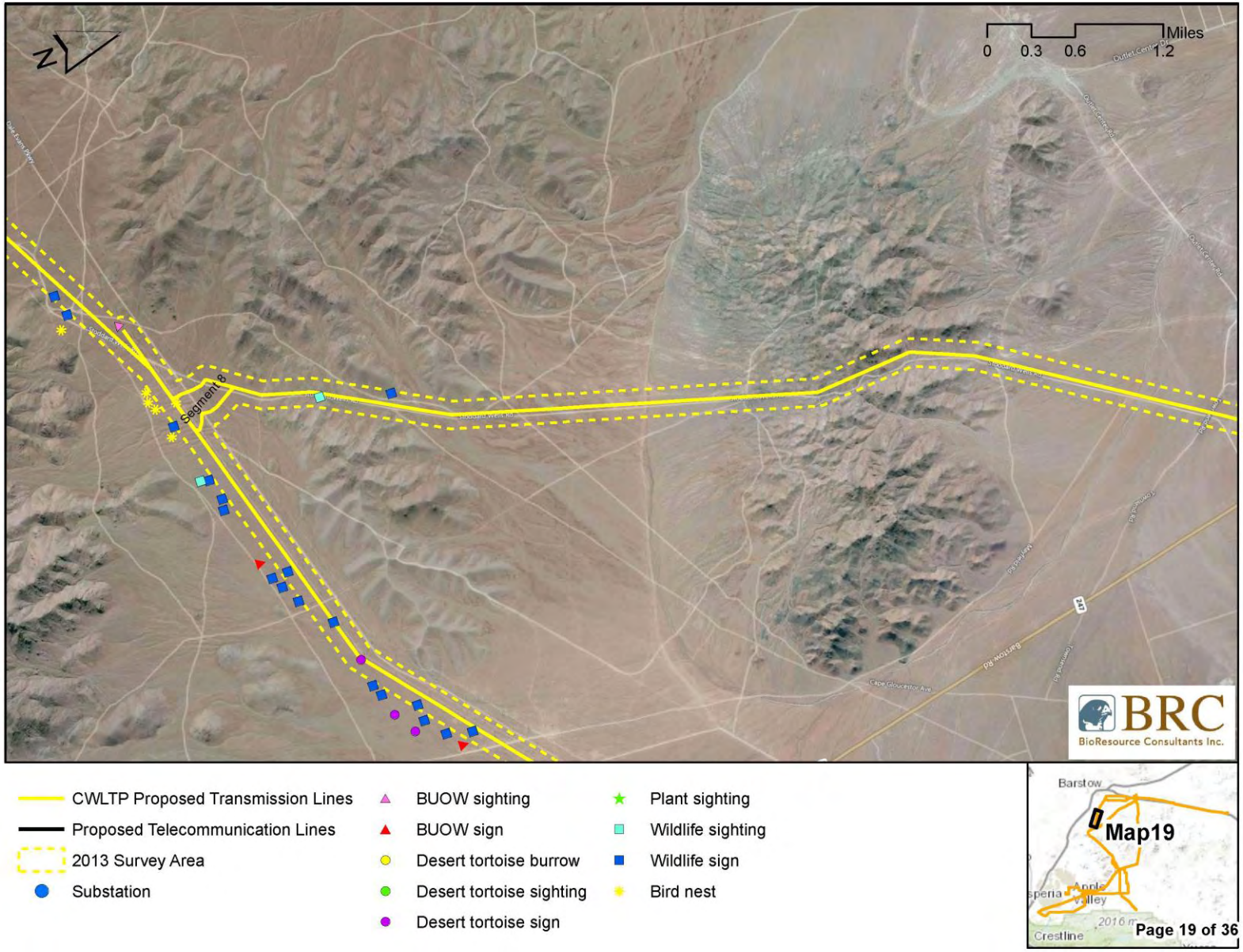

N
0 0.3 0.6 1.2 Miles
EXISTING COOLWATER (OnGen) SUBSTATION
EXISTING GALE SUBSTATION
Daggett
Nebo
Jasper
Marine Corps Logistics Base Barstow
National Trails Hwy
Pendleton Rd
Santa Fe St
California St
Camp Rock Rd
Ord Mountain Rd
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map15
Apple Valley
Crestline
Page 15 of 36

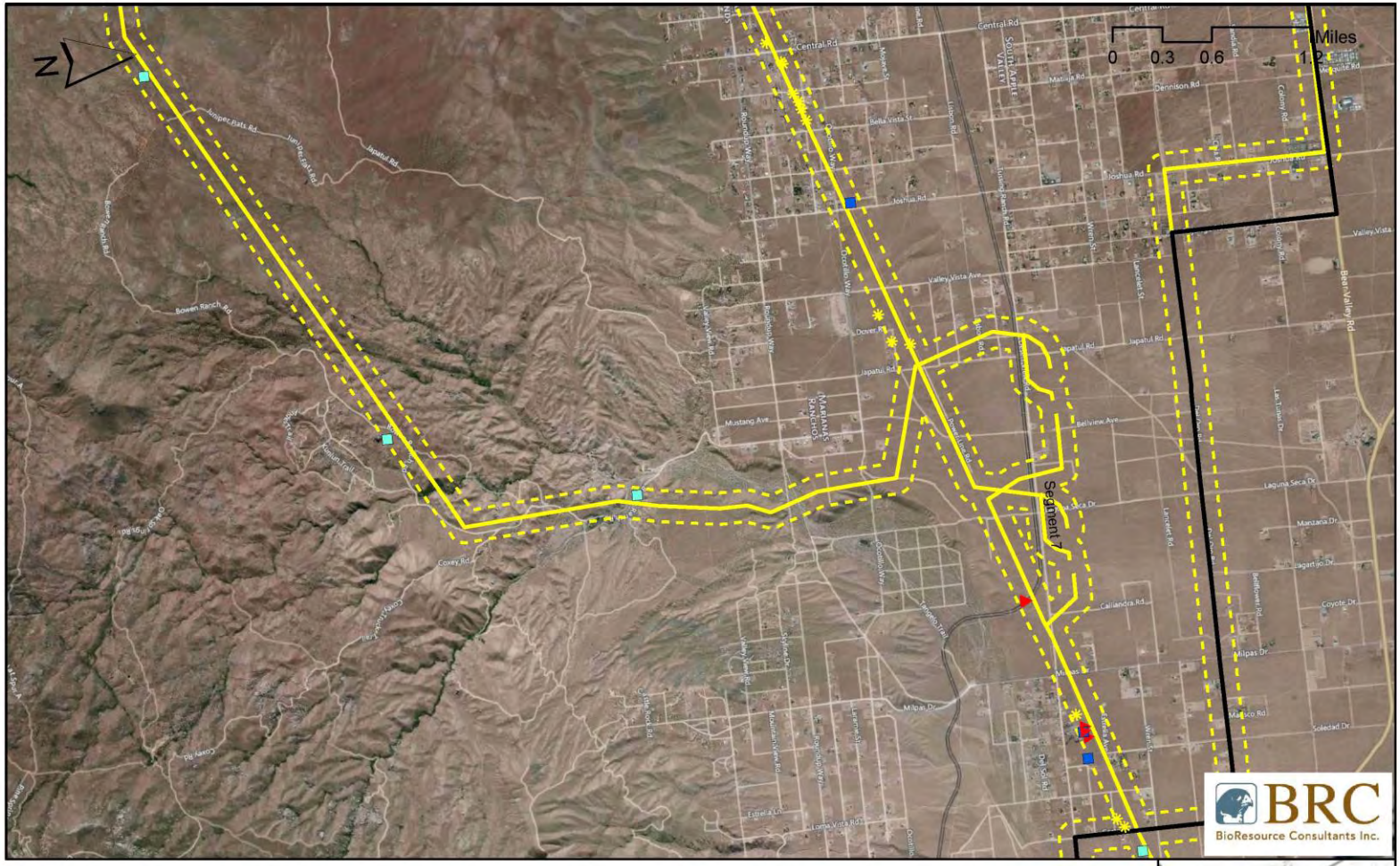

N
0 0.3 0.6 1.2 Miles
Barstow
Marine Corps Logistics Base Barstow
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Map16
Apple Valley
Crestline


N
0 0.3 0.6 1.2 Miles
Marine Corps Logistics Base Barstow
Daggett
National Trails Hwy
Barstow Rd
Pendleton Rd
Guam St
Goat Mountain Rd
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map17
Apple Valley
Crestline



CWLTP Proposed Transmission Lines	BUOW sighting	Plant sighting
Proposed Telecommunication Lines	BUOW sign	Wildlife sighting
2013 Survey Area	Desert tortoise burrow	Wildlife sign
Substation	Desert tortoise sighting	Bird nest
	Desert tortoise sign	


N
0 0.3 0.6 1.2
Miles
Segment 8
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map19
Apple Valley
Crestline
Page 19 of 36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BUOW sign
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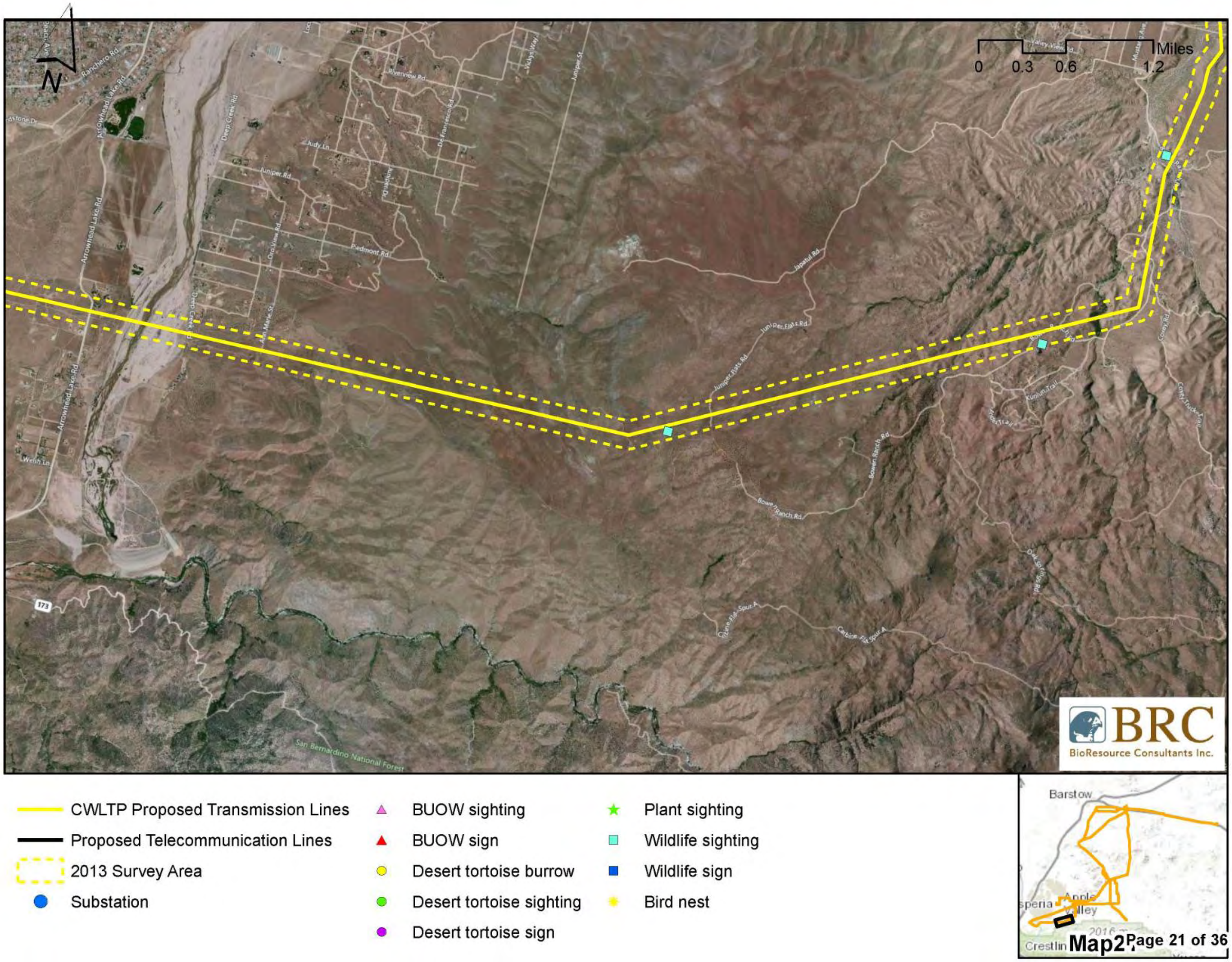
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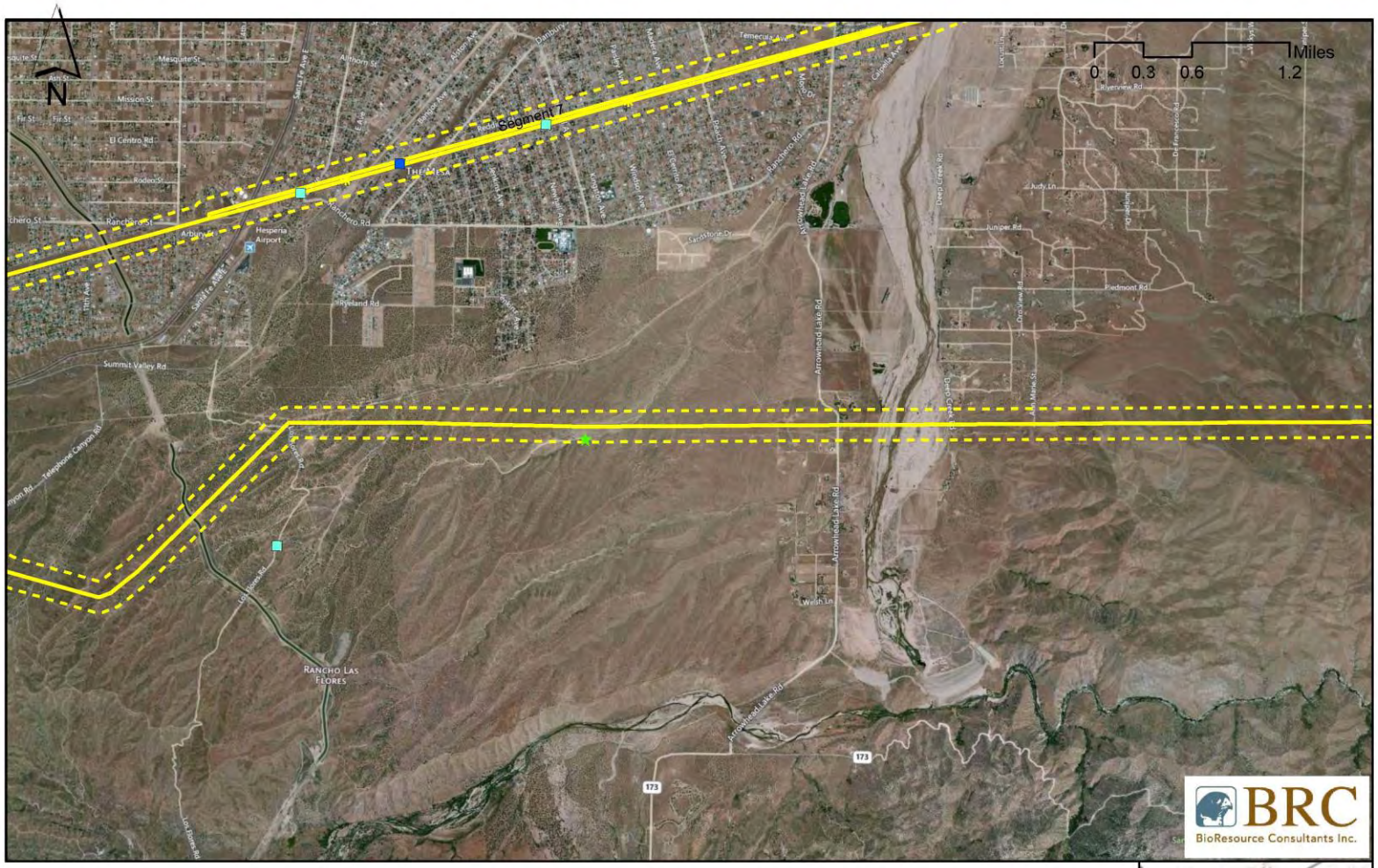
Map2 Page 21 of 36



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Plant sighting
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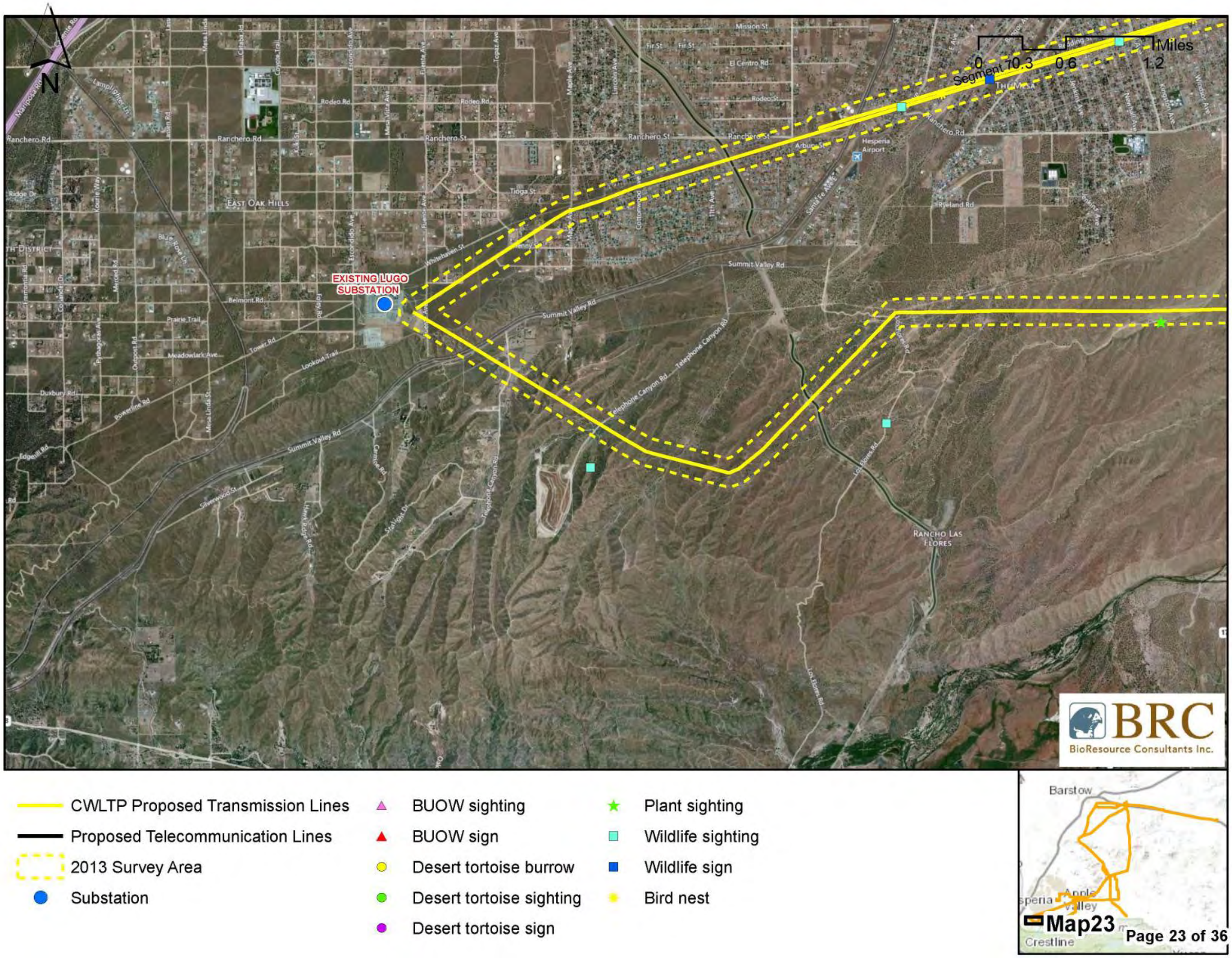
Bird nest



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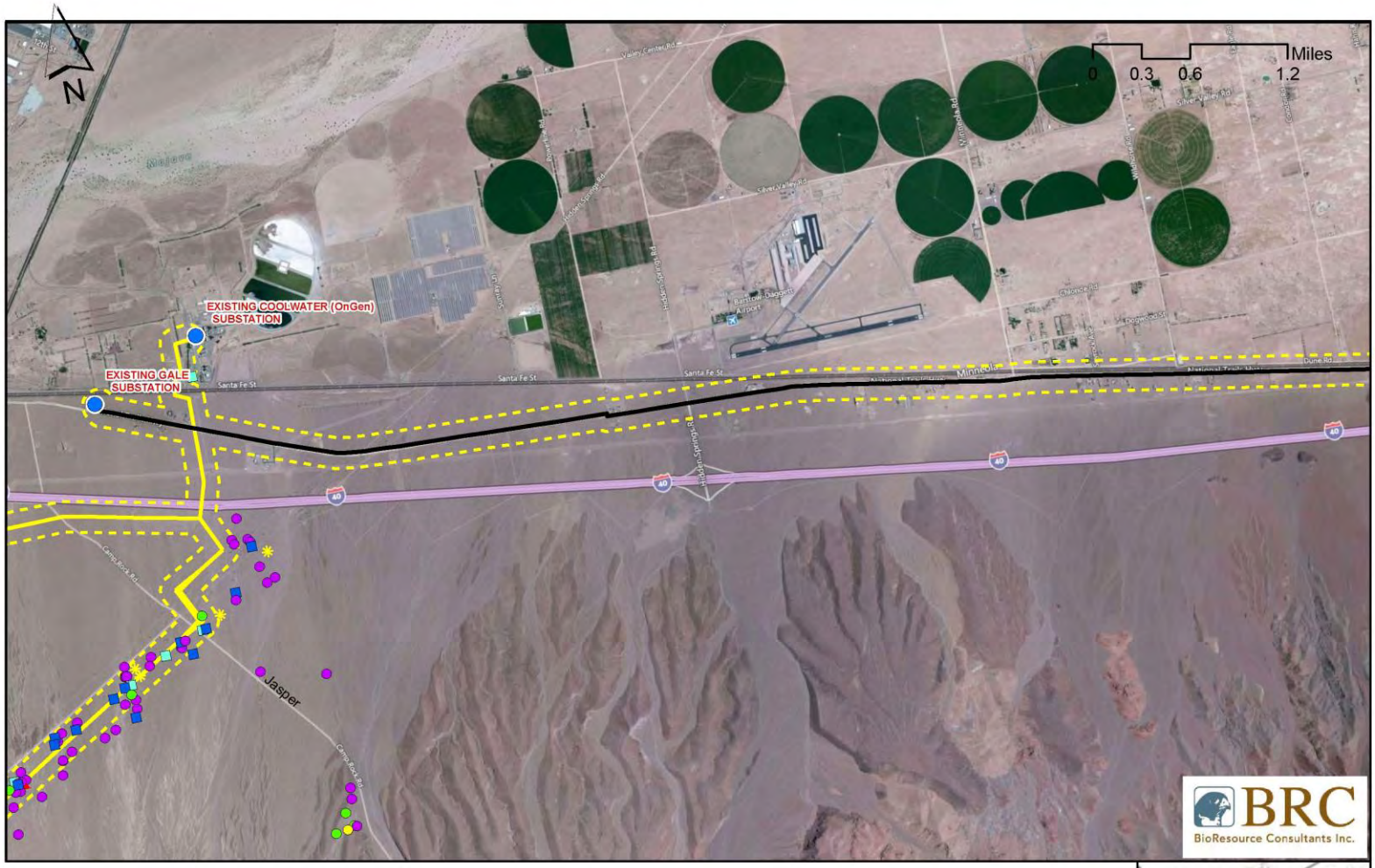
Bird nest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Jasper
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
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Wildlife sighting
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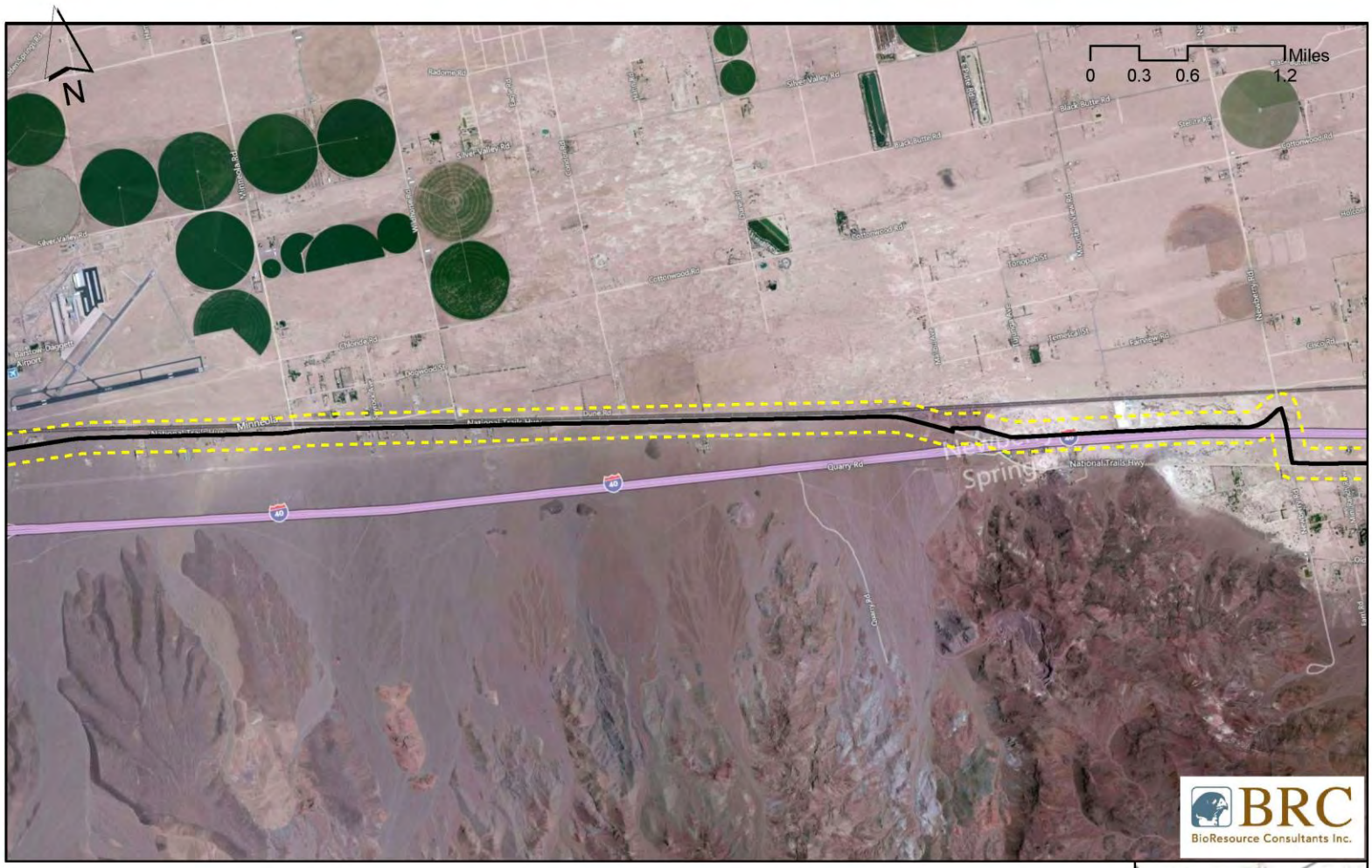
Map24
Apple Valley
Crestline
2016 m



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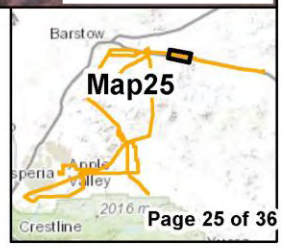

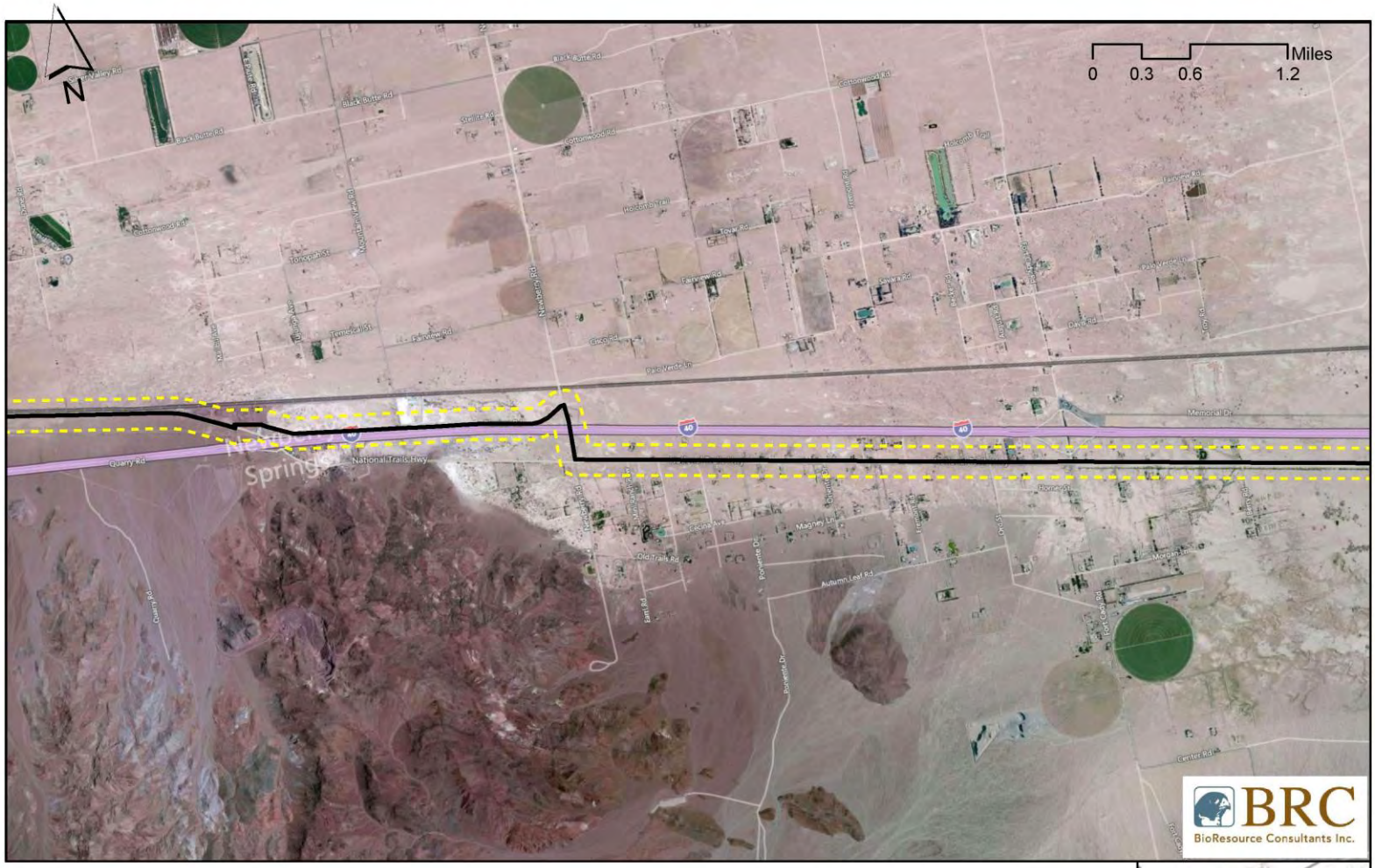
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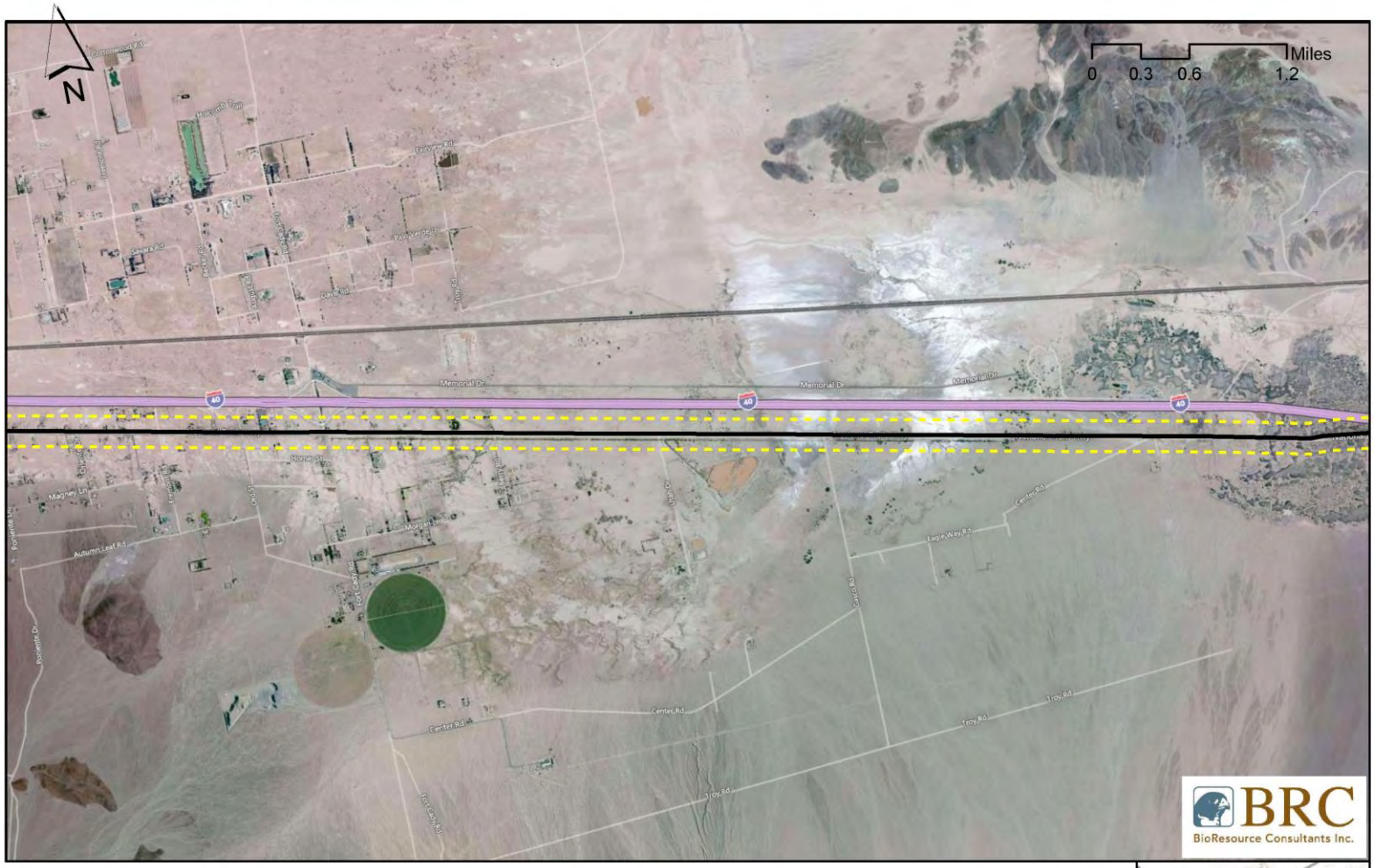
Barstow
Map26
Apple Valley
Crestline
Page 26 of 36



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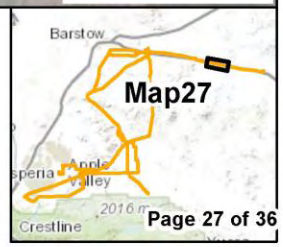

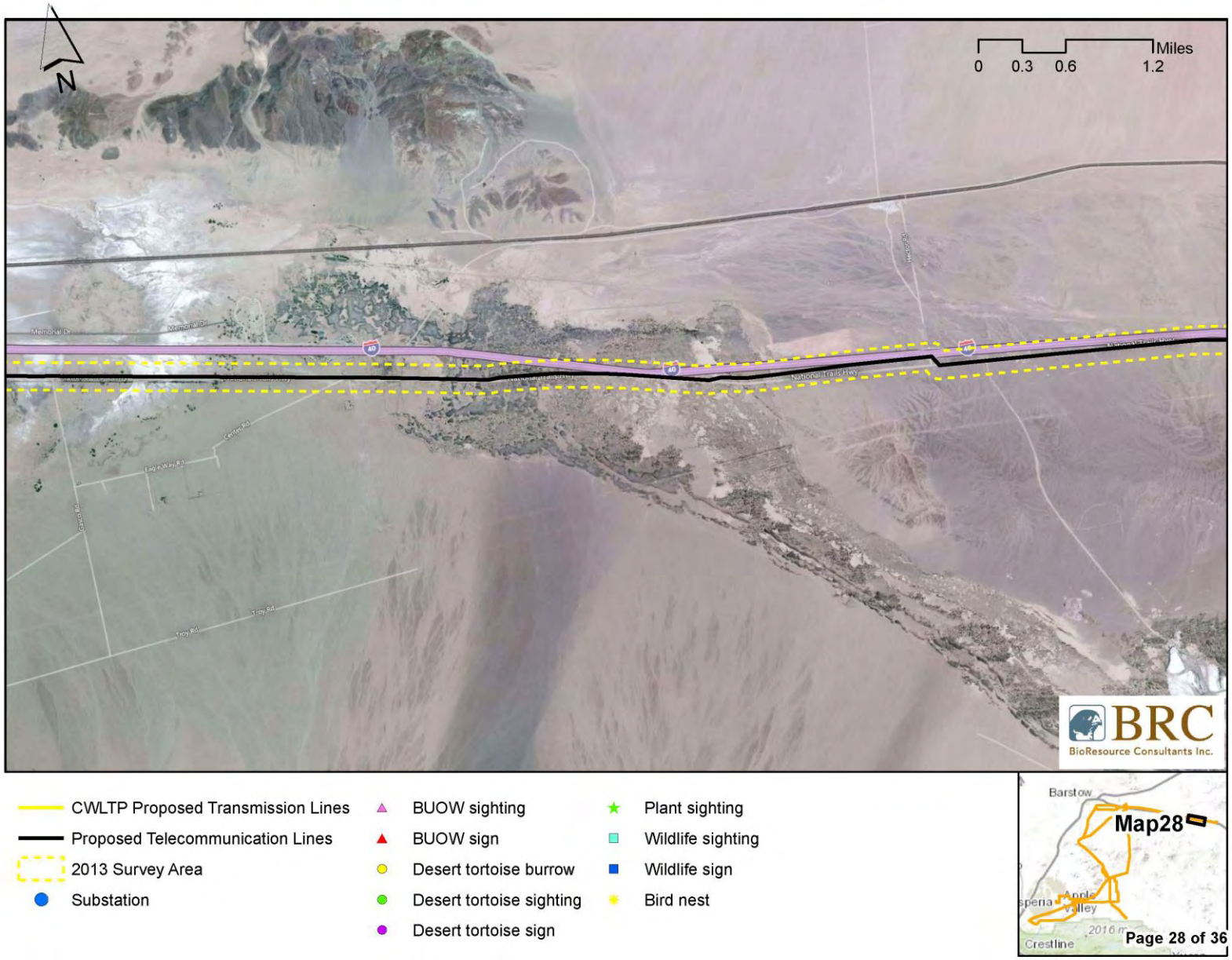
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Proposed Telecommunication Lines
2013 Survey Area
Substation
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BUOW sign
Desert tortoise burrow
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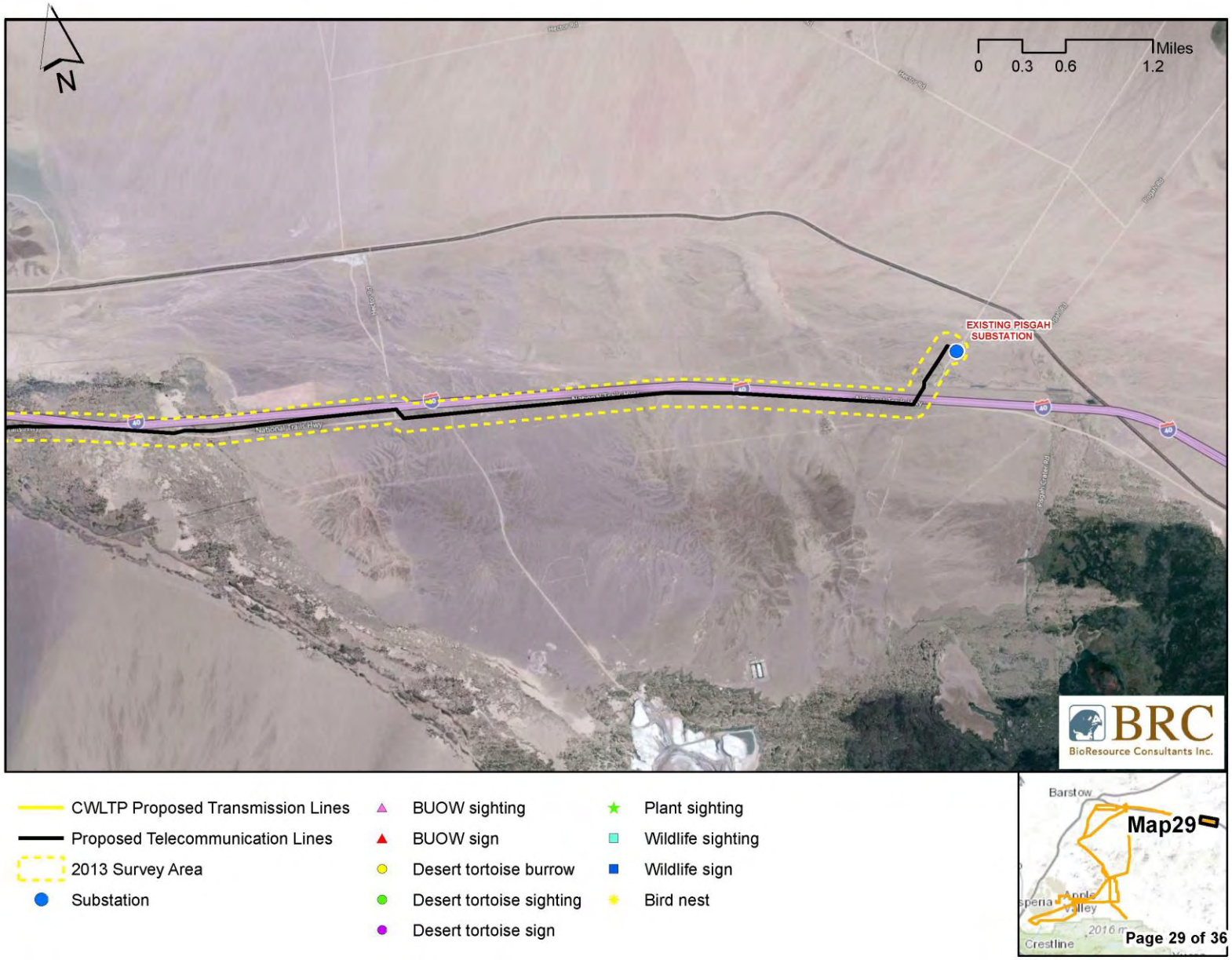
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map28
Apple Valley
Crestline
Page 28 of 36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BUOW sign
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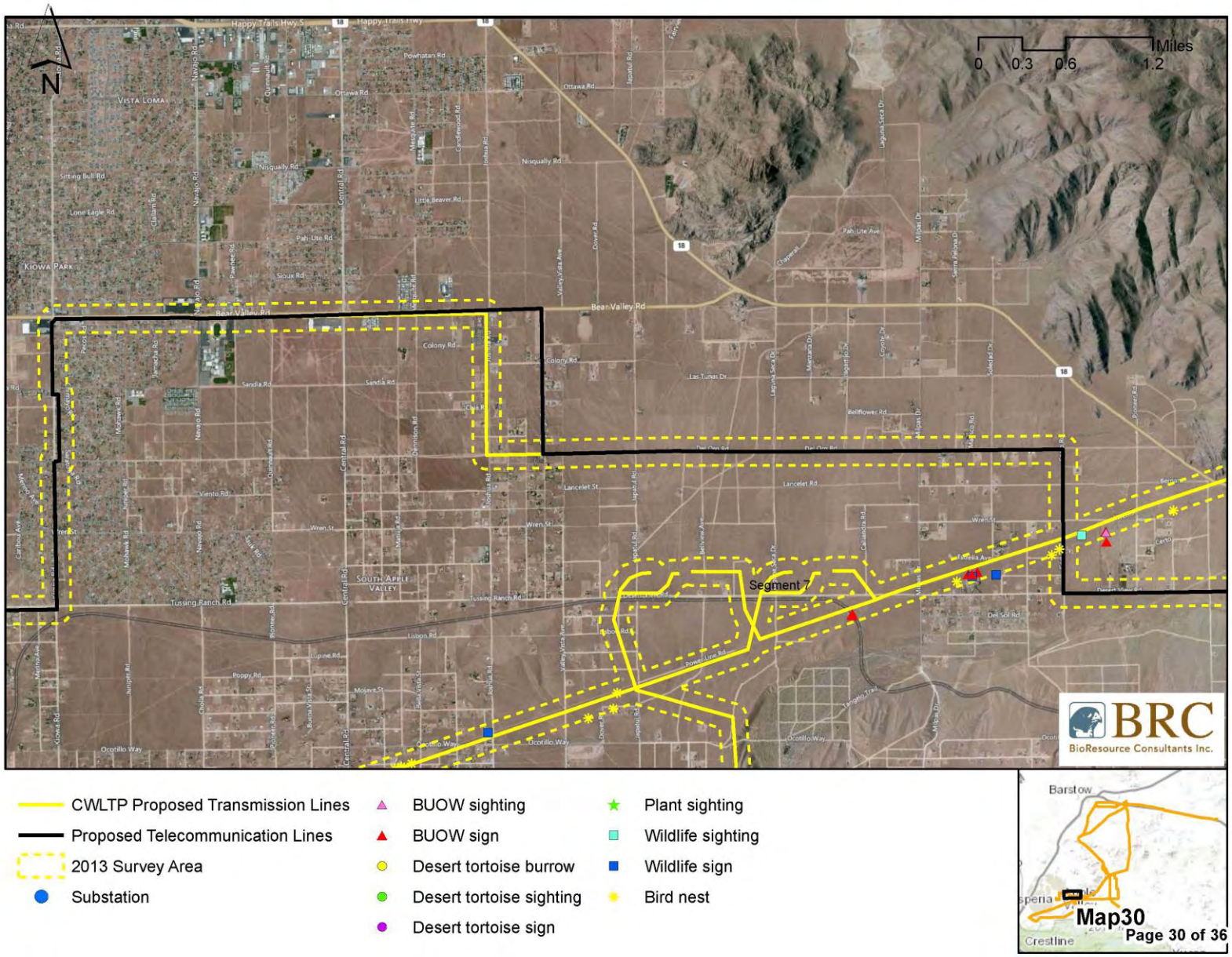
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Map29
Apple Valley
Crestline
Page 29 of 36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BUOW sign
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Wildlife sign
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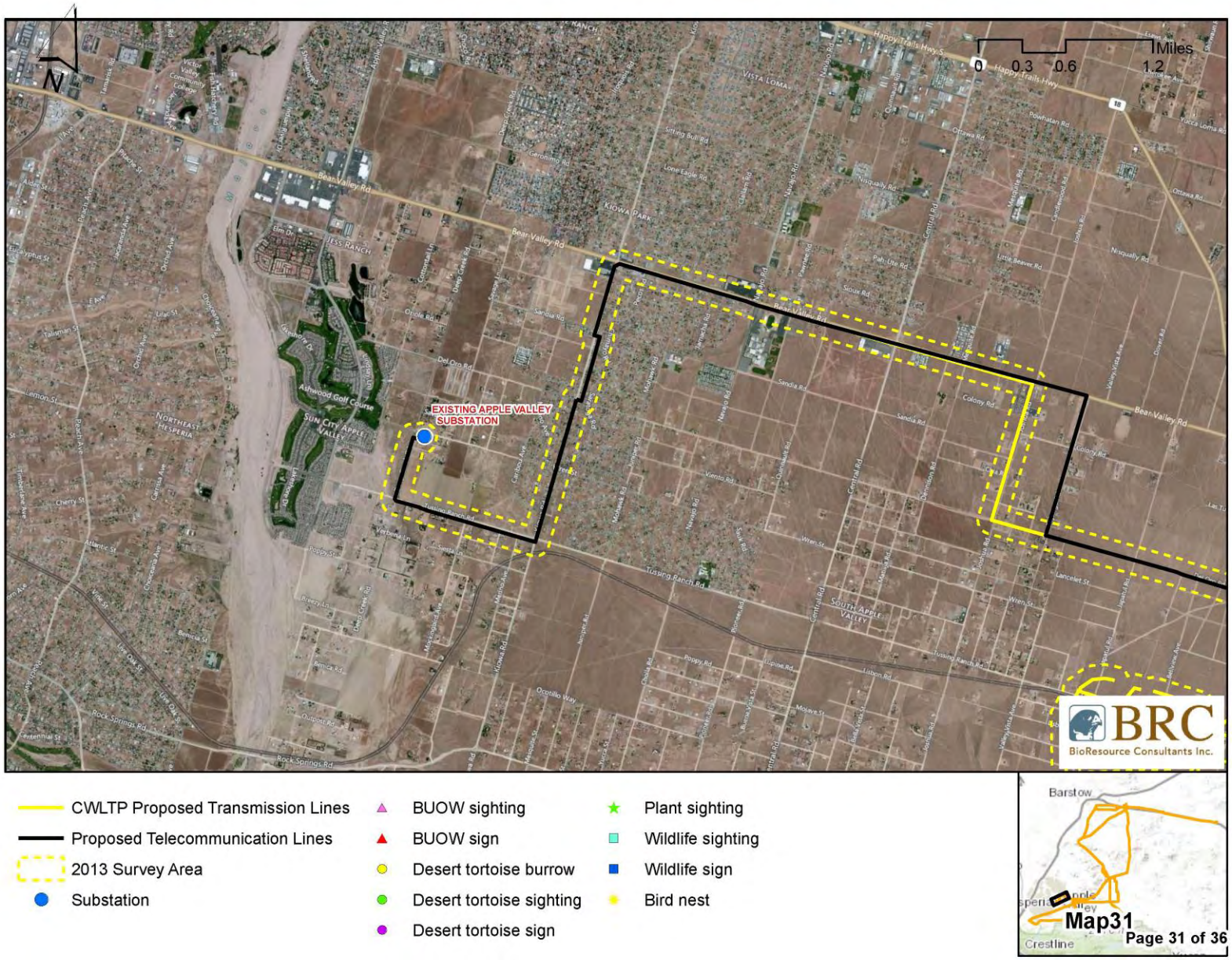
Crestline
Map30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Rock Springs Rd
Ashwood Golf Course
SUN CITY APPLE VALLEY
NORTHEAST HESPERIA
SOUTH APPLE VALLEY
KIOWA PARK
VISTA LOMA
BRC
BioResource Consultants Inc.
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
BUOW sighting
BUOW sign
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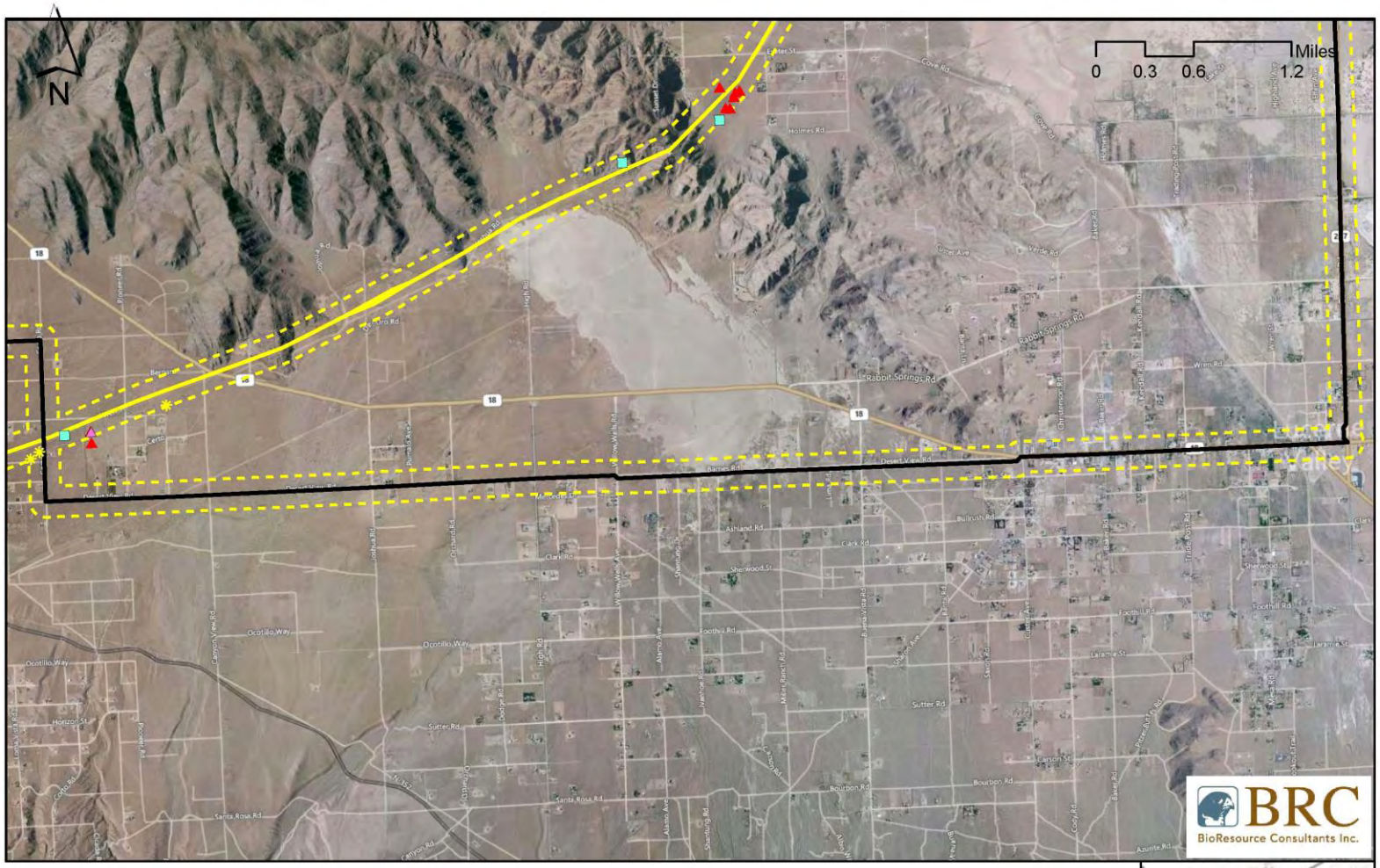
Crestline
Map31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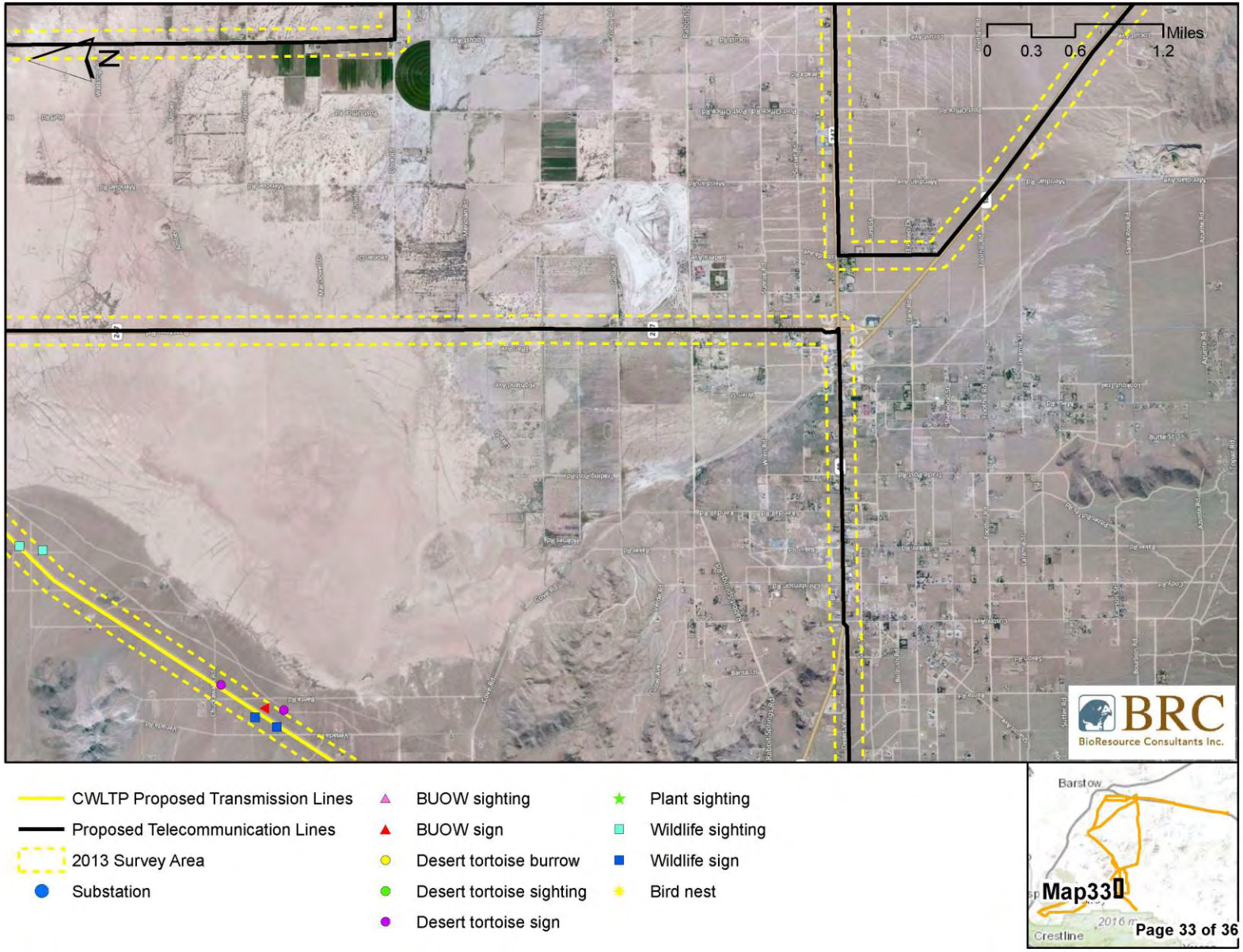
Bird nest
Barstow
Crestline
Map32
Page 32 of 36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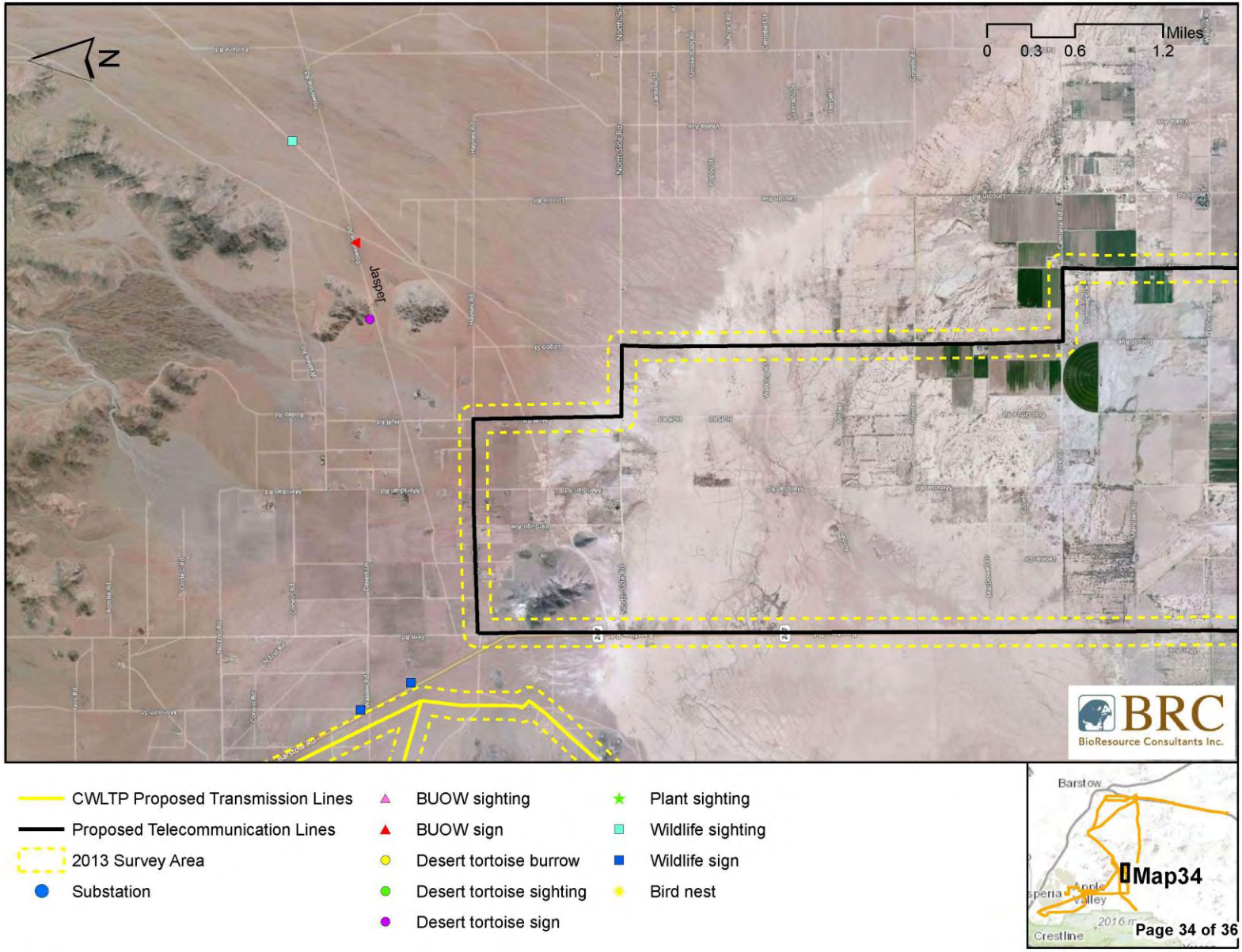
Map33
Crestline
Page 33 of 36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Barstow
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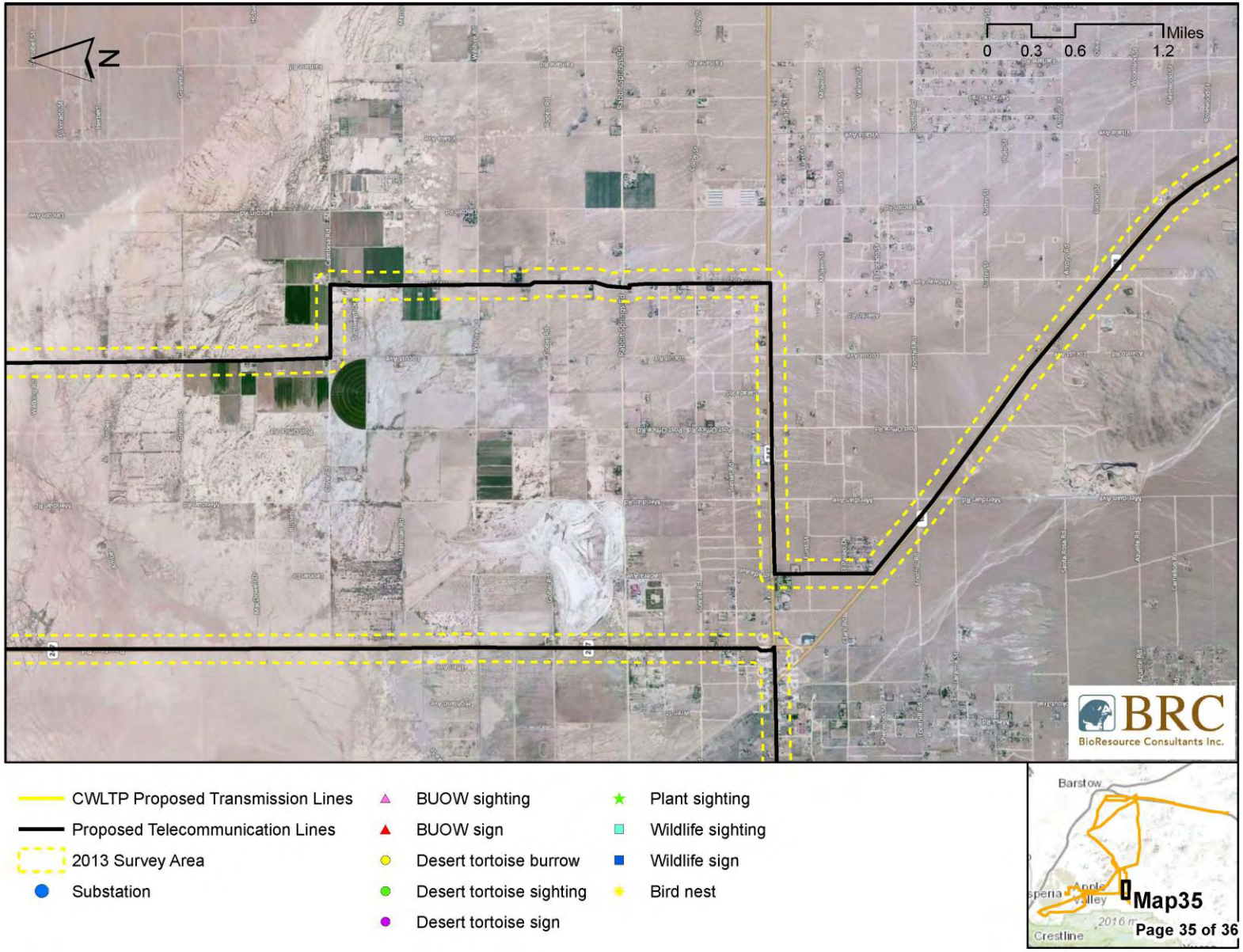
Crestline
2016 m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Crestline
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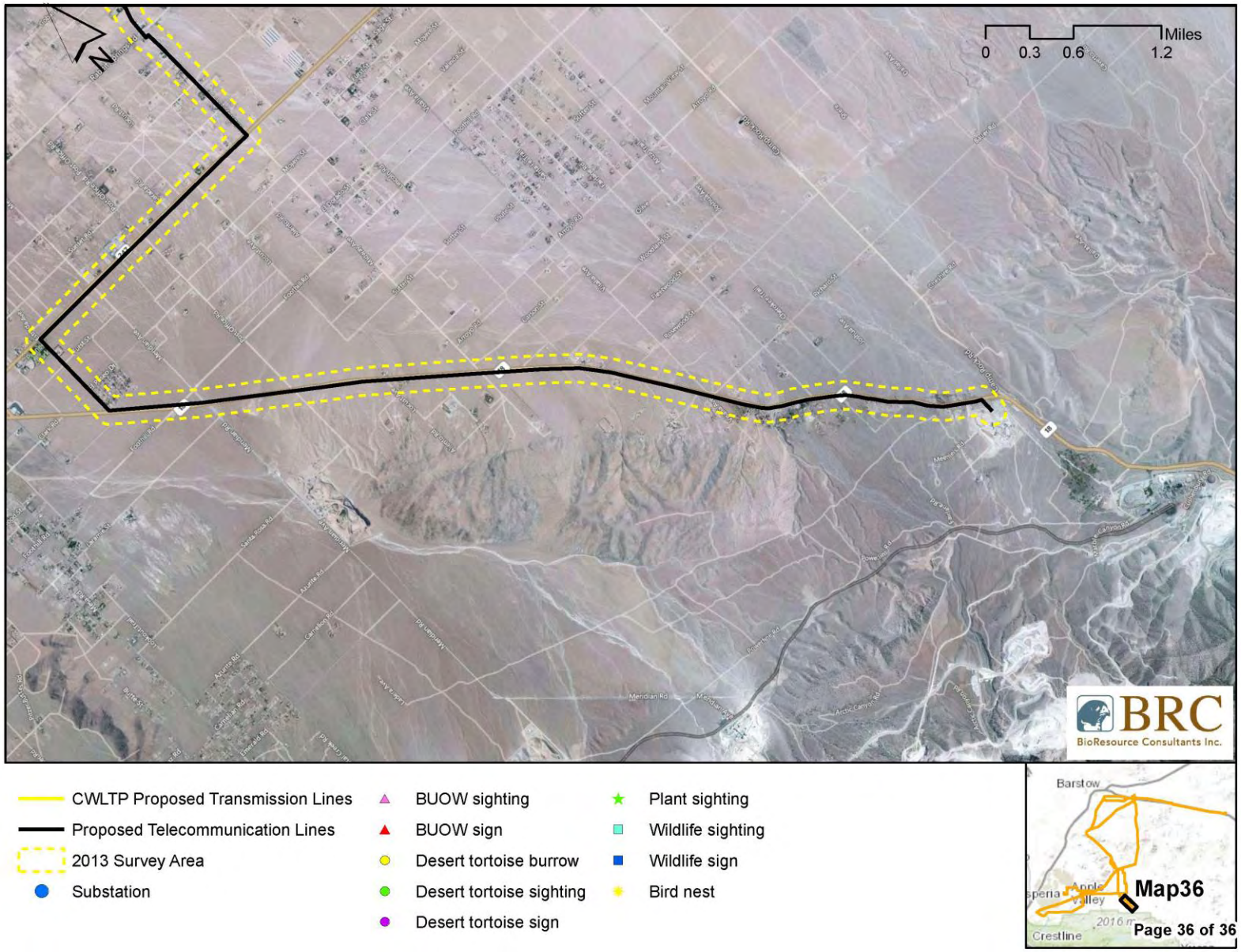
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BUOW sign
Desert tortoise burrow
Desert tortoise sighting
Desert tortoise sign
Plant sighting
Wildlife sighting
Wildlife sign
Bird nest
Barstow
Apple Valley
Crestline
Map36
Page 36 of 36

FOCUSED SPECIAL-STATUS PLANT SURVEY
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
Southern California Edison
1218 South 5th Avenue
Monrovia, California 91016

Submitted by:
BioResource Consultants, Inc.
310 E Matilija Street
Ojai, California 93023

JUNE 2013

Table of Contents

List of Figures

List of Attachments

1.0 INTRODUCTION

This report documents and describes the existing conditions and biological resources in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to special status plant species that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

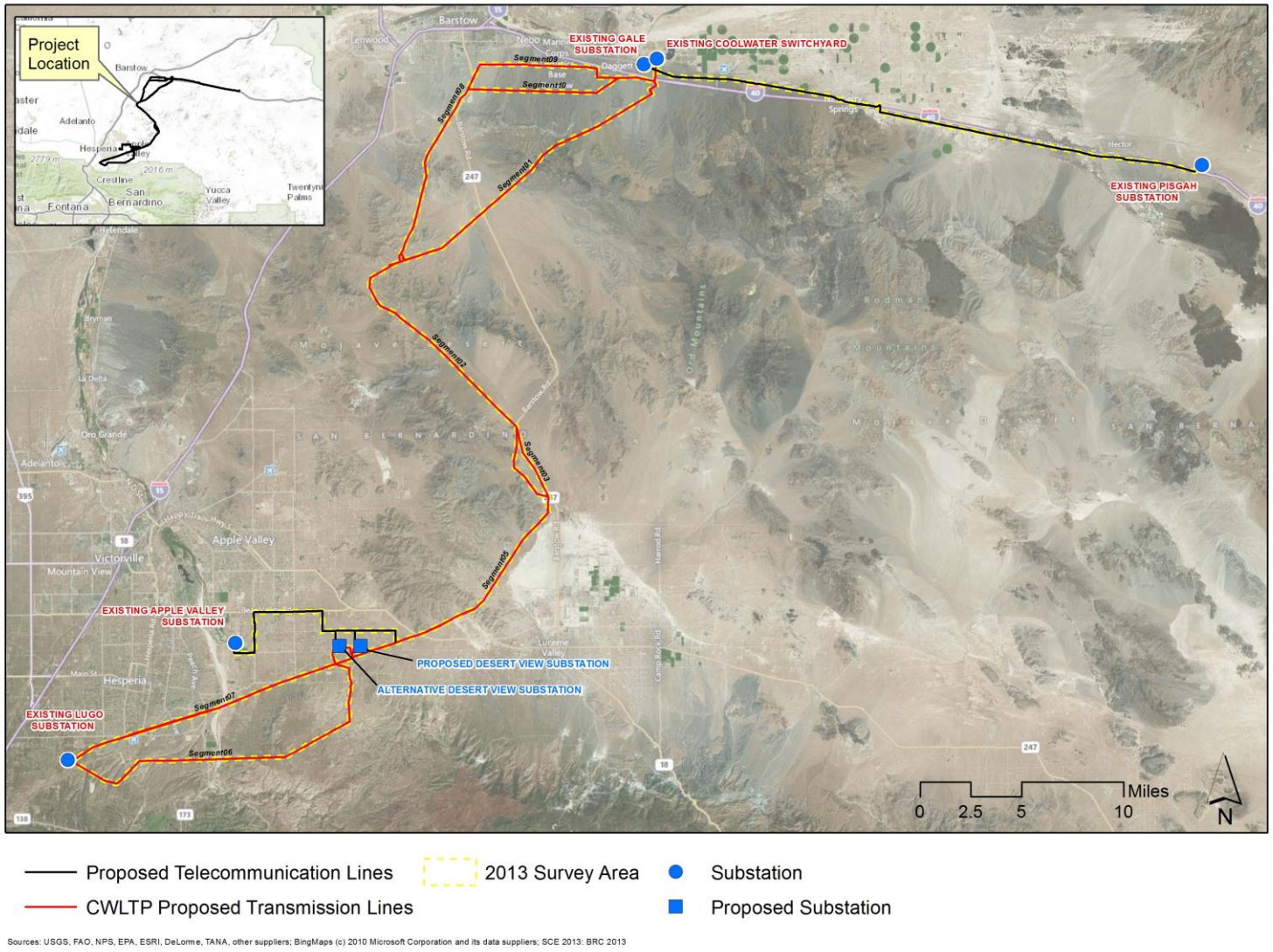
1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

Figure 1. Project Location



2.0 METHODOLOGY

Prior to field surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain a list of federal- and state-listed resources, including sensitive plant species in the region. The results of these preliminary database searches provided a basis for addressing the appropriate special-status resources in the footprint of the Proposed Project components and immediate surroundings (collectively referred to as the Biological Resources Project Area). The biological resources assessment included general biological surveys and habitat suitability assessments for special-status plant species within the Project Area and a 500-foot buffer on either side of the alignment ("Survey Area"). Non-linear features such as substations were surveyed within the boundary of the feature. Additionally, literature was reviewed to identify potential special-status plants within 5 miles of the Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area. Surveys were conducted in 2012 and 2013.

2.1 Literature and Database Review

Information about documented plants was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include: *The Jepson Manual* (Baldwin 2012); the *CalFlora Database* (CalFlora 2012); and the *Inventory of Rare and Endangered Plants of California* (CNPS 2010).

Special-status plant species documented to occur in the Project vicinity are listed in **Attachment A**, along with their habitat suitability and an indication of their known presence, or assessment of their potential to occur, within the Project Area.

Using information from the various listed sources and floral surveys of the area, the potential for special-status plant species to occur within the Project Area was assessed as present (observed during the survey), none (not expected to occur in the Project Area), or else high, medium, low, or none based on the following criteria:

- **High:** CNDDB or other documented occurrences have been recorded within 1.0 mile of the Project and suitable habitat is present. Individuals were not observed during field surveys; however, the species could be present.
- **Medium:** CNDDB or other documented occurrences have been recorded within 5 miles of the Project Area and suitable habitat is present. Individuals were not observed during field surveys; however, the species could be present.

- **Low:** Suitable or marginal habitat may occur in the Project Area but no CNDDB records of the species have been recorded within recent years, records of the species within 5 miles of the Project are suspected to be now extirpated or potentially misidentified with other species, or individuals were not observed during field surveys and are not anticipated to be present.

Nine special-status plant species have a high potential to occur, and 18 special-status plant species have a medium potential to occur within the Project Area

2.2 Survey Methods

A focused survey for special-status plant species was conducted in the Project Area from March 28 to April 12, 2012. The survey was conducted by walking transects approximately 45 meters wide out to 500 feet from either side of the center line of the Project. As a result of changes to the Project description, additional surveys were performed between May 28 and June 15, 2013, to cover previously unsurveyed areas of the Project Alignment and to spot-check areas of the exiting Project Alignment in order to obtain more conclusive results than in the previous year's survey.

Vegetation was mapped in the field in conjunction with aerial photographs to delineate the extent of each vegetation community within the Project Area. Plant species were identified in the field or collected for subsequent identification using keys in Baldwin (2012). Nomenclature generally follows Sawyer et al. (2009) for vegetation types and communities, and Calflora (2012), Baldwin (2012), and current scientific data (e.g., scientific journals) for individual plant species. Individuals or populations of special-status plant species were recorded using a global positioning system (GPS) unit and cross-referenced with representative specimens or photographs of the species. For the purposes of these focused surveys, the Project Area included the preferred alignment and the alternative alignments.

3.0 RESULTS

3.1 Vegetation Communities

Based on the survey, 14 plant communities, characterized and named according to the vegetation's dominant species, were identified within the Project Area.

Basalt Rock ("BR")

Basalt Rock lacks a dominance of vegetation and is characterized by volcanic rock and boulders with occurrences of creosote bush *(Larrea tridentata)* and desert tea *(Ephedra californica)*. This community occurs primarily in the northeast portion of the Project.

Big Sagebrush Scrub ("BSS")

This community is dominated by big sagebrush (*Artemisia tridentata*) and is typically found on plains, alluvial fans, and bajadas with sandy soils with an open canopy and the herbaceous layer is spare to intermittent with non-native grasses. This community occurs on the western end of Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 near the

Lugo Substation. Other species that occur within this community include yellow rabbit brush *(Chyrsothamnus viscidiflorus)*, mormon tea *(Ephedra viridis)*, rubber rabbit brush *(Ericameria nauseosa)*, and California juniper *(Juniperus californicas)*.

Creosote Bush Scrub ("CBS")

Creosote Bush Scrub is dominated by creosote bush with an intermittent to open canopy with an herbaceous layer of seasonal annuals or perennial grasses. This community is found on alluvial fans, bajadas, upland slopes, and washes. The soils are well drained, sometimes with desert pavement. Along the Project alignment, this community is found scattered throughout. Other species that occur within this community include white bursage *(Ambrosia dumosa)*, fourwing saltbush *(Atriplex canescens)*, allscale *(Atriplex polycarpa)*, brittlebush *(Encelia farinosa)*, Anderson's desert thorn *(Lycium andersonii)* and Joshua tree *(Yucca brevifolia)*.

Creosote Bush Scrub-White Bursage Scrub ("CBBS")

This community is dominated by creosote bush and co-dominated by white bursage with an intermittent to open canopy. The herbaceous layer is dominated by seasonal annuals. This community typically occurs within small washes, rills, alluvial fans, and bajadas. This is the most common community occurring along the majority of the Project. Other species within this community include fourwing saltbush, allscale, brittlebush, Anderson's desert thorn, Joshua tree, California barrel cactus (*Ferrocactus cylindraceus var. cylindraceus*), beavertail cactus desert (*Opuntia basilaris*), desert straw (*Stephanomeria pauciflora*), and desert trumpet (*Eriogonum inflatum*).

California Buckwheat Scrub ("CBUS")

The California Buckwheat Scrub along the Project alignment is considered the transmontane stand and is dominated by California buckwheat *(Eriogonum fasciculatum)* with white bursage, creosote, mormon tea, brittlebush with occurrences of California juniper). This community occurs in transition with California Juniper Woodland and Creosote Bush Scrub or Creosote Bush-White Bursage Scrub. The California Buckwheat Scrub only occurs within the western portion of the alignment within Alternative Transmission Line Segment 6.

California Juniper Woodland ("CJW")

The California Juniper Woodland is dominated by California juniper and is associated with species of the California Buckwheat Scrub and Big Sagebrush Scrub. This community is only found on the western portion of the Project within Alternative Transmission Line Segment 6.

Dry Lake Bed ("DLB")

This community is dominated by Parry's saltbush *(Atriplex parryi)* with fourwing saltbush, and bud sage *(Artemisia spinescens)*. The canopy cover is open with a lack of herbaceous species. The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs on dry lake beds within the Proposed Transmission Line Segments 1 and 5a and the Apple Valley to Desert View Telecommunication Route.

Fourwing Saltbush Scrub ("FWSS")

Fourwing Saltbush Scrub is dominated by fourwing saltbush with allscale, creosotebush, Mormon tea as co-dominates. The canopy cover is open with a lack of herbaceous species. This community occurs on playas, dry lake beds, alluvial fans and rolling hills. The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs at scattered locations along the alignment primarily within the Proposed and Alternative Transmission Line Segment 5.

Joshua Tree Woodland ("JTW")

The Joshua Tree Woodland is dominated by Joshua tree (Y*ucca brevifolia*) co-dominated by species of the Creosote Bush Scrub or Creosote Bush-White Bursage Scrub including creosote bush, white bursage, Mormon tea, Anderson's desert thorn, cheese bush *(Hymenoclea salsola)*, beavertail cactus, and California barrel cactus. The understory is dominated by herbaceous seasonal annuals and grasses. This community is scattered throughout the Project, typically on rocky soils on ridges and moderate slopes.

Mojave River ("MR")

The Mojave River is the primary surface drainage of the region and the Project Area. The Mojave River generally lacks dominance of vegetation and consists of braided sandy channels within a wide floodplain. The Mojave River within the region has surface flow during storm events but generally has an underground flow. Along the edges of the river seasonal annuals are prevalent. Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River.

Rabbit Brush Scrub ("RBS")

Rabbit Brush Scrub is dominated by rubber rabbit bush and yellow rabbit brush with a co-dominance of non-native ruderal species including Russian thistle *(Salsola tragus)*, mustards *(Brassica nigra)*, and *(Hirschfeldia incana)*. This community transitions into Big Sagebrush Scrub and is found along the alignment in disturbed areas of residential development within the western portion of the proposed Project Area including Proposed Transmission Line Segment 7 and the Apple Valley to Desert View Telecommunication Route.

Rock Outcrop ("RC")

Rock Outcrop lacks a dominance of vegetation and is characterized by steep slopes with volcanic rock and boulders with occurrences of brittlebush and creosote bush. This community occurs sporadically within the Project alignment.

Willow Riparian (not mapped)

The Willow Riparian community occurs along canyon drainages and the Mojave River in the western portion of the Project Area within Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6. This community is dominated by arroyo willow (*Salix lasiolepis)*, red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), and

elderberry (*Sambucus nigra*). This habitat community was not mapped due to its extremely localized and limited distribution within the Project Area.

Desert Ephemeral Wash (not mapped)

Desert ephemeral washes occur throughout the Project alignment. The washes typically are characterized by a sandy to gravel channel from 4 to 50 feet wide and lack a predominance of vegetation. When vegetation does occur, species are typical of the surrounding upland habitat. Desert ephemeral washes only have flow during major storm events. This habitat community was not mapped due to its extremely localized and limited distribution within the Project Area.

3.2 Plant Species

A total of 81 species were identified during surveys including 11 non-native species and 1 special-status species. A list of plant species observed in the Project Area is provided in **Attachment B**.

3.3 Special-Status Plant Species

One special-status plant species was observed during the 2012 survey: Booth's evening-primrose (*Camissonia boothii ssp. boothii*). No other special-status plant species were observed in either survey year.

The following are detailed descriptions of observed special-status plant species:

Booth's evening-primrose (Camissonia boothii ssp. boothii)

STATUS		
Federal	**State / NDDB**	**CNPS** (CNPS 2012)
None	None / G5T4, S2	2.3 - rare, threatened, endangered in CA and elsewhere

Booth's evening-primrose is an annual herb within the Onagraceae family which blooms April through September. Booth's evening primrose if found within Creosote Scrub, Joshua tree Woodland and Pinyon Juniper Woodland at elevations ranging from 2950 - 7900 feet. This species was observed along Segment 7 Shoofly on the east side of the Mojave River.

4.0 DISCUSSION

The Project alignment provides suitable habitat for a variety of special-status plant species. While only one special-status plant species was observed during the focused botanical surveys, the potential for occurrence remains for all high- and medium-probability species. The majority of these species are herbaceous annuals, dependent on annual rainfall and micro habitat conditions that vary from year to year. Both 2012 and 2013 were drought years, characterized by extremely low winter rainfall (NCDC 2013). The dry conditions resulting from long term drought causes characteristically low herbaceous annual bloom. The special-status plant species with high and medium probability of occurrence in the Project Area have a collective bloom

period ranging from March through October. The 2012 and 2013 focused botanical surveys occurred during the portion of this broad bloom period optimal for annual species, between March and June. Perennial herbs, shrubs, and subshrubs blooming outside of the survey window remain identifiable throughout the spring and summer seasons, both before and after their ideal bloom period.

Due to the timing of these focused surveys during two consecutive drought years, it is recommended that additional surveys be conducted during a nondrought cycle to identify areas where special-status annual herbaceous plant species occur. In addition, preconstruction site surveys should always be conducted to identify special-status plant species to avoid during construction activities.

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Attachment A:

Special-status Plant Species Compendium

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
desert sand verbena (*Abronia villosa* var. *aurita*)	1B.1, BLM, USFS	Occurs in chaparral, coastal scrub, and desert dunes or sandy areas. Found at elevations of 75 - 1600 meters. Blooming Period January – September.	Low	CNDDB occurrences and suitable habitat present within project area.
Cienega Seca oxytheca (*Acanthoscyphus parishii* var. *cienegensis*)	1B.3, USFS	Occur in Joshua tree woodland, Pinyon/ juniper woodland, Upper montane coniferous forest habitats with sandy or granitic soils. Found at elevations of 2105 - 2450 meters Known blooming period is June – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Cushenbury oxytheca (*Acanthoscyphus parishii* var. *goodmaniana*)	FE, 1B.1, USFS	Found in Pinyon and juniper woodlands with carbonate, or talus, or sandy soils). Found at elevations of 1219 - 2377 meters. Species is only known from occurrences in San Bernardino County. Known Blooming period is from May - October.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Scrub lotus (*Acmispon argyraeus* var. *multicaulis*)	BLM	Occurs in Pinyon and juniper woodlands with granitic soils. Found at elevations from 1200 - 1500 meters. Species is only known form occurrences in San Bernardino County. Known blooming period is from April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Utah agave (*Agave utahensis* var. *eborispina*)	BLM	Found in Mojavean desert scrub habitat with rocky slopes at elevations ranging from 945 - 1370 meters. Known blooming period is from May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Small-flowered androstephium (*Androstephium breviflorum*)	2B.2	Occurs in Desert Dunes and Mojavean desert scrub. Blooms March – April.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
San Bernardino milk-vetch (*Astragalus bernardinus*)	1B.2, BLM	Found in Pinyon/juniper woodland and Joshua tree woodland habitats with granitic or carbonate soils. Found at elevations from 900 - 2000 meters. Blooming period is from April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
black milk-vetch (*Astragalus funereus*)	BLM	Found in gravelly or rocky areas of Mojavean desert scrub habitat with clay soils at elevations from 1280 - 2100 meters. Known blooming period is from March – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Lane Mountain milk-vetch (*Astragalus*	BLM	Occurs in Joshua tree woodland, Mojavean desert scrub with granitic, sandy or gravelly soils. Found at elevations of 900 - 1200 meters. Species is only known from San Bernardino County.	**Medium**	Potential suitable habitat present, but no CNDDB occurrences near project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
jaegerianus)		Known blooming period April – June.		
Fish Slough milk-vetch (*Astragalus lentiginosus* var. *piscinensis*)	FT, 1B.1	Occurs in alkaline Playas at elevation of 1130 - 1300 meters. Known blooming period is from June – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *sierrae*)	1B.2, USFS	Found in Mojavean desert scrub, Meadows and seeps, Pinyon/juniper woodland, Upper montane coniferous forest habitat with gravelly or rocky soils. Found at elevations of 1800 - 2600 meters. Known blooming period is from April – August.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Tidestrom's milk-vetch (*Astragalus tidestromii*)	2.2	Occurs on sandy or gravelly soils of Mojavean desert scrub at elevations of 600 - 1585 meters. Known blooming period is from April – July.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
triple ribbed milk-vetch (*Astragalus tricarinatus*)	FE, 1B.2, USFS	Found in Joshua tree woodland and Sonoran desert scrub habitats with sandy or gravelly soils. Occurs at elevations from 450 - 1190 meters Known blooming period is from February – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Pahrump orache (*Atriplex argentea* var. *longitrichoma*)	1.B1, BLM	Found in disturbed areas of Mojavean desert scrub habitat with alkaline soils. Known blooming period is from April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Parish's brittlescale (*Atriplex parishii*)	1B.1, USFS	Occurs in disturbed areas of Mojavean desert scrub with alkaline soils at elevations from 700 - 850 meters. Known blooming period is from April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Harrison’s barberry (*Berberis harrisoniana*)	1B.2, BLM	Usually found on north-facing talus slopes of Chaparral and	Low	No CNDDB occurrences near project area. No suitable habitat in project area.
pinyon rock cress (*Boechera dispar*)	2.3	Occurs in Joshua tree woodland, Mojavean desert scrub, and Pinyon/juniper woodland habitats with granitic, gravelly soils at elevations of 1200 - 2540 meters. Known blooming period is March – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Shockley's rock-cress (*Boechera shockleyi*)	2.2, USFS	Found in Pinyon/juniper woodlands with rocky or gravelly soils at elevations of 875 - 2310 meters. Known blooming period is from May – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
alkali mariposa lily (*Calochortus striatus*)	1B.2, BLM, USFS	Found in mesic chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps habitats with alkaline soils. Found at elevations of 70 - 1595 meters. Known blooming period of April – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Booth's evening primrose (*Camissonia boothii* ssp.*boothii*)	2.3	Occurs in Joshua tree woodland and Pinyon and juniper woodland. Found at elevations ranging from 900 - 2,400 meters. Known blooming period of April – September.	**High**	Observed within project area. Suitable habitat present within project area.
white pygmy-poppy (*Canbya candida*)	4.2, USFS	Found in sandy places in Joshua tree woodland, Mojavean scrub, and pinyon/juniper woodland. Mojave desert adjacent to the Sierra Nevadas Found at elevations of 610 - 1200 meters. Known blooming period April – September.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
Crucifixion thorn (*Castela emoryi*)	2.3	Occurs in areas of Mojavean desert scrub, Playas, Sonoran desert scrub habitats with gravelly soils. Found at elevations of 90 - 670 meters. Known blooming period of April – September.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
ashgray Indian paintbrush (*Castilleja cinerea*)	FT, 1B.2, USFS	Found in openings within Mojavean desert scrub, Meadows, seeps, Pebble (Pavement) plain, Pinyon/juniper woodland, and Upper montane coniferous forest habitats with clay soils at elevations of 1800 - 2960 meters. Known blooming period of June – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Wheeler's skeletonweed (*Chaetadelpha wheeleri*)	2.2	Occurs in Desert dunes, Great Basin scrub, and Mojavean desert_scrub habitats with sandy soils at elevations of 850 - 1900 meters. Known blooming period of April – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Tecopa bird's beak (*Chloropyron tecopense*)	1B.2	Found in mesic Mojavean desert scrub, meadows and seeps with alkaline soils. Found at elevations of 60 - 900 meters. Known blooming period of July – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
white bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)	1B.2, BLM	Found in coastal scrub, Mojavean desert scrub, Pinyon/juniper woodland habitats with sandy or gravelly soils at elevations of 300 - 1200 meters. Known blooming period of April – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Hall's meadow hawksbeard (*Crepis runcinata* ssp. *hallii*)	2.1	Found in mesic areas of Mojavean desert scrub and Pinyon/ juniper woodland habitats with alkaline soils at elevations of 1250 - 1978 meters. Known blooming periods of May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Clokey's cryptantha (*Cryptantha clokeyi*)	1B.2, BLM	Found in Mojavean desert scrub habitat at elevations of 725 - 1365 meters. Known blooming period of April.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
desert cymopterus (*Cymopterus deserticola*)	1B.2, BLM	Found in Joshua tree woodland and Mojave desert scrub habitats with sandy soils. Occurs at elevation of 630 - 1500 meters. Known only to occur in Kern, Los Angeles, and San Bernardino Counties. Known blooming period of March – May.	Low	CNDDB occurrences and suitable habitat present within project area.
Arizona cymopterus (*Cymopterus multinervatus*)	2.2	Found in Mojavean desert scrub, Pinyon/juniper woodland habitats with sandy or gravelly soils at elevations of 790 - 1800 meters. Known blooming period March – April.	**High**	CNDDB occurrences and suitable habitat present within project area.
San Bernardino Mountains dudleya (*Dudleya abramsii* ssp.*affinis*)	1B.2, USFS	Found in Pebble (Pavement) plain, Pinyon/juniper woodland, and Upper montane coniferous forest habitats with granitic or carbonate soils at elevations of 1250 - 2600 meters. Known blooming period of April – June.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Howe's hedgehog cactus (*Echinocereus engelmannii* var. *howei*)	1B.1, BLM	Found in Mojavean desert scrub habitat at elevations of 430 - 775 meters. Known blooming period of April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Big Bear Valley sandwort (*Eremogone ursina*)	FT, 1B.2, USFS	Occurs in mesic, rocky areas within Meadows, Seeps, Pebble (Pavement) plain, Pinyon/juniper woodland at elevations of 1800 - 2900 meters. Known blooming period of May – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Harwood's eriastrum (*Eriastrum harwoodii*)	1B.2, BLM	Occurs in Desert dunes at elevations of 200 - 915 meters. Known blooming period March – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Parish's daisy (*Erigeron parishii*)	FT, 1B.1, USFS	Found in Mojavean desert scrub and Pinyon/juniper woodland habitats at elevation of 800 - 2000 meters. Known blooming period May – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
limestone daisy (*Erigeron uncialis* var. *uncialis*)	1B.2, USFS	Found in Great Basin scrub, Pinyon/juniper woodland, and Subalpine coniferous forest habitats at elevations of 1900 - 2900 meters. Known blooming period of May – July.	Low	No CNDDB occurrences near project area. Project is outside of species range
Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*)	FE, 1B.1, USFS	Found in Joshua tree woodland, Mojavean desert scrub, and pinyon/ juniper woodland habitats. Found at elevations of 1400 - 2440 meters. Known blooming period is May – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Thorne's buckwheat (*Eriogonum thornei*)	SE, 1B.2, BLM	Occurs in Pinyon/juniper woodlands with gravelly soils at elevations of 1800 - 1830 meters. Known blooming period is July – August.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Barstow woolly sunflower (*Eriophyllum mohavense*)	1B.2, BLM	Occurs in desert dunes, great basin scrub, and sonorant desert scrub. Found at elevations of 500 - 960 meters. Known blooming period is March – May.	**High**	CNDDB occurrences and suitable habitat present within project area.
pungent glossopetalon (*Glossopetalon pungens*)	1B.2, BLM	Found in Chaparral and Pinyon/juniper woodland habitats with carbonate soils at elevations of 1675 - 2000 meters. Known blooming period is May – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Jaeger's ivesia (*Ivesia jaegeri*)	1B.3, BLM	Found in Pinyon/juniper woodland and Upper montane coniferous forest habitats with carbonate, or rocky soils at elevations of 1830 - 3600 meters. Known blooming period is June – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Kingston Mountains ivesia (*Ivesia patellifera*)	1B.3	Occurs in Pinyon and juniper woodland with rock soils at elevation of 1400 - 2100 meters. Species is only known from San Bernardino County. Known blooming period is June – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
hillside wheat grass (*Leymus salinus* ssp. *mojavensis*)	2.3	Found in rocky areas of Pinyon and juniper woodlands at elevation of1350 - 2135 meters. Known blooming period is May – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Baldwin Lake linanthus (*Linanthus killipii*)	1B.2, USFS	Found in Joshua tree woodland, Meadows and seeps, Pebble (Pavement) plain, and Pinyon/juniper woodland habitats at elevations of1700 - 2400 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Little San Bernardino Mtns. linanthus (*Linanthus maculatus*)	1B.2, BLM	Found in desert dunes, Joshua tree woodland, Mojavean desert scrub, and Sonoran desert scrub habitat. Occurs at elevation from 195 - 2075 meters. Blooming Period March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)	2.2, BLM	Occurs in desert dunes, Great Basin scrub, Sonoran desert scrub habitats with sandy soils Elevation range of species is 700 - 1615 meters. Known blooming period is April – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Parish's desert thorn (*Lycium parishii*)	2.3	Found in Coastal scrub and Sonoran desert scrub habitats at elevations of 305 - 1000 meters. Known blooming period is March – April.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
spearleaf (*Matelea parvifolia*)	2.3, USFS	Occurs in rocky areas of Mojavean desert scrub and Sonoran desert scrub habitats at elevations of 440 - 1095 meters. Known blooming period is March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Mojave menodora (*Menodora spinescens* var. *mohavensis*)	1B.2	Occurs on Andesite gravel, rocky hillsides, and canyons in Mojavean desert scrub. Found at elevations of 690 - 2000 meters. Species is only known from 13 occurrences in San Bernardino and Riverside Counties. Known blooming period is April to May.	**High**	CNDDB occurrences and suitable habitat present within project area.
polished blazingstar (*Mentzelia polita*)	1B.2, BLM	Found in Mojavean desert scrub with carbonate soils at elevations of 1200 - 1500 meters. Known blooming period is April – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Argus blazing star (*Mentzelia puberula*)	2.2	Found in Mojavean desert scrub and Sonoran desert scrub habitats with sandy or rocky soils at elevations of 90 - 1280 meters. Known blooming period is March – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
spinyhair blazing star (*Mentzelia tricuspis*)	2.1	Known to occur in sandy, gravelly, slopes, and washes of Mojavean desert scrub. Found at elevations of 150 - 1280 meters. Known blooming period is March – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
threetooth blazing star (*Mentzelia tridentata*)	1B.3, BLM	Occurs in rocky, gravelly, and sandy areas Mojavean desert scrub habitat. Found at elevation of 700 - 1160 meters Known blooming period is March – May.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
San Bernardino Mountains monkeyflower (*Mimulus exiguus*)	1B.2, USFS	Found on sandy or gravelly soils, often in washes, of Joshua tree woodland, and Mojavean desert scrub habitats. Occurs at elevation of 600 - 1200 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Mojave monkeyflower (*Mimulus mohavensis*)	1B.2, BLM	Found on sandy or gravelly soils, often in washes, of Joshua tree woodland, and Mojavean desert scrub habitats. Occurs at elevation of 600 - 1200 meters. Known blooming period is April – June.	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
Boyd's monardella (*Monardella boydii*)	1B.2	Found in Mojavean desert scrub, Pinyon/juniper woodland, and Riparian scrub habitats. Usually occurs in alluvial soils and cracks of bedrock in washes on canyon bottoms and rocky slopes at elevations of 1400 - 1650 meters. Known blooming period is Aug-Oct.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Robinson's monardella (*Monardella robisonii*)	1B.3	Occurs in Pinyon/juniper woodland habitat. Found at elevations of 610 - 1500 meters. Known blooming period is February – October.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
appressed muhly (*Muhlenbergia appressa*)	2.2	Found in rocky areas of Coastal scrub, Mojavean desert scrub, and Valley/foothill grassland habitats at elevations of 20 - 1600 meters. Known blooming period is April – May.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Baja navarretia (*Navarretia peninsularis*)	USFS	Occurs in mesic areas with openings within Chaparral, Lower montane coniferous forest, Meadows and seeps, and Pinyon/juniper woodland at elevations of 1500 - 2300 meters. Known blooming period is June – August.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Amargosa niterwort (*Nitrophila mohavensis*)	FE, SE	Occurs in Playas (mesic, clay) Found at elevations 425 - 750 meters. Known blooming period is May – October.	Low	No CNDDB occurrences near project area. Project is outside of species range.
short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)	1B.2, USFS	Occurs in chaparral, Joshua tree woodland, pinyon/juniper woodland, and Mojavean desert scrub habitats. Found in areas of 1225-2300 meters. Known blooming period is April – August.	**Medium**	CNDDB occurrences and suitable habitat present within project area.
Rock Creek broomrape (*Orobanche valida* ssp.*valida*)	1B.2, USFS	Found in Chaparral, Pinyon/juniper woodland habitats with granitic soils at elevations of 1250 - 2000 meters. Known blooming period is May – September.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
San Bernardino ragwort (*Packera bernardina*)	1B.2, USFS	Found in mesic areas of Meadows and seeps, Pebble (Pavement) plain, and Upper montane coniferous forest habitats at elevations of 1800 - 2300 meters. Known blooming period is May – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Indian breadroot (*Pediomelum castoreum*)	1B.2, BLM	Occurs on sandy soils of washes and road cuts of Joshua tree woodland Mojavean desert scrub habitats. Found at elevation 610 - 1525 meters. Known blooming period is April - May	**High**	Numerous CNDDB occurrences within project area. Suitable habitat present within project area.
white margined beardtongue (*Penstemon albomarginatus*)	1B.1	Occurs in Desert dunes and Mojavean desert scrub habitats with sandy soils. Found at elevation of 640 - 1065 meters. Known blooming period is March – May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
pinto beardtongue (*Penstemon bicolor* ssp. *roseus)*	1B.1, BLM	Occurs in rocky or gravelly, sometimes disturbed areas of Joshua tree woodland and Mojavean desert scrub habitats at elevations of 700 - 1500 meters. Known blooming period is May.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Death Valley beardtongue (*Penstemon fruticiformis* var. *amargosae*)	1B.3	Found in Mojavean desert scrub habitat at elevations of 850 - 1400 meters. Known blooming period is April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Stephens' beardtongue (*Penstemon stephensii*)	1B.3	Found in Mojavean desert scrub and Pinyon/ juniper woodland habitat with rocky soils. Occurs at elevation of 1160 - 1850 meters Known blooming period is April – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Death Valley sandpaper plant (*Petalonyx thurberi* ssp.*gilmanii*)	1B.3	Occurs in Desert dunes and Mojavean desert scrub habitats. Found at elevations of 260 - 1445 meters. Known blooming period is May – September.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Death Valley round leaved phacelia (*Phacelia mustelina*)	1B.3, BLM, USFS	Found in Mojavean desert scrub and Pinyon/juniper woodland habitats with gravelly or rocky soils at elevations of 730 - 2620 meters. Known blooming period is May – July.	Low	No CNDDB occurrences near project area. Project is outside of species range.
Parish's phacelia (*Phacelia parishii*)	1B.1, BLM	Found in Mojavean desert scrub and Playas habitats with clay or alkaline soils. Occur at elevation of 540 - 1200 meters. Known blooming period is April – July.	**Medium**	CNDDB occurrences and suitable habitat present within project area.

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Parish's popcorn flower (*Plagiobothrys parishii*)	1B.1	Occurs on alkaline, mesic areas of Great Basin scrub and Joshua tree woodland habitats at elevations of 750 - 1400 meters. Known blooming period is March – November.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Latimer's woodland gilia (*Saltugilia latimeri*)	1B.2, BLM, USFS	Found in Chaparral, Mojavean desert scrub, and Pinyon and juniper woodland habitats with rocky or sandy soils at elevations 400 - 1900 meters. Known blooming period March – June.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
Rusby's desert-mallow (*Sphaeralcea rusbyi* var. *eremicola*)	1B.2, BLM	Found in Joshua tree woodland and Mojavean desert scrub habitats at elevations of 975 - 1645 meters. Known blooming period is March – June.	Low	No CNDDB occurrences near project area. Project is outside of species range.
southern jewel flower (*Streptanthus campestris*)	1B.3, USFS	Found in rocky areas of Chaparral, Lower montane coniferous forest, and Pinyon and juniper woodland habitats at elevations of 900 - 2300 meters. Known blooming period is April – July.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.
rigid fringepod (*Thysanocarpus rigidus*)	1B.2, BLM	Occurs on dry, rocky slopes of Pinyon and juniper woodlands at elevations of 600 - 2200 meters. Known blooming period February – May.	Low	No CNDDB occurrences near project area. Project is outside of species range.
jackass clover (*Wislizenia refracta* ssp. *refracta*)	2.2	Found in Desert dunes, Mojavean desert scrub, Playas, and Sonoran desert scrub habitat at elevations of 600 - 800 meters. Known blooming period is April – November.	Low	Potential suitable habitat present within project area. No CNDDB occurrences near project area.

Key:

BLM = Bureau of Land Management listed as Sensitive
USFS = United States Forest Service Sensitive
FE = Federally listed as Endangered
FT = Federal listed as Threatened
FC = Federal candidate for listing under the Endangered Species Act
FD = Federally delisted
FPE = Federally proposed for listing as Endangered
FPT = Federally proposed for listing as Threatened
SC = State proposed for listing
SE = State-listed as Endangered
ST = State-listed as Threatened
SWL= California Department of Fish and Game (CDFW) Watch List Species
SSC = California Department of Fish and Game (CDFW) Species of Special Concern
SFP = California Department of Fish and Game (CDFW) Fully Protected Species
SR = State Rare
BCC= United States Fish and Wildlife Service_ Birds of Conservation Concern

California Native Plant Society System:
1A = Presumed extinct in California
1B = Rare or Endangered in California and elsewhere
2 = Rare or Endangered in California, more common elsewhere
3 = Plants for which we need more information - Review list
4 = Plants of limited distribution - Watch list
.1 = Seriously endangered in California (over 80% of occurrences threatened)
.2 = Fairly endangered in California (20-80% occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known

Attachment B

Plant Species Observed

Scientific Name	Common Name	Family	Native –Non-Native
Achnatherum hymenoides	Indian rice grass	*Poaceae*	Native
Allium fimbriatum	Wild onion	*Alliaceae*	Native
Ambrosia acanthicarpa	Burrweed	*Asteraceae*	Native
Ambrosia dumosa	White bursage	*Asteraceae*	Native
Amsinckia tessellata	Fiddleneck	*Baraginaceae*	Native
Argemone corymbosa	Mojave prickly poppy	*Papaveraceae*	Native
Artemisia californica	California sagebrush	*Asteraceae*	Native
Artemisia spinescens	Budsage	*Asteraceae*	Native
Atriplex canescens	Fourwing saltbush	*Chenopodiaceae*	Native
Atriplex parryi	Parry's saltbush	*Chenopodiaceae*	Native
Atriplex polycarpa	Allscale	*Chenopodiaceae*	Native
Atriplex hymenlytra	Desert holly	*Chenopodiaceae*	Native
Brassica nigra	Black mustard	*Brassicaceae*	Non-Native
Bromus rubens	Red brome	*Poaceae*	Non-Native
Bromus tectorum	Cheatgrass	*Poaceae*	Non-Native
Camissonia boothii	**Booth's evening-primrose**	***Onagraceae***	**Native**
Camissonia campestris	Mojave suncup	*Onagraceae*	Native
Camissonia claviformis	Brown eyed primrose	*Onagraceae*	Native
Chaenactis fremontii	Pincusion flower	*Asteraceae*	Native
Chrysothamnus viscidiflorus	Yellow rabbit brush	*Asteraceae*	Native
Cleomella obtusifolia	Bluntleaf stinkweed	*Cleomaceae*	Native
Croton californicus	Croton	*Euphorbiaceae*	Native
Cryptantha circumscissa	Forget me not	*Boraginaceae*	Native
Cylindropuntia ramosissima	Branched pencil cholla	*Cactaceae*	Native
Descurainia pinnata	Tansy mustard	*Brassicaceae*	Native
Dieteria canescens	Hoary aster	*Asteraceae*	Native
Echinocactus polycephalus	Cottontop cactus	*Cactaceae*	Native
Encelia actoni	Acton's encelia	*Asteraceae*	Native

Scientific Name	Common Name	Family	Native –Non-Native
Encelia farinosa	Brittlebush	*Asteraceae*	Native
Encelia frutescens	Bush encelia	*Asteraceae*	Native
Ephedra californica	Desert tea	*Ephedraceae*	Native
Ephedra viridis	Mormon tea	*Ephedraceae*	Native
Ephedra nevadensis	Nevada joint fir	*Ephedraceae*	Native
Eriastrum eremicum	Desert wooly star	*Polemoniaceae*	Native
Ericameria laricifolia	Trupentine bush	*Asteraceae*	Native
Ericameria nauseosa	Rubber rabbit brush	*Asteraceae*	Native
Eriodictyon trichocalyx	Hairy yerba santa	*Boraginaceae*	Native
Eriogonum fasciculatum	California buckwheat	*Polygonaceae*	Native
Eriogonum inflatum	Desert trumpet	*Polygonaceae*	Native
Eriogonum sp.	Buckwheat	*Polygonaceae*	Unknown
Eriophyllum wallacei	Wallace eriophyllum	*Asteraceae*	Native
Erodium cicutarium	Storksbill	*Geraniaceae*	Non-Native
Eschscholzia minutiflora	Pygmy poppy	*Papaveraceae*	Native
Euphorbia albomarginata	Rattlesnake spruge	*Euphorbiaceae*	Non-Native
Ferocactus cylindraceus var. cylindraceus	California barrel cactus	*Cactaceae*	Native
Grayia spinosa	Hopsage	*Chenopodiaceae*	Native
Hesperoyucca whipplei	Chaparral yucca	*Agavaceae*	Native
Hirschfeldia incana	Sahara mustard	*Brassicaceae*	Non-Native
Hymenoclea salsola	Cheese bush	*Asteraceae*	Native
Juniperus Californica	California Juniper	*Cupressaceae*	Native
Larrea tridentata	Creosote bush	*Zygophylaceae*	Native
Lupinus sp.	Lupine	*Fabaceae*	Unknwon
Lycium andersonii	Anderson's thorn bush	*Solanaceae*	Native
Malacothrix glabrata	Desert dandelion	*Asteraceae*	Native
Mentzelia albicaulis	Small flowered blazing star	*Loasaceae*	Native
Mirabilis multiflora	Desert four o clock	*Nyctaginaceae*	Native

Scientific Name	Common Name	Family	Native –Non-Native
Nama demissum	Purple mat	*Hyrophllaceae*	Native
Opuntia basilaris	Beavertail cactus	*Cactaceae*	Native
Opuntia echinocarpa	Silver cholla	*Cactaceae*	Native
Pectocarya penicillata	Baja pectocarya	*Boraginaceae*	Native
Pectocarya platycarpa	Broad nutted comb bur	*Boraginaceae*	Native
Phacelia distans	Common phaceila	*Hyrophyllaceae*	Native
Phacelia sp.	Phaceila	*Hydrophyllaceae*	Unknown
Platanus racemosa	Sycamore	*Platanaceae*	Native
Populus fremontii	Freemont cottonwood	*Salicaceae*	Native
Psorothamnus schottii	Indigo bush	*Fabaceae*	Native
Salix exigua	Narrow leaved willow	*Salicaceae*	Native
Salix laevigata	Red willow	*Salicaceae*	Native
Salix lasiolepis	Arroyo willow	*Salicaceae*	Native
Salsola tragus	Russian thistle	*Chenopdiaceae*	Non-Native
Sambucus nigra	Black elderberry	*Adoxaceae*	Native
Schinus molle	Peruvian pepper tree	*Anacardiaceae*	Non-Native
Schismus barbatus	Mediterranean grass	*Poaceae*	Non-native
Solanum sp.	Nightshade	*Solanaceae*	Unknown
Stephanomeria pauciflora	Desert straw	*Asteraceae*	Native
Suaeda moquinii	Mojave seablite	*Chenopodaceae*	Native
Tamarix sp.	Salt cedar	*Tamaricaceae*	Non-Native
Vulpia myuros	Rattail fescue	*Poaceae*	Non-Native
Xylorhiza tortifolia	Mojave woodystar	*Asteraceae*	Native
Yucca brevifolia	Joshua tree	*Agavaceae*	Native
Yucca schidigera	Mojave yucca	*Agavaceae*	Native

Bold print signifies a special-status species

FOCUSED DESERT TORTOISE SURVEY
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
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Table of Contents

List of Tables

List of Figures

List of Attachments

1.0 INTRODUCTION

This report documents and describes the existing conditions regarding desert tortoise (*Gopherus agassizii)* in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to desert tortoise that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

1.3 Species Description

The desert tortoise is widely distributed in the Mojave and Sonoran deserts from below sea level to approximately 2,200 meters (7,217 feet). This species occurs in almost every desert habitat, but is most common in desert scrub, desert wash, and Joshua tree habitats. Highest densities of tortoise typically occur in creosote bush communities with extensive annual wildflower blooms.

Tortoises require friable, sandy, well-drained soil for excavation of nests and burrows. Burrows are crucial to survival, especially in areas of extreme temperatures. For shelter, this species normally excavates a burrow under bushes, overhanging soil, or rock formations, and may dig into open soil in a clearing. On occasion, a tortoise will take cover under a bush or any natural shelter. Desert tortoises are known to utilize an average of 7-12 burrows at any given time (BLM 2006).

Desert tortoises are mostly herbivorous, eating both annual forbs and grasses. In general, forbs are preferred over grasses, and green vegetation is preferred over dry. Rabbits and other small

mammals likely compete with tortoises for these available food resources. Tortoises do not require water, but they will drink it if it is available.

Home range size seems to depend upon the quality of the habitat. In the western Mojave, home ranges are approximately 2 to 15 hectares (5 to 38 acres). Desert tortoise densities can vary greatly, ranging from 3.5 per square kilometer (9.2 per square mile) in the eastern Mojave to more than 1,000 per square kilometer (2,600 per square mile) in the western Mojave.

Desert tortoises may be active at any time of year, but most activity takes place between March and June and, to a lesser extent, in late summer in areas with summer rains. In early spring, they may be active all day, but by late spring, activity is typically reduced to less than 1 hour in the early morning. Tortoises are aggressive and may defend their home territories. Mating begins shortly after they become active in late March or early April, and eggs are laid in early summer (late May to July) with clutches averaging two to nine eggs per nest. These clutches take approximately three to four months to hatch. Nests are often constructed at the entrance to burrows. The absence of rainfall for prolonged periods and consequent scarcity of annual plants may result in a decrease in reproduction.

Threats to desert tortoises include loss or degradation of habitat, vandalism, poaching, intentional killing, predation on young tortoises by the common raven and other predators (e.g., kit fox, snakes, etc.), and disease. Off-road vehicles, military training maneuvers, mining, and livestock grazing also affect tortoise habitat by collapsing burrows, eroding soils, reducing availability of food plants, eliminating shrubs which would provide shade for tortoises and support for their burrows. These activities also result in surface disturbance that promotes conditions more conducive to invasion by exotic plant species, which provide less nutritional value to tortoises than the native species that were replaced. Human activities, including dumping of garbage, landfills, and roads, increased common raven nesting opportunities, irrigation, and increased vehicle use have led to increased numbers of common ravens in California deserts. Increased predation on young tortoises by common ravens reduces recruitment into breeding populations.

More recently, a mycoplasmic respiratory disease, mycoplasmosis, has been detected in desert tortoises. *Mycoplasma agassizzii* is the organism responsible for the primary disease, several secondary diseases, and complications which are ultimately responsible for the animal's death. The disease is most prevalent in the western Mojave but it also infects tortoises elsewhere in California and in Utah, Nevada, Arizona, Mexico, and in captive tortoise populations. The disease can be fatal and is apparently spreading through wild populations.

1.4 Regulatory Setting

Desert tortoises are protected under various federal and state laws and regulations that include: the Endangered Species Act of 1973 (ESA), and the California Endangered Species Act (CESA). These laws aim to protect special-status and non-game species. These laws, regulations, and codes are detailed in the General Habitat Assessment Report (BioResource Consultants 2013).

The BLM and California Department of Fish and Wildlife (CDFW) in 1992 developed the *California Statewide Desert Tortoise Management Policy* to address declining populations of desert tortoise in the West Mojave Desert. This policy—a product of a 1986 multi-interest

workgroup—established definitive recommendations for improved protection of desert tortoise populations and habitat.

In this wide-ranging policy document, procedures were established to secure adequate compensation habitat and ensure compatible public land uses in varying quality desert tortoise habitats. Three categories of habitats (I, II, and III) were recognized which addressed their importance to maintaining long-term viability of remaining populations on public lands. Four criteria were the basis for this categorization system. They included: 1) importance of the habitat for maintaining viable populations, 2) resolvability of conflicts, 3) tortoise densities, and 4) population statistics (stable, increasing, or decreasing).

The goals for BLM Category I habitat—the highest priority category which encompassed those areas considered to support the highest quality habitats and largest desert tortoise populations—were to "maintain stable, viable populations and protect existing tortoise habitat values; increase populations, where possible." The goals for BLM Category II habitat were to "maintain stable, viable populations and halt further declines in tortoise habitat values." Lastly, the goals for BLM Category III habitat were to "limit tortoise habitat and population declines to the extent possible by mitigating impacts." At that time, BLM and CDFW did not consider Category III habitats essential to maintaining viable populations of the species; these habitats were generally known for irreconcilable land use conflicts, were in proximity to rapidly urbanizing landscapes, consisted of low- to medium-density habitat not contiguous with medium- or high-density habitat areas, and habitat where there a stable or decreasing population was present. Category III habitat is generally recognized as having relatively low tortoise densities and previous disturbance. The 1992 Statewide Policy was envisioned to be applied to both public lands managed by the BLM and private land development regulated by the CDFW.

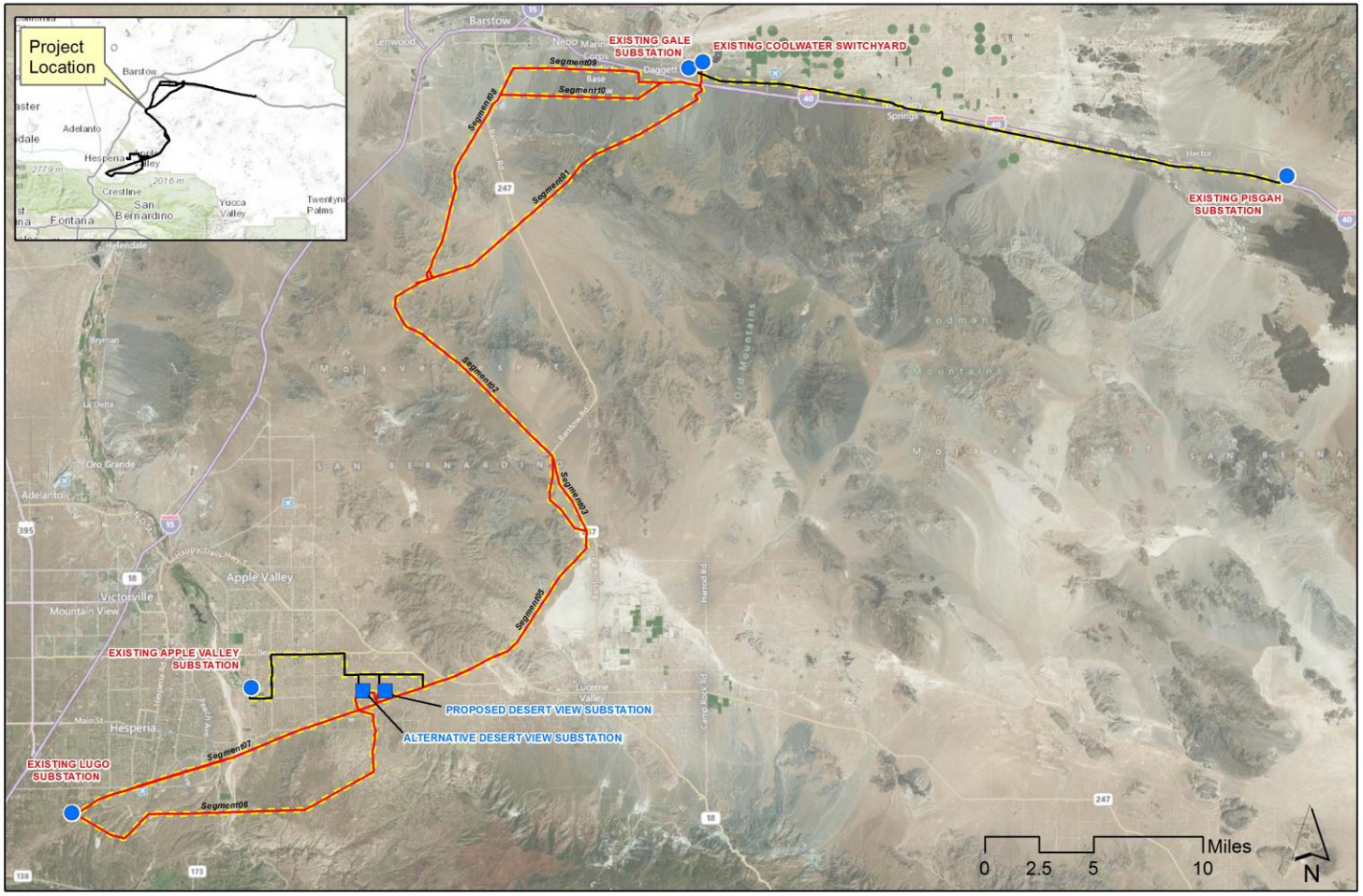
Because the BLM habitat categorization system, by definition, only applied to public lands, the CDFW subsequently developed a desert tortoise "Crucial Habitat" map applicable to all state and private lands in the region. The boundaries of the CDFW-designated Desert Tortoise Crucial Habitat Areas closely coincided with the BLM Category I and II Desert Tortoise Habitat Areas. The CDFW, however, did not identify areas consistent with the BLM Category III habitat or non-habitats. Over time, crucial habitat references were virtually replaced with the BLM habitat categories by all involved regulatory agencies in applying the objectives of the California Statewide Desert Tortoise Management Policy to regulatory actions.

In 1994, the U.S. Fish and Wildlife Service (USFWS) designated approximately 6.4 million acres as "critical habitat" for the Mojave population of the desert tortoise (USFWS 1994a). Critical habitat is defined as those areas that contain constituent habitat or biological elements considered essential to the conservation of the species, regardless of whether the species currently occupied those areas (ESA, as amended, Section 3).

Also in 1994, the USFWS published the *Desert Tortoise (Mojave Population) Recovery Plan* (USFWS 1994b). Developed by a national team of specialists referred to as "the Desert Tortoise Recovery Team," this recovery plan identified threats to the desert tortoise and its habitat. It also recommended actions to recover tortoise populations to the point where the species would persist as viable populations in the wild and eventually be removed from protections provided by the ESA.

The West Mojave Plan (BLM 2006) is a habitat conservation plan and federal land use plan amendment that: 1) presents a comprehensive strategy to conserve and protect the desert tortoise, the Mojave ground squirrel and nearly 100 other sensitive plants and animals and the natural communities of which they are a part, and 2) provides a streamlined program for complying with the requirements of the CESA and ESA.

Figure 1. Project Location



2.0 METHODOLOGY

Prior to conducting surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain pertinent information regarding desert tortoise. The results of these preliminary database searches provided a basis for addressing the appropriate special-status species in the footprint of existing infrastructure (substations, access roads, and crane pads), proposed additional workspace (spur roads, temporary and permanent drill and crane pads, pulling and stringing sites), and immediate surroundings (collectively referred to as the Project Area). Additionally, literature was reviewed to identify potential special-status flora or fauna within 5 miles of the Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area.

2.1 Literature and Database Review

Information about documented desert tortoises and their habitat was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include:

U.S. Bureau of Land Management. 2006. West Mojave Plan. Land management plan prepared by BLM.

U.S. Fish and Wildlife Service (USFWS). 1992a. Field survey protocol for any federal action (or non-federal action) that may occur within the range of the Desert Tortoise. Regions, 1, 2, and 6 of the Fish and Wildlife Service. October 1992. 18 pp. plus appendices.

USFWS. 1992b. Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise. Unpublished paper distributed by the USFWS.

USFWS. 1994. Desert Tortoise (Mojave Population) Recovery Plan. USFWS, Portland, Oregon. 73pp. + appendices.

2.2 Survey Methods

Surveys conducted during the General Habitat Assessment identified desert tortoise, suitable desert tortoise habitat, and tortoise sign along much of the Project Area. Habitat was classified into three distinct classes (high quality, medium quality, and low quality). Areas of the Project alignment containing desert tortoise and sign, areas with CDNNB records documenting desert tortoise occurrences, and areas of low disturbance were classified as having high-quality desert

tortoise habitat. Areas of the Project alignment that are classified as being medium-quality desert tortoise habitat show CNDDB records of desert tortoise occurrence and have potential suitable habitat, but desert tortoises, or their sign were not observed during the General Habitat Assessment. Areas of low-quality desert tortoise habitat are characterized as being heavily disturbed, with no CNDDB record of desert tortoise occurrence, and no tortoise sign observed during the general habitat assessment. No additional surveys were conducted in areas of low-quality desert tortoise habitat.

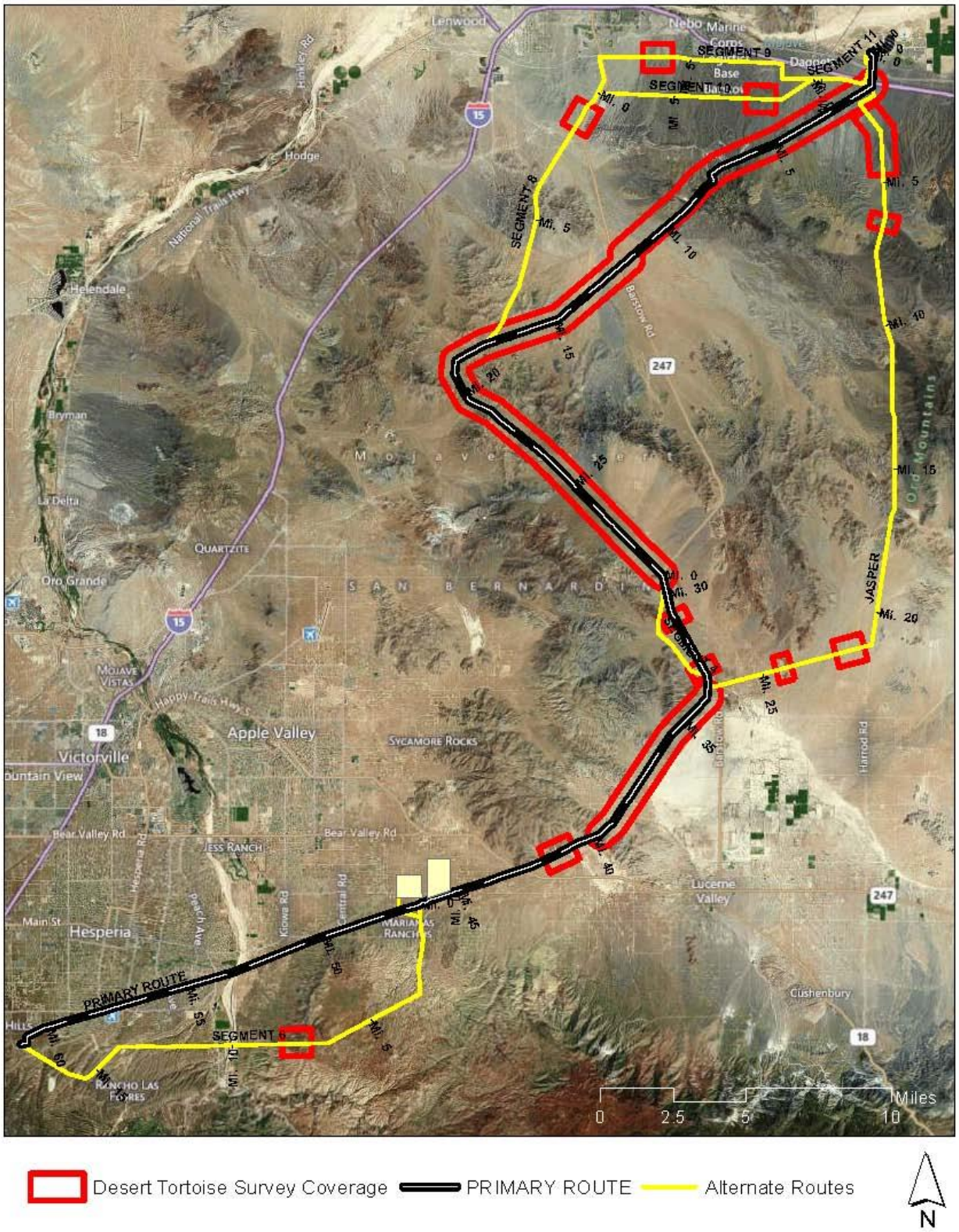
Biologists conducted focused surveys for desert tortoise within the Project alignment and along Alternative Segments in those areas identified as having suitable tortoise habitat. To provide adequate coverage of the Alternative Segments, and areas defined as having medium-quality habitat, a random sample of these areas was selected and surveyed as described below. The survey methodology, described in the 2010 Pre-project 2010 Field Season Protocol (USFWS 2010), was used to assess desert tortoise population. Surveys were conducted within the Project Area and extended to include a zone of influence (ZOI) 750 meters from the Project center line. The ZOI is delineated to account for adjacent burrows and foraging habitat outside the Project Area that could be and impacted by factors such as noise and vibration due to heavy equipment. Surveys covered 100 percent of the Project alignment by utilizing belt transects. Surveys occurred along 15 belt transects on each side of the proposed transmission line (32 transects total) which were equally spaced at 10 meters (m) (~30 feet) apart. In addition, the ZOI was covered by three additional transects at 200-meter (~655-foot) intervals parallel to the Project alignment (200 m, 400 m, and 600 m from the perimeter of the Project Area). Surveys were conducted in May-July 2012 and along portions of the revised Project in May-June 2013. **Figure 2** shows the project areas surveyed.

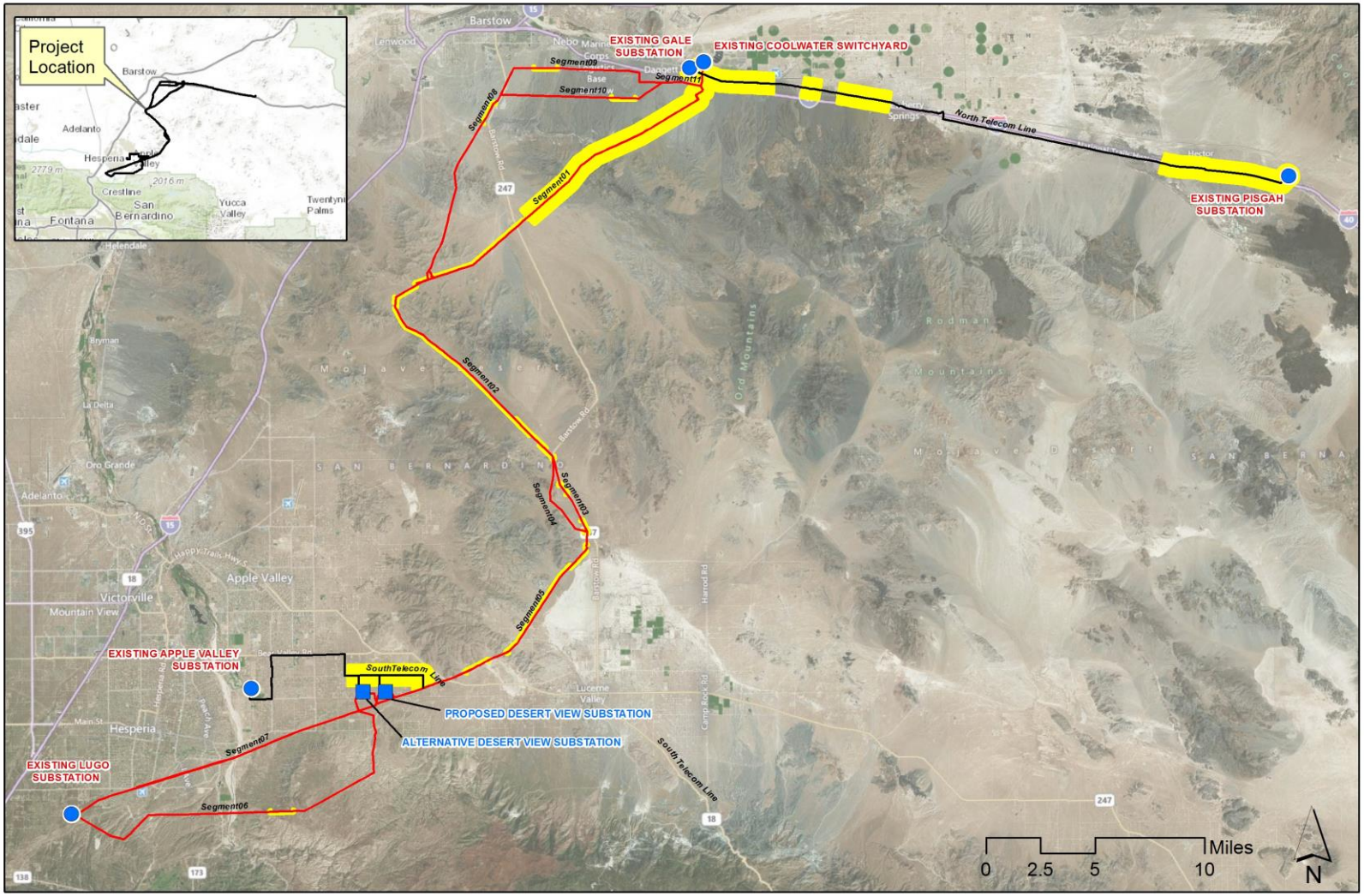
All desert tortoise sign (i.e., live tortoises, burrows, scat, carcasses and fragments thereof) was documented. All live desert tortoises were visually assessed by estimating size, sex and health. Tortoise locations were recorded with GPS units and photographed. All potential tortoise burrows, scat, and carcasses detected were recorded with GPS units and classified according to USFWS categories (class 1 through 5).

2.3 USFWS Abundance Calculations

To determine the abundance of desert tortoises within the Project Area, the data from the survey were used to calculate the 95 percent confidence intervals in accordance with USFWS protocol (USFWS 2010). The confidence interval gives an estimated range of values. The wider the confidence interval the less certainty is associated with the estimate. The USFWS uses these numbers to determine the extent of impacts on desert tortoise within the Project Area.

Figure 2. 2012 and 2013 Project Survey Coverage




Project Location
EXISTING GALE SUBSTATION
EXISTING COOLWATER SWITCHYARD
EXISTING PISGAH SUBSTATION
EXISTING APPLE VALLEY SUBSTATION
EXISTING LUGO SUBSTATION
PROPOSED DESERT VIEW SUBSTATION
ALTERNATIVE DESERT VIEW SUBSTATION
North Telecom Line
South Telecom Line
Segment01
Segment02
Segment03
Segment04
Segment05
Segment06
Segment07
Segment08
Segment09
Segment10
Segment11
Barstow
Victorville
Apple Valley
Hesperia
Adelanto
Oro Grande
Lucerne Valley
Miles
0 2.5 5 10
N
2013 Desert Tortoise Survey Coverage
CWLTP Proposed Transmission Lines
Substation
Proposed Telecommunication Lines
Proposed Substation
Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers; BingMaps (c) 2010 Microsoft Corporation and its data suppliers; SCE 2013: BRC 2013

3.0 RESULTS

As discussed above, desert tortoise habitat quality was assessed as part of the General Habitat Assessment Report (BioResource Consultants 2013). The habitat was classified into 3 distinct classes (high quality, medium quality, and low quality). Tortoises or their sign were documented along many segments of the Project Area; areas of high and medium quality habitat are located along both the Preferred and Alternative Segments. Low quality habitat is generally only present in urbanized areas, areas with extremely steep slopes, or areas of heavy disturbance. **Figure 3** presents the desert tortoise habitat classification.

Protocol-level surveys were conducted based on the results from the habitat classification. Areas of high quality desert tortoise habitat received focused surveys to locate tortoises within the Project Area and within the ZOI. A random sample of Alternative Segments and medium quality habitat provided adequate coverage of those areas. The desert tortoise surveys obtained positive results. **Table 1** presents a summary of the documented tortoise sightings and associated sign. **Figure 4 (Attachment A)** maps each documented desert tortoise sighting or associated sign. Selected photo documentation is included in **Attachment B.**

Table 1 - Documented Desert Tortoise Sightings and Sign

Project Component	Observation Type	Number of Occurrences
Preferred Route	desert tortoise	47
	desert tortoise burrow	527
	desert tortoise carcass	264
	desert tortoise scat	72
	desert tortoise tracks	7
Alternative Segments	desert tortoise	6
	desert tortoise burrow	87
	desert tortoise carcass	33
	desert tortoise scat	2
	desert tortoise tracks	1
Telecom Routes	desert tortoise	0
	desert tortoise burrow	27
	desert tortoise carcass	2
	desert tortoise scat	2
	desert tortoise tracks	0
ZOI	desert tortoise	4
	desert tortoise burrow	88
	desert tortoise carcass	75
	desert tortoise scat	33
	desert tortoise tracks	1

Note: Survey results from the previously proposed Jasper Segment are not included below since this segment is no longer part of the Project and is geographically removed from the current Project Area. Abundance calculations relying on data collected along that segment are no longer relevant to the Project. However, the Jasper Segment data is provided in the Attachments to this report for its scientific value.

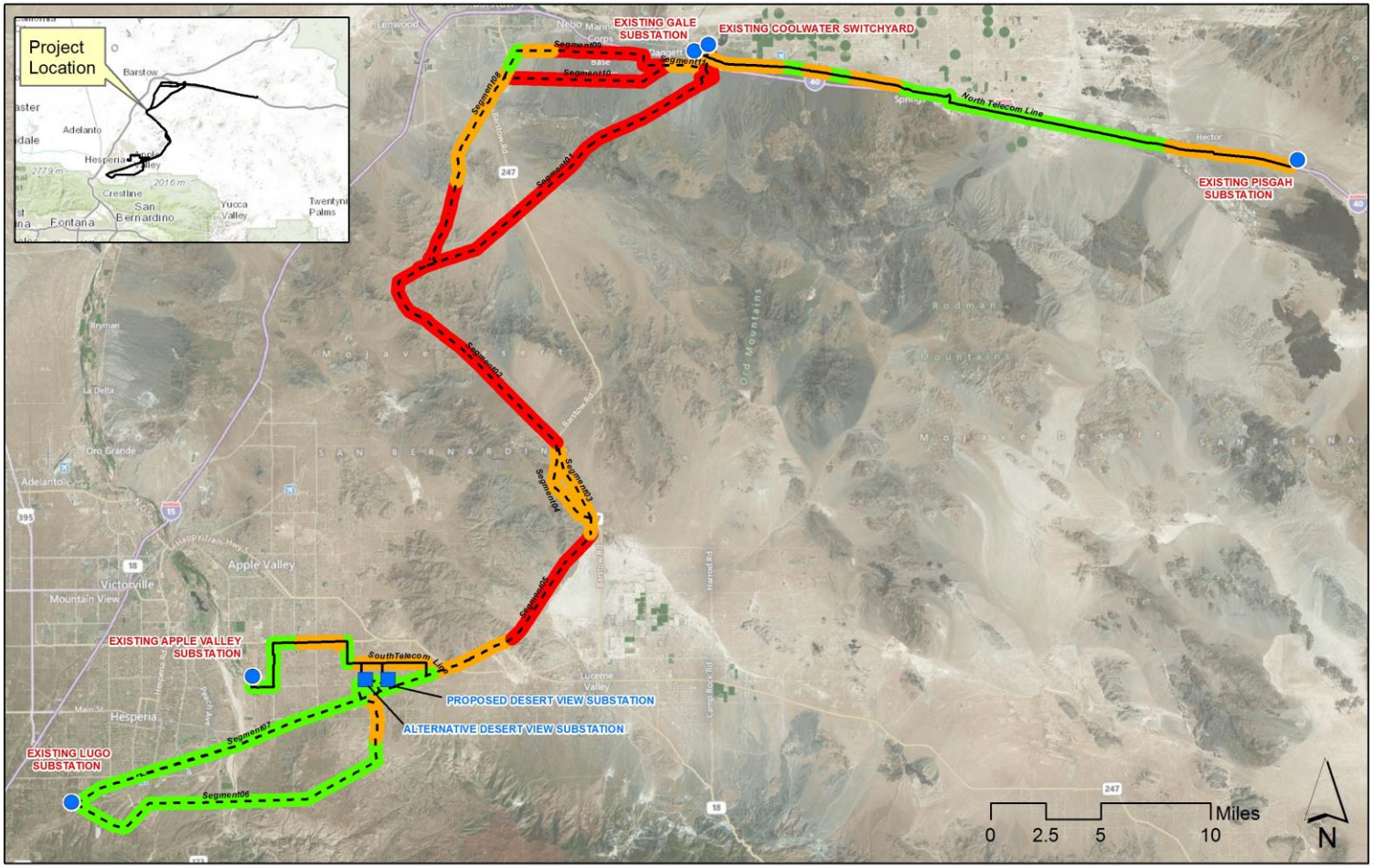
A total of 729 potential desert tortoise burrows were observed during the surveys. Burrows were described using the USFWS condition classification. 77 of the burrows discovered were definitely active desert tortoise burrows (class 1 burrow). 267 burrows were definitely tortoise but showed no sign of recent use (class 2). The remaining burrows were either collapsed tortoise burrows or were not definitely tortoise burrows but had the potential to be used by tortoises (class 3, 4, and 5).

Desert tortoise carcasses were described using the USFWS condition classification. A total of 374 desert tortoise carcasses were documented during the surveys. Only 11 carcasses were rated as class 1 or 2 which indicate that death likely occurred within the last year. The cause of death was not always easily discernible, but the majority of carcasses lacked visible trauma and therefore seem to indicate either disease or exposure as the most likely cause of death. Evidence of predation by both ravens and canine species was observed although it is not always possible to conclude whether these predators simply scavenged on an already deceased tortoise or if predation was the actual cause of death. The remaining carcasses were rated class 3, 4, or 5, indicating that death occurred a year or more past.

3.1 Abundance Calculations

To determine the abundance of desert tortoises within the Project Area, the data from the survey were used to calculate the 95 percent confidence intervals in accordance with USFWS protocol (USFWS 2010). The confidence interval gives an estimated range of values. The wider the confidence interval the less certainty is associated with the estimate. The USFWS spreadsheet used to perform the said calculations is included in **Attachment C**. Based on the calculations the number of desert tortoises associated with the Project Area is 36, with a lower 95 percent confidence interval of 17.89 and an upper 95 percent confidence interval of 73.46.

Figure 3. Desert Tortoise Habitat Classification Maps



4.0 DISCUSSION

Indirect impacts to desert tortoise may result from a variety of Project-related factors. This species is particularly at risk of injury during construction activities. The tortoise's slow rate of movement combined with its cryptic coloration creates high potential for this species to be crushed by construction equipment. In addition, tortoises or their eggs in burrows may also be crushed if their burrow is collapsed during construction activities.

The Project would result in the permanent loss of habitat. However, the loss would be spread out over the length of the project, somewhat mitigating impacts to habitat in any one area. Regardless, habitat, including prime desert tortoise habitat, would be lost and desert tortoises would be impacted.

Fugitive dust generated by project construction has the potential to decrease offsite germination of annual plant species, which comprise a large portion of the desert tortoise's diet. Additional nesting, perching, and shade opportunities would be created for the common raven, a scavenging species known to prey on hatchling and juvenile desert tortoises. Simple human presence associated with Project operations, in addition to any trash/garbage generated by Project-related activities, would likely attract common ravens to the area as well.

All of these indirect impacts to the desert tortoise are considered significant if not avoided or mitigated. Mitigation measures may include participating in a federal Section 7 consultation by the USFWS and receipt of a Project biological opinion (BO), obtaining from CDFW a CESA Section 2080.1 concurrence with the Project BO, offsite habitat compensation, and impact minimization measures for this species. A detailed discussion of these mitigation measures is provided below. The USFWS requires that surveys, in order to be accepted, must be performed within a year of the Project start date. Additional surveys will therefore be required to comply with USFWS requirements.

Recommendations

1. One or more Field Contact Representatives (FCR) shall be designated to oversee and be responsible for compliance with conditions of Project approval. The FCRs would be on site or easily accessible during all Project activities and would have the authority to halt all Project activities that are in violation of conditions of Project approval.
2. Construction and maintenance personnel outside of desert tortoise exclusion fenced areas would be required to inspect for desert tortoises under vehicles prior to moving any vehicle. If a desert tortoise is found beneath a vehicle, it would not be moved until the desert tortoise had left of its own accord. All desert tortoise observations would be reported to the authorized biologist, and subsequently, to the FCR.
3. If a desert tortoise is in imminent danger (such as from an approaching vehicle or equipment), and the desert tortoise has been given the opportunity to move but has withdrawn in its shell and is not moving, an approved authorized biologist or environmental monitor may capture the desert tortoise and place it in a clean cardboard box or similar container.
4. In accordance with "*Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise*" (USFWS 1992b), an authorized desert tortoise biologist (authorized

biologist) should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields. The authorized biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and their sign. In addition, the biologist shall have the ability to recognize and accurately record survey results.

5. Upon locating or receiving a report of a dead/injured tortoise in the Project area, the FCR or appointed agent would be required to immediately notify the local CDFW and USFWS representatives.
6. All burrows found during clearance surveys, whether occupied or vacant, would be excavated by the authorized biologist and collapsed or blocked to prevent desert tortoise reentry.
7. All desert tortoise handling/excavations, including nests, would be conducted by the authorized biologist in accordance with USFWS approved protocol.
8. Desert tortoise exclusion fencing shall be installed around long-term construction areas and laydown areas. Fencing shall be installed according to USFWS approved protocol.

5.0 LITERATURE CITED

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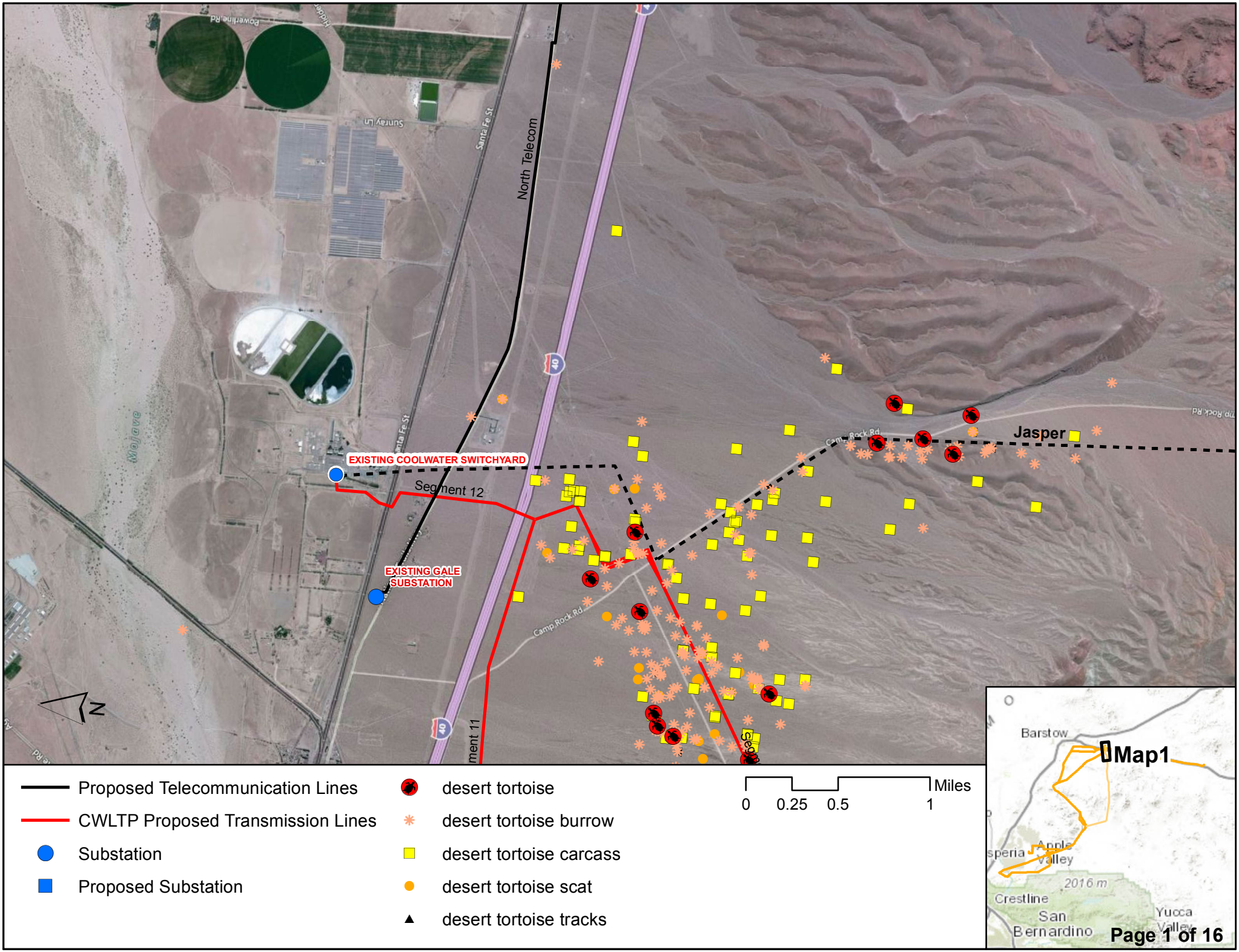
Attachment A:

Maps

Figure 4. Desert Tortoise Observations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Sunray Ln
Mojave
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
desert tortoise
desert tortoise burrow
desert tortoise carcass
desert tortoise scat
desert tortoise tracks
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Map1
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Crestline
San Bernardino
Yucca Valley
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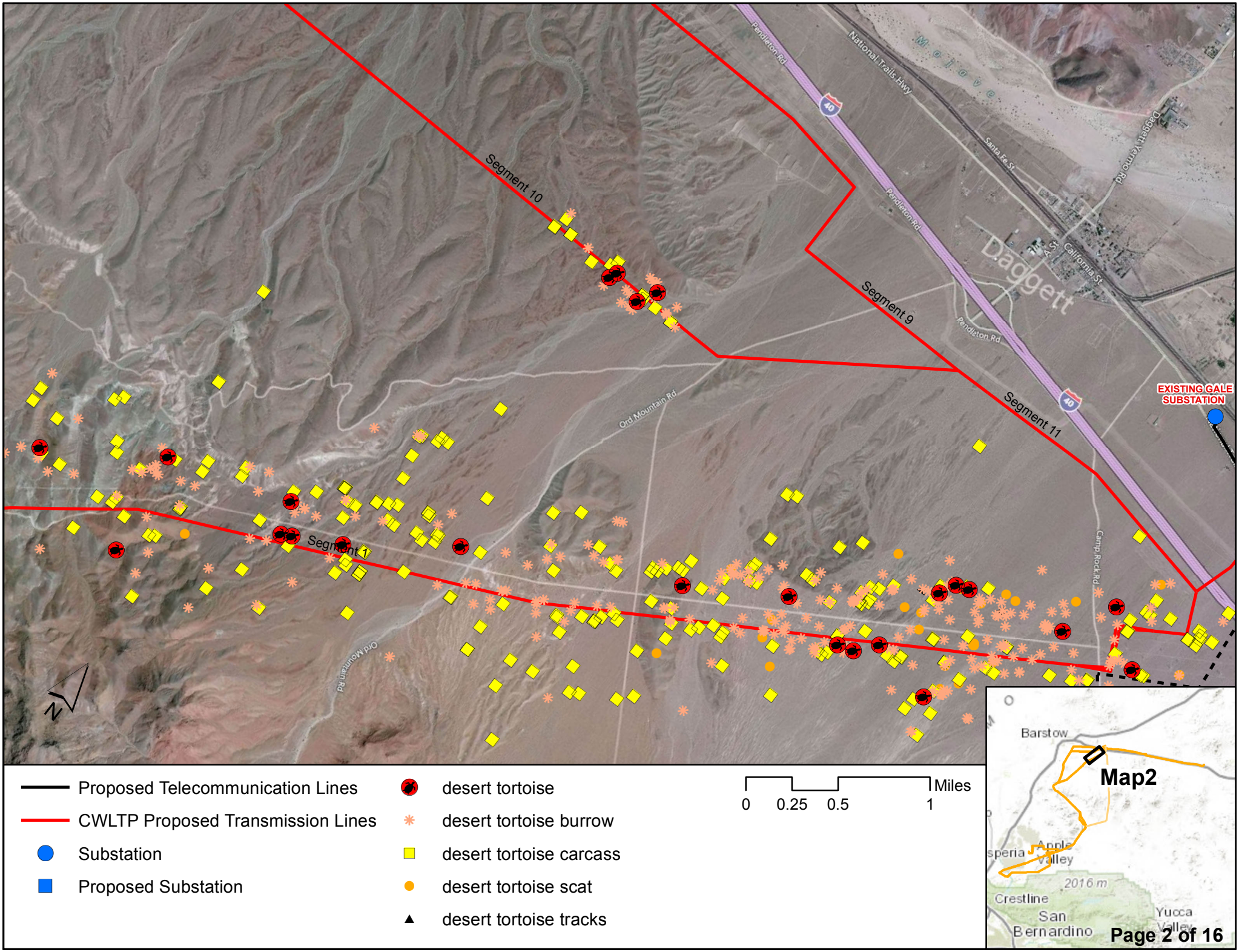
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Daggett
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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desert tortoise burrow
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Barstow
Map2
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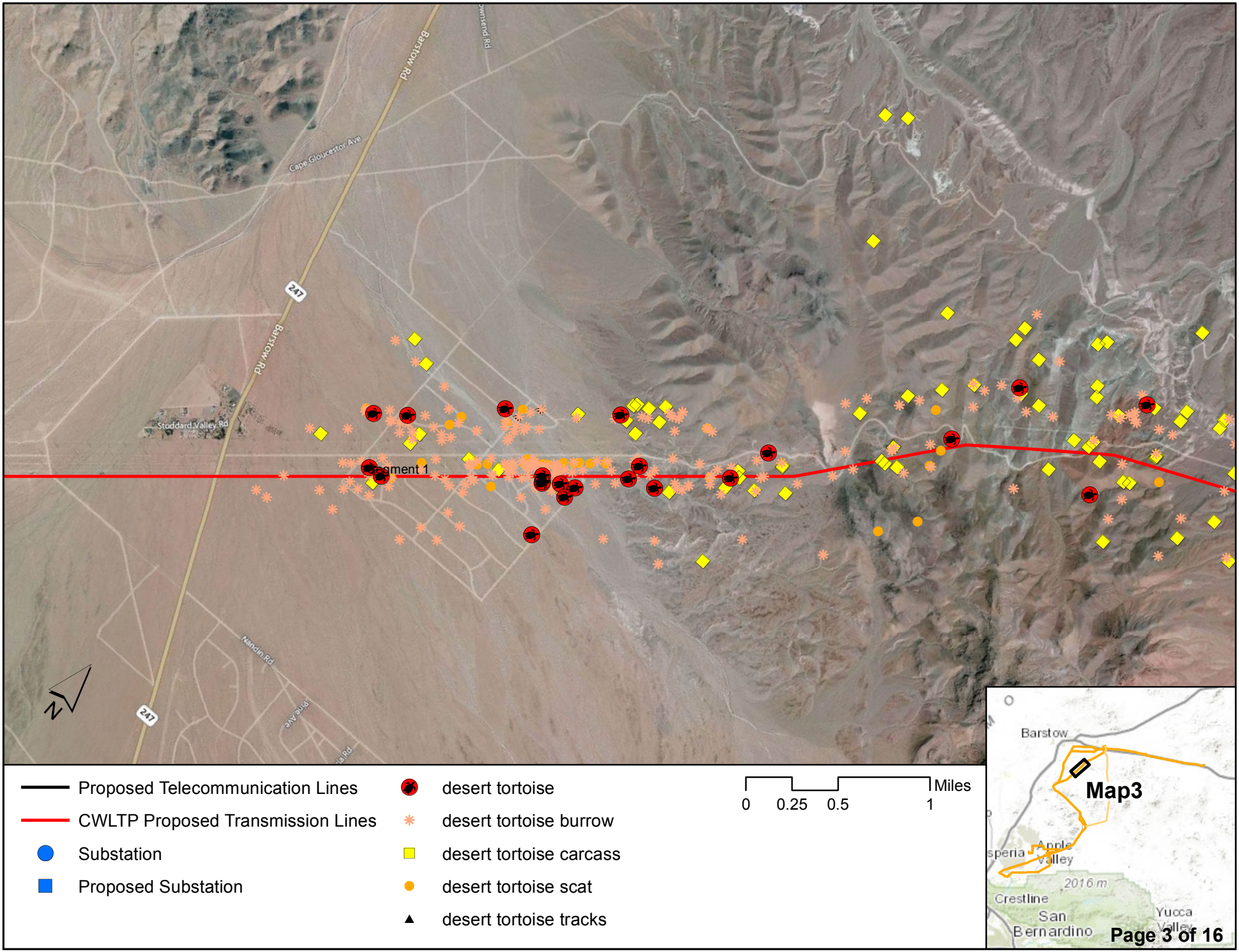
Crestline
San Bernardino
Yucca Valley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Substation
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desert tortoise carcass
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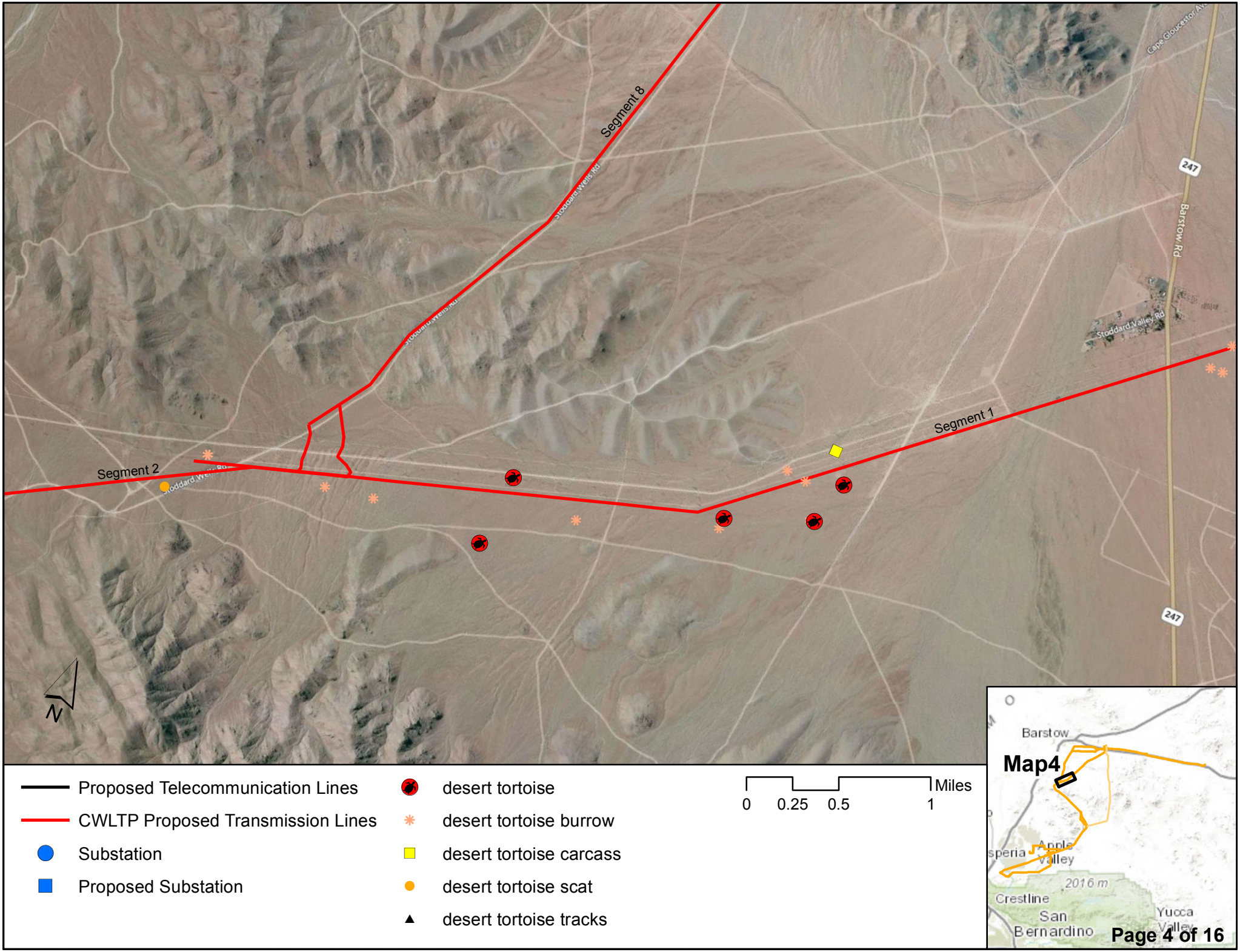
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desert tortoise burrow
desert tortoise carcass
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desert tortoise tracks
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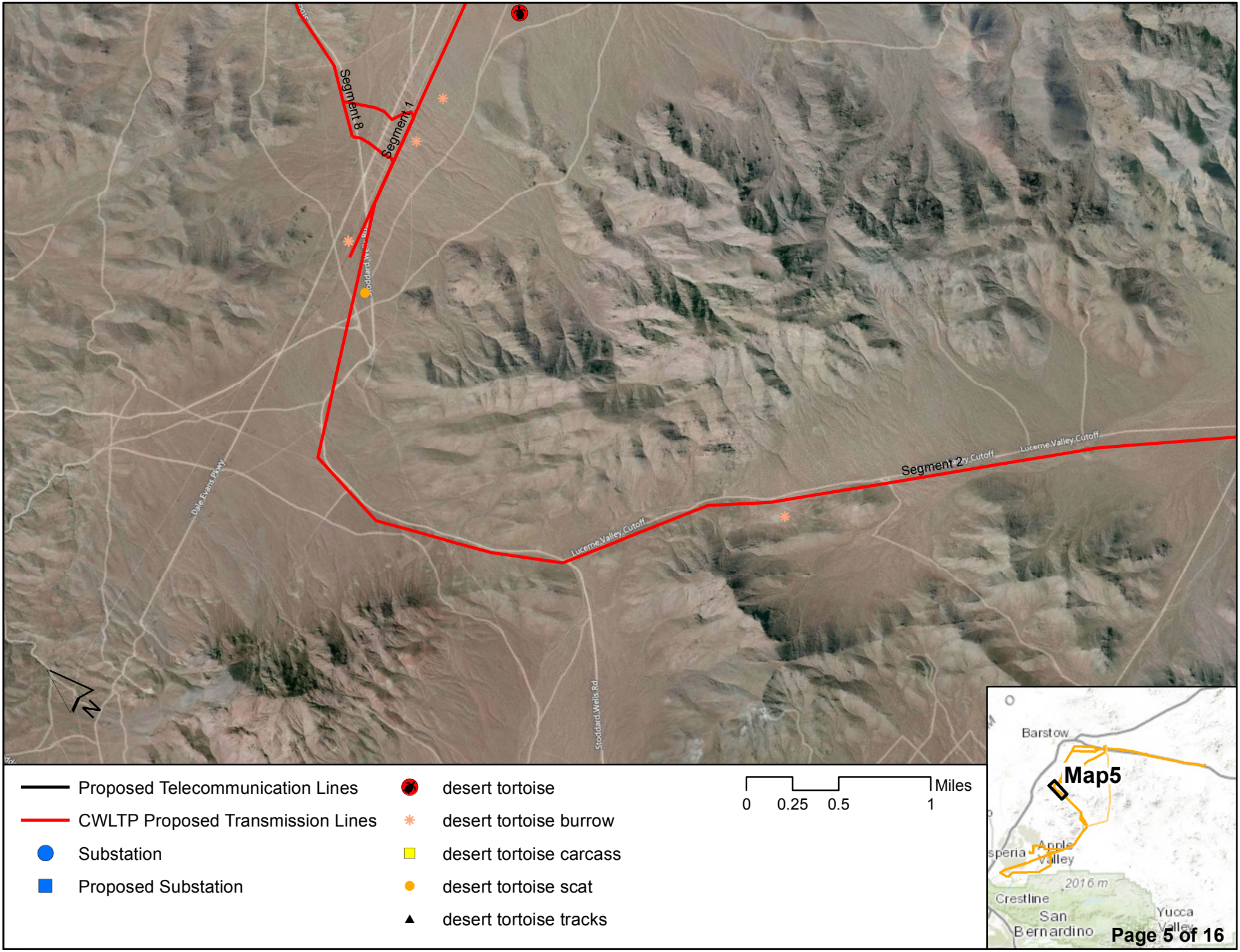
Crestline
San Bernardino
Yucca Valley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desert tortoise burrow
desert tortoise carcass
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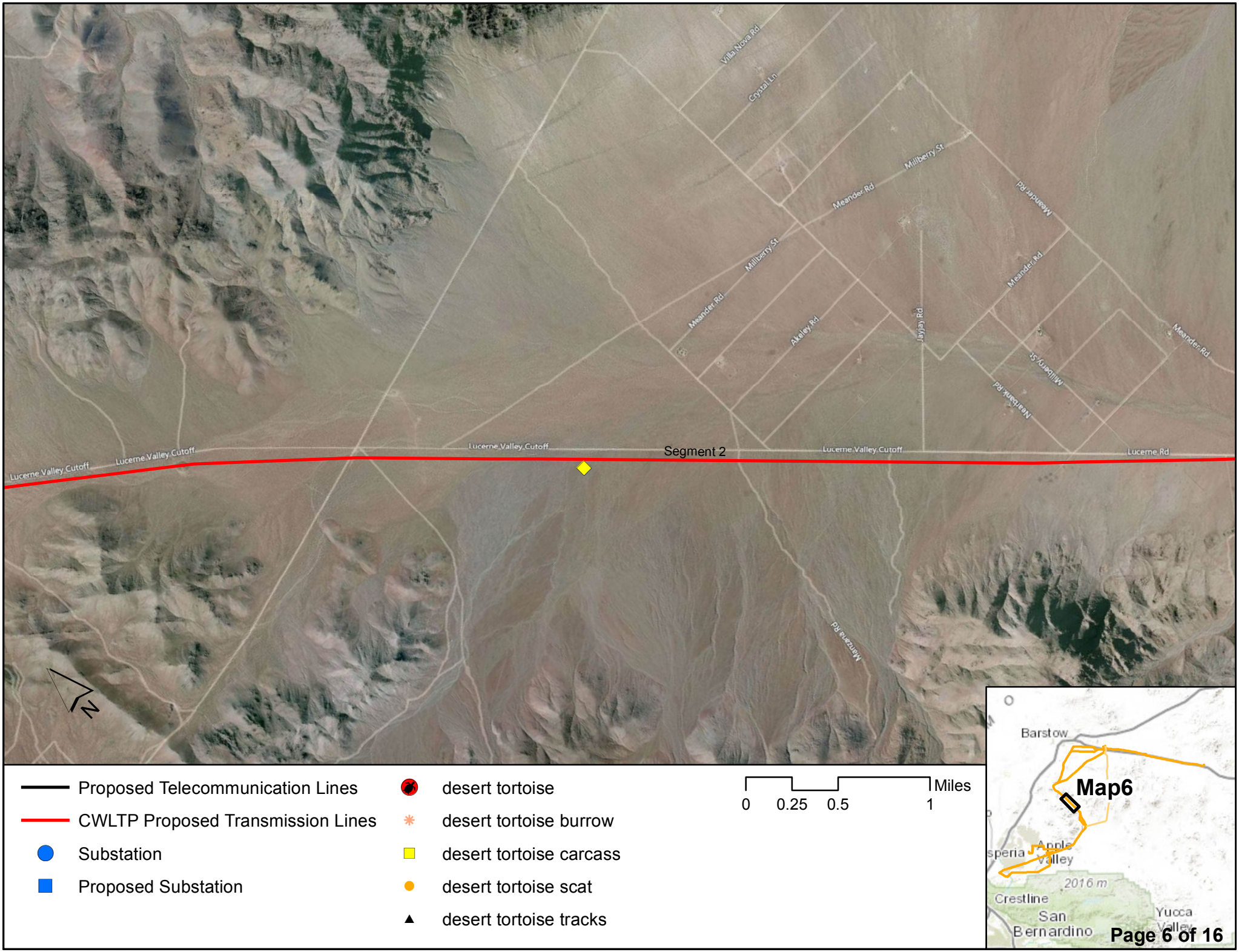
San Bernardino
Yucca Valley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desert tortoise scat
desert tortoise tracks
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Barstow
Map6
Apple Valley
2016 m
Crestline
San Bernardino
Yucca Valley


Millberry St
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Meander Rd
Jayjay Rd
Meander Rd
Millberry St
Nearbank Rd
Barstow Rd
Johnson
Beaumont St
Palisade Ave
Selmadolph St
Laurjoe St
Fern Rd
Fern Rd
Acmite Rd
Circle C Rd
Meridian Rd
Monolith St
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Corwin Rd
Desert Ln
N End Rd
Corwin Rd
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Waalew Rd
Fern Rd
Segment 2
Segment 3
Segment 4
Segment 5
Jasper
Johnson Rd
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Proposed Telecommunication Lines		desert tortoise	
CWLTP Proposed Transmission Lines		desert tortoise burrow	
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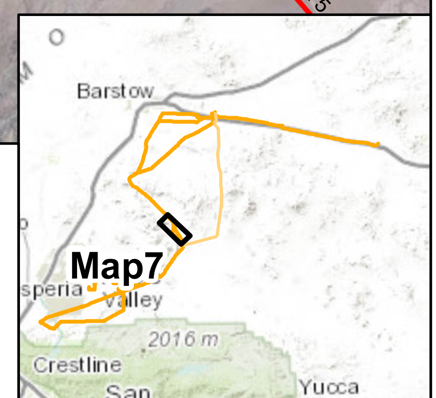

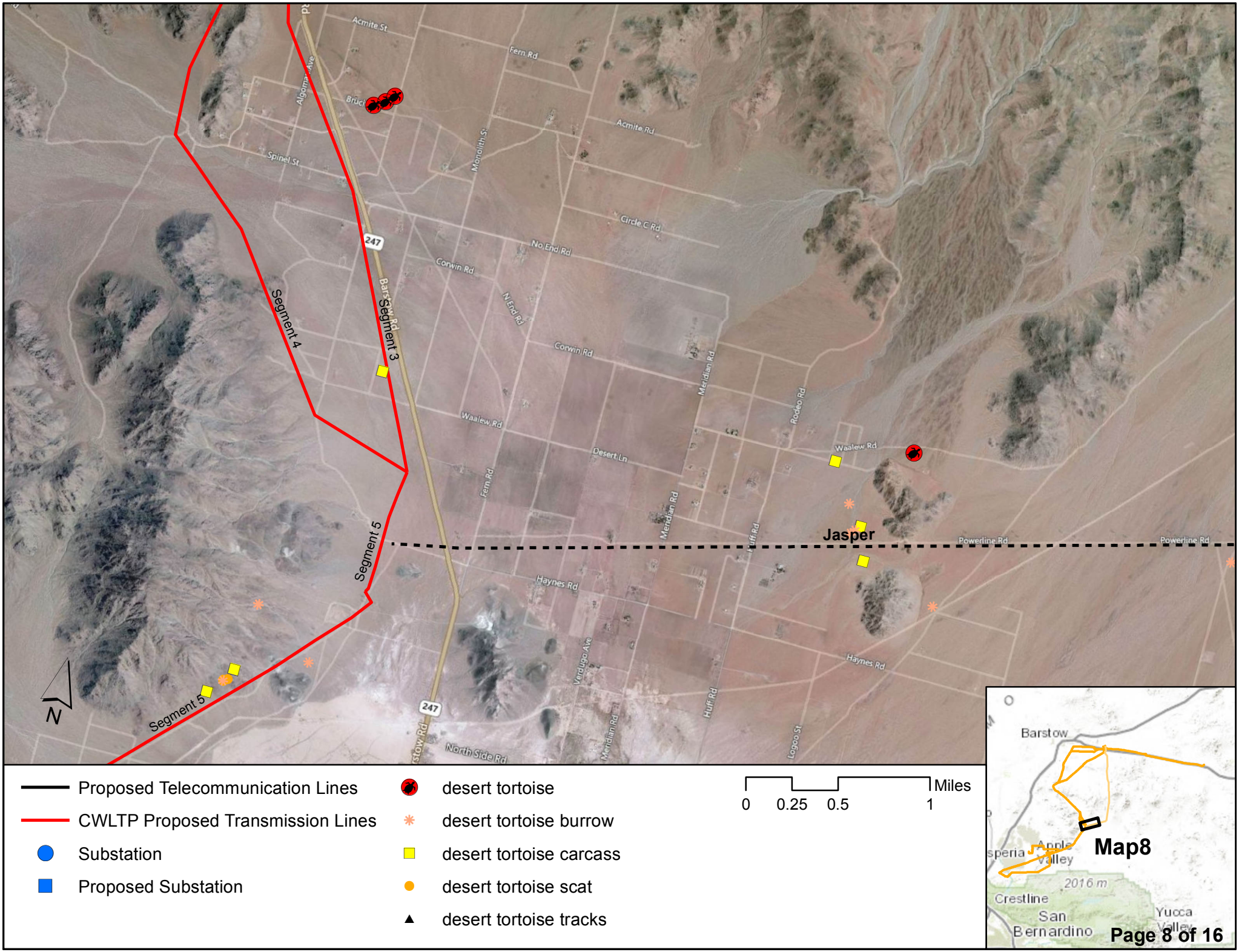
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Rodeo Rd
Waalew Rd
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Powerline Rd
Haynes Rd
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Huff Rd
Logoo St
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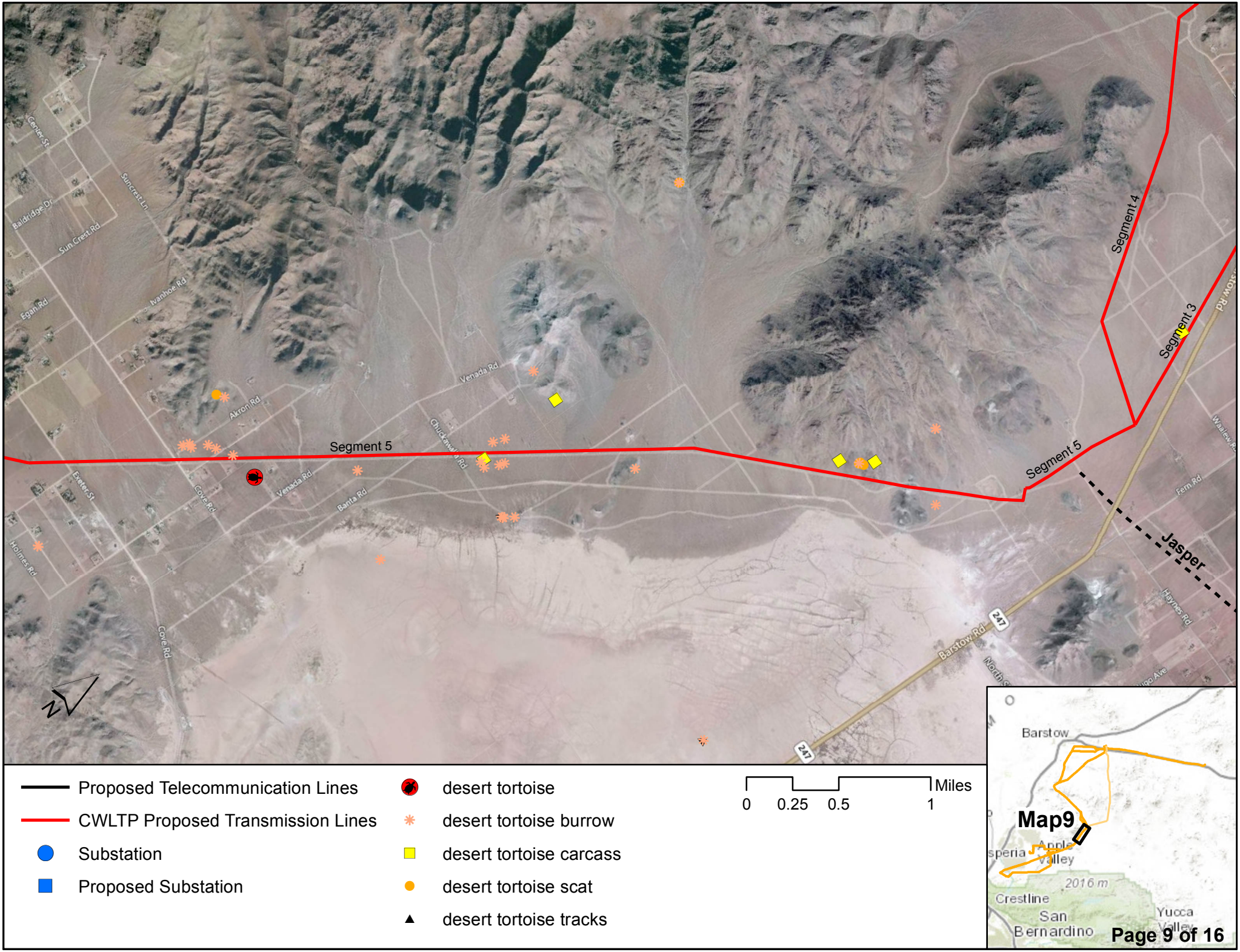
Map8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Substation
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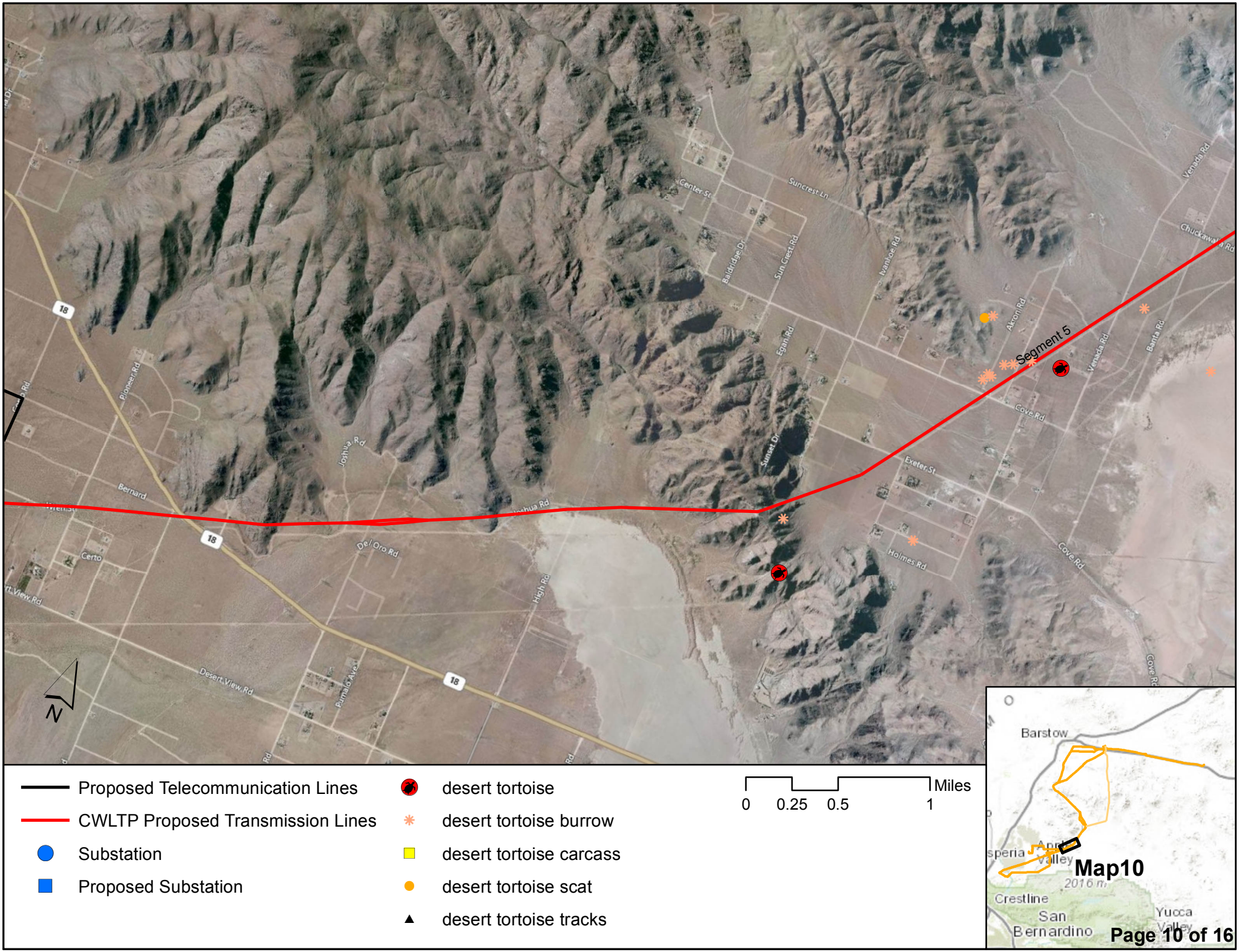
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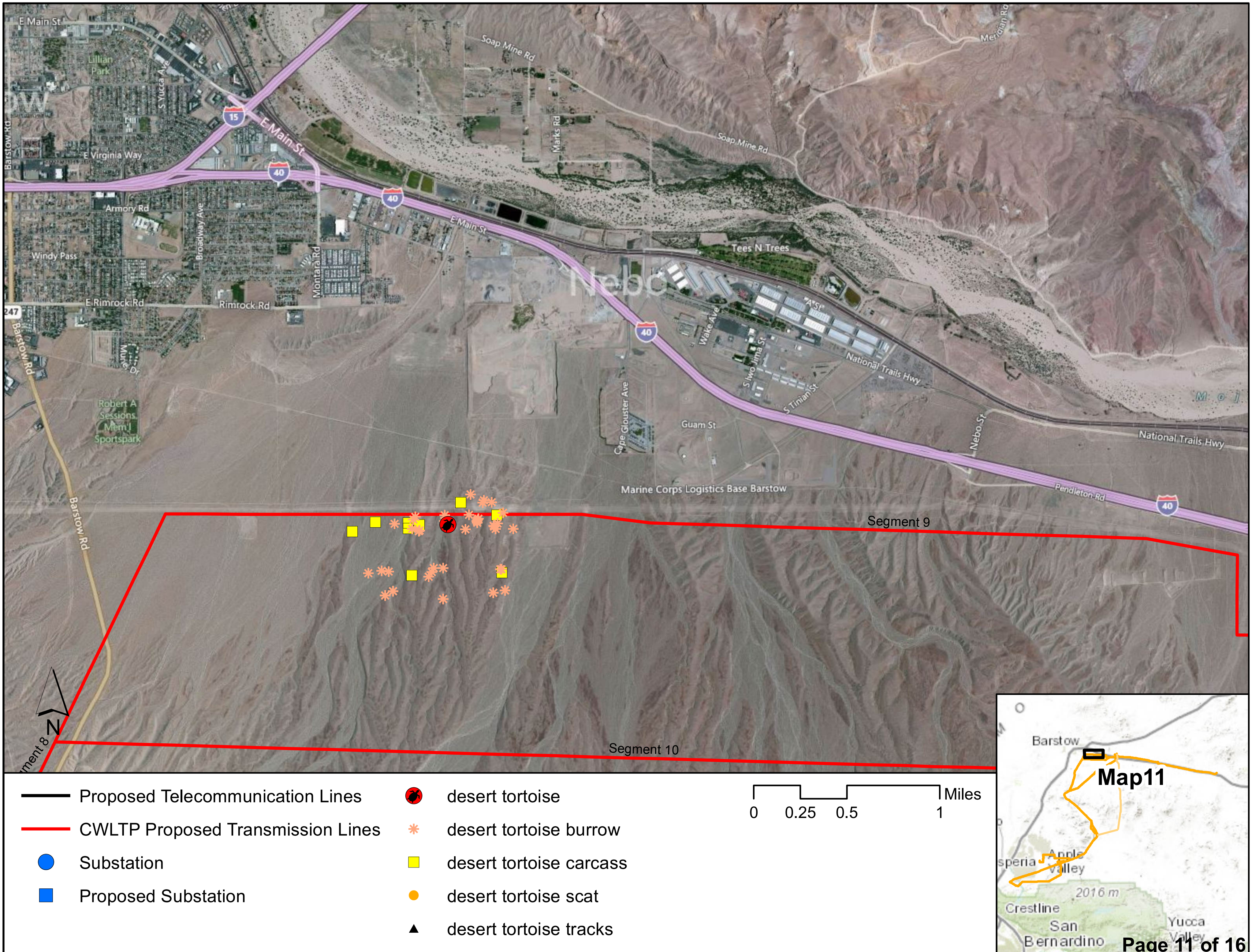
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Rimrock Rd
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Barstow Rd
Muriel Dr
Robert A Sessions Mem'l Sportspark
Barstow Rd
Soap Mine Rd
Marks Rd
Soap Mine Rd
Meridian Rd
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Tees N Trees
Nebo
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Wake Ave
S Iwo Jima St
S Tinian St
National Trails Hwy
Cape Glouster Ave
Guam St
Nebo St
National Trails Hwy
Marine Corps Logistics Base Barstow
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Substation
Proposed Substation
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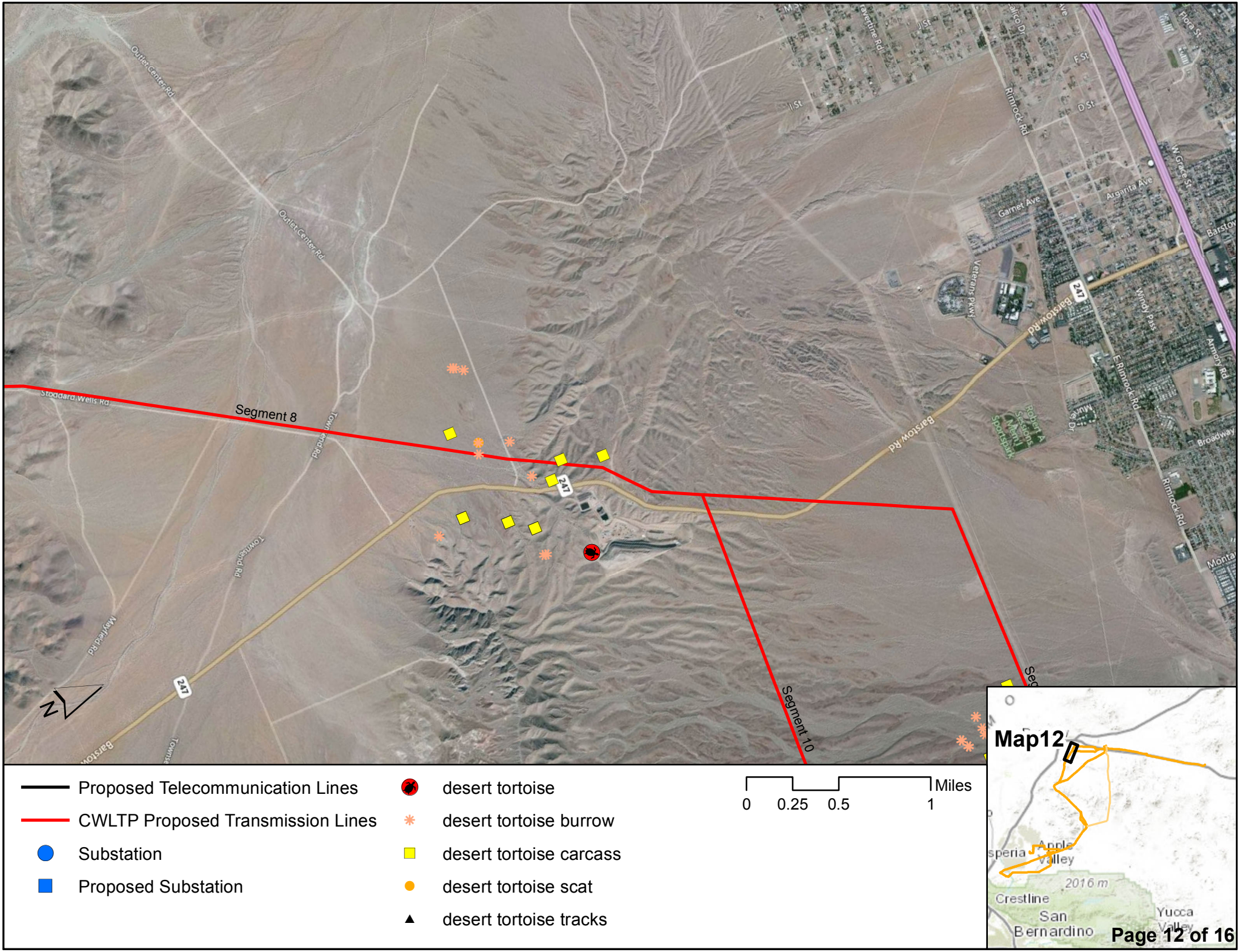
Yucca Valley
Page 11 of 16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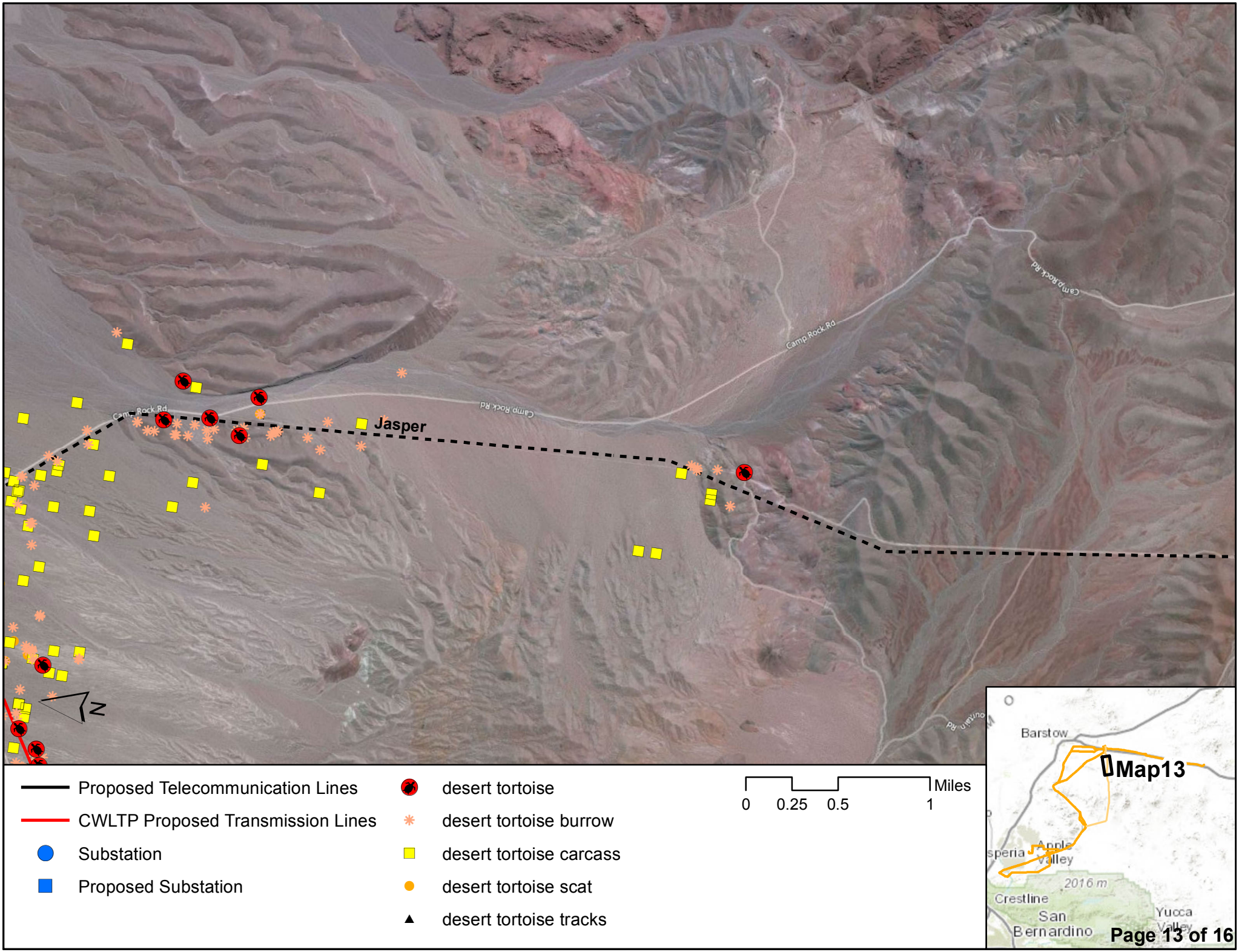
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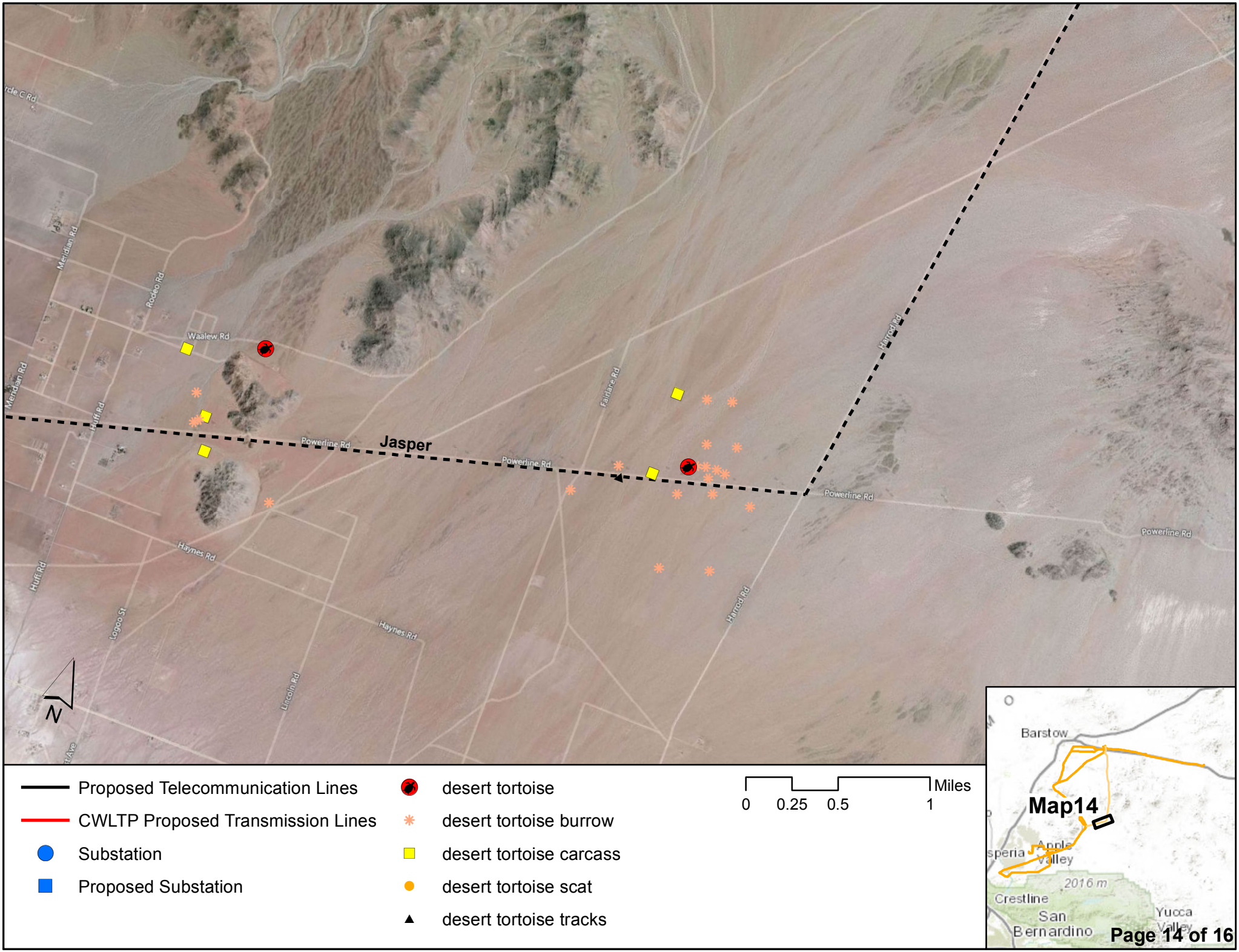
Yucca Valley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Lincoln Rd
Fairlane Rd
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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desert tortoise scat
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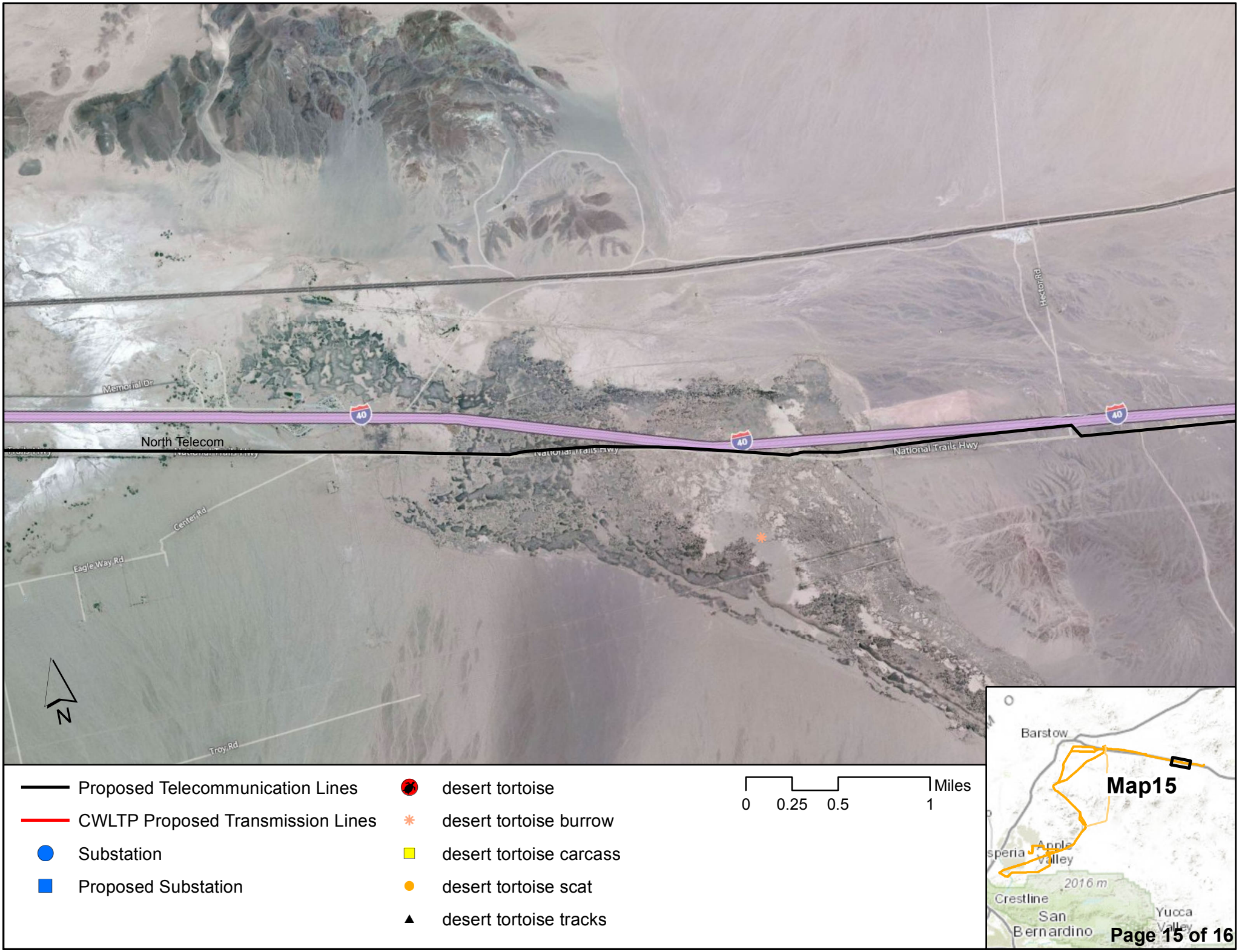
Yucca Valley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Substation
Proposed Substation
desert tortoise
desert tortoise burrow
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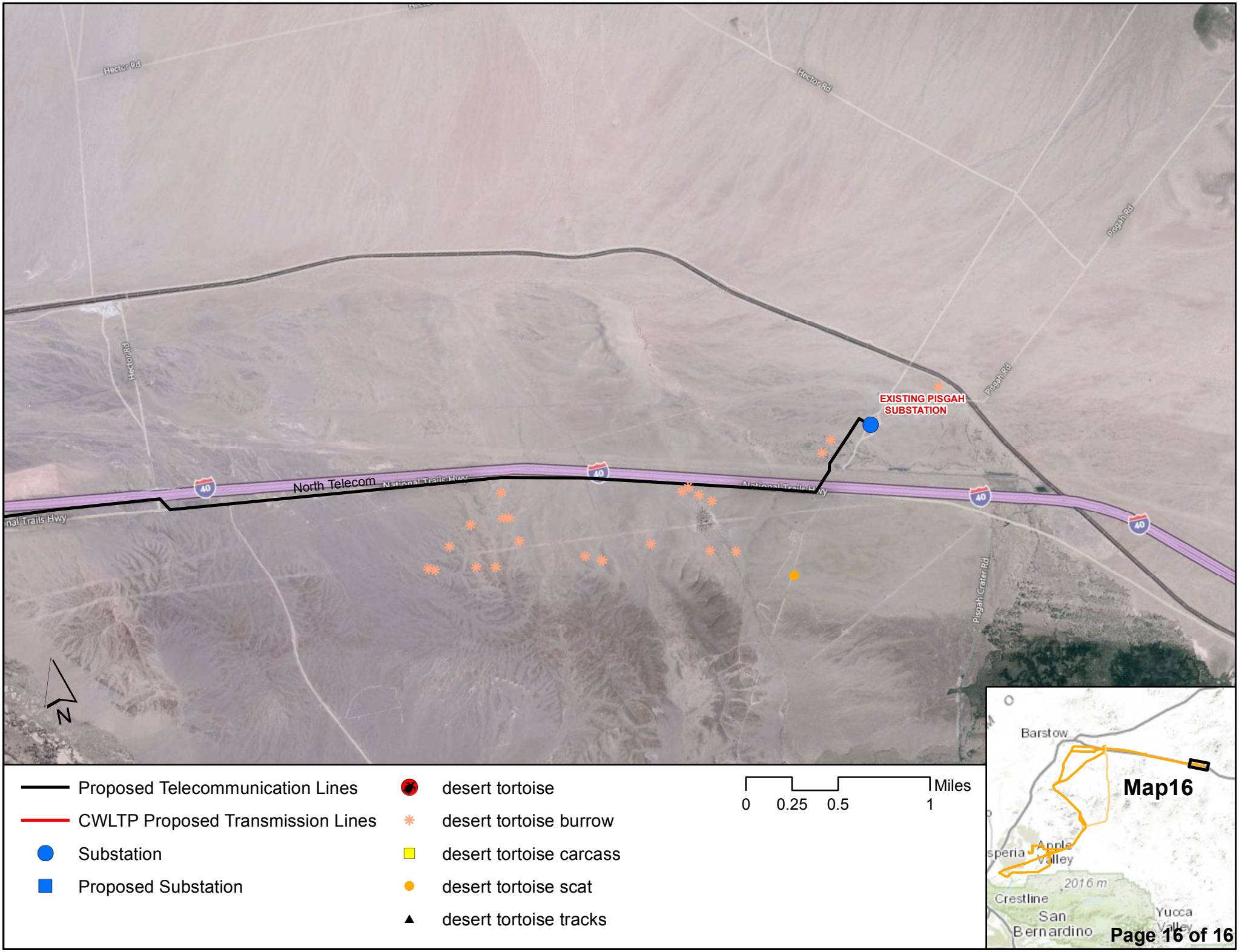
San Bernardino
Yucca Valley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Hector Rd
Hector Rd
Pisgah Rd
Pisgah Rd
Pisgah Crater Rd
EXISTING PISGAH SUBSTATION
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National Trails Hwy
National Trails Hwy
National Trails Hwy
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Proposed Telecommunication Lines
CWLTP Proposed Transmission Lines
Substation
Proposed Substation
desert tortoise
desert tortoise burrow
desert tortoise carcass
desert tortoise scat
desert tortoise tracks
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1
Miles
Barstow
Map16
Apple Valley
2016 m
Crestline
San Bernardino
Yucca Valley

Attachment B:

Photo Documentation

Photo1. Class 2 Carcass – Adult Female Desert Tortoise

Photo 2. Class 3 Carcass – Adult Male Desert Tortoise

Photo 3. Class 4 Carcass – Sub-adult Male Desert Tortoise

Photo 4. Class 5 Carcass – Adult Male Desert Tortoise

Photo 5: Class 2 Desert Tortoise Scat

Photo 6: Class 4 Desert Tortoise Scat

Photo 7: Class 1 Desert Tortoise Burrow

Photo 8: Class 2 Desert Tortoise Burrow

Photo 9: Adult Female Desert Tortoise

Photo 10: Adult Female Desert Tortoise

Photo 11: Sub-adult Male Tortoise with Shell Damage from Unknown Source

Photo12: Adult Tortoise in Burrow

Attachment C:

USFWS Abundance Calculations

Table 3. USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estimated number of tortoises and associated 95% confidence interval for the action area?

INSTRUCTIONS ***Use this tab when your transects were of unequal length.***

Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.

N =	**36.2**
Lower 95%CI =	**17.89**
Upper 95%CI =	**73.46**
Total action area (acres)	**5400**
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	**0.800**
Total length of transects walked (km) =	**1794**
Number of transects walked =	**90**
Number of tortoises found during surveys (n) =	**15**

Transects of various lengths

Transect	Length (km)	Tortoises within 5m of centerline
1	53.820	0
2	53.862	0
3	53.904	0
4	53.946	0
5	53.988	0
6	54.030	2
7	54.072	2
8	54.114	1
9	54.156	1
10	54.197	2
11	54.239	2
12	54.281	1
13	54.323	0
14	54.365	2
15	54.407	1
16	37.251	0
17	37.301	0
18	37.351	0
19	37.402	0
20	37.452	0
21	37.502	0
22	37.553	0
23	37.603	0
24	37.653	0
25	37.704	0
26	37.754	0

27	37.804	0
28	37.855	0
29	37.905	0
30	37.955	0
31	19.479	0
32	19.541	0
33	19.604	0
34	19.666	0
35	19.729	0
36	19.791	0
37	19.853	0
38	19.916	0
39	19.978	0
40	20.041	0
41	20.103	0
42	20.166	0
43	20.228	0
44	20.291	0
45	20.353	1
46	1.715	0
47	1.755	0
48	1.796	0
49	1.836	0
50	1.876	0
51	1.916	0
52	1.956	0
53	1.996	0
54	2.036	0
55	2.076	0
56	2.116	0
57	2.156	0
58	2.196	0
59	2.236	0
60	2.276	0
61	1.814	0
62	1.855	0
63	1.895	0
64	1.935	0
65	1.975	0
66	2.015	0
67	2.055	0
68	2.096	0
69	2.136	0
70	2.176	0
71	2.216	0
72	2.256	0
73	2.296	0
74	2.336	0
75	2.376	0
76	3.581	0
77	3.637	0
78	3.684	0

79	3.727	0
80	3.770	0
81	3.811	0
82	3.852	0
83	3.893	0
84	3.933	0
85	3.974	0
86	4.014	0
87	4.055	0
88	4.095	0
89	4.135	0
90	4.175	0
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FOCUSED BURROWING OWL SURVEY REPORT
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
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June 2013

Table of Contents

List of Tables

List of Figures

List of Attachments

1.0 INTRODUCTION

This report documents and describes the existing conditions regarding burrowing owl (Athene cunicularia) in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to burrowing owl that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

1.3 Species Description

Burrowing owls are small, long-legged, ground-dwelling owls that occur from British Columbia, throughout North America, and into portions of Central and South America. They winter in the southern latitudes and many remain as year-long residents in Southern California. At higher elevations and latitudes, they will only occur during breeding seasons. In California, high-density owl populations have been documented in agricultural areas in the San Joaquin Valley and Imperial Valley.

Burrowing owls occur in a variety of habitat types throughout California, including annual and perennial grasslands, agricultural fields, deserts, and scrublands characterized by low-growing vegetation (California Burrowing Owl Consortium [CBOC], 1993). Suitable owl habitat may also include areas with trees and shrubs where canopies cover less than 30 percent of the ground surface. Suitable burrows may include both artificial and natural burrows that provide shelter from the elements as well as protection from predators. Burrowing owls also use burrows for nesting during spring and early summer months. The California ground squirrel (*Spermophilus beecheyi)* is known to provide suitable burrows, inactive coyote, kit fox, badger, and desert

tortoise burrows may also be used. Burrowing owls can also create and/or modify existing burrows. Artificial burrows may include culverts, concrete pipes, irrigation boxes, wood debris piles, and openings beneath cement or asphalt.

Burrowing owls are most active at night but are also known to be crepuscular (active dawn and dusk). Typical prey items include invertebrates, small mammals, lizards, snakes, and small birds. They nest underground in burrows, and clutches range between 4 and 9 eggs. Burrow entrances and nest areas may be adorned with cow chips, feathers, grass, trash, food items, and dog feces. They are typically monogamous and tend to exist in colonies. They exhibit high nest fidelity and will return to the same burrow nest site for multiple years.

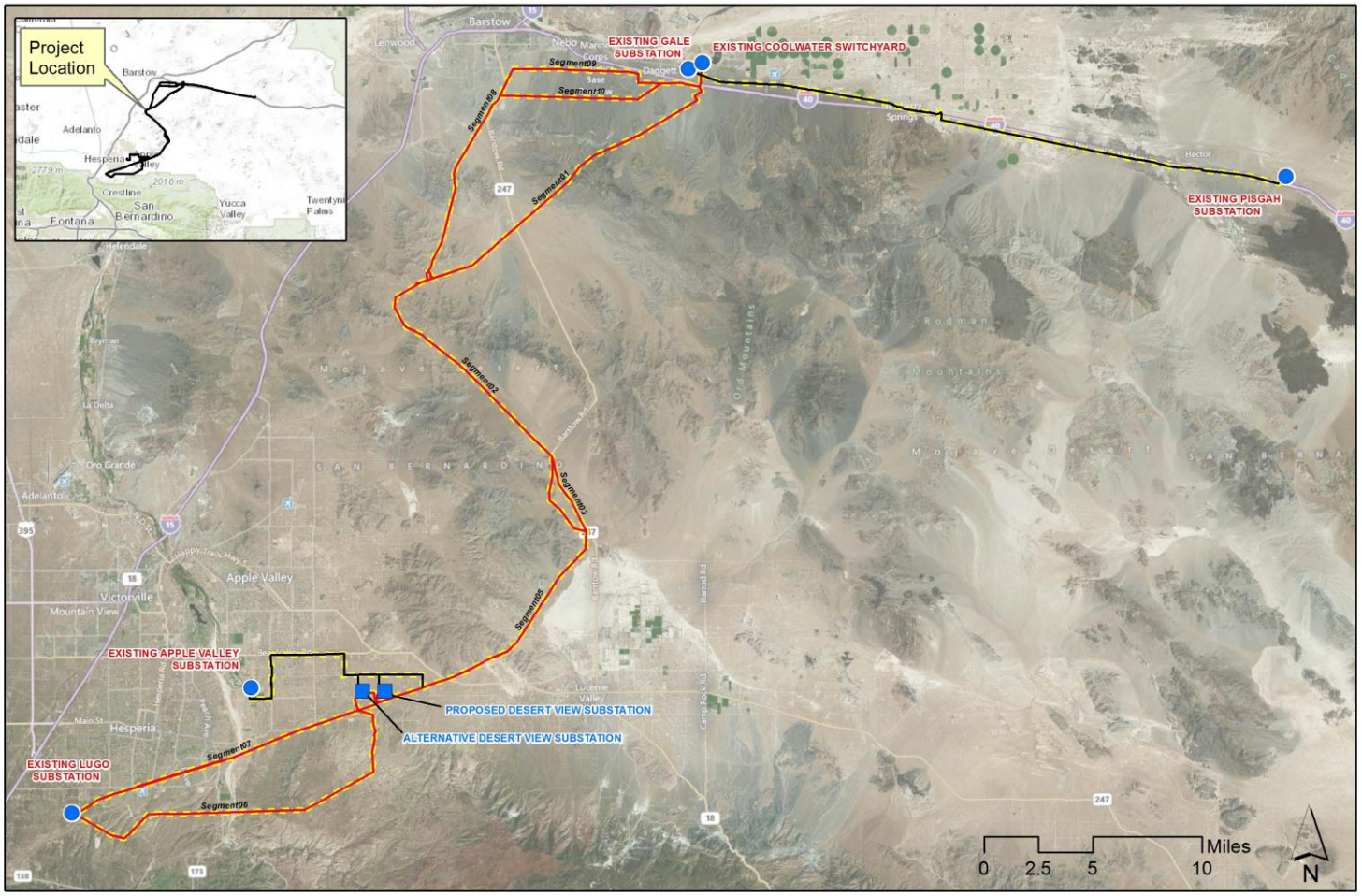
In desert scrub habitat, they are usually associated with canine and California ground squirrel burrows along mounds that provide vistas for viewing prey and predators. They are also found along washes and wash banks where small mammals and invertebrates are more abundant.

1.4 Regulatory Setting

Burrowing owls are protected under various federal and state laws and regulations that include: The Endangered Species Act of 1973, The Migratory Bird Treaty Act of 1918, and the California Endangered Species Act. These laws aim to protect special-status and non-game species by protecting individual birds, bird nests, and eggs. These laws, regulations, and codes are detailed in the General Habitat Assessment Report (BioResource Consultants, 2013).

Additionally, the California Department of Fish and Wildlife (CDFW) has recently provided their *Staff Report on Burrowing Owl Mitigation* (2012b) to provide a comprehensive conservation and mitigation strategy for burrowing owls. CDFW determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, including: developing more rigorous burrowing owl survey methods; working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level. The 2012 staff report takes into account the CBOC's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization, and mitigation recommendations in the earlier 1995 staff report.

Figure 1. Project Location



2.0 METHODOLOGY

Prior to conducting surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain pertinent information regarding burrowing owl. The results of these preliminary database searches provided a basis for addressing the appropriate special-status species in the footprint of existing infrastructure (substations, access roads, and crane pads), proposed additional workspace (spur roads, temporary and permanent drill and crane pads, pulling, and stringing sites), and immediate surroundings (collectively referred to as the Project Area). Additionally, literature was reviewed to identify potential special-status flora or fauna within 5 miles of the Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area.

2.1 Literature and Database Review

Information about documented burrowing owl was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included the following U.S. Geological Survey (USGS) 7.5-minute quadrangle maps: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include: *The Sibley Field Guide to Birds of Western North America* (Sibley 2003); the *eBird* website (Cornell Lab of Ornithology and National Audubon Society, Inc. 2012); and *California Wildlife Habitat Relationships* software (CDFW 2005); Burrowing Owl Survey Protocol and Mitigation Guidelines (Burrowing Owl Consortium. 1997); and *Staff Report on Burrowing Owl Mitigation.* (CDFW 2012b).

2.2 Survey Methods

Focused surveys were conducted for burrowing owls using CDFW-approved protocols (CBOC 2012).

Habitat assessment surveys were conducted as part of the General Habitat Assessment. Biologists conducted further habitat surveys along the Project alignment and along Alternative Segments. The survey area extended 1,000 feet from each side of the Project center line, delineating the zone of influence (ZOI). The ZOI is delineated to account for adjacent burrows and foraging habitat outside the Project Area that could be impacted by factors such as noise and vibration due to heavy equipment (CBOC 1997).

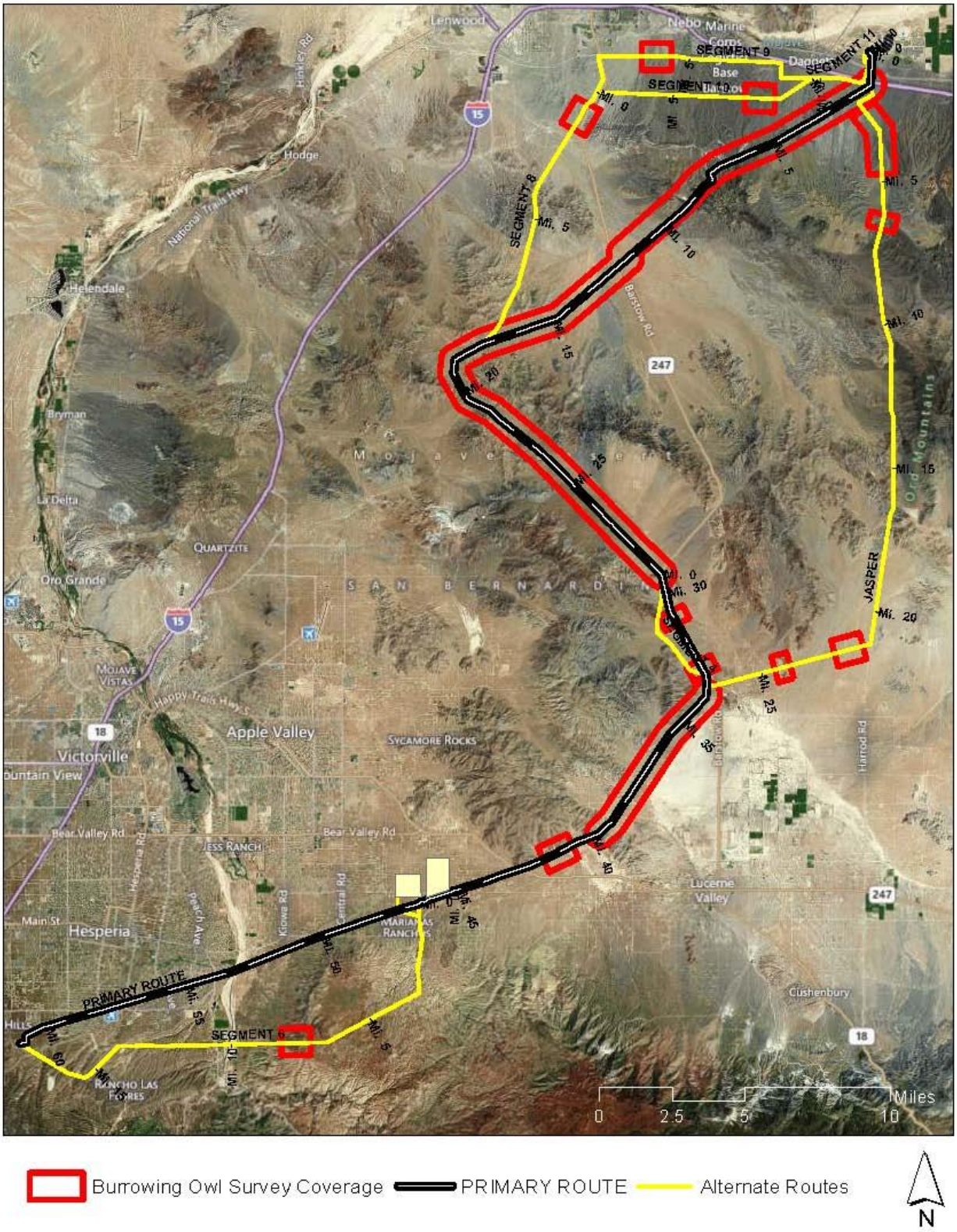
The habitat was classified into three distinct classes: high quality, medium quality, and low quality. High-quality burrowing owl habitat within the ZOI has burrowing owl sign, CDNNB records, and suitable habitat. Medium-quality habitat has CNDDB records and suitable habitat present, but no burrowing owl sign was observed during the habitat assessment surveys. Low-

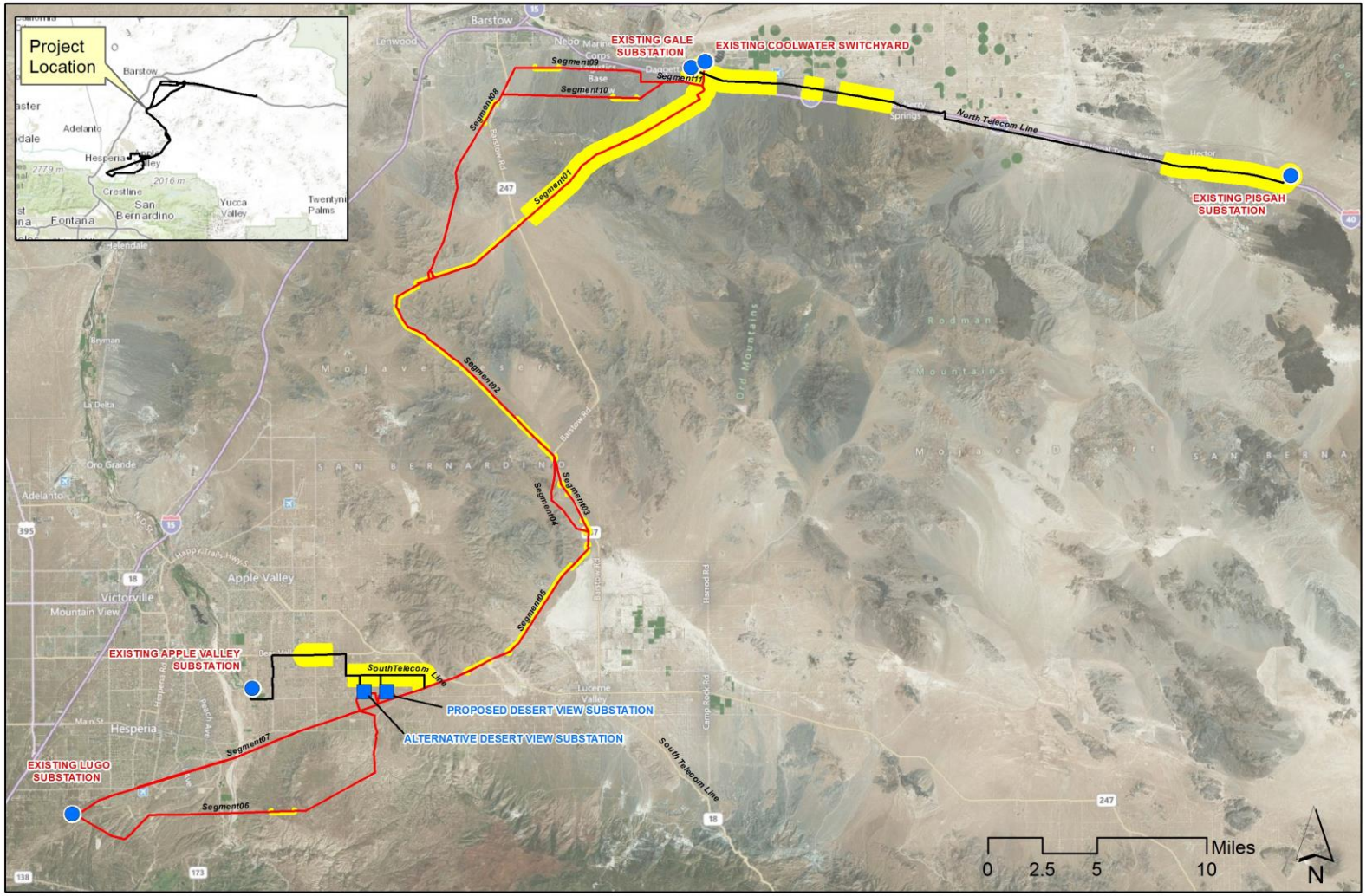
quality burrowing owl habitat is characterized as being heavily disturbed, with no CNDDB records, and no sign observed during the general assessment surveys.

Protocol-level surveys were conducted from May 30 to July 14, 2012 and from May 1 to June 14, 2013, and were guided by the findings of the habitat assessment surveys. Areas of high- or medium-quality burrowing habitat received focused surveys to identify locations of burrowing owls within the ZOI. Areas of low-quality habitat were not further surveyed since no evidence of burrowing owls was observed during the habitat assessment surveys.

Protocol-level survey transects were spaced at 10 to 20 meters to allow for 100 percent visual coverage of the ground surface. Surveyors documented burrowing owl sightings, burrows, and burrowing owl sign (whitewash, pellets, feathers, etc.). To provide adequate coverage of the Project alternative, a random sampling of the Alternative Segments was selected and surveyed using the methods described above (**Figure 2)**.

Figure 2. 2012 and 2013 Project Survey Coverage





Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, other suppliers; BingMaps (c) 2010 Microsoft Corporation and its data suppliers; SCE 2013: BRC 2013

3.0 RESULTS

3.1 Habitat Assessment

As discussed above, habitat assessment surveys were conducted as part of the General Habitat Assessment Report. The habitat was classified into 3 distinct classes (high quality, medium quality, and low quality). Areas of high- and medium-quality habitat are located along all Segments. Low-quality habitat is generally only present in areas of rock outcroppings, urbanized areas, or in areas with extremely steep slopes. **Figure 3** presents the burrowing owl habitat classifications.

3.2 Protocol Surveys

Protocol-level surveys were conducted based on the results from the habitat assessment surveys. Areas of high- or medium-quality burrowing habitat received focused surveys to identify locations of burrowing owls within the ZOI. The burrowing owl surveys obtained positive results. Seven burrowing owls were observed and 72 burrows were documented (**Table 1)**. Burrows were positively identified as burrowing owl based on their association with owl sign. **Figure 4 (Attachment A)** maps each documented burrowing owl sighting or associated sign. A sampling of photo documentation is included in **Attachment B.**

Figure 3. Burrowing Owl Habitat Classification Map

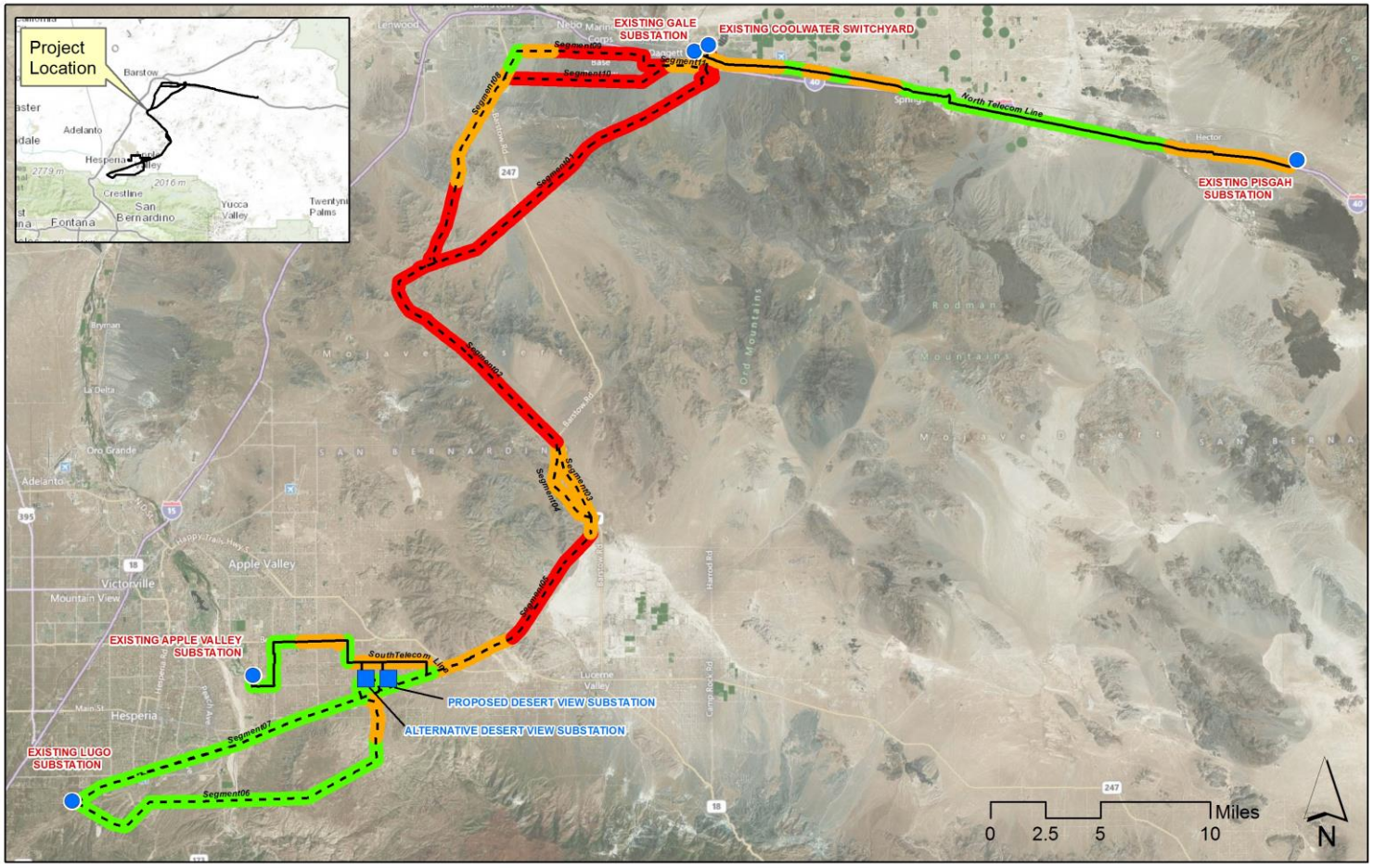


Table 1 - Documented Burrowing Owl Sightings and Sign

#	Date	UTM N.	UTM E.	Sign	Notes
1	6/4/2012	509034	3853341	Burrow	Whitewash
2	6/5/2012	506584	3852258	Burrow	-
3	6/12/2012	497007	3843397	Burrow	-
4	6/12/2012	500122	3847042	Burrow	Whitewash and pellets
5	6/13/2012	492263	3841706	Burrow	Whitewash at entrance
6	6/14/2012	494442	3842409	Burrow	Whitewash pellets
7	6/14/2012	500958	3829974	**Burrowing owl**	Adult owl
8	6/20/2012	496442	3814346	**Burrowing owl**	Adult owl
9	6/26/2012	500822	3819258	Burrow	Pellets
10	6/26/2012	501957	3819258	Burrow	Whitewash pellets, feathers
11	6/26/2012	502029	3848857	Burrow	Whitewash
12	6/26/2012	502373	3819957	Burrow	Whitewash
13	6/27/2012	496442	3814346	**Burrowing owl**	Adult owl
14	6/27/2012	499051	3815060	Burrow	5 burrows with whitewash wash
15	6/27/2012	500654	3817585	Burrow	Whitewash
16	6/27/2012	500777	3817496	Burrow	Whitewash
17	6/27/2012	500863	3817727	Burrow	Pellets, whitewash
18	6/28/2012	498642	3814920	Burrow	Whitewash
19	6/28/2012	498893	3815129	Burrow	Whitewash
20	6/28/2012	499061	3815097	Burrow	-
21	6/28/2012	512373	3824635	Burrow	-
22	6/28/2012	512707	3855341	Burrow	Whitewash at entrance
23	6/29/2012	511269	3825063	Burrow	Whitewash at entrance
24	7/2/2012	502510	3826125	Burrow	Whitewash at entrance
25	7/2/2012	504041	3823973	Burrow	3 burrows whitewash , pellets
26	7/2/2012	490767	3838974	Burrow	Sign of Active Burrow - whitewash, feathers
27	7/3/2012	512988	3824822	Burrow	Whitewash and pellet present

#	Date	UTM N.	UTM E.	Sign	Notes
28	7/3/2012	513380	3854299	Burrow	8 burrows with whitewash around opening
29	7/3/2012	513429	3854040	Burrow	-
30	7/3/2012	513849	3851792	Burrow	Whitewash at entrance; small bones, feathers at entrance
31	7/3/2012	513984	3852336	Burrow	Whitewash at entrance
32	7/5/2012	514101	3848112	Burrow	Whitewash
33	7/6/2012	505875	3852281	Burrow	Whitewash around the burrow is old, no pellets present.
34	7/9/2012	496769	3854329	**Burrowing owl**	Adult burrowing owl. Sighted flying away from DT burrow entrance. Burrow opening 12" x 7". No sign of whitewash. One feather present.
35	7/9/2012	497066	3853981	Burrow	Whitewash and feathers present
36	7/9/2012	497498	3854685	Burrow	Whitewash Present
37	7/9/2012	497498	3854685	Burrow	Whitewash Present
38	7/9/2012	497806	3854631	Burrow	6 burrows. Whitewash and feathers
39	7/9/2012	497806	3854631	Burrow	6 burrows. Whitewash and feathers
40	7/9/2012	498598	3814934	**Burrowing owl**	Adult
41	7/9/2012	498735	3814996	Burrow	Whitewash and feathers found, N facing
42	7/10/2012	499036	3815019	Burrow	Whitewash present
43	7/11/2012	499041	8315284	Burrow	Whitewash and feathers found
44	7/11/2012	499074	3815049	Burrow	Whitewash present, somewhat filled in with dirt
45	7/12/2012	499101	3815073	Burrow	Whitewash present, under Creosote bush
46	7/12/2012	499728	3814833	Burrow	Pellet and whitewash found
47	5/29/2013	511408	3854088	Burrow	Whitewash in a tortoise burrow.
48	5/30/2013	510180	3853546	Burrow	Pellets in a tortoise burrow.
49	5/17/2013	513575	3856411	Burrow	13 burrows.
50	5/17/2013	513575	3856411	Burrow	Burrowing owl pellets.
51	5/17/2013	516900	3855929	Burrow	2 burrows
52	5/22/2013	489629	3812799	Burrow	22 Burrows
53	5/23/2013	491278	3812966	Burrow	Active burrow
54	5/28/2013	511155	3851148	Burrow	Active burrow

#	Date	UTM N.	UTM E.	Sign	Notes
55	5/15/2013	518256	3856002	Burrow	Opening 15x8". White wash and pellets
56	5/16/2013	553615	3848391	Burrow	Opening 12x6". White wash
57	5/16/2013	547262	3849216	Burrow	Opening 14x4". Rodent bones
58	5/22/2013	506827	380986	Burrow	Opening 10x10". White wash
59	5/22/2013	507257	3809510	Burrow	Opening 20x20". White wash and mammal bones
60	5/24/2013	493151	3811172	Burrow	Opening 12x7". White wash and mammal bones and pellets
61	5/24/2013	493151	3811172	**Burrowing owl**	Male flushed from burrow
62	5/24/2013	493151	3811172	**Burrowing owl**	Female flushed from burrow
63	5/24/2013	494991	3810689	Burrow	3 burrows. White wash and mammal bones and pellets
64	5/24/2013	511260	3854490	Burrow	Opening 12x5". Pellets
65	5/24/2013	510193	3853548	Burrow	Opening 13x6". Complex of burrows with pellets and mammal bones
66	5/24/2013	509962	3853409	Burrow	Opening 16x6". Pellets and old white wash, not active
67	5/13/2013	514021	3856460	Burrow	3 burrows in close proximity with pellets
68	5/16/2013	553078	3848635	Burrow	Burrow found with pellets
69	5/16/2013	550240	3849045	Burrow	5 burrows in close proximity with pellets
70	5/16/2013	549762	3849129	Burrow	9 burrows in close proximity with pellets
71	5/24/2013	492360	3810892	Burrow	Burrow found with pellets
72	5/28/2013	512479	3855070	Burrow	Inactive burrow
73	5/30/2013	510190	3853440	Burrow	6 burrows in close proximity with pellets and white wash
74	6/3/2013	506466	3851621	Burrow	White wash present but no pellets
75	6/12/2013	495662	3843083	Burrow	5 burrows in close proximity with pellets
76	6/13/2013	506051	3850680	Burrow	Bones and white wash present
77	5/24/2013	505200	3822410	Burrow	Pellets, whitewash.
78	6/3/2013	506147	3851553	Burrow	Non-active burrow. White wash, pellets, and mammal bones present around burrow.
79	6/13/2013	501498	3847124	Burrow	Non-active burrow. Pellets around 5 burrows

4.0 DISCUSSION

Burrowing owl is a yearlong resident of open desert habitats. In the vicinity of the Project Area, burrowing owls are present along most Segments. As described above, 7 burrowing owls were sighted and 72 burrows were documented during protocol surveys. Activities such as grading, vegetation trimming or removal, and general project noise or vibration could result in construction-related impacts to nesting burrowing owl, including potential disruption of nesting activity, or destruction of active burrows. Construction disturbance during the breeding season (February 1–August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment, is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFW under the California Fish and Game Codes 3503, 3503.5, and 3513.

Based on the results of the surveys, burrowing owls are present within the Project Area and the ZOI and likely use burrows within the Project Area and ZOI as breeding and nesting locations. As such, preconstruction surveys would be required to fully assess the status of the burrowing owl population within the Project Area and to determine which burrows are in use at the time construction is scheduled occur.

Recommendations

Preconstruction surveys are recommended to fully assess the burrowing owl population within the ZOI. Pre-construction surveys of these areas area also recommended to ensure that no burrowing owl breeding activity is occurring at these locations, or is disturbed by Project activities.

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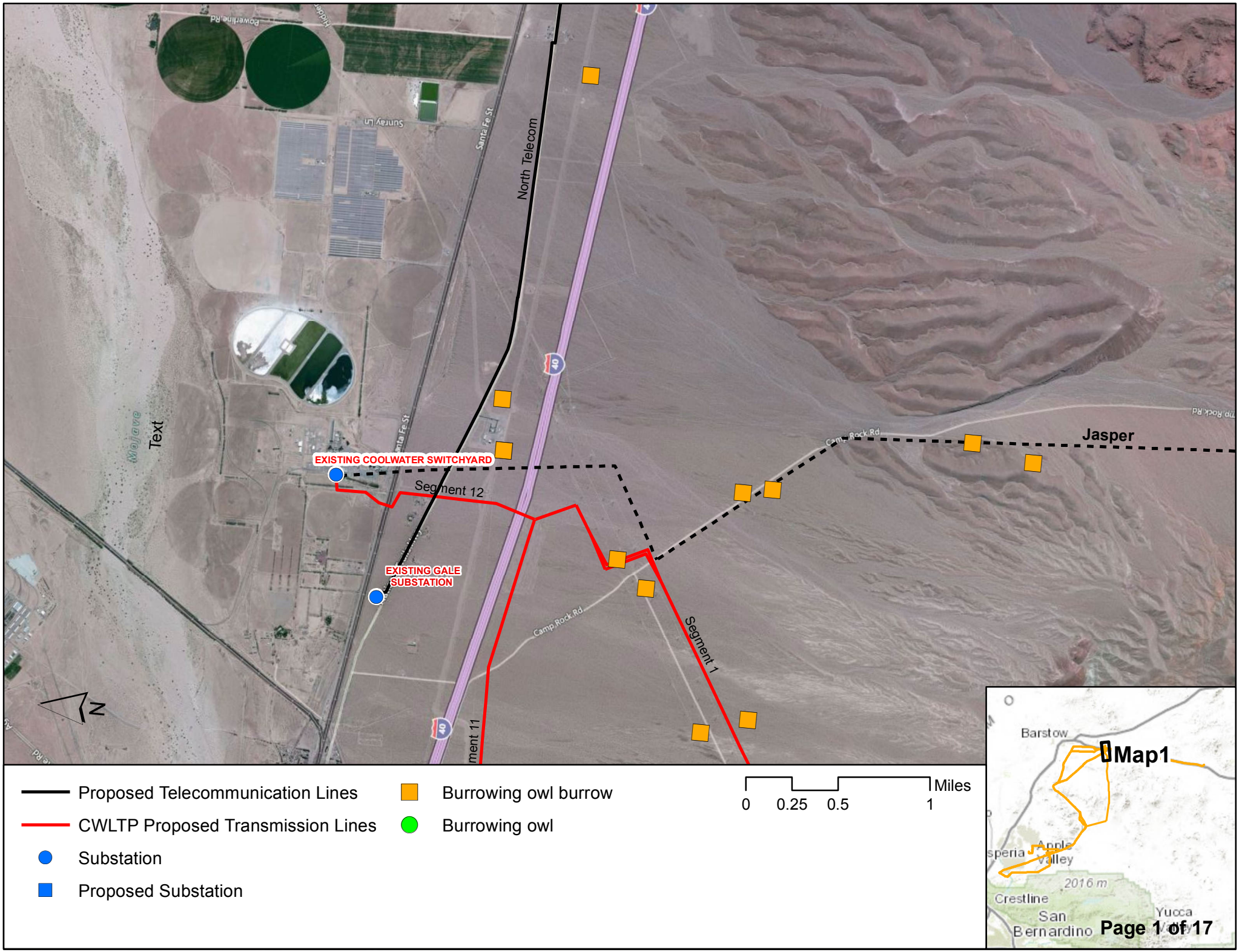
Attachment A:
Maps and Data

Figure 4. Documented Burrowing Owl Occurrences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Sunray Ln
Powerline Rd
Mojave
N
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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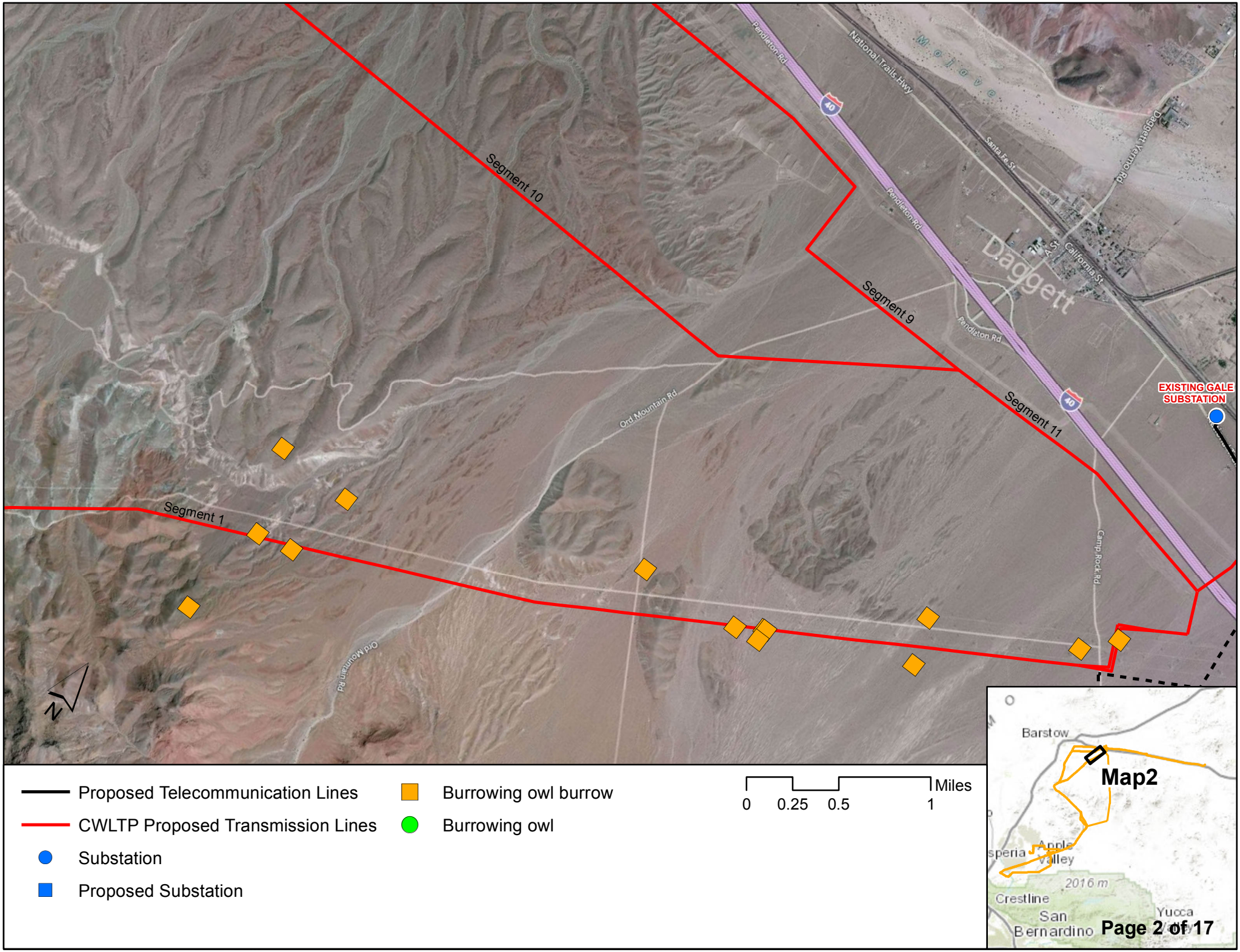
2016 m
Crestline
San Bernardino
Yucca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CWLTP Proposed Transmission Lines
Substation
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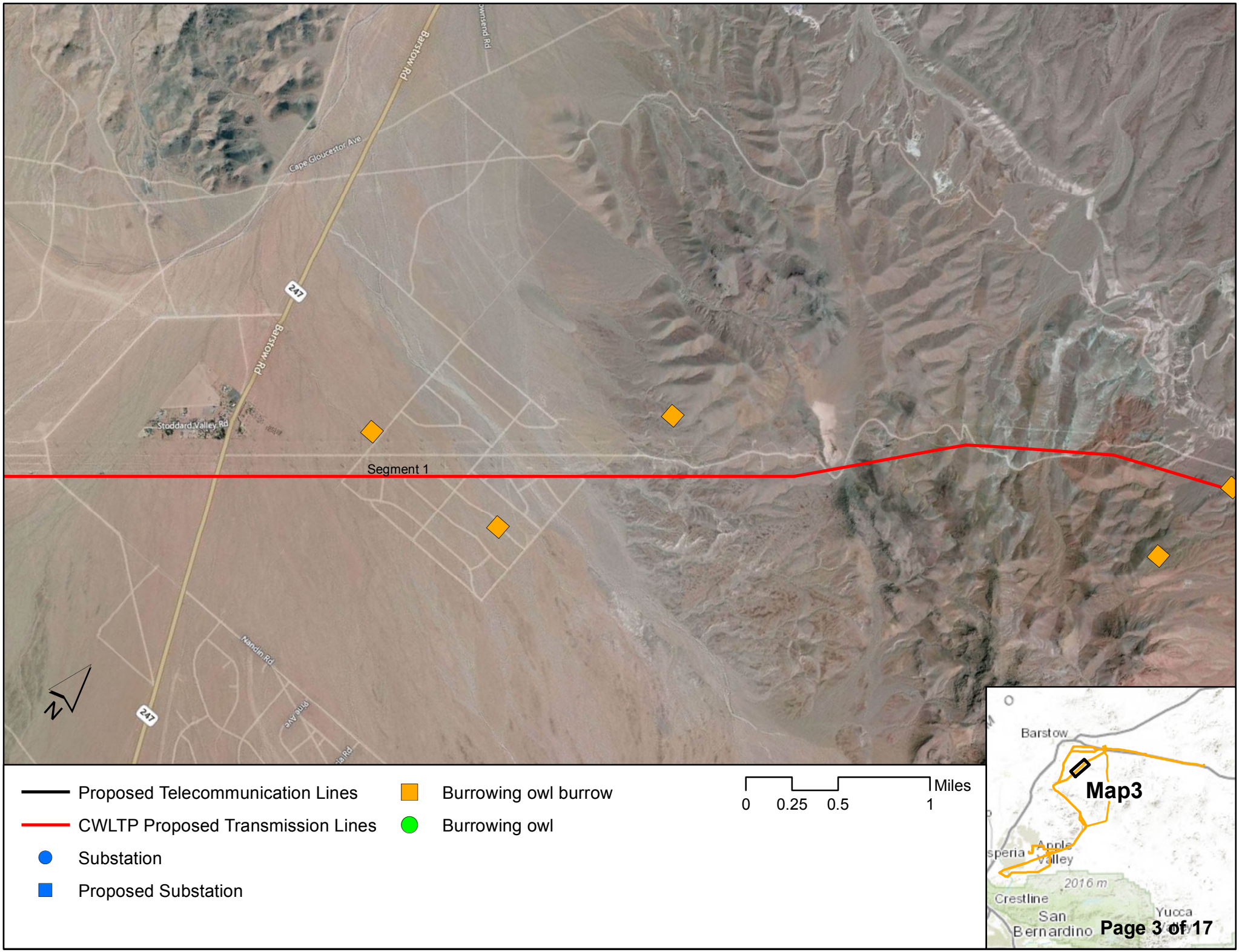
Crestline
San Bernardino
Yucca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Substation
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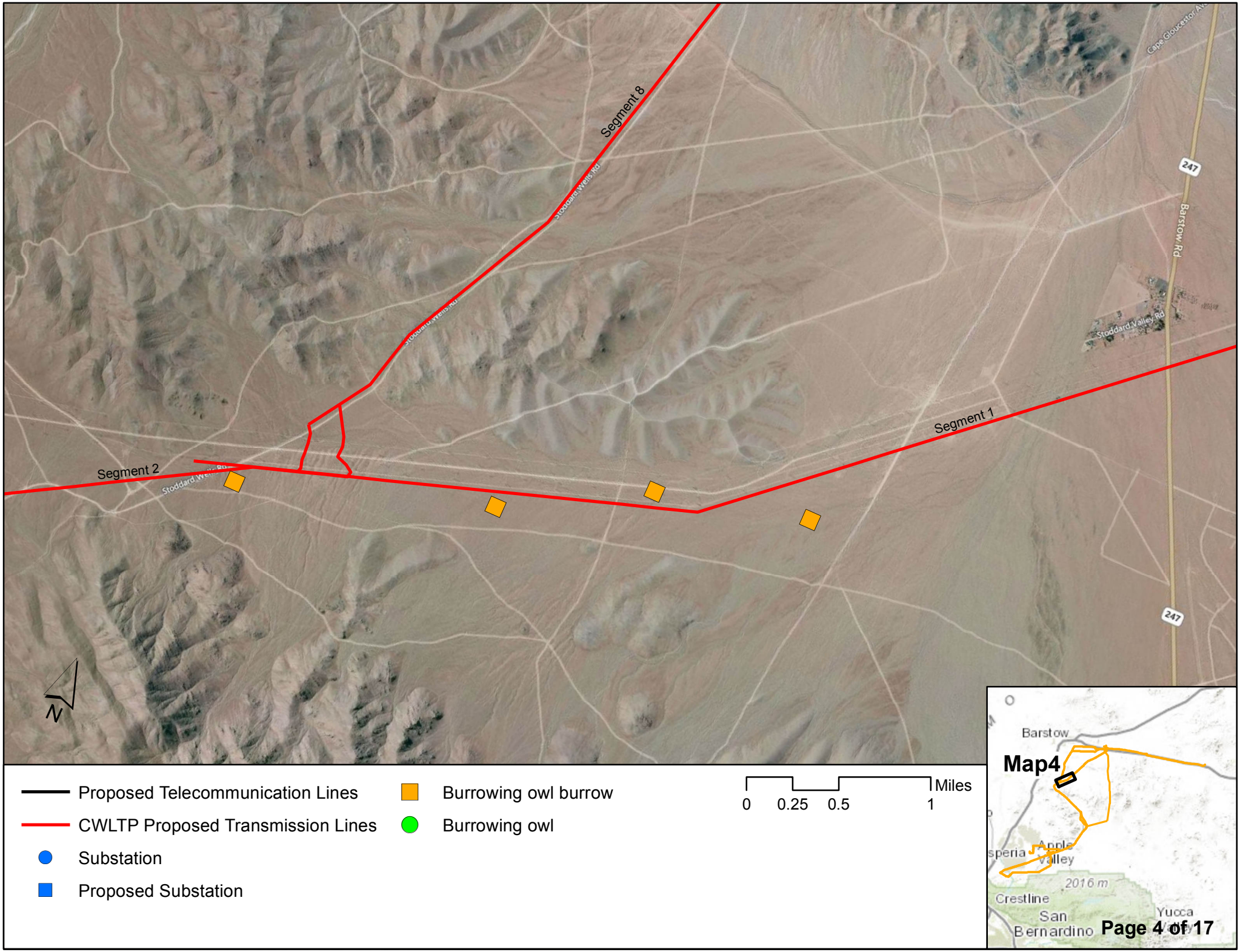
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San Bernardino
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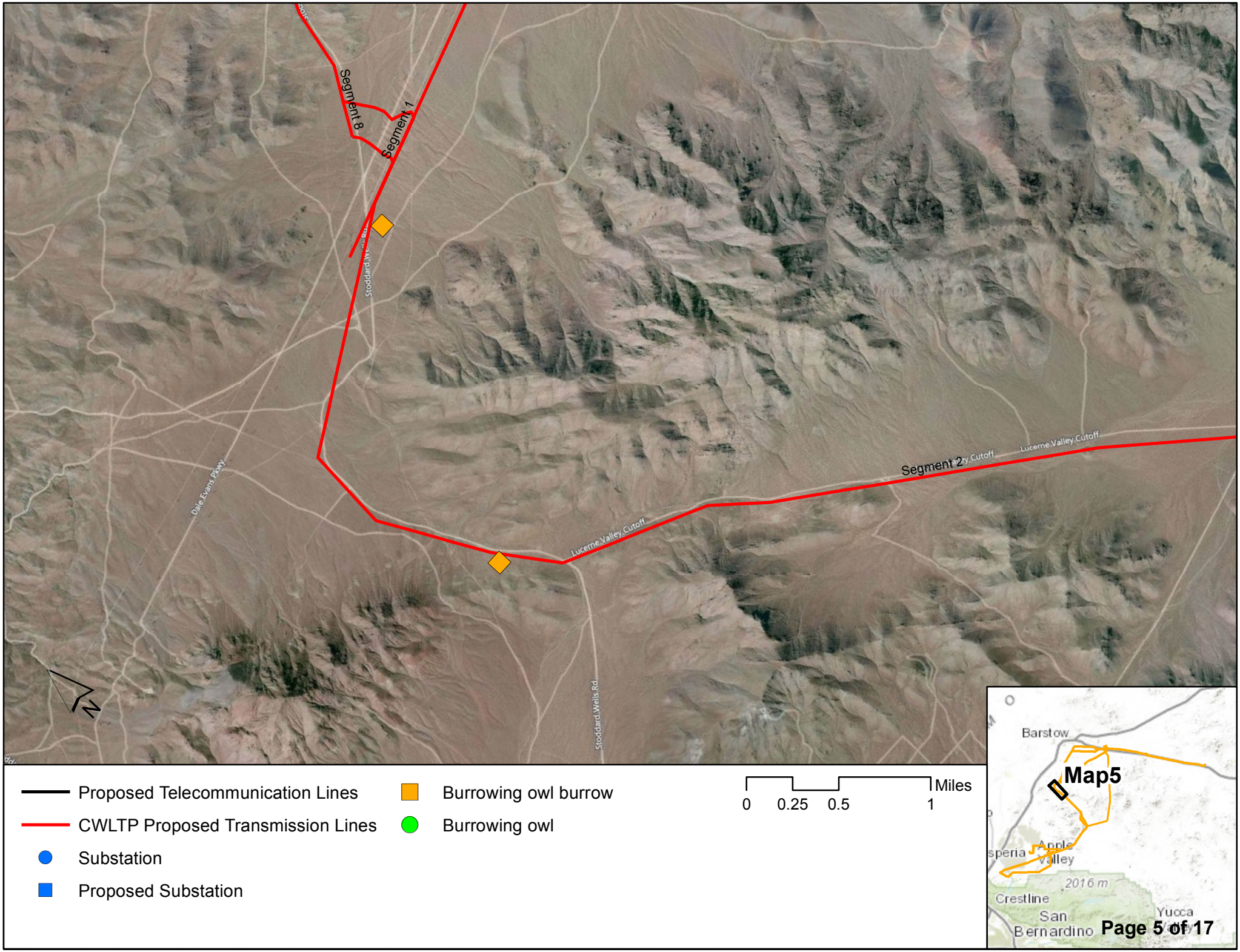
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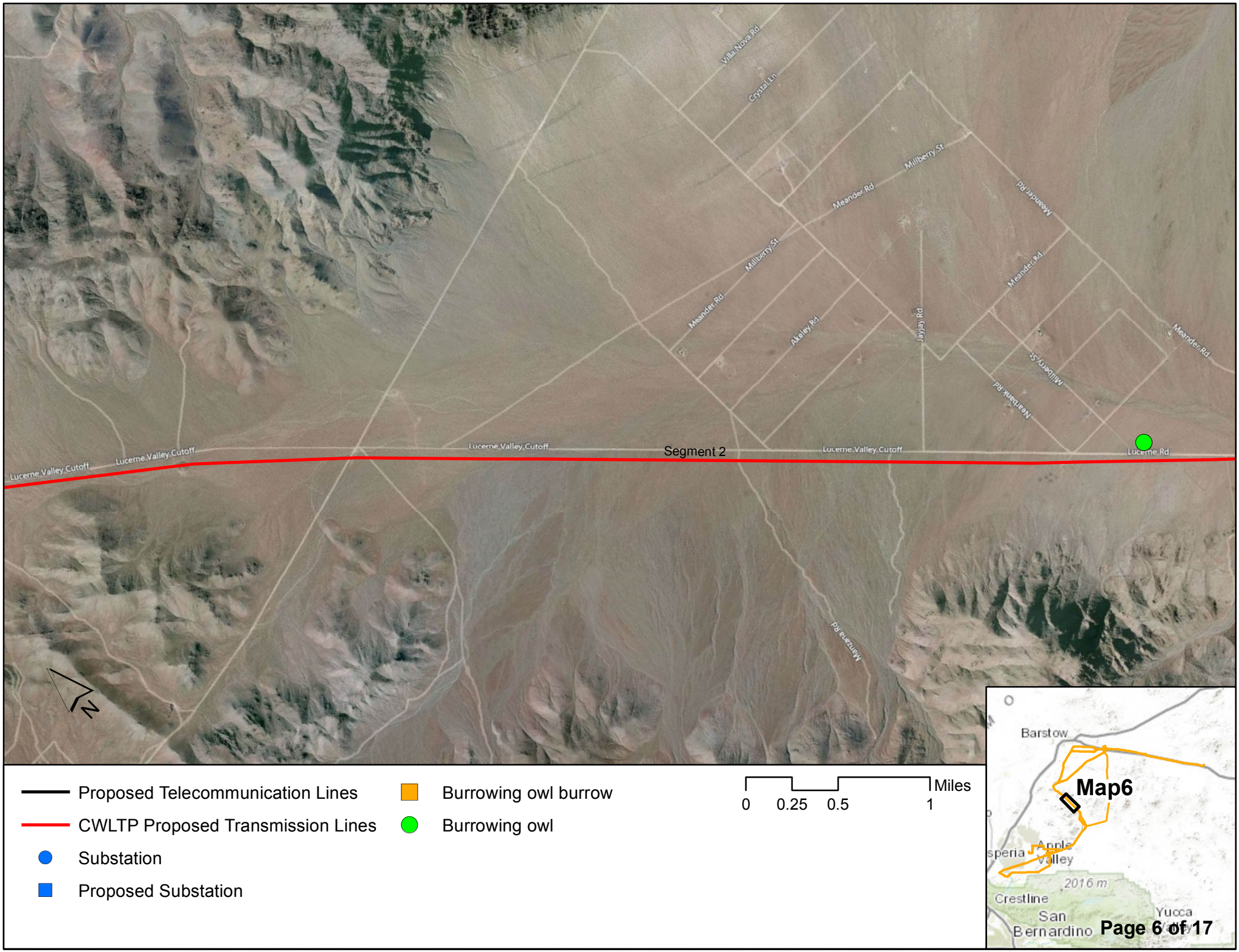
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Lucerne Valley Cutoff
Lucerne Valley Cutoff
Segment 2
Lucerne Valley Cutoff
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Manzana Rd
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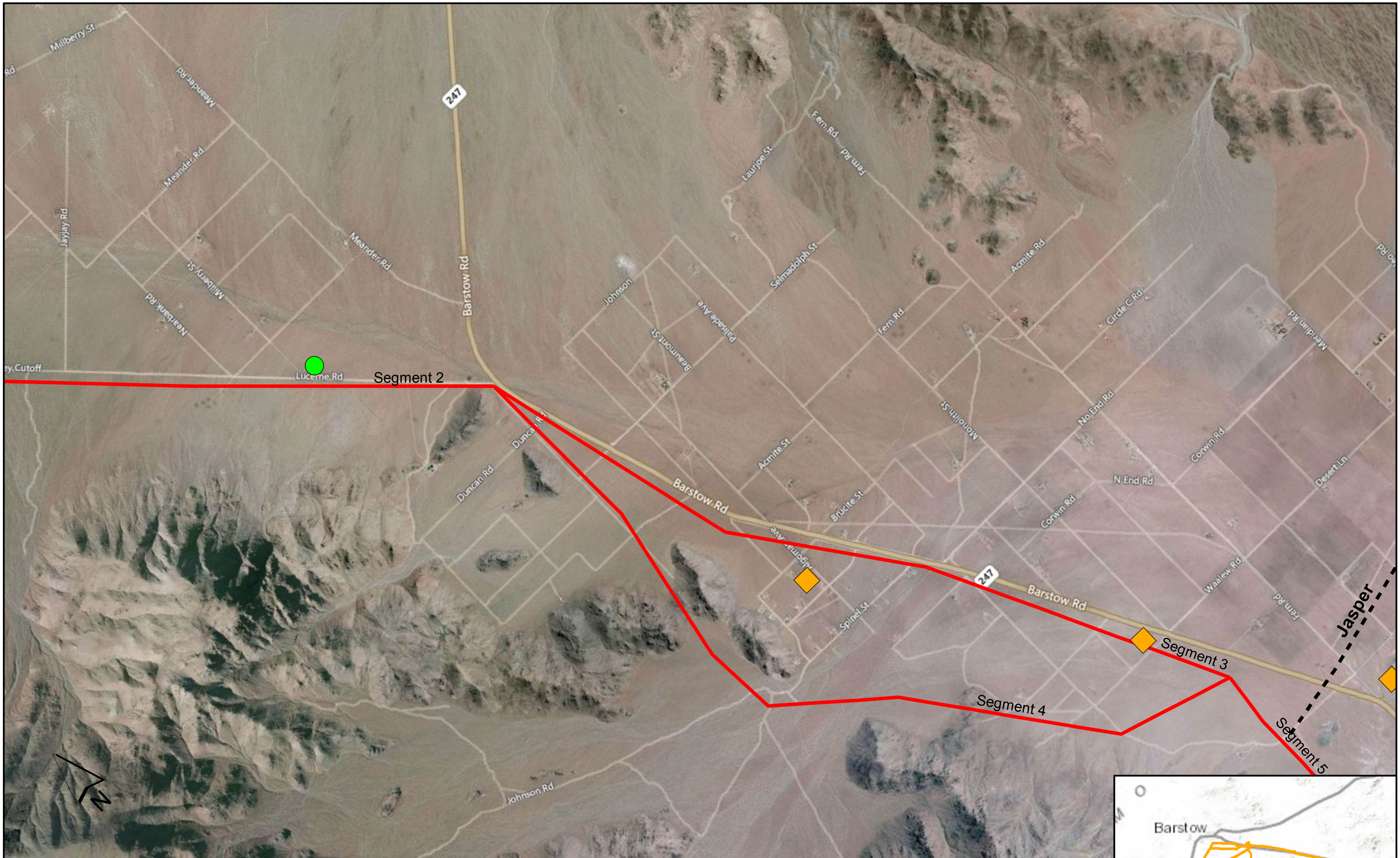

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Burrowing owl

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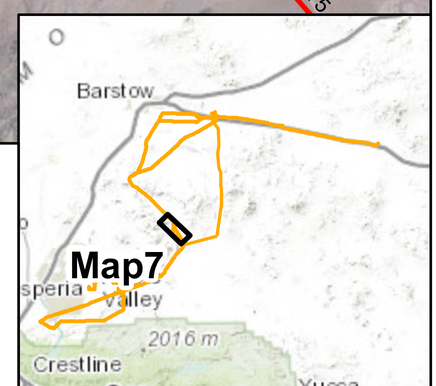

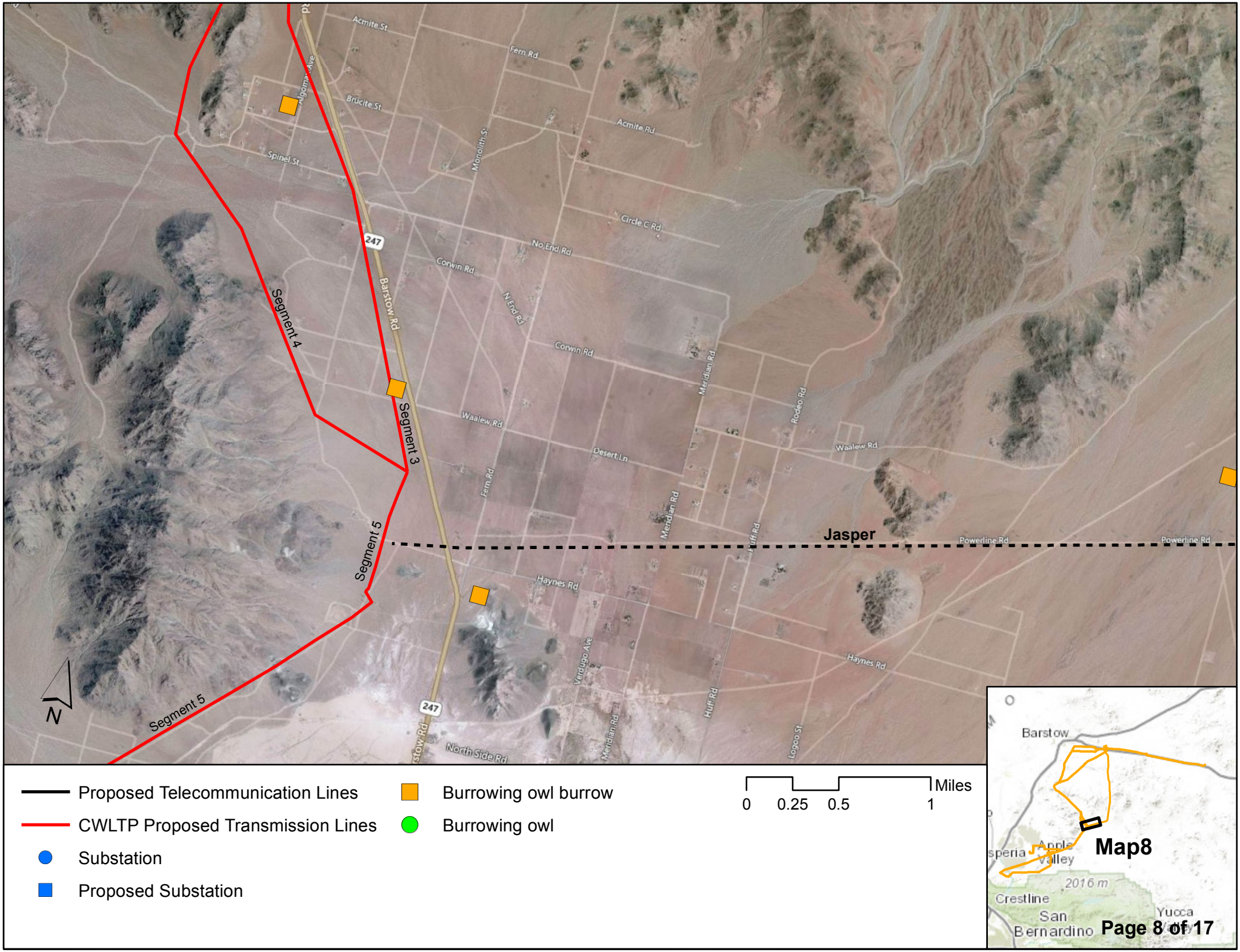
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Segment 3
Segment 5
Meridian Rd
Rodeo Rd
Waalew Rd
Desert Ln
Fern Rd
Jasper
Powerline Rd
Haynes Rd
Verdugo Ave
Huff Rd
Logoo St
North Side Rd
N
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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Barstow
Apple Valley
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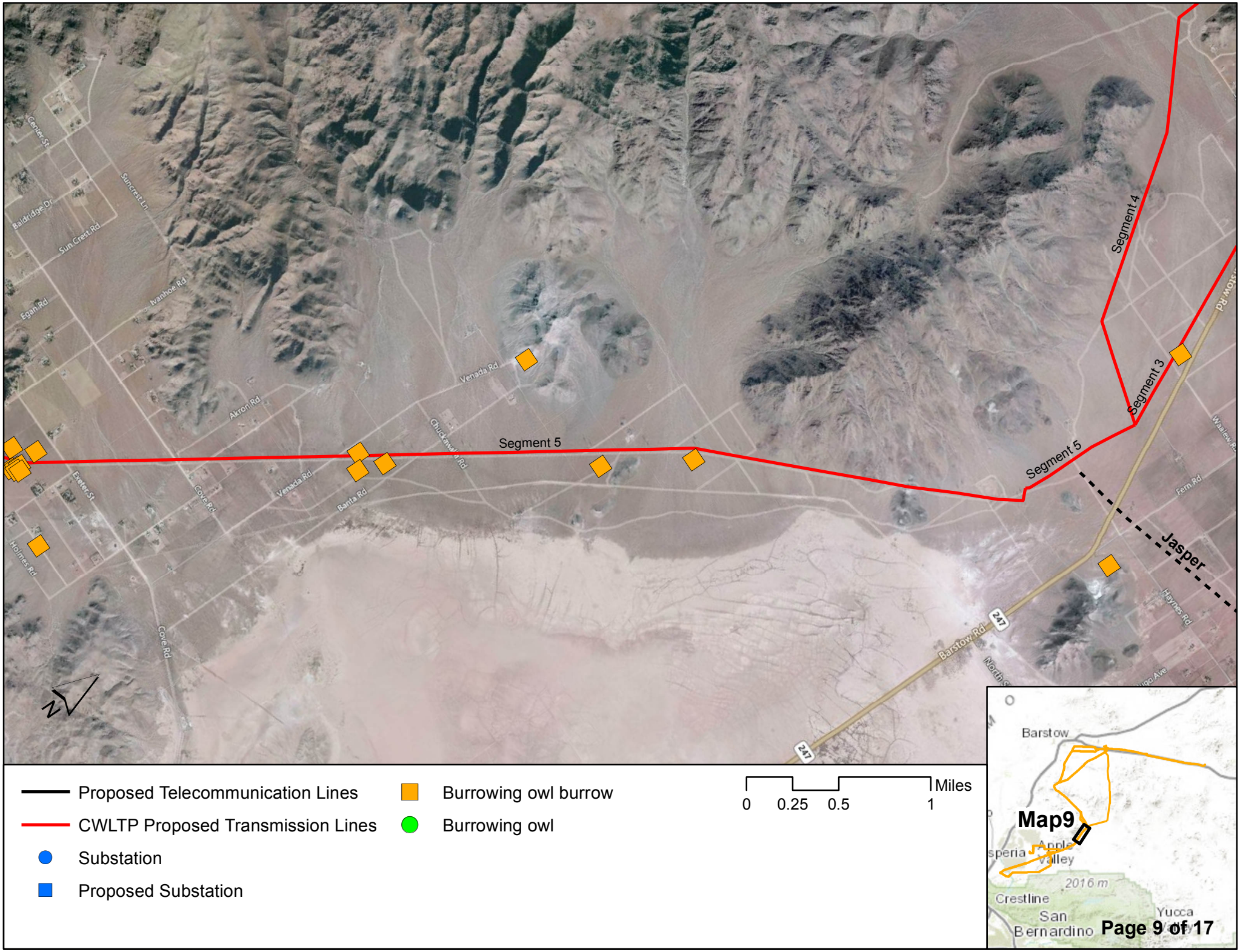
2016 m
Crestline
San Bernardino
Yucca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Segment 5
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Egan Rd
Sun Crest Rd
Suncrest Ln
Baldridge Dr
Center St
Fern Rd
Haynes Rd
Proposed Telecommunication Lines
CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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Burrowing owl
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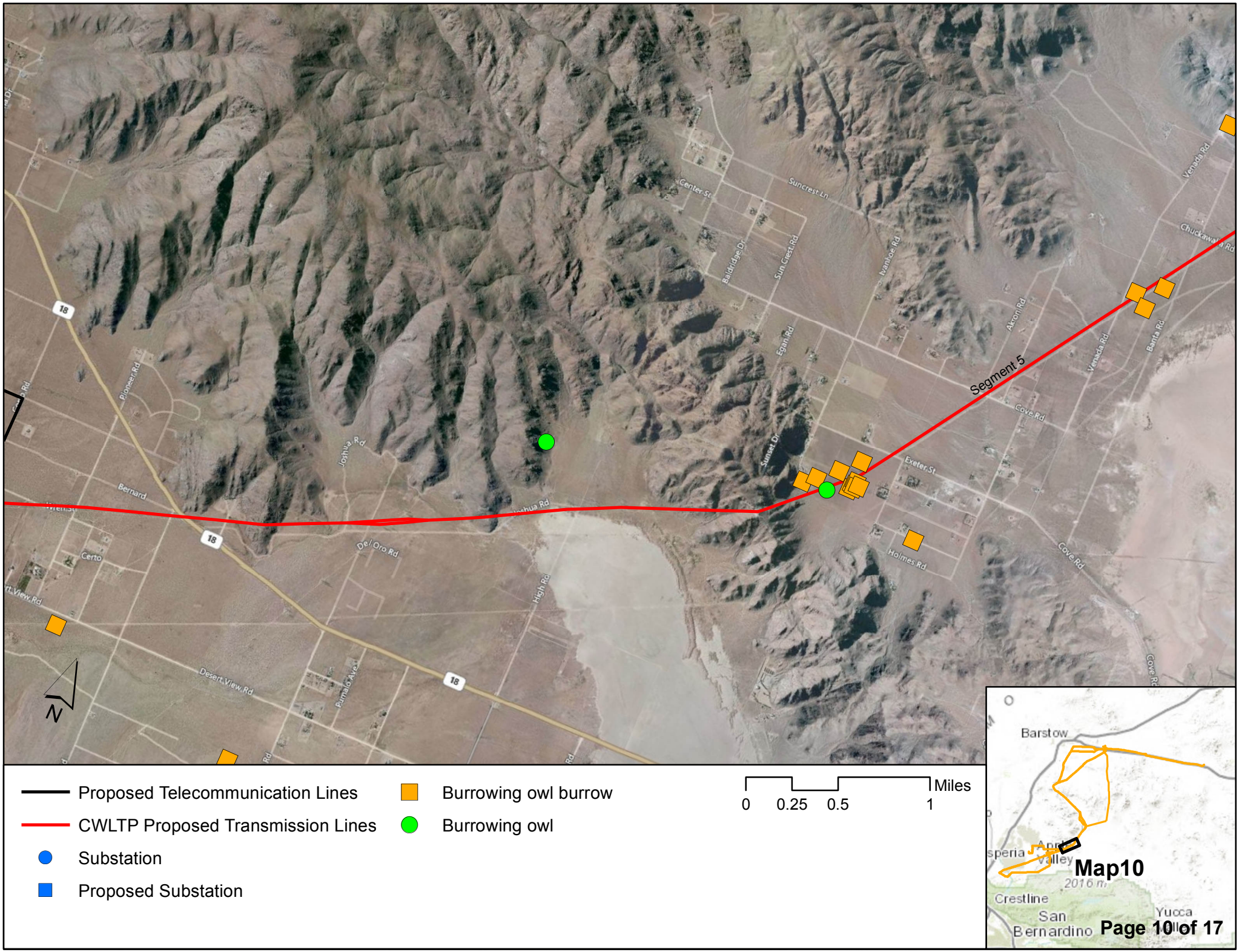
Apple Valley
2016 m
Crestline
San Bernardino
Yucca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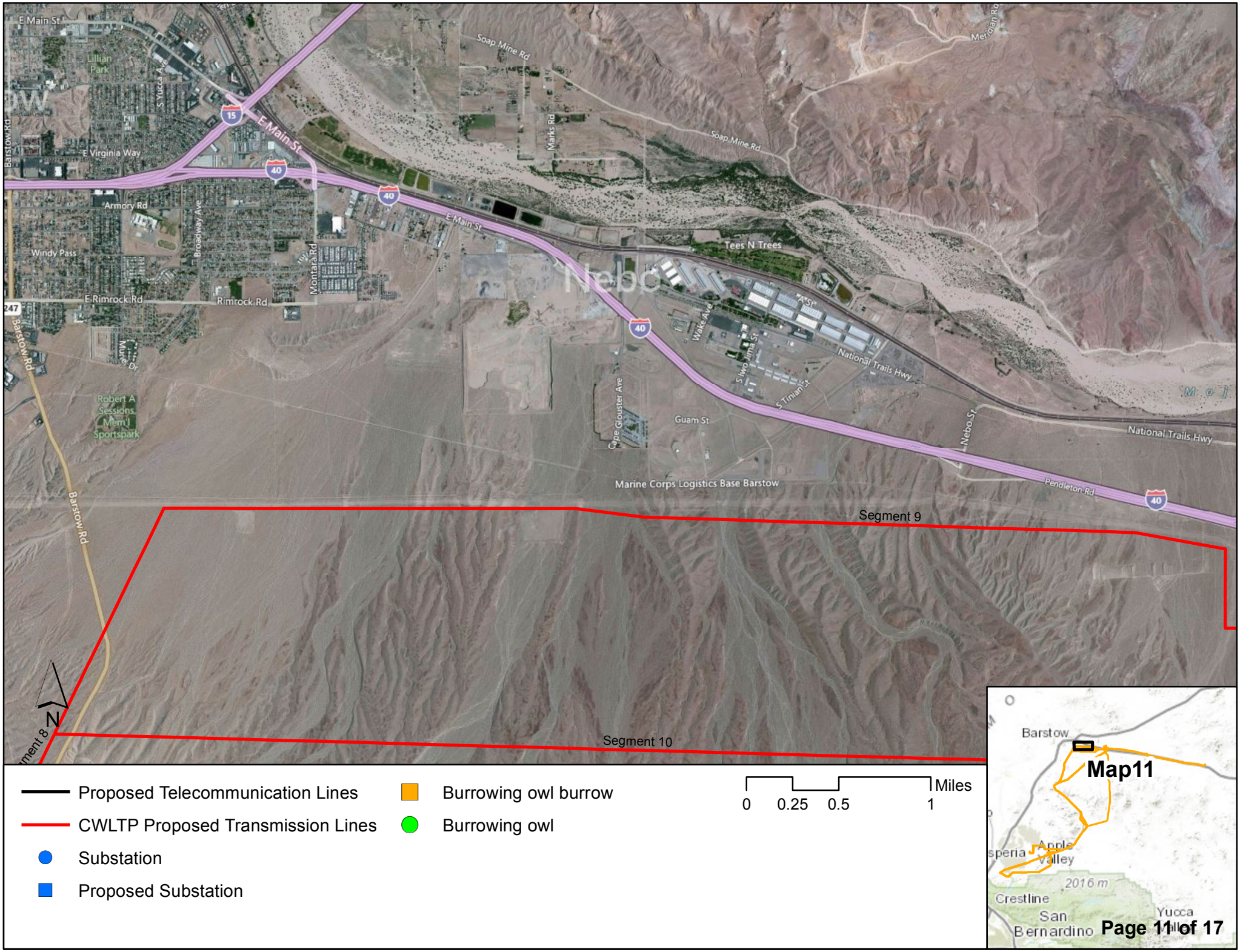
Barstow
Crestline
San Bernardino
Yucca
Map10
2016 m.
Page 10 of 17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Marks Rd
Meridian Rd
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Broadway Ave
Montara Rd
Windy Pass
Tees N Trees
E Rimrock Rd
Rimrock Rd
247
Barstow Rd
Wake Ave
A St
S Two Jims St
National Trails Hwy
S Timian St
Marks Dr
Robert A Sessions Mem'l Sportspark
Cape Glouster Ave
Guam St
Nebo St
National Trails Hwy
Marine Corps Logistics Base Barstow
Pendleton Rd
Barstow Rd
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Segment 10
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San Bernardino
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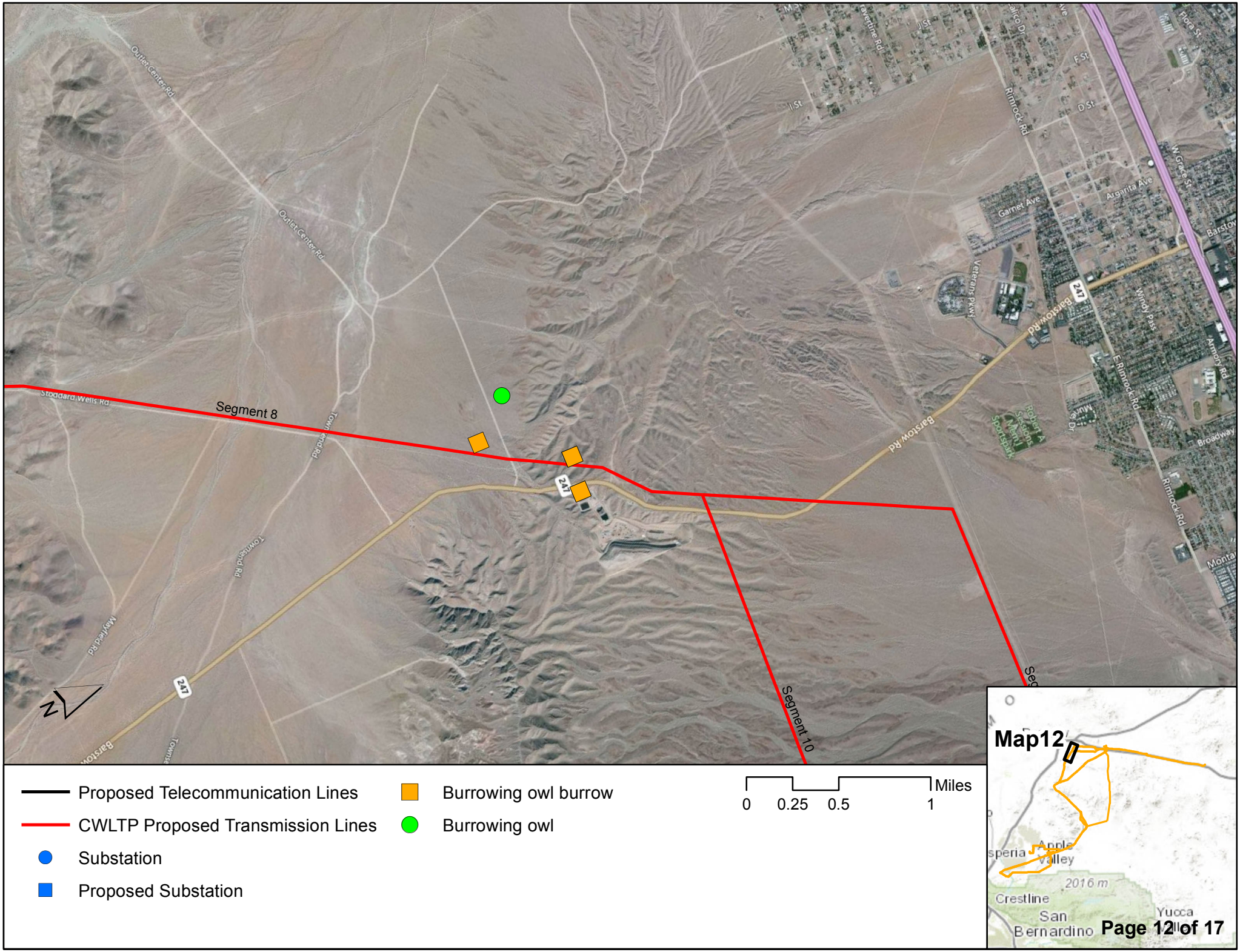
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Armory Rd
Broadway
247
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CWLTP Proposed Transmission Lines
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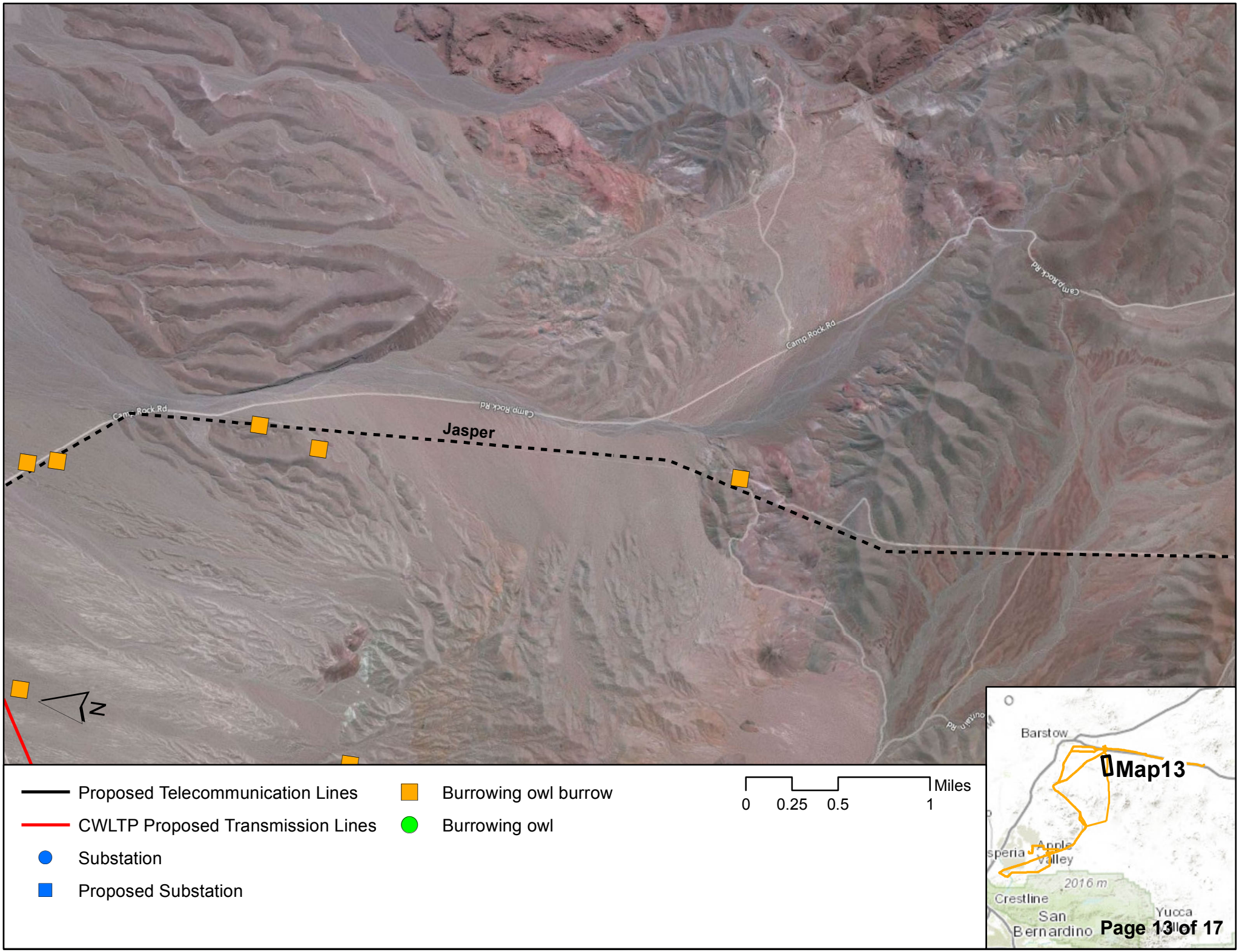
2016 m
Crestline
San Bernardino
Yucca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Substation
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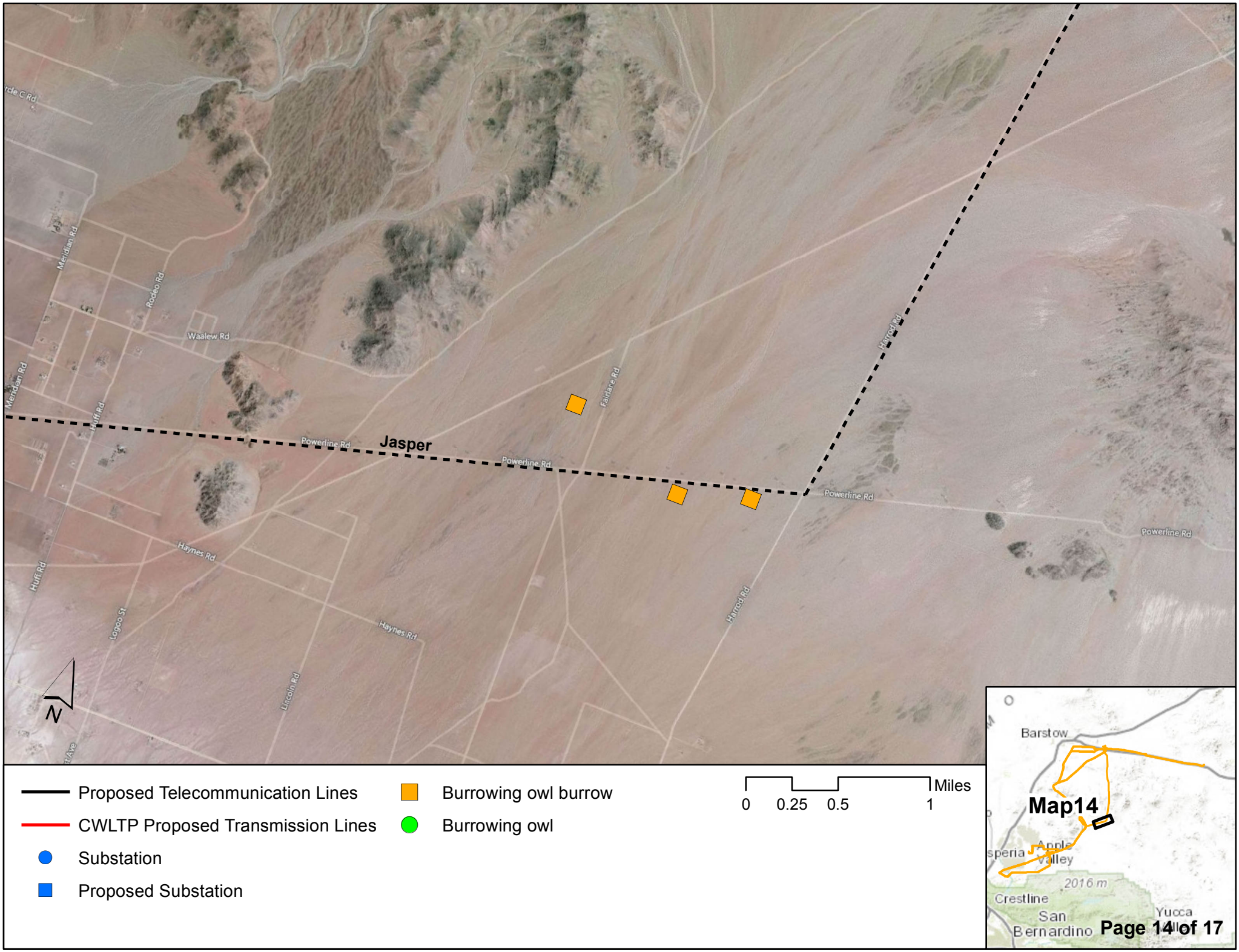
Barstow
Map13
Apple Valley
2016 m
Crestline
San Bernardino
Yucca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Waalew Rd
Haynes Rd
Haynes Rd
Meridian Rd
Meridian Rd
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Huff Rd
Logoo St
Lincoln Rd
Fairlane Rd
Harrod Rd
Harrod Rd
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Proposed Telecommunication Lines
CWLTP Proposed Transmission Lines
Substation
Proposed Substation
Burrowing owl burrow
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0
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1
Miles
Barstow
Map14
Apple Valley
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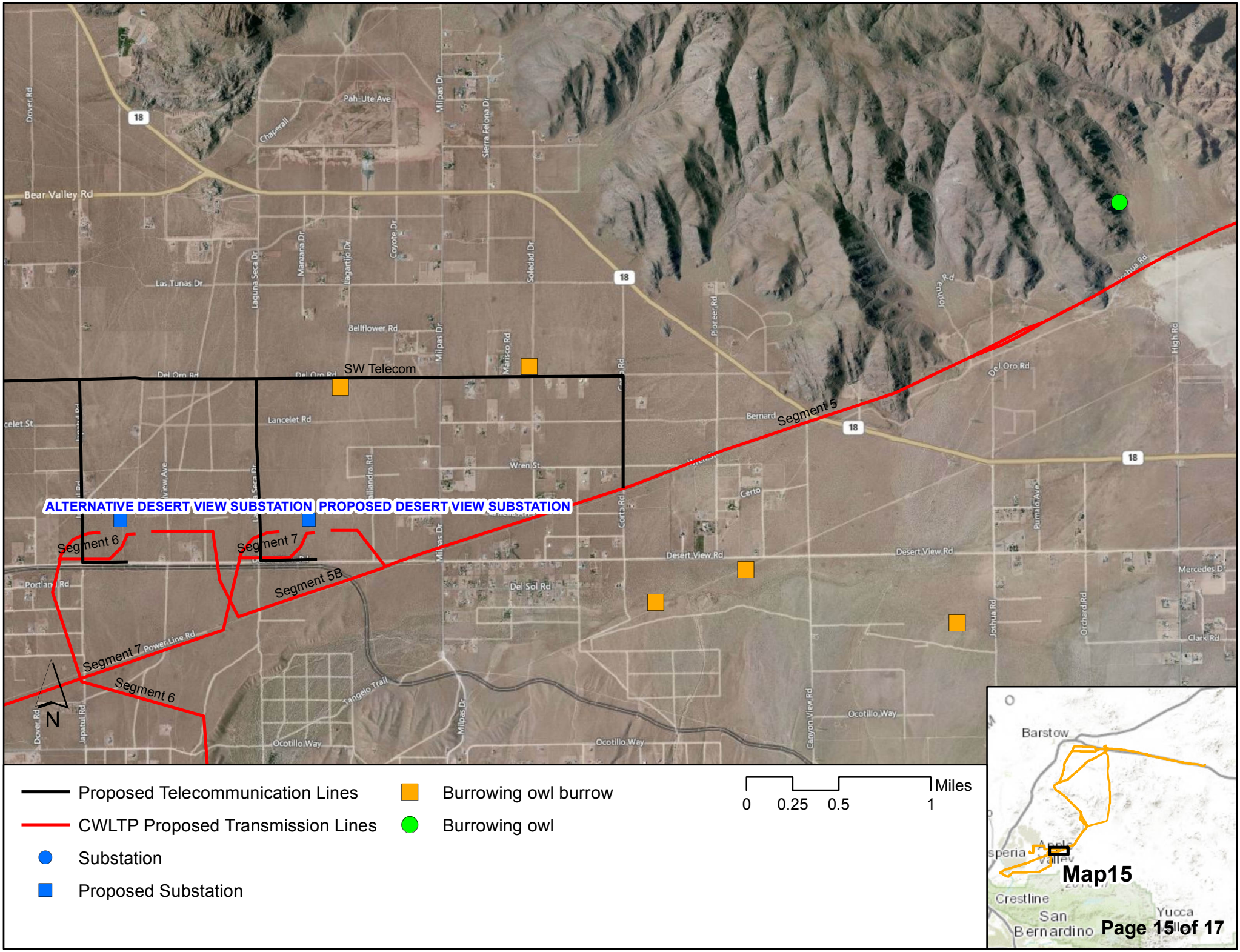
Crestline
San Bernardino
Yucca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Bernard
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Del Sol Rd
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Dover Rd
Japatul Rd
Pah-Ute Ave
Chaperall
Milpas Dr
Sierra Pelona Dr
Laguna Seca Dr
Manzana Dr
Lagartijo Dr
Coyote Dr
Soledad Dr
Mariposa Rd
Pioneer Rd
Joshua Rd
High Rd
Corto Rd
Pumalo Ave
Orchard Rd
Mercedes Dr
Clark Rd
Canyon View Rd
Williandra Rd
View Ave
18
SW Telecom
ALTERNATIVE DESERT VIEW SUBSTATION
PROPOSED DESERT VIEW SUBSTATION
Segment 5
Segment 5B
Segment 6
Segment 7
Segment 7 Power Line Rd
Segment 6
N
Proposed Telecommunication Lines
CWLTP Proposed Transmission Lines
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Burrowing owl
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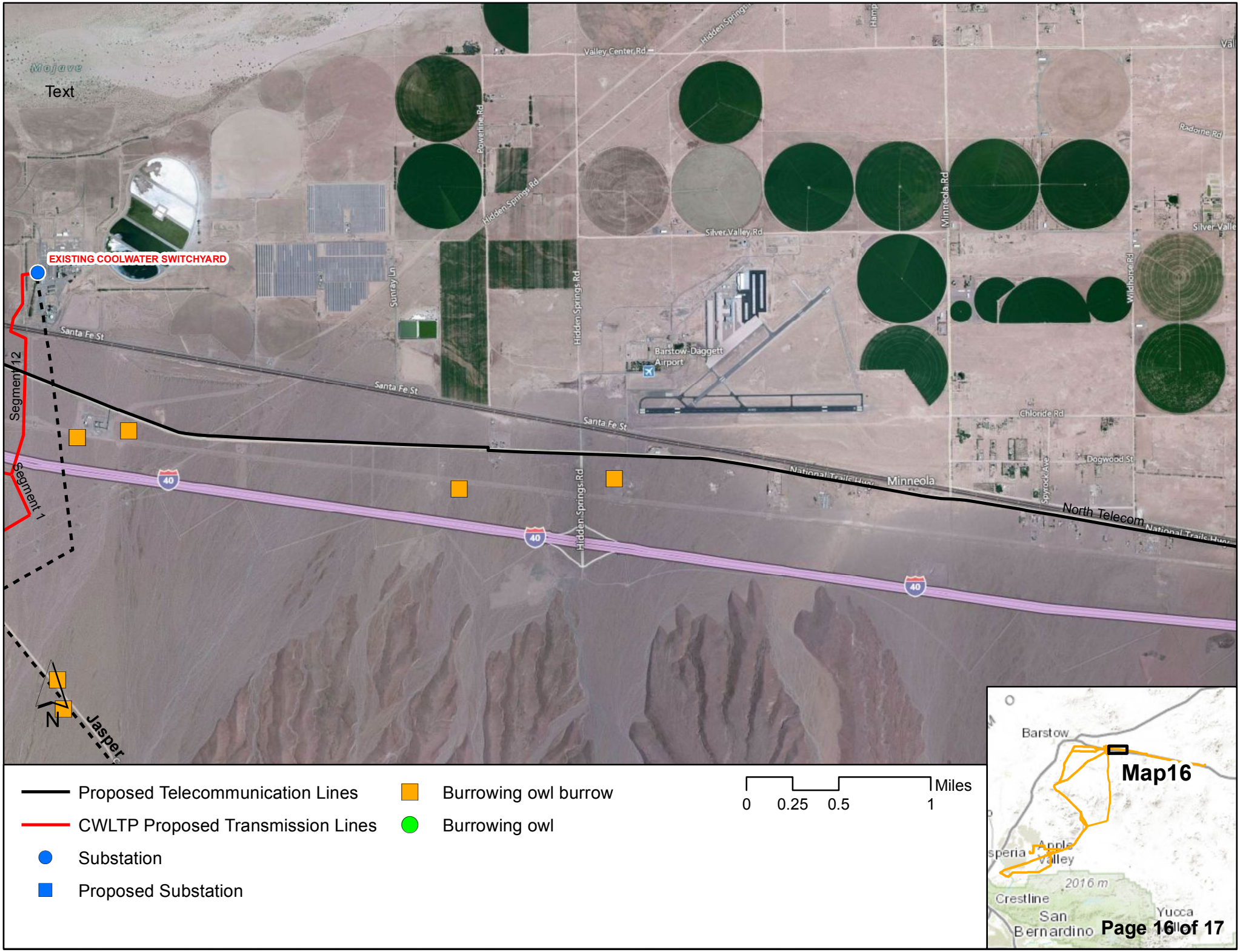
Barstow
Crestline
San Bernardino
Yucca
Map15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Segment 12
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Hidden Springs Rd
Powerline Rd
Silver Valley Rd
Minneola Rd
Radorne Rd
Barstow-Daggett Airport
Chloride Rd
Dogwood St
Minneola
North Telecom
National Trails Hwy
Jasper
N
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CWLTP Proposed Transmission Lines
Substation
Proposed Substation
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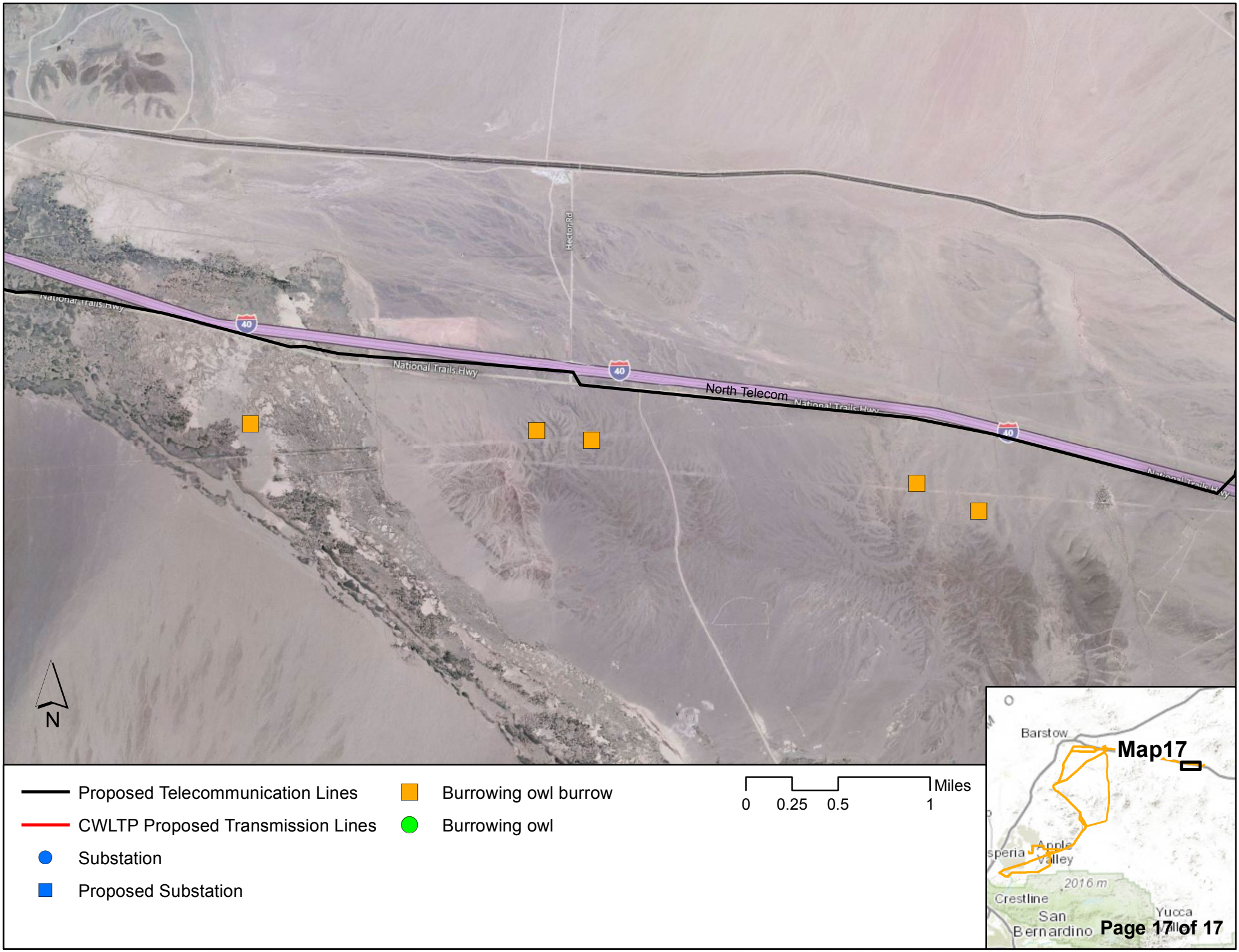
Apple Valley
2016 m
Crestline
San Bernardino
Yucca



Proposed Telecommunication Lines

CWLTP Proposed Transmission Lines

Substation

Proposed Substation

Burrowing owl burrow

Burrowing owl

0 0.25 0.5 1 Miles

Attachment B:

Photo Documentation

Photo 1: Active Burrowing Owl Burrow with Whitewash

Photo 2: Burrowing Owl Feather Found at Burrow Entrance

Photo 3: Potential Burrowing Owl Burrow

Photo 4: Active Burrowing Owl Burrow with Whitewash

MOHAVE GROUND SQUIRREL REPORT FOR THE COOLWATER-LUGO TRANSMISSION PROJECT

SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
Southern California Edison
1218 South 5th Avenue
Monrovia, California 91016

Submitted by:
BioResource Consultants, Inc.
310 E Matilija Street
Ojai, California 93023

William J. Vanherweg

Certified Wildlife Biologist *-Biological Surveys -Impact Analysis -Regulatory Agency Consultation*

-Mitigation Design -Habitat Management & Conservation Planning

1020 O'Connor Way *(805) 839-0375*
San Luis Obispo, California 93405 *FAX (805) 456-2163*

27 June 2013

BioResorces Consultants, Inc.
310 E. Matilija St.
Ojai, CA 93023

I have completed Mohave ground squirrel (*Xerospermophilus mohavence)* habitat assessment surveys along the Preferred, Jasper Alternative segment, Western Alternative segments, and the Southern Alternative segment of the proposed Coolwater Electrical Transmission and Telecom Project routes in San Bernardino County, California.

METHODS

I determined the suitability of habitat along the proposed transmission line corridor by observing and recording topography, vegetation types, levels of disturbance due to urban development, and distances of the corridors from the historic range of the Mohave ground squirrel (MGS). The southern boundary of MGS follows the course of the Mojave River. The surveys were conducted by driving and walking along the preferred and alternate routes on 10, 19 May 12 July 2012, and 30 May 2013.

RESULTS

The following table shows the miles of habitat along the preferred and alternative routes and compares the amount of MGS habitat along alternatives with the equivalent segment of the preferred route. No MGS or their sign was observed during these preliminary surveys.

Route	Total miles of habitat/grids required	Vegetation types of suitable habitat	Vegetation type of unsuitable habitat	Topography Unsuitable habitat
Preferred Route	47.3/48	Creosote scrub Some Joshua tree woodland	Juniper woodland	Steep and/or rugged
Western Alternative w/ northern segment	17.6/18	Creosote scrub	N/A	Steep and/or rugged
Western Alternative w/ southern segment	17.9/18	Creosote scrub	N/A	Steep and/or rugged
Preferred equivalent	13.0/13	Creosote scrub	N/A	Steep and/or rugged
Southern Alternative	2.5/3	Creosote scrub Some Joshua tree woodland	Juniper woodland	Steep and/or rugged
Preferred equivalent	4.9/5	Creosote scrub Some Joshua tree woodland	Juniper woodland	Steep and/or rugged
Telecom Interstate 40	15.0/15	Creosote and saltbush scrub	N/A	N/A
Telecom Apple Valley	11.52/12	All desert scrub habitats	N/A	Urban

CONCLUSION

Construction of the proposed electrical transmission line will require disturbances for tower pads, laydown areas, and access roads to the tower sites. If the preferred alternative is chosen 48 MGS rapping grids would be required to determine absence or presence. If the Jasper alternative route is implemented 38 grid would be required. California Department of Fish and Wildlife (CDFW) usually requires trapping within the MGS historic range as well as a 10 mile buffer outside that range. Most of the habitat along the route is in the 10 mile buffer area and lies outside the historic range of MGS. The results of trapping surveys would most likely be negative for MGS even though the habitat is suitable. The proposed Telecom project will primarily be attached to existing poles and new disturbance to potential habitat will most likely be minimal. We recommend that

areas where new disturbance is proposed be identified so that trapping surveys can be minimized. A more cost effective alternative to trapping surveys may be to assume presence of MGS along the

corridors, prepare a 2081 permit application, and compensate for project related disturbances.

Thank you for asking me to provide consulting services. If you have any questions please call (805) 839-0375.

Sincerely,

William J. Vanherweg
Certified Wildlife Biologist

FOCUSED AVIAN SURVEY REPORT
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
Southern California Edison
1218 South 5th Avenue
Monrovia, California 91016

Submitted by:
BioResource Consultants, Inc.
310 E Matilija Street
Ojai, California 93023

JUNE 2013

Table of Contents

List of Tables

List of Figures

List of Attachments

1.0 INTRODUCTION

This report documents and describes the existing conditions and biological resources in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to biological resources that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

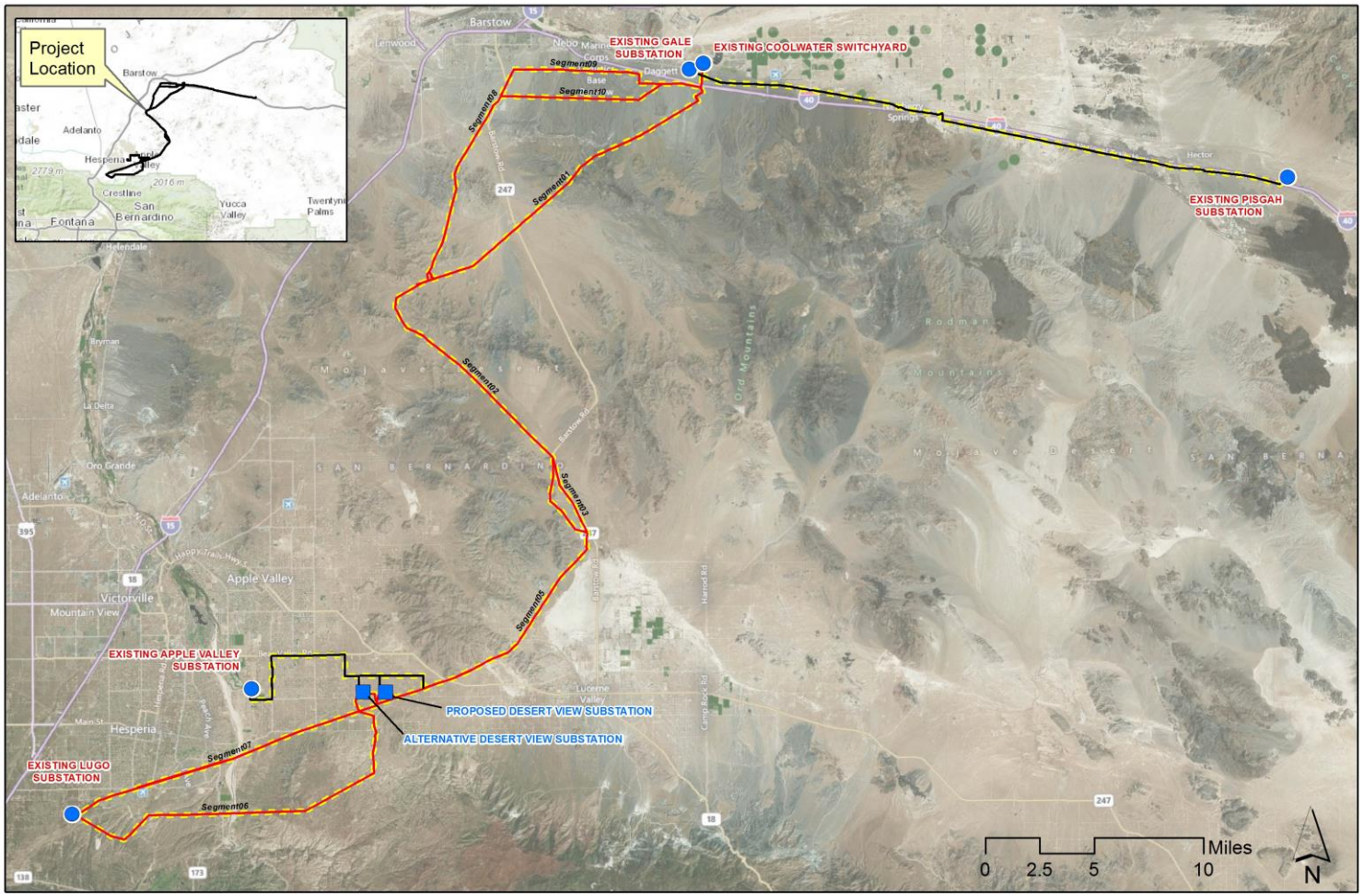
1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

Figure 1. Project Location



2.0 METHODOLOGY

Prior to field surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain a list of federal- and state-listed resources, including sensitive herpetological species in the region. The results of these preliminary database searches provided a basis for addressing the appropriate special-status resources in the footprint of the Proposed Project components and immediate surroundings (collectively referred to as the Biological Resources Project Area). The biological resources assessment included habitat suitability assessments for special-status avian species within the Project Area and a 500-foot buffer on either side of the alignment ("Survey Area"). Non-linear features such as substations were surveyed within the boundary of the feature. Additionally, literature was reviewed to identify potential special-status avian species within 5 miles of the Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area. Surveys were conducted in 2012 and 2013.

2.1 Literature and Database Review

Information regarding locations sensitive avian species and their habitats was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include: the eBird website (Cornell Lab Ornithology 2012), and *California Wildlife Habitat Relationships* software (CDFW 2005).

2.2 Survey Methods

In 2012, fifteen survey points were established along the proposed transmission line route. The survey points were distributed along the initial Project alignment in an attempt to best sample the avian community located within the Project Area. In 2013, due to changes in the Project, additional survey points were established along two telecom routes, and original points 2, 3 & 4 were moved slightly to account for the adjusted transmission line route. Surveys were completed for 10 minutes at each survey point. The surveys along the initial route were repeated six times in 2012 and once in 2013. The survey points established along the telecom routes were surveyed once in 2013. Surveys were initiated just before or at sunrise. For the transmission line, surveys proceeded from the survey point located at the lowest elevation to the point located at the highest elevation. For the telecom surveys, surveys were initiated at the western most

point and continued eastwardly along the Project alignment. All avian species observed were recorded.

2.3 Avian Species

A total of 74 species of birds have been identified during surveys, including nine special-status species. A complete list of bird species observed in the Project Area is provided in **Table 1**. Special-status species are in bold print.

Table 1. Avian Species Observed During 2012 and 2013 Surveys

Common Name	Scientific Name
American coot	*Fulica americana*
American kestrel	*Falco sparverius*
American white pelican	*Pelecanus erythrorhynchos*
Anna's hummingbird	*Calypte anna*
Ash-throated flycatcher	*Myiarchus cinerascens*
Bendire's Thrasher	***Toxostoma bendirei***
Black phoebe	*Sayornis nigricans*
Black-tailed gnatcatcher	*Polioptila melanura*
Blue-gray gnatcatcher	*Polioptila caerulea*
Brewer’s blackbird	*Euphagus cyanocephalus*
Brewer’s sparrow	*Spizella breweri*
Brewer's sparrow	*Spizella breweri*
Burrowing owl	***Athene cunicularia***
Bushtit	*Psaltriparus minimus*
Cactus wren	*Campylorhynchus brunneicapillus*
California quail	*Callipepla californica*
California towhee	*Pipilo crissalis*
Canyon wren	*Catherpes mexicanus*
Chipping sparrow	*Spizella passerina*
Chukar	*Alectoris chukar*
Common raven	*Corvus corax*
Cooper's hawk	***Accipiter cooperii***
Costa’s hummingbird	*Calypte costae*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Golden eagle	***Aquila chrysaetos***
Great egret	*Ardea alba*
Greater roadrunner	*Geococcyx californianus*
Horned lark	*Eremophila alpestris*

House finch	*Carpodacus mexicanus*
House sparrow	*Passer domesticus*
House wren	*Troglodytes aedon*
Juniper titmouse	*Baeolophus ridgwayi*
Killdeer	*Charadrius vociferus*
Ladder-backed woodpecker	*Picoides scalaris*
Lark sparrow	*Chondestes grammacus*
Lawrence's goldfinch	*Carduelis lawrencei*
Le Conte's thrasher	***Toxostoma lecontei***
Lesser goldfinch	*Carduelis psaltria*
Loggerhead shrike	***Lanius ludovicianus***
Mountain bluebird	*Sialia currucoides*
Mourning dove	*Zenaida macroura*
Northern flicker	*Colaptes auratus*
Northern mockingbird	*Mimus polyglottos*
Northern rough-wing swallow	*Stelgidopteryx serripennis*
Nuttal's woodpecker	*Picoides nuttallii*
Prairie falcon	***Selasphorus rufus***
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-billed gull	*Larus delawarensis*
Rock pigeon	*Columba livia*
Rock wren	*Salpinctes obsoletus*
Rufous hummingbird	*Selasphorus rufus*
Sage sparrow	*Amphispiza belli*
Sage Thrasher	*Oreoscoptes montanus*
Say's phoebe	*Sayornis saya*
Scott's oriole	*Icterus parisorum*
Swainson's hawk	***Buteo swainsoni***
Townsend's warbler	*Dendroica townsendi*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
Violet-green swallow	*Tachycineta thalassina*
Warbling vireo	*Vireo gilvus*
Western bluebird	*Sialia mexicana*
Western Kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Western scrub-jay	*Aphelocoma californica*
Western tanager	*Piranga ludoviciana*
White-crowned sparrow	*Zonotrichia leucophrys*
White-throated swift	*Aeronautes saxatalis*

Wilson's warbler	*Wilsonia pusilla*
Yellow warbler	***Dendroica petechia***
Yellow-rumped warbler	*Dendroica coronata*

2.4 Special-Status Avian Species

The Project Area provides suitable habitat for special status avian species. Based on of the search of the CNDDB (CDFW 2013), twelve special-status species are documented to occur or have potential habitat in the region of the Project Area. **Table 2** provides a list of special-status species that have potential to occur within the Project Area.

Table 2. Special-status Avian Species Likely to Occur within the Project Area

Species	Listing	Habitat	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Cooper's hawk (*Accipiter cooperii*)	SWL	Breeds in areas of dense stands of live oak, riparian deciduous or other forest habitats near water.	**Medium**	CNDDB occurrences and suitable habitat present in Project area.
tricolored blackbird (*Agelaius tricolor*)	SSC, BLM, BCC	Fresh water marshes of cattails.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
golden eagle (*Aquila chrysaetos*)	BLM, SWL, SFP, BCC	Generally open country, prairies, tundra, open wooden country, and hilly or mountainous regions.	**Medium**	Potential suitable habitat present in Project area.
long-eared owl (*Asio otus*)	SSC	Frequents dense, riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats. Also found in dense conifer stands at higher elevations. Winters in the desert habitats.	**Medium**	CNDDB occurrences and suitable habitat present in Project area.
burrowing owl (*Athene cunicularia*)	BLM, SSC, BCC	Found mainly in grassland and open scrub from the seashore to foothills. Strongly associated with ground squirrel burrows.	**High**	Numerous CNDDB occurrences within Project area. Suitable habitat present within Project area.

Swainson's hawk (*Buteo swainsoni*)	ST, BLM, USFS	Forages in open grasslands, agricultural areas, sparse shrub lands, and small open woodlands. Nests in scattered trees within grasslands, shrub lands, or agricultural landscapes.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC, SE, BLM, USFS	Found in valley foothill and desert riparian habitats. Typically in areas of Densely foliaged, deciduous trees and shrubs, especially willows, required for roosting sites.	Low	Potential suitable habitat present in Project area. CNDDB occurrences near Project area.
yellow warbler (*Dendroica petechia brewsteri*)	SSC, BCC	Breeds in mature riparian woodlands that consist of cottonwood, willow, alder, and ash trees.	**Medium**	CNDDB occurrences and suitable habitat present in Project area.
White-tailed kite (*Elanus leucurus*)	SFP	Savanna, open woodland, marshes, and open agriculture lands.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE, SE	Riparian woodlands with current or evidence of recent water flow and scouring. Riparian corridors must be at least 33 feet wide, closed canopy, relatively dense understory, and open mid-story.	Low	No potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
prairie falcon (*Falco mexicanus*)	SWL, BCC	Found in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Requires sheltered cliff ledges for cover and nesting.	**High**	Numerous CNDDB occurrences within Project area. Suitable habitat present within Project area.
bald eagle (*Haliaeetus leucocephalus*)	FD, SE, BLM, SFP, USFS	Breeding areas are usually found by water.	Low	No potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
yellow-breasted chat (*Icteria virens*)	SSC	Found in valley foothill riparian, and desert riparian habitats. Requires riparian thickets of willow and other brushy tangles near watercourses for cover.	Low	CNDDB occurrences and suitable habitat present in Project area.

loggerhead shrike (*Lanius ludovicianus*)	SSC, BCC	Breeds in areas of scrub and annual grasslands with scattered shrubs for nesting.	**High**	CNDDB occurrences and suitable habitat present in Project area.
California black rail (*Laterallus jamaicensis coturniculus*)	ST, BLM, SSC, BCC, SFP	High coastal marshes, freshwater marshes.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
Gila woodpecker (*Melanerpes uropygialis*)	SE, BLM, BCC	Deserts that have large cacti or suitable trees for nesting, riparian woodlands, and residential areas.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
Lucy's warbler (*Oreothlypis luciae*)	SSC, BCC	Riparian mesquite woodlands.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
summer tanager (*Piranga rubra*)	SSC	Occurs in mature, desert riparian habitat dominated by cottonwoods and willows. Cottonwoods and willows, especially older, dense stands along rivers and streams, provide nesting, feeding cover.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
vermilion flycatcher (*Pyrocephalus rubinus*)	SSC	Found in desert scrub, savanna, riparian woodlands.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
Bendire's thrasher (*Toxostoma bendirei*)	BLM, SSC, BCC	Occurs in areas of desert succulent shrub and Joshua tree habitats in Mojave Desert area. Frequents flat desert areas with scattered stands of thorny shrubs and cactus for cover, foraging, and nesting.	**High**	CNDDB occurrences and suitable habitat present in Project area.
Le Conte's thrasher (*Toxostoma lecontei*)	SSC, BCC	Occurs in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs.	**High**	Numerous CNDDB occurrences within Project area. Suitable habitat present within Project area.

least Bell's vireo (*Vireo bellii pusillus*)	FE, SE	Found in areas of valley foothill riparian habitat and along the western edge of the deserts in desert riparian habitat. Thickets of willow and other low shrubs afford nesting and roosting cover.	Low	Potential suitable habitat present in Project area. No CNDDB occurrences near Project area.
gray vireo (*Vireo vicinior*)	BLM , SSC, BCC	Found in arid pinyon-juniper, and juniper, woodlands and chaparral habitats from 600 - 2,000 meters.	**Medium**	CNDDB occurrences and suitable habitat present in Project area.

Eleven special-status species are anticipated to occur within the Project Area. Focused surveys for burrowing owl were conducted within the Project Area and the survey results are presented within **Appendix D** of the General Habitat Assessment.

The following are detailed descriptions of sensitive bird species that are anticipated to occur within the Project Area:

Cooper's Hawk (*Accipiter cooperii)*

STATUS		
Federal	**State**	**CDFW** (CDFW 2012)
None	None	SWL – Watch List Species for CA

Resident throughout most of the state, Cooper's hawk habitat consists of stands of live oak, riparian deciduous or other forest habitats near water are used most frequently. When hunting and feeding, Cooper's hawks will catch small birds and small mammals, but will also take reptiles and amphibians. Cooper's hawks hunt in broken woodland and habitat edges, catching prey in air, on ground, and in vegetation. They often use patchy woodlands and edges with snags for perching.

During surveys, Cooper hawks were observed perched in a tree line outside of the Dagget Switch Yard (UTM 11S 513209 N, 3857482 E). Cooper's hawk has the potential to occur within the Project Area where larger trees are located, typically in larger trees located near residential areas.

Golden eagle (Aquila chrysaetos)

STATUS		
Federal	**State**	**CDFW**, **BLM, USFWS**
None	None	BLMS – Bureau of Land Management Sensitive Species SWL – Watch List Species for CA SFP – Fully protected by CA BCC – Birds of conservation concern

Golden eagles are usually found in mountainous areas, as well as open country with broken woodlands, grasslands, chaparral, sagebrush edges, and desert edges. Nesting habitat is mainly in steep cliffs and ledges and less often in medium to tall trees adjacent to open country. While hunting, these raptors soar high in the air, contouring the terrain and also hunt from prominent perches. Diet consists primarily of rabbits, hares, ground squirrels, and prairie dogs.

During surveys four golden eagles were observed during avian surveys near the Granite and Ord Mountains. Golden eagle nest data was obtained from the Barstow District of the Bureau of Land Management ("BLM") for eagle nests within 10-miles of the Project Area within the Granite Mountains, Stoddard Ridge, Sidewinder Mountain, Dagget Ridge, Goat Mountains, Ord Mountains, and Elephant Mountains. In total there are 85 historic and active nests within vicinity of the Project Area. During 2012 surveys, ten of these sites were active, 27 were inactive, 32 sites had nests missing, and 16 nests could not be located (LaPre 2012).

Burrowing owl (Athene cunicularia)

STATUS		
Federal	**State**	**CDFW, BLM, USFWS**
None	None	BLMS – Sensitive species SSC – CA Species of Special Concern BCC – Birds of Conservation Concern

Burrowing owls are a small round-headed species of owl with short tails, no ear tufts, long slim bare legs, and small facial discs. They have barred underparts, spotted upper sides, white throats and arched white "eyebrows". Habitat consists of open, dry grasslands, agricultural and range lands, and desert habitats of low-growing vegetation. They are nocturnal and primarily hunt small rodents.

Burrowing owls and their burrows were found throughout the Project Area. Data on the location and number of burrowing owls observed during surveys is presented within the **Appendix D**.

Long-Eared Owl (*Asio otus*)

STATUS		
Federal	**State**	**CDFW**
None	None	SSC – CA Species of Special Concern

The Long-eared owl is an uncommon winter resident within the deserts of southern California. Long-eared owls are most often near riparian habitats, but sill also utilize live oak thickets and other dense stands of trees for nesting Foraging habitat of long-eared owls consists of open areas, occasionally in woodland and forested habitats. Winter roosts habitat is typically riparian or other thickets with small, densely canopied trees.

No long-eared owls were observed during surveys. The juniper woodland habitat located in the southwest portion of the Project Area provides suitable habitat for long-eared owls.

A CNDDB occurrence of a long-eared owl exists along the Mohave River in Apple Valley approximately 1,000 feet south of the Project alignment. A search of the eBird database (eBird 2013) revealed several additional locations of Long-eared owls with the San Bernardino National Forest.

Swainson's Hawk (Buteo swainsoni)

STATUS		
Federal	**State**	**BLM**
Sensitive	Threatened	BLMS – Sensitive species

The Swainson's hawk is a medium-sized raptor with relatively long, pointed wings. The Swainson's hawk breeds in the western United States and Canada and winters in South America as far south as Argentina. Adapted to open grasslands, this raptor has become increasingly dependent on agriculture, especially alfalfa crops, as native communities are converted to agricultural lands. The diet of the Swainson's hawk in California is varied, but mainly consists of small rodents called voles. Other small mammals, birds, and insects are also taken. Swainson's hawks often nest near riparian systems. They will also use lone trees in agricultural fields or pastures and roadside trees when adjacent to suitable foraging habitat. Swainson's hawks may occupy Juniper communities, if they are present in the area.

Two Swainson's hawks were observed flying over the Project Area within the Granite Mountains southwest of Highway 247. The Project area does not provide suitable nesting habitat. Swainson's hawks are only expected to occur within the Project Area in the spring and fall during migration. There are no CNDDB records of Swainson's hawks nesting within the vicinity of the Project Area.

Prairie falcon (Falco mexicanus)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G5, S3	LC – Least Concern

The prairie falcon is an uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed ranges include annual grasslands to alpine meadows, but are associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. The prairie falcon requires sheltered cliff ledges for cover, and usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area. In California, average home range size is between 59 and 288 square kilometers. Prairie falcons migrate from the north and winter in California. Prairie falcons forage mostly in the early morning and late afternoon. The breeding season ranges from mid-February through mid-September, with peak between April and early August.

Prairie Falcons were observed foraging along the Project Area from near the Dagget Substation to the proposed Desert View Substation. Suitable breeding habitat is present

on cliffs and rock outcroppings present along the Project alignment. Incidental prairie falcon nest data was obtained from golden eagle surveys that were conducted on behalf of the BLM Barstow District (LaPre 2012). Active prairie falcon nests were observed near the Project Area in the Granite Mountains and the Fairview Mountains.

Loggerhead shrike (Lanius ludovicianus)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012), **BLM, USFS**
None	None / G4, S4	SCC – CA Species of Special Concern

The loggerhead shrike is a small gray, black, and white bird with a hooked beak. A common resident and winter visitor in lowlands and foothills throughout California, it prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. The loggerhead shrike eats mostly large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. It searches for prey from a perch at least 0.6 meters (2 feet) above ground, often much higher. Nests can be found on stable branches in densely foliaged shrubs or trees, usually well concealed. Breeding season is from March to May.

Loggerhead shrikes were observed throughout the Project area in all desert habitats.

Bendire's thrasher (Toxostoma bendirei)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G4G5, S3	SSC – CA Species of Special Concern

Bendire's thrasher is a spring and summer resident and breeder in flat areas of desert succulent shrub and Joshua tree habitats in the Mojave Desert area. The bird occurs primarily in San Bernardino County and western Kern County. Migrants appear in California in February. Most have left breeding grounds by August. Bendire's thrasher forages on flat desert floors with scattered clumps of cactus, yucca, and thorny scrub, and seeks cover in stands of thorny shrubs and cactus in flat desert areas. Potentially serious threats to this species include harvesting of Joshua tree and other yuccas, grazing by domestic livestock, urbanization, and off-road vehicle activity within its limited breeding range.

During surveys three Bendire's thrashers were observed along the preferred Project alignment near Camp Rock Road. Thrashers have the potential to occur within Mohave Desert Scrub, and Joshua tree woodland habitats within the Project Area.

Le Conte's thrasher (Toxostoma lecontei)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G3, S3	SSC – CA Species of Special Concern

Le Conte's thrasher is an uncommon to rare local resident in southern California deserts from southern Mono County south to the Mexican border, and in western and southern San Joaquin Valley. The bird occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats, though it also occurs in Joshua tree habitat with scattered shrubs.

Le Conte's thrasher uses scattered desert shrubs and cactus frequently saltbush and cholla, for cover. It frequents desert washes and flats with scattered shrubs and large areas of open, sandy, or alkaline terrain in desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats. It commonly nests in dense, spiny shrubs or densely branched cactii in desert wash habitat. Le Conte's thrasher is not migratory, and its home range averages 100 acres in saltbrush-cholla scrub. Its breeding season extends from late January into early June, with peak activity between mid-March and mid-April.

Le Conte's thrashers have been observed within the Project Area during avian surveys. Mohave Desert Scrub and Joshua tree woodland habitats within the Project Area provide suitable habitat for Le Conte's thrasher.

Gray Vireo (Vireo vicinior)

STATUS		
Federal	**State**	**CDFW** (CDFW 2012)
None	None	SSC – CA Species of Special Concern

The gray vireo is a drab, medium-sized vireo with a small bill. It is gray overall, with the upper-parts being a darker gray and the under-parts more of a grayish white. It is an uncommon, local, summer resident in arid pinyon-juniper, juniper, and chamise-redshank chaparral habitats from 2000-6500 feet in mountains of Southern California.

Gray vireos were not observed during surveys. Suitable juniper woodland habitat is present within the Project Area in the Mountains near Hesperia. A search of the CNDDB identified an occurrence of gray vireo approximately 500 feet to the south of Segment 6, west of the Mohave River in Hesperia.

Yellow Warbler (*Dendroica petechia brewsteri*)

STATUS		
Federal	**State**	**CDFG** (CDFG 2012), USFWS
None	None	SSC – CA species of Special Concern BCC – Birds of Conservation Concern

Yellow warblers are unmistakably bright yellow and the only species with yellow spots on the tail. They are distinguished by a stout bill, plain face with pale color surrounding the eye. Yellow warblers are common and widespread in many wet brushy habitats, such as willow thickets and mature riparian woodlands.

During the survey along Segment 6 near the Mohave River, a single adult yellow warbler was observed in the willows which line the river bed (UTM 11 S 477754E, 3802640N). The willow riparian habitat present within Segment 6 and 7 provides suitable habitat that could potentially be utilized by yellow warbler for breeding and foraging.

3.0 DISCUSSION

In total nine sensitive avian species were documented to occur within the Project Area. In addition, suitable habitat exists for the long-eared owl and gray vireo that were not observed during avian surveys.

Considering the special-status listing of these species, impacts could constitute a significant impact. Development of the Project in areas where suitable habitat for these species exists has the potential to cause direct impacts. Impacts would result from the permanent and temporary loss of habitat and from direct injury to these species, or nest abandonment as a result of construction activities. For many of these species, habitat loss and development is thought to be the primary agents in population decline.

Sensitive raptor species including golden eagles have the potential to be significantly impacted by the use of helicopters. The use of helicopters has the potential to result in mortality through strikes with the helicopter, or being flushed from the nest while incubating. Helicopter use could also impact raptors by reducing access to preferred foraging areas.

Mitigation measures are included and are intended to reduce potential impacts to a less than significant level.

4.0 RECOMMENDATIONS

The following recommendations are suggested to mitigate potential impacts to avian species:

- Pre-construction biological surveys for special-status avian species and nesting birds would be conducted by a qualified biologist in all laydown/work areas. If a special-status species is encountered, biologists would record the location, take a photograph, and delineate a buffer area, as appropriate, where activities should be restricted for the protection of the resource. If impacts to the special-status wildlife cannot be avoided, SCE would consult with the appropriate resource agency or agencies.

- SCE would conduct Project-wide nesting bird surveys. SCE would, if feasible, remove trees, transmission structures, and poles outside of the nesting season. If a tree, transmission structure, or pole containing a nest must be removed during nesting season, SCE biologists would consult with the appropriate agencies. If work is scheduled to take place in close proximity to an active nest, appropriate nesting buffers or other measures would be established based on a Project-specific nesting bird management plan or consultation with the appropriate agencies

5.0 LITERATURE CITED

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Attachment A

Avian Point Count Survey Report

General Avian Survey
Southern California Edison
Coolwater-Lugo Transmission Line Project
San Bernardino County, CA

Prepared for:

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June 24, 2013

INTRODUCTION

In 2012, Davenport Biological Services was hired by BioResource Consultants to conduct a general avian survey along the right-of-way for Southern California Edison's South of Kramer transmission line project. In 2012, the avian survey was completed at fifteen observation points located along the project alignment between Daggett and Hesperia, California. The initial surveys were initiated on 23 April 2012 and completed on 9 September 2012. In 2013, the project was modified and additional survey areas added; the project name was also changed to Coolwater-Lugo. The most recent surveys were initiated on 13 June 2013 and completed on 18 June 2013. The location of all survey points sampled in 2012 and 2013, are provided (Figure 1). Grinnell and Miller (1944) and Garrett and Dunn (1981) were used to check avian distributions and nesting occurrences.

SITE DESCRIPTION

The survey area is located within the Mojave Desert. The topography within the study area includes Lucerne Lake (dry lake), valley floors, alluvial fans and desert mountains. The elevation at specific sampling points varied from approximately 2,030 feet to 3,700 feet above sea level.

The plant community located within most of the study site is best described as Mojave creosote bush scrub. As such, the plant community associated with most of the survey points was dominated by creosote bush (*Larrea tridentata*). The plant community at two of the survey points is best described at saltbush scrub. One survey point was located in Juniper scrub. Within the creosote bush scrub plant community, Mojave yucca and Joshua trees were present within several of the sampled areas. Other common species within the study area included succulents such as golden cholla (*Opuntia echinocarpa*), pencil cholla (*Opuntia ramosissima*), and clustered barrel cactus (*Echinocactus polycephalus*).

METHODS

In 2012, fifteen survey points were established along the proposed transmission line route. The survey points were distributed along the initial project alignments in an attempt to best sample the avian community located within the project area. In 2013, due to changes in the project, additional survey points were established along two telecom routes, and original pointes 2, 3 & 4 were moved slightly to account for the adjusted transmission line route (Figure 1). Surveys were completed for 10 minutes at each survey point. The surveys along the initial route were repeated six times in 2012 and once in 2013. The survey points established along the telecom routes were surveyed once in 2013 (Table 1). Surveys were initiated just before or at sunrise. For the transmission line, surveys proceeded from the survey point located at the lowest elevation (i.e., No. 1) to the point located at the highest elevation (i.e., No. 15). For the telecom surveys, surveys were initiated at the western most point and continued eastwardly along the alignment. All avian species observed were recorded.

Table 1. Shows date, survey time, and weather conditions during each survey event.

Survey Date	Time	Temperature (F^{o})	Wind Speed (mph)	Cloud Cover (%)
	Start/Stop	Start/Stop	Start/Stop	
23 Apr 2012	0600/1300	64/68	0-2/5-10	0/0
30 Apr 2012	0530/1215	60/83	1-4/1-5	0/0
13 May 2012	0530/1200	64/85	0-1/1-2	0/0
21 May 2012	0500/1200	67/86	1-3/5-10	0/0
3 Sep 2012	0550/1220	67/93	0-3/4-12	20/20
9 Sep 2012	0830-1430	58/66	0-2/1-3	0/0
13 Jun 2013	0530-1100	75/97	5-8/3-5	0/0
14 Jun 2013	0530-1200	55/88	0-2/0-2	0/0
18 Jun 2013	0530-1200	73/84	1-5/1-8	0/0

RESULTS

A total of 46 avian species were observed during this study (Appendix 1, 2 & 3). Of these, 41 were native species. Included in the list of detected native species were the golden eagle (*Aquila chrysaetos*) and burrowing owl (*Athene cunicularia*). Non-native species included chukar (*Alectoris chukar*), rock pigeon (*Columba livia*), Eurasian collared dove (*Streptopelia decaocto*), house sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*).

All animals observed or otherwise detected during this study are provided in Appendix 4.

DISCUSSION

The avian community within the project area was found to be diverse. The highest counts of species and individual birds occurred during the early spring survey. These higher counts, as compared to the surveys completed in September, are due to the occurrence of migrants passing through the desert. Additionally, the higher counts are due to the more vocal nature of nesting birds as opposed to post nesting individuals in September. Two sensitive species, the golden eagle and burrowing owl, were observed during this survey; both of which receive protection under State and/or Federal law. More individuals and pairs of these species are anticipated within the project area.

Forty-six avian species were observed during this survey, five of which were introduced. Of the 41 native species, 33 are anticipated to nest in the project area. Several of these species, such as the golden eagle, red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), Say's phoebe (*Sayornis saya*), Western kingbird (*Tyrannus verticalis*), and house finch (*Carpodacus mexicanus*) will nest on the lattice structures of the towers supporting the transmission and telecom lines. The house finch will also nest on and within vehicles and other artificial structures. The other species that nest within the project area include ground nesters (e.g., horned lark (*Eremophila alpestris*)), and those that place their nests in shrubs and cactus (e.g., Le Conte's thrasher (*Toxostoma lecontei*)). There are also cavity nesters such as the ash-throated flycatcher (*Myiarchus cinerascens*) and ladder-backed woodpecker (*Picoides scalaris*). Both of these species will nest in cavities found in Joshua trees, Mojave yucca, and wood power-poles.

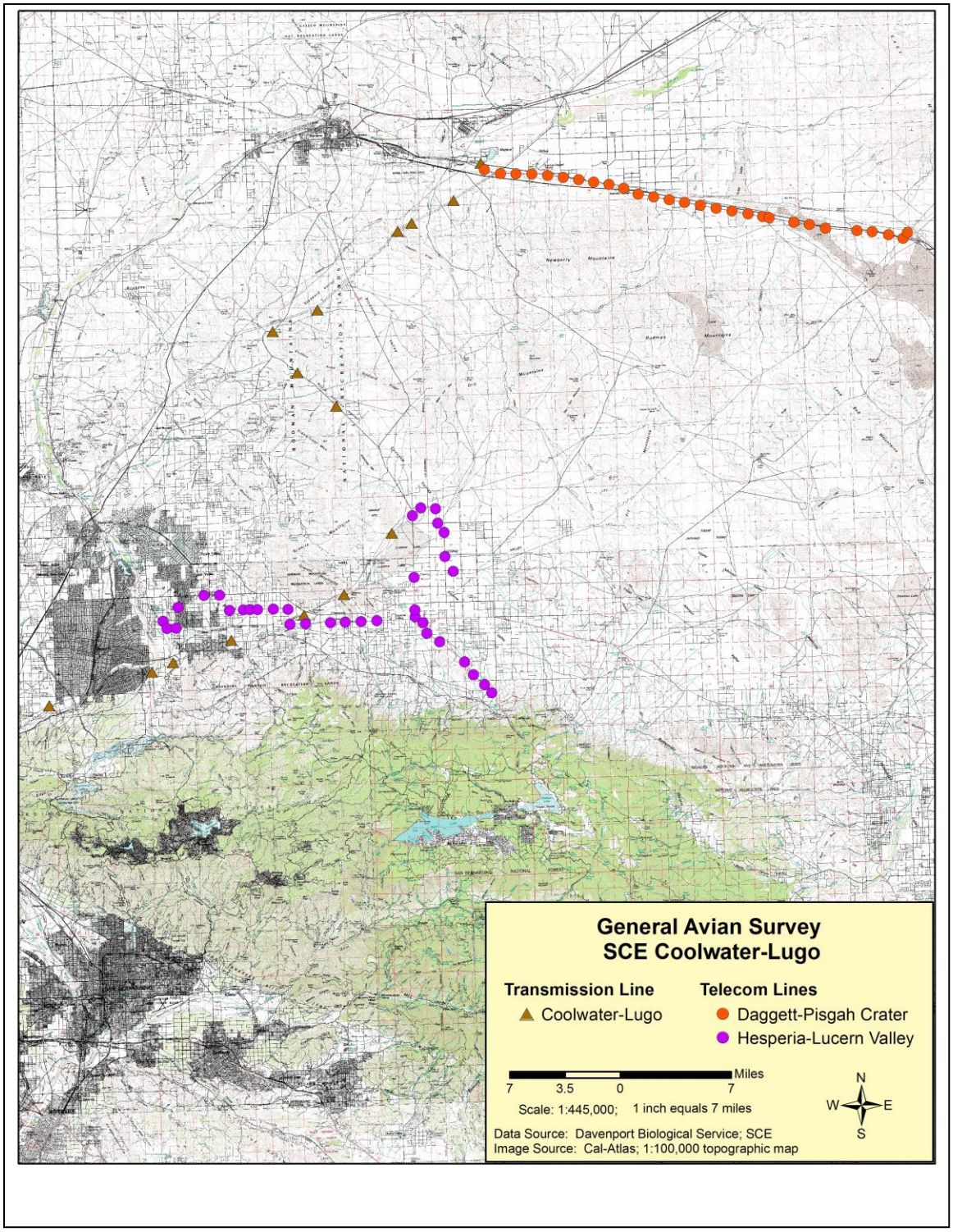

Figure 1. Shows geographic location of all survey points.

Twenty-nine additional native species are anticipated to occur and likely nest within the project area. These species include the Cooper's hawk (*Accipiter cooperii*), prairie falcon (*Falco mexicanus*), killdeer (*Charadrius vociferous*), white-throated swift (*Aeronautes saxatalis*), black-chinned hummingbird (*Archilochus alexandri*), Anna's hummingbird (*Calypte anna*), northern

flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), Bewick's wren (*Thryomanes bewickii*), blue-gray gnatcatcher (*Polioptila caerulea*), western bluebird (*Sialia Mexicana*), American robin (*Turdus migratorius*), California thrasher (*Toxostoma redivivum*), Phainopepla (*Phainopepla nitens*), spotted towhee (*Pipilo maculates*), chipping sparrow (*Spizella passerina*), lark sparrow (*Chondestes grammacus*), western meadowlark (*Sturnella neglecta*), brown-headed cowbird (*Molothrus ater*), hooded oriole (*Icterus cucullatus*), Bullock's oriole (*Icterus bullockii*), lesser goldfinch (*Carduelis psaltria*) and Lawrence's goldfinch (*Carduelis lawrencei*). The additional anticipated species include nocturnal species such as the lesser nighthawk (*Chordeiles acutipennis*), common poorwill (*Phalaenoptilus nuttallii*), barn owl (*Tyto alba*) and great-horned owl (*Bubo virginianus*).

It's not unusual that many anticipated species went undetected. Regarding the undetected species, additional survey points and additional survey passes would be needed to detect their presence. Unfortunately, detection probabilities vary between species and vary for a particular species depending on the time of year. Thus, in order to detect 95 percent of the species occurring within a study area with some degree of statistical confidence, a more intensive survey methodology that incorporates detection probabilities into the study design would be necessary. Such an approach would require more survey points and additional survey passes. Therefore, although not observed, the anticipated yet undetected species should also be considered during the environmental review and analysis process.

Literature Cited

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Appendix 1. Transmission Line; Avian Bird Survey; Data

The following acronyms were used to identify the variety of species observed during this study: GREG: Great Egret; GOEA: Golden eagle; RTHA: Red-tailed hawk; AMKE: American kestrel; CAQU: California quail; CHUK: Chukar; ROPI: Rock pigeon; ECDO: Eurasian collared-dove; MODO; Mourning dove; GRRU: Greater roadrunner; COHU: Costa's hummingbird; LAWO: Ladderbacked woodpecker; WEKI: Western kingbird; SAPH: Say's phoebe; ATFL: Ash-throated flycatcher; VERD: Verdin; BUTI: Bushtit; BTGN: Black-tailed gnatcatcher; NRSW: Northern rough-winged swallow; HOLA: Horned lark; WIWA: Wilson's warbler; TOWA: Townsend's warbler; YRWA: Yellow-rumped warbler; CORA: Common raven; WSJA: Western scrub-jay; HOWR: House wren; CAWR: Cactus wren; ROWR: Rock wren; LOSH: Logger-head shrike; NOMO: Northern mockingbird; LETH: Le Conte's thrasher; WETA: Western tanager; CATO: California towhee; BTSP: Black-throated sparrow; SAGS: Sage sparrow; WCSP: White-crowned sparrow; HOFI: House finch; LAGO: Lawrence's goldfinch; BRSP: Brewer's sparrow; SCOR: Scott's oriole; BRBL: Brewer's blackbird; RWBL: Red-winged blackbird; EUST: European starling; HOSP: House sparrow

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
23-Apr-12	RTHA		1										1	1		
23-Apr-12	CAQU												1	2		
23-Apr-12	CHUK			2												
23-Apr-12	ROPI	2														
23-Apr-12	MODO	2		1	2											2
23-Apr-12	GRRO															1
23-Apr-12	WEKI												1			
23-Apr-12	SAPH				1											
23-Apr-12	ATFL				1											
23-Apr-12	VERD	1														
23-Apr-12	BTGN							1								
23-Apr-12	NRSW														2	
23-Apr-12	HOLA					2	1		2			3				
23-Apr-12	WIWA	1				1										
23-Apr-12	CORA		2		1	1	2		2	1	1		1	1	1	1
23-Apr-12	CAWR		2	1	1		3	3					1	1	2	2
23-Apr-12	ROWR				1						2					
23-Apr-12	LOSH							2	2							
23-Apr-12	LETH		1			1			1							
23-Apr-12	BTSP		1	2												
23-Apr-12	SAGS								4		2		1			
23-Apr-12	WCSP													1	2	
23-Apr-12	HOFI	4		3		2	11	1	3		1		3	2		3
23-Apr-12	RWBL														3	
23-Apr-12	EUST	7														
# Species		6	5	5	6	5	4	4	6	1	4	1	7	6	5	5
# Birds		17	7	9	7	7	17	7	14	1	6	3	9	8	10	9

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
30-Apr-12	RTHA												2	1		
30-Apr-12	AMKE															1
30-Apr-12	CAQU												4	2		1
30-Apr-12	CHUK															
30-Apr-12	ROPI															3
30-Apr-12	ECDO															1
30-Apr-12	MODO														1	2
30-Apr-12	GRRO															
30-Apr-12	WEKI															
30-Apr-12	SAPH						1									
30-Apr-12	ATFL												1	2		
30-Apr-12	VERD															
30-Apr-12	BUTI															3
30-Apr-12	BTGN															
30-Apr-12	NRSW															
30-Apr-12	HOLA					1	20	1	2		2				3	
30-Apr-12	WIWA															
30-Apr-12	CORA	2				1					2	3	3		5	3
30-Apr-12	NSJA															
30-Apr-12	HOWR															2
30-Apr-12	CAWR		1			1	1	1					1	1	1	1
30-Apr-12	ROWR									1	1					
30-Apr-12	LOSH			1				2								
30-Apr-12	NOMO												1			
30-Apr-12	LETH							1								
30-Apr-12	CATO															1
30-Apr-12	BTSP			1	1		2					1				
30-Apr-12	SAGS						2	1	2							1
30-Apr-12	WCSP															
30-Apr-12	HOFI	2	1	1	1	1	15		2			1	5	3		
30-Apr-12	BRSP								1							
30-Apr-12	RWBL	1													1	
30-Apr-12	EUST															
30-Apr-12	HOSP	5														
# Species		4	2	3	2	4	6	0	5	1	3	3	7	5	5	11
# Birds		10	2	3	2	4	41	6	7	1	5	5	17	9	11	19

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
12-May-12	GOEA		1													
12-May-12	RTHA												2	2		
12-May-12	AMKE															
12-May-12	CAQU															
12-May-12	CHUK															
12-May-12	ROPI															
12-May-12	ECDO	1														
12-May-12	MODO	3			2								1			
12-May-12	GRRO															
12-May-12	COHU												2			
12-May-12	WEKI												2			
12-May-12	SAPH			1												
12-May-12	ATFL															
12-May-12	VERD															
12-May-12	BUTI															
12-May-12	BTGN															
12-May-12	NRSW															
12-May-12	HOLA					1	1		3			2				
12-May-12	WIWA							1								
12-May-12	TOWA						1	1			1					
12-May-12	YRWA							1								
12-May-12	CORA	1			1	1	1	2			1	3		2	2	3
12-May-12	WSJA															1
12-May-12	HOWR															
12-May-12	CAWR		1	1	1		1	1					1	2	1	
12-May-12	ROWR										1					
12-May-12	LOSH			1	1		1	2								
12-May-12	NOMO													1	1	
12-May-12	LETH		1													
12-May-12	WETA								3							
12-May-12	CATO															1
12-May-12	BTSP		1													
12-May-12	SAGS								1							
12-May-12	WCSP															
12-May-12	HOFI	5				2			2			2	5	1	5	
12-May-12	BRSP															
12-May-12	RWBL															
12-May-12	EUST														2	
12-May-12	HOSP	5														2
# Species		5	4	3	4	3	5	6	4	0	3	3	6	5	5	4
# Birds		15	4	3	5	4	5	8	9	0	3	7	13	8	11	7

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
21-May-12	GREG	1														
21-May-12	GOEA															
21-May-12	RTHA											1	2	2		
21-May-12	AMKE															
21-May-12	CAQU															
21-May-12	CHUK															
21-May-12	ROPI	12														
21-May-12	ECDO															
21-May-12	MODO				2		4	1							1	
21-May-12	GRRO								1							
21-May-12	COHU															
21-May-12	WEKI												2			
21-May-12	SAPH										1					
21-May-12	ATFL		1		1											
21-May-12	VERD	1														
21-May-12	BUTI															
21-May-12	BTGN															
21-May-12	NRSW															
21-May-12	HOLA											2				
21-May-12	WIWA															
21-May-12	TOWA		2	1			1		1							
21-May-12	YRWA															
21-May-12	CORA	1				2					1	2	1	2	2	2
21-May-12	WSJA															1
21-May-12	HOWR															
21-May-12	CAWR		1	1			1	2	1				1	2		
21-May-12	ROWR				1					1	1					
21-May-12	LOSH				1											
21-May-12	NOMO													1	1	
21-May-12	LETH		1													
21-May-12	WETA															
21-May-12	CATO															
21-May-12	BTSP								1		2					
21-May-12	SAGS							1	1							
21-May-12	WCSP															
21-May-12	HOFI	3	1				2		1			2	3	1	1	2
21-May-12	BRSP															
21-May-12	SCOR			1				2								
21-May-12	BRBL														2	3
21-May-12	RWBL														1	
21-May-12	EUST															
21-May-12	HOSP	5												2		
# Species		6	5	3	4	1	4	4	6	1	4	4	5	6	6	4
# Birds		23	6	3	5	2	8	6	6	1	5	7	9	10	8	8

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
3-Sep-12	GREG															
3-Sep-12	GOEA															
3-Sep-12	RTHA													1	1	
3-Sep-12	AMKE															
3-Sep-12	CAQU															
3-Sep-12	CHUK															
3-Sep-12	ROPI															
3-Sep-12	ECDO															
3-Sep-12	MODO															
3-Sep-12	GRRO															
3-Sep-12	COHU															
3-Sep-12	LAWO							1								
3-Sep-12	WEKI															
3-Sep-12	SAPH															
3-Sep-12	ATFL													2		
3-Sep-12	VERD															
3-Sep-12	BUTI															
3-Sep-12	BTGN															
3-Sep-12	NRSW															
3-Sep-12	HOLA															
3-Sep-12	WIWA															
3-Sep-12	TOWA															
3-Sep-12	YRWA															
3-Sep-12	CORA												1		2	4
3-Sep-12	WSJA															
3-Sep-12	HOWR															
3-Sep-12	CAWR													2		
3-Sep-12	ROWR															
3-Sep-12	LOSH															
3-Sep-12	NOMO													1		
3-Sep-12	LETH											1				
3-Sep-12	WETA															
3-Sep-12	CATO															
3-Sep-12	BTSP															
3-Sep-12	SAGS							2								
3-Sep-12	WCSP															
3-Sep-12	HOFI	2				1	1	1							2	
3-Sep-12	BRSP															
3-Sep-12	SCOR															
3-Sep-12	BRBL															
3-Sep-12	RWBL															
3-Sep-12	EUST															
3-Sep-12	HOSP															
# Species		1	0	0	0	1	1	3	0	0	0	1	1	4	3	1
# Birds		2	0	0	0	1	1	4	0	0	0	1	1	6	5	4

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
9-Sep-12	GREG															
9-Sep-12	GOEA															
9-Sep-12	RTHA														1	
9-Sep-12	AMKE															
9-Sep-12	CAQU															
9-Sep-12	CHUK						15									
9-Sep-12	ROPI															
9-Sep-12	ECDO															
9-Sep-12	MODO															
9-Sep-12	GRRO															
9-Sep-12	COHU															
9-Sep-12	LAWO															
9-Sep-12	WEKI															
9-Sep-12	SAPH					1	1									
9-Sep-12	ATFL															
9-Sep-12	VERD															
9-Sep-12	BUTI															
9-Sep-12	BTGN															
9-Sep-12	NRSW															
9-Sep-12	HOLA						1		2							
9-Sep-12	WIWA															
9-Sep-12	TOWA															
9-Sep-12	YRWA															
9-Sep-12	CORA														3	13
9-Sep-12	WSJA															
9-Sep-12	HOWR															
9-Sep-12	CAWR			1				1								
9-Sep-12	ROWR						1			1	1					
9-Sep-12	LOSH															
9-Sep-12	NOMO													1		
9-Sep-12	LETH															
9-Sep-12	WETA															
9-Sep-12	CATO															1
9-Sep-12	BTSP													2		
9-Sep-12	SAGS							1								
9-Sep-12	WCSP															
9-Sep-12	HOFI	1												5		
9-Sep-12	BRSP															
9-Sep-12	SCOR															
9-Sep-12	BRBL															
9-Sep-12	RWBL															
9-Sep-12	EUST												15			2
9-Sep-12	HOSP	2													2	
# Species		2	0	1	0	1	4	2	1	1	1	0	1	3	3	3
# Birds		3	0	1	0	1	18	2	2	1	1	0	15	8	6	16

		Survey Points														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	Species															
18-Jun-13	GREG															
18-Jun-13	GOEA															
18-Jun-13	RTHA															
18-Jun-13	AMKE															
18-Jun-13	CAQU															
18-Jun-13	CHUK															
18-Jun-13	ROPI															1
18-Jun-13	ECDO															
18-Jun-13	MODO			1												
18-Jun-13	GRRO															
18-Jun-13	COHU			1												
18-Jun-13	LAWO															
18-Jun-13	WEKI															
18-Jun-13	SAPH															
18-Jun-13	ATFL							1	1							
18-Jun-13	VERD	1														
18-Jun-13	BUTI															
18-Jun-13	BTGN															
18-Jun-13	NRSW															
18-Jun-13	HOLA					1						2			5	
18-Jun-13	WIWA															
18-Jun-13	TOWA															
18-Jun-13	YRWA															
18-Jun-13	CORA	2											2	2	1	2
18-Jun-13	WSJA															
18-Jun-13	HOWR															
18-Jun-13	CAWR							1					1	2		
18-Jun-13	ROWR															
18-Jun-13	LOSH		1				1									
18-Jun-13	NOMO														1	2
18-Jun-13	LETH															
18-Jun-13	WETA															
18-Jun-13	CATO															
18-Jun-13	BTSP															
18-Jun-13	SAGS								1							
18-Jun-13	WCSP															
18-Jun-13	HOFI	8					2						4	1	2	1
18-Jun-13	BRSP															
18-Jun-13	SCOR															
18-Jun-13	BRBL															
18-Jun-13	RWBL															
18-Jun-13	EUST														5	
18-Jun-13	HOSP															
# Species		3	1	2	0	1	2	2	2	0	0	1	3	3	5	4
# Birds		11	1	2	0	1	3	2	2	0	0	2	7	5	14	5

Appendix 2. Telecom Line, Daggett to Lucerne Pisgah Crater; Avian Bird Survey; Data

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Date	Species																												
13-Jun-13	RTHA									1		1																	
13-Jun-13	CAQU																												
13-Jun-13	CHUK																												
13-Jun-13	ROPI							1			1																		
13-Jun-13	MODO			1			1	2								1	2				3								
13-Jun-13	ECDO					1	2	2							1														
13-Jun-13	GRRO																												
13-Jun-13	WEKI																												
13-Jun-13	SAPH																												
13-Jun-13	ATFL																												
13-Jun-13	VERD																				1								
13-Jun-13	BTGN																												
13-Jun-13	NRSW																												
13-Jun-13	HOLA											2						1				2							
13-Jun-13	WIWA																												
13-Jun-13	CORA				2	2	1		2		1	2	1	1		3	1				1							2	2
13-Jun-13	CAWR																												
13-Jun-13	ROWR																												
13-Jun-13	LOSH																												
13-Jun-13	NOMO					1																							
14-Jun-13	YEWA																												
13-Jun-13	BTSP																												
13-Jun-13	SAGS																												
13-Jun-13	WCSP																												
13-Jun-13	HOFI	2		1		2		3	1			1	4	1	2		2		1	2									
13-Jun-13	RWBL																												
13-Jun-13	HOSP							2							2														
13-Jun-13	EUST						2																						
	GTGR																3												
# Species		1	0	2	1	4	4	5	2	1	2	4	2	2	3	2	4	1	1	1	3	1	0	0	0	0	0	1	1
# Birds		2	0	2	2	6	6	10	3	1	2	6	5	2	5	4	8	1	1	2	5	2	0	0	0	0	0	2	2

Appendix 3. Telecom Line, Hesperia to Lucerne Valley; Avian Bird Survey; Data

		Survey Points																																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Date	Species																																			
13-Jun-13	RTHA													1																					1	
13-Jun-13	CAQU		3																																	
13-Jun-13	ROPI					7																														
13-Jun-13	MODO	1	3	1				1						1				1	1									1	1					2		1
13-Jun-13	BUOW													1																						
13-Jun-13	GRRO									1																										
13-Jun-13	WEKI																																			
13-Jun-13	SAPH								1																											
13-Jun-13	ATFL		1					1		2				1	1									1				1								
13-Jun-13	VERD													1																						
13-Jun-13	BTGN																																			
13-Jun-13	NRSW																												2							
13-Jun-13	HOLA			1		2					2	1		1			1							2		1	1									
13-Jun-13	WIWA																																			
13-Jun-13	CORA	2	1	3	4		4	1	2	1	2	2	2	1		3	2	2	7	2	1			2	1					1	1		16			1
13-Jun-13	CAWR								2					1																						
13-Jun-13	ROWR																						1													
13-Jun-13	LOSH										1																									
13-Jun-13	NOMO		1	1	1	1	1	1									1					1						1	1					1		
13-Jun-13	YEWA																																			1
13-Jun-13	SAGS										2		1	1	1																		1			
13-Jun-13	WCSP																																			
13-Jun-13	HOFI	2	5	1		2		2	2											2		1											1			2
13-Jun-13	LAGO		1																																	
13-Jun-13	RWBL																												3							
13-Jun-13	HOSP	5	35	5	3		2	2				3	2			5			5										11							
13-Jun-13	EUST		3																										2							
# Species		4	9	6	3	4	3	6	4	3	4	3	3	9	2	2	3	2	3	2	1	2	1	3	1	1	1	3	6	1	1	0	2	2	2	4
# Birds		10	53	12	8	12	7	8	7	4	7	6	5	9	2	8	4	3	13	4	1	1	1	5	1	1	1	3	20	1	1	0	2	18	2	5

Appendix 4. Vertebrate animals observed within the survey area (based on direct observation and/or sign).

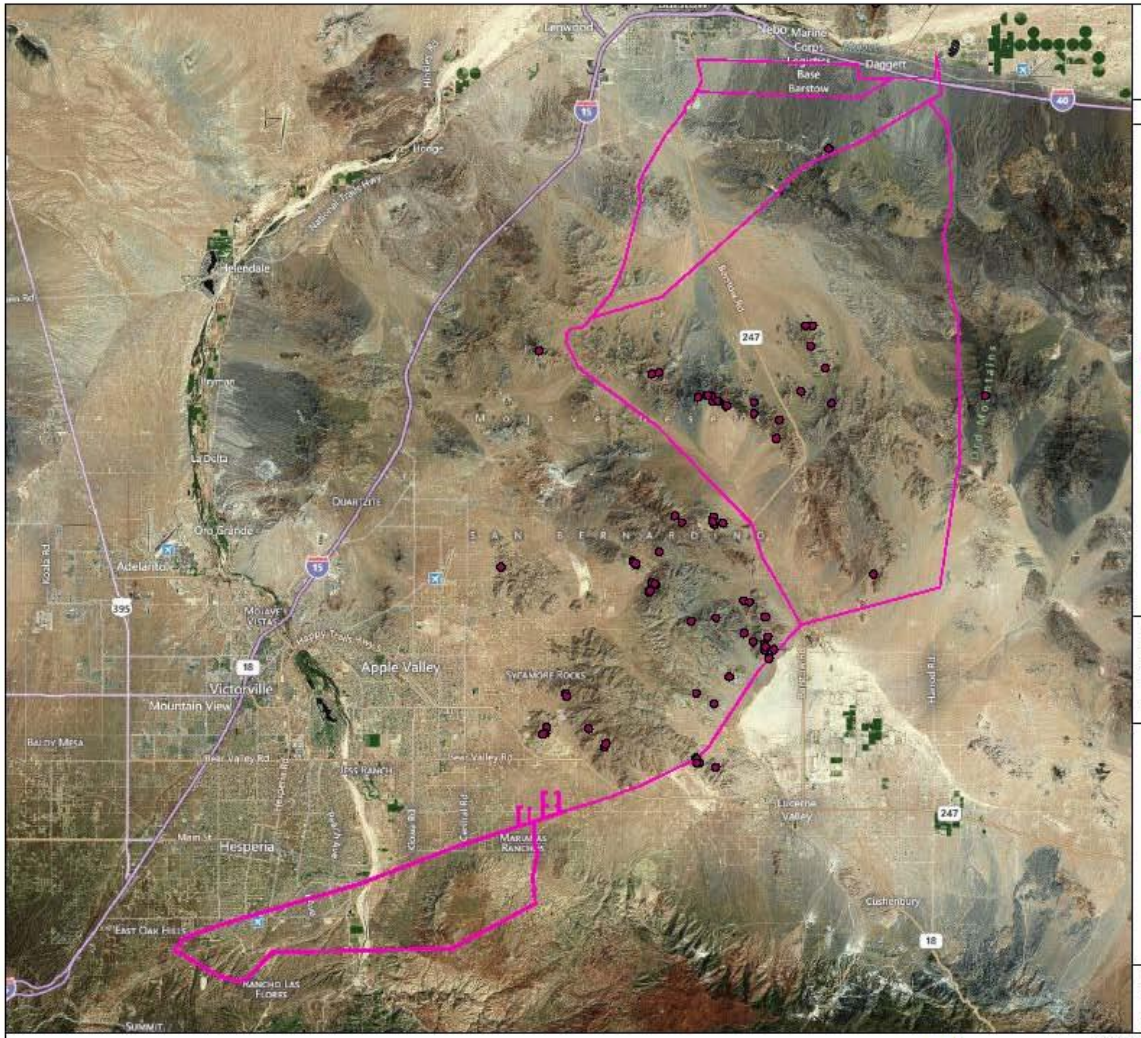
Amphibians	
Western toad	*Bufo boreas*
Reptiles	
Desert tortoise	*Gopherus agassizii*
Western whiptail lizard	Aspidoscelis tigris
Side-blotched lizard	*Uta stansburiana*
Western fence Lizard	*Sceloporus occidentalis*
Leopard lizard	*Gambelia wislizenii*
Coachwhip	Masticophis flagellum
Birds	
Great egret	*Ardea alba*
Golden eagle	*Aquila chrysaetos*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
California quail	*Callipepla californica*
Chukar	*Alectoris chukar*
Rock pigeon	*Columba livia*
Eurasian collared-dove	*Streptopelia decaocto*
Mourning dove	*Zenaida macroura*
Greater roadrunner	*Geococcyx californianus*
Burrowing owl	*Athene cunicularia*
Costa's hummingbird	*Calypte costae*
Ladder-backed woodpecker	*Picoides scalaris*
Western Kingbird	*Tyrannus verticalis*
Say's phoebe	*Sayornis saya*
Ash-throated flycatcher	*Myiarchus cinerascens*
Verdin	*Auriparus flaviceps*
Bushtit	*Psaltriparus minimus*
Black-tailed gnatcatcher	*Polioptila melanura*
Northern rough-wing swallow	*Stelgidopteryx serripennis*
Horned lark	*Eremophila alpestris*
Yellow warbler	*Dendroica petechia*
Wilson's warbler	*Wilsonia pusilla*
Townsend's warbler	*Dendroica townsendi*
Yellow-rumped warbler	*Dendroica coronata*
Common raven	*Corvus corax*
Western scrub-jay	*Aphelocoma californica*
House wren	*Troglodytes aedon*
Cactus wren	*Campylorhynchus brunneicapillus*
Rock wren	*Salpinctes obsoletus*
Loggerhead shrike	*Lanius ludovicianus*
Northern mockingbird	*Mimus polyglottos*
Le Conte's thrasher	*Toxostoma lecontei*
Western tanager	*Piranga ludoviciana*
California towhee	*Pipilo crissalis*
Black-throated sparrow	*Amphispiza bilineata*
Sage sparrow	*Amphispiza belli*
White-crowned sparrow	*Zonotrichia leucophrys*
House finch	*Carpodacus mexicanus*
Lawrence's goldfinch	*Carduelis lawrencei*
Brewer's sparrow	*Spizella breweri*
Scott's oriole	*Icterus parisorum*

Appendix 4 (Cont). Vertebrate animals observed within the survey area (based on direct observation and/or sign).

Birds (Cont.)	
Brewer's blackbird	*Euphagus cyanocephalus*
Red-winged blackbird	*Agelaius phoeniceus*
European starling	*Sturnus vulgaris*
House sparrow	*Passer domesticus*
Mammals	
Merriam's kangaroo rat	*Dipodomys merriami*
Desert cottontail	*Sylvilagus audoboni*
Black-tailed jackrabbit	*Lepus californicus*
Antelope ground squirrel	*Ammospermophilus leucurus*
Coyote	*Canis latrans*

Attachment B

Golden Eagle Nest Data



South of Kramer
Nest Locations
Southern California Edison

Legend

- ALL_NESTS
- 500kV_CORRIDOR
- 220kV_CORRIDOR

Issued For: Jeff Trow

Date: November 30, 2012

Prepared By: Andrew Belcourt

Project Number:

Index Map

Protection: NAD 83 UTM Zone 11

Contains Transmission Information Distribution limited to FERC Standards of Conduct

CONFIDENTIAL

Contains Critical Electric Infrastructure Information

If any questions contact Corporate Security (27875) for handling/storage requirements.

N W E S

0 6 12 18 24 Miles

SOUTHERN CALIFORNIA EDISON

An EDISON INTERNATIONAL Company

FOCUSED HERPETOLOGICAL SURVEY REPORT
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
Southern California Edison
1218 South 5th Avenue
Monrovia, California 91016

Submitted by:
BioResource Consultants, Inc.
310 E Matilija Street
Ojai, California 93023

JUNE 2013

Table of Contents

List of Tables

List of Figures

1.0 INTRODUCTION

This report documents and describes the existing conditions and herpetological resources in the area of the Coolwater-Lugo Transmission Project (Project), and identifies potential impacts to herpetological resources that may result from construction and implementation of the Project. The Project was originally named "South of Kramer" in 2012 and was updated in 2013 to the "Coolwater-Lugo Transmission Project". Survey revisions for 2013 included the addition of two telecommunication lines, realignment of portions of the transmission line (primarily within Segment 1), and removal of a Segment along Camp Rock Road. As a result, this document incorporates survey data collected during 2012 and 2013.

1.1 Project Description

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

SCE has also identified an Alternative Transmission Line Route (Segments 12, 11, 10/9, 8, 2, 4, 5, 5b, and 6).

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

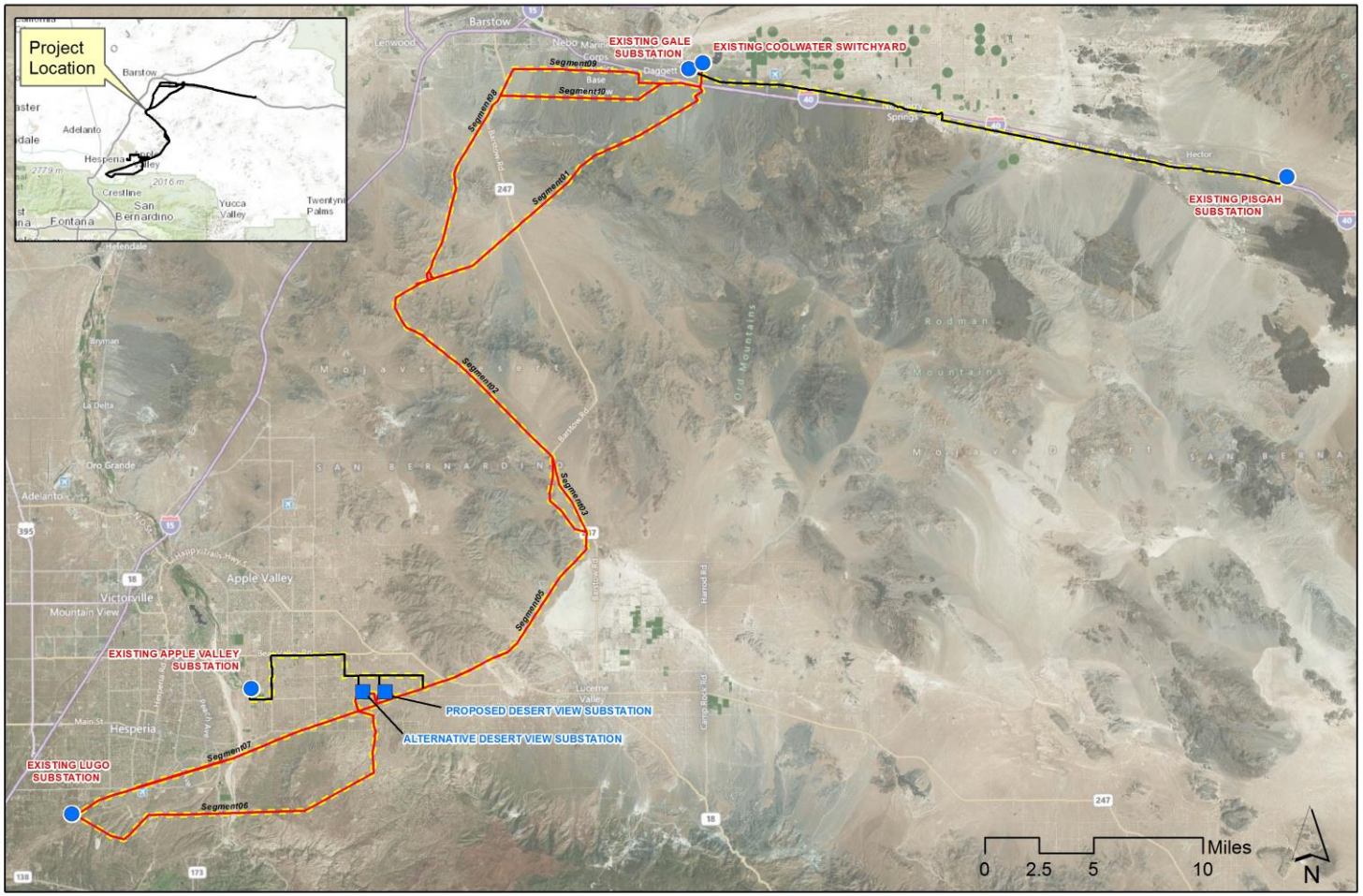
1.2 Environmental Setting

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

Figure 1. Project Location



2.0 METHODOLOGY

Prior to field surveys, standard database searches were conducted and previous surveys in the area were reviewed to obtain a list of federal- and state-listed resources, including sensitive herpetological species in the region. The results of these preliminary database searches provided a basis for addressing the appropriate special-status resources in the footprint of the Proposed Project components and immediate surroundings (collectively referred to as the Biological Resources Project Area). The biological resources assessment included general biological surveys and habitat suitability assessments for special-status herpetological species within the Project Area and a 500-foot buffer on either side of the alignment ("Survey Area"). Non-linear features such as substations were surveyed within the boundary of the feature. Additionally, literature was reviewed to identify potential special-status plants within 5 miles of the Project Area, to assist in determining the likelihood of a species to be present in or near the Project Area. Surveys were conducted in 2012 and 2013.

2.1 Literature and Database Review

Information regarding locations sensitive herpetofauna and their habitats was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteenmile Valley, Fairview Valley, White Horse Mountain, Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Troy Lake, Silver Bell Mine, Sunshine Peak, Sleeping Beauty, Lavic Lake, Hidden Valley East, Hidden Valley West, Manix, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

Additional literature and databases referenced include: Field Guide to Western Reptiles & Amphibians (Stebbins 2003), the California Herps website (CalHerps 2012), and *California Wildlife Habitat Relationships* software (CDFW 2005).

2.2 Survey Methods

A focused survey for special-status plant herpetofauna was conducted in the Project Area from March 28 to April 12, 2012 along the preferred and alternative segments. The survey was conducted by walking transects spaced approximately 150 feet apart out to a distance of 500 feet from the center line of the Project. Cover sites (e.g., boards, debris) were flipped to search for individuals taking refuge underneath. Road surveys were conducted by slowly driving the roads, using 10x42 binoculars to identify species basking on nearby rocks or along the road. Individuals of special-status herptile species were recorded using a global positioning system (GPS) unit.

Additional surveys were performed in May-June 2013 to cover previously unsurveyed areas of the Project alignment. These areas included the telecommunication lines as well as portions of segments 1, 2, 5a, and 5b. Surveys in these areas were conducted by walking transects spaced approximately 30 feet apart out to a distance of 500 feet from the center line of the Project alignment. As before, cover sites (e.g., boards, debris) were flipped to search for individuals taking refuge underneath and binoculars were utilized to identify species at a distance.

3.0 RESULTS

3.1 Herptile Species

A total of 23 species herptiles have been identified during surveys, including 2 species of amphibians and 2 special-status species. A complete list of herptile species observed in the Project Area is provided in Table 1. Special-status species are in bold print.

Table 1. Herptile Species Observed During 2012 and 2013 Surveys

Common Name	*Scientific Name*
Amphibians	
American bullfrog	*Lithobates catesbeianus*
Western toad	*Bufo boreas*
Reptiles	
Coast horned lizard	***Phrynosoma blainvillii***
Common chuckwalla	*Sauromalus ater*
Desert night lizard	*Xantusia vigilis*
Desert spiny lizard	*Sceloporus magister*
Desert tortoise	***Gopherus agassizii***
Mohave glossy snake	*Arizona elegans candida*
Great Basin collared lizard	*Crotaphytus bicinctores*
Great Basin fence lizard	*Sceloporus occidentalis longipes*
Great Basin gopher snake	*Pituophis catenifer deserticola*
Great Basin whiptail	*Aspidoscelis tigris tigris*
Long-nosed leopard lizard	*Gambelia wislizenii*
Mohave desert sidewinder	*Crotalus cerastes cerastes*
Mohave patched-nose snake	*Salvadora hexalepis mojavensis*
Mohave shoveled-nose snake	*Chionactis occipitalis occipitalis*
Northern desert iguana	*Dipsosaurus dorsalis dorsalis*
Northern Mohave rattlesnake	*Crotalus scutulatus scutulatus*
Red racer	*Coluber flagellum piceus*
Southern desert horned lizard	*Phrynosoma platyrhinos calidiarum*
Southwest spectacled rattlesnake	*Crotalus mitchellii pyrrhus*
Western side-blotched lizard	*Uta stansburiana elegans*
Western zebra-tailed lizard	*Callisaurus draconoides rhodostictus*

3.2 Special-Status Herptile Species

The Project Area provides suitable habitat for special herptile species. Based on of the search of the CNDDB, four special-status species are documented to occur or have potential habitat in the region of the Project alignment. Table 2 provides a list of special-status species that have a high or medium likelihood of occurring within the Project Area.

Table 2. Special-status Herptile Species Likely to Occur within the Project Area

Scientific Name	Listing	Habitat description	Likelihood to Occur Within Project Area	Known or Potential Occurrence Determination
Arroyo toad (*Anaxyrus californicus*)	FE, SSC	Found in semi-arid regions near washes or intermittent streams. Habitats used include valley-foothill and desert riparian as well as a variety of more arid habitats including desert wash, palm oasis, and Joshua tree, mixed chaparral and sagebrush. Often found near rivers with sandy banks, willows, cottonwoods, and sycamores in valley-foothill and desert riparian habitats. Found in loose gravelly areas of streams in drier portions of its range.	**Medium**	Numerous CNDDB occurrences within Project Area. Suitable habitat present within Project Area.
Desert tortoise (*Gopherus agassizii)*	FE, SE	A desert species found in arid sandy or gravelly locations along riverbanks, washes, sandy dunes, creosote flats/hillsides, and rocky hillsides. In California tortoises are found throughout the Mojave Desert.	**High**	Numerous CNDDB occurrences within Project Area. Suitable habitat present within Project Area.
Coast horned lizard (*Phrynosoma blainvillii*)	BLM, SSC, USFS	Species requires loose, fine soils with a high sand fraction, abundance of native ants or other insects, open areas with limited overstory for basking and areas with low, dense shrubs for refuge. Elevational range is 10-2,130 meters.	**High**	Numerous CNDDB occurrences within Project Area. Suitable habitat present within Project Area.
Mojave fringe-toed lizard (*Uma scoparia*)	BLM, SSC	Species is restricted to fine, loose, wind-blown deposits in sand dunes, dry lakebeds, riverbanks, desert washes, and sparse alkali scrub and desert shrub habitats. Elevational range extends from near sea level up to 1000 meters.	**Medium**	CNDDB occurrences and suitable habitat present within the Project Area.

Four special-status species are anticipated to occur within the Project Area. Focused surveys for both desert tortoise and arroyo toad were conducted within the Project Area and the survey results are presented within Appendix C and Appendix H**,** respectively. Therefore, this report addresses findings related to coast horned lizard and Mojave fringe-toed lizard.

The following are detailed descriptions of coast horned lizard and Mojave fringe-toed lizard:

Coast horned lizard (*Phrynosoma blainvillii*)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G4, S3S4	SSC – CA Species of Special Concern

The coast horned lizard inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 2,438 meters in elevation. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills.

One coast horned lizard was observed during the survey near a large rock outcropping in a disturbed area with sandy soils (UTM 11 S 487477, 3805056) along Alternative Segment 6. No other horned lizards were observed along any of the other segments of the Project alignment.

Mojave fringe-toed lizard (*Uma scoparia*)

STATUS		
Federal	**State / NDDB**	**CDFW** (CDFW 2012)
None	None / G3G4, S3S4	SSC – CA Species of Special Concern; BLM:S – Bureau of Land Management Sensitive Species

The Mojave fringe-toed lizard is a medium-sized, flat-bodied, smooth-skinned lizard which inhabits sparsely vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. This species needs fine, loose sand for burrowing. Its range includes the Mojave Desert from the southern end of Death Valley south to the Colorado River around Blythe, and into extreme western Arizona from elevations around 300 to 3,000 feet.

Mojave fringe-toed lizard was not observed during surveys. This species requires a very specific habitat type that is only found in portions of the North Telecommunication route primarily around the Pisgah substation and potentially in association with basalt flows east of Newberry Springs. The nearest CNDDB occurrence of this species is located approximately 0.8 mile north of the North Telecommunication route. However, Interstate 40 presents a significant barrier between this portion of the Project Area and suitable and Mojave fringe-toed lizard habitat. This occurrence is located 1.3 miles west of the Pisgah substation and suitable habitat for this species is continuous to this portion of the Project Area.

4.0 DISCUSSION

Coast horned lizard was documented to occur within the Project Area. In addition, suitable habitat exists for the in portions of the North Telecommunication route primarily around the Pisgah substation and potentially in association with basalt flows east of Newberry Springs.

Considering the special-status listing of both the coast horned lizard and the Mojave fringed-toed lizard, impacts to these species would constitute a significant impact. Development of the Project in areas where suitable habitat for these species exists has the potential to cause direct impacts. Impacts would result from the permanent and temporary loss of habitat and from direct injury to these species as a result of construction activities. For both of these species, habitat loss is thought to be the primary agent in population decline. The loose wind-blown sand habitat, upon which the Mojave fringed-toed lizard is dependent, is a fragile ecosystem requiring the

protection against both direct and indirect disturbances; construction in such areas should be avoided to the maximum extent practicable. The coast horned lizard is primarily expected to occur along Alternative Segment 6. Should the Project proceed along Alternative Segment 6, care should be taken to minimize impacts to areas of suitable habitat.

Mitigation measures are included and are intended to reduce potential impacts to a less than a significant level.

5.0 RECOMMENDATIONS

Pre-construction biological surveys for special-status wildlife would be conducted by a qualified biologist in all laydown/work areas. If a special-status species is encountered, biologists would record the location, take a photograph, and delineate a buffer area, as appropriate, where activities should be restricted for the protection of the resource. If impacts to the special-status wildlife cannot be avoided, SCE would consult with the appropriate resource agency or agencies.

1. To the extent feasible, SCE would minimize impacts and permanent loss to native vegetation types, vegetation that may support special-status species by avoiding construction activities in areas flagged to be avoided. If unable to avoid impacts to native vegetation, a project revegetation plan may be prepared in consultation with the appropriate agencies for areas of native habitat temporarily impacted during construction.

2. Biological monitors would monitor construction activities in wildlife habitat areas that may contain special-status species, critical habitat for those species, or unique resources to ensure such species, habitat, or resources are avoided.

6.0 LITERATURE CITED

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FOCUSED ARROYO TOAD SURVEY REPORT
FOR THE
COOLWATER-LUGO TRANSMISSION PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:
Southern California Edison
1218 South 5th Avenue
Monrovia, California 91016

Submitted by:
BioResource Consultants, Inc.
310 E Matilija Street
Ojai, California 93023

Focused Biological Survey Report

Arroyo Toad (*Anaxyrus californicus*) on the Southern California Edison Proposed Coolwater-Lugo Project, San Bernardino County, California

Prepared for

BRC Consulting
310 East Matilija Street
Ojai, CA 93023

July 2013

Prepared by

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PLEGADIS

Table of Contents

Tables

Figures

Appendix

1 INTRODUCTION

Southern California Edison (SCE) proposes to construct the Coolwater Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of constructing from 65 to 75 miles of new high-voltage transmission lines between SCE's Coolwater Substation in Daggett, SCE's proposed Jasper Substation in Lucerne Valley, and SCE's Lugo Substation in Hesperia. It will also require construction of the new Desert View Substation east of Apple Valley and upgrades to telecommunication lines.

The Project is being constructed to help support system reliability, increased electrical demand, and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources, helping to make the power grid greener for California. Implementation of the Project will help meet these goals and will provide the electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

The Project crosses multiple jurisdictions and a wide variety of desert and semi-desert plant communities and habitats. Notable among these habitats are those that comprise the Mojave River, which also supports a number of sensitive species such as arroyo toad (*Anaxyrus californicus*), a listed species afforded protection under both the state and federal endangered species acts.

The purpose of this study is to document the possible occurrence and address the potential for arroyo toads in that portion of the project alignment that crosses the Mojave River.

1.1 Survey Location

The Project is located east of Interstate 15 and south of Interstate 40 near the communities of Apple Valley, Barstow, and Hesperia. The existing Lugo Substation is located approximately eight (8) miles south of the City of Hesperia. The survey area is within the north-facing (desert) slope of the San Bernardino Mountains and encompasses existing and future utility transmission towers located near and within Mojave River (Figure 1). Two proposed sites are examined. The first is located northeast of the Lugo Substation (Northern Site), while the other is located nearly east Lugo Substation inside the eastern bank of the Mojave River (Southern Site). Utility line/ Mojave River intersections serve as the center for one-kilometer circular survey areas (Figure 2).

1.2 Arroyo Toad Biology, Distribution and Status

The arroyo toad is a 2- to 3- inch, blunt-nosed toad with spotted greenish gray to tan warty skin (Stebbins 2003, Wright and Wright 1949). Adults are largely opportunistic feeders on a wide variety of food items, while juveniles are highly specialized feeders on loose organic material (Sweet 1992). Arroyo toads breed from late January or February to early July, or later depending on weather conditions (USFWS 1999b).

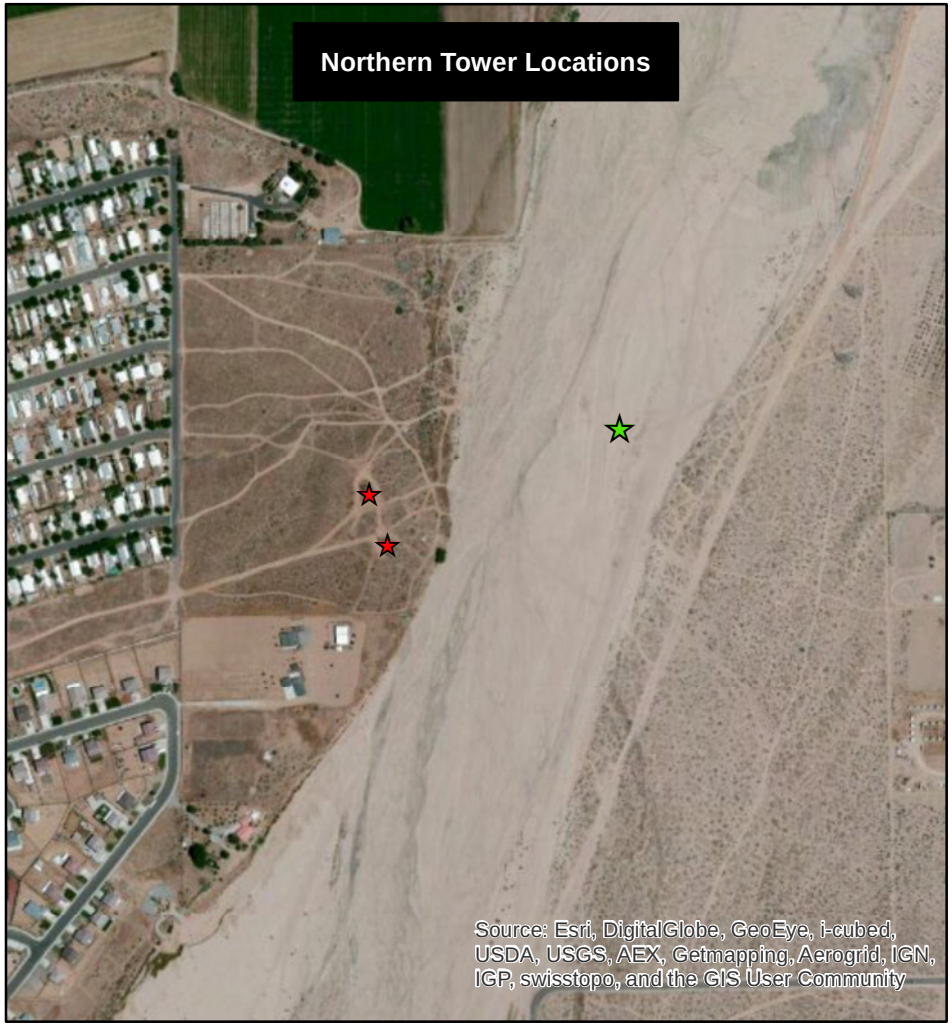
Figure 1. Location and Vicinity

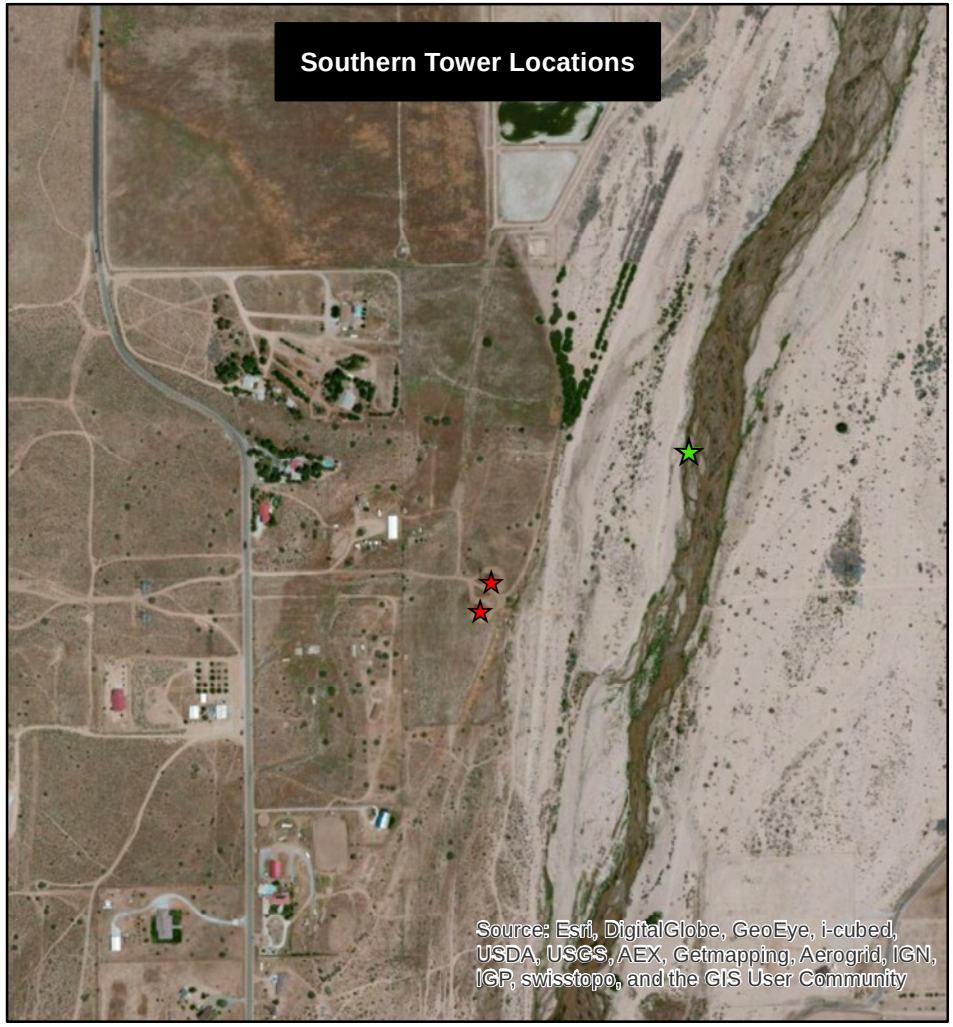
Legend

- Survey Area Centers
- Survey Area (One-kilometer Buffer)

0 0.2 0.4 0.8 1.2 1.6 Miles

Figure 2. Survey Area Centers





Legend

- Existing Tower Locations
- Utility Line/Riverine Habitat Intersection (survey area centers)

0 275 550 1,100 1,650 2,200
Feet

Arroyo toads occur in semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian communities and desert washes. Rivers with sandy banks, willows, cottonwoods, and sycamores are common habitats. Loose gravelly areas of streams in drier parts of range are also used by the species (USFWS 1999a, Jennings and Hayes 1994).

The historic range of arroyo toad included many of the river and river wash systems in Southern California (USGS 2001, USFWS 1999; Jennings and Hayes, 1994). Conversion of the species' preferred habitat, which consists of sandy low gradient open wash with slow moving or pooling water, has decreased dramatically with urban development (USGS 2001).

1.3 Local Distribution

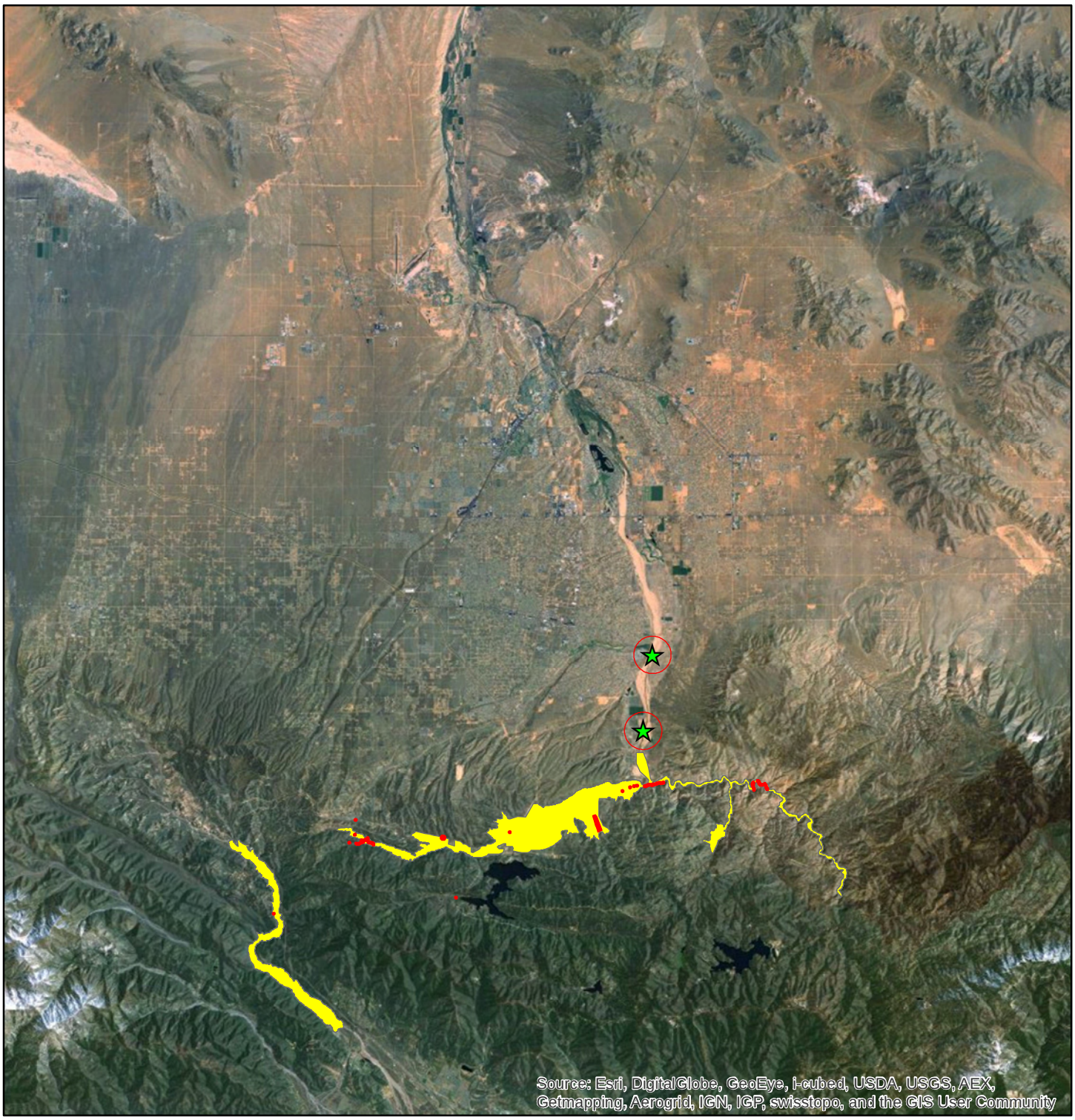
Arroyo toads are known from the Mojave River. Upstream populations include observations near and above the West Fork Mojave Dam, Silverwood Lake, and Cleghorn Road. Much of this area is also designated as Critical Habitat for the species (USFWS 2013). Table 1-1 summarizes local populations. Figure 3 shows documented arroyo toad populations near the Project and designated critical habitat.

Table 1-1. Arroyo Toad Local Populations

Location	Most Recent Record Prior to Survey
West Fork of the Mojave River and Deep Creek, 0.2 to 1.6 mi west of Mojave Forks Dam spillway (approximately 1 mile south of the Southern Site).	2008
West Fork Mojave River at southwestern Silverwood Lake, about 0.3 mi east-southeast of hwy 138 at Cleghorn Road, Silverwood Lake State Recreation Area.	2004

Sources: CNDDB 2013, USGS 2001, USFWS 1999

Figure 3. Reported Sightings



Legend

- Survey Area Centers
- Survey Areas
- Arroyo Toad Sightings
- Critical Habitat

N

0 1.5 3 6 9 12 Miles

2 METHODS

2.1 Overview

This section summarizes the methodology employed for the study. Plegadis staff undertook the study in three major parts:

1. Literature and Records Review;
2. Data Compilation, Preparation and Analysis; and,
3. Field Surveys.

2.2 Literature and Records Review

Plegadis staff reviewed available regional and local natural resources information including published and unpublished documents and herbarium records to undertake the analysis. Several Geographic Information System (GIS) data sets were collected as described below. Section 6 (Literature Cited) lists all documents and literature reviewed for this assessment and cited in this document. Site-specific information reviewed included, but was not limited to, the following sources:

- California Department of Fish and Wildlife, California Natural Diversity Database
- USGS 2001 Survey Results for the Arroyo Toad (*Bufo californicus*) in the San Bernardino National Forest
- USFWS 1999 Arroyo Southwestern Toad Recovery Plan

2.3 Data Compilation, Preparation, and Analysis

Plegadis staff compiled biological resources geospatial literature and records sources to develop a project-specific GIS database. This was the first analysis level and it provided reviewers with essential sensitive species location data and preliminary site-preference information. The data were compiled in ArcGIS Desktop 10 and were subsequently uploaded to a Trimble Juno handheld GPS with Trimble TerraSync and ESRI ArcPad 8.0 for field verification efforts.

2.4 Field Surveys

Biologist Ricardo Montijo and GIS specialist Bryan Solis conducted seven site visits as part of focused surveys in April, May and June 2013. The surveys followed the methodology in the *Survey Protocol for the Arroyo Toad* (USFWS 1999b). Table 2-1 summarizes survey dates, weather conditions (temperature and wind) and lunar phase. Daily survey schedules began with daytime surveys that consisted of assessment and mapping of:

a. Arroyo toad habitat suitability in the study area, and
b. The presence of arroyo toad eggs, larvae or juveniles within potential habitat in the study area.

Table 2-1. Survey Dates and Environmental Conditions

Date	Time	Start to End Temperature	Lunar Phase	Weather and Site Conditions
10 April 2013	1400 to 2200	79°F to 64°F	New Moon	Breezy, with mild gusts from the southwest. Water present at Southern Site and southwest of Northern Site.
18 April 2013	1600 to 2200	66°F to 57°F	Waxing ½ Moon	Nearly calm, slight breeze from the north. Water present at Southern Site and southwest of Northern Site.
09 May 2013	1700 to 2200	70°F to 61°F	New Moon	Partly cloudy to overcast. Windy, at times. Water present at Southern Site and nearly absent from southwest of Northern Site.
16 May 2013	1700 to 2230	77°F to 63°F	Waxing ½ Moon	Partly cloudy. Windy, at times. Water diminishing at Southern Site and absent from Northern Site.
31 May 2013	1800 to 2300	93°F to 79°F	Waning ½ Moon	Partly cloudy and breezy to windy at times. Water nearly absent from Southern Site.
12 June 2013	1800 to 2300	90°F to 70°F	Waxing ¼ Moon	Relatively calm. Water absent at both sites.
19 June 2013	1800 to 2200	88°F to 63°F	Waxing ¾ Moon	Relatively calm. Water absent at both sites.

Daylight surveys normally began in the afternoon and continued until dusk along streams, riverbeds and riparian habitat. The team visually searched (but did not disturb) eggs, larvae and juveniles, in or along areas considered being suitable habitat of arroyo toad. The team crossed streams only in fast-flowing areas downstream from any potential breeding pools to limit the possibility of disturbing silt deposits. Surveys were also conducted in non-wetland and riparian areas (roads, trails and uplands) to detect foraging toads.

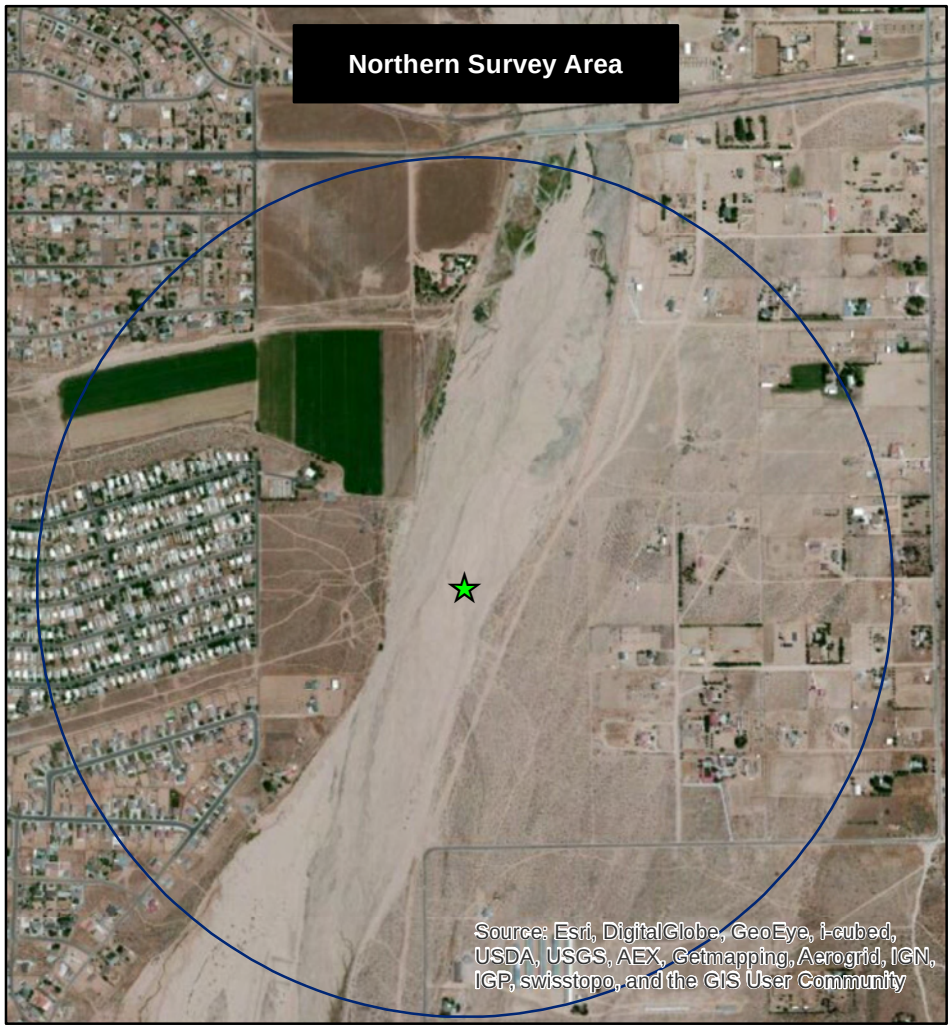
Night time surveys consisted of parallel transects in potential habitat identified during daytime

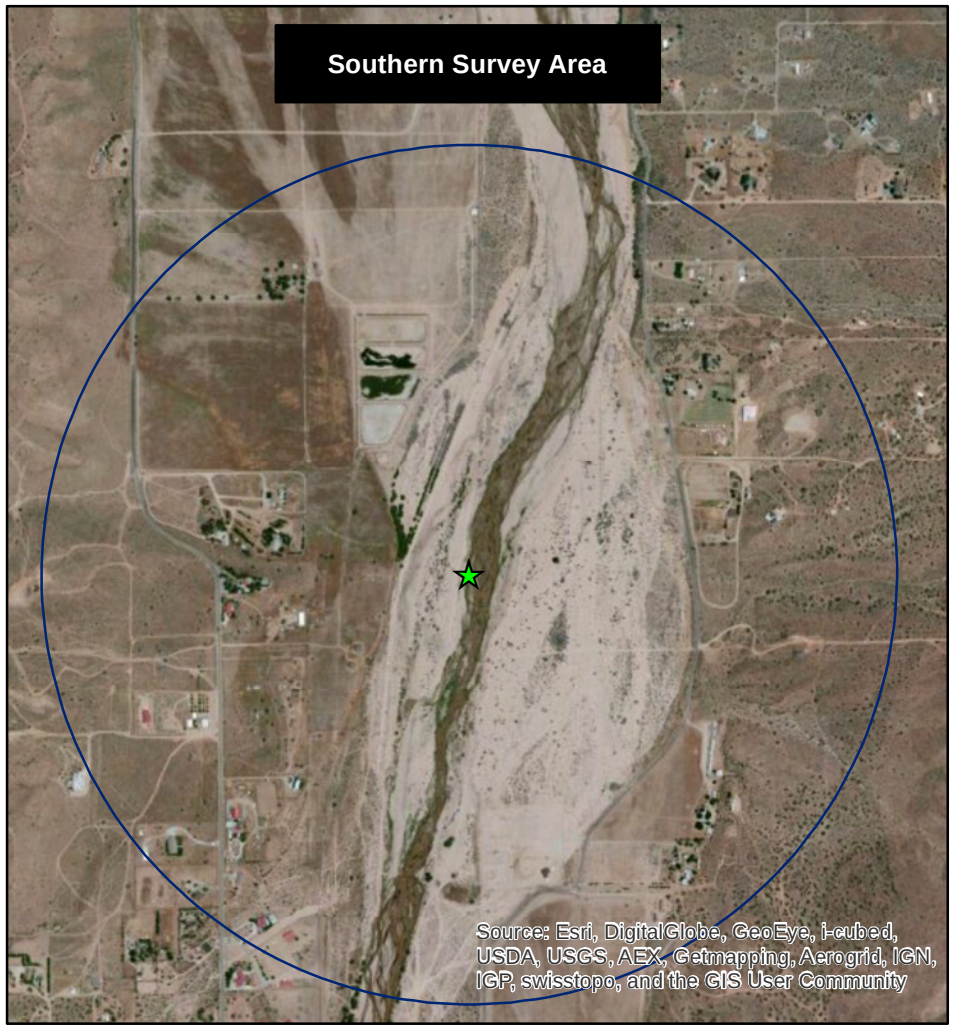
surveys. The team undertook nighttime surveys from dusk to 10:00 PM or 11:00 PM on foot. Transects parallel with streams and wet areas were spaced 3 meters apart to helped ensure uniform survey coverage. Figure 4 shows the Project survey limits (a one-kilometer buffer surrounding identified survey area centers) at the Northern and Southern Sites. All ampibians detected were recorded using the Trimble Juno GPS. Some were photographed to document species occurrence.

The surveyors used headlamps set to the lowest possible power for the purposes of identifying amphibians. The surveyors surveyed all potential arroyo toad-breeding pools and adjacent uplands on every visit and minimized talking or other human generated noise to prevent startling toads. The surveyors also minimized disturbance of possible breeding, although human impact, including off-road vehicle use, is evident throughout the area and was observed during several of the survey events. In addition to surveys conducted in potential project sites, Plegadis staff checked known occupied habitat south of the survey area near the Mojave Forks Dam to determine upstream presence and proximity.

Staff recorded mapping and location data using Trimble TerraSync or ArcPad software installed on a Trimble Juno global positioning system unit. The software allowed staff to superimpose survey boundaries on aerial imagery and thus confirm survey limits in the field. Biologists also used aerial photographs scaled to 1 inch equals 50 feet (1” = 50’) to identify site features and areas that potentially support arroyo toad.

Figure 4. Survey Areas





Legend

- Survey Area Center Locations
- Survey Areas

N

0 0.15 0.3 0.6 0.9 1.2 Miles

3 RESULTS

3.1 Site Conditions

The Project survey sites are largely within the Mojave River and largely consist of low-gradient streambed and terraces. In these areas, alluvial substrates range from loams to coarse sand to boulders, the product of downstream transport within the broad Mojave River Valley. Sandy loams occur in terraced uplands west and east of the Mojave River. Coarse sand is the common within the Mojave River, although pebbles, cobbles, and boulders occur in portions of the River channel. Upslope areas rise from the valley floor to form the north slopes of the San Bernardino Mountains' north (desert) slope.

Upland loams support some agricultural activities, in the western and eastern portions of the Project survey areas. Portions of these uplands also support rural and urban residential development. Natural vegetation occurs in the Mojave River, portions of the terraced uplands, and slopes of the San Bernardino Mountains.

Within the Project survey sites, natural vegetation within the Mojave River includes open water, sparsely-vegetated wash, alluvial scrub, and willow/mulefat scrub. Upslope areas are comprised of alluvial scrub, willow/mulefat scrub, semi-desert scrub, and tamarisk.

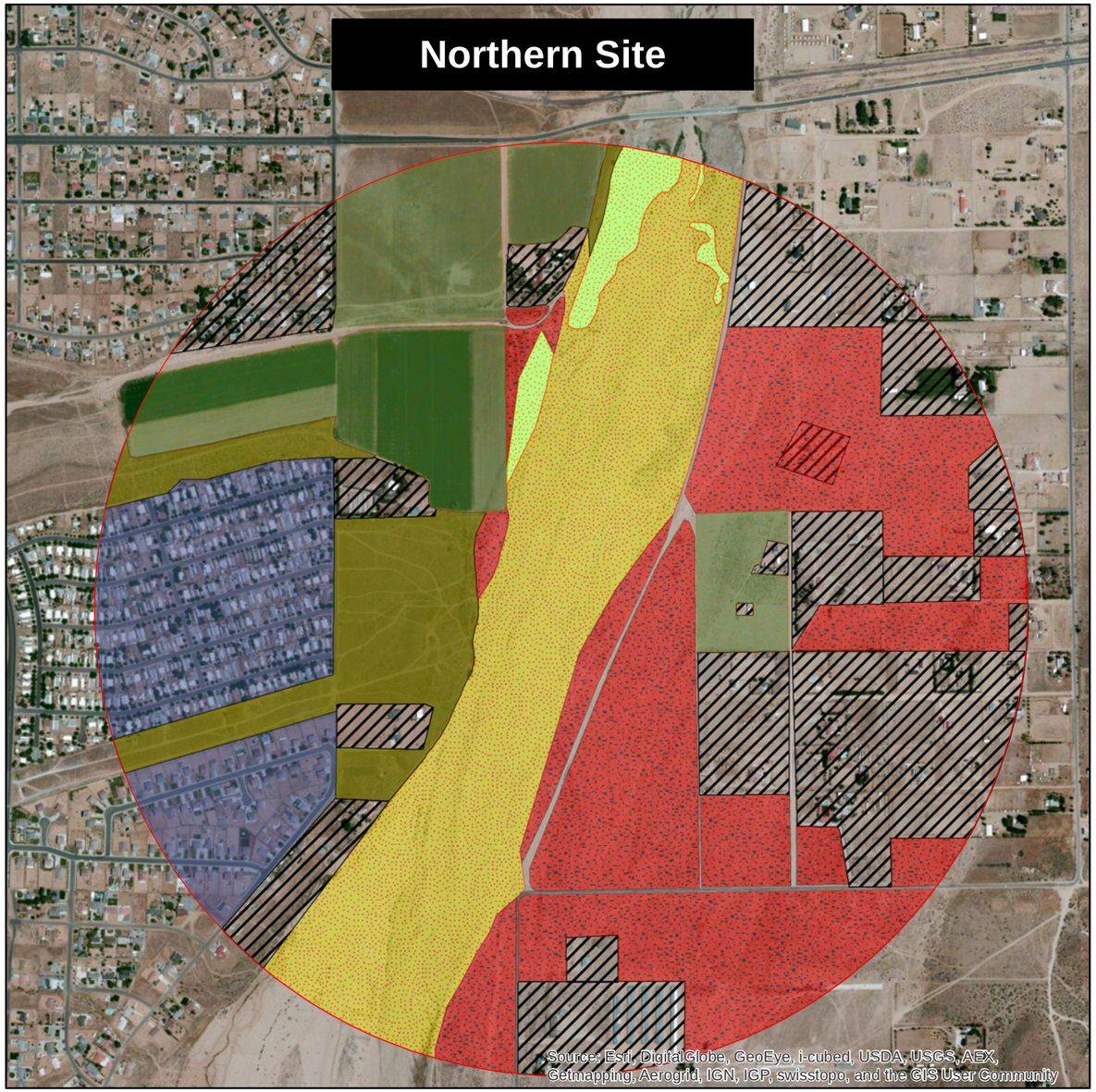
Open water areas are generally devoid of vegetation, although sparse cattails (*Typha* sp.), willows (*Salix* spp.), cocklebur (*Xanthium strumarium*) and the non-native rabbitsfoot grass (*Polypogon monspeliensis*) infrequently grow there. Washes include sparse vegetation, predominantly mulefat (*Baccharis salicifolia*), but also scalebroom (*Lepidospartum squamatum*) and other species. Alluvial scrub mostly occurs on terraces away from the active channel and includes mulefat, willows, California buckwheat (*Eriogonum fasciculatum*) and other scrub species. Willow/mulefat scrub can line active channels and open water and sometimes includes cottonwoods (*Populus fremontii*) and western sycamore (*Platanus racemosa*). Semi-desert scrub includes California buckwheat, rubber rabbitbrush (*Chrysothamnus nauseosus*), and California juniper (*Juniperus californicus*).

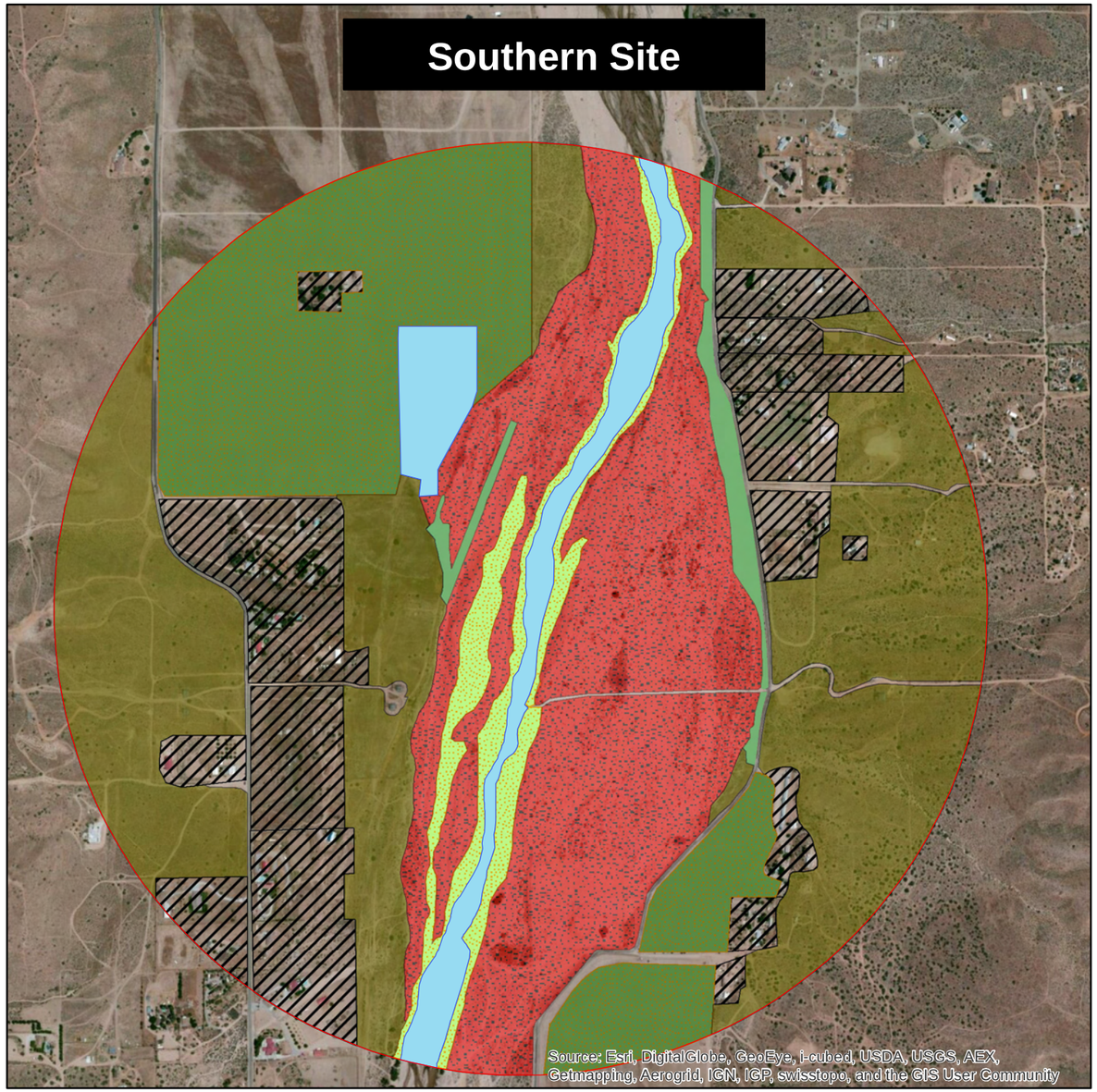
The invasive tree tamarisk (*Tamarix* sp.), occurs only portions of the Project survey sites. Figure 5 illustrates the habitats within both study sites. The Northernmost Site supports less open water and other suitable habitat for the species (Appendix A: Photographs 1-4).

3.2 Species Detected

Wetter portions of the survey sites supported western toad (*Anaxyrus boreas*) and Pacific tree frog (*Pseudacris regilla*) (Photographs 5-6). Both species were observed in the southwestern corner of the Northern Site through April, but not thereafter. Both species were observed in wetter portions of the Southern Site from April through May, but were not observed in June. Tadpoles of both species were found at both locations. No other amphibian species were found within the Project survey sites.

Figure 5. Survey Area Habitats





Legend

- Project Survey Area
- Active Channel/Open Water
- Agriculture
- Alluvial Scrub
- Semi-desert Scrub
- Rural
- Tamarisk
- Urban
- Wash
- Willow/Mulefat

N

0 0.125 0.25 0.5 0.75 1 Miles

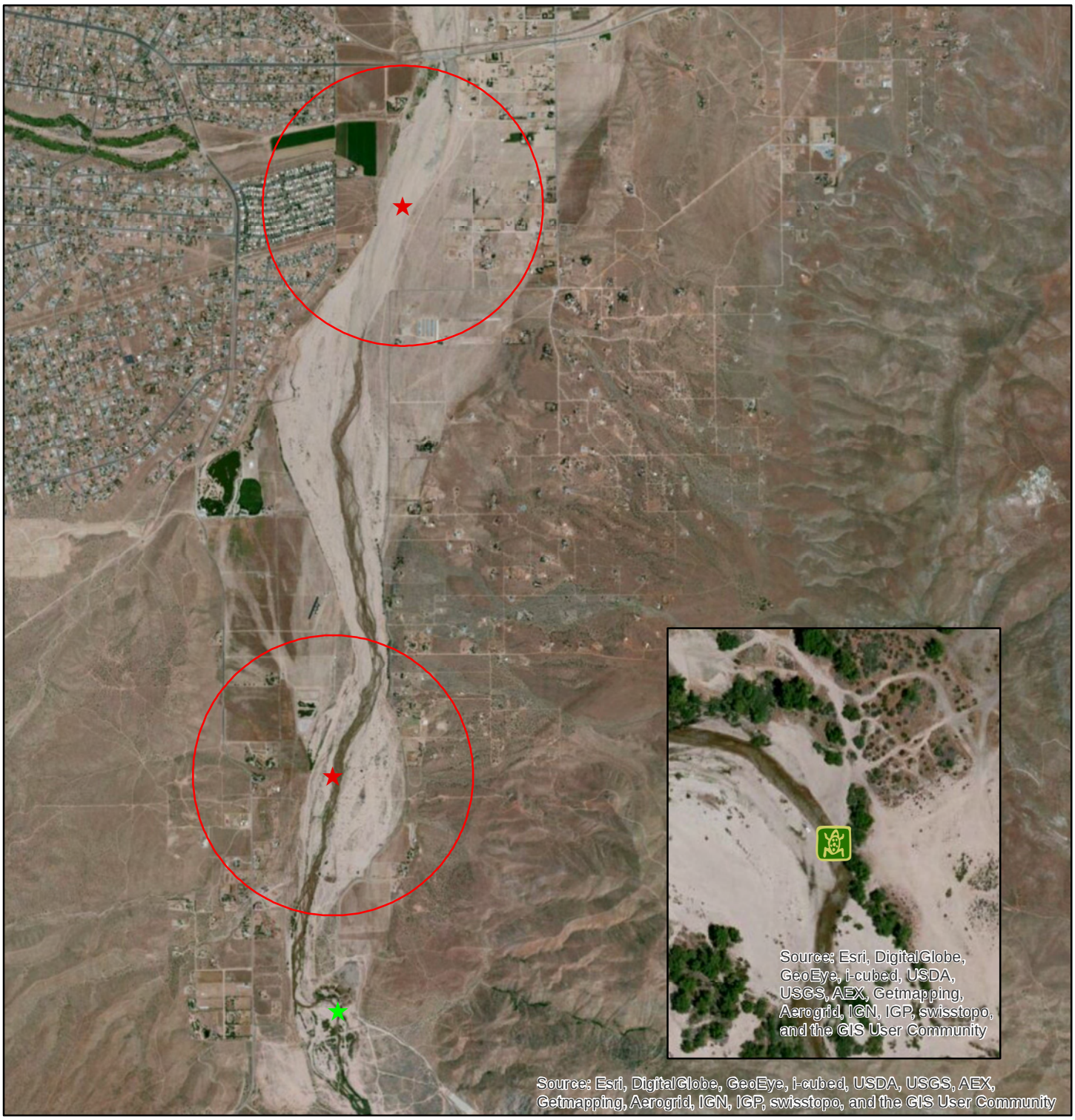
Side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), and zebra-tailed lizard (*Callisaurus draconoides*) were observed during the surveys. Common birds included white-crowned sparrow (*Zonotrichia leucophrys*), yellow-rumped warbler (*Dendroica coronata*), Bewick's wren (*Thryomanes bewickii*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), California quail (*Callipepla californica*), California towhee (*Pipilo crissalis*), lesser goldfinch (*Carduelis psaltria*), and killdeer (*Charadrius vociferus*).

Surveyors detected Coyote (*Canis latrans*) by scat and vocalizations and observed black-tailed jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*) during the surveys.

3.3 Arroyo Toad

Plegadis staff found a single arroyo toad on 12 June 2013 within the known occupied habitat south of the survey area near the Mojave Forks (Figure 6 and Appendix A: Photographs 7-8). No tadpoles or larvae were detected, although suitable breeding habitat was found during the visit. Other amphibians detected in close proximity included Pacific tree frog, western toad, and bullfrog (*Rana catesbeiana*).

Figure 6. Toad Sighting in Project Vicinity



Legend

- Toad Sighting (6/12/13)
- Survey Area Center Locations
- Project Survey Area

0 0.2 0.4 0.8 1.2 1.6
Miles

4 DISCUSSION

No arroyo toads were found within the survey sites, although the Southern Site appears to support better habitat for the species (open water, vegetation, and substrate). A single adult arroyo toad was found within known occupied habitat about ½-mile south of the Southern Survey area (approximately 1 mile south of the existing and proposed Project utility corridor and towers. Reports reviewed for this survey suggest that the species occurred downstream at sites near Mojave Narrows and Oro Grande as recently as the 1970's, but while arroyo toads were once common throughout portions of the West Fork Mojave construction of Silverwood Lake in 1972 removed occupied habitat and altered local hydrology (USFWS 1999). These changes and other disturbances to the Mojave River have eliminated shallow breeding areas and likely pose an obstacle to dispersal and successful reproduction on the survey sites (USFWS 1999).

The most salient problem for the species in the survey areas is the pervasive presence of off-road vehicles within active channel and in shallow pools. This disturbance includes not only vehicular travel, but also, as we noted during latter surveys, releases of gasoline, oil and other fluids into flowing and standing water. Nevertheless, the site is in close proximity to known occupied sites, and downstream dispersal is possible during rainfall events, especially in wetter years. We therefore recommend monitoring Project construction activities in the Mojave River for this species.

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Appendix A: Photographs

Photograph 1. Habitat Near Proposed Northern Tower Site

The above west-facing photo shows typical vegetation around the Northern Tower. Habitat here is primarily comprised of open and sparsely-vegetated wash.

Photograph 2. Northern Tower Habitat (Alternate View)

An alternate east-facing view of the same area shows the open and sparsely-vegetated Mojave River wash area.

Photograph 3. Southern Tower Habitat

The above south-oriented photo shows the Mojave River wash/active channel at the southern tower location (note heavy use by off-road vehicles).

Photograph 4. Southern Tower Habitat (Alternate View)

This west-facing view of habitat at the Southern Tower mulefat scrub often found adjacent to the open channel.

Photograph 5. Western Toad

Western toads prefer shallow water and areas near temporary water sources within the survey area; this survey documented their presence at both tower locations. The above photo shows a western toad observed in the southwest quarter of the northern tower survey location.

Photograph 6. Western Toad (2)

Shown above is a western toad in the center of the southern tower survey location.

Photograph 7. Arroyo Toad

The surveys produced no arroyo toad sightings in the tower survey areas; surveyors found a single toad approximately one-half mile south of the southern tower survey area's southern limits.

Photograph 8. Arroyo Toad (2)

Photograph 8 shows an alternate view of the same toad.

WETLANDS AND OTHER WATERS DELINEATION REPORT FOR THE

COOLWATER-LUGO TRANSMISSION PROJECT

SAN BERNARDINO COUNTY, CALIFORNIA

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Submitted by:
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August 2013

Table of Contents

Attachments

1.0 INTRODUCTION

BioResource Consultants Inc. was retained by Southern California Edison (SCE) to conduct a wetland delineation to determine the extent of wetlands and other waters within the Coolwater-Lugo Project in San Bernardino County, California.

2.0 PROJECT LOCATION

Coolwater-Lugo lies within San Bernardino County, east of Interstate 15 ("I-15"), and south of the Interstate 40 ("I-40"), and north of San Bernardino National Forest (Figure 2.1-A, Coolwater-Lugo Transmission Project Siting Study Areas Map). Elevations vary throughout the Coolwater-Lugo Project area from a low of approximately 1,700 feet above sea level near Newberry Springs, to a high of approximately 3,800 feet above sea level along the base of Stoddard Mountain.

Coolwater-Lugo is located within the Mojave Desert region. Temperatures vary with highs typically exceeding 100 degrees Fahrenheit ("°F") in the summer to lows near 30 °F in the winter (NOAA 2012). Average rainfall varies from 0 inches to as much as 13 inches per year. Snowfall is not uncommon at higher elevations. The Project alignment crosses numerous ephemeral drainages of varying size. Near the City of Hesperia, Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River. This river is the major water feature of the Western Mojave Desert and the only perennial water body located along the Project alignment.

A portion of Coolwater-Lugo is located on Bureau of Land Management ("BLM") land and State Lands Commission lands. Jurisdictions through which Coolwater-Lugo passes include unincorporated San Bernardino County, the Cities of Hesperia and Barstow, the Town of Apple Valley, and the communities of Daggett, Lucerne Valley, and Newberry Springs. Land uses in the immediate vicinity of Coolwater-Lugo include open space areas, off-highway vehicle recreation areas, and low-density rural residential, medium-density residential, and limited agriculture.

The project alignments (primary and alternatives) are within the following U.S. Geological Survey (USGS) 7.5-minute quadrangles: Baldy Mesa, Cajon, Silverwood Lake, Lake Arrowhead, Apple Valley North, Apple Valley South, Butler Peak, Fifteen mile Valley, Fairview Valley, White Horse Mtn., Lucerne Valley, Fawnskin, Big Bear City, Cougar Buttes, Old Woman Springs, Rattlesnake Canyon, Melville Lake, Fry Mountains, Stoddard Well, West Ord Mountain, Nebo, Yermo, Harvard Hill, Newberry Springs, Camp Rock Mine, Minneola, Ord Mountain, Barstow, Barstow SE, Daggett, Chidago Canyon, Hodge, and Turtle Valley.

3.0 PROJECT DESCRIPTION

Southern California Edison (SCE) proposes to construct the Coolwater-Lugo Transmission Project (Project), which would provide additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas. The Project will consist of between 65 and 75 miles of new high-voltage transmission lines between SCE's Coolwater Switchyard in Daggett, the Proposed Desert View Substation in unincorporated San Bernardino County, and SCE's Lugo Substation

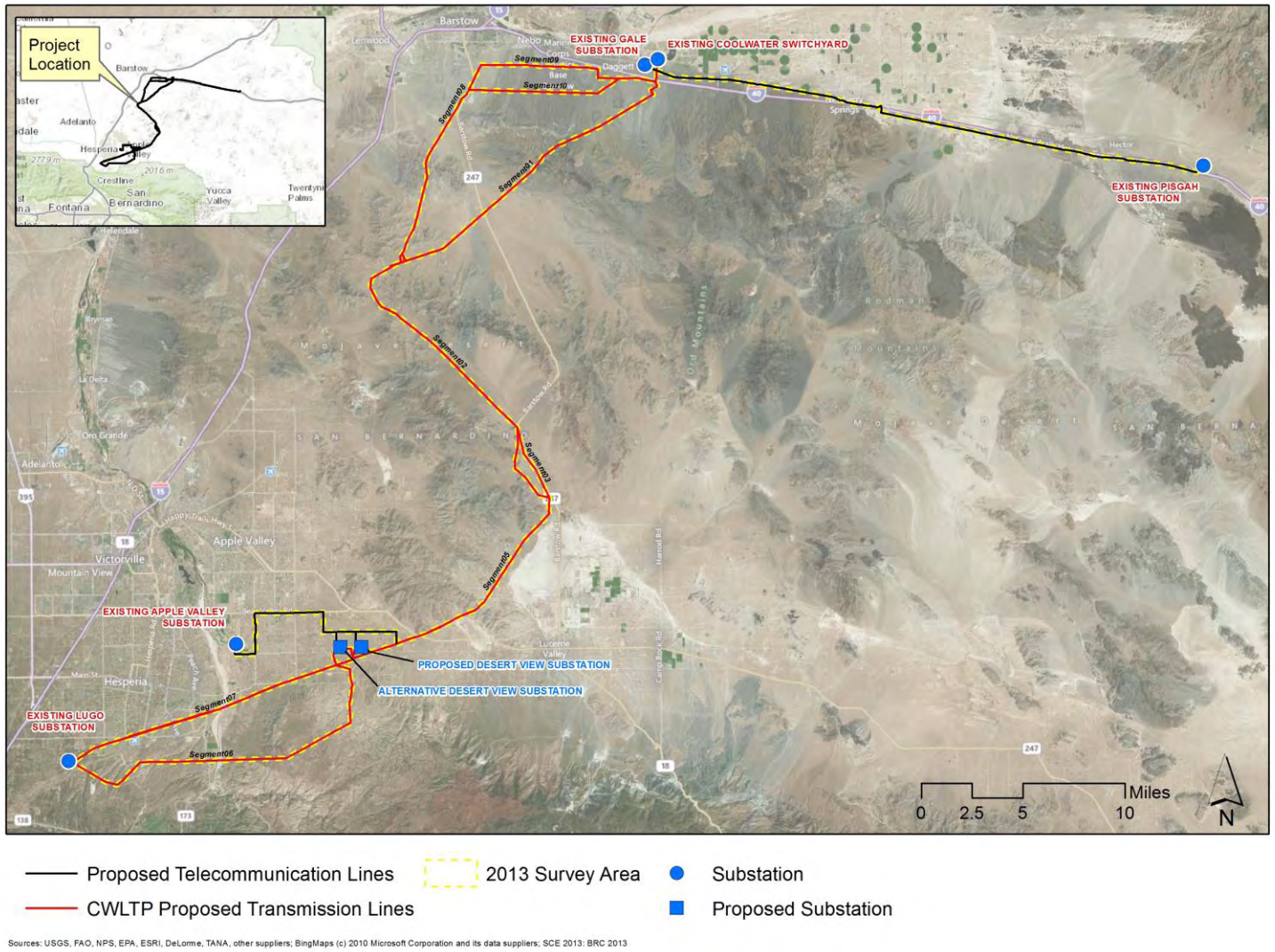
in Hesperia. It will also require the addition of telecommunication lines, upgrades to existing telecommunication lines, and modifications to existing Coolwater and Lugo substations.

The Project is being constructed to improve system reliability, and to provide for increased electrical demand and large-scale renewable generation development. SCE is committed to delivering electricity from renewable energy resources and making the power grid greener for California. Implementation of the Project will help meet these commitments and will provide electrical facilities and additional transmission capacity needed in the Kramer Junction and Lucerne Valley areas.

As shown on Figure 1, the Project has been divided into geographically defined Segments. The Proposed Transmission Line Route includes Segments 12, 1, 2, 3, 5, 5a, and 7). Segment 12 begins at the Coolwater Switchyard and travels south across the National Trails Highway and Interstate 40 ("I-40"). South of I-40, Segment 1 begins and continues southwest following an existing LADWP transmission lines corridor, crossing State Route 247 ("SR-247"), and terminating in the Ord Mountain off-highway vehicle recreation area. Segment 2 continues southeast following the Lucerne Valley Cutoff (dirt road) until its termination at SR-247. Segment 3 continues in a southerly direction, following SR-247, and terminates near the northern edge of the Lucerne Valley dry lake bed. Segment 5 continues southwest to terminate near the eastern boundary of the Town of Apple Valley. Segment 5a extends from the existing SCE corridor where Segment 5 would be located north and east into the eastern side of the Proposed Desert View Substation. The Proposed Desert View Substation is located at the termination of Segment 5a. Segment 7 runs westward and crosses the Mojave River before terminating at the Lugo Substation just outside of the City of Hesperia.

The Project also includes two telecommunication routes: the North Telecom route which extends from Gale Substation (which lies directly west of the Coolwater Switchyard) east along Historic Route 66 to the Pisgah substation; and the South Telecom route which extends from the Apple Valley Substation to the Proposed or Alternative Desert View Substation.

Figure 1. Project Location



4.0 DELINEATION METHODS

A detailed desktop review was conducted utilizing preliminary project engineering, previous environmental documents, aerial photography, USGS topographical maps, National Wetland Inventory Maps and other sources to identify the likelihood of jurisdictional waterway features within the Project Area. Field surveys for the delineation were conducted on March 28 to April 12, 2012, July 31 to August 3, 2012 and May 28 to June 15, 2013. Steve Jones, Evan Sharp, and Cedrick Villaseñor, qualified biologist/botanists, conducted the delineation adapted from the routine onsite determination method described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987) and in accordance with the methods identified in the *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual Arid West Region (Version 2.0)* (USACE 2010). Waters were mapped in the field in conjunction with aerial photographs to delineate the extent of each feature within the Project Area.

Hydrophytic vegetation is defined as the community of macrophytes that occur in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence on the plant species present. Hydrophytic vegetation decisions are based on the assemblage of plant species growing on a site rather than the presence or absence of particular species. Hydrophytic vegetation is present when the plant community is dominated by species that can tolerate inundation or soil saturation during the growing season. As detailed in the Regional Supplement, the 50/20 Rule was used to select dominant species from each stratum of the community and the presence of hydrophytic vegetation was determined by the dominance test, prevalence index, and other indicators, including morphological adaptations. The wetland indicator status of each species encountered was determined based upon the *National List of Plant Species That Occur in Wetlands: California (Region 0)* (Reed 1988).

The National Technical committee for Hydric Soils defines a hydric soil as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. To determine the presence of hydric soils a soil pit was dug to a depth of 12 inches or deeper as necessary to document an indicator or to confirm the absence of indicators. Soils were examined with hydric soil indicators as described in the Regional Supplement and compared to a Munsell Soil Color Chart (Munsell 2007).

Hydrology was determined to be present based on primary and secondary indicators as referenced in the Regional Supplement. Hydrological indicators include the presence of surface water or groundwater, evidence of flooding or ponding (water marks, drift deposits, sediment deposits), and evidence of soil saturation (surface water, soil saturation in the upper 12 inches, oxidized rhizospheres, reduced iron or sulphur).

The boundaries of non-tidal, non-wetland water were delineated at the ordinary high water mark (OHWM) as defined in 33 Code of Federal Regulations 328.3 and in accordance with *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the U.S., A Delineation Manual (August 2008).*

The boundaries of state waters subject to regulation by the California Department of Fish and Game (CDFG) were delineated using agency-issued guidance under the California Fish and Game Code, related CDFG materials, and standard practices by CDFG personnel. CDFG jurisdiction was delineated by measuring the outer boundaries of the greater of either the top of bank measurement (bankfull width) or the extent of associated riparian or wetland vegetation.

The delineation was limited to a survey corridor of 500 feet either side of the proposed centerline for all segments and 25 feet either side (50 feet) of the access roads. Ground truthing to determine bed bank or OHWM was conducted as necessary beyond the survey corridor. However, mapping and acreage calculations are limited to the survey corridor or within the 50 foot access road corridor.

5.0 RESULTS

5.1 Vegetation

Based on the reconnaissance-level survey of the entire Project Area, 14 plant communities, characterized and named according to the vegetation's dominant species, were identified.

Table 1. Vegetation Types and Communities Found Within the Project Area.

Plant Community Name	Class Code	Segment(s) of Occurrence	Acreage within Survey Area
Basalt Rock	BR	North Telecom	217
Big Sagebrush Scrub	BSS	6, 7	442
Creosote Bush Scrub	CBS	4, 5a, 5b, 6, 7, North Telecom, South Telecom	5,532
Creosote Bush Scrub- White Bursage Scrub	CBBS	1, 2, 5a, 5b, 6, 7, 8, 9, 10	8,895
California Buckwheat Scrub	CBUS	6	936
California Juniper Woodland	CJW	6	936
Dry Lake Bed	DLB	1, South Telecom	850
Fourwing Saltbush Scrub	FWSS	5	285
Joshua Tree Woodland	JTW	1, 2	4323

Plant Community Name	Class Code	Segment(s) of Occurrence	Acreage within Survey Area
Mojave River	MR	6, 7	179
Rabbit brush scrub	RBS	7	596
Rock Outcrop	RC	4, 5	200
Willow Riparian	Not mapped	-	-

Basalt Rock ("BR")

Basalt Rock lacks a dominance of vegetation and is characterized by volcanic rock and boulders with occurrences of creosote bush *(Larrea tridentata)* and desert tea *(Ephedra californica)*. This community occurs primarily in the northeast portion of the Project.

Big Sagebrush Scrub ("BSS")

This community is dominated by big sagebrush (*Artemisia tridentata*) and is typically found on plains, alluvial fans, and bajadas with sandy soils with an open canopy and the herbaceous layer is spare to intermittent with non-native grasses. This community occurs on the western end of Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 near the Lugo Substation. Other species that occur within this community include yellow rabbit brush *(Chyrsothamnus viscidiflorus)*, mormon tea *(Ephedra viridis)*, rubber rabbit brush *(Ericameria nauseosa)*, and California juniper *(Juniperus californicas)*.

Creosote Bush Scrub ("CBS")

Creosote Bush Scrub is dominated by creosote bush with an intermittent to open canopy with an herbaceous layer of seasonal annuals or perennial grasses. This community is found on alluvial fans, bajadas, upland slopes, and washes. The soils are well drained, sometimes with desert pavement. Along the Project alignment, this community is found scattered throughout. Other species that occur within this community include white bursage *(Ambrosia dumosa)*, fourwing saltbush *(Atriplex canescens)*, allscale *(Atriplex polycarpa)*, brittlebush *(Encelia farinosa)*, Anderson's desert thorn *(Lycium andersonii)* and Joshua tree *(Yucca brevifolia)*.

Creosote Bush Scrub-White Bursage Scrub ("CBBS")

This community is dominated by creosote bush and co-dominated by white bursage with an intermittent to open canopy. The herbaceous layer is dominated by seasonal annuals. This community typically occurs within small washes, rills, alluvial fans, and bajadas. This is the most common community occurring along the majority of the Project. Other species within this community include fourwing saltbush, allscale, brittlebush, Anderson's desert thorn, Joshua tree, California barrel cactus (*Ferrocactus cylindraceus var. cylindraceus*), beavertail cactus desert

(*Opuntia basilaris*), desert straw (*Stephanomeria pauciflora*), and desert trumpet (*Eriogonum inflatum*).

California Buckwheat Scrub ("CBUS")

The California Buckwheat Scrub along the Project alignment is considered the transmontane stand and is dominated by California buckwheat *(Eriogonum fasciculatum)* with white bursage, creosote, mormon tea, brittlebush with occurrences of California juniper). This community occurs in transition with California Juniper Woodland and Creosote Bush Scrub or Creosote Bush-White Bursage Scrub. The California Buckwheat Scrub only occurs within the western portion of the alignment within Alternative Transmission Line Segment 6.

California Juniper Woodland ("CJW")

The California Juniper Woodland is dominated by California juniper and is associated with species of the California Buckwheat Scrub and Big Sagebrush Scrub. This community is only found on the western portion of the Project within Alternative Transmission Line Segment 6.

Dry Lake Bed ("DLB")

This community is dominated by Parry's saltbush *(Atriplex parryi)* with fourwing saltbush, and bud sage *(Artemisia spinescens)*. The canopy cover is open with a lack of herbaceous species. The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs on dry lake beds within the Proposed Transmission Line Segments 1 and 5a and the Apple Valley to Desert View Telecommunication Route.

Fourwing Saltbush Scrub ("FWSS")

Fourwing Saltbush Scrub is dominated by fourwing saltbush with allscale, creosotebush, Mormon tea as co-dominates. The canopy cover is open with a lack of herbaceous species. This community occurs on playas, dry lake beds, alluvial fans and rolling hills. The soils are typically carbonate rich, alkaline, sandy or sandy-clay loam soils. This community occurs at scattered locations along the alignment primarily within the Proposed and Alternative Transmission Line Segment 5.

Joshua Tree Woodland ("JTW")

The Joshua Tree Woodland is dominated by Joshua tree (Y*ucca brevifolia*) co-dominated by species of the Creosote Bush Scrub or Creosote Bush-White Bursage Scrub including creosote bush, white bursage, Mormon tea, Anderson's desert thorn, cheese bush *(Hymenoclea salsola)*, beavertail cactus, and California barrel cactus. The understory is dominated by herbaceous seasonal annuals and grasses. This community is scattered throughout the Project, typically on rocky soils on ridges and moderate slopes.

Mojave River ("MR")

The Mojave River is the primary surface drainage of the region and the Project Area. The Mojave River generally lacks dominance of vegetation and consists of braided sandy channels within a wide floodplain. The Mojave River within the region has surface flow during storm events but generally has an underground flow. Along the edges of the river seasonal annuals are prevalent. Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6 cross the Mojave River.

Rabbit Brush Scrub ("RBS")

Rabbit Brush Scrub is dominated by rubber rabbit bush and yellow rabbit brush with a co-dominance of non-native ruderal species including Russian thistle *(Salsola tragus),* mustards *(Brassica nigra),* and *(Hirschfeldia incana).* This community transitions into Big Sagebrush Scrub and is found along the alignment in disturbed areas of residential development within the western portion of the proposed Project Area including Proposed Transmission Line Segment 7 and the Apple Valley to Desert View Telecommunication Route.

Rock Outcrop ("RC")

Rock Outcrop lacks a dominance of vegetation and is characterized by steep slopes with volcanic rock and boulders with occurrences of brittlebush and creosote bush. This community occurs sporadically within the Project alignment.

Willow Riparian (not mapped)

The Willow Riparian community occurs along canyon drainages and the Mojave River in the western portion of the Project Area within Proposed Transmission Line Segment 7 and Alternative Transmission Line Segment 6. This community is dominated by arroyo willow (*Salix lasiolepis),* red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), and elderberry (*Sambucus nigra*). This habitat community was not mapped due to its extremely localized and limited distribution within the Project Area.

5.2 Soils

The project is entirely within the Soil Survey for San Bernardino County, California Mojave River Area. The project is characterized by many soil types, shown within Attachment A and described below.

General Soil Mapping Units within the Project

Villa-Riverwash-Victorville: very deep, nearly level, moderately well drained soils and Riverwash; on flood plains and low terraces.

Playas-Bousic: Playas and very deep, nearly level, moderately well drained soils; on basin rims.

Cajon-Manet: Very deep, nearly level to strongly sloping, somewhat excessively drained and well drained; soils on recent alluvial fans.

Kimberlina-Waco: Very deep, nearly level and gently sloping, well drained soils; on alluvial fans.

Bryman-Helendale: Very deep, nearly level to strongly sloping, well drained soils; on alluvial fans and terraces.

Mirage-Joshua: Very deep and moderate deep, gently sloping to strongly sloping, well drained soils that have a desert pavement; on old terraces.

Nebona-Cuddeback: Shallow and moderately deep, gently sloping and moderately sloping, well drained sols that have a desert pavement; on old terraces and alluvial fans.

Yermo-Kimberlina-Typic Haplagrids: Very deep, gently sloping to steep, well drained soils; on alluvial fans and hills.

Rock Outcrop-lithic-Torriorthents-Sparkhule: Rock outcrop and very shallow and shallow, moderately steep and steep, well drained soils; on desert foothills and mountains.

Detailed Soil Map Units within Survey Corridor and associated Access Roads are provided in Table 1.

Table 2. Detailed Soil Map Units

Soil Map Unit*	Description	Hydric
100	ARIZO GRAVELLY LOAMY SAND, 2 TO 9 PERCENT SLOPES"	
101	ARRASTRE-ROCK OUTCROP COMPLEX, 30 TO 50 PERCENT SLOPES	
102	AVAWATZ-OAK GLEN ASSOCIATION, GENTLY SLOPING	2B2, 3
103	BADLAND	
104	BOUSIC CLAY	3
105	BRYMAN LOAMY FINE SAND, 0 TO 2 PERCENT SLOPES	
106	BRYMAN LOAMY FINE SAND, 2 TO 5 PERCENT SLOPES	
107	BRYMAN LOAMY FINE SAND, 5 TO 9 PERCENT SLOPES	

Soil Map Unit*	Description	Hydric
108	BRYMAN LOAMY FINE SAND, 9 TO 15 PERCENT SLOPES	
111	BULL TRAIL-TYPIC XERORTHENTS ASSOCIATION, MODERATELY STEEP	
112	CAJON SAND, 0 TO 2 PERCENT SLOPES	X-
113	CAJON SAND, 2 TO 9 PERCENT SLOPES	
114	CAJON SAND, 9 TO 15 PERCENT SLOPES	
115	CAJON GRAVELLY SAND, 2 TO 15 PERCENT SLOPES	
118	CAJON-ARIZO COMPLEX, 2 TO 15 PERCENT SLOPES	
119	CAJON-WASCO, COOL COMPLEX, 2 TO 9 PERCENT SLOPES	4
120	CAVE LOAM, DRY, 0 TO 2 PERCENT SLOPES	3
121	CRAFTON-SHEEPHEAD-ROCK OUTCROP ASSOCIATION, STEEP	
122	CUSHENBURY-CRAFTON-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES	
123	DUNE LAND	3
126	GULLIED LAND-HAPLOXERALFS	
130	HAPLARGIDS-CALCIORTHIDS COMPLEX, 15 TO 50 PERCENT SLOPES	
131	HELENDALE LOAMY SAND, 0 TO 2 PERCENT SLOPES	
132	HELENDALE LOAMY SAND, 2 TO 5 PERCENT SLOPES	
133	HELENDALE-BRYMAN LOAMY SANDS, 2 TO 5 PERCENT SLOPES	
134	HESPERIA LOAMY FINE SAND, 2 TO 5 PERCENT SLOPES	
135	JOSHUA LOAM, 2 TO 5 PERCENT SLOPES	
136	JOSHUA LOAM, 9 TO 15 PERCENT SLOPES	
137	KIMBERLINA LOAMY FINE SAND, COOL, 0 TO 2 PERCENT SLOPES	

Soil Map Unit*	Description	Hydric
138	KIMBERLINA LOAMY FINE SAND, COOL, 2 TO 5 PERCENT SLOPES	
139	KIMBERLINA GRAVELLY SANDY LOAM, COOL, 2 TO 5 PERCENT SLOPES	
140	LAVIC LOAMY FINE SAND	3
141	LOVELACE LOAMY SAND, 5 TO 9 PERCENT SLOPES	
142	LUCERNE SANDY LOAM, 0 TO 2 PERCENT SLOPES	
143	LUCERNE SANDY LOAM, 2 TO 5 PERCENT SLOPES	
148	MIRAGE SANDY LOAM, 2 TO 5 PERCENT SLOPES	
149	MIRAGE-JOSHUA COMPLEX, 2 TO 5 PERCENT SLOPES	
151	NEBONA-CUDDEBACK COMPLEX, 2 TO 9 PERCENT SLOPES	X
154	PETERMAN CLAY	3
155	PITS	4
156	PLAYAS	3
157	RIVERWASH	2B2, 3
158	ROCK OUTCROP-LITHIC TORRIORTHENTS COMPLEX, 15 TO 50 PERCENT SLOPES	
159	ROSAMOND LOAM, SALINE-ALKALI	3
162	SPARKHULE-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES	
164	TRIGGER GRAVELLY LOAM, 5 TO 15 PERCENT SLOPES	
165	TRIGGER-SPARKHULE-ROCK OUTCROP ASSOCIATION, STEEP	
166	TRIGGER-ROCK OUTCROP COMPLEX, 30 TO 50 PERCENT SLOPES	
168	TYPIC HAPLARGIDS-YERMO COMPLEX, 8 TO 30 PERCENT SLOPES	
169	VICTORVILLE SANDY LOAM	2A

Soil Map Unit*	Description	Hydric
171	VILLA LOAMY SAND	2B1
172	VILLA LOAMY SAND, HUMMOCKY	2B1
173	WASCO SANDY LOAM, COOL, 0 TO 2 PERCENT SLOPES	
174	ASCO SANDY LOAM, COOL, 2 TO 5 PERCENT SLOPES	
175	WRIGHTWOOD-BULL TRAIL ASSOCIATION, SLOPING	
177	YERMO-KIMBERLINA, COOL, ASSOCIATION, SLOPING	3
178	WATER	NA
179	MISCELLANEOUS WATER	NA

Notes:

1. All Histels except Folistels and Histosols except Folists; or

2. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;

3. Map unit components that are frequently ponded for long duration or very long duration during the growing season that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil; or

4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soils meet the definition of a hydric soil.

5. All Histels except Folistels and Histosols except Folists; or

6. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;

Soil Map Unit*	Description	Hydric
7. Map unit components that are frequently ponded for long duration or very long duration during the growing season that: a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or b. Show evidence that the soil meets the definition of a hydric soil; or 8. Map unit components that are frequently flooded for long duration or very long duration during the growing season that: a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or b. Show evidence that the soils meet the definition of a hydric soil. *Soil map units were not confirmed in the field.		

5.3 Hydrology/Water Quality

The project alignment is within the South Lahontan and Colorado River Hydrologic Regions.

The South Lahontan HR represents about 17 percent of the land area in California. The region includes Inyo County and portions of Mono, San Bernardino, Kern and Los Angeles counties. It is bounded to the north by the drainage divide between Mono Lake and East Walker River; to the west and south by the Sierra Nevada, San Gabriel, San Bernardino and Tehachapi mountains; and to the east by the state of Nevada. Drainage for most of the watershed in the region is underground. Along the arid climate this accounts for the presence of many dry lakebeds or playas in the region. Major lakes in the region include Mono Lake, June Lake, Convict Lake, Crowley Lake, Tinemaha Reservoir, Lake Arrowhead, Silverwood Lake and Lake Palmdale. Rivers in the region include Owens River, Mojave River and Armargosa River.

Within the South Lahontan Region the project is within the Mojave Hydrologic Unit - Upper Mojave hydrologic Area, Middle Mojave Hydrologic Area, Lower Mojave Hydrologic Area, New Berry Springs Hydrologic Area and Broadwell Hydrologic Area. The area also includes the Upper Mojave River Valley Groundwater Basin, Middle Mojave River Valley groundwater Basin, Upper Mojave River Valley Groundwater Basin and the Kane Wash Groundwater basin.

The main hydrologic feature of the watershed is the Mojave River whose headwaters are in the San Bernardino Mountains. Snow melt provides most water for the river.

The Mojave River is the largest stream in the region of the project. The majority of the river has a sub-surface flow with surface flow during storm events and at the upper narrows between Victorville and Apple Valley, California, then downstream past Barstow, California at lower narrows as the river begins its way through Afton Canyon.

The Lower Mojave River Valley Groundwater Basin/Hydrologic Area is an elongate east west valley with the Mojave River flowing through the valley from the west across the Waterman Fault and exiting the valley to the east through Afton Canyon. The contact between unconsolidated Quaternary sediments and consolidated Tertiary and older rocs of the Waterman and Calico Mountains forms the northern boundary. The southern boundary is the contact between unconsolidated sediments and consolidated rocks forming the Daggett Ridge, the Newberry Mountains and the Rodman Mountains. The western boundary is the Camp Rock-Harper Lake fault zone and the southeast boundary is the Pisgash fault. The northeastern boundary is an arbitrary divide between adjacent Coyote Lake Valley Basin and Caves Canyon Valley Basin.

The middle Mojave River Valley Groundwater Basin/Hydrologic Area is an elongate east west valley, with the Mojave River flowing through the valley from the south near the town of Helendale to the east and into the Lower Mojave River Valley Basin at the Waterman fault. The Middle Mojave River Valley basin is bounded on the north by a combination of surface and subsurface divides, the Helendale fault and the contact between Quaternary alluvium and consolidated basement rocks of the Kramer Hills and Iron Mountain. The southern boundary is a roughly east-west line from outcropping basement rock near Helendale to that in the Shadow Mountains. The eastern boundary is the Camp Rock-Harper Lake fault zone and the western boundary is surface drainage and basement outcrops of the Shadow Mountains northward to the Kramer Hills area.

The Upper Mojave River Valley Groundwater Basin/Hydrologic Area is an elongate north south valley with the Mojave River flowing through the valley from the San Bernardino Mountains on the south, northward into the Middle Mojave River Valley Groundwater Basin and to the town of Helendale. The basin is bounded on the north by a roughly east west line from basement rock outcrops near Helendale to those in the Shadow Mountains. The southern boundary is the contact between Quaternary sedimentary deposits and unconsolidated basement rocks of the San Bernardino Mountains. The basin is bounded on the southeast by the Helendale fault and on the east by basement exposures of the Mountains surrounding the Apple Valley. The western boundary is marked by a surface drainage divide between this basin and the El mirage Valley Basin and a contact between alluvium and basement rocks that form the Shadow Mountains.

The Kane Wash Area Groundwater Basin is a northwest valley along the Camp Rock fault in central San Bernardino County. The basin is bounded by non-water bearing rocks on the Newberry Mountains on the north, of the Ord Mountains on the west and south and the Newberry and Rodman Mountains along the Camp Rock fault on the east. Surface water drains toward the central part of the valley d exits northeastward through Kane Wash.

The Colorado River Hydrologic Region is approximately 13 million acres (20,000 square miles) in southeastern California. It is bounded on the east by Nevada and Arizona, the south Mexico, the west the Laguna, San Jacinto, and San Bernardino Mountains, and the north by the New York, Providence, Granite, Old Dad, Bristol, Rodman and Ord Mountain ranges. The region

includes all of Imperial, most of Riverside, much of San Bernardino and part of San Diego counties. Surface runoff drains to many closed basins or to the Colorado River.

Within the Colorado River Hydrologic Region the project is within the Lucerne Lake Hydrologic Unit/Area, the Lavic Hydrologic Unit/Area and the Means Hydrologic Unit/Area Lucerne Valley Groundwater Basin/Hydrologic Area. The area also includes the Lucerne Valley Groundwater Basin which underlies Lucerne and North Lucerne Valleys in the northwest part of the Colorado River Hydrologic Region. The basin is bounded on the south by the San Bernardino Mountains and on the west by the Granite Mountains and the Helendale fault. The Ord Mountains bound the basin on the north. The Camp Rock fault and Kane Wash Area Groundwater Basin bound the basin on the east and the Fry Mountains bound the basin on the southeast. Parts of the eastern and southeastern boundaries are surface drainage divides. Surface water drains toward Lucerne (dry) Lake in the western portion of the basin.

The project alignment traverses through the Mojave Watershed and the Lucerne Lake Watershed within these watersheds the alignment traverse through the following hydrological units;

- Daggett Wash-Mojave River –Drainages flow to the Mojave River
- Stoddard Valley –Drainages flow to basins within Stoddard Valley
- Wild Wash –Drainages flow to basins within Stoddard valley and Lucerne Valley
- North Lucerne Valley –Drainages flow to basins, dry lakes of Lucerne Valley including Lucerne Dry Lake
- Crystal Lake – Lucerne Dry Lake –Drainages flow to Lucerne Dry Lake
- Silver Lake-Rabbit Dry Lake –Drainages flow to Rabbit Dry Lake
- Apple Valley – Dry Lake –Drainages flow to basins and dry lakes within Apple valley
- Bell Mountain wash – Mojave River –Drainages flow to the Mojave River

5.4 Wetlands

No areas meeting the three mandatory criteria (hydrophytic vegetation, hydrology and hydric soils) for wetlands occur along the project alignment or project area.

5.5 Waters of the U.S and State Waters

There are numerous ephemeral drainages that occur within the project area (Attachment B). The ephemeral drainages generally exhibit channel morphology that would be considered jurisdictional including bank, scour, sediment deposit, and OHWM. The drainages traverse through upland desert habitats with a lack of vegetation or occurrence of upland desert vegetation within the channels. Attachment C presents a table of the drainages that occur within the project ROW and access roads. The table includes drainage name or nomenclature, width, length and acreage.

6.0 JURISDICITONAL DETERMINATION

6.1 Waters of the U.S.

The ACOE will assert jurisdiction over Traditional Navigable Waters (TNW), all wetland adjacent to TNWs, non-navigable tributaries of TNWs that are relatively permanent (RPW) (tributaries that typically flow year round or have continuous flow at least seasonally), wetlands that directly abut such tributaries and non RPWs if the water body is determined to have a significant nexus with a TNW.

As detailed in the Jurisdictional Guidebook, the ephemeral drainages within the project area are considered non-relatively permanent waters (non-RPW). The drainages generally exhibit channel morphology that would be considered jurisdictional including bank, scour, sediment deposit, and OHWM. The drainages traverse through upland desert habitats with a lack of vegetation or occurrence of upland desert vegetation within the channels. The drainages typically have flow for short durations associated with major storm events.

The project alignment traverses through the Mojave Watershed and the Lucerne Lake Watershed within these watersheds the alignment traverse through the following hydrological units;

The drainages within the project area flow into closed valley, basins or dry lake beds that are typically considered isolated and not TNWs within the following hydrologic units

- Stoddard Valley –Drainages flow to basins within Stoddard Valley
- Wild Wash –Drainages flow to basins within Stoddard valley and Lucerne Valley
- North Lucerne Valley –Drainages flow to basins, dry lakes of Lucerne Valley including Lucerne Dry Lake
- Crystal Lake – Lucerne Dry Lake –Drainages flow to Lucerne Dry Lake
- Silver Lake-Rabbit Dry Lake –Drainages flow to Rabbit Dry Lake
- Apple Valley – Dry Lake –Drainages flow to basins and dry lakes within Apple valley

The majority of the drainages in the following hydrologic units flow into the Mojave River directly or indirectly through tributaries to the Mojave River. However, there several drainages within these areas that could be considered isolated. Hydrologic units that drain to the Mojave River within the project area include.

- Daggett Wash-Mojave River –Drainages flow to the Mojave River
- Bell Mountain wash – Mojave River –Drainages flow to the Mojave River

Non RPWs that do not flow into TNWs are considered non-jurisdictional. However, the ACOE on large scale projects typically make jurisdictional determinations on a project by project basis. The majority of the drainages within the project area would be considered non-RPWS that do not flow into a TNW. Non-RPWs that flow directly or indirectly into TNWs require a significant nexus to assert jurisdiction over this class of water body under the CWA. The ACOE has not made a jurisdictional determination on the un-named desert washes within the project area and

within the hydrological units. The Mojave River is an ephemeral river with primarily subsurface flow and areas of surface flow during storm events. While the Mojave River appears to be non-navigable (not a traditional navigable water) portions of the river upstream of Silver Lakes have been determined subject to USACE jurisdiction. The surface flow of the river is isolated from downstream hydrologic systems and Silver Lake, the terminus of the river, and could be considered isolated and non-navigable. However, the Mojave River is the largest stream in the region and surface and subsurface flow are an integral part of the hydrologic cycle of the region and could be considered jurisdictional based on its function, hydrology, and ecological significance to the region. To determine hydrological connections and significant nexus for the ephemeral drainages flowing to TNWs of non-TNWS would require considerable hydrological analysis. Therefore, for the purposes of this delineation and report all the drainages are considered jurisdictional.

Considering the ACOE has not made a determination SCE has two options for permitting. The first would be to request a formal jurisdictional determination from the ACOE and the second would be to waive the option for a jurisdictional determination by the ACOE and assume the onsite Non-RPWs and the Mojave River are jurisdictional under a Preliminary Jurisdictional Determination. It is anticipated that SCE in respect to this project would proceed under Nationwide Permit 12 (NWP 12) Utility Line Activities if project construction would impact the onsite desert washes. The proposed project would be considered a single and complete linear project. However, without final project design plans impact acreage is unknown and therefore, a definitive permit type cannot be determined. All determinations in this report should be considered preliminary until concurrence from the ACOE, Los Angeles District.

Dredge and fill activities in federal jurisdictional waters (waters of the U.S.) that trigger coverage under a Section 404 nationwide permit must also receive water quality certification under Section 401 of the CWA. The State Water Resources Control Board (SWRCB), through its Regional Water Quality Control Boards (RWQCBs), has jurisdiction over Section 401 water quality certification in California.

6.2 State Waters

The CDFG is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires notification to the CDFG of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government, or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with subsurface flow. Therefore, the ephemeral drainages and the Mojave River within the project area are considered state waters and subject to Section 1602.

The Porter Cologne Water Quality Act, Division 7 of the California Water Code, establishes the responsibilities and authorities of the nine RWQCBs and the SWRCB. This act establishes that the waters of the state shall be protected for use and enjoyment by the people of the state; that the activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality. The act also names the RWQCBs to formulate and adopt water quality control plans for all areas within the region. The project is within the Lahontan Region Basin Plan and Colorado River Region Basin Plan/West Colorado River Basin.

The majority of the drainages in the project area are ephemeral unnamed channels which provide intermittent beneficial uses. The intermittent beneficial uses are listed below;

- GWR: Ground Water Recharge
- WILD: Wildlife Habitat
- AGR: Agricultural Supply
- REC II – Non-contact Water Recreation
- WILD – Wildlife Habitat
- MUN – Municipal and Domestic Supply

Intermittent beneficial uses can be characterized as low for the delineated project ephemeral washes. These drainages provide limited surface water with flows only occurring during short durations associated with major storm events.

Beneficial uses for the Mojave River are listed below”

- GWR: Ground Water Recharge
- WILD: Wildlife Habitat
- AGR: Agricultural Supply
- REC I – Contact Water Recreation
- WARM – Warm Freshwater Habitat
- COLD – Cold Freshwater Habitat
- REC II – Non-contact Water Recreation
- WILD – Wildlife Habitat
- MUN – Municipal and Domestic Supply
- COMM – Commercial and Sport Fishing

7.0 SUMMARY

Based on the information contained in this report the total Waters of the U.S. and State Waters within the Project Area are 597.026 acres. Of the 597.026 acres 37.429 are located at access road crossings.

8.0 REFERENCES

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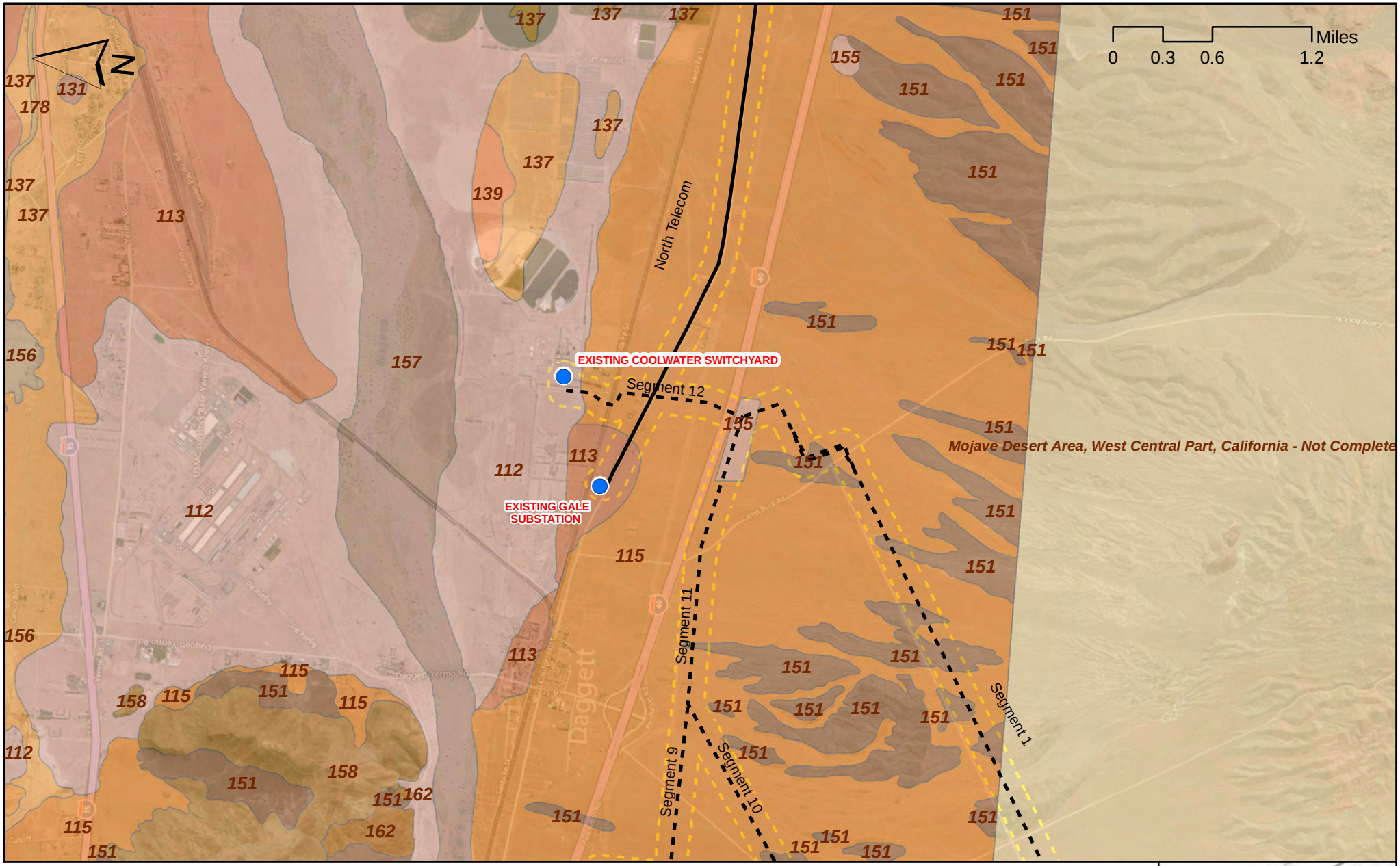
ATTACHMENT A

Soils



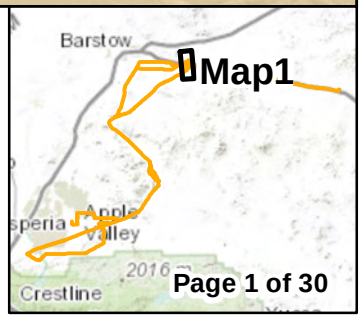
- - - - CWLTP Proposed Transmission Lines

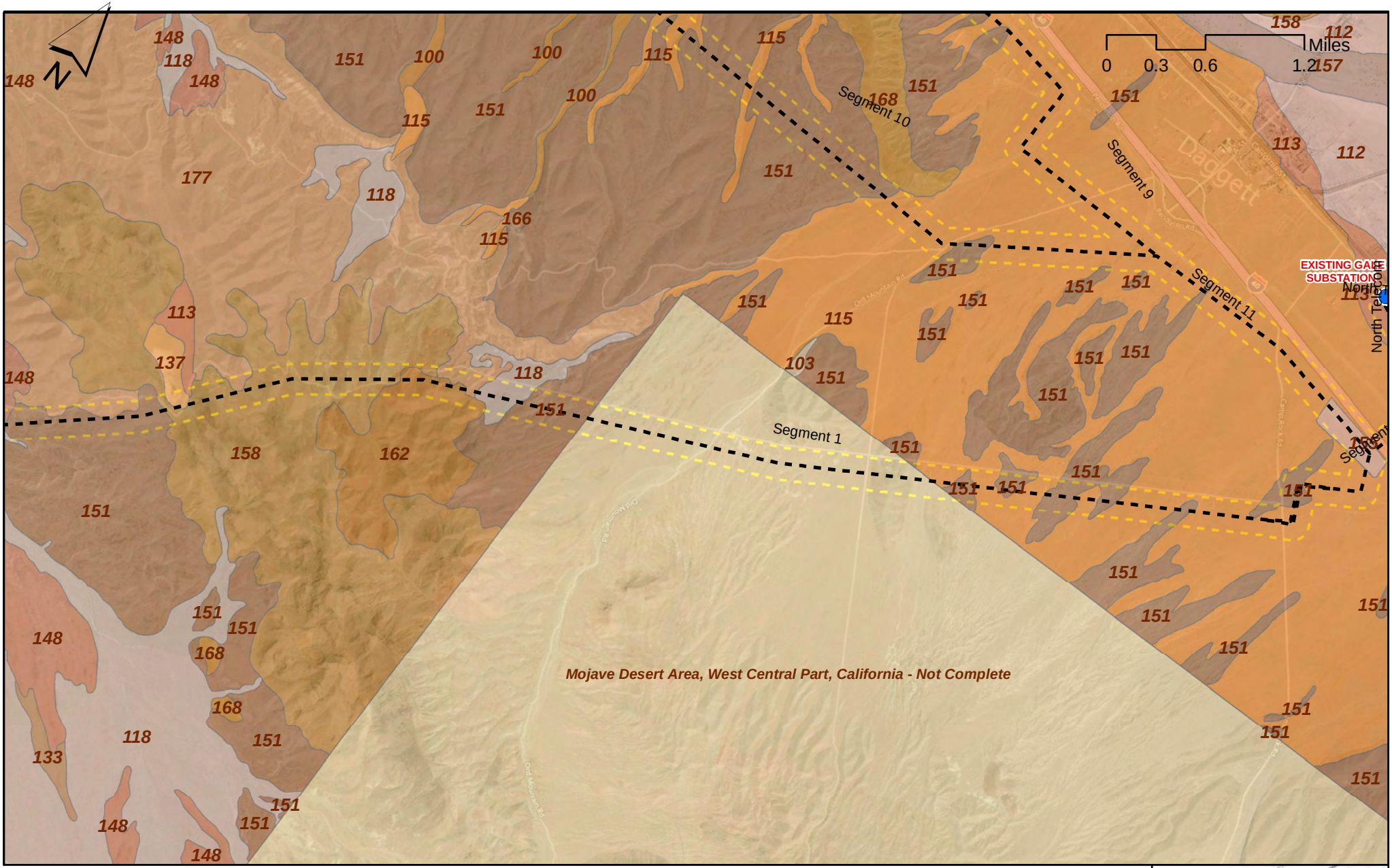
——— Proposed Telecommunication Lines

2013 Survey Area

● Substation

■ Proposed Substation





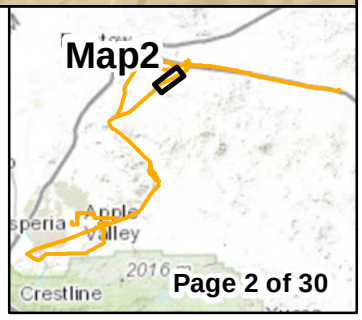
CWLTP Proposed Transmission Lines

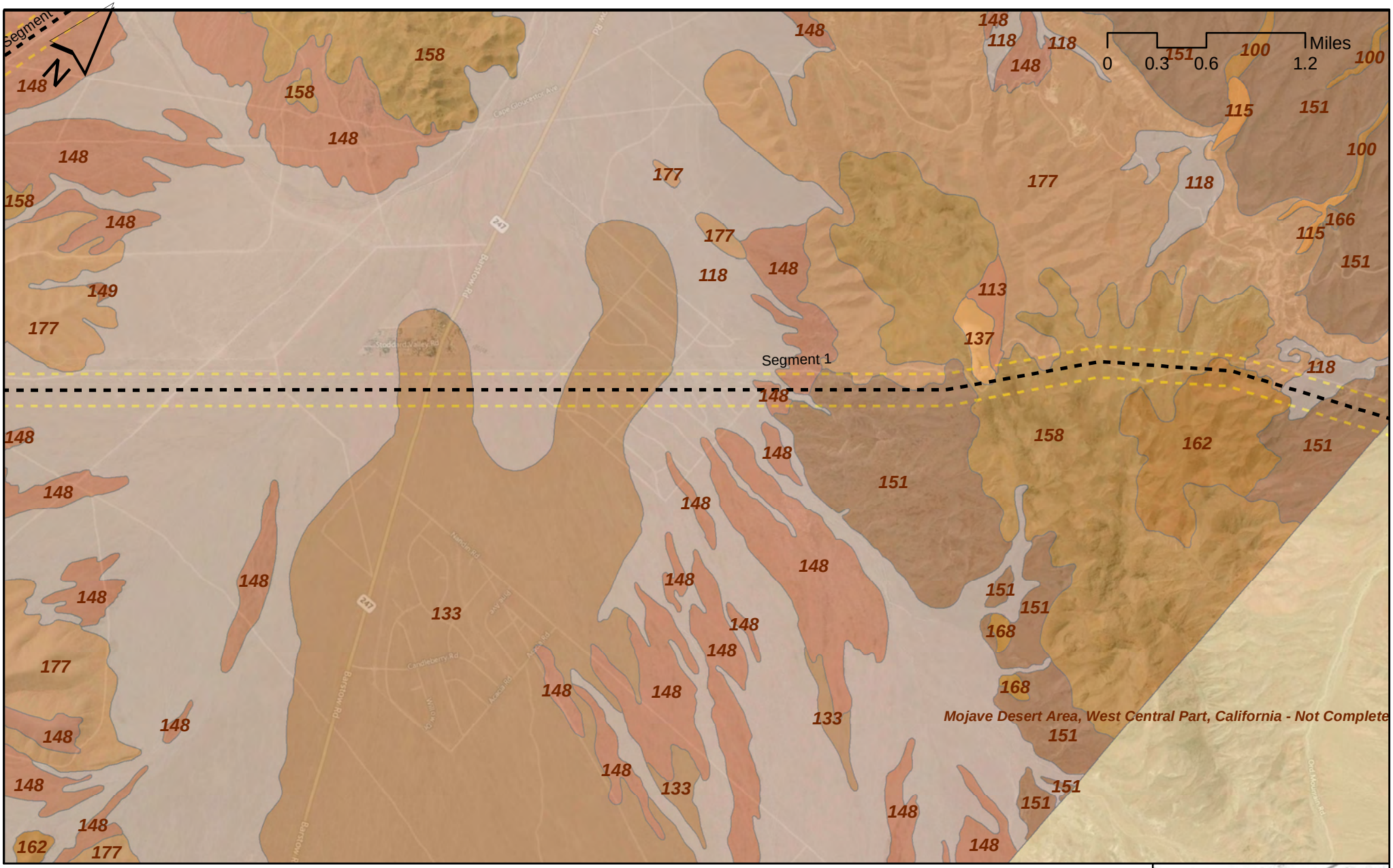
Proposed Telecommunication Lines

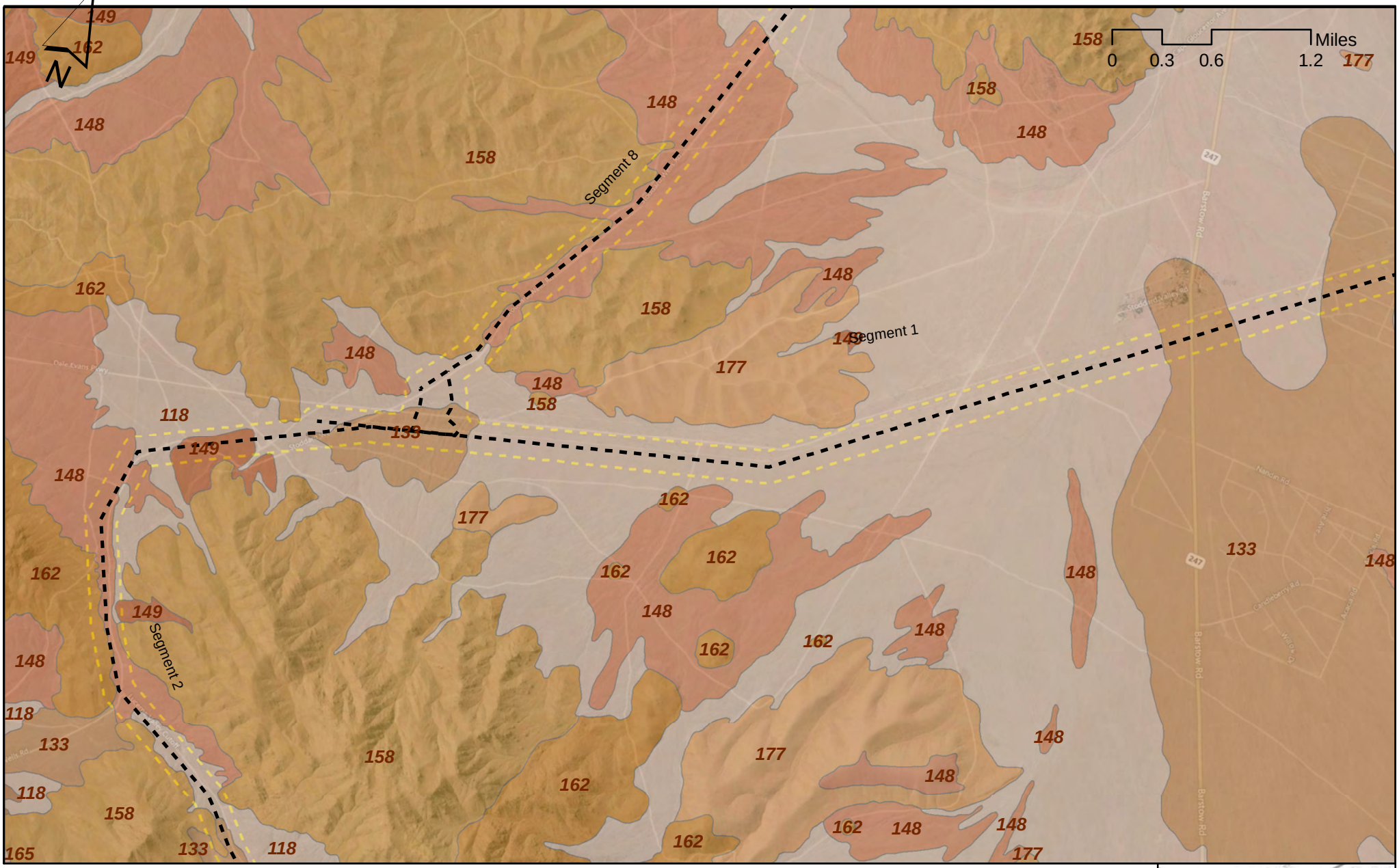
2013 Survey Area

Substation

Proposed Substation




Segment 1
Miles
0
0.3
0.6
1.2
Mojave Desert Area, West Central Part, California - Not Complete
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Map3
Apple Valley
Crestline
2016



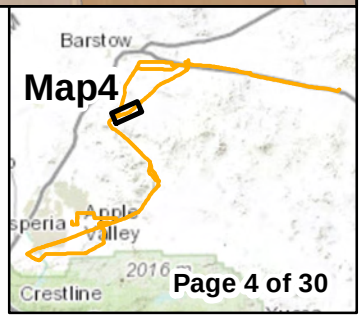
CWLTP Proposed Transmission Lines

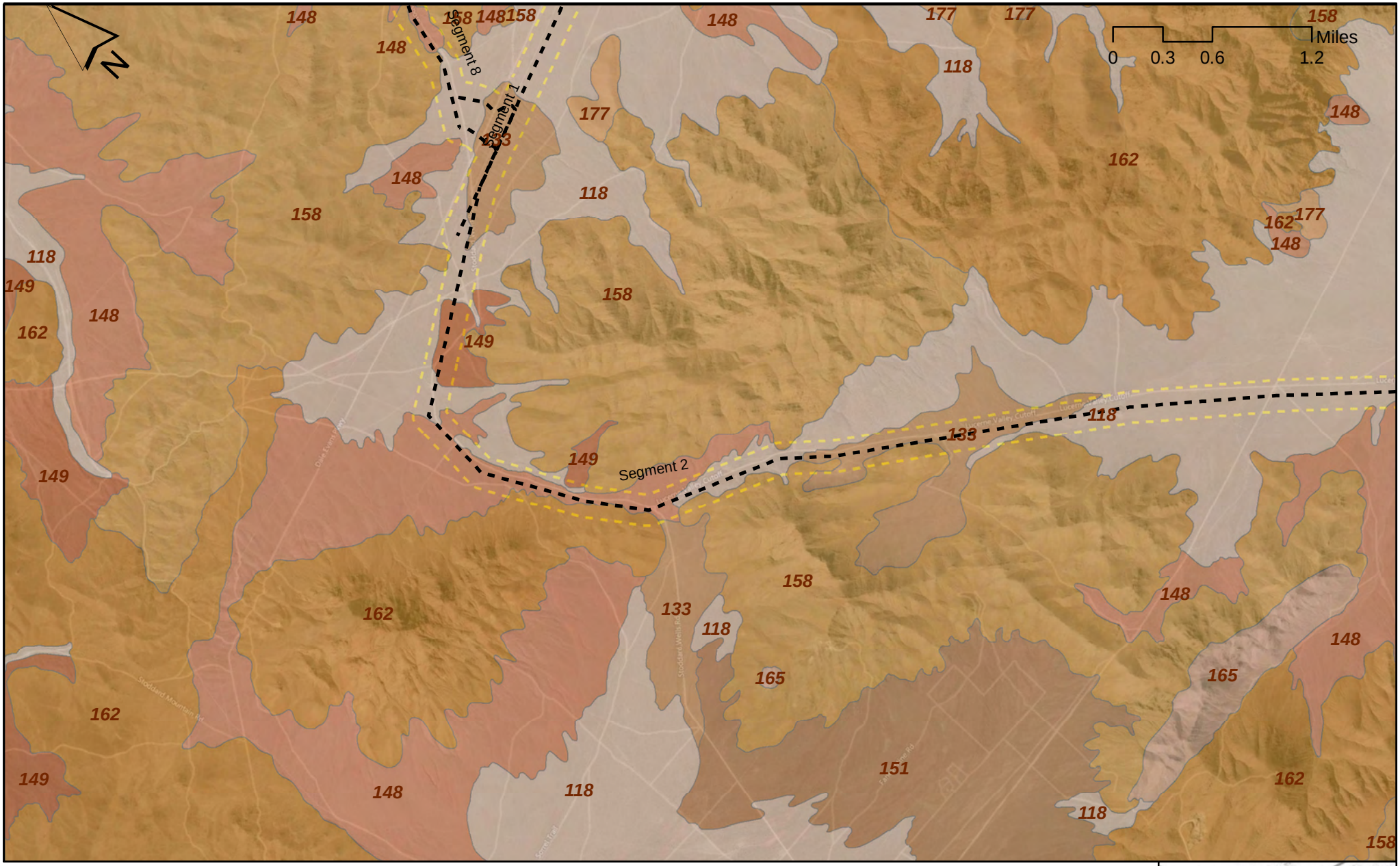
Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation





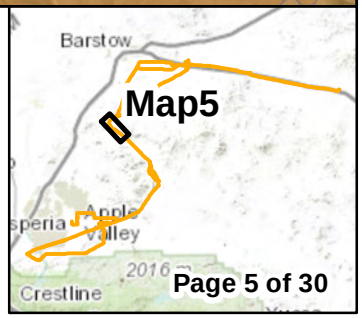
CWLTP Proposed Transmission Lines

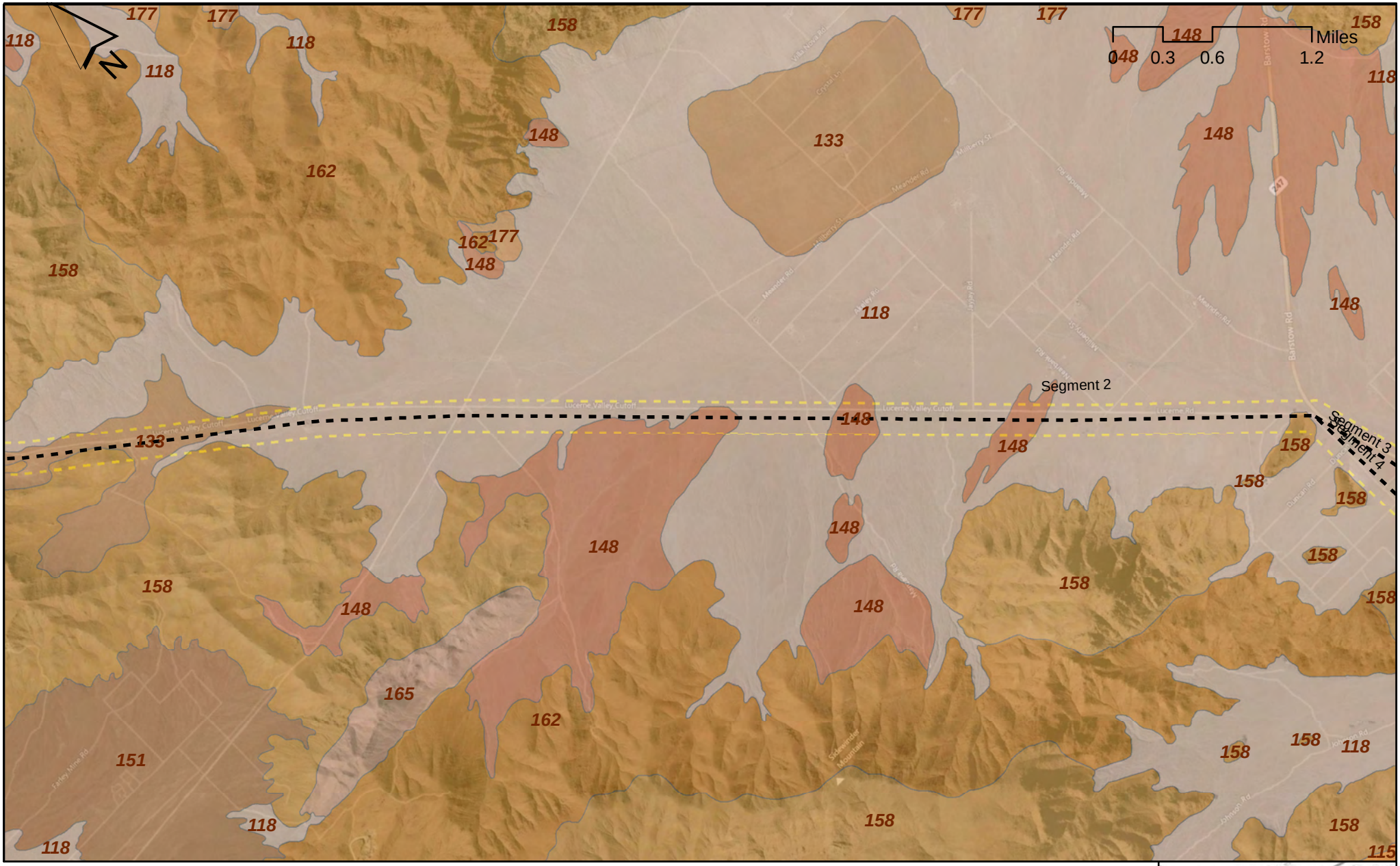
Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation





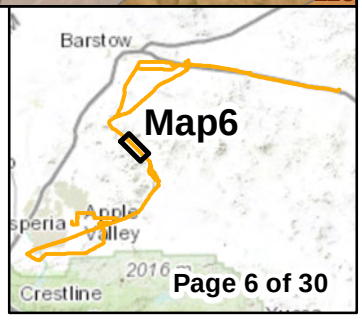
- - - - CWLTP Proposed Transmission Lines

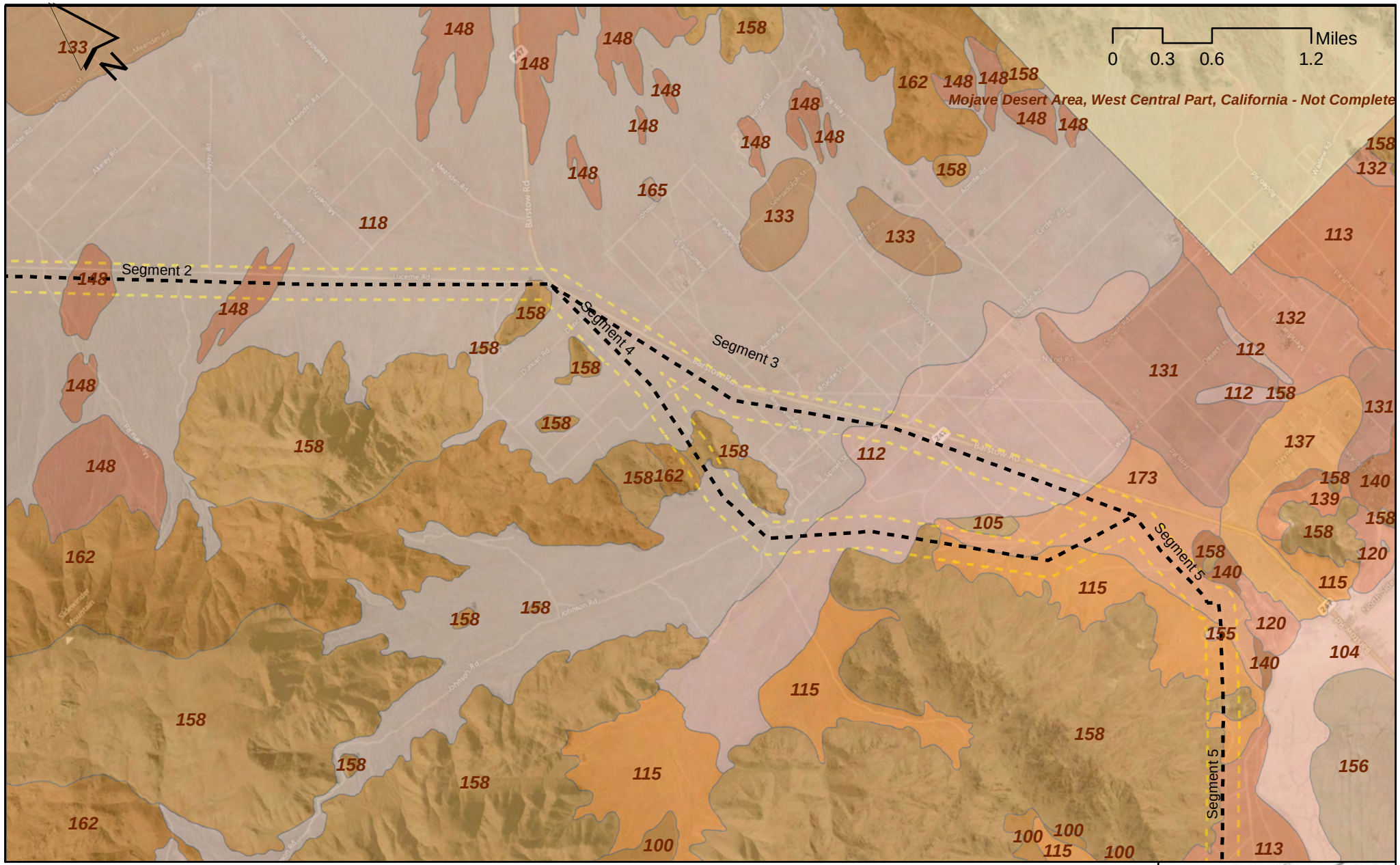
——— Proposed Telecommunication Lines

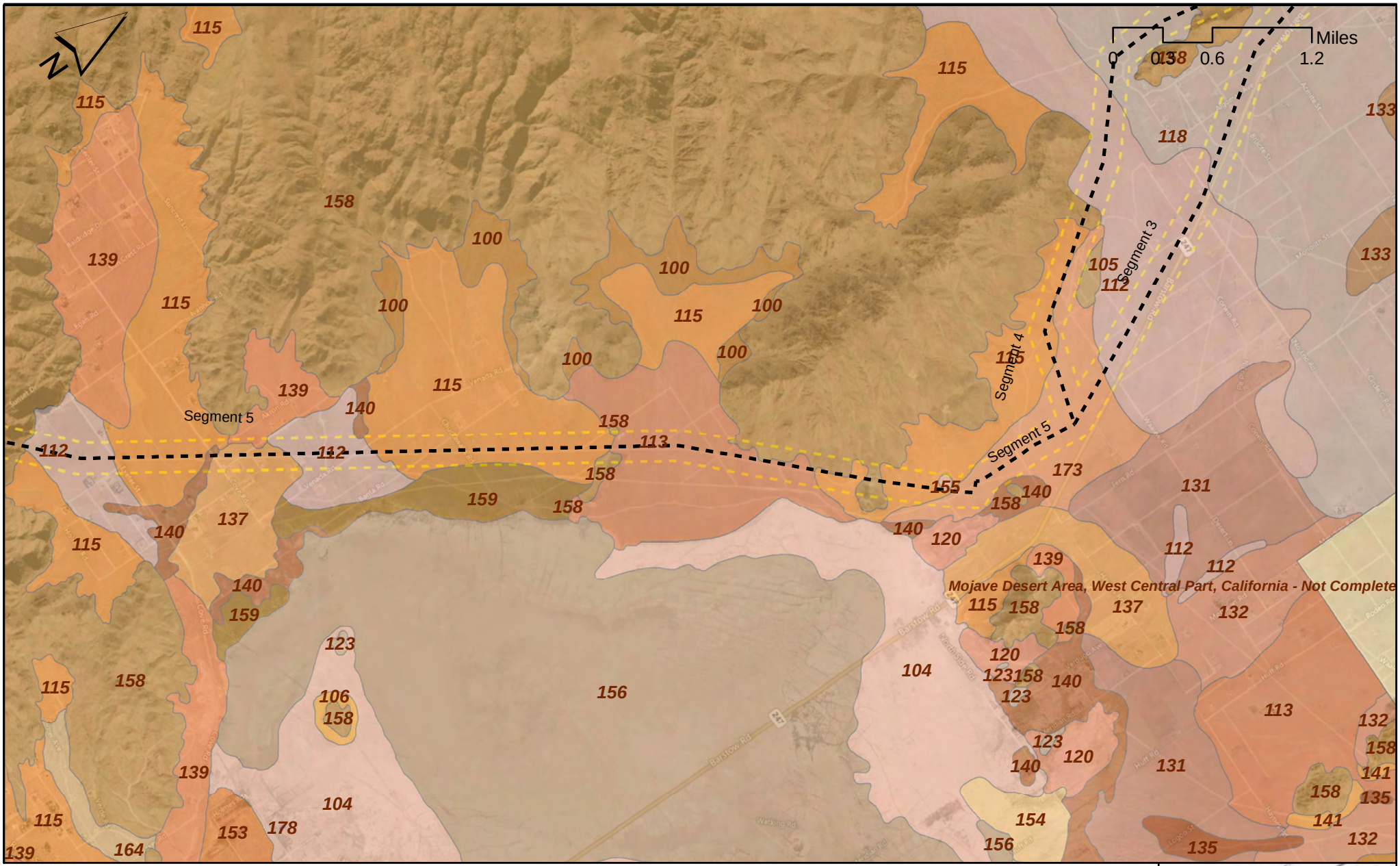
2013 Survey Area

Substation

Proposed Substation




N
Miles
0 0.3 0.6 1.2
Mojave Desert Area, West Central Part, California - Not Complete
Segment 2
Segment 3
Segment 4
Segment 5
Segment 5
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Map7
Apple Valley
Crestline
2016



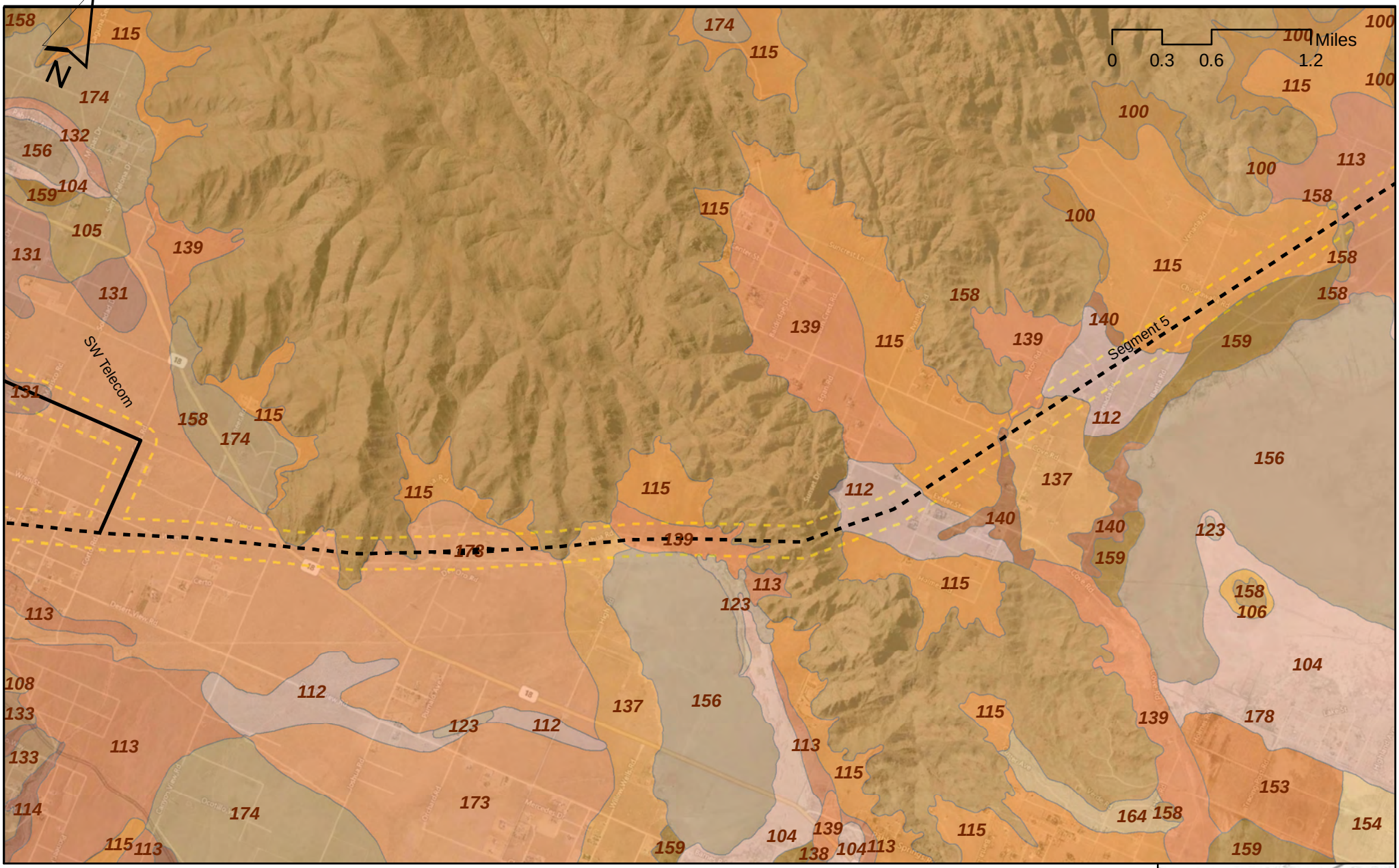
CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation



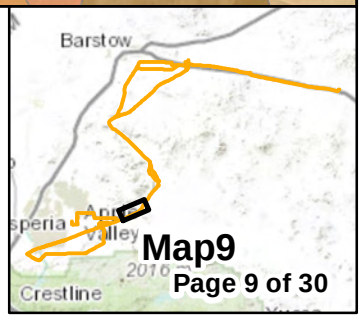
CWLTP Proposed Transmission Lines

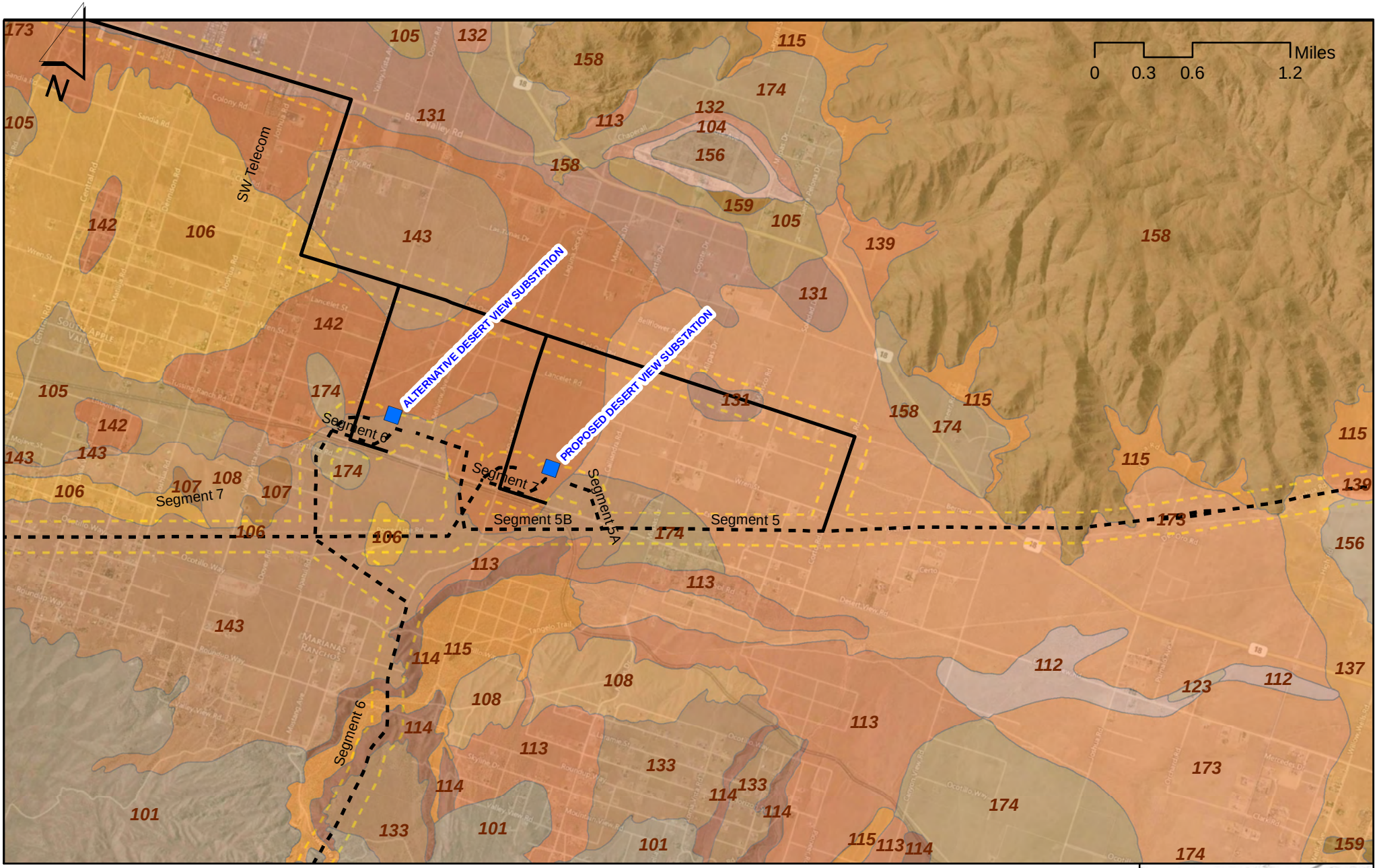
Proposed Telecommunication Lines

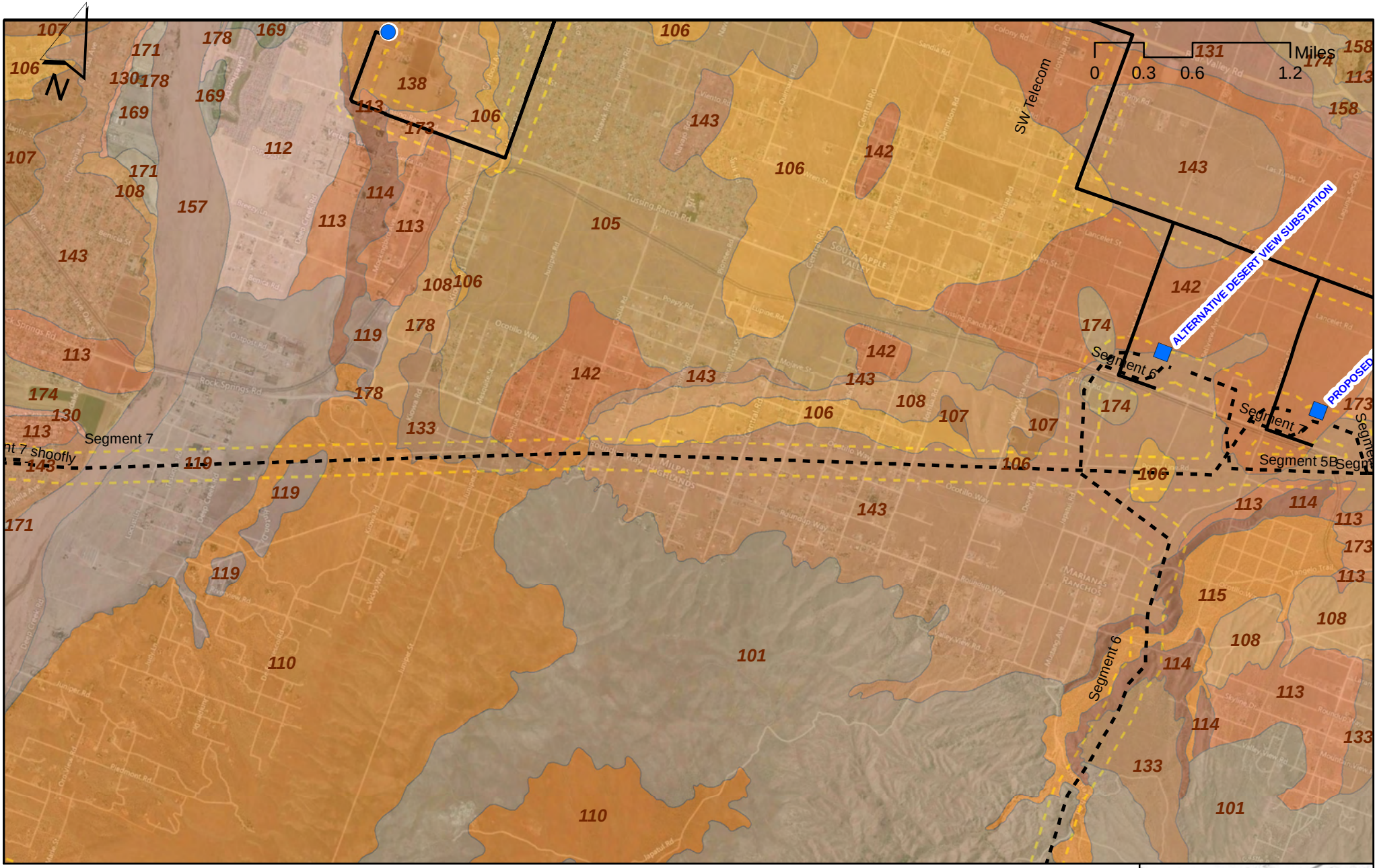
2013 Survey Area

Substation

Proposed Substation




N
0 0.3 0.6 1.2 Miles
SW Telecom
ALTERNATIVE DESERT VIEW SUBSTATION
PROPOSED DESERT VIEW SUBSTATION
Segment 6
Segment 7
Segment 5A
Segment 5B
Segment 5
Segment 7
Segment 6
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Crestline
Map10
Page 10 of 30



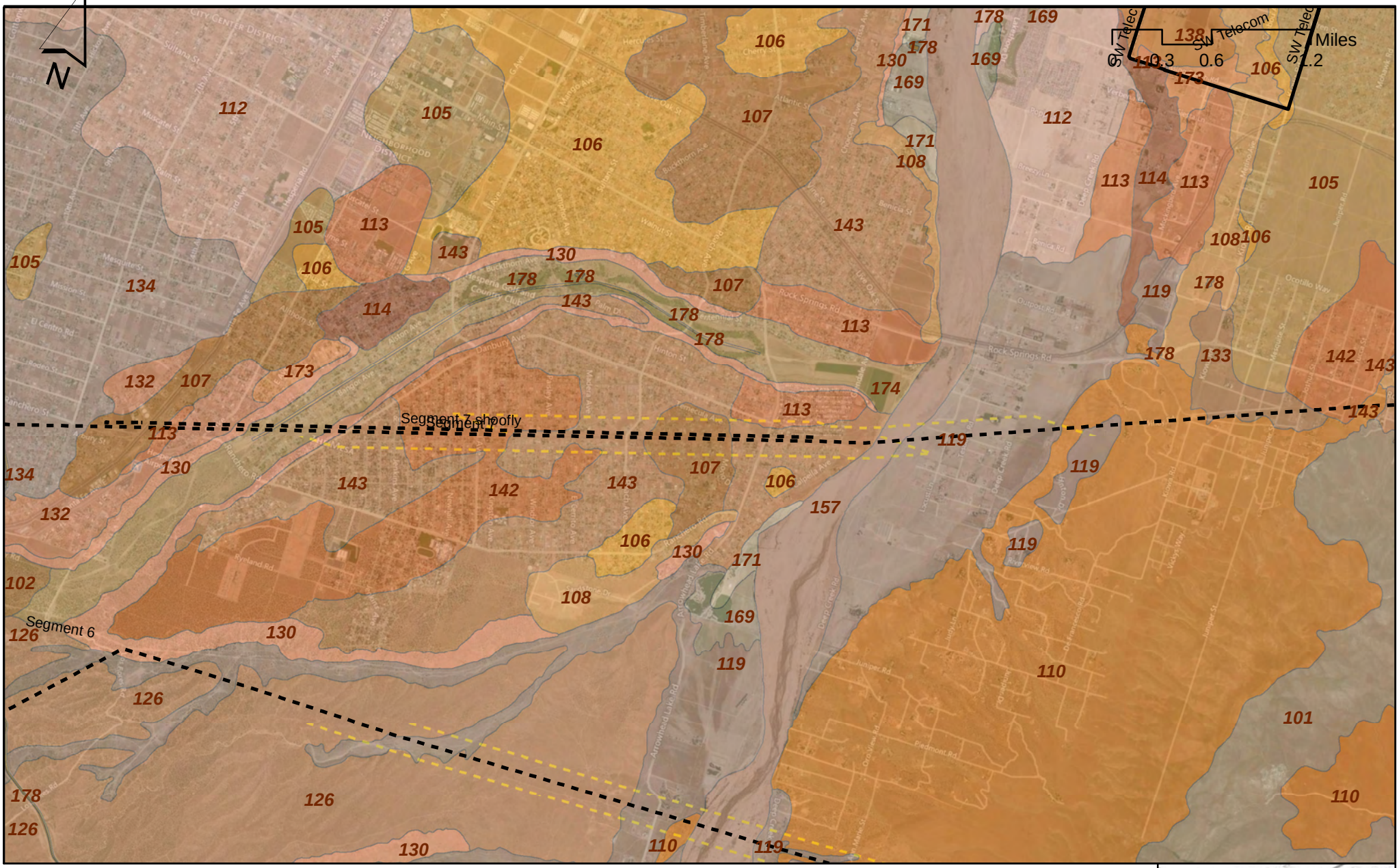
CWLTP Proposed Transmission Lines

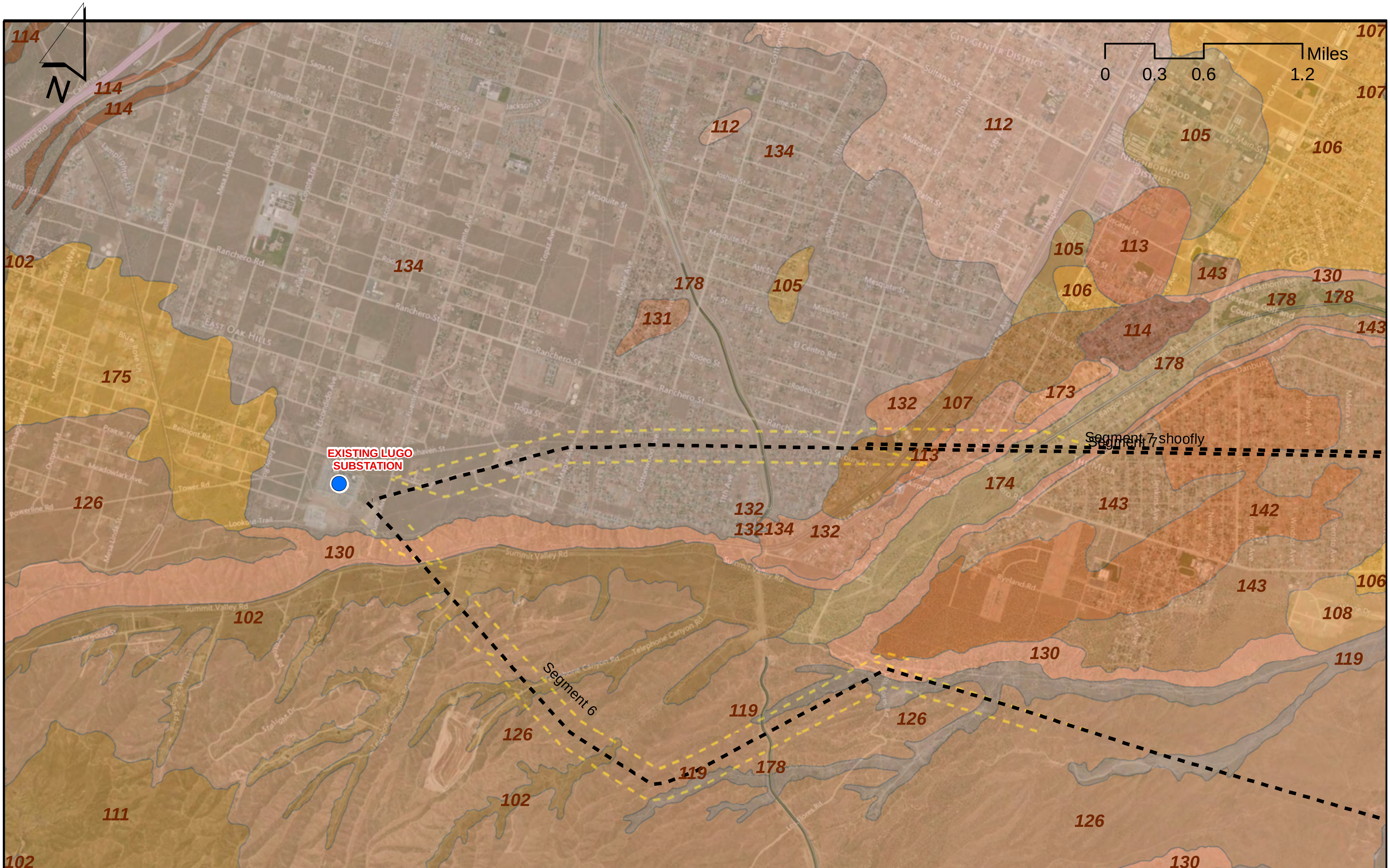
Proposed Telecommunication Lines

2013 Survey Area

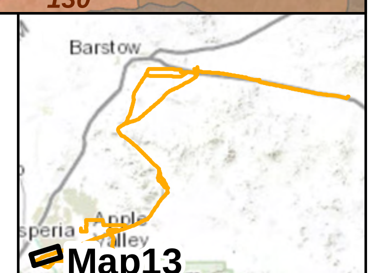
Substation

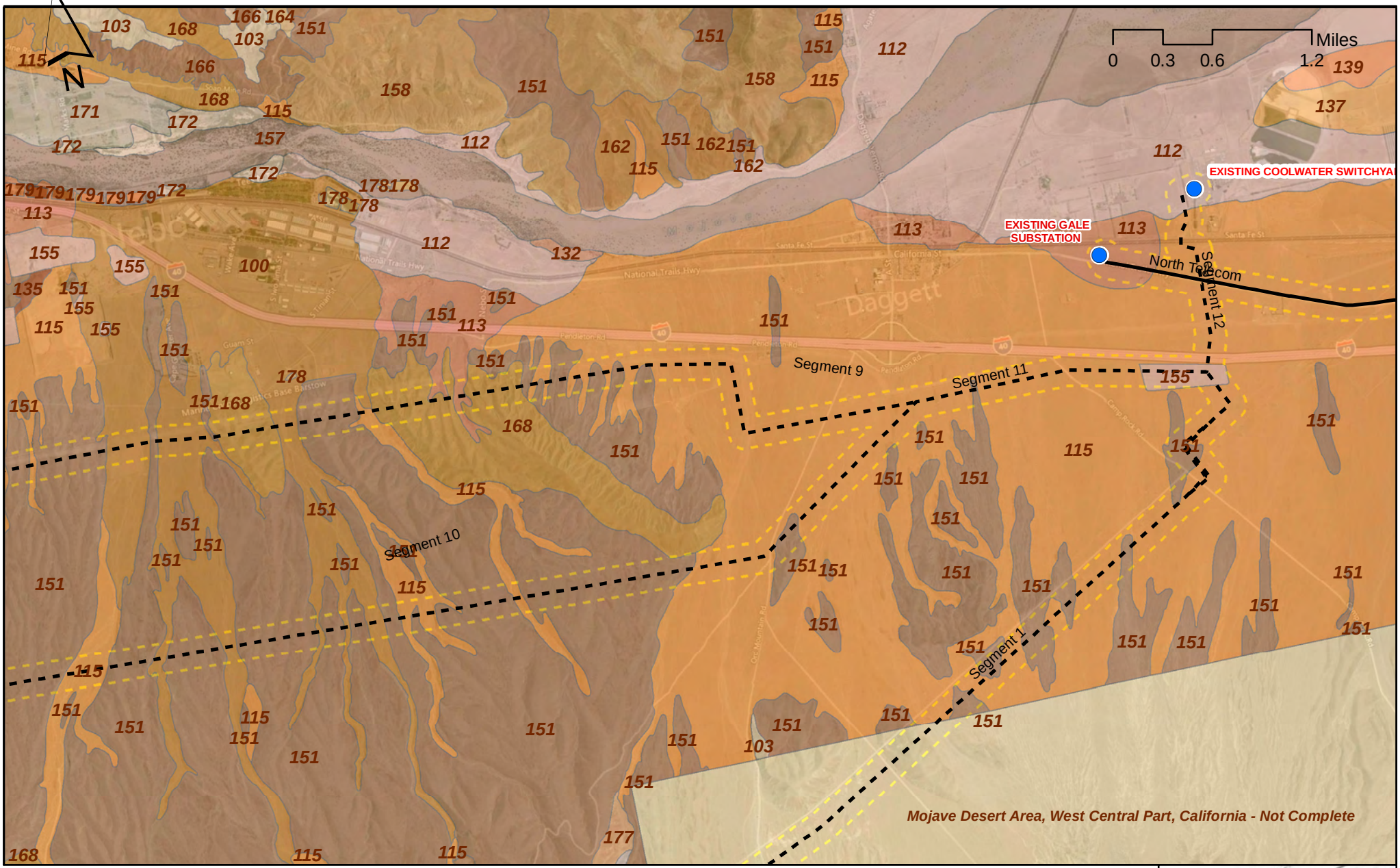
Proposed Substation


N
Segment 7 shpofly
Segment 7
Segment 6
SW Telecom
0.3
0.6
1.2
Miles
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Apple Valley
Crestline
Map12

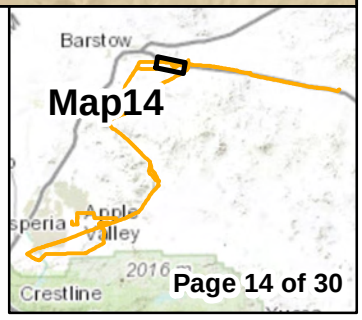


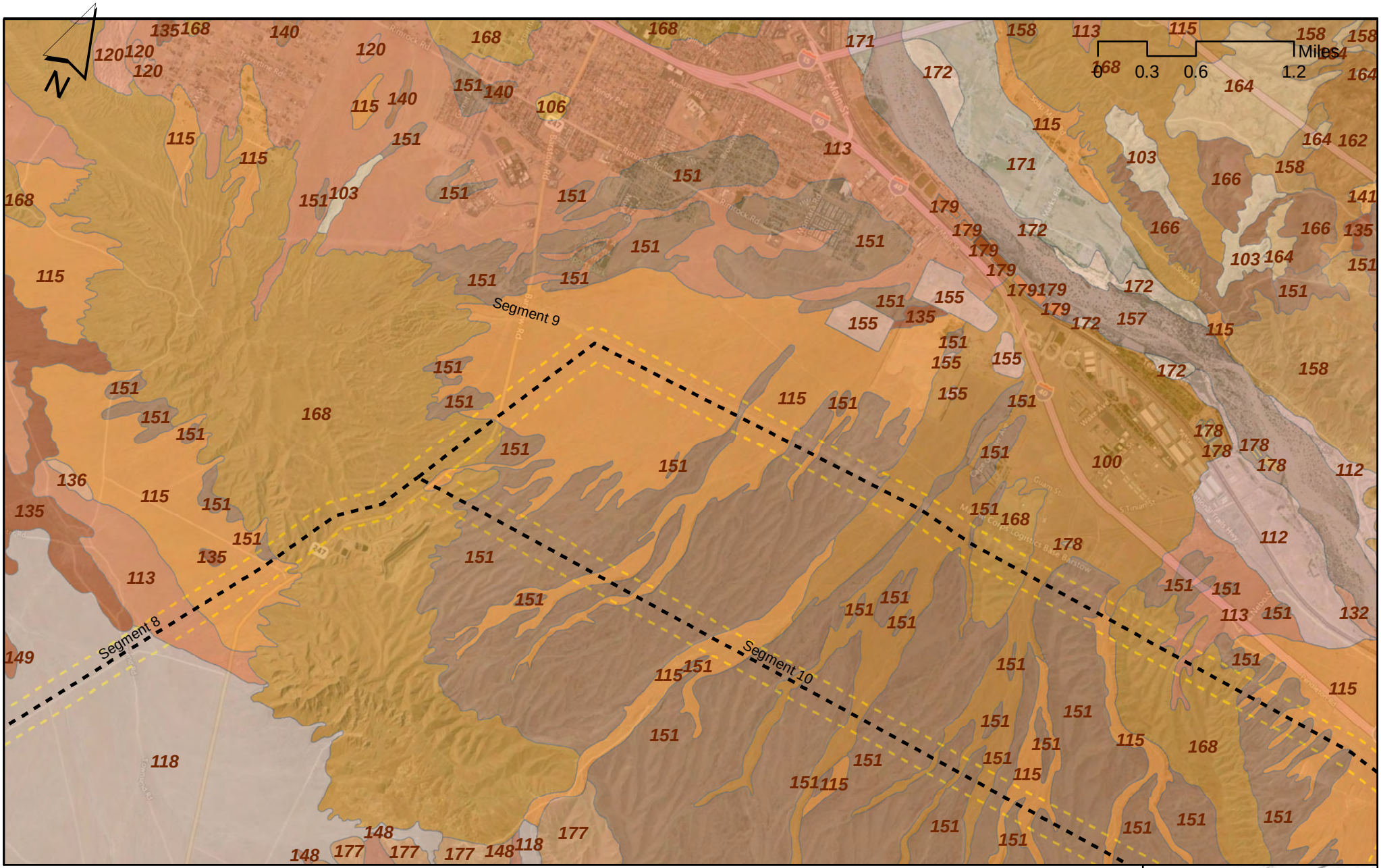
- - - - CWLTP Proposed Transmission Lines
—— Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation



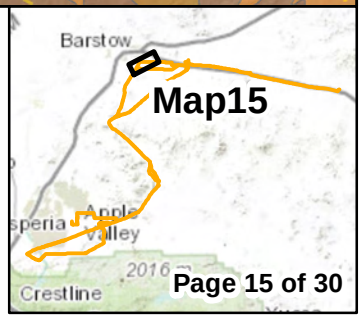


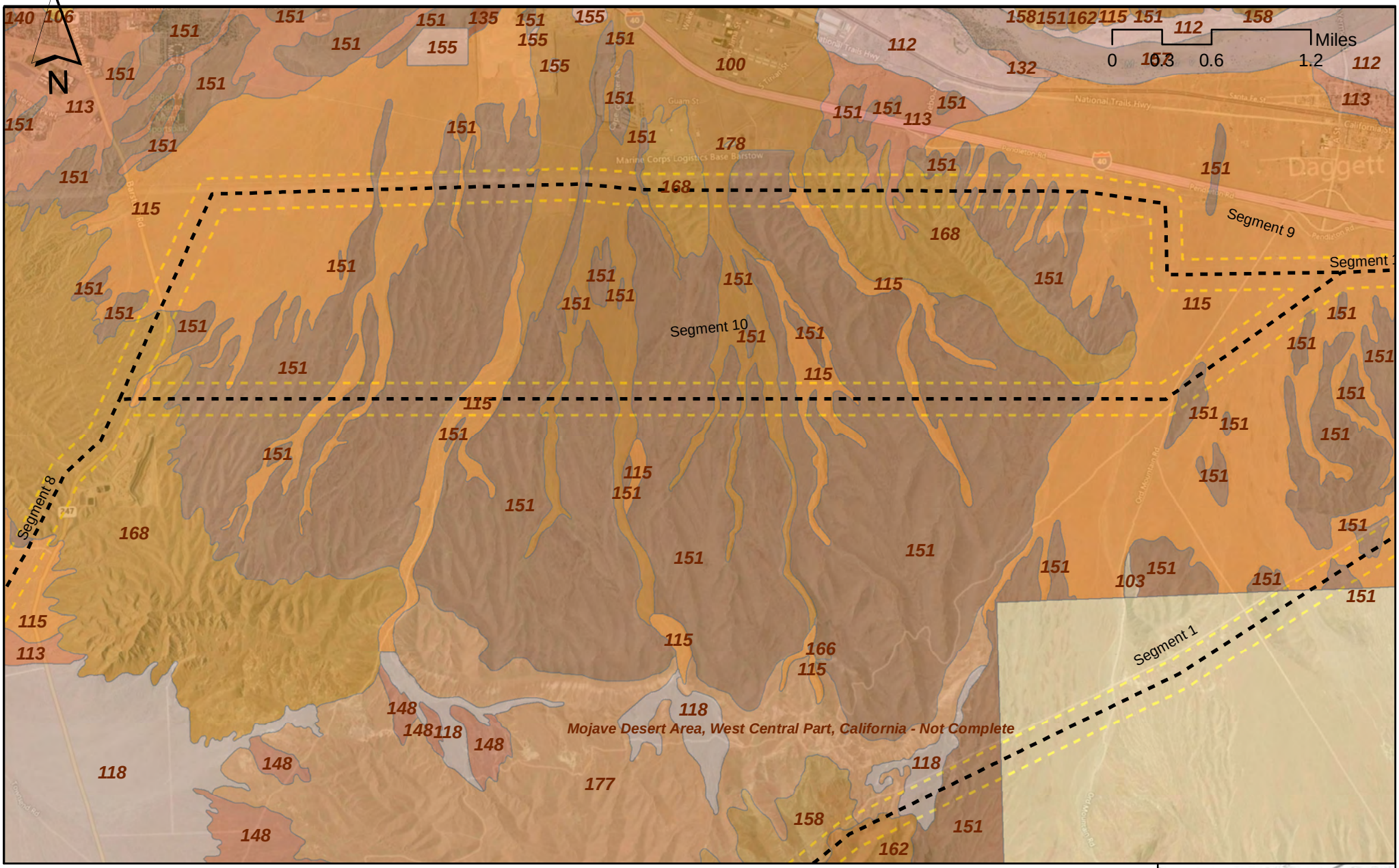
- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

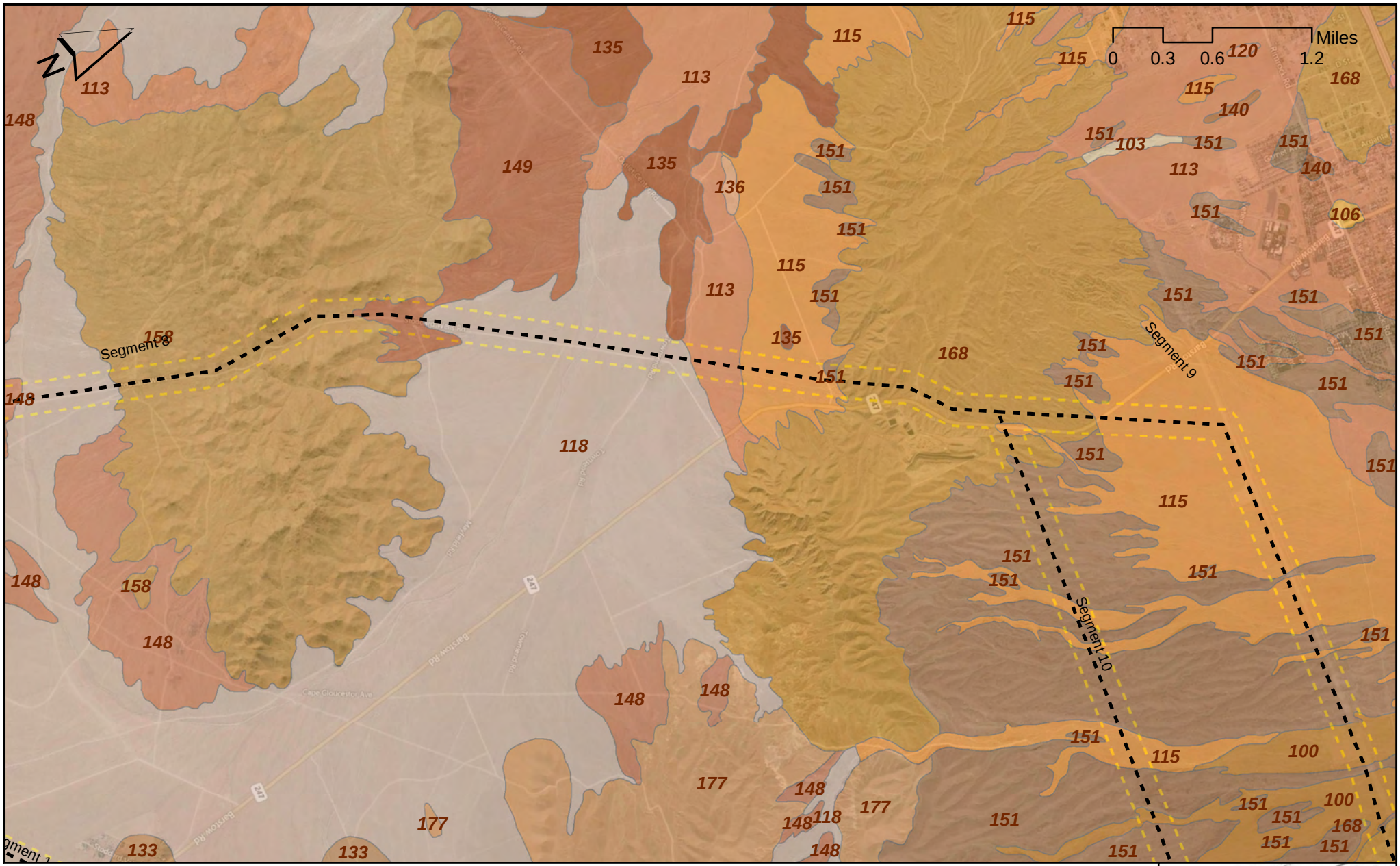




- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation




N
0 0.3 0.6 1.2 Miles
Segment 8
Segment 9
Segment 10
Segment 1
Mojave Desert Area, West Central Part, California - Not Complete
Marine Corps Logistics Base Barstow
Daggett
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Map16
Apple Valley
Crestline
2016



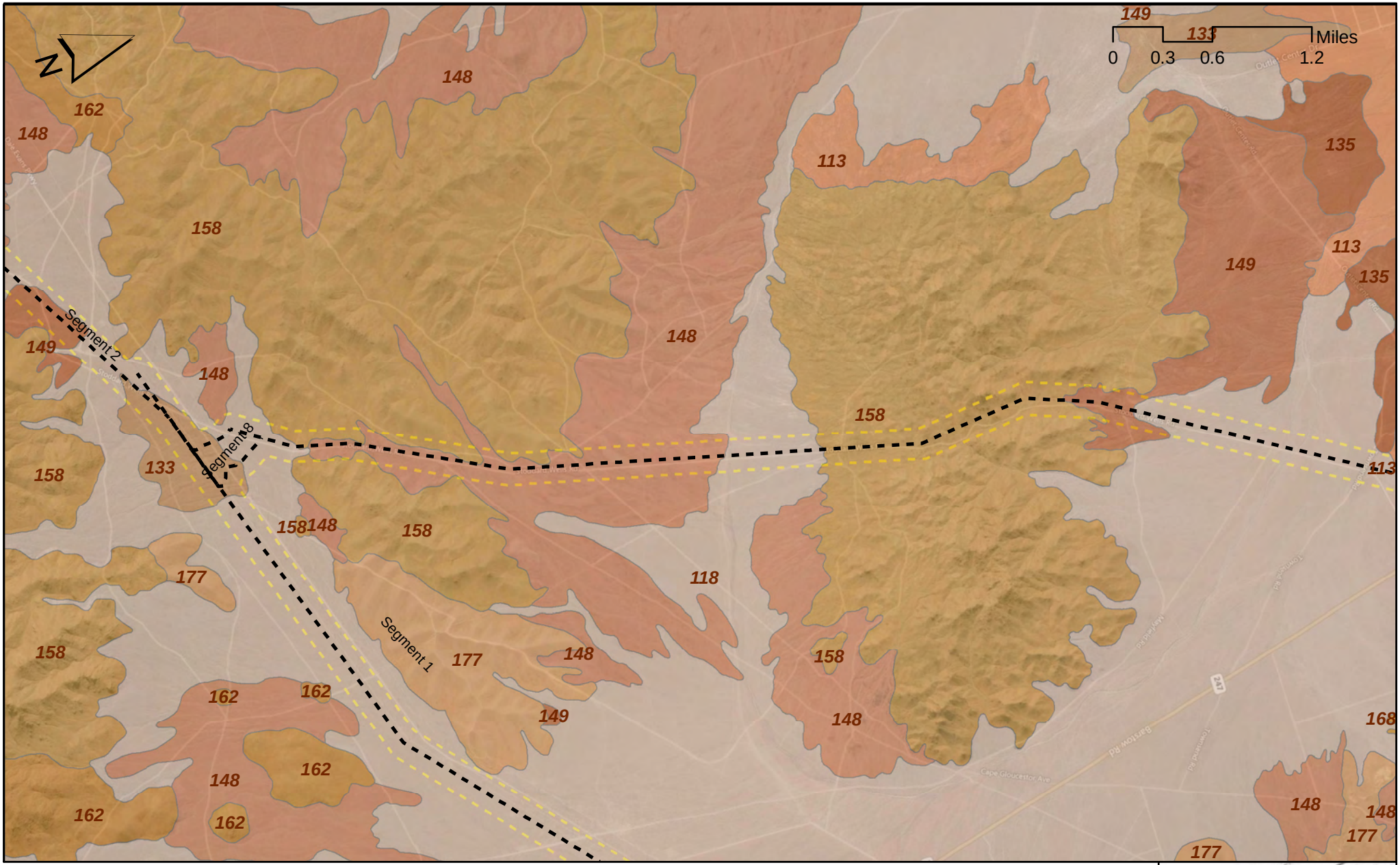
CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation



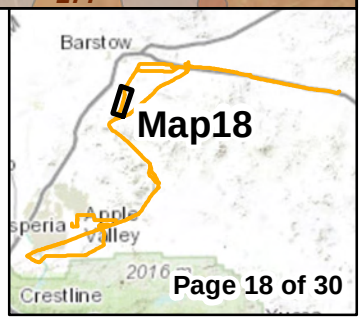
CWLTP Proposed Transmission Lines

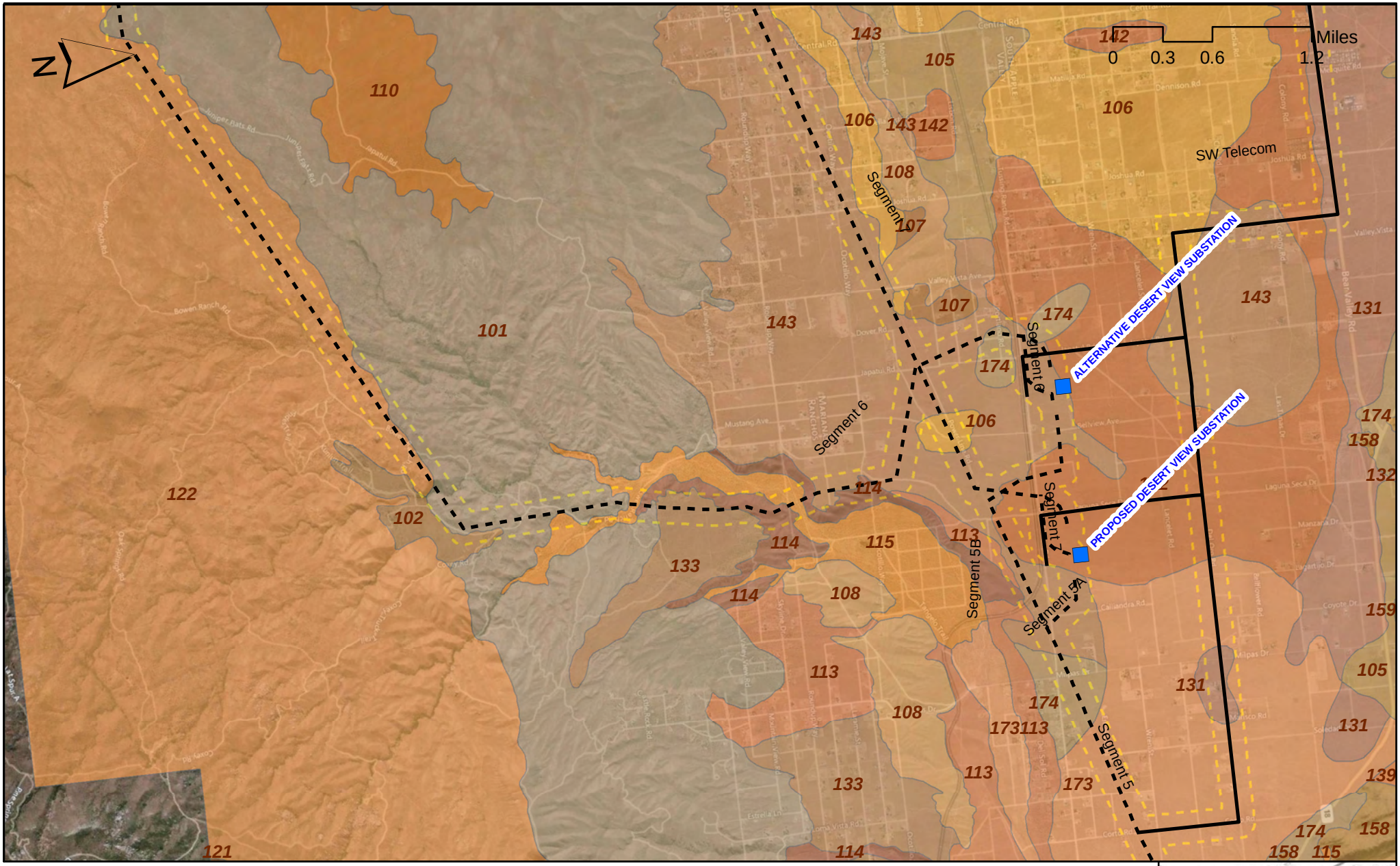
Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation





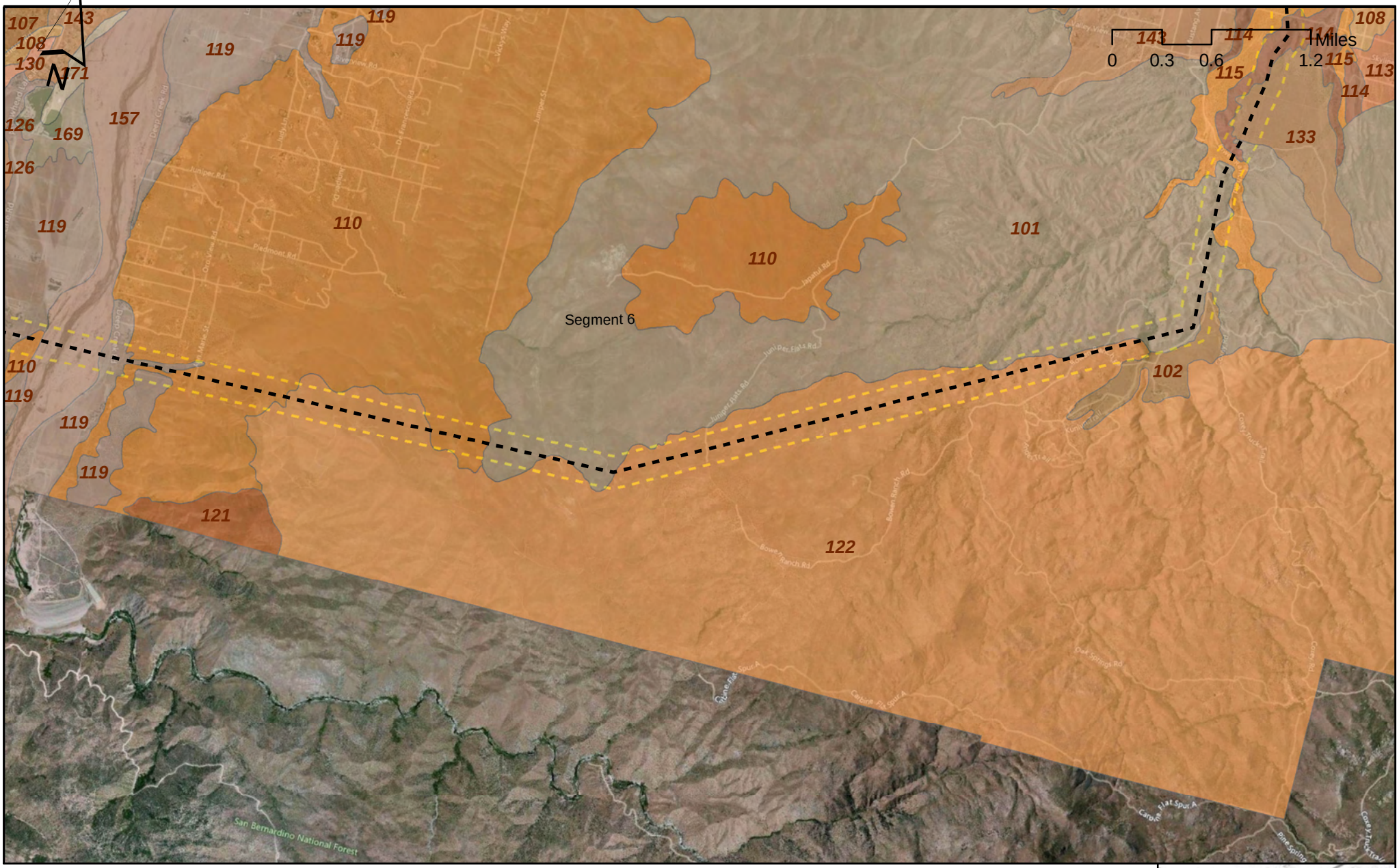
CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

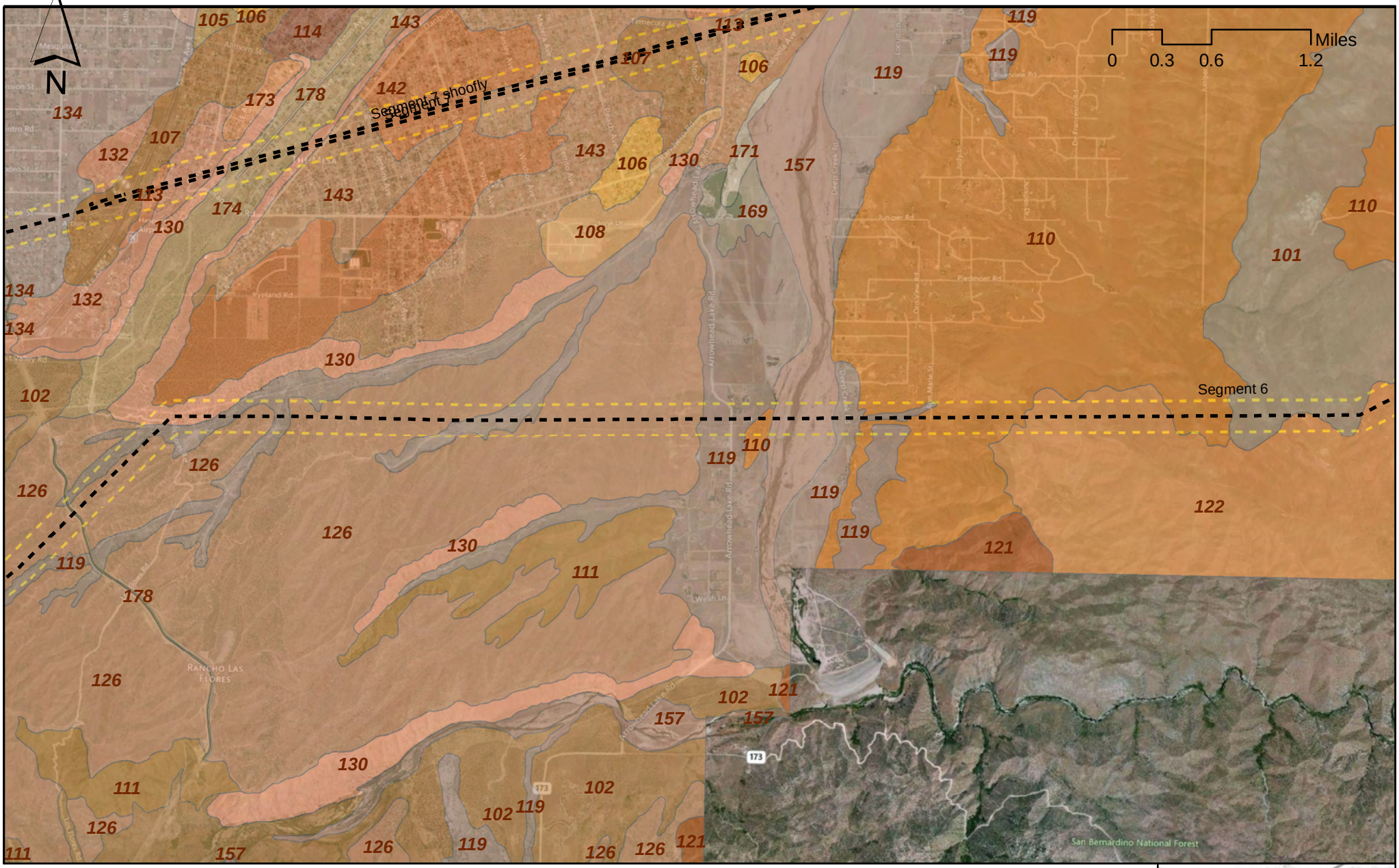
2013 Survey Area

Substation

Proposed Substation



- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation



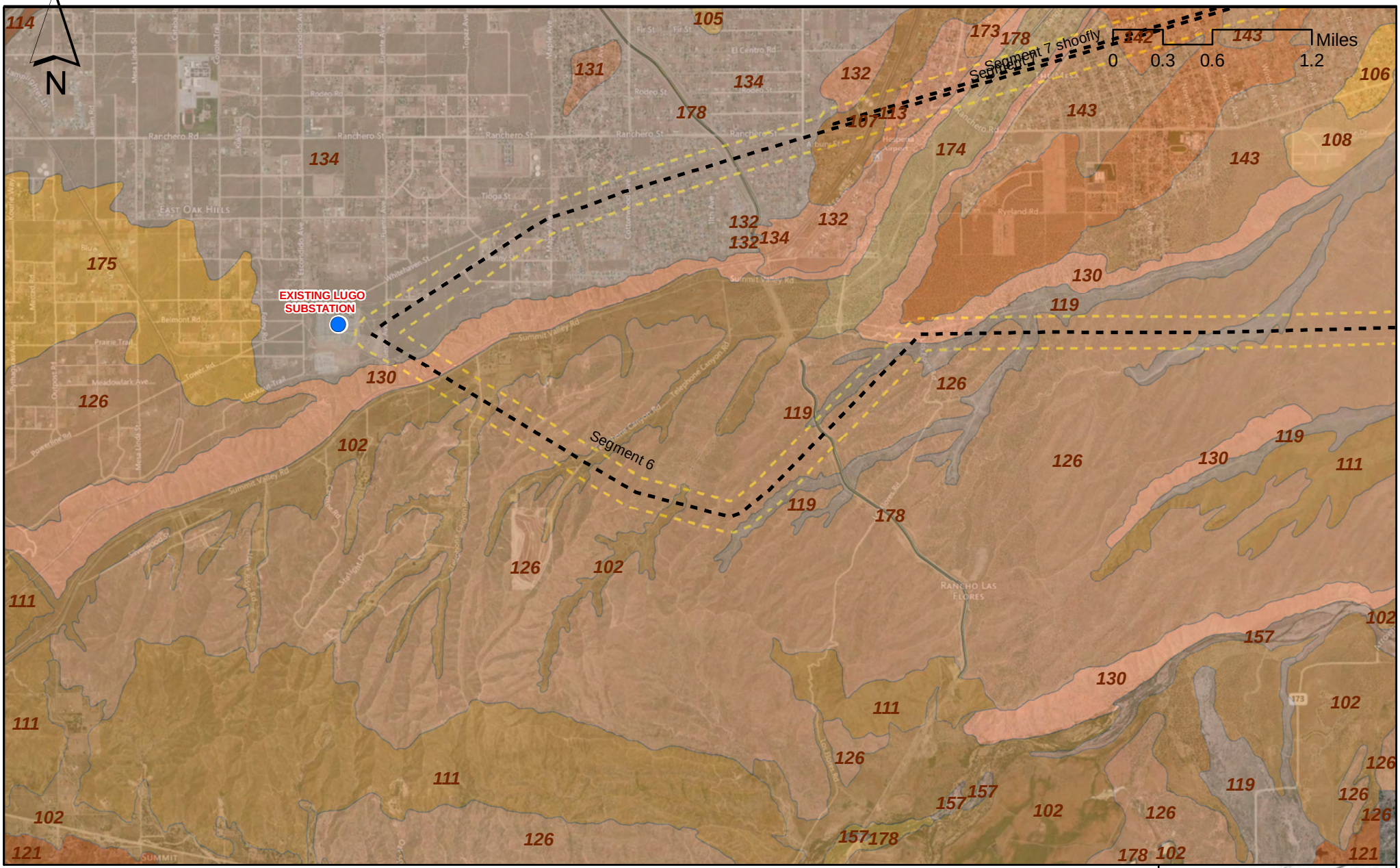
- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation



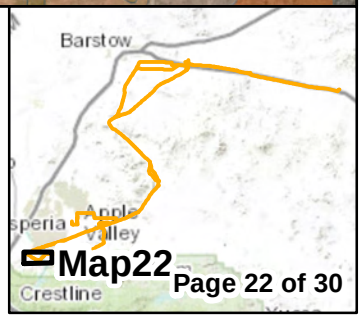
- - - - CWLTP Proposed Transmission Lines

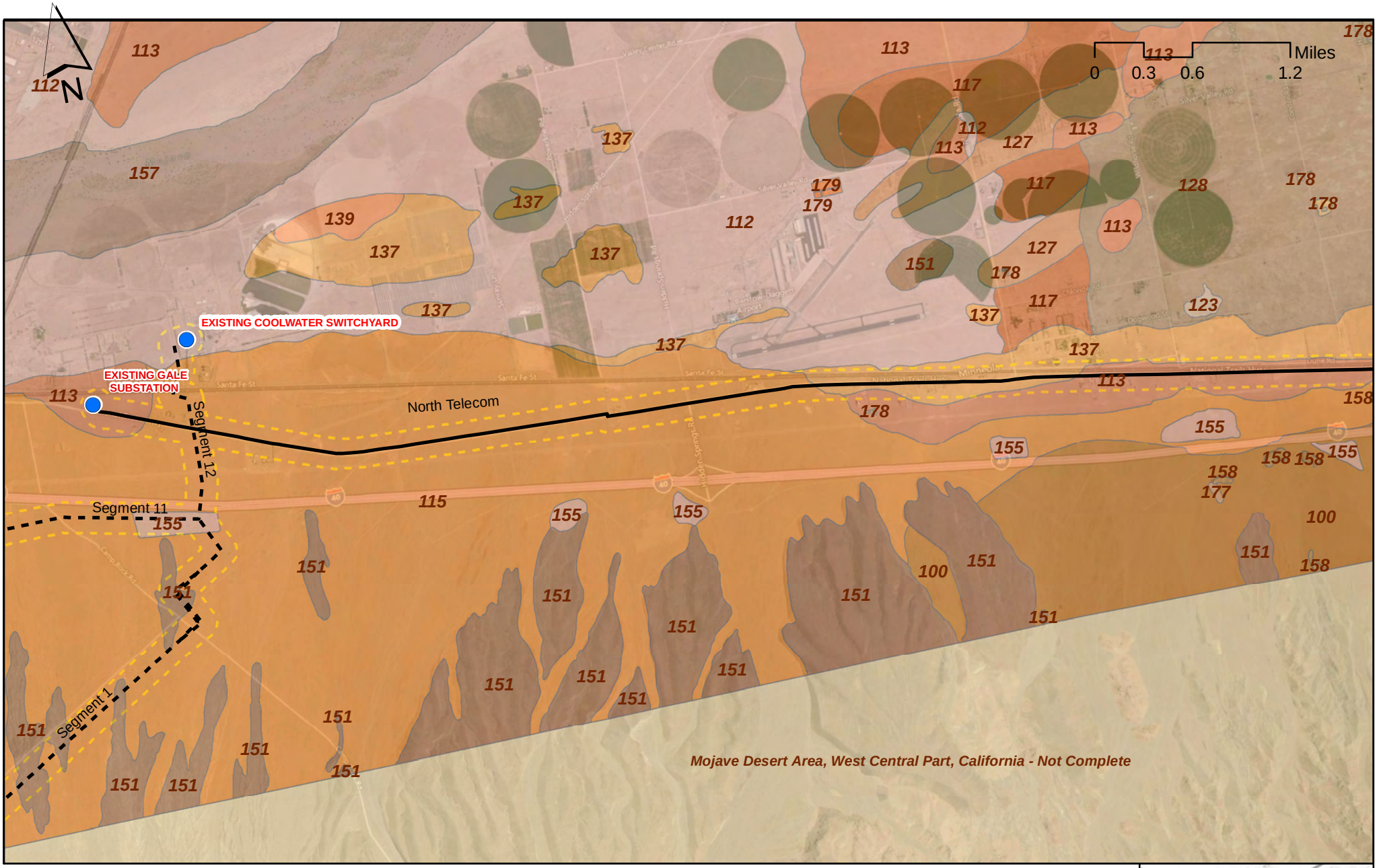
——— Proposed Telecommunication Lines

2013 Survey Area

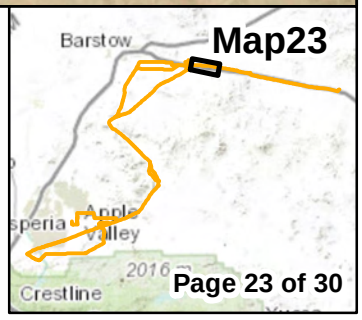
● Substation

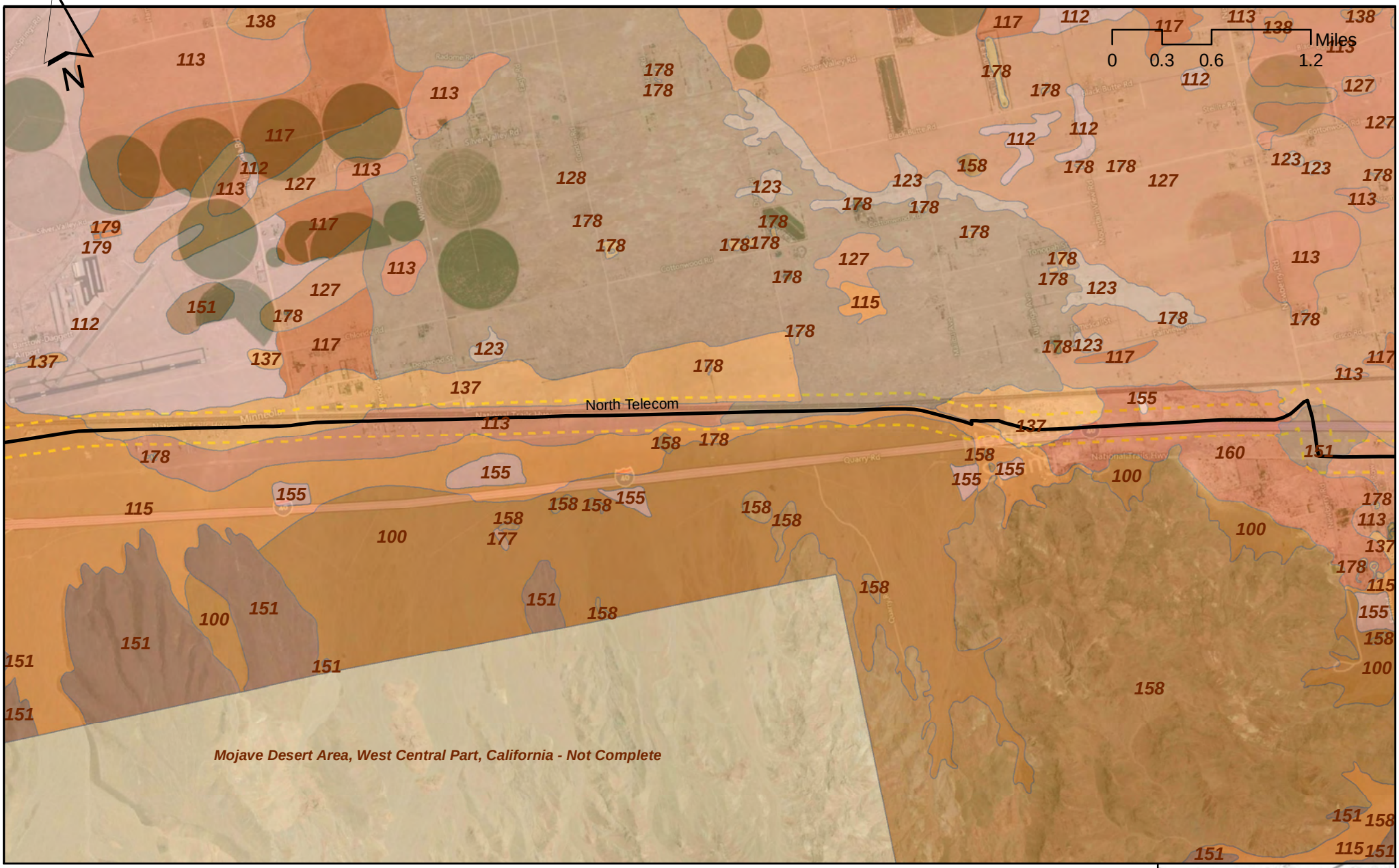
■ Proposed Substation



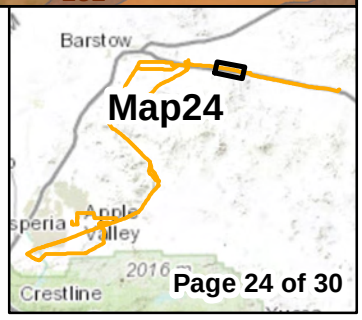


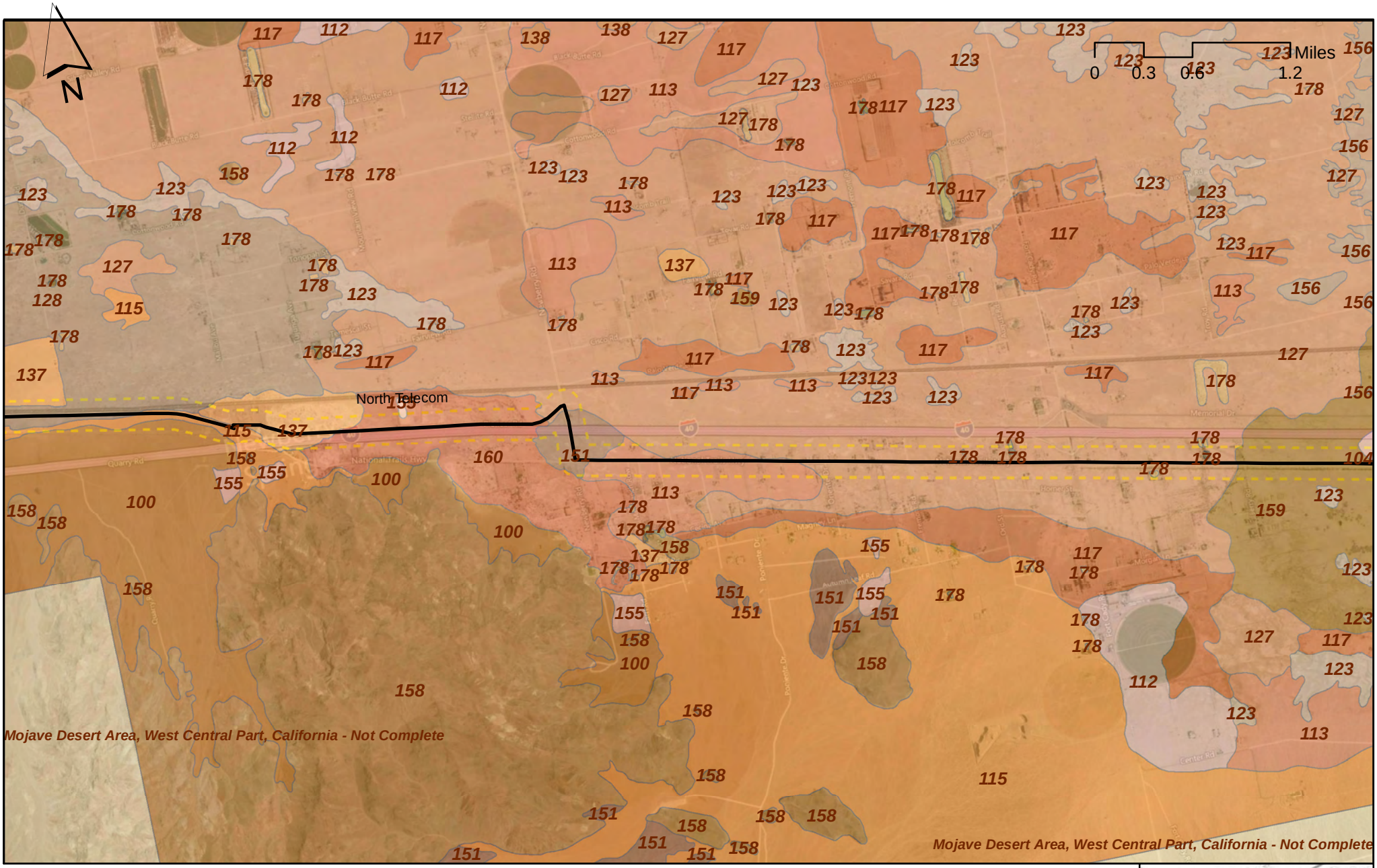
- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation





- - - - CWLTP Proposed Transmission Lines
——— Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation





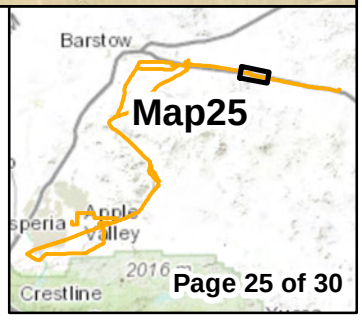
- - - - CWLTP Proposed Transmission Lines

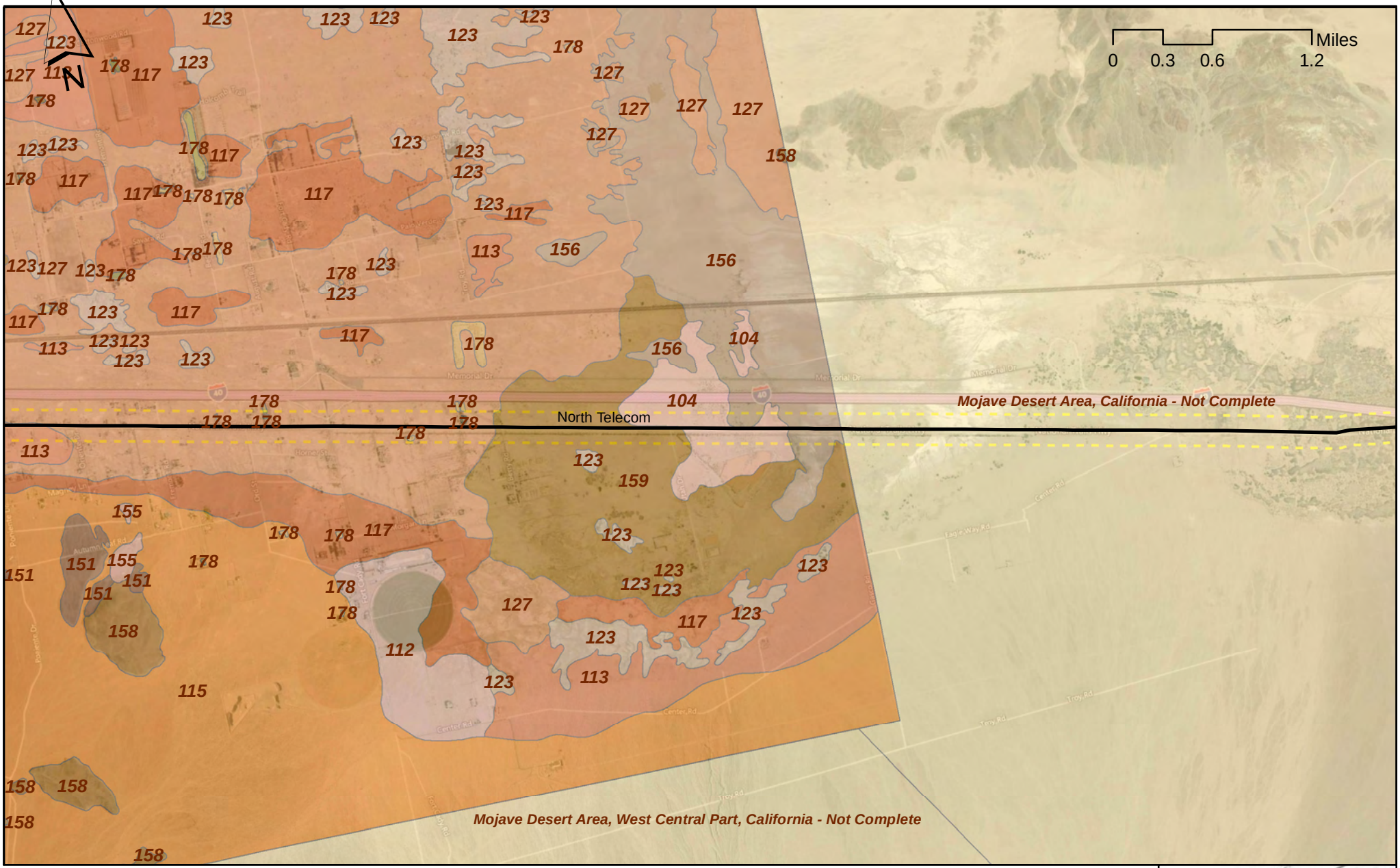
——— Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation





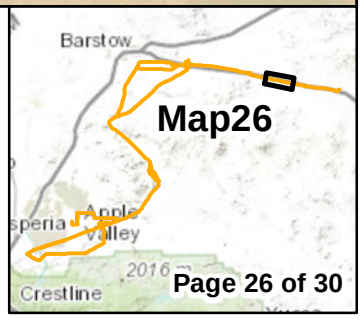
- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation



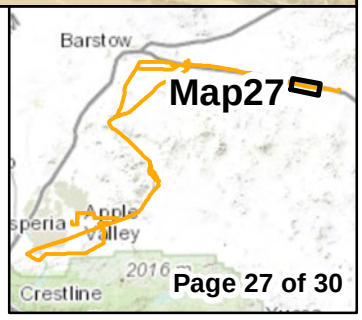
- - - - CWLTP Proposed Transmission Lines

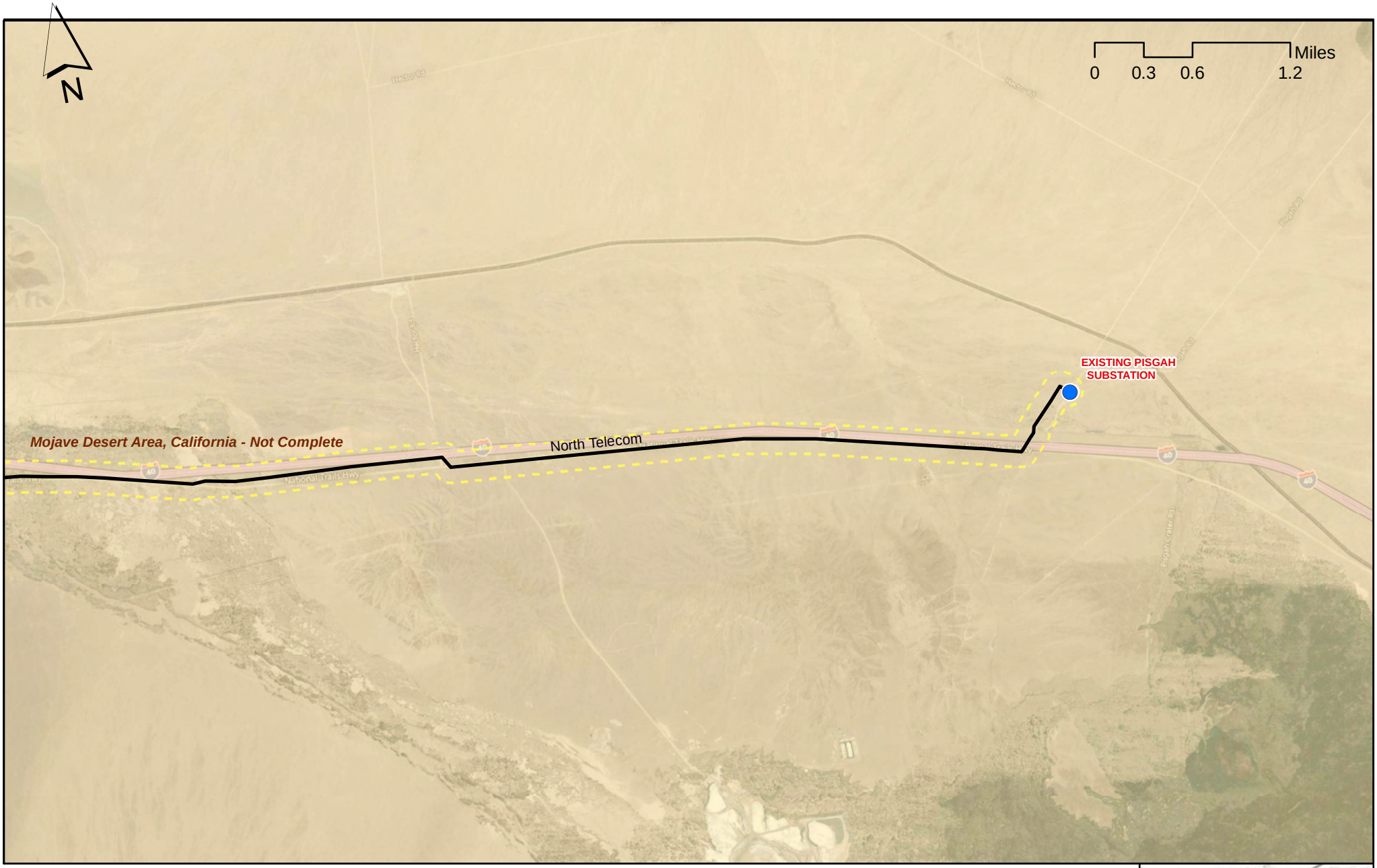
——— Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation





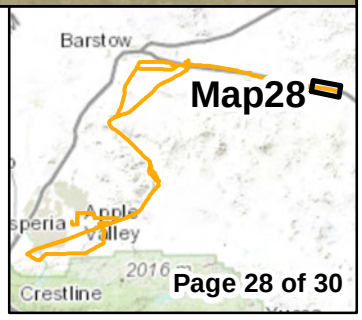
CWLTP Proposed Transmission Lines

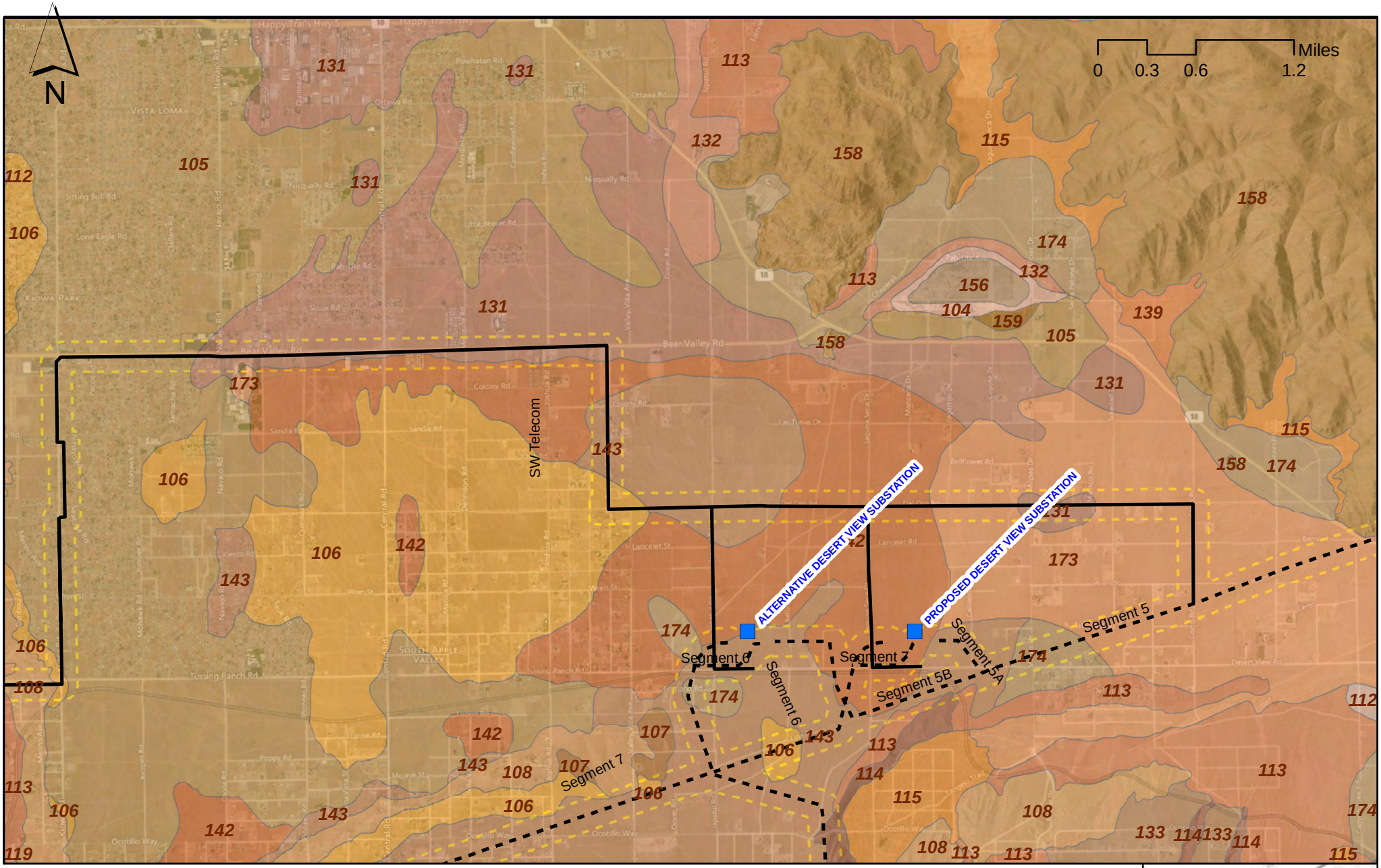
Proposed Telecommunication Lines

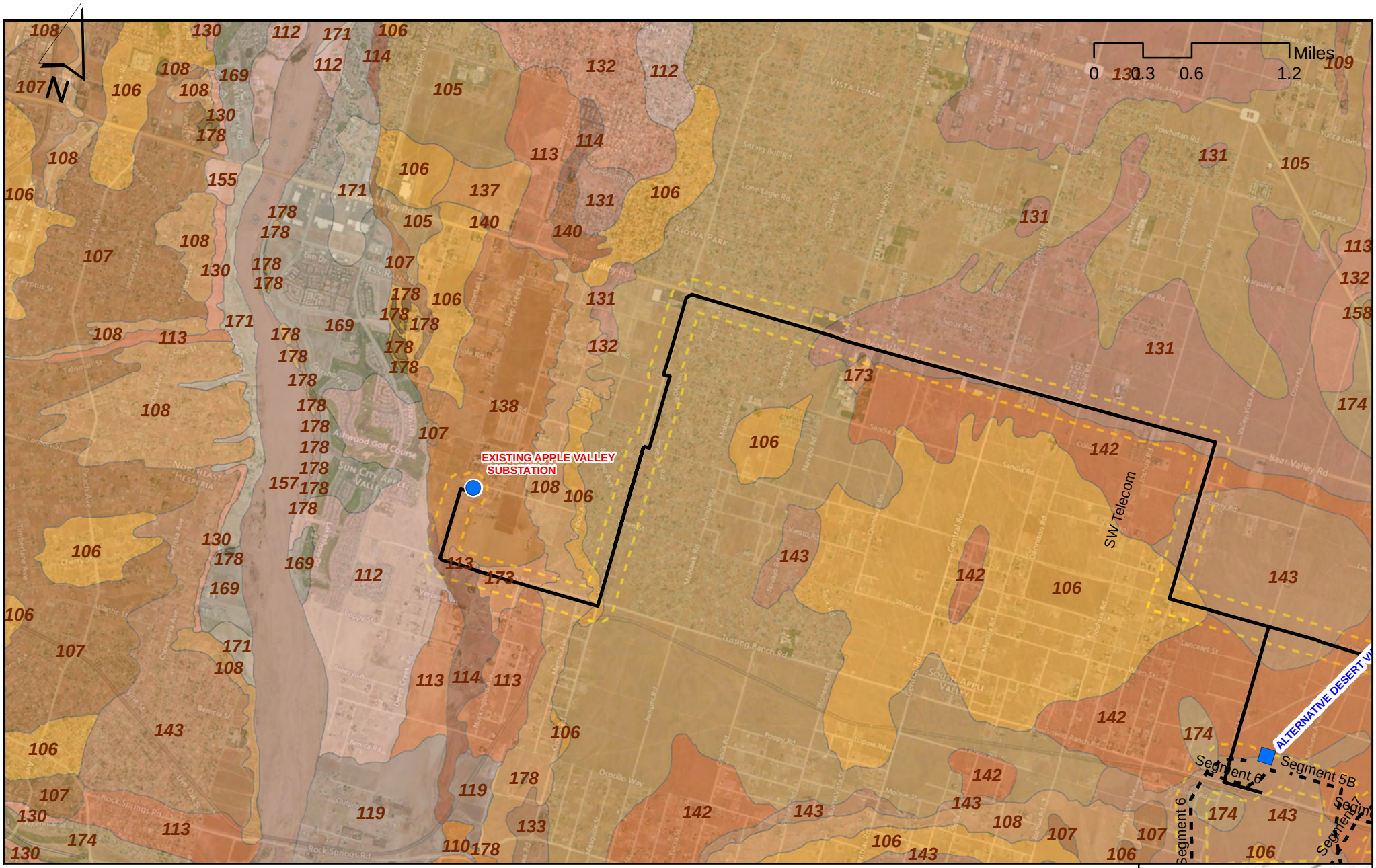
2013 Survey Area

Substation

Proposed Substation




N
Miles
0 0.3 0.6 1.2
SW Telecom
ALTERNATIVE DESERT VIEW SUBSTATION
PROPOSED DESERT VIEW SUBSTATION
Segment 5
Segment 5A
Segment 5B
Segment 6
Segment 7
Segment 6
Segment 7
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Barstow
Crestline
Map29
Page 29 of 30



- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

ATTACHMENT B

Delineation of Waters

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

N

0 255 510 1,020 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

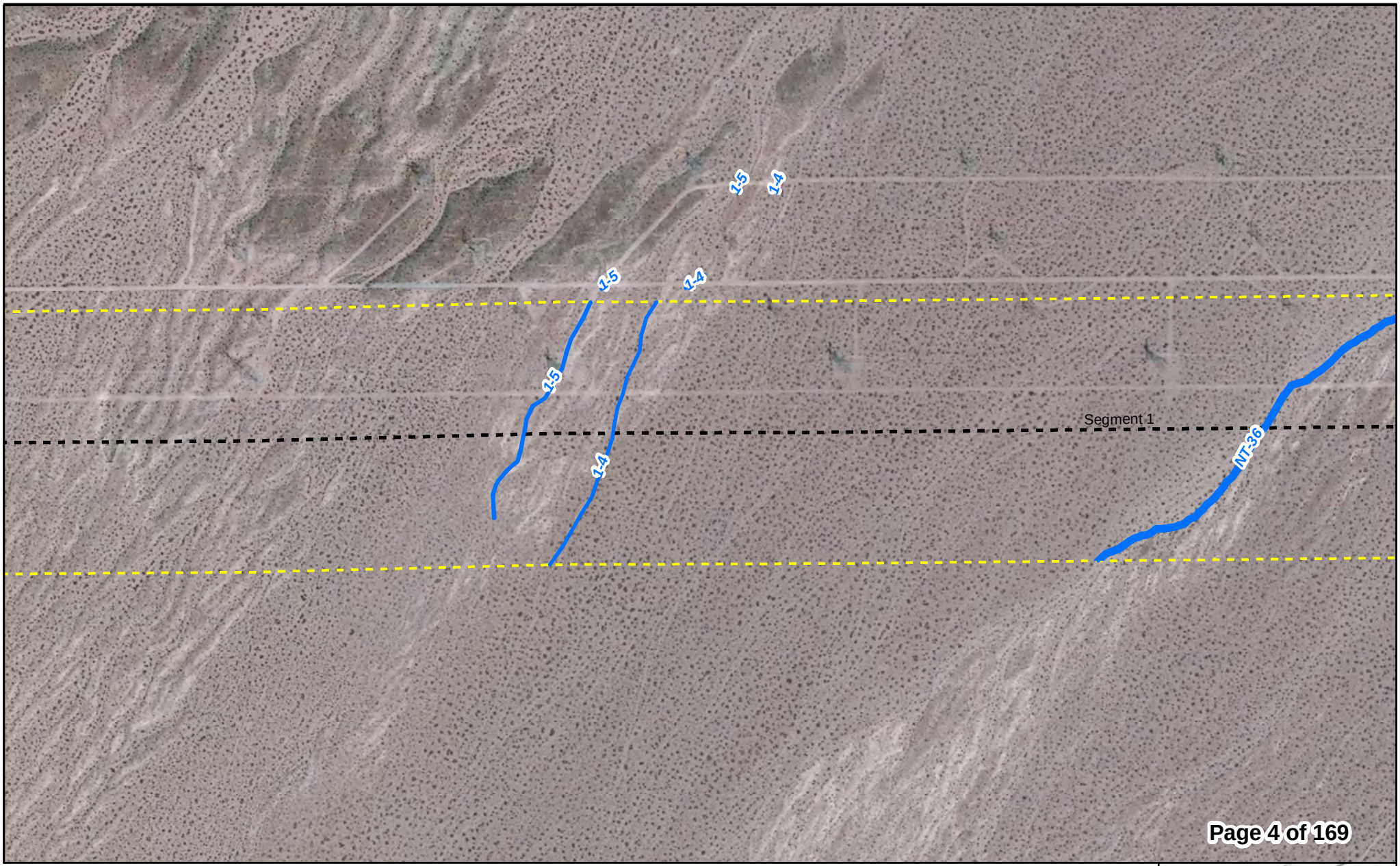
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

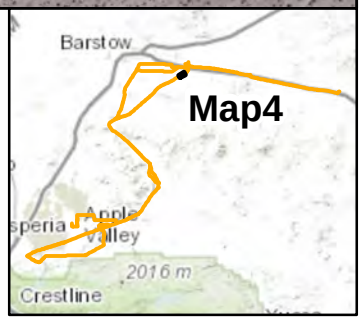
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

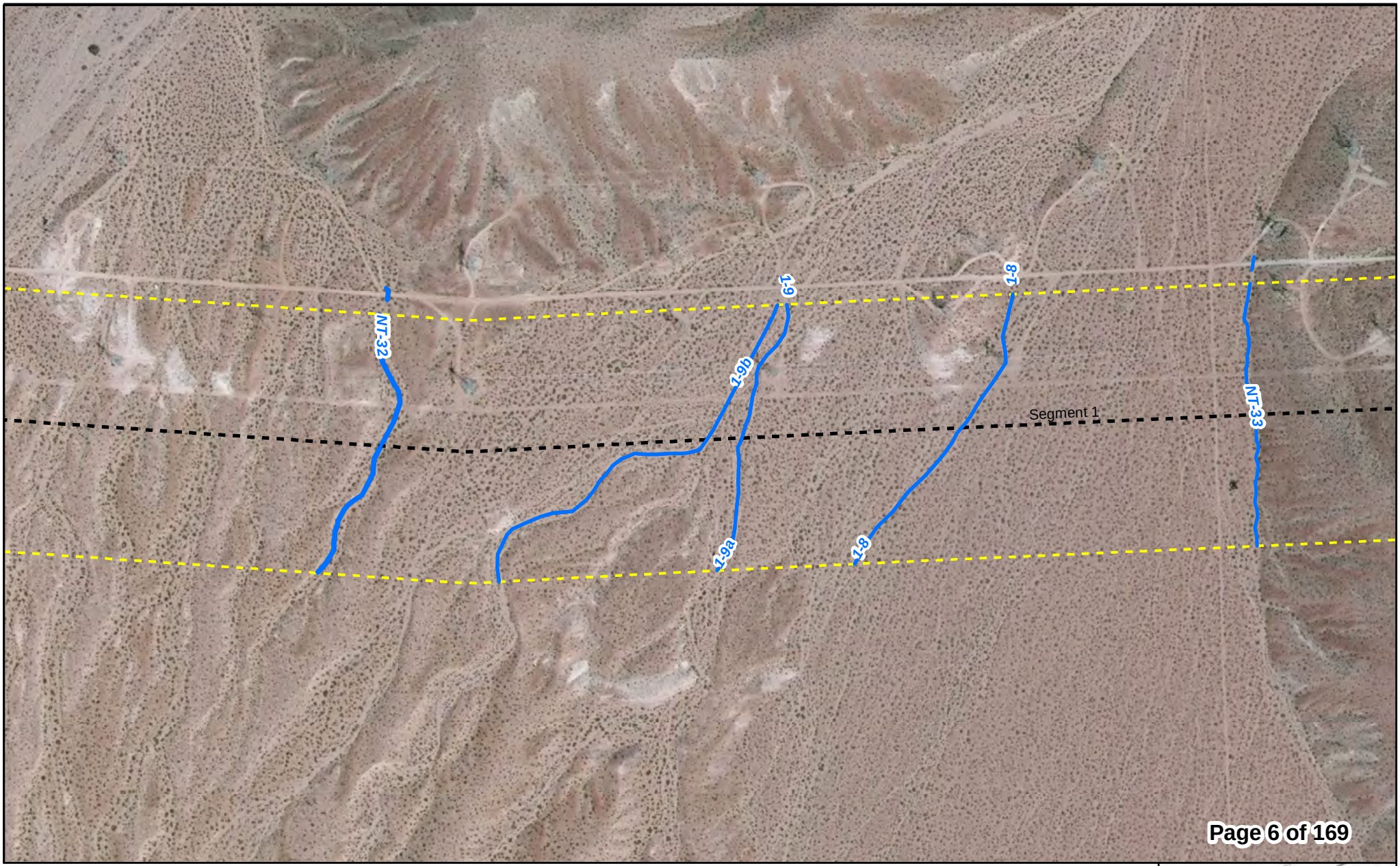
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

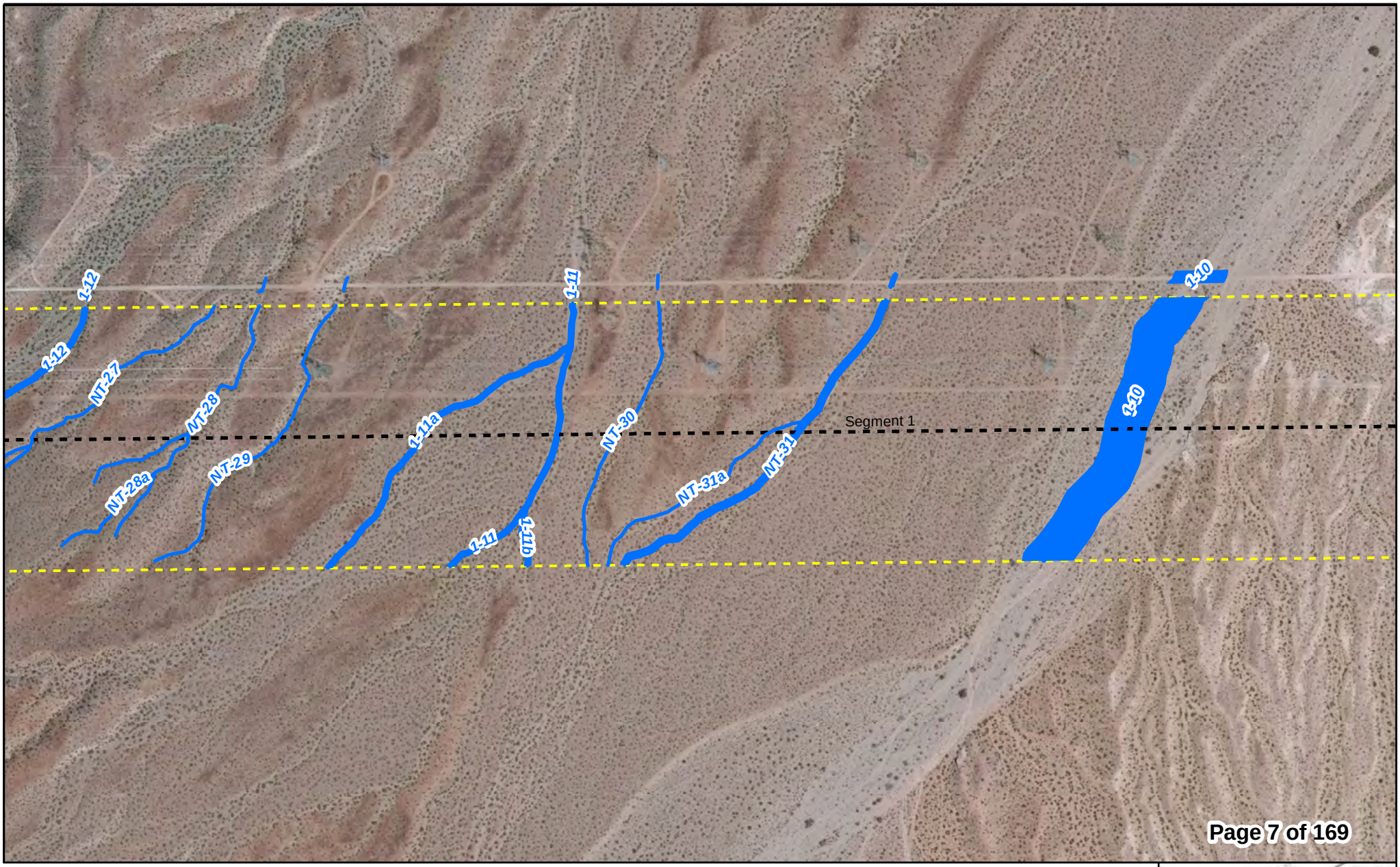
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

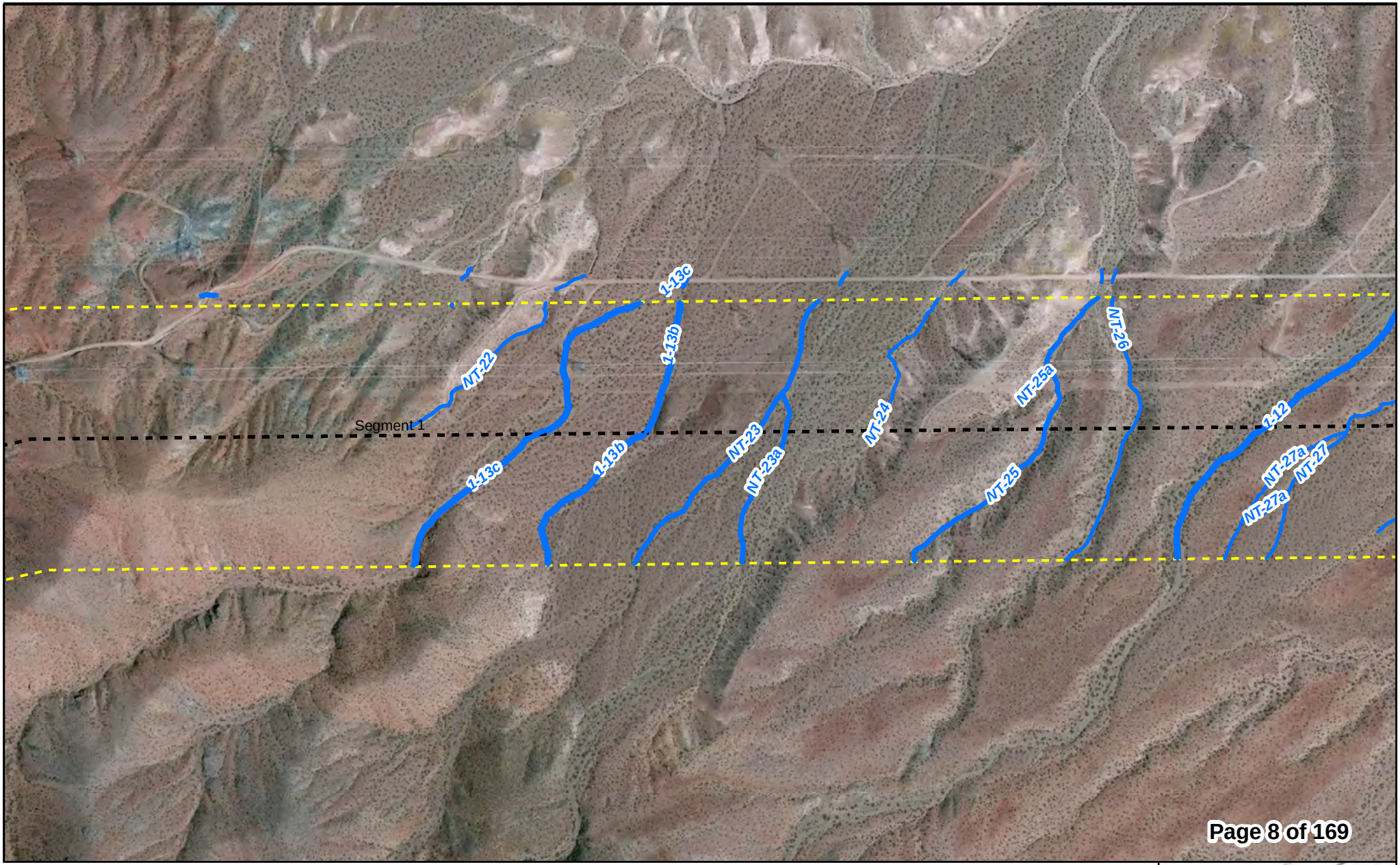
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

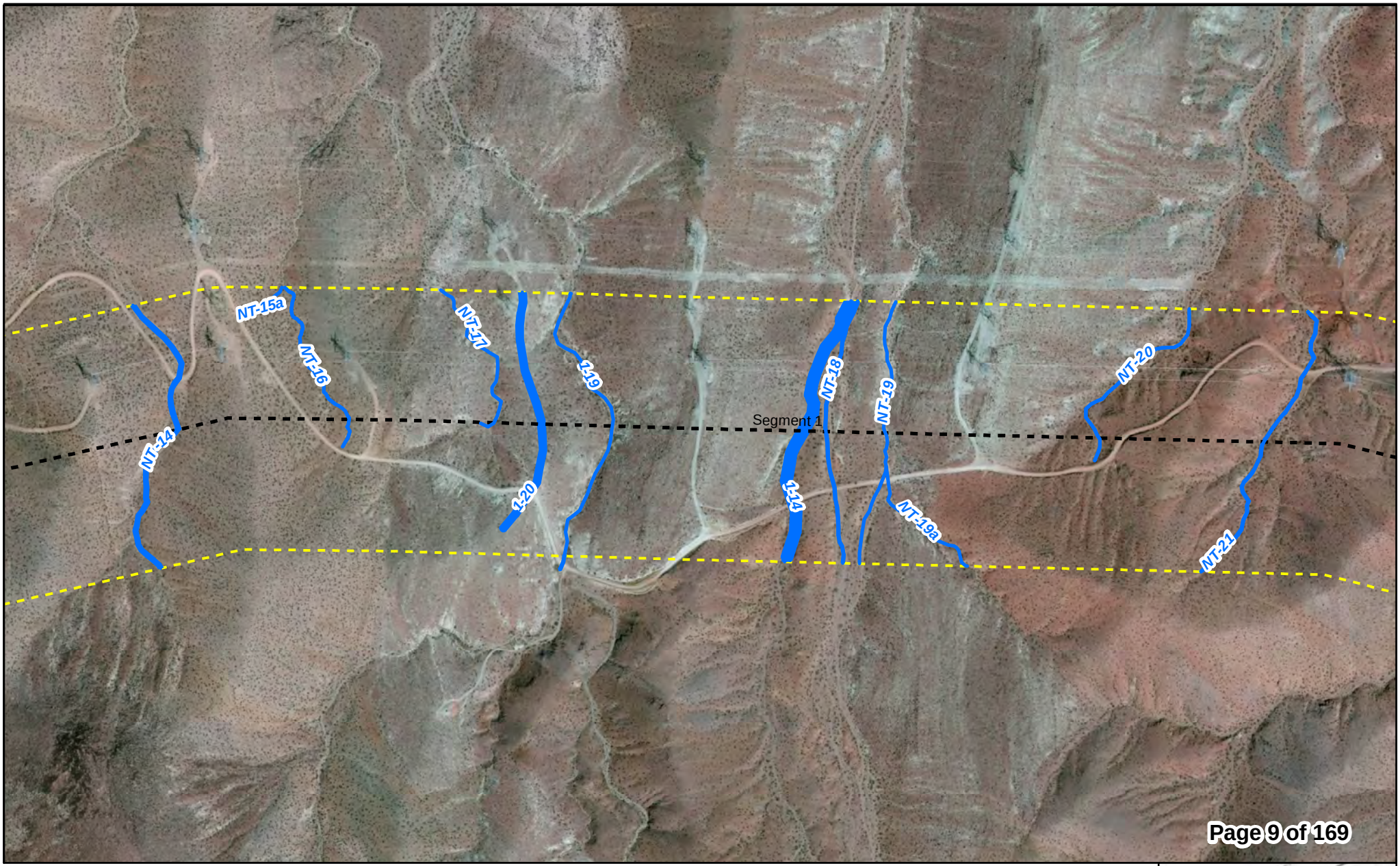
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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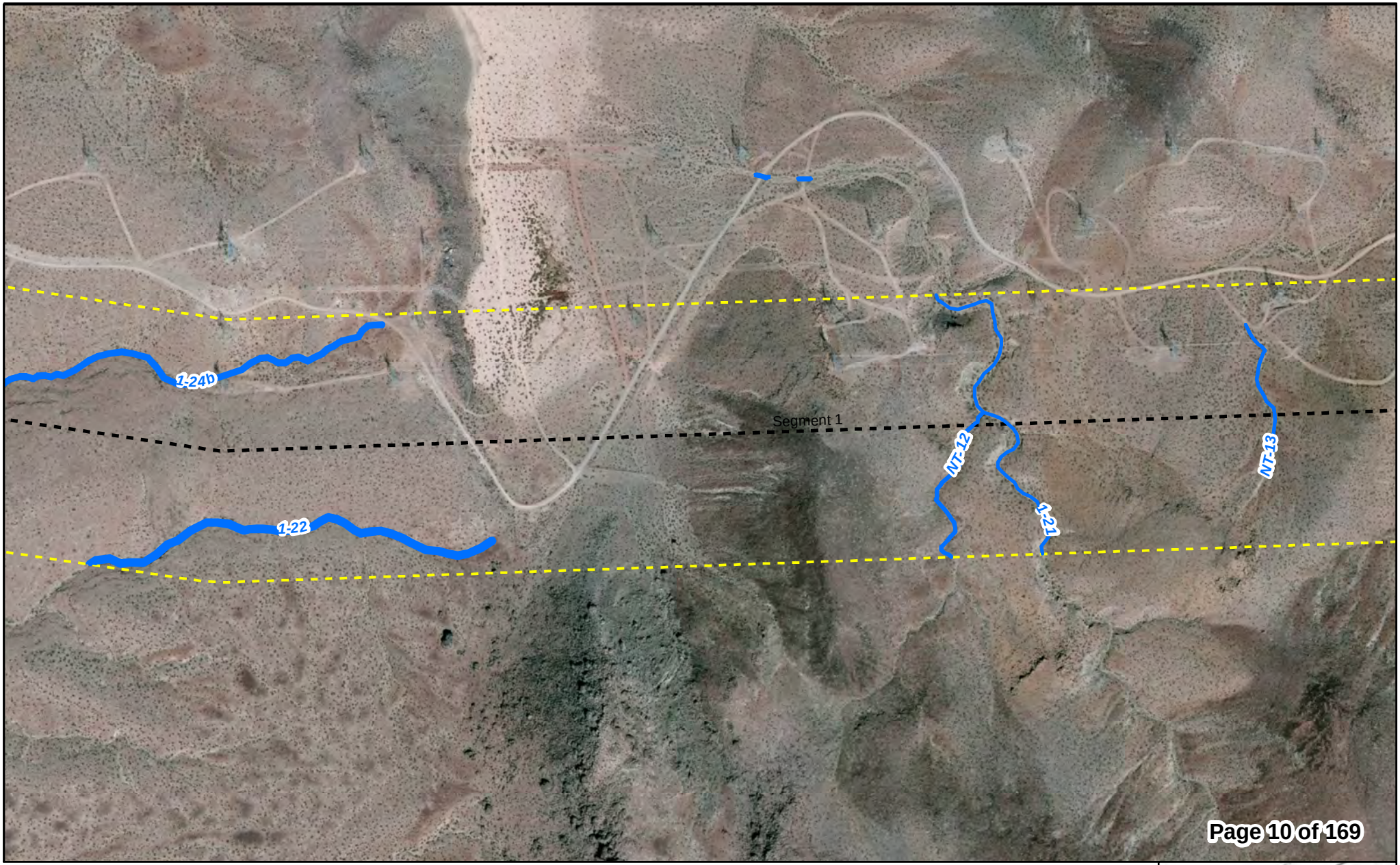

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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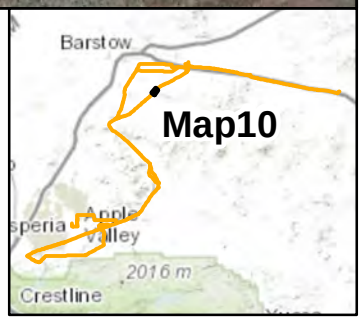

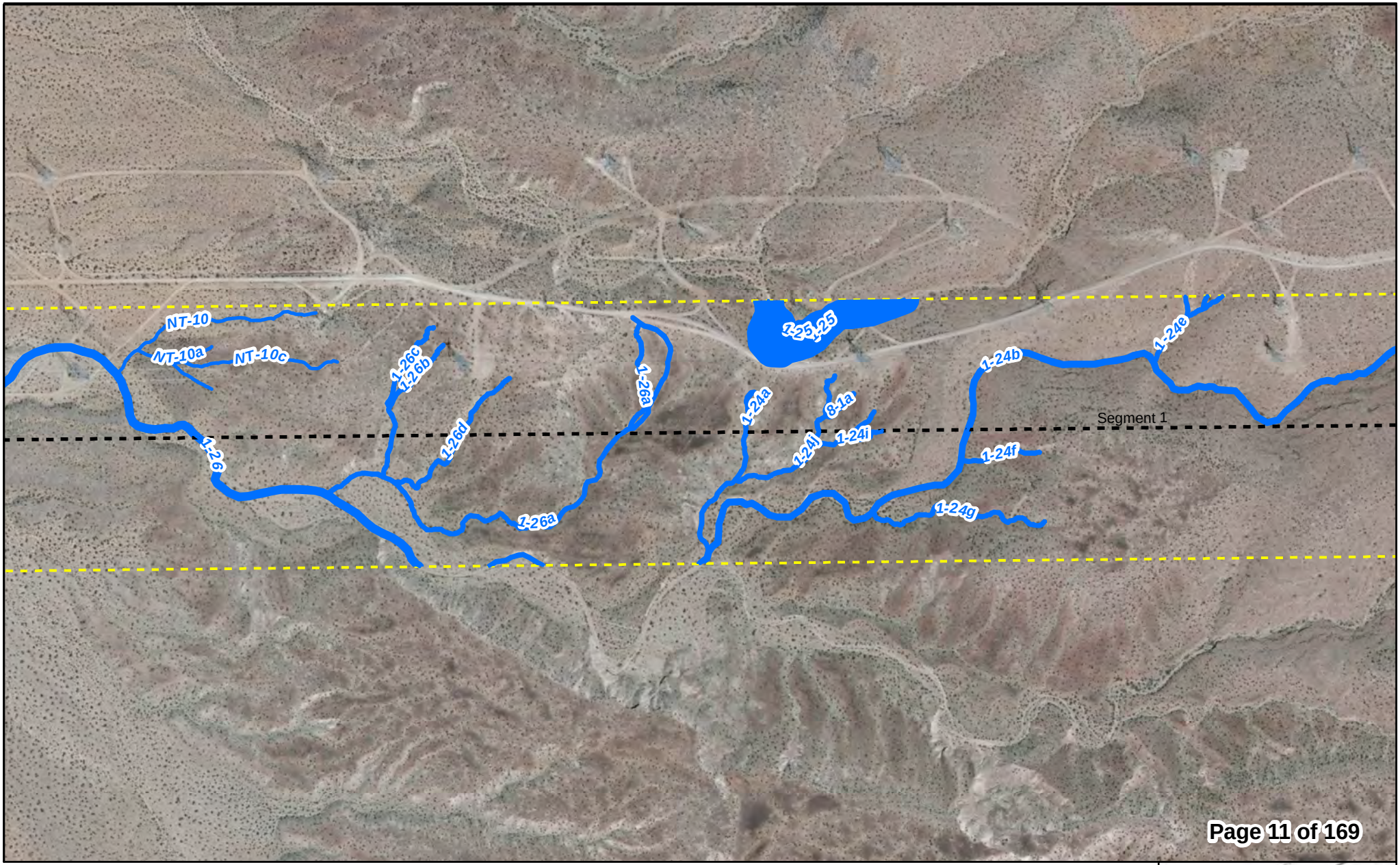

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Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

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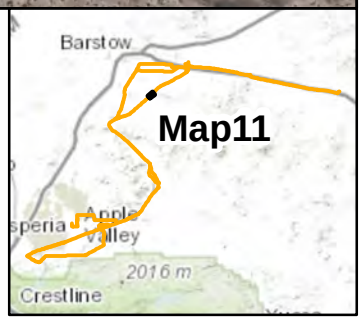

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2013 Survey Area

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Waters of the U.S. and State Waters

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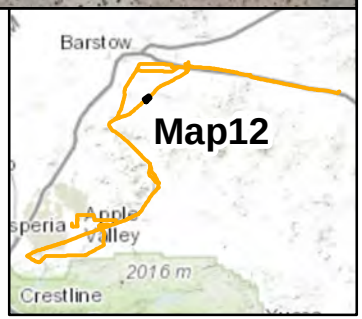

CWLTP Proposed Transmission Lines

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2013 Survey Area

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Waters of the U.S. and State Waters

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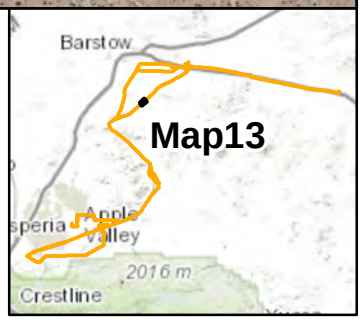

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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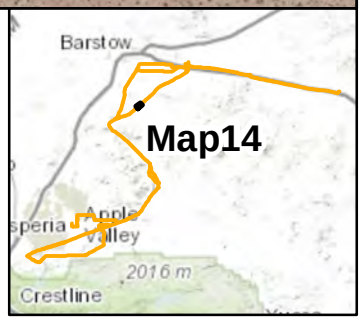

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2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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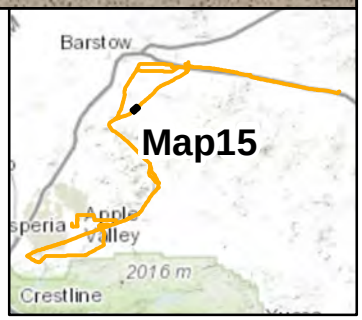

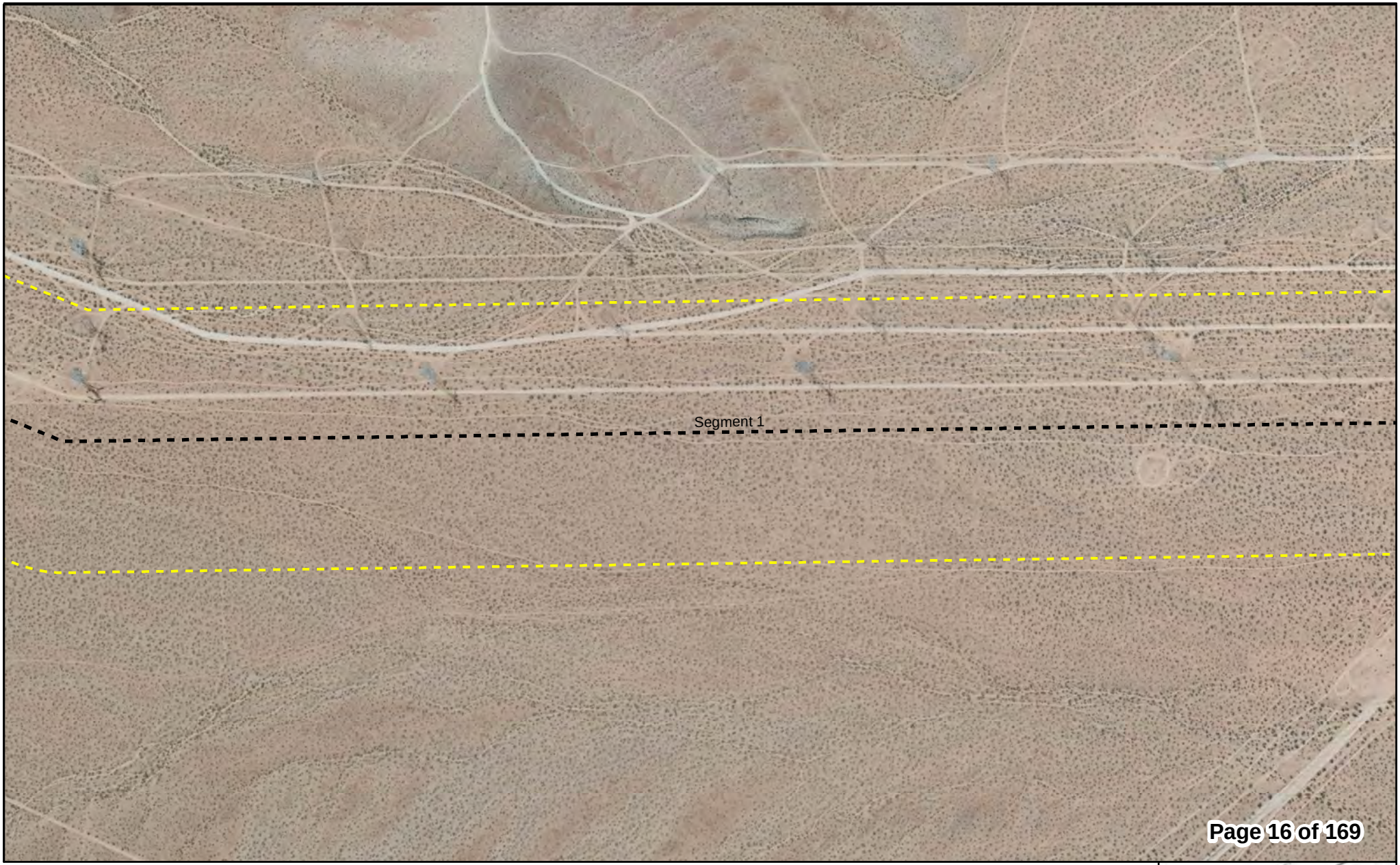

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2013 Survey Area

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Waters of the U.S. and State Waters

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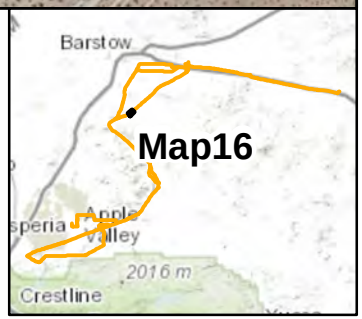

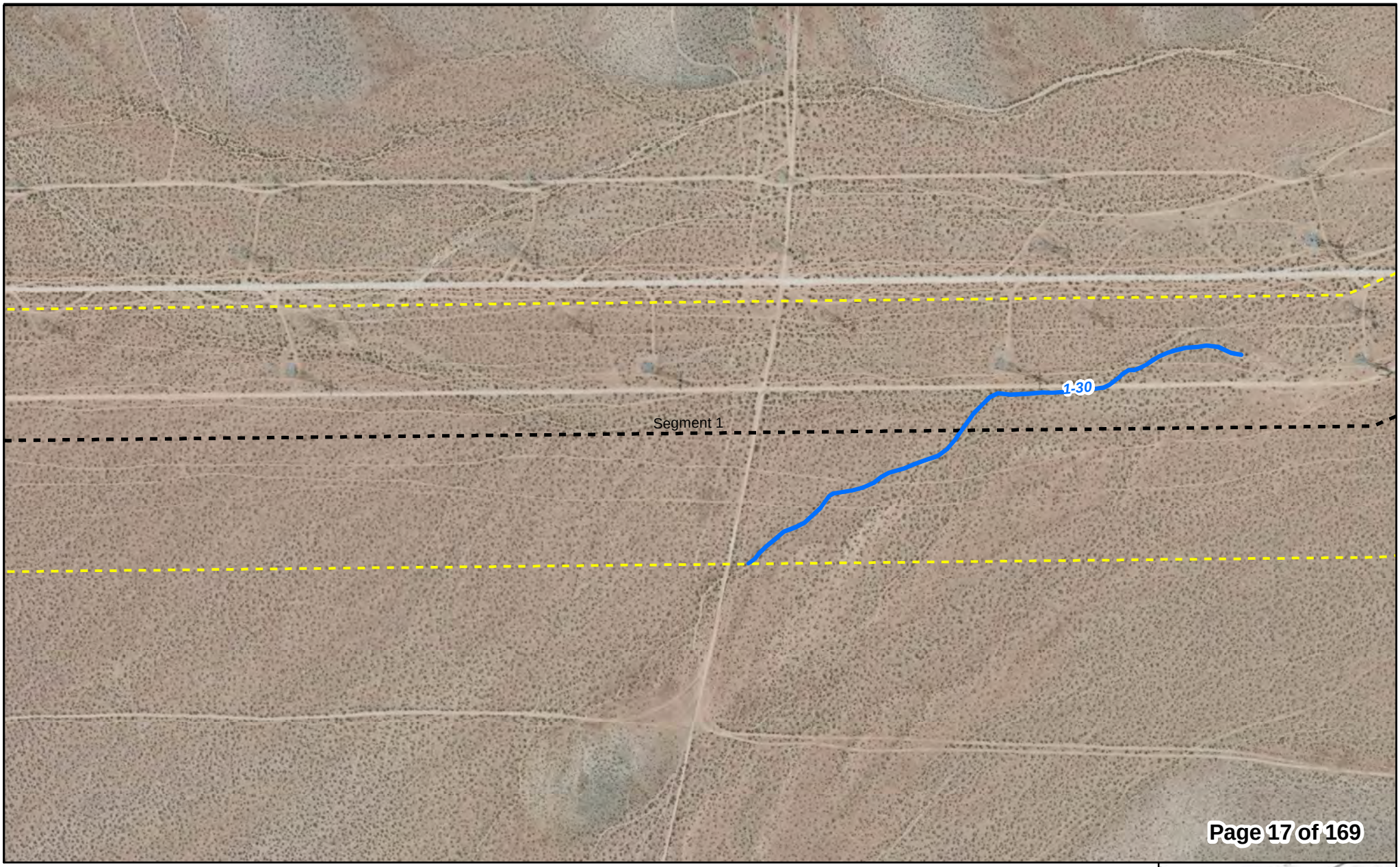

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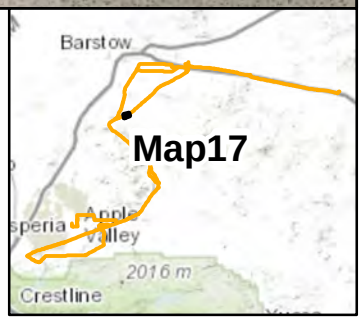

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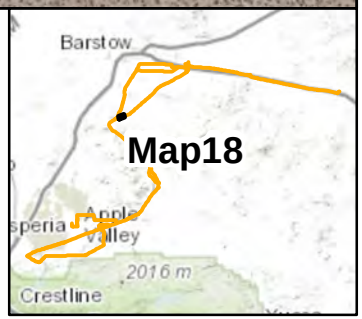

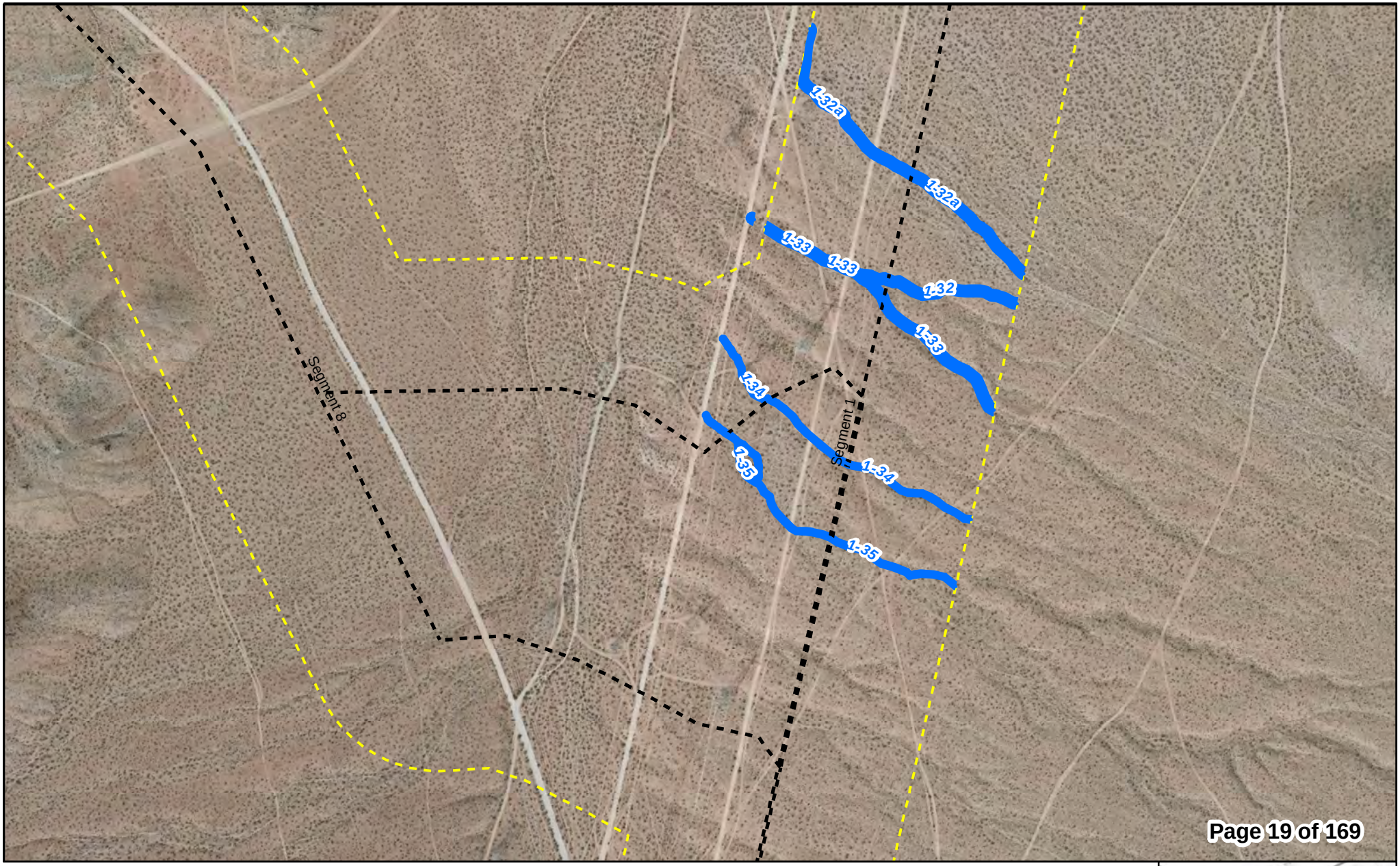

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2013 Survey Area

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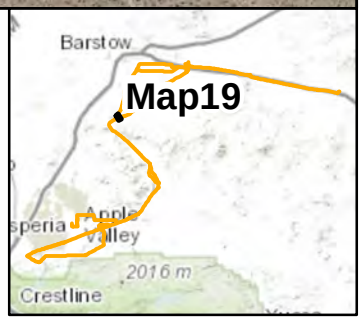

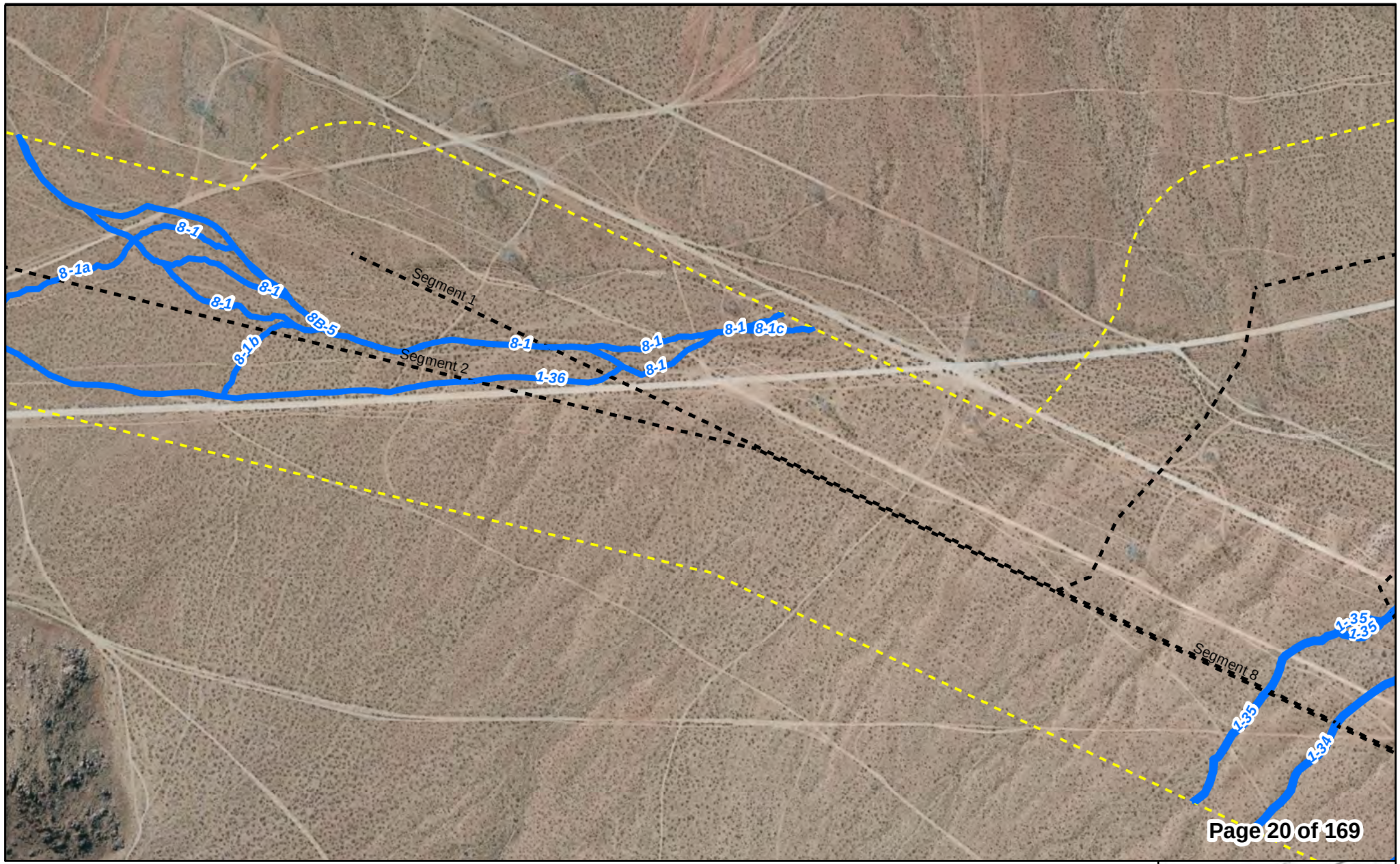

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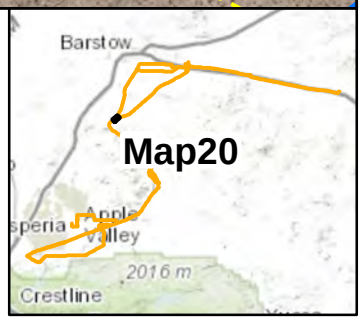

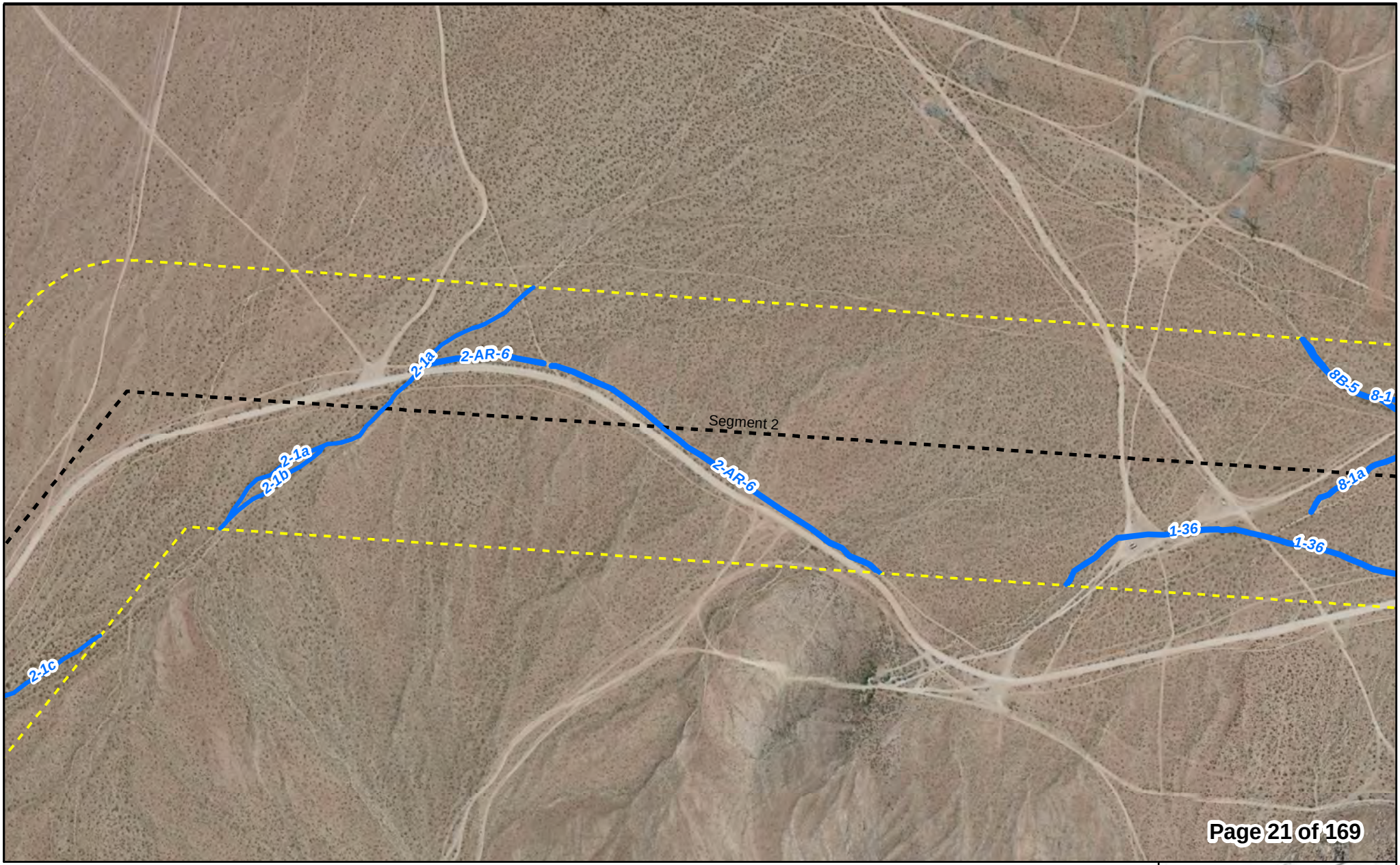

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Waters of the U.S. and State Waters

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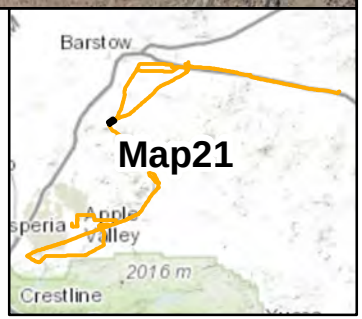

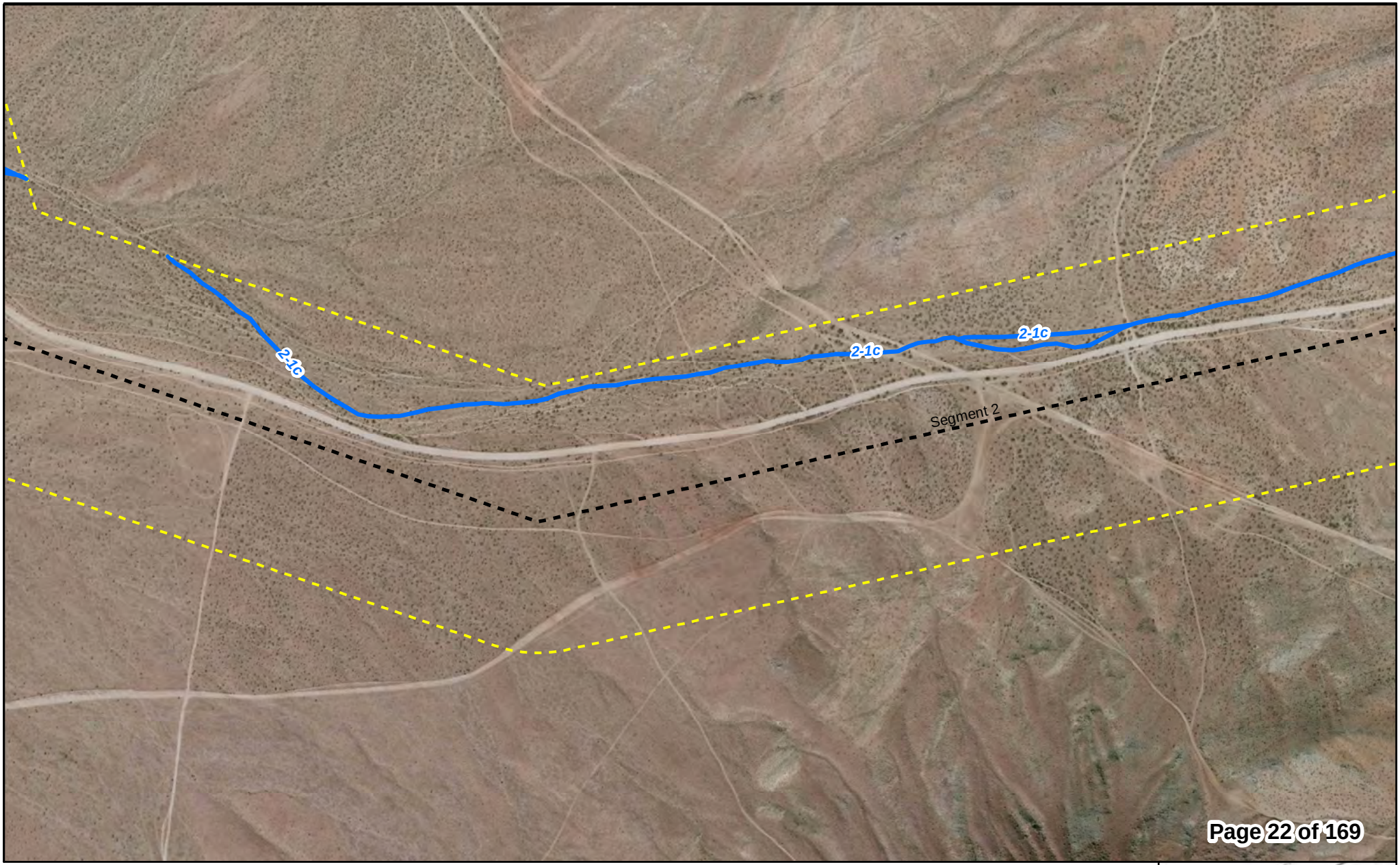

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Waters of the U.S. and State Waters

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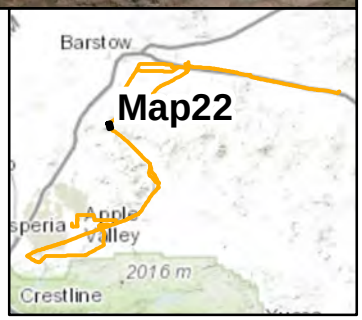

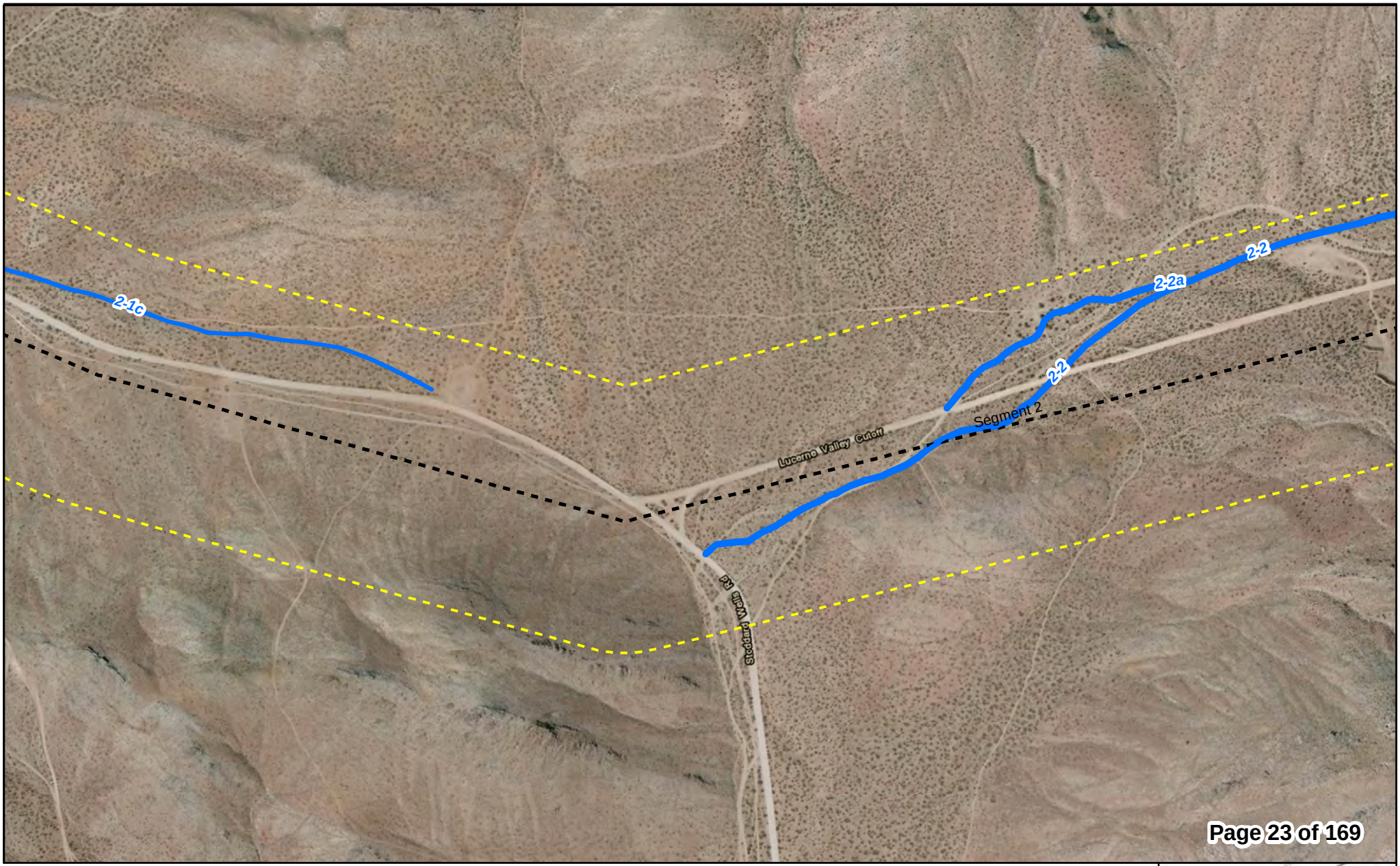

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Waters of the U.S. and State Waters

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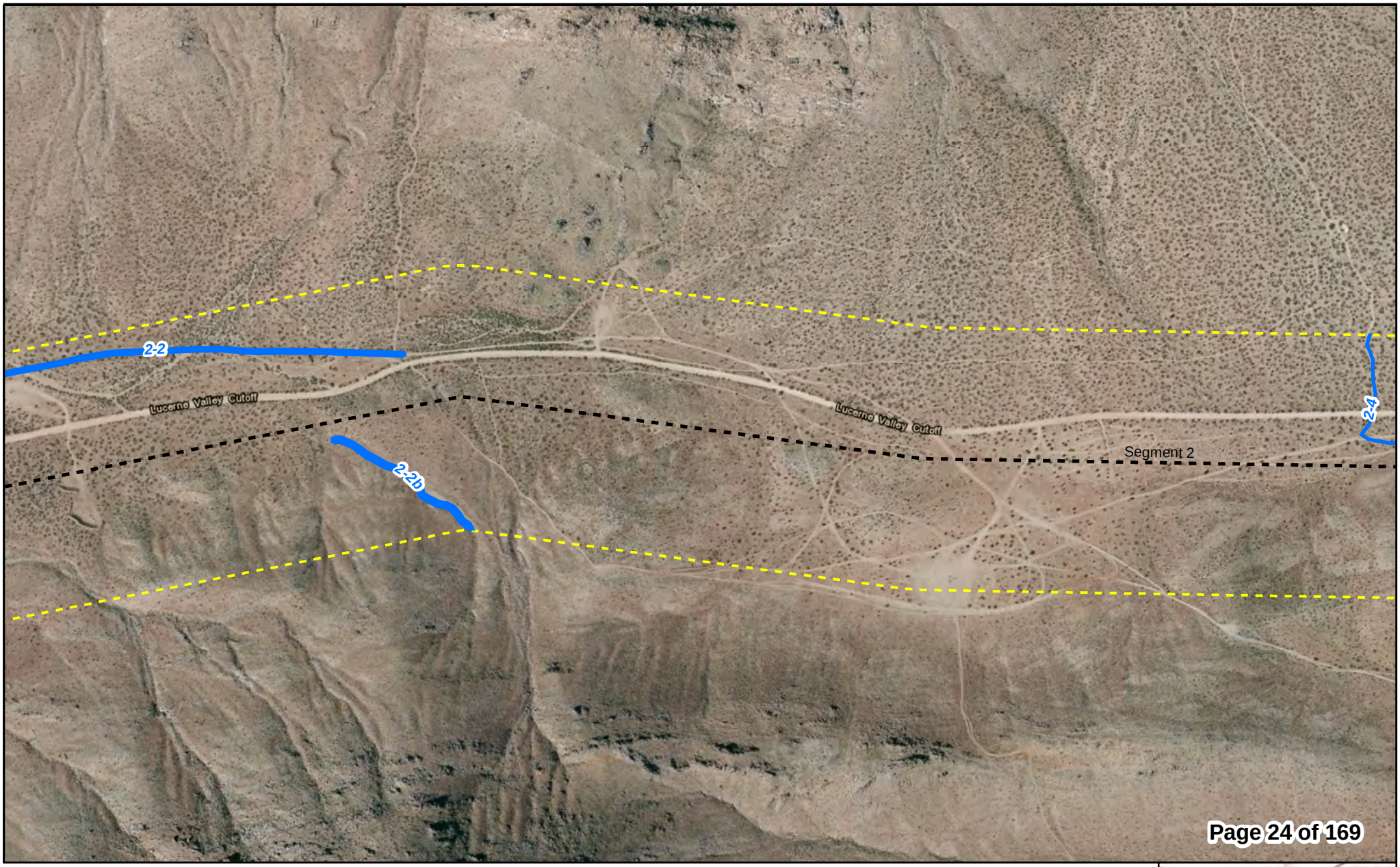

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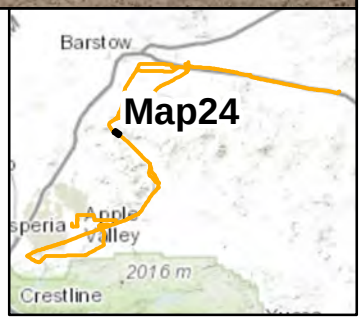

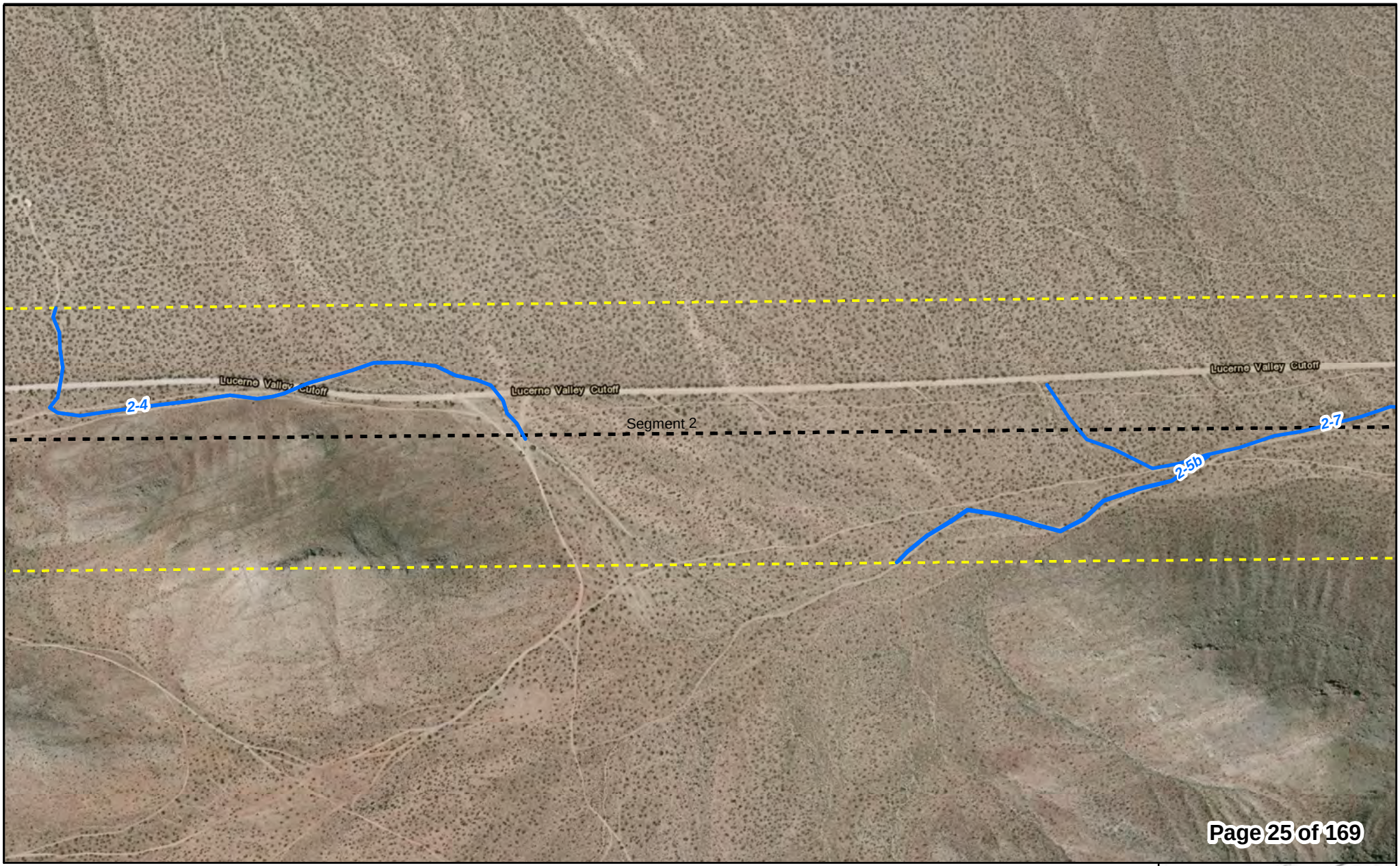

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Waters of the U.S. and State Waters

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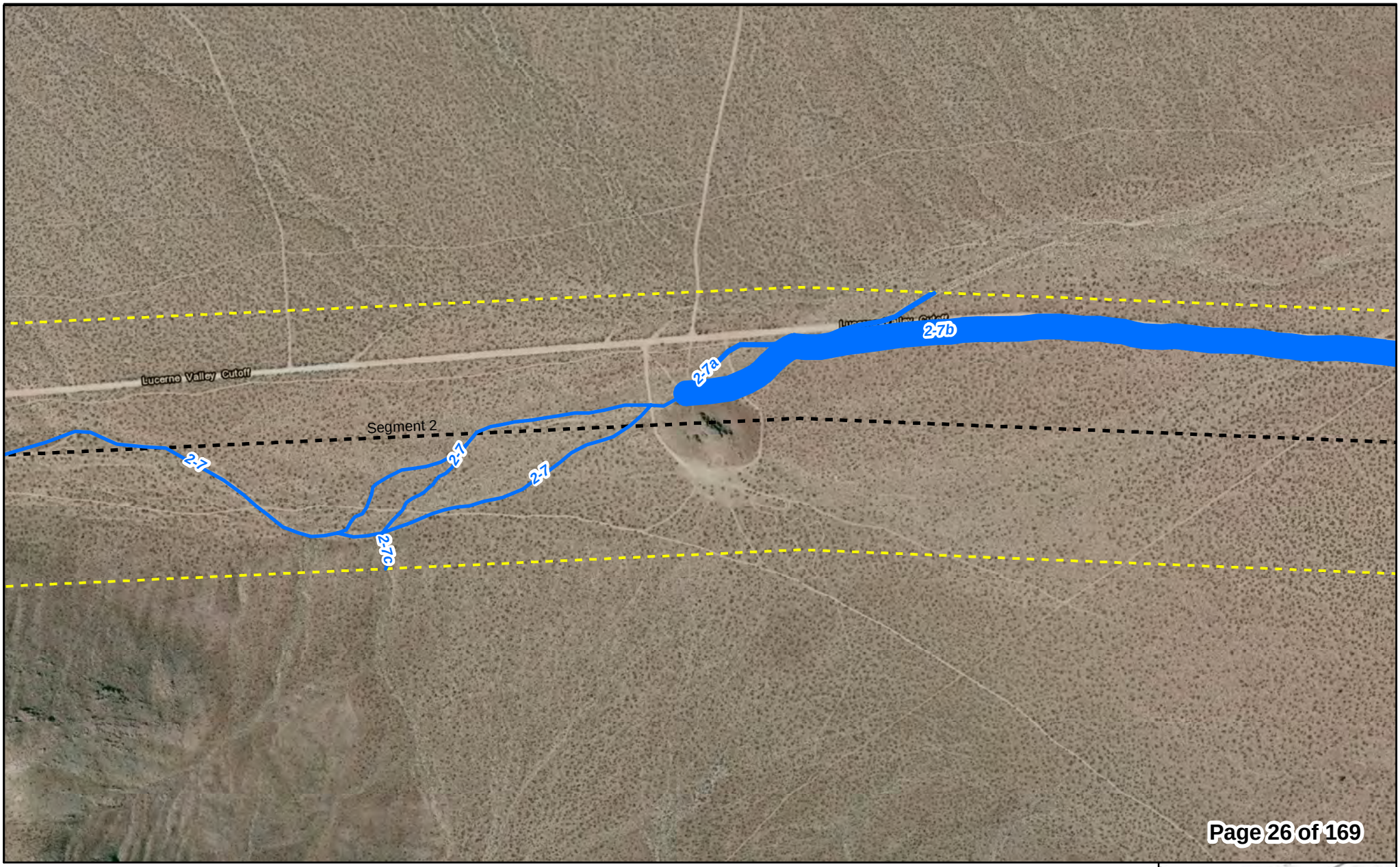

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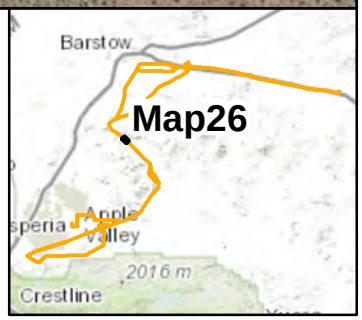

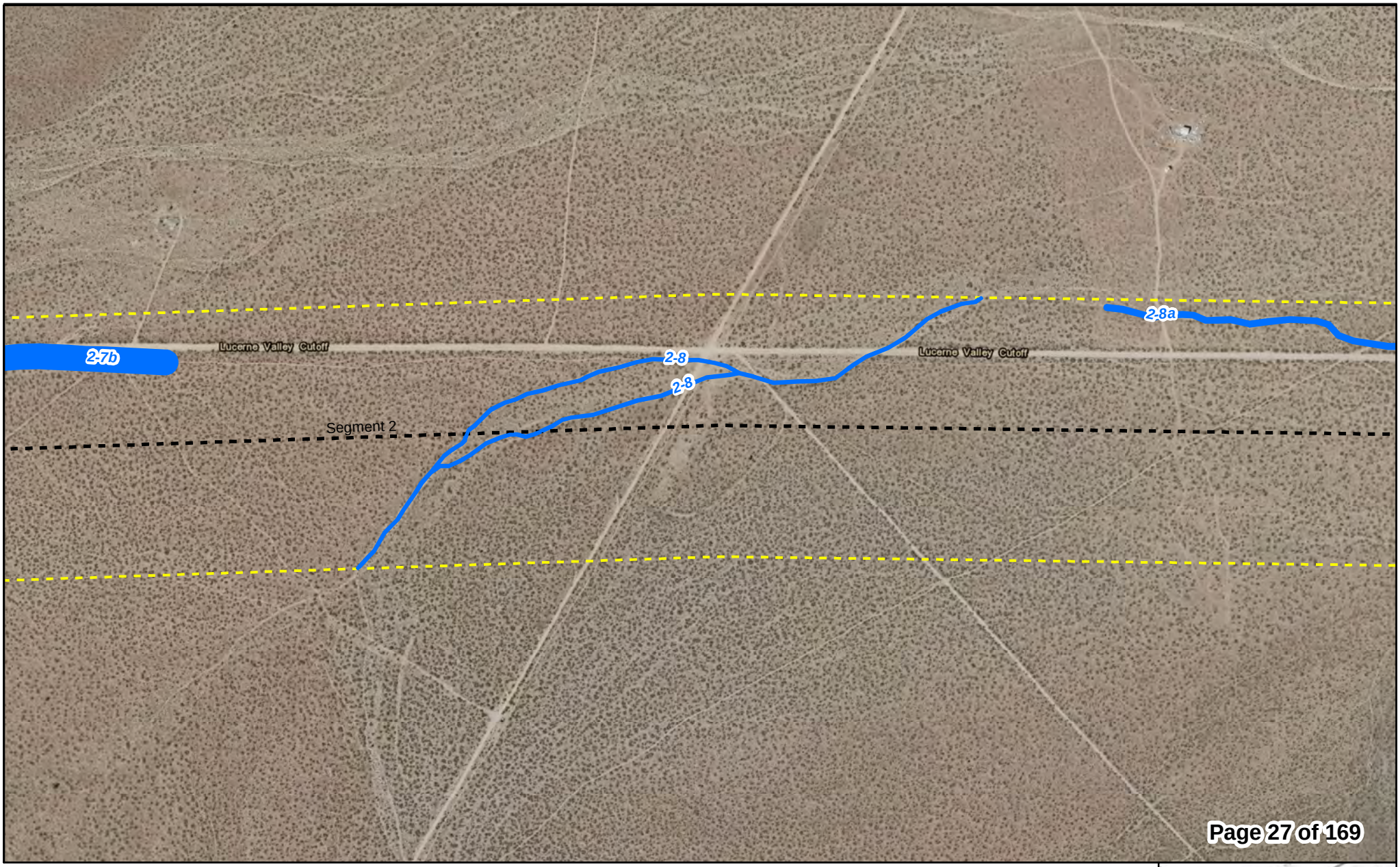

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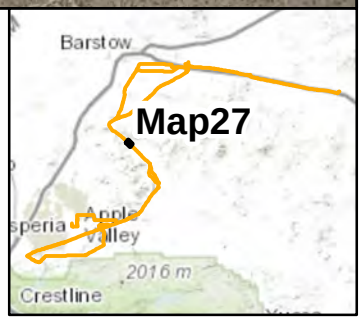

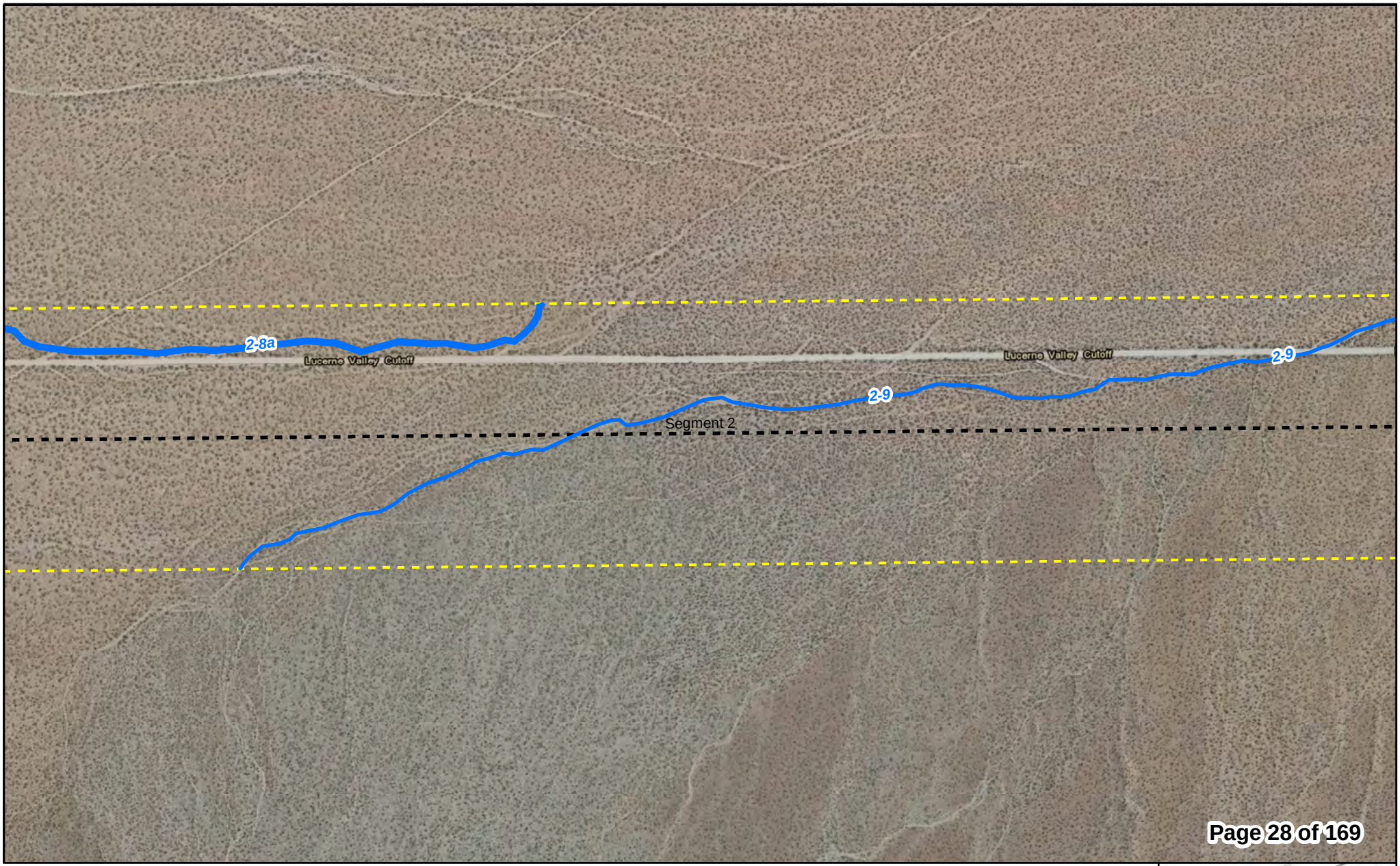

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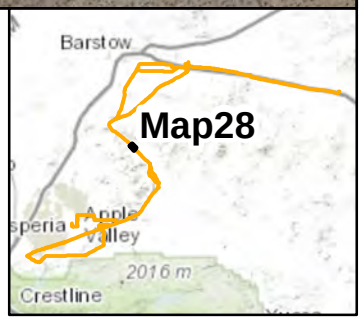

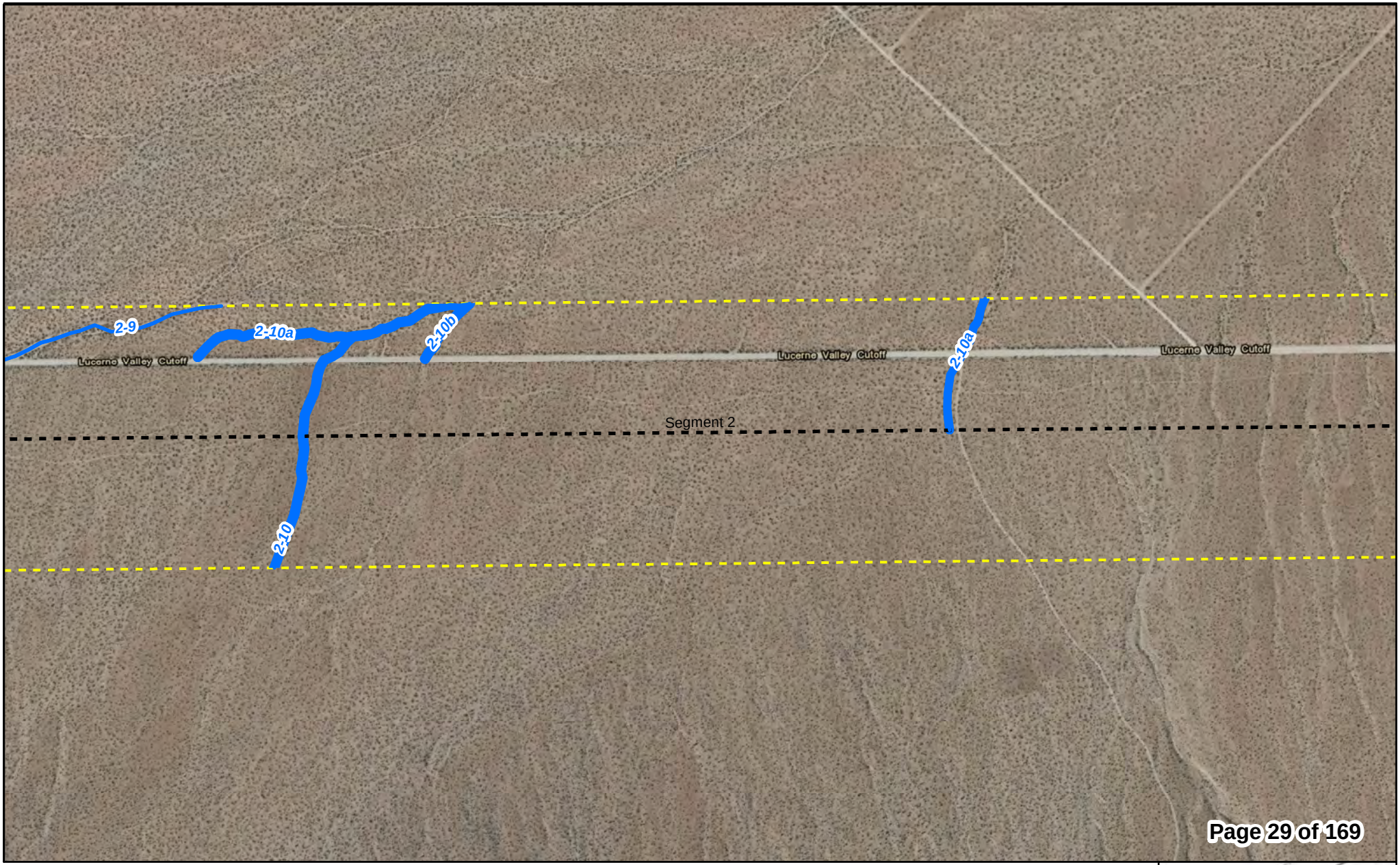

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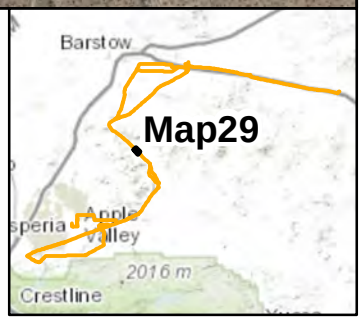

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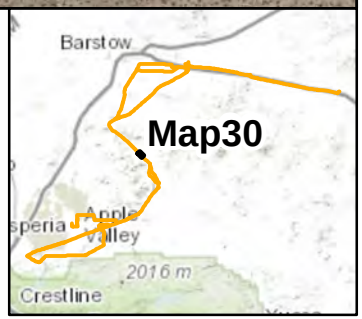

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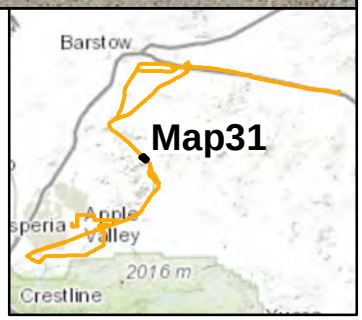

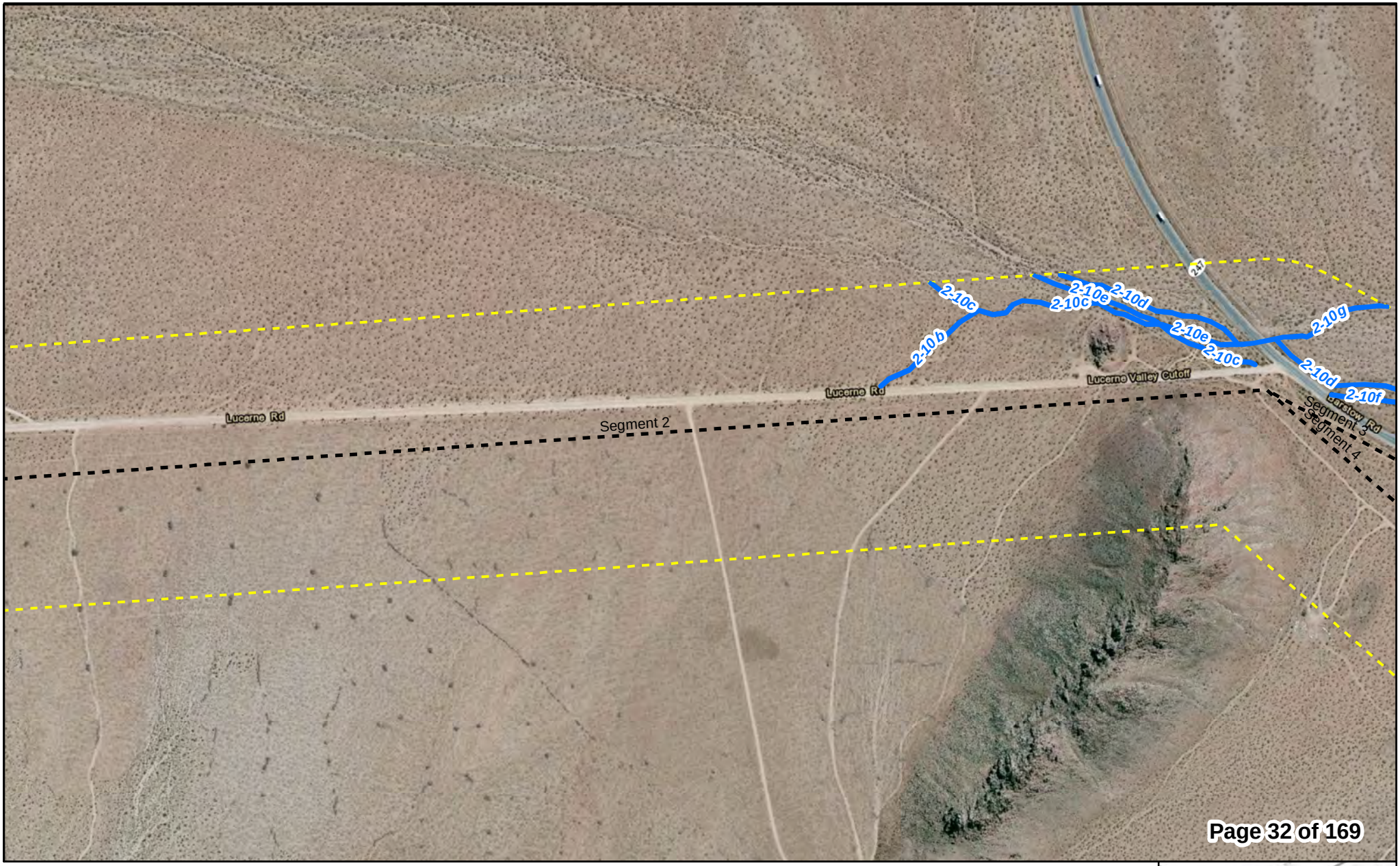

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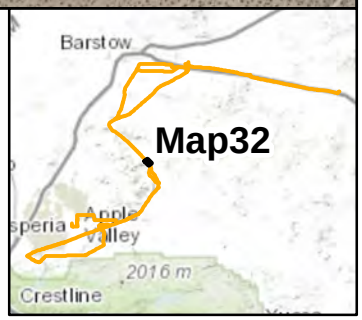

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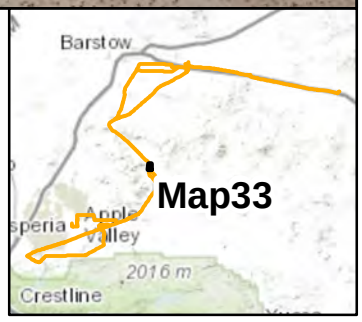

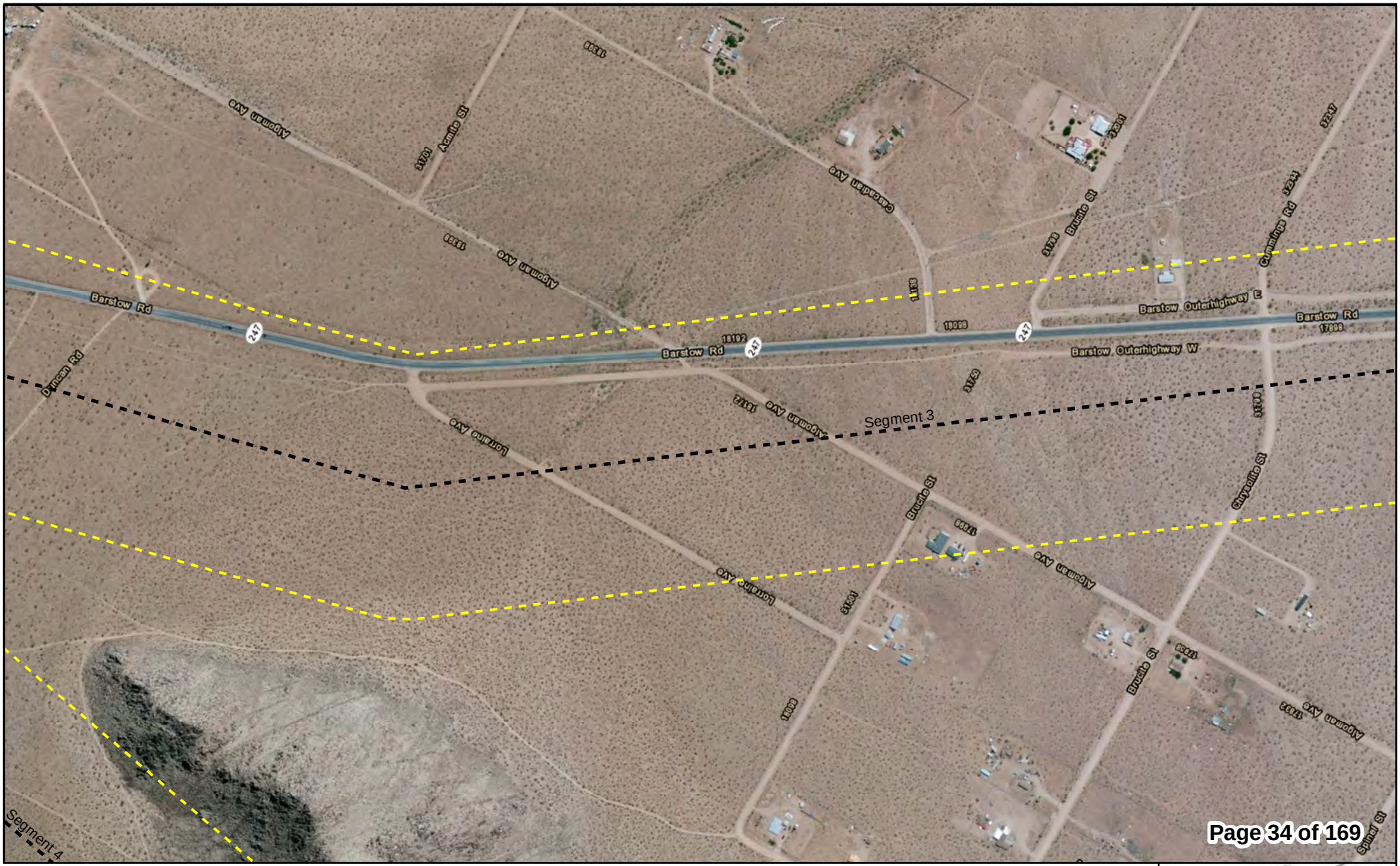

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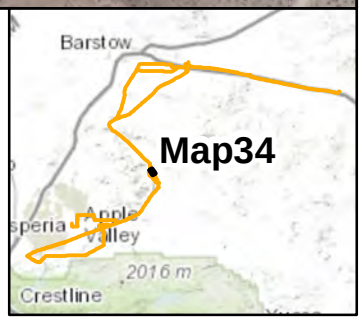

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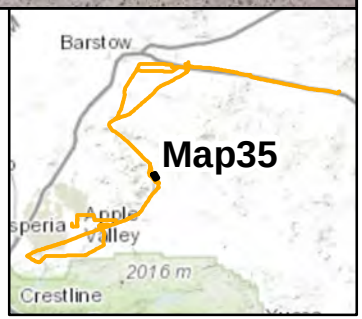

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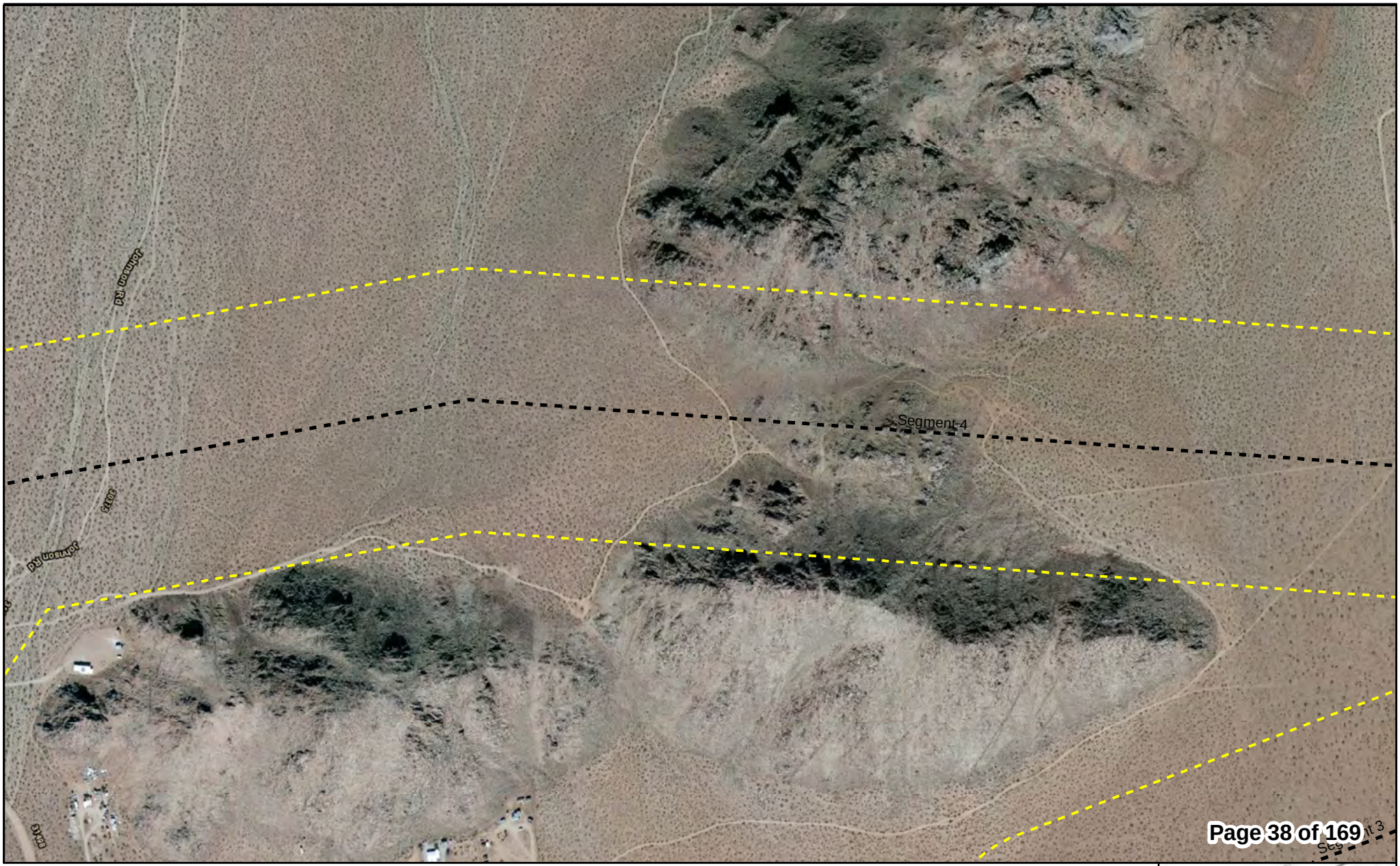

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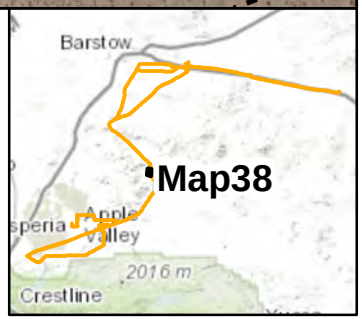

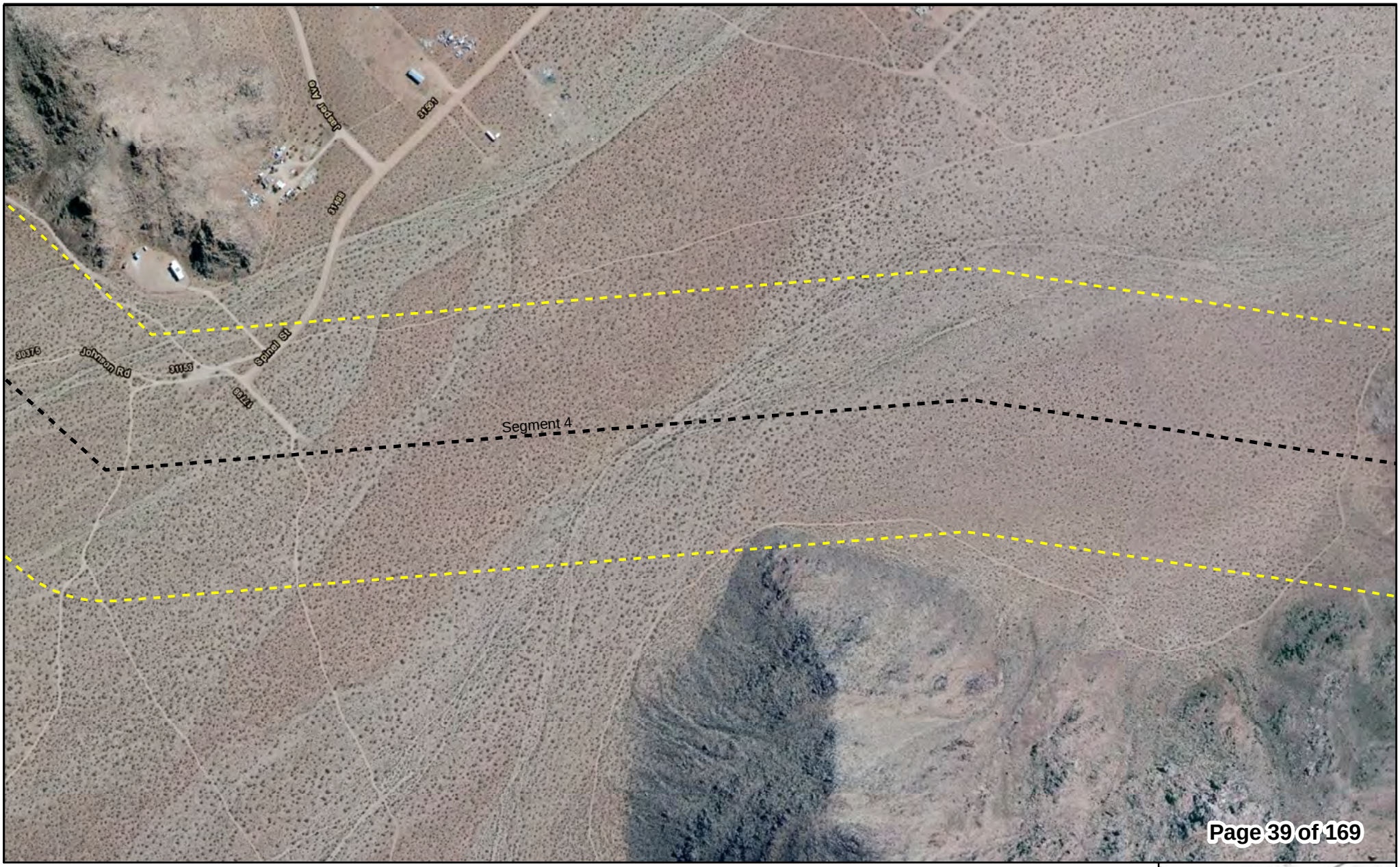

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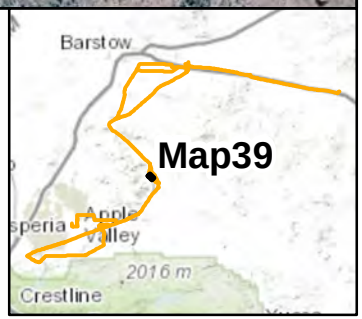

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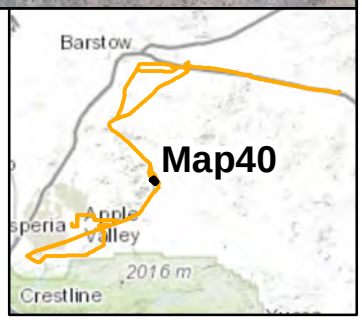
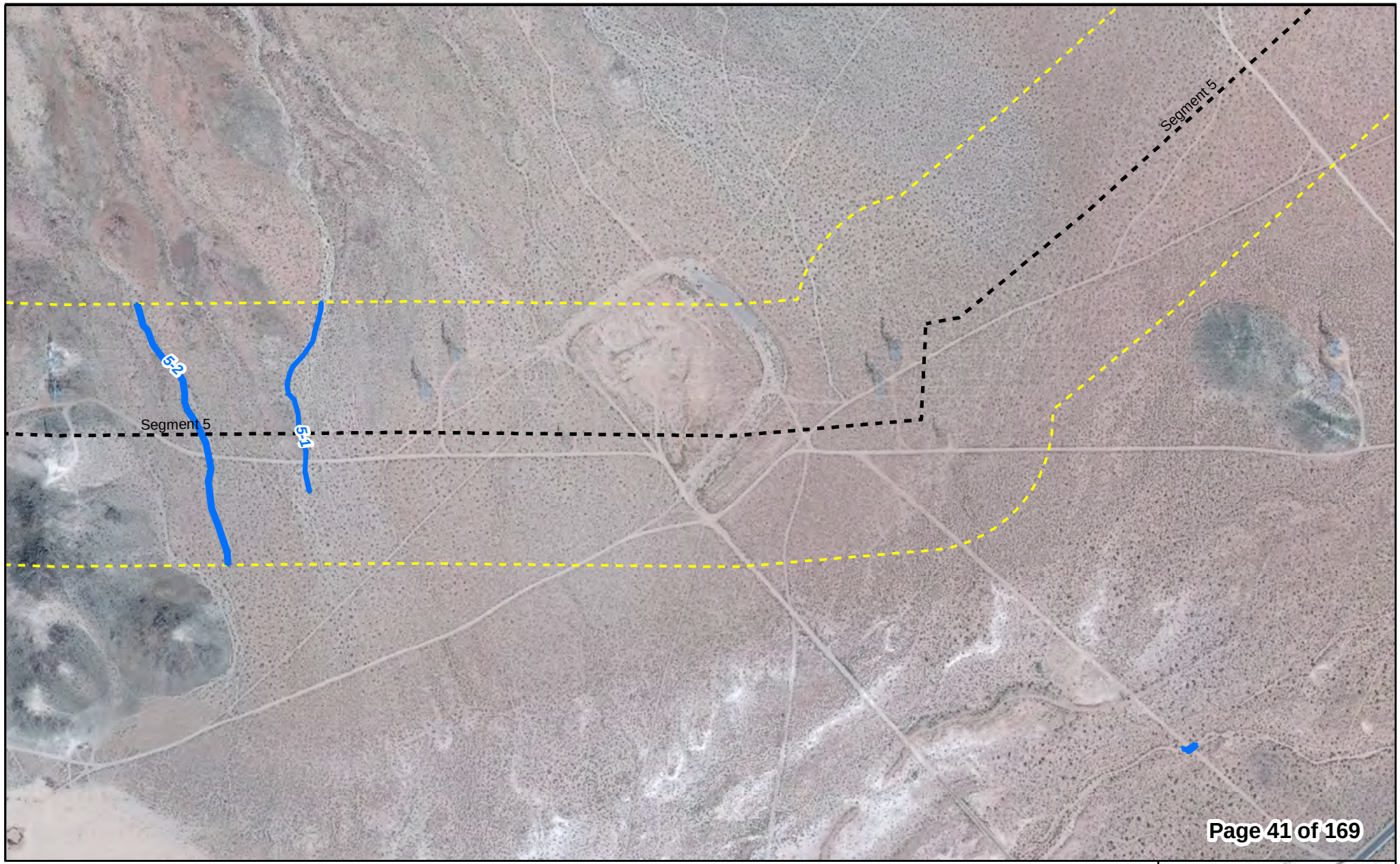




CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

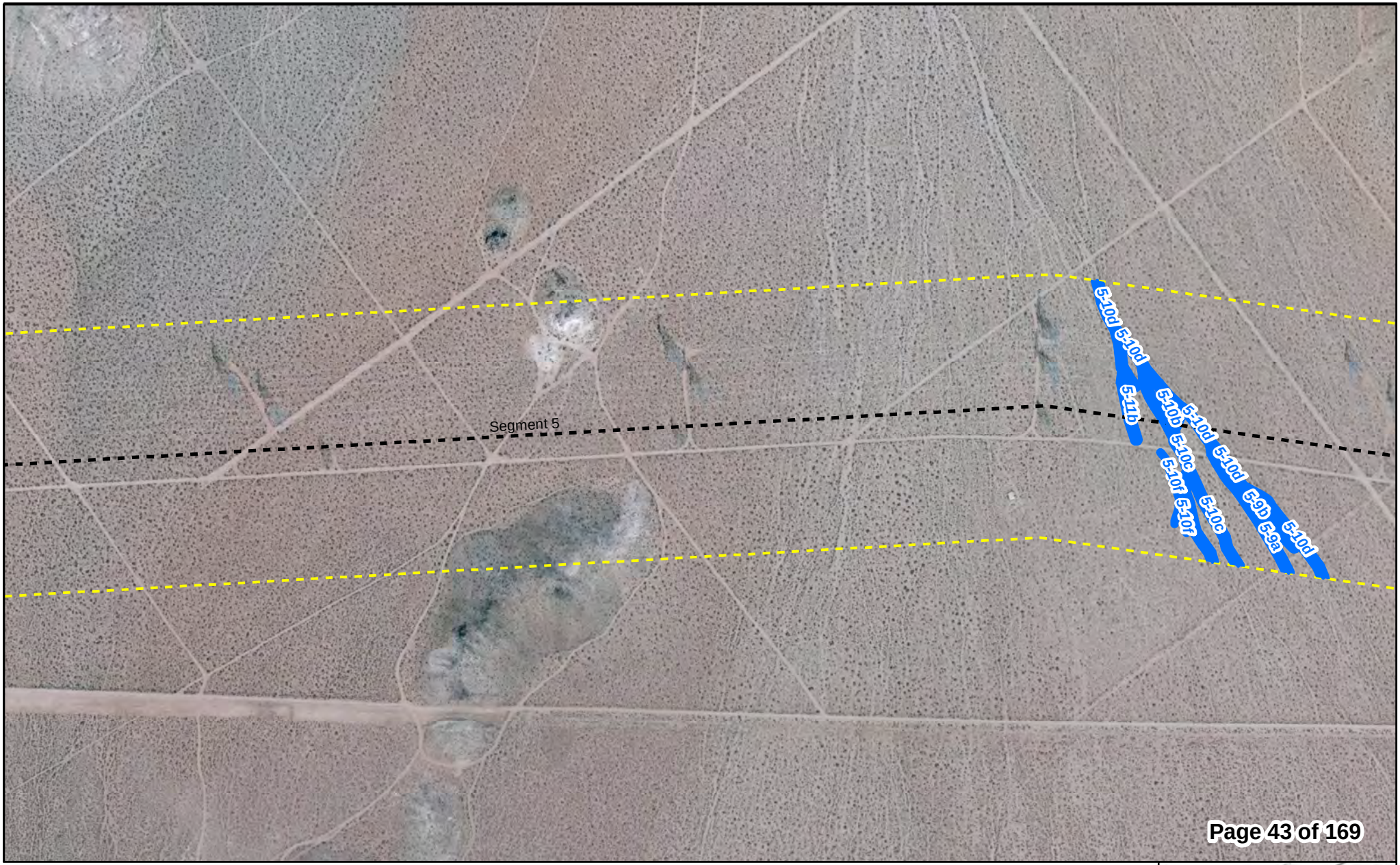
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

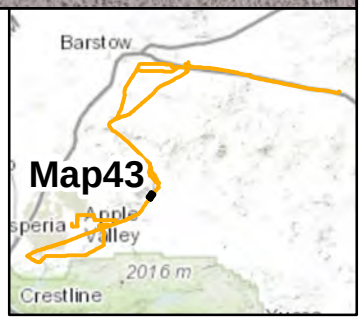
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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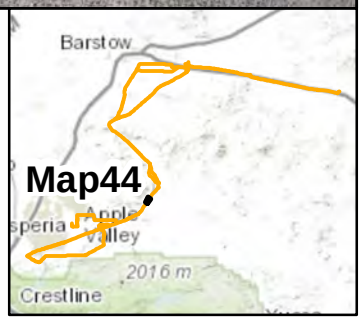
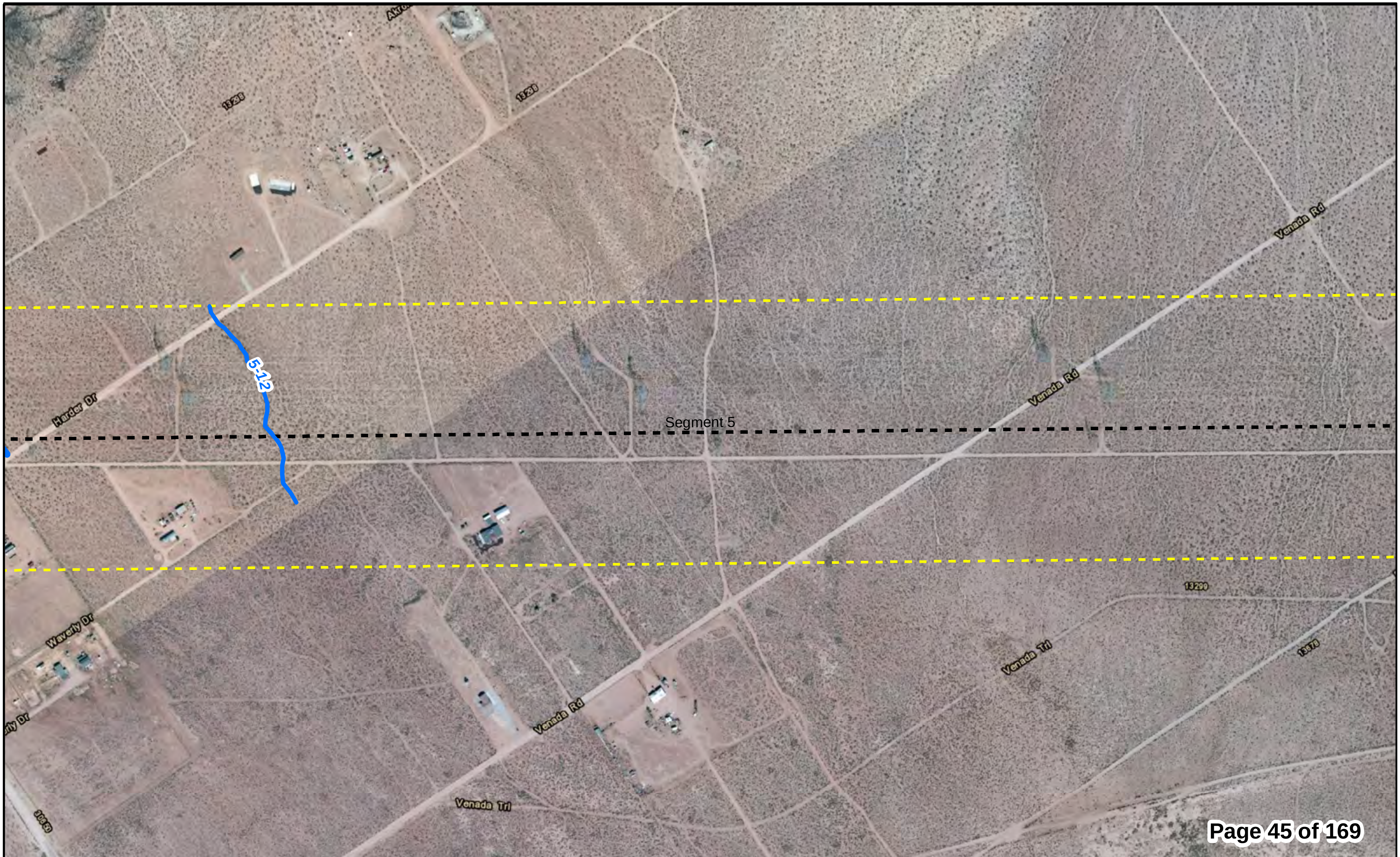


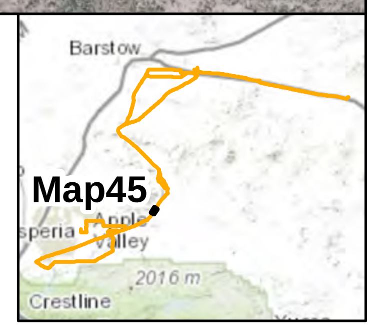


- - - - CWLTP Proposed Transmission Lines
—— Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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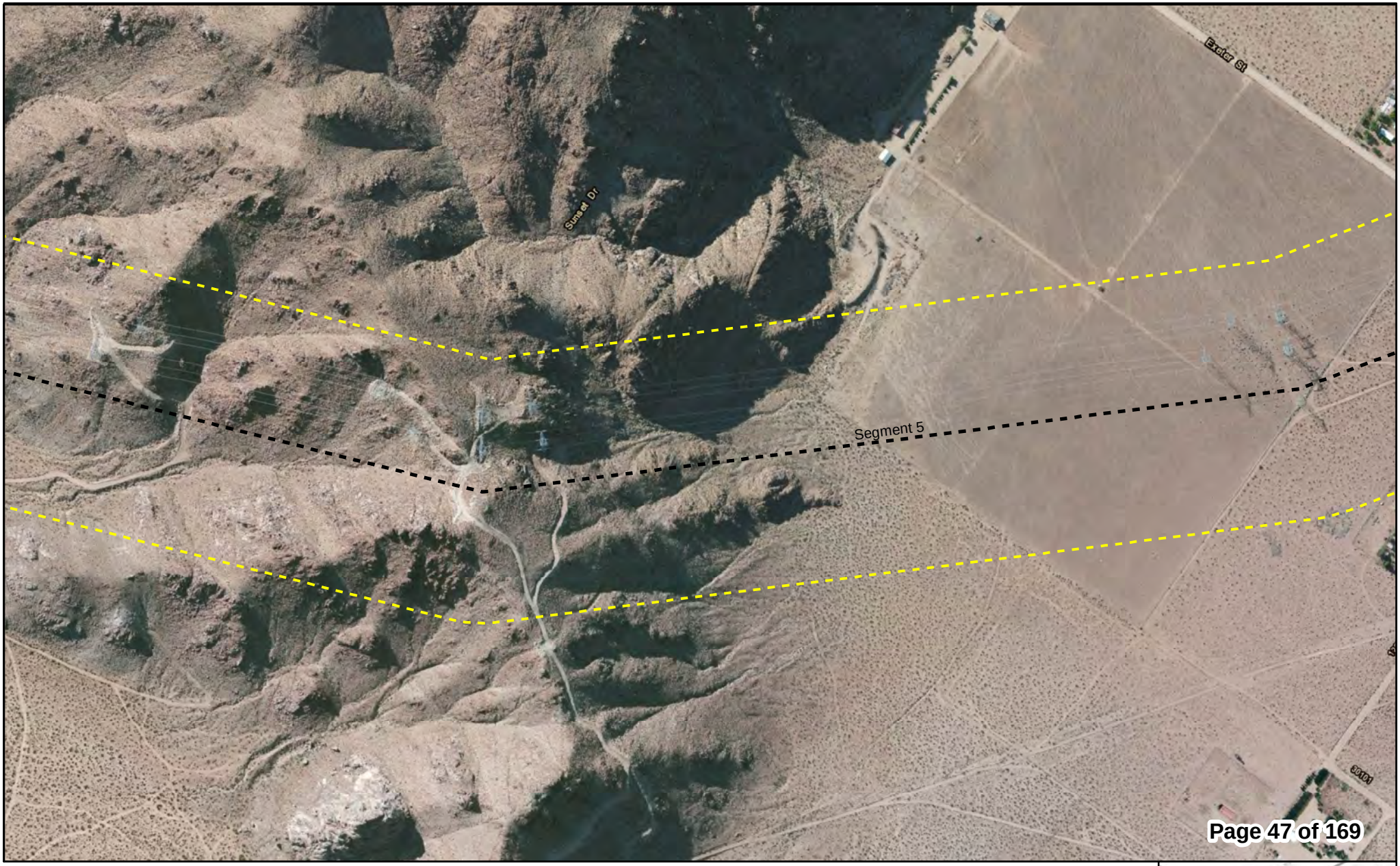

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

N

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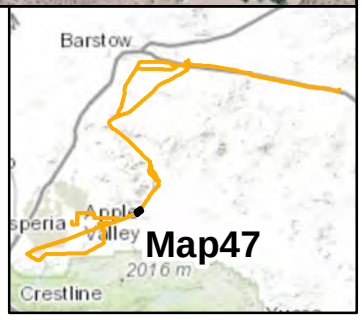
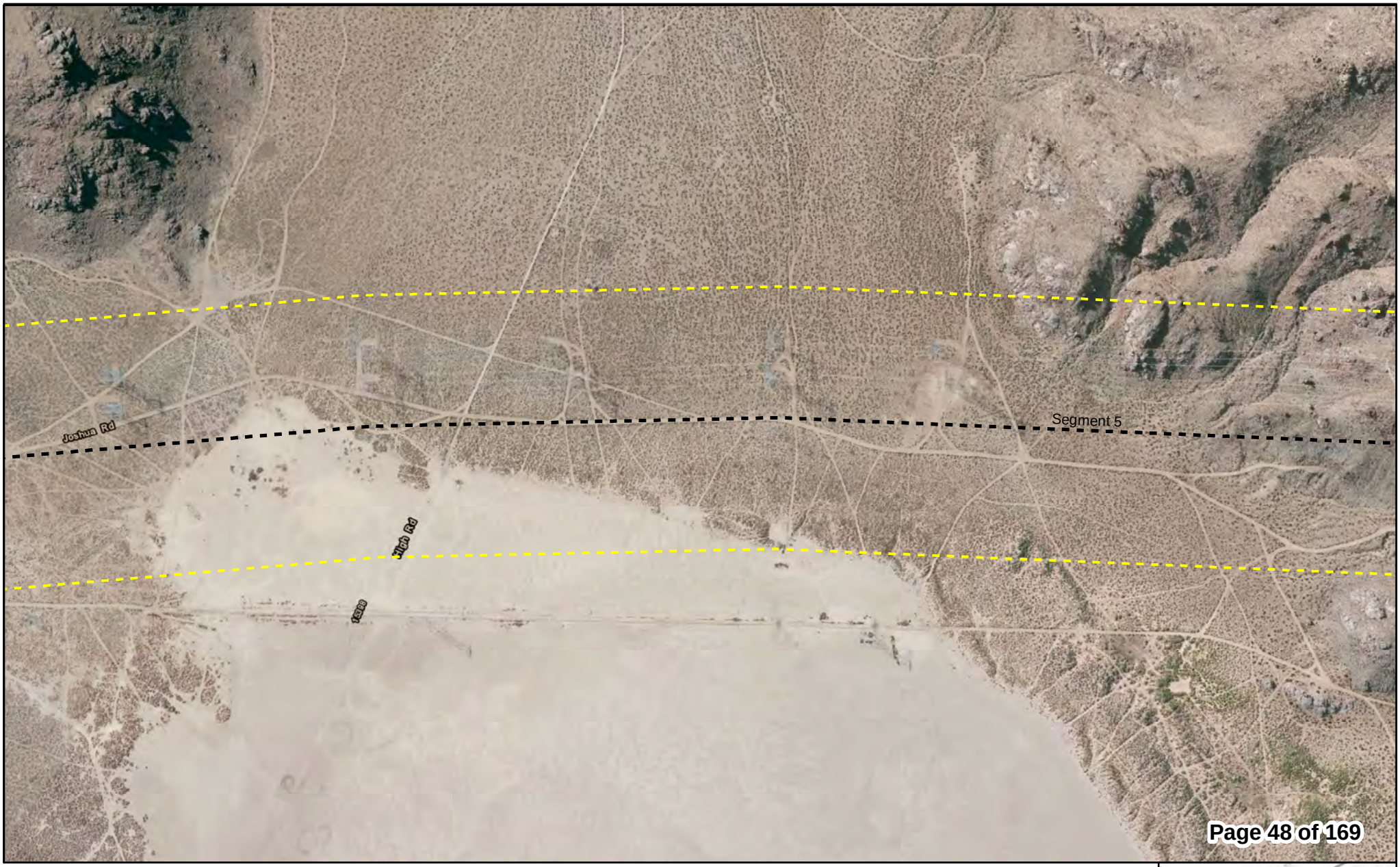




CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

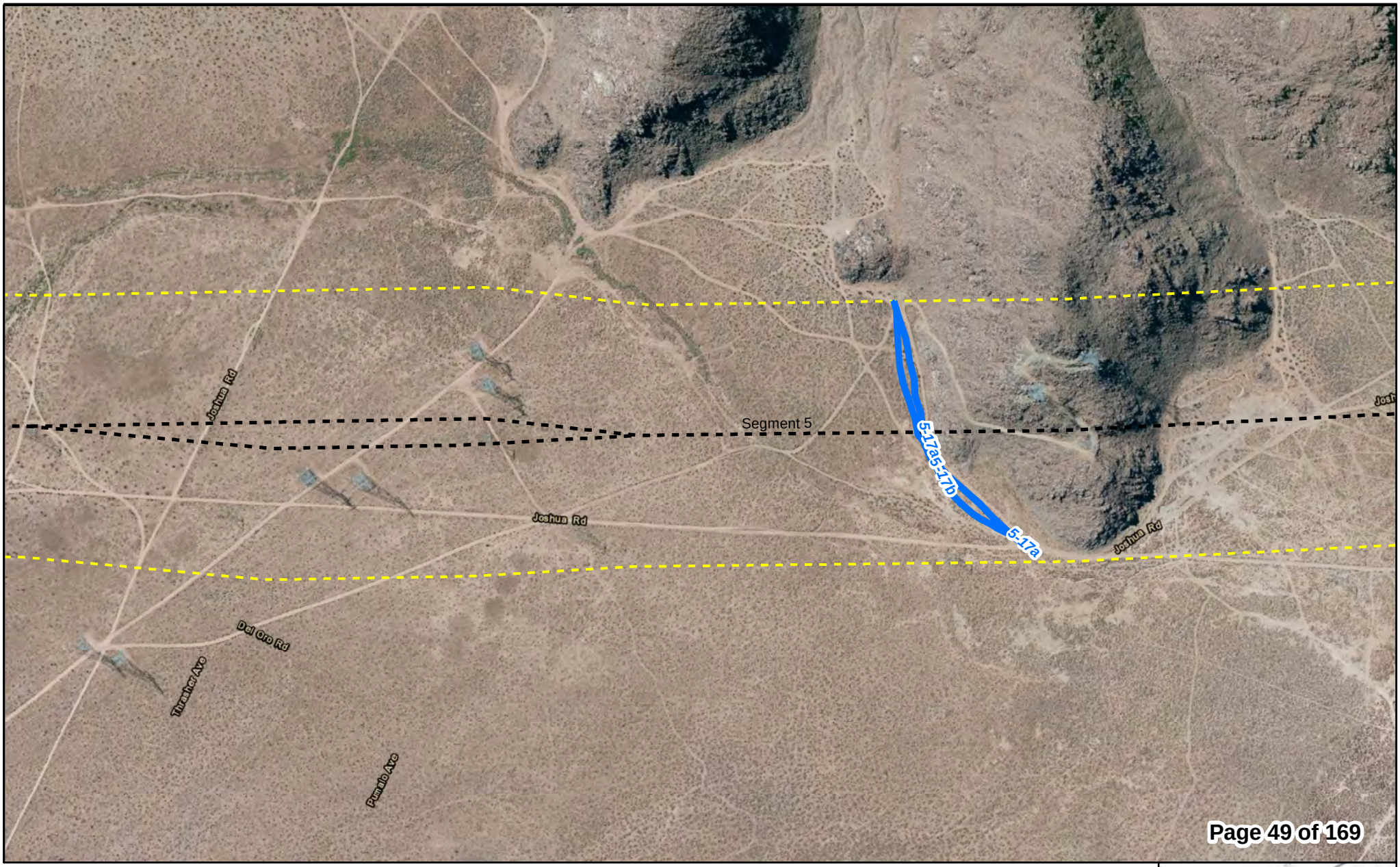
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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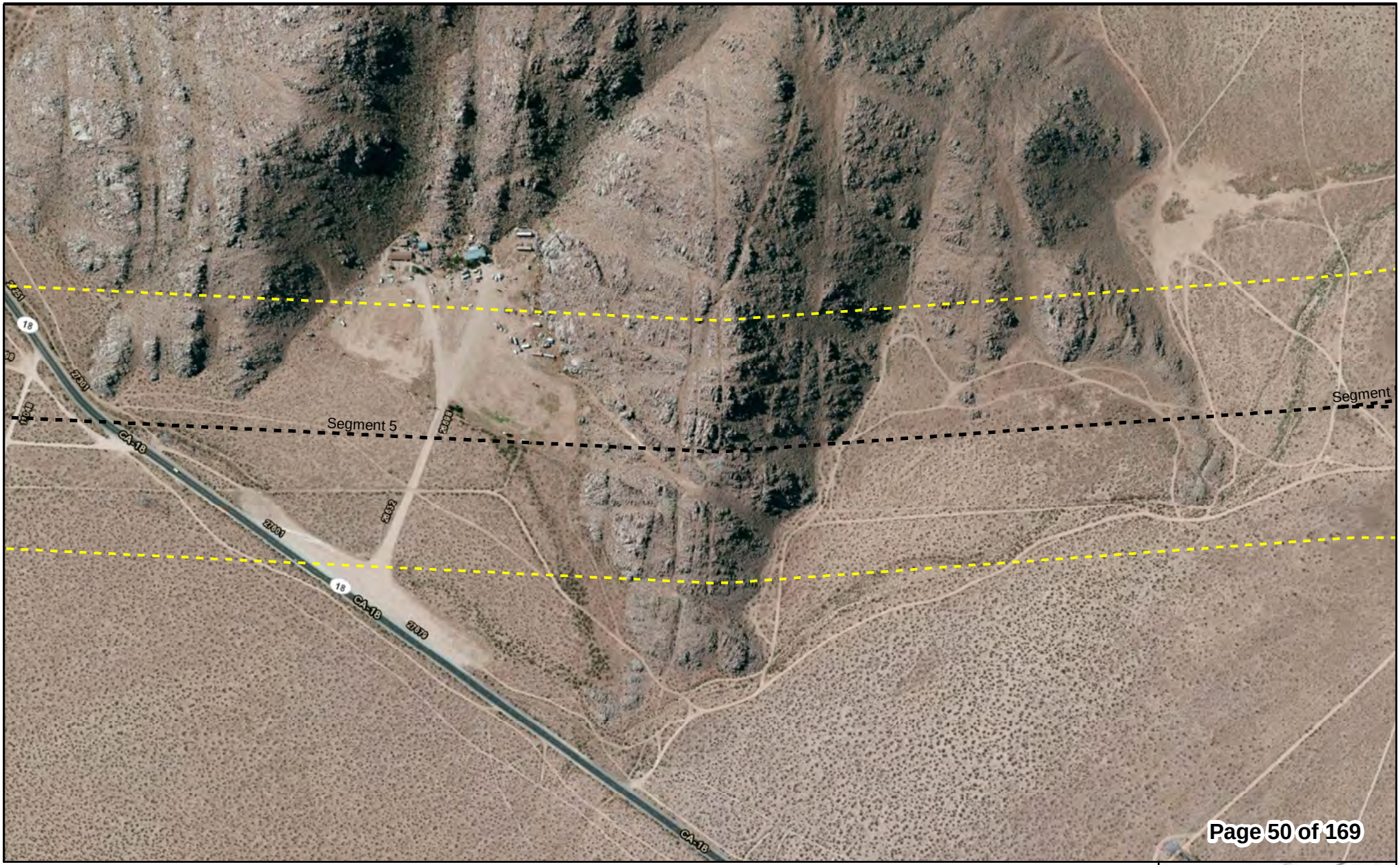

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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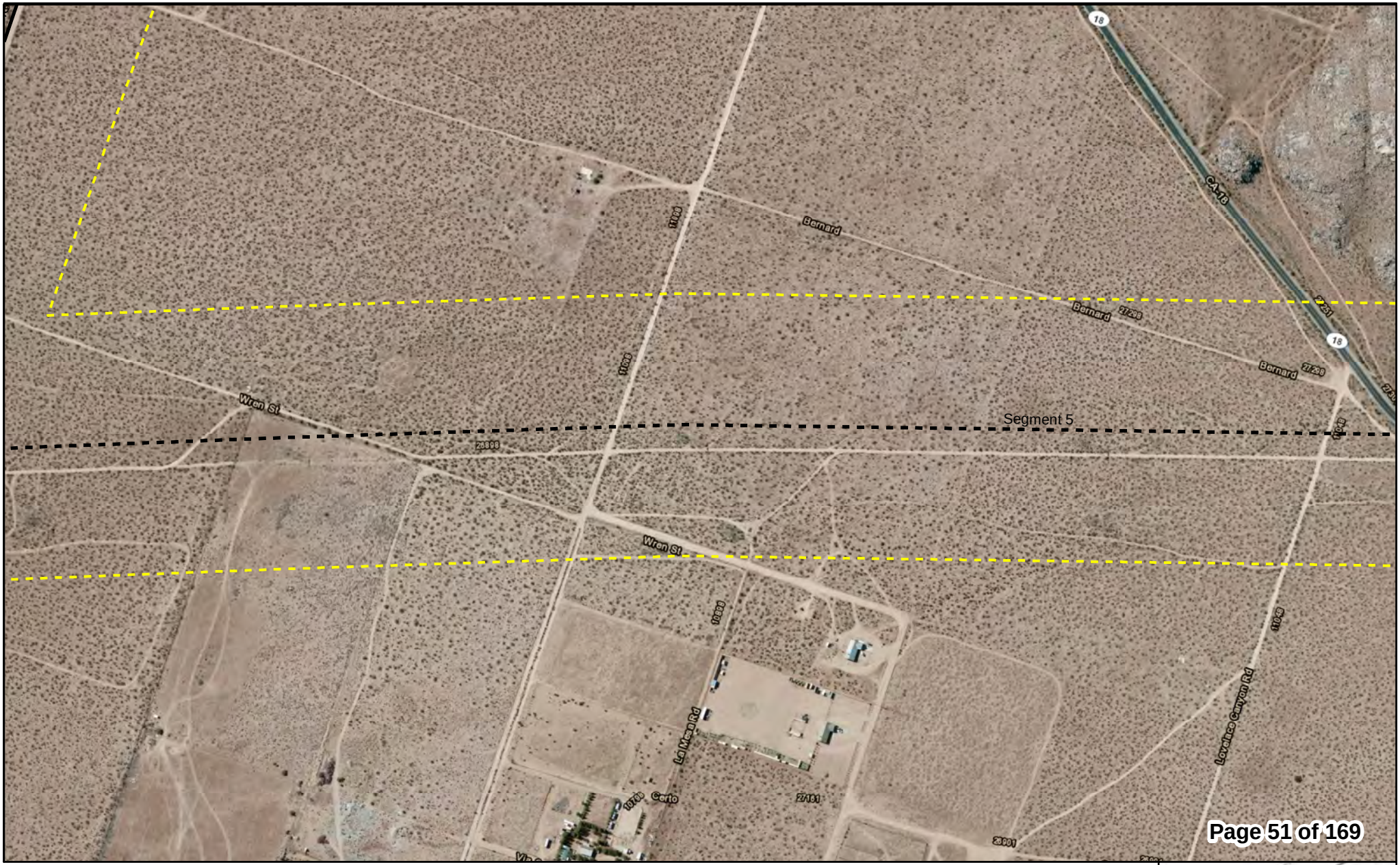

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

N

0 255 510 1,020 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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0 255 510 1,020 Feet

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Waters of the U.S. and State Waters
Waters Survey Identification Number

N

0 265 530 1,060 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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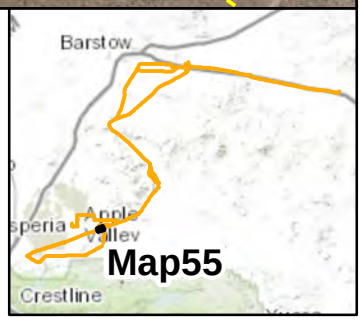

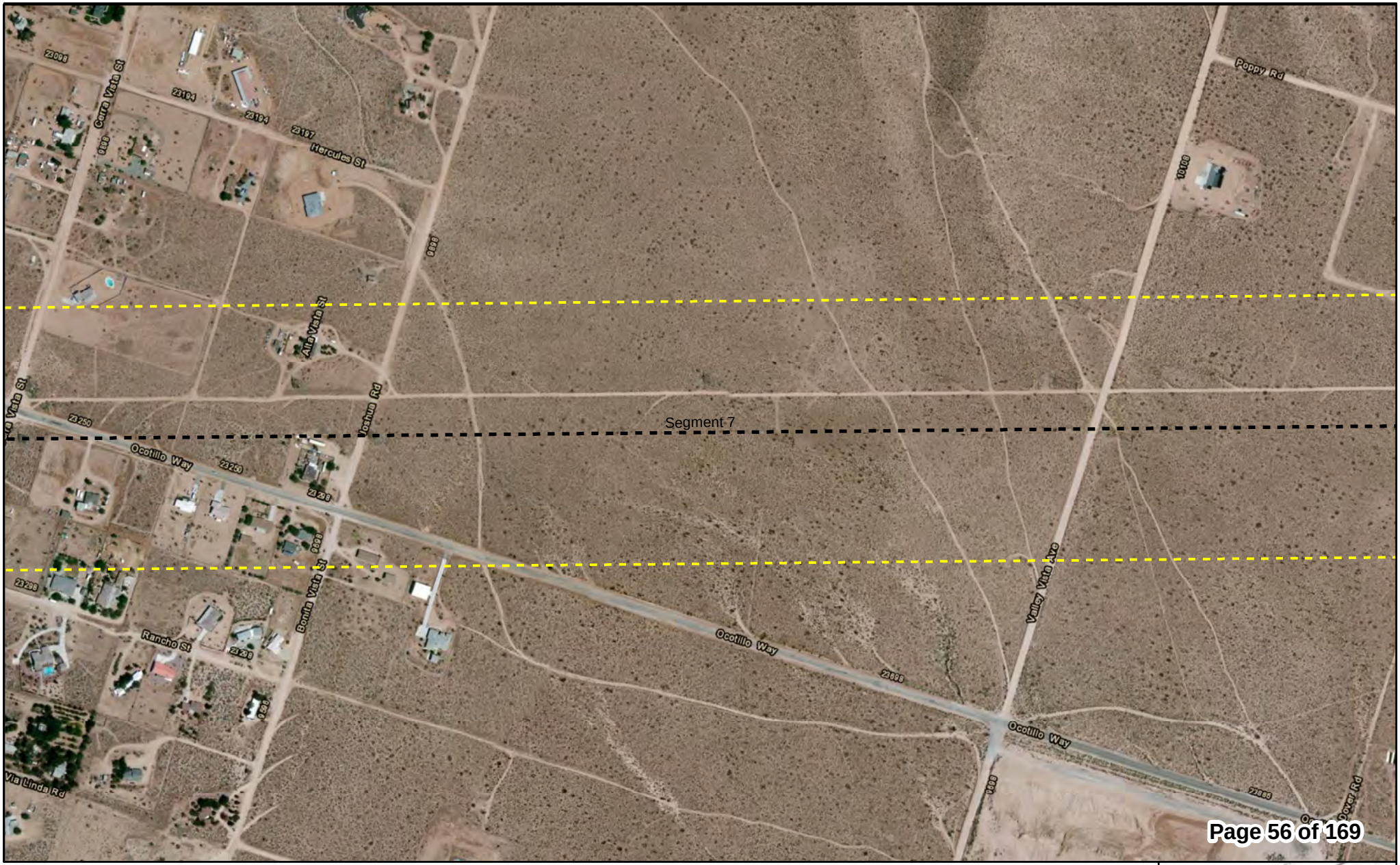

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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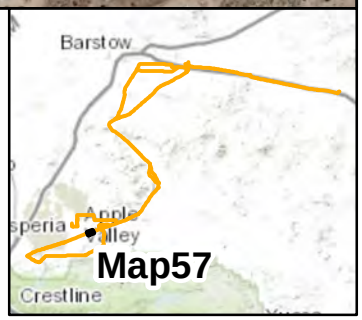

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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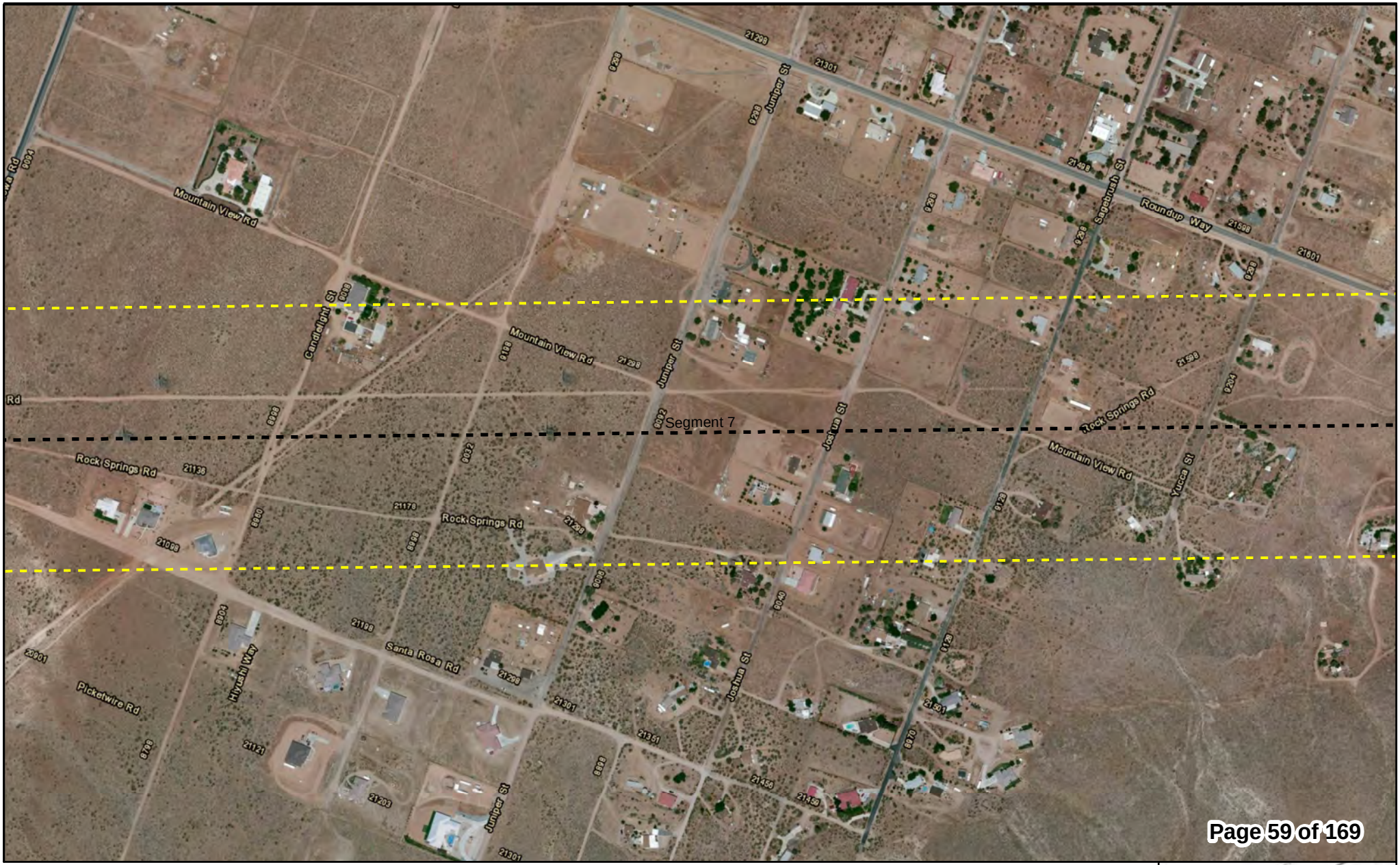
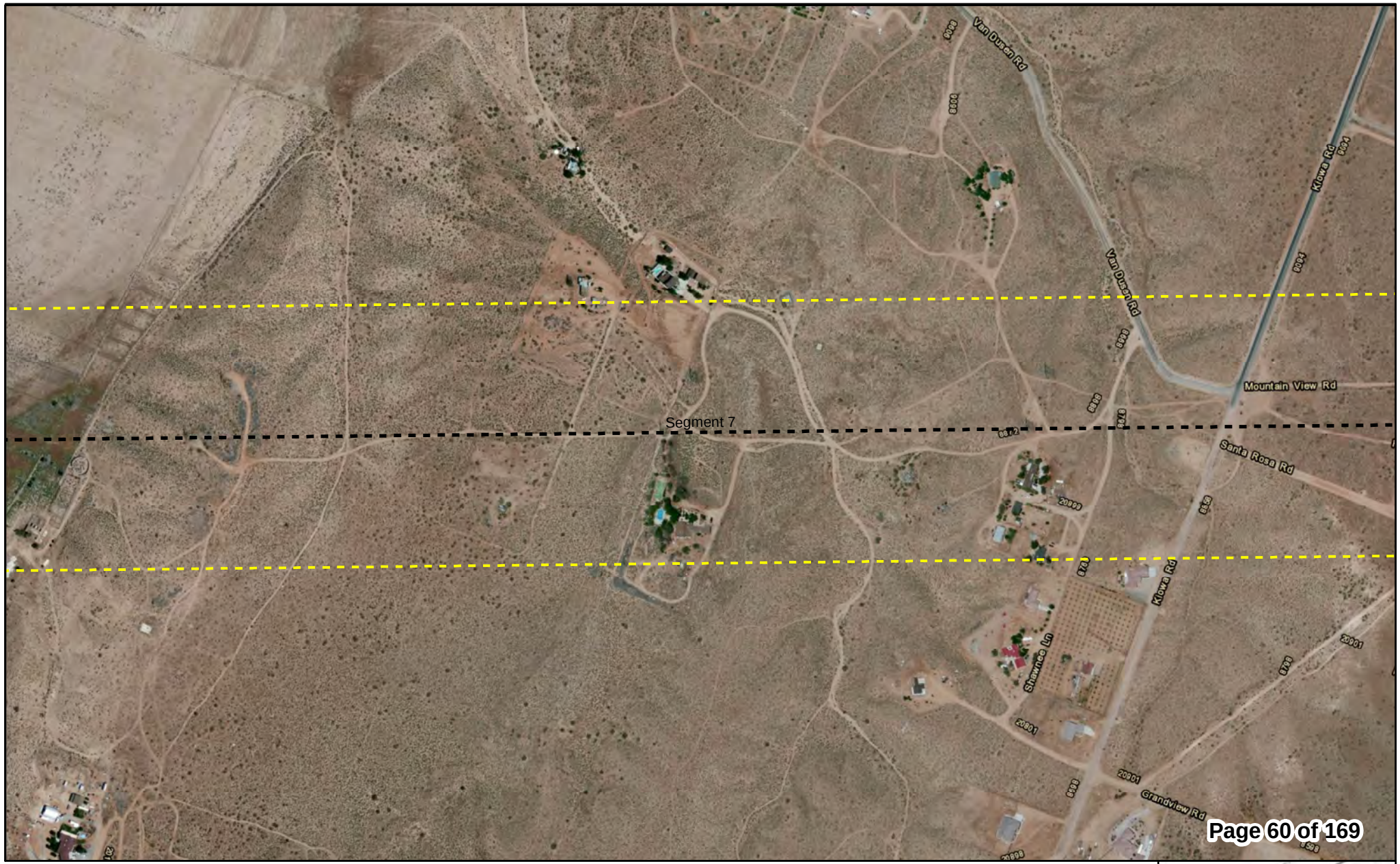


- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation
- Waters of the U.S. and State Waters
  Waters Survey Identification Number

N

0 255 510 1,020 Feet



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- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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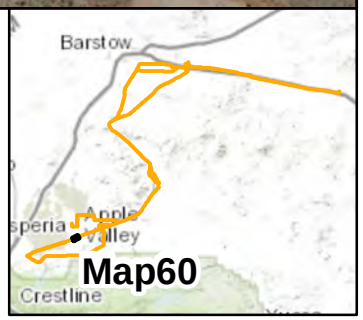

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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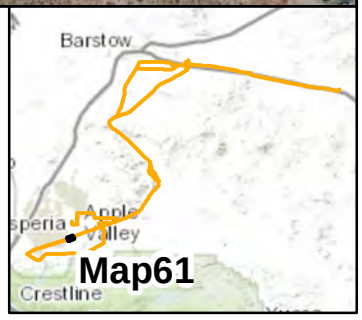

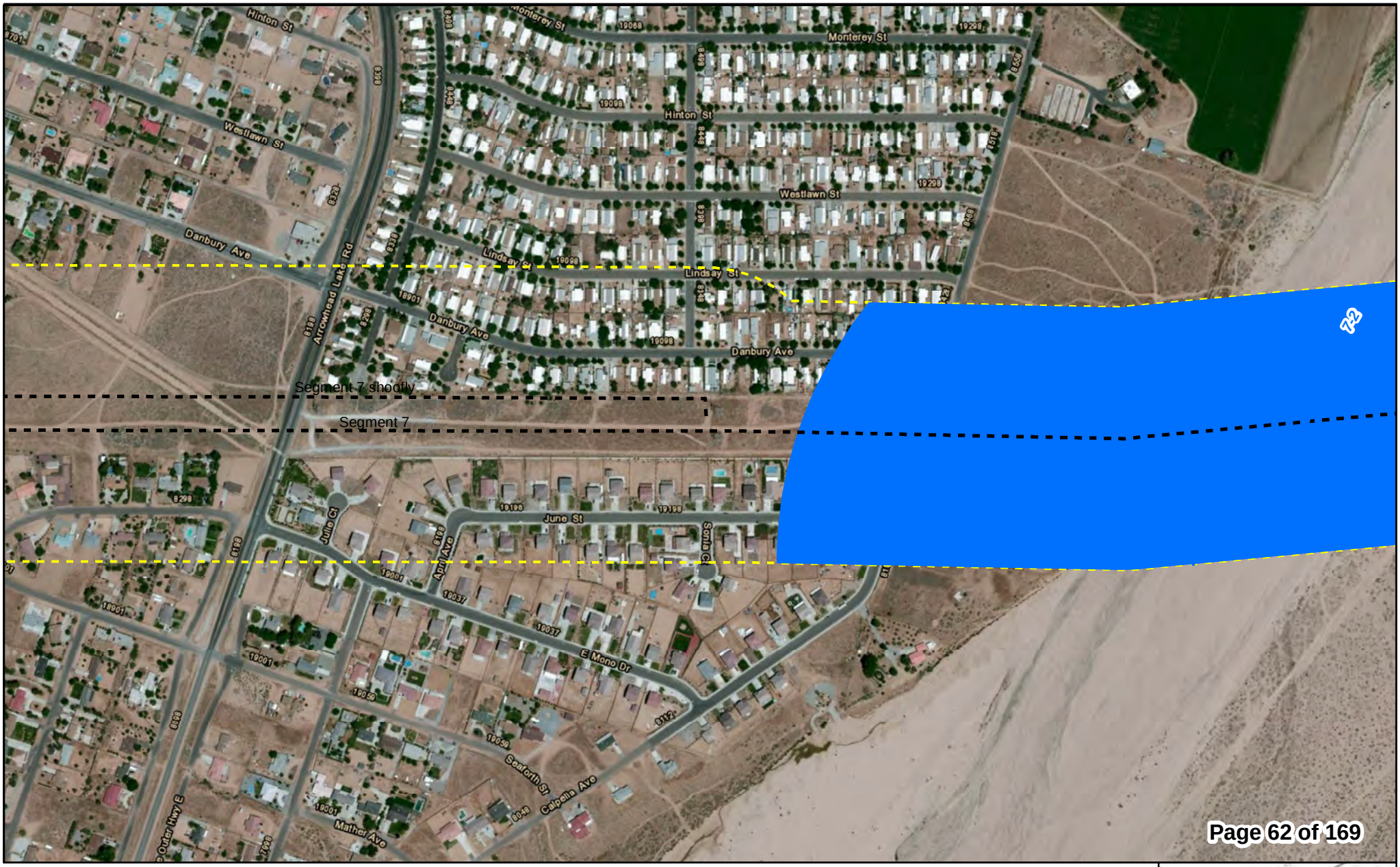

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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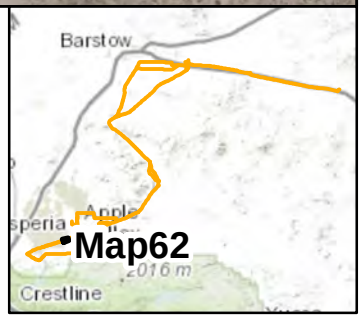

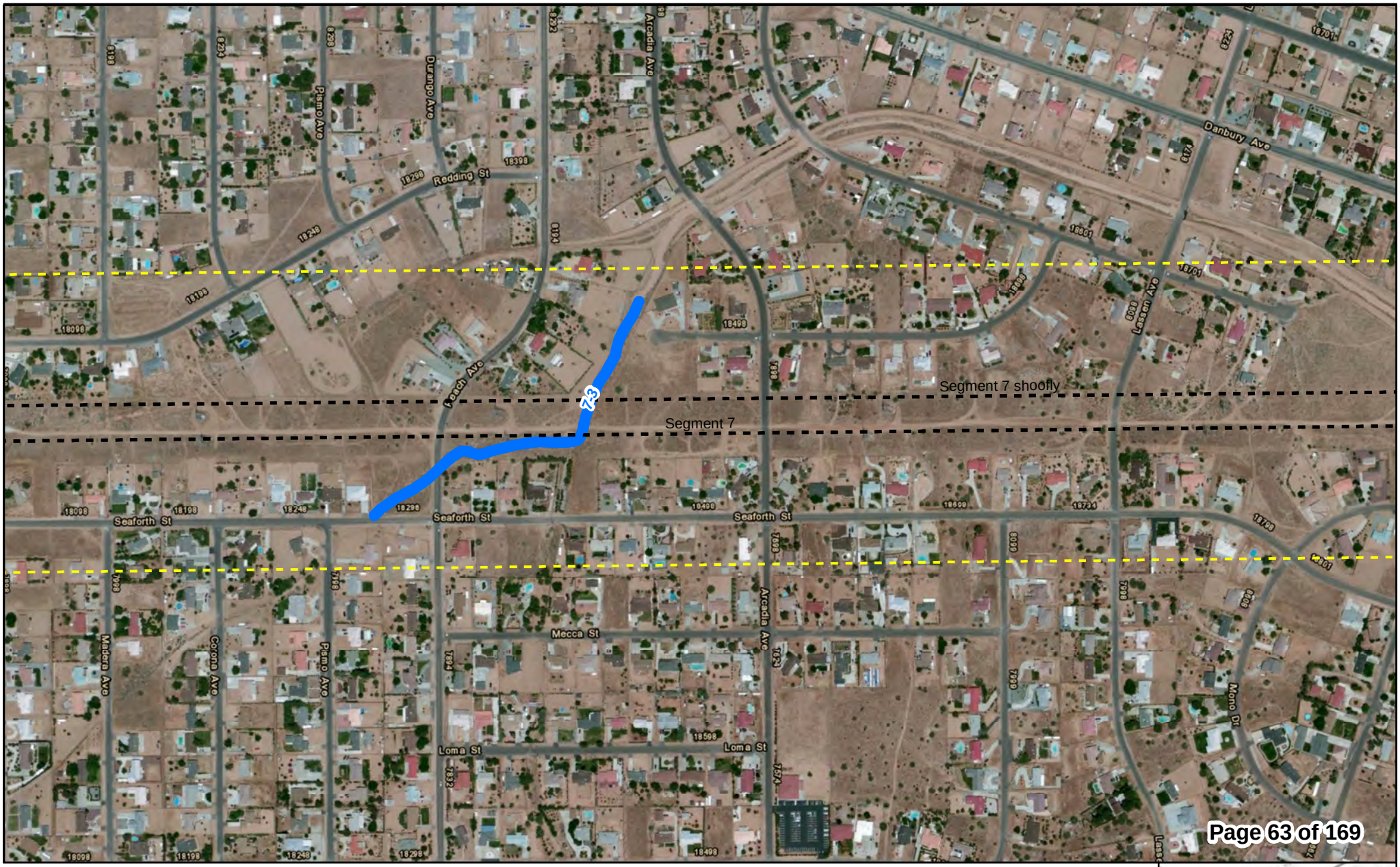

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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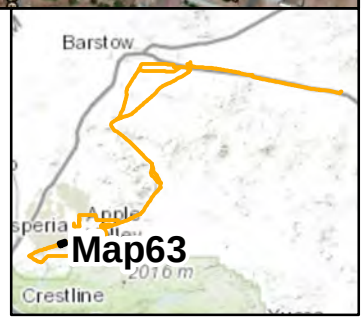

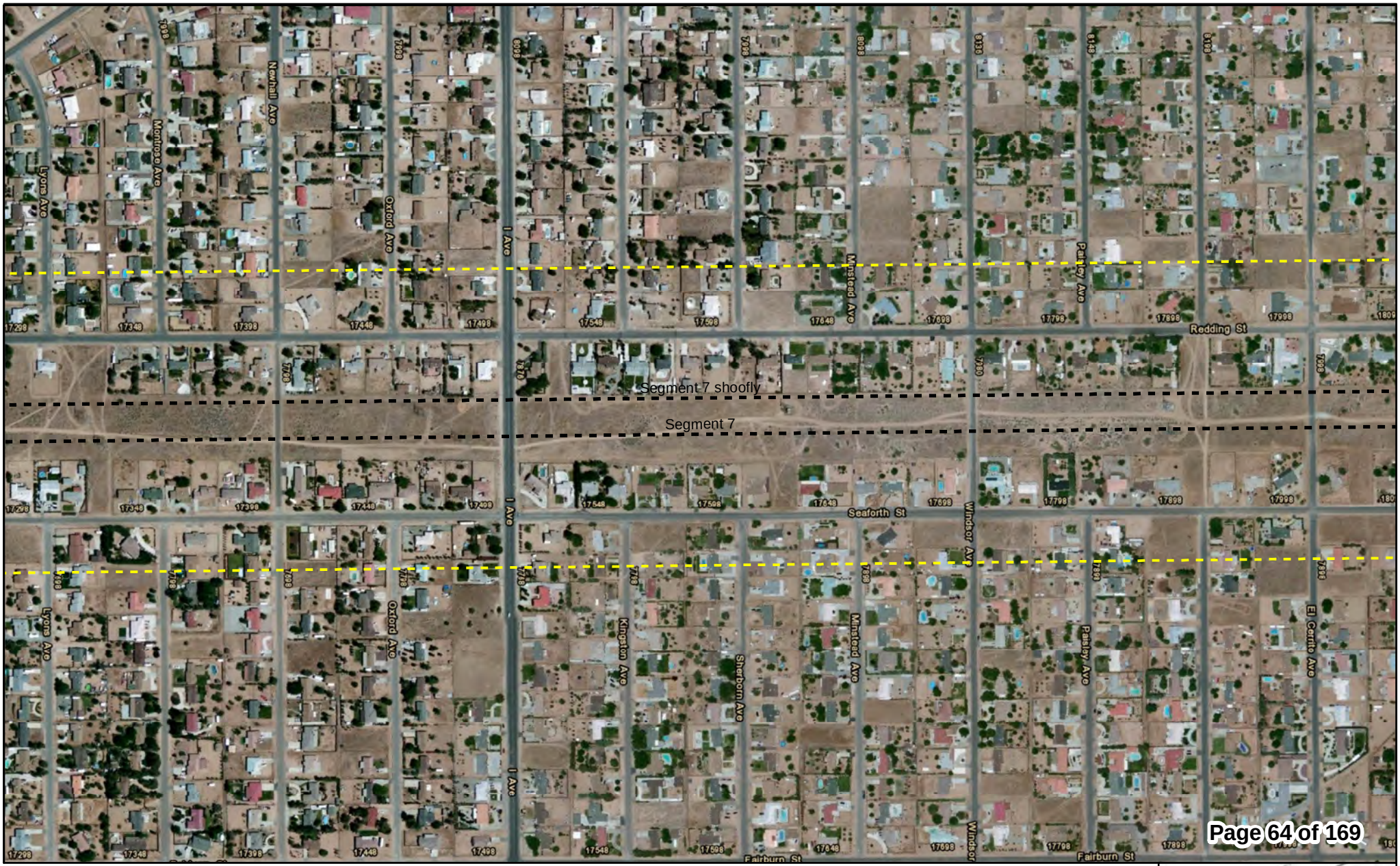

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
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- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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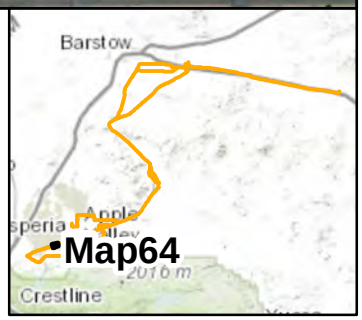

- CWLTP Proposed Transmission Lines
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- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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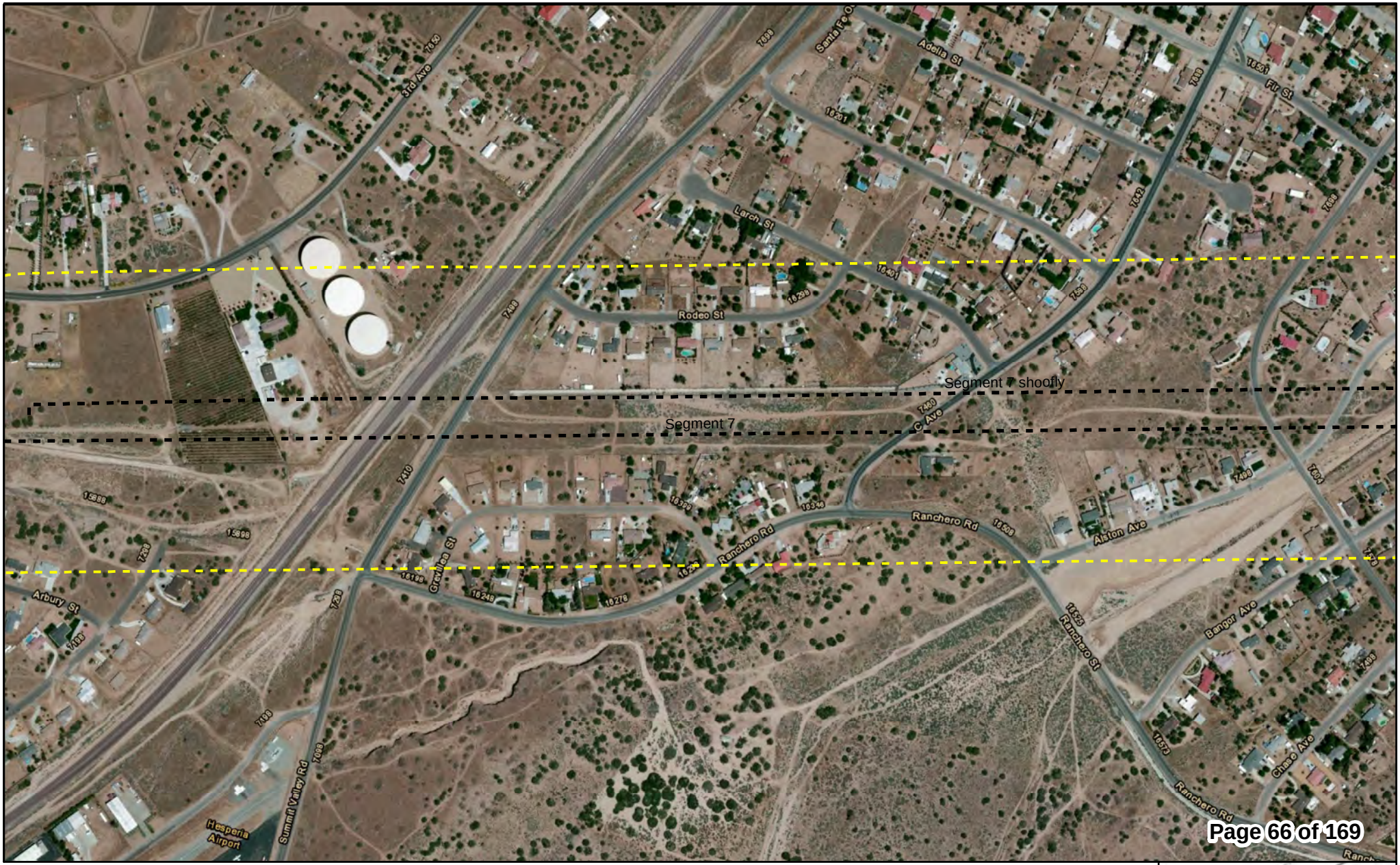

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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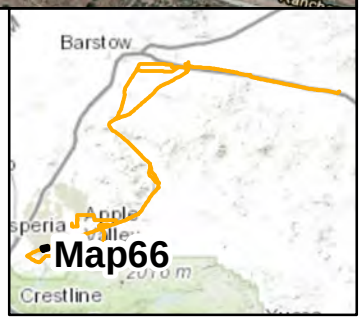

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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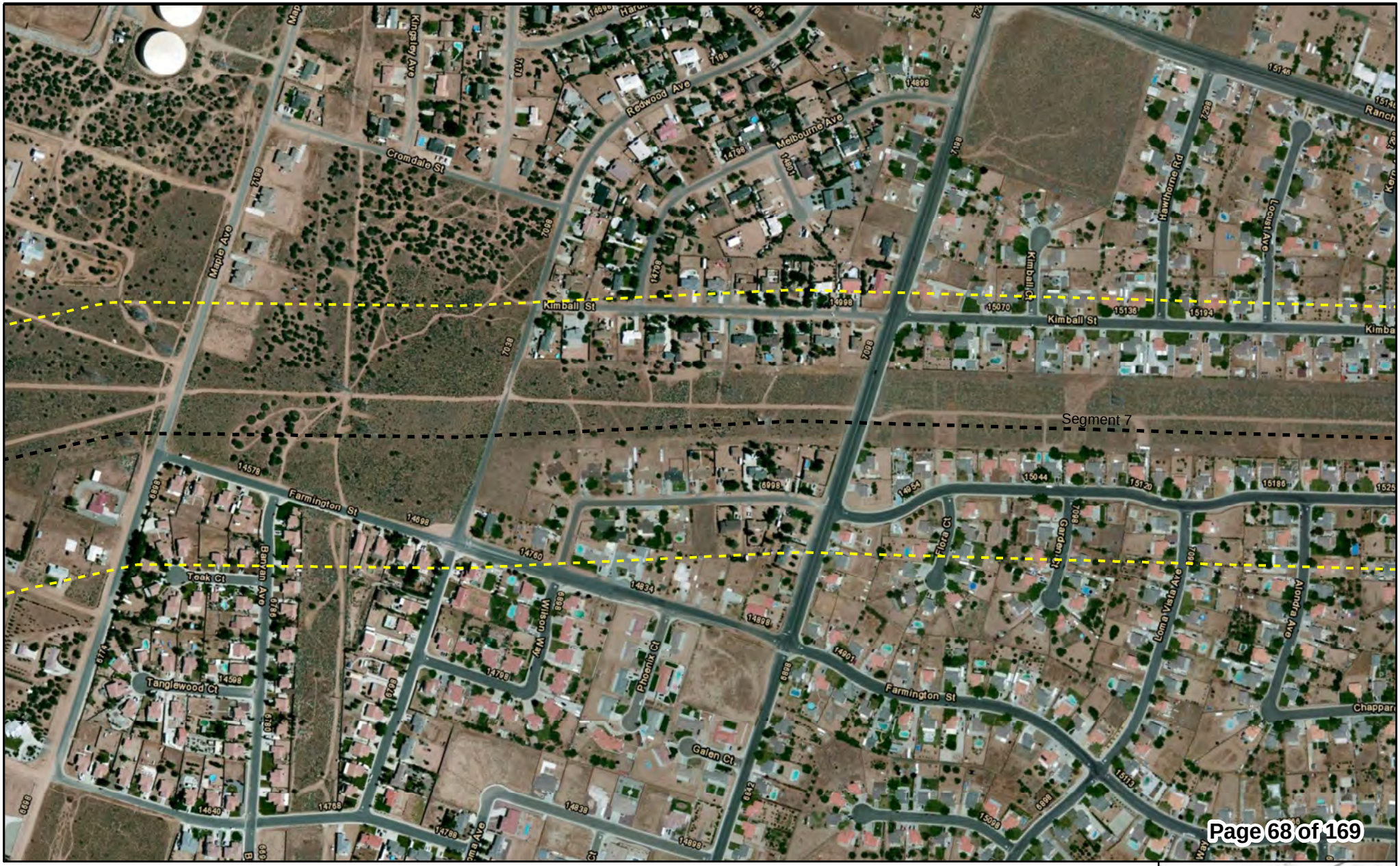

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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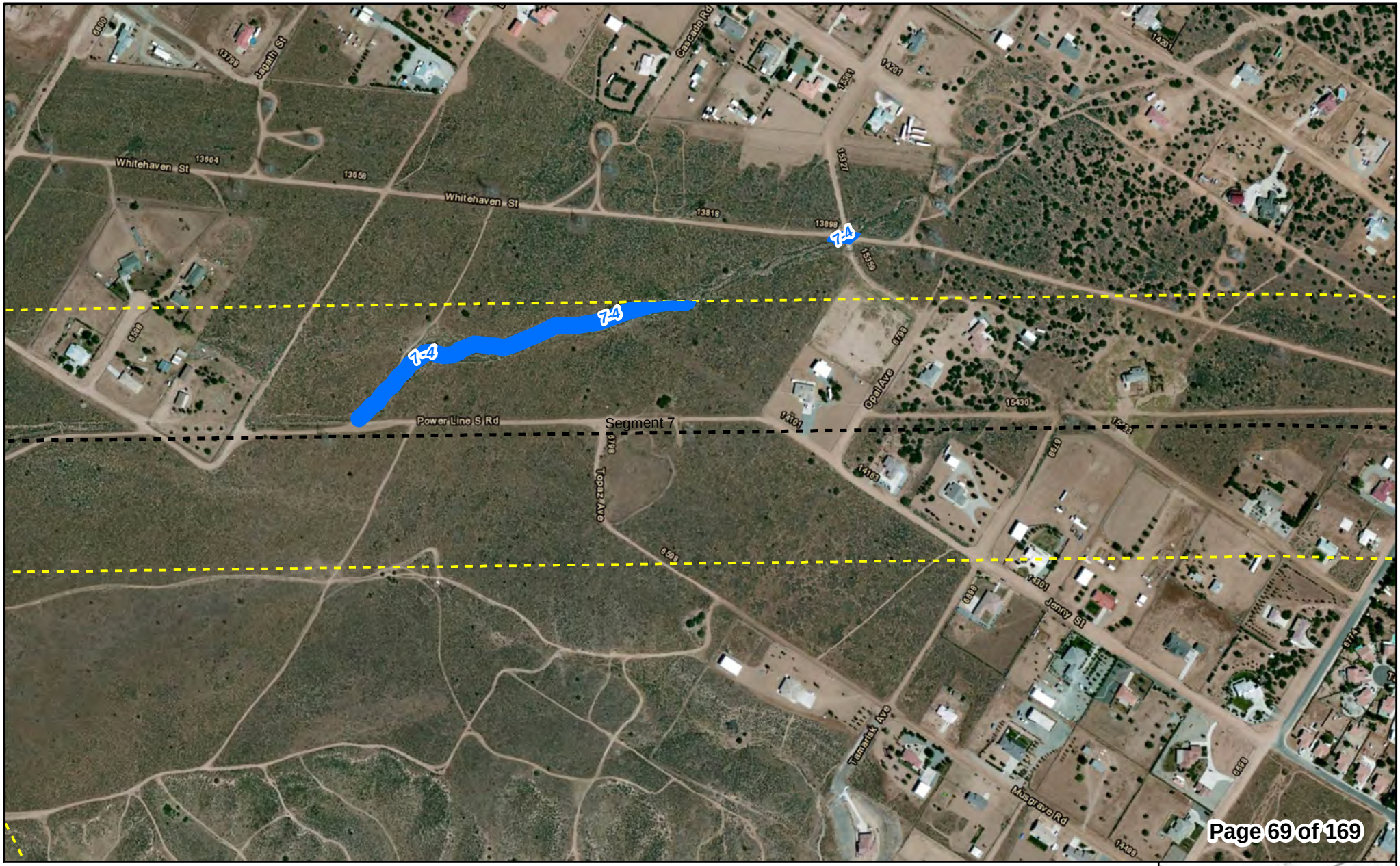

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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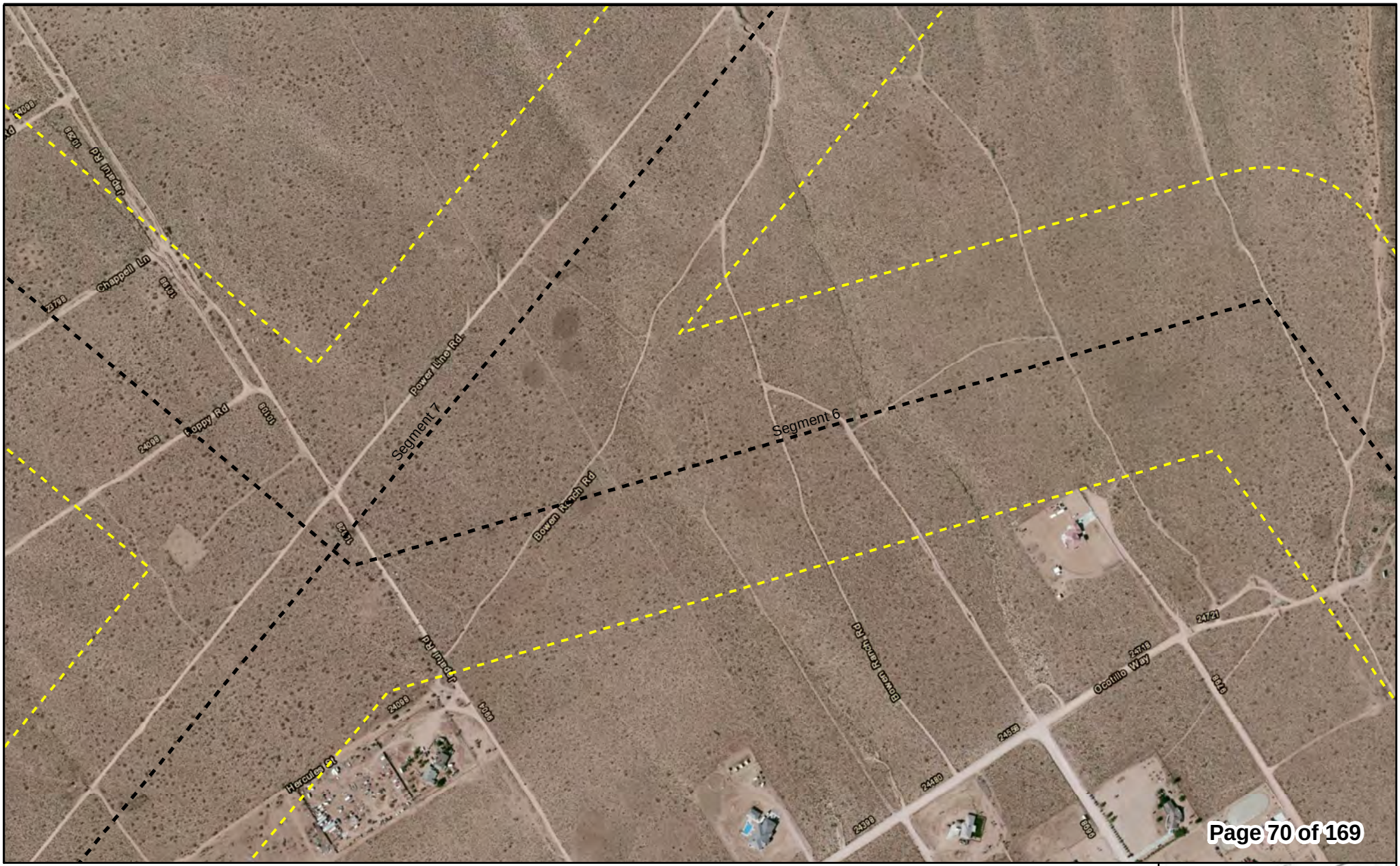

CWLTP Proposed Transmission Lines

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Waters of the U.S. and State Waters

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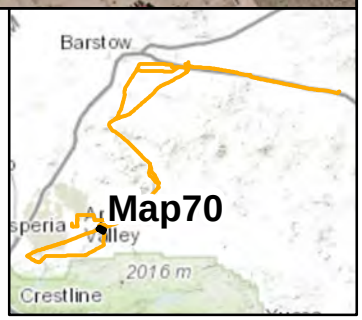

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Waters of the U.S. and State Waters

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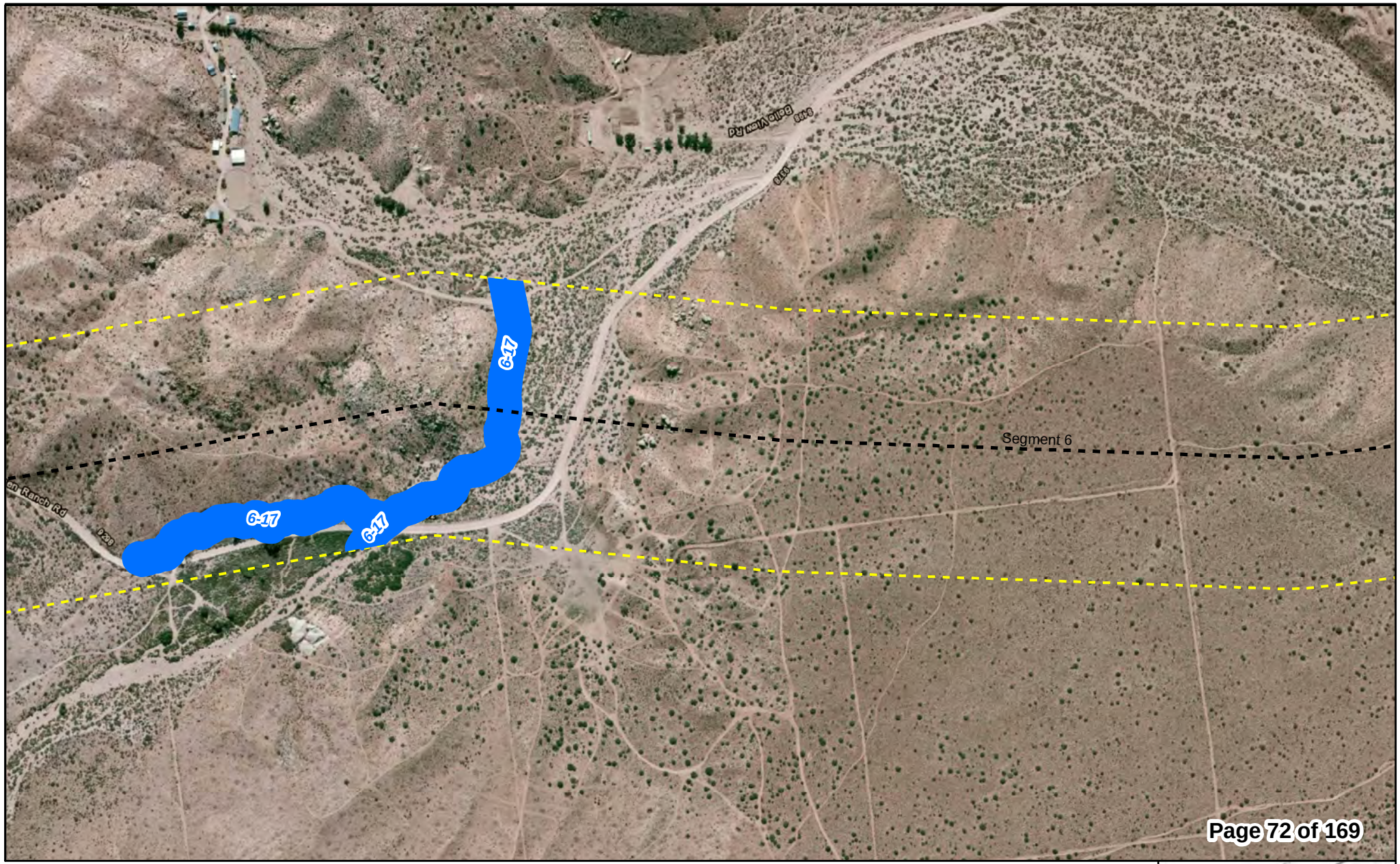

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
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- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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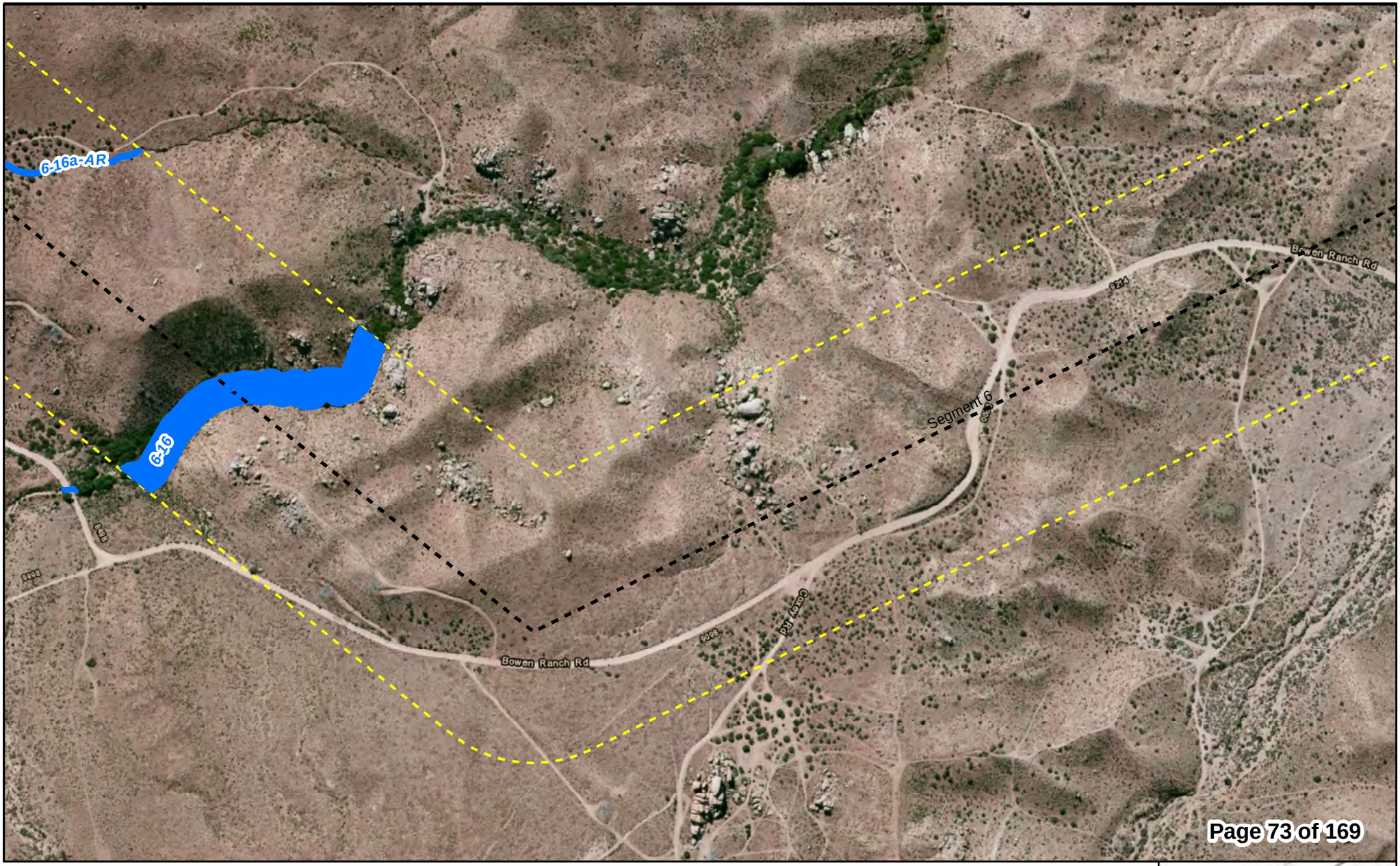

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Waters of the U.S. and State Waters

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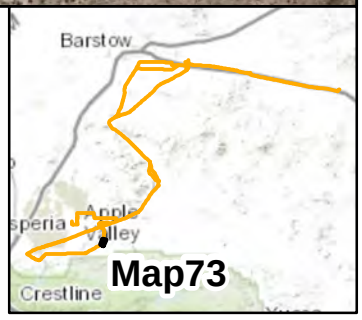

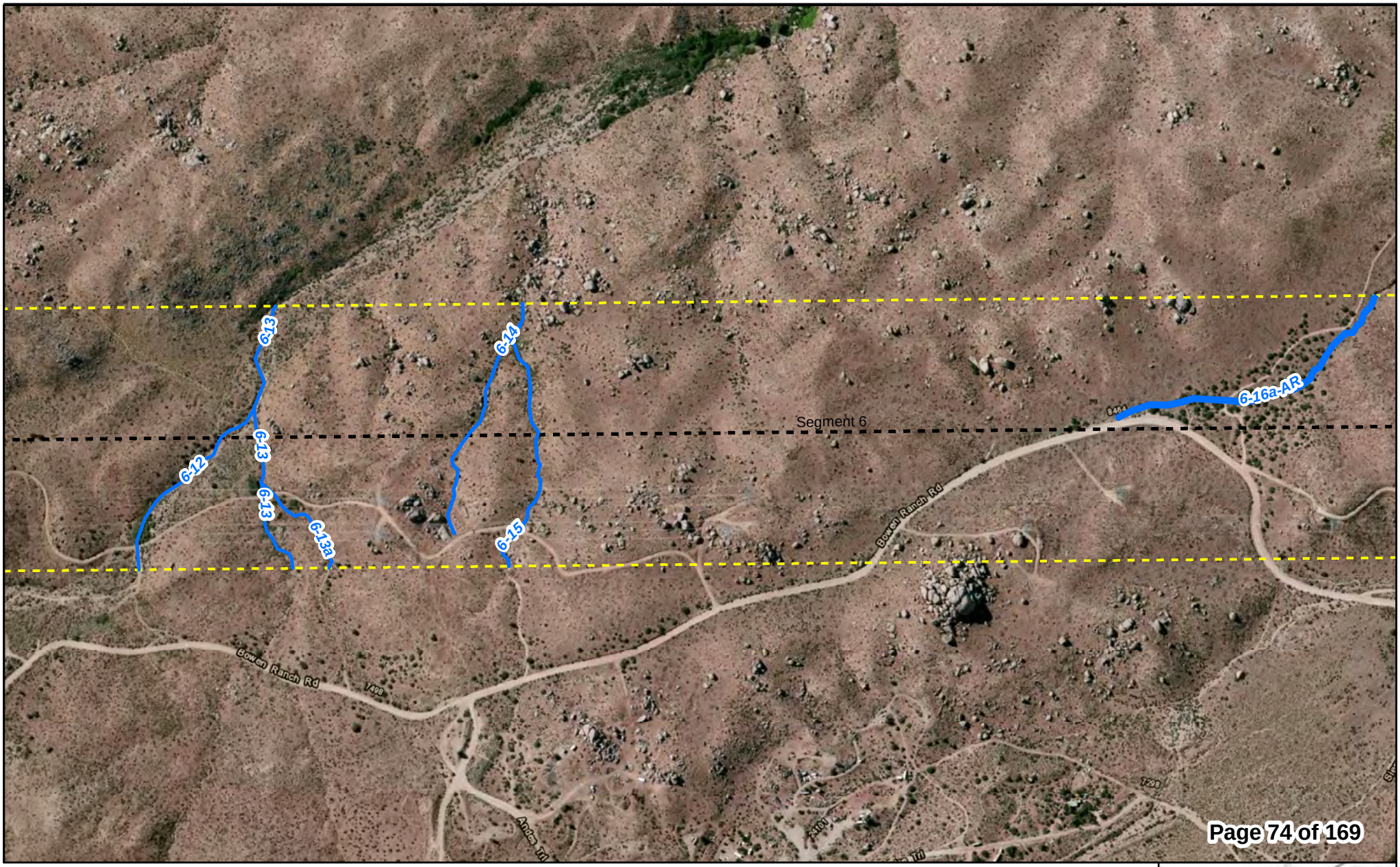

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Waters of the U.S. and State Waters

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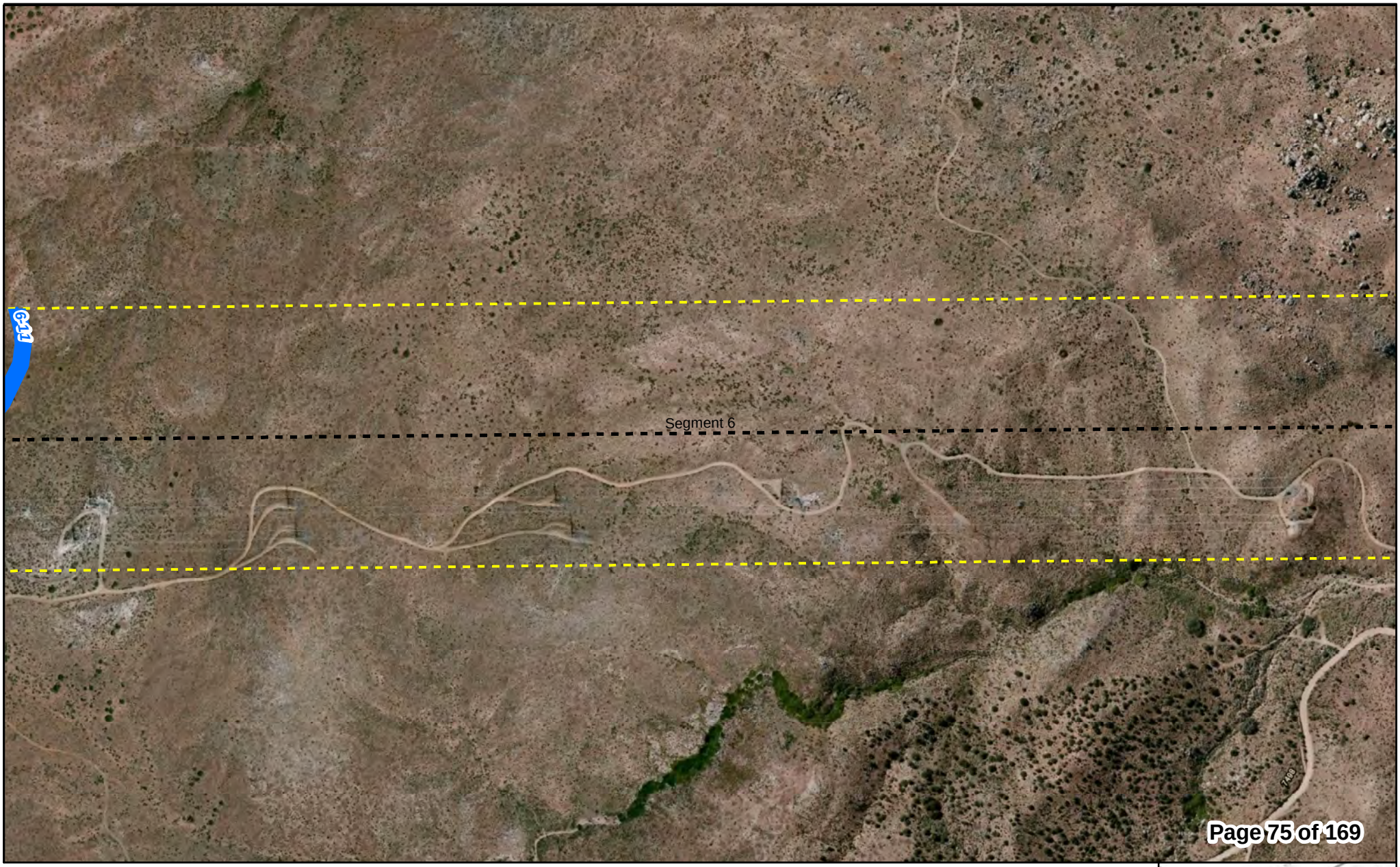

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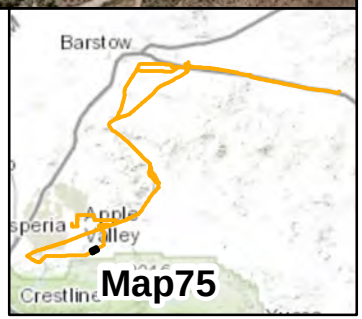

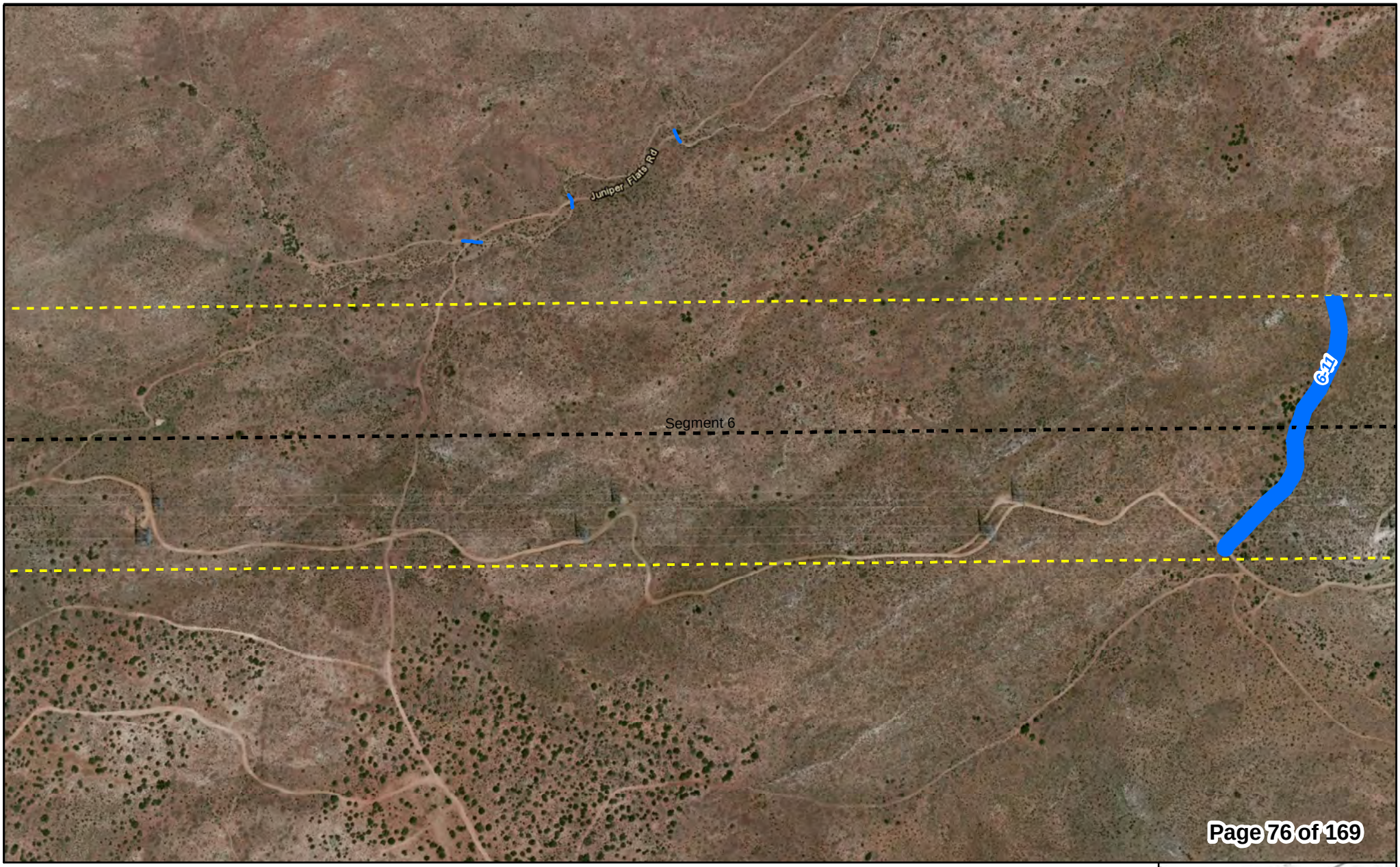

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Waters of the U.S. and State Waters

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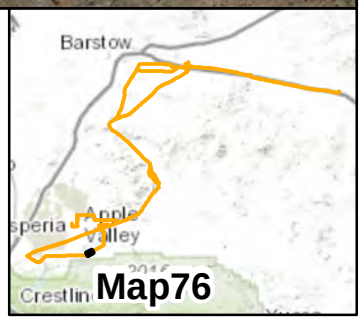

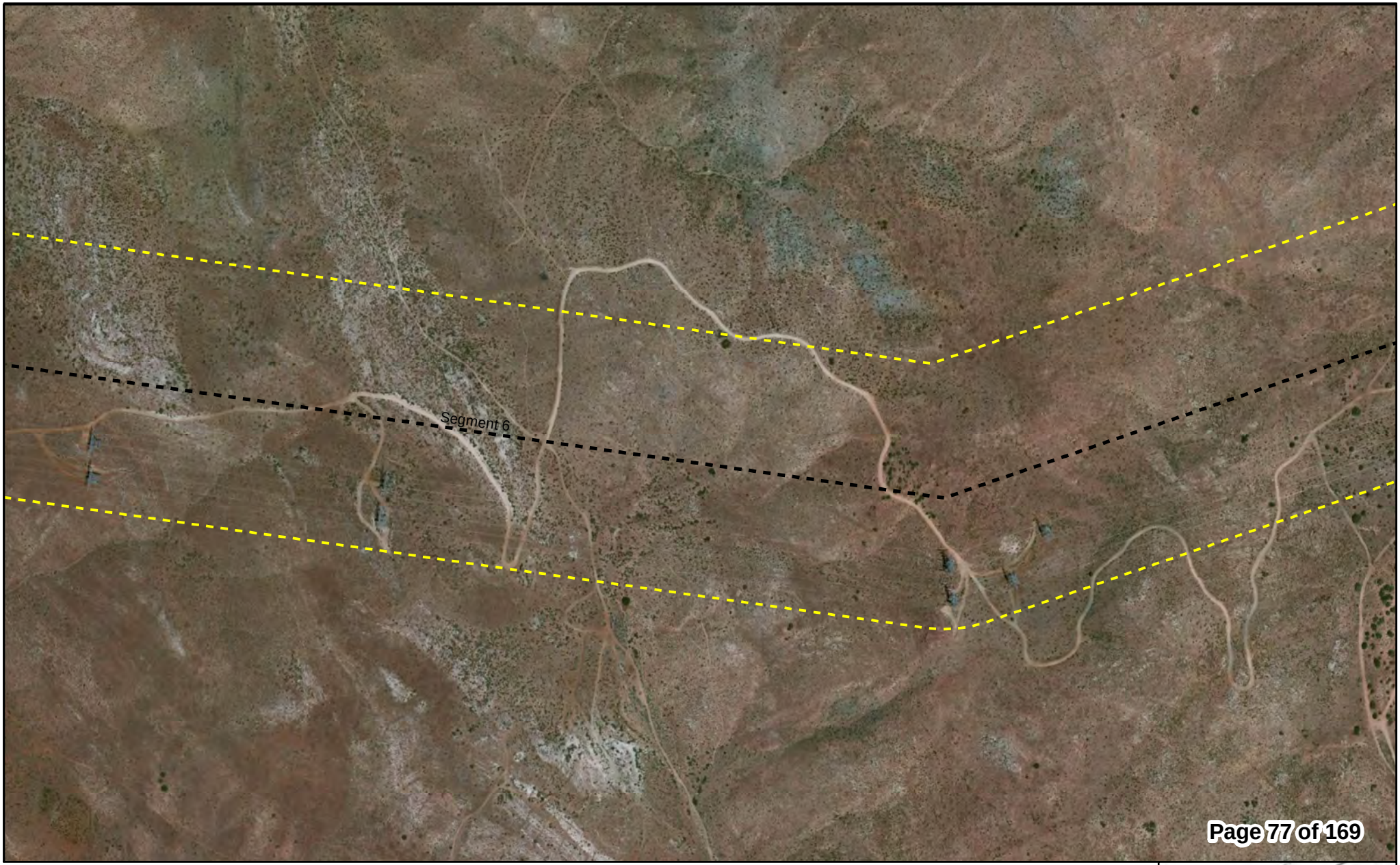

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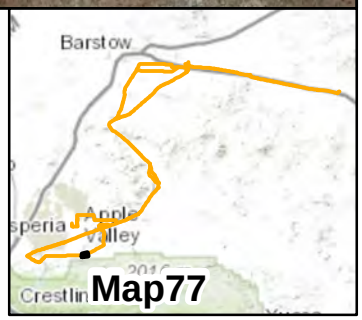

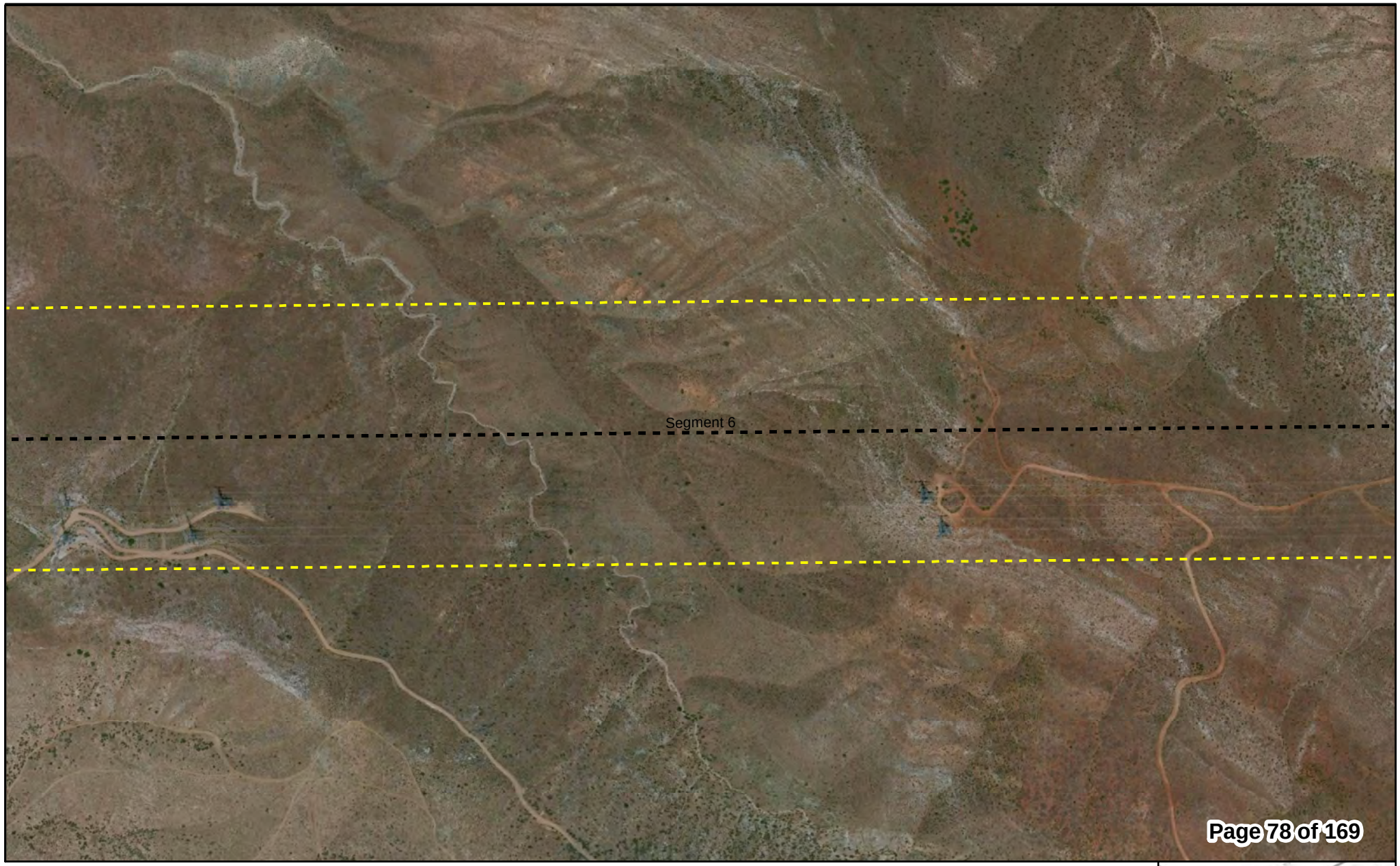

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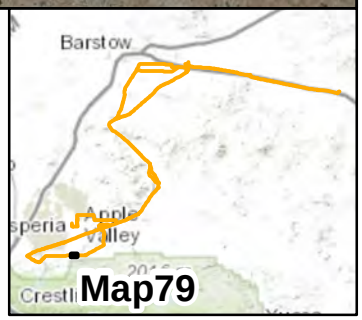
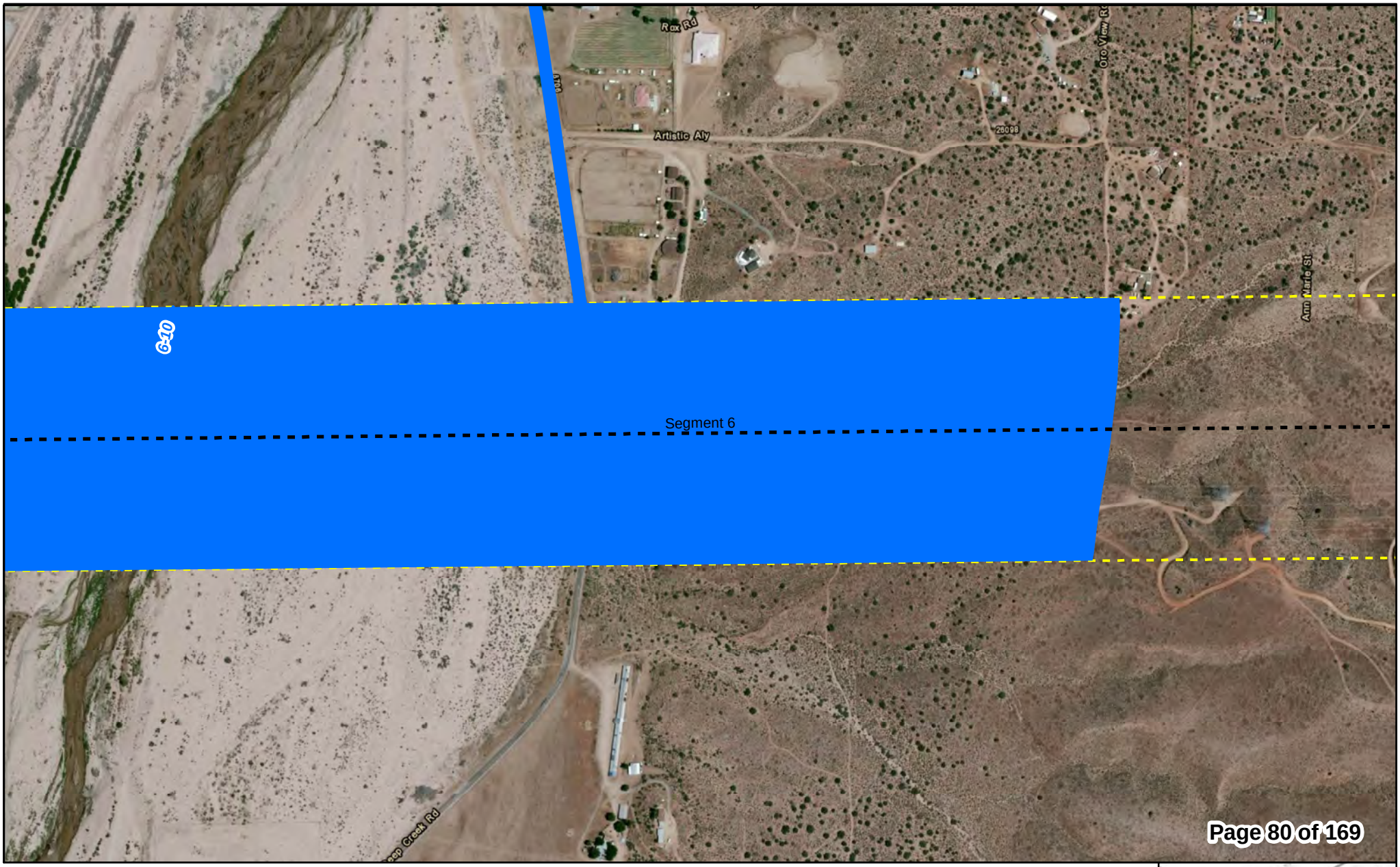
0 255 510 1,020 Feet





CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

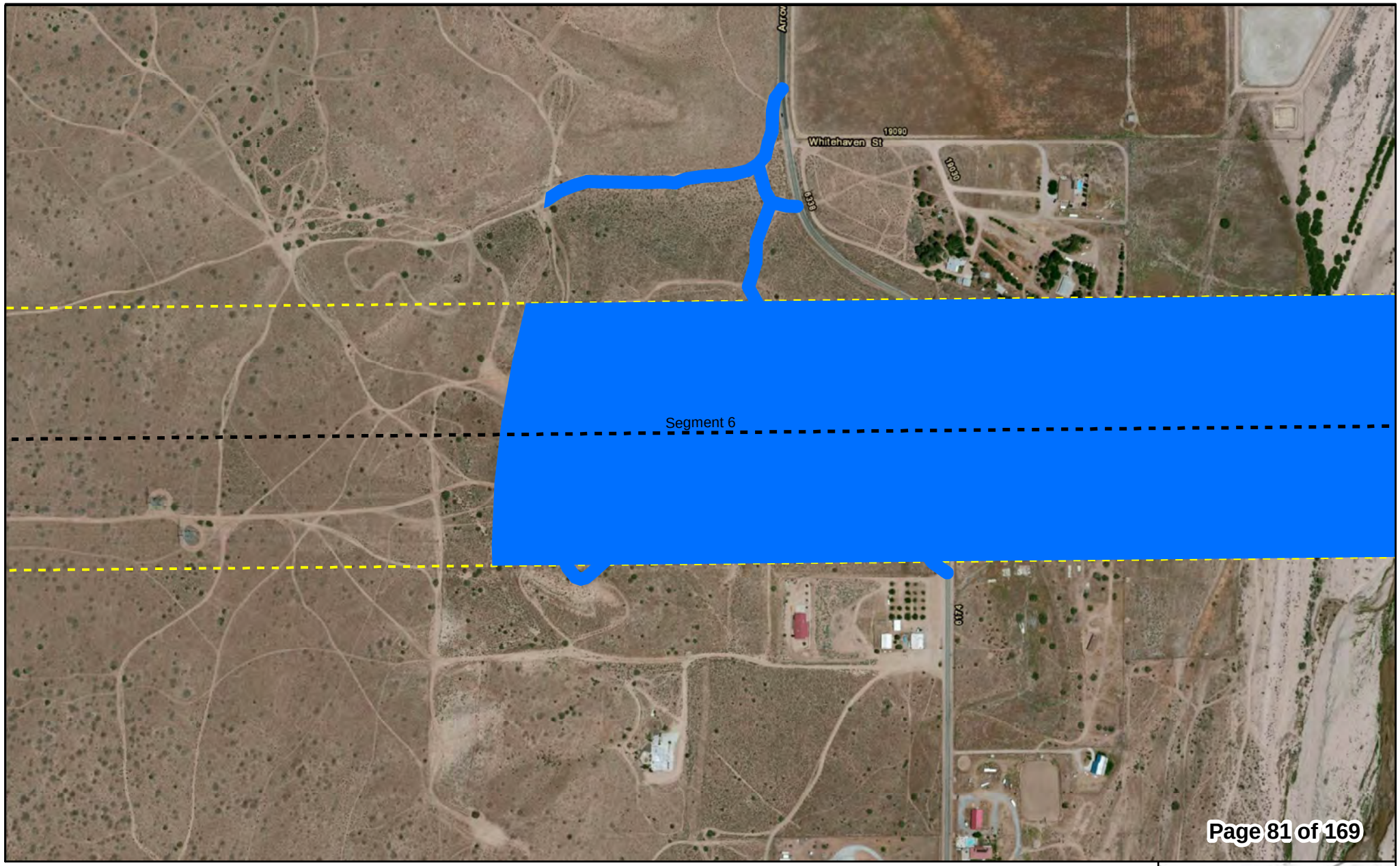
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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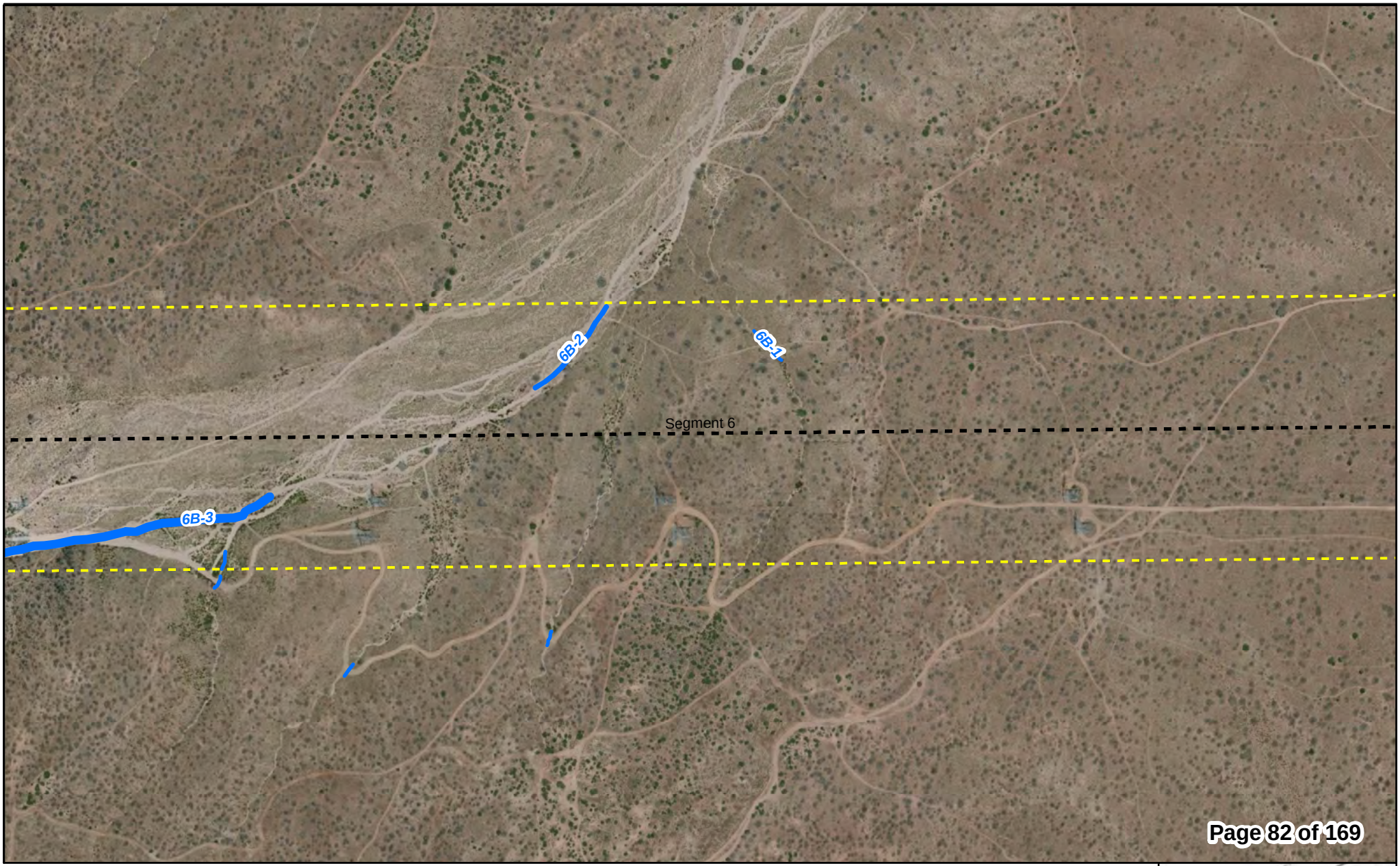


CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

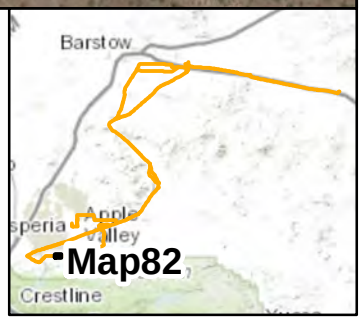
Proposed Substation

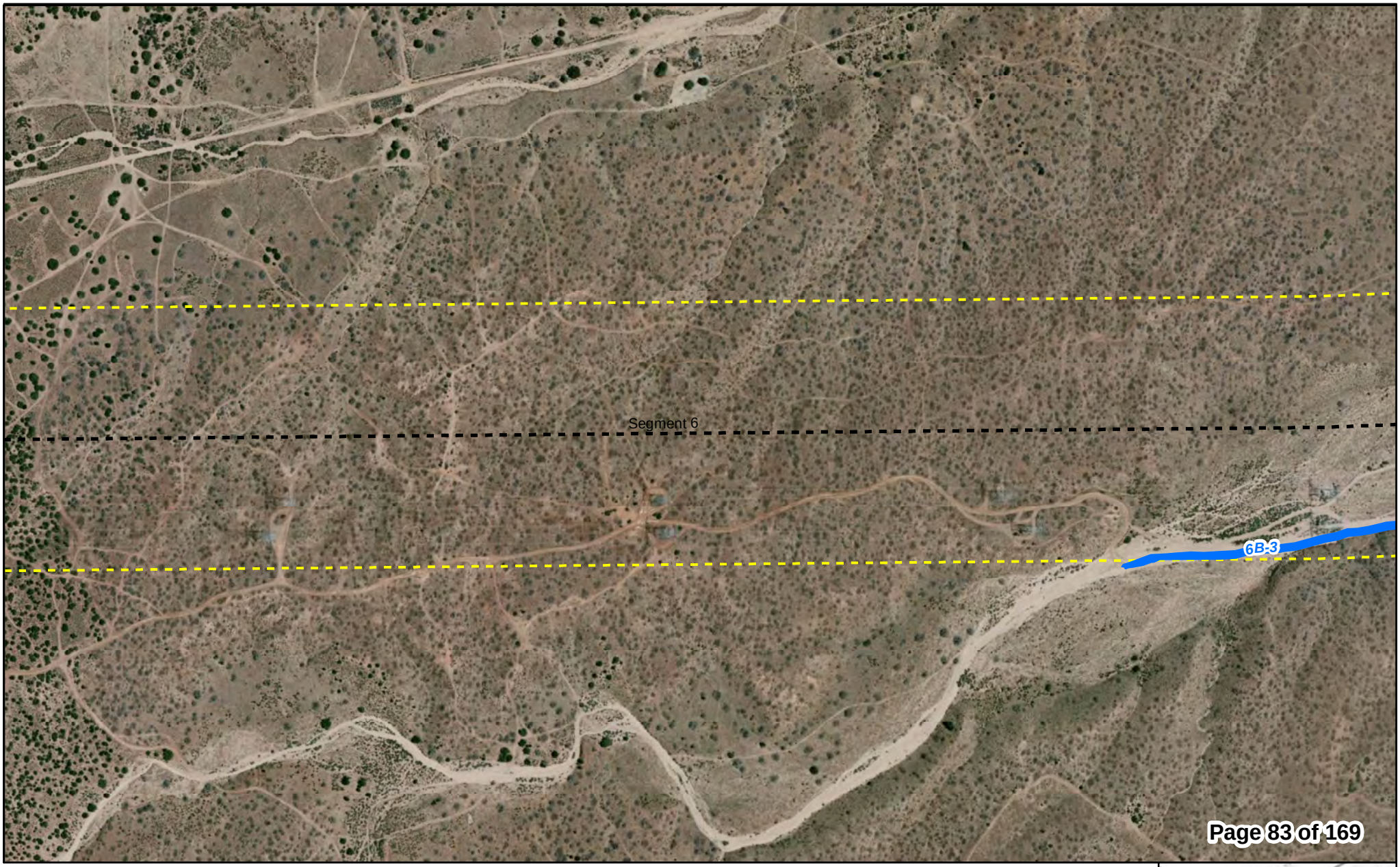
Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet





CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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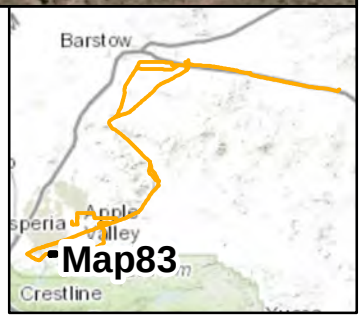
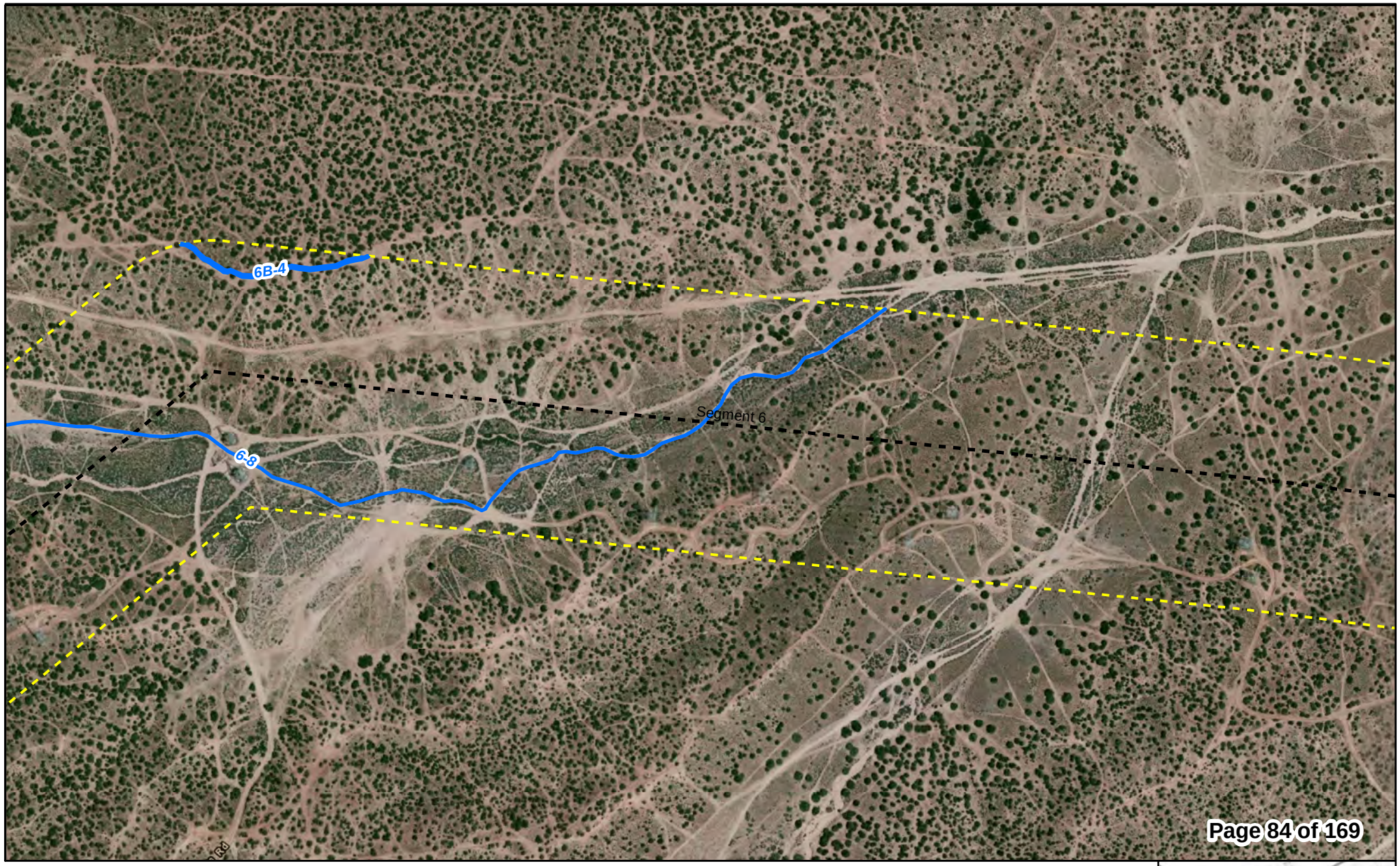
0 255 510 1,020 Feet





CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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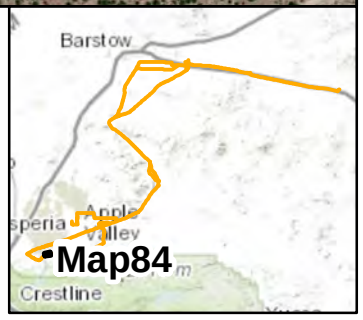
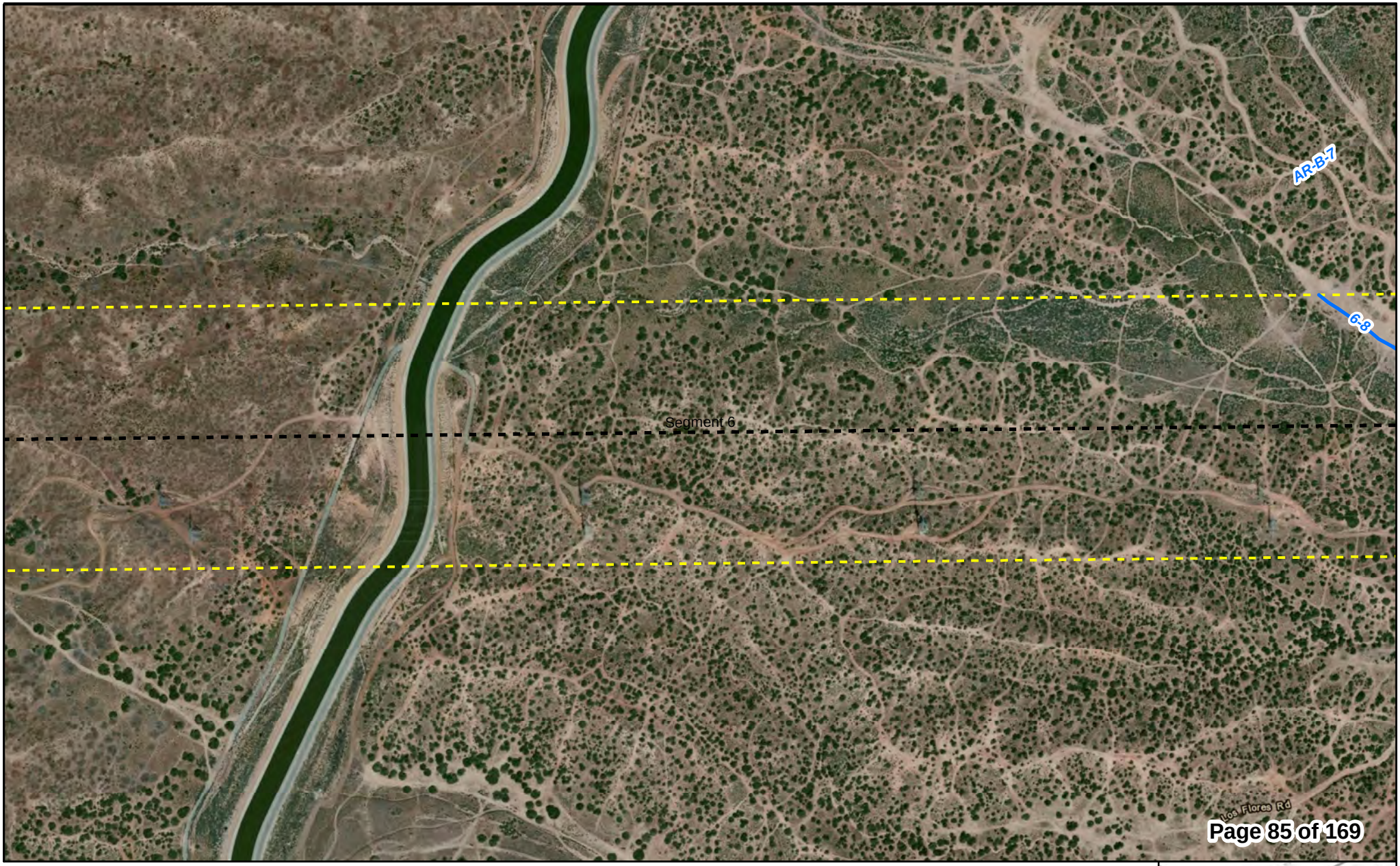
0 255 510 1,020 Feet





CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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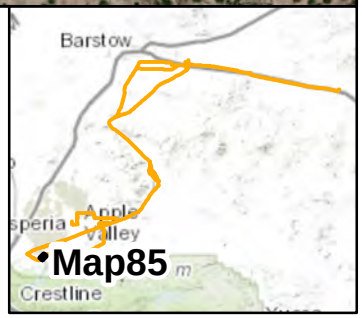
0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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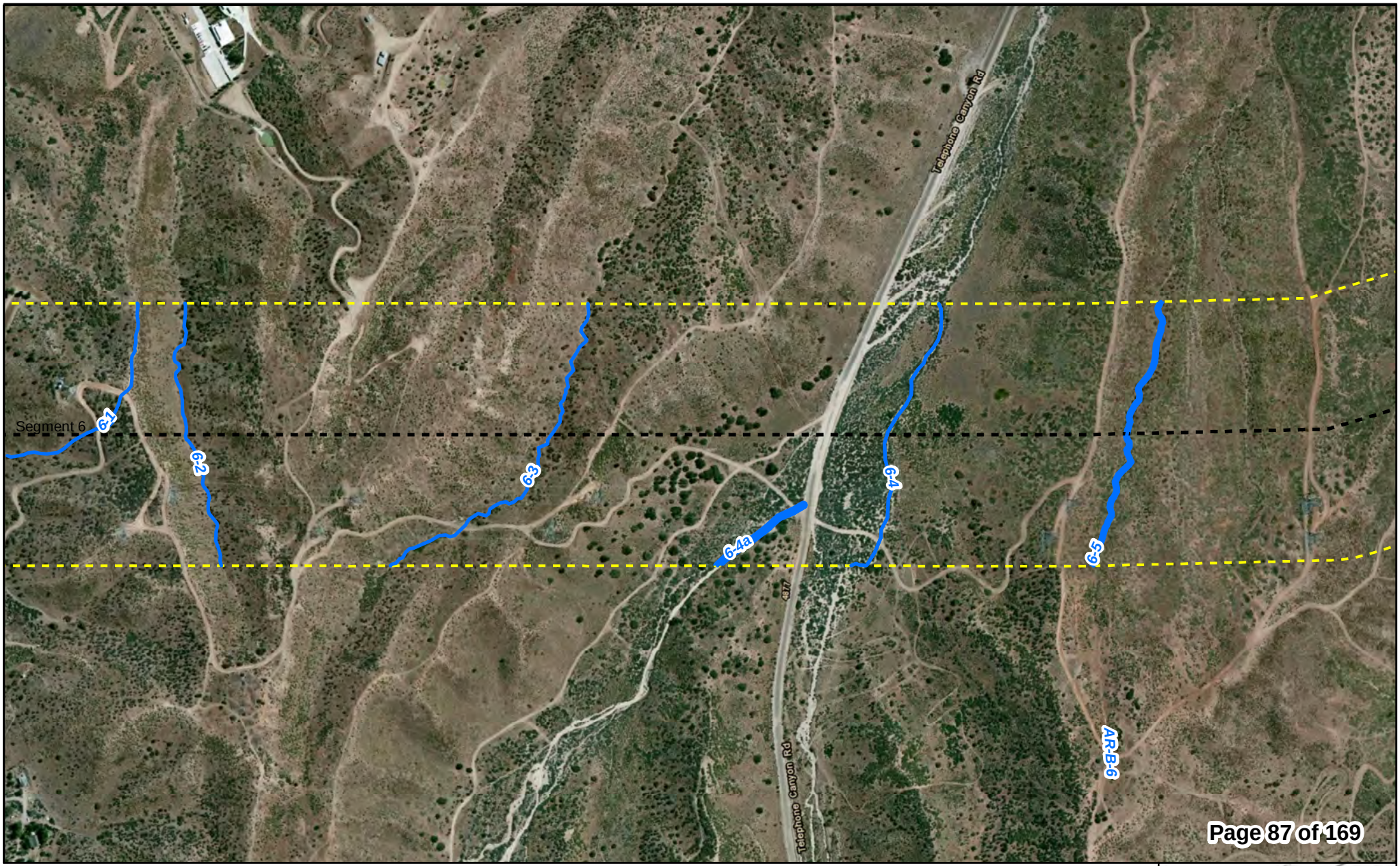

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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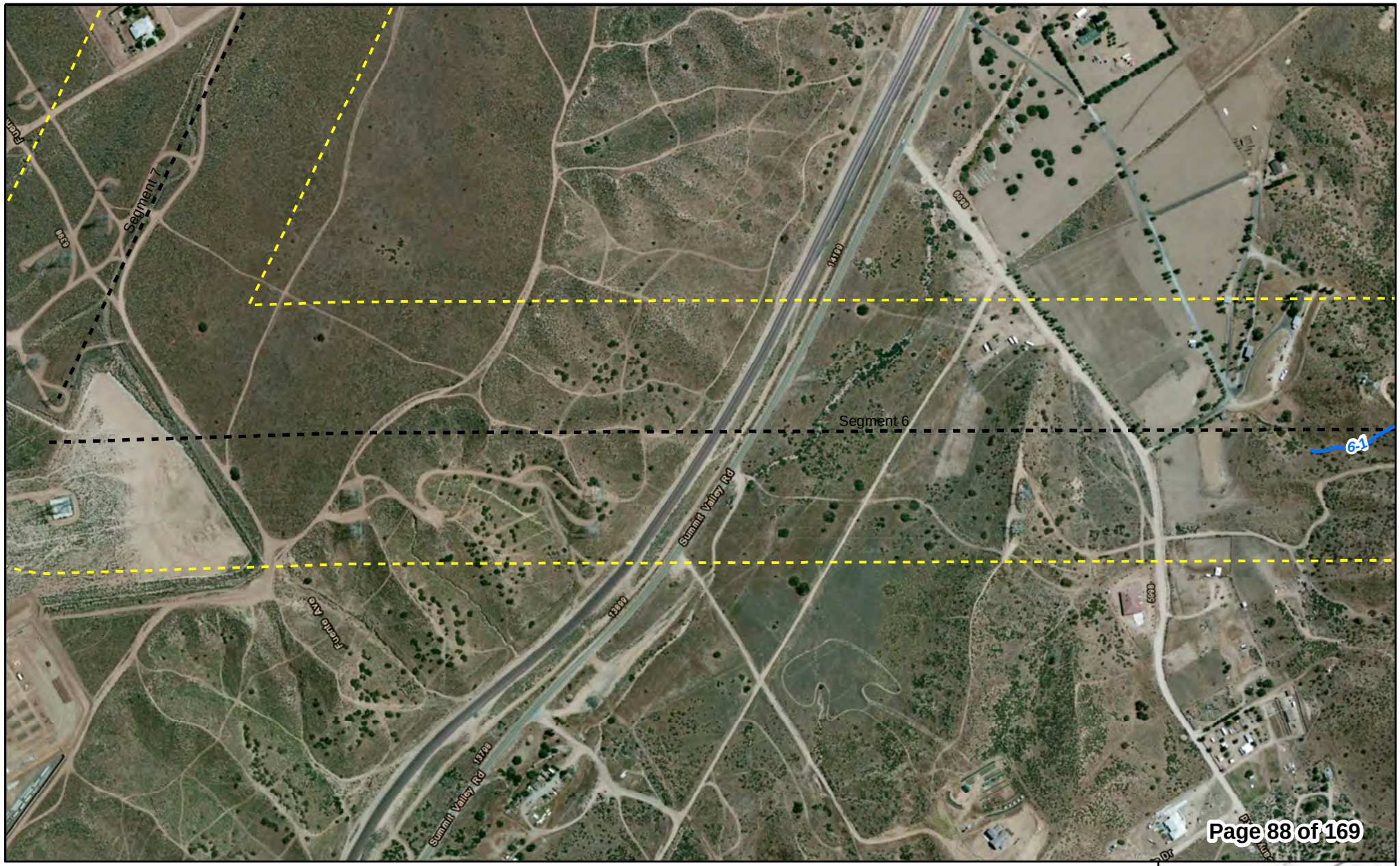

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Proposed Telecommunication Lines

2013 Survey Area

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CWLTP Proposed Transmission Lines

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2013 Survey Area

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- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

● Substation

■ Proposed Substation

——— Waters of the U.S. and State Waters

Waters Survey Identification Number

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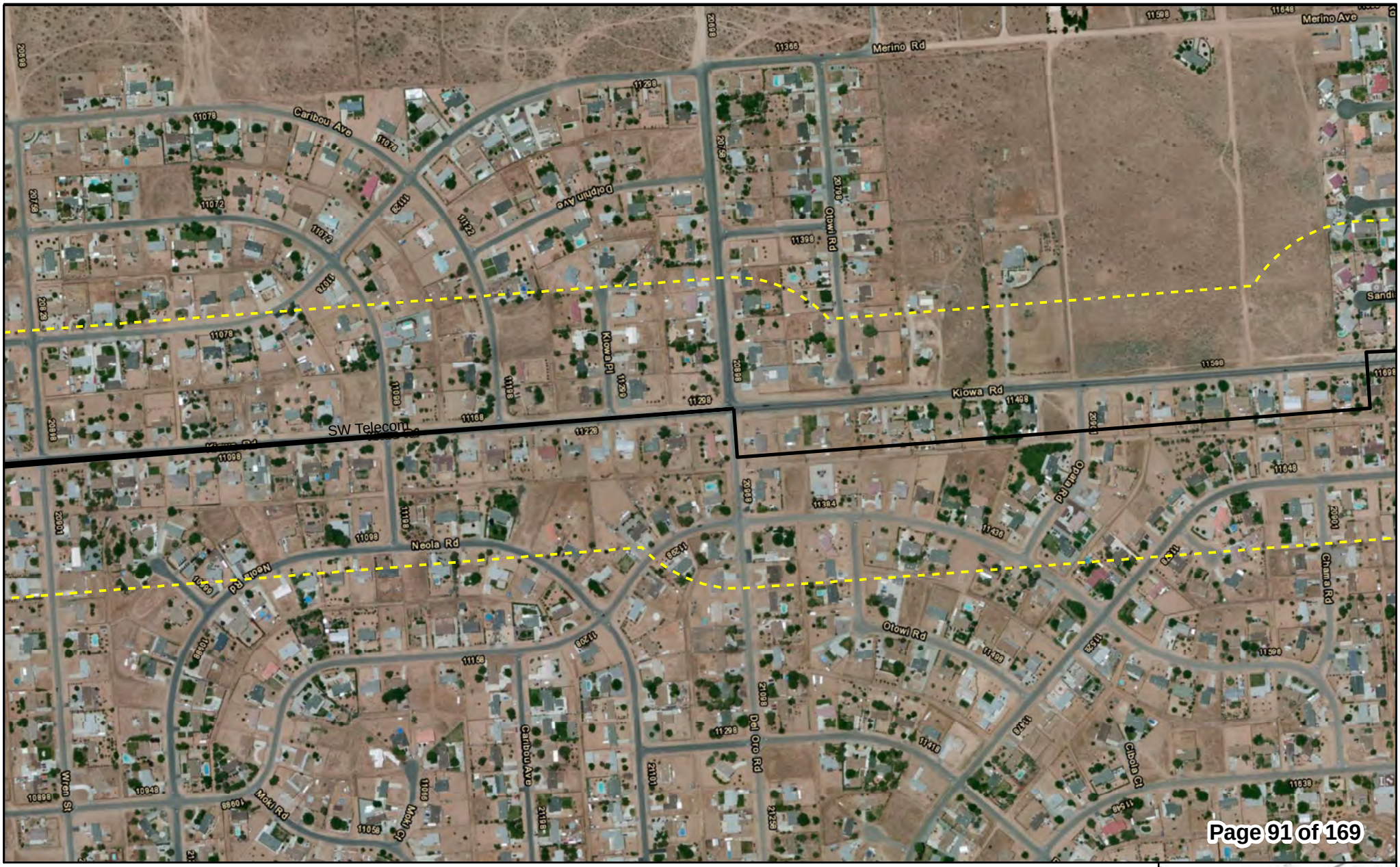

- - - - CWLTP Proposed Transmission Lines

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2013 Survey Area

● Substation

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——— Waters of the U.S. and State Waters

Waters Survey Identification Number

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Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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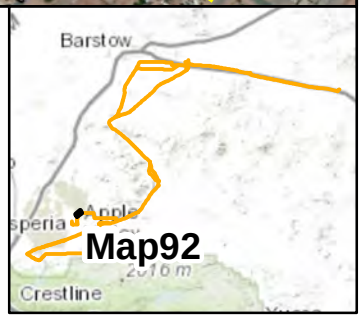

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Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

Waters Survey Identification Number

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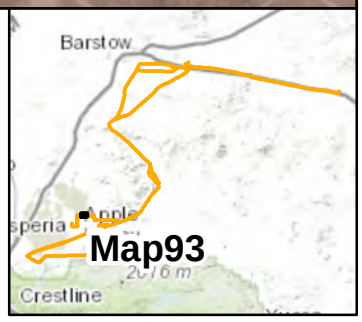
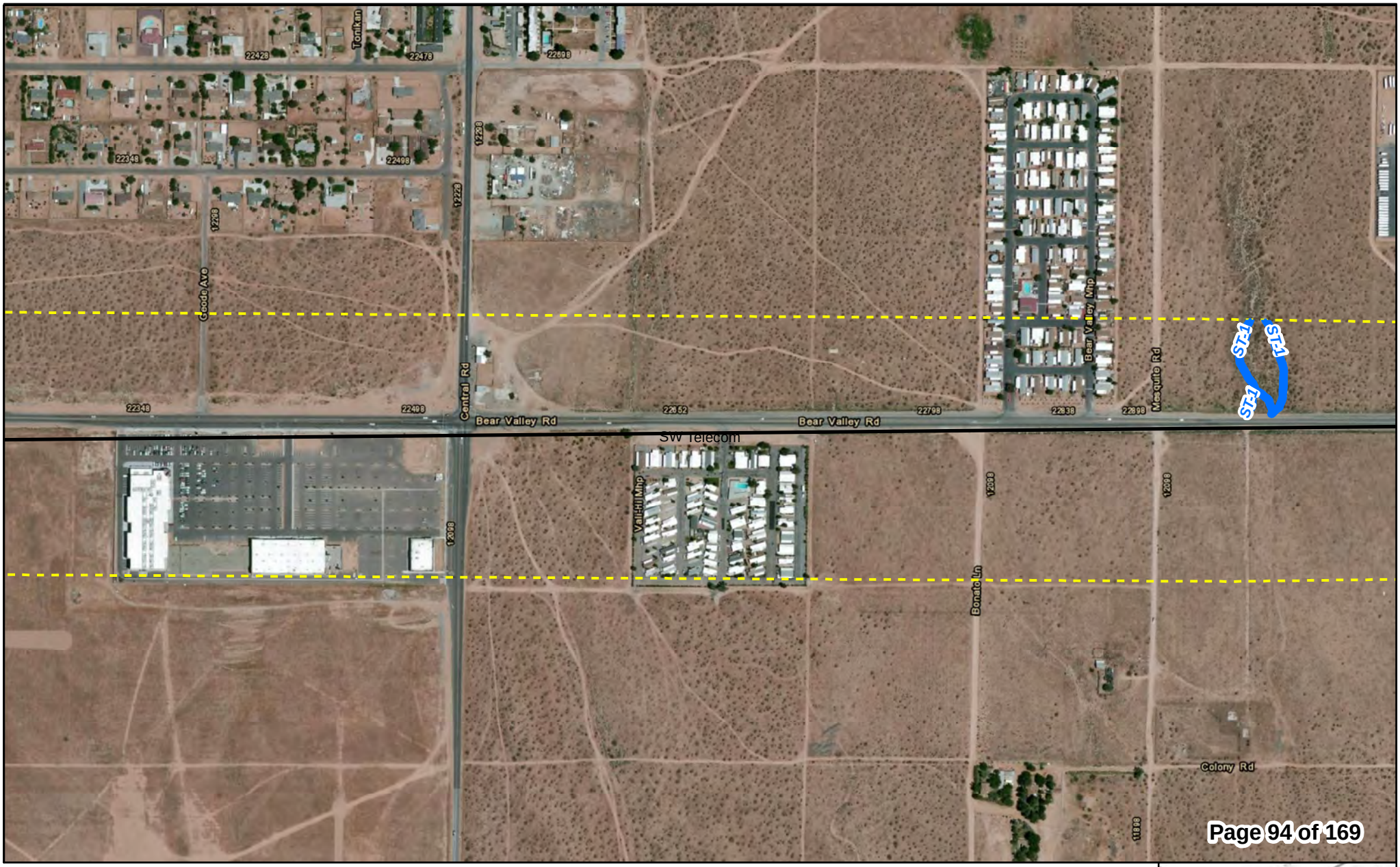


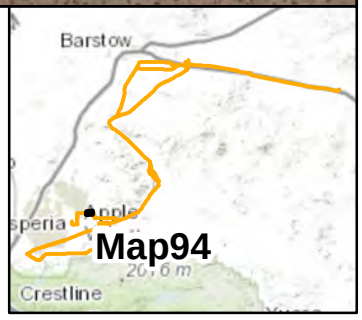


- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

N

0 255 510 1,020 Feet



- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

● Substation

■ Proposed Substation

——— Waters of the U.S. and State Waters

Waters Survey Identification Number

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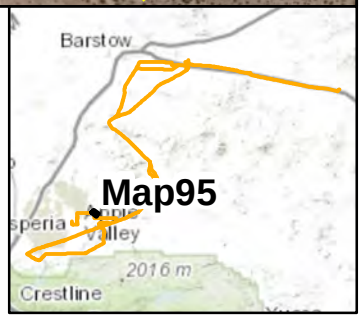

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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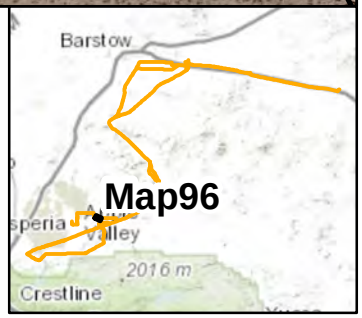

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

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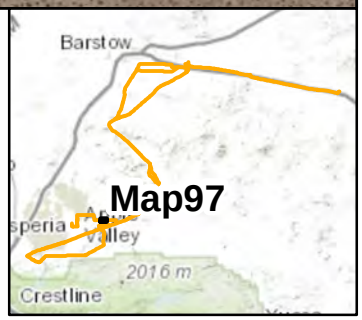

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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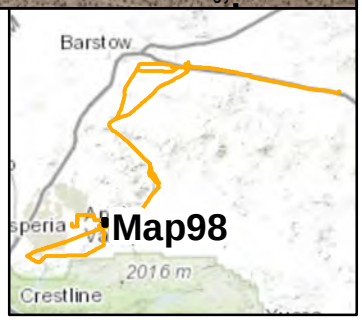

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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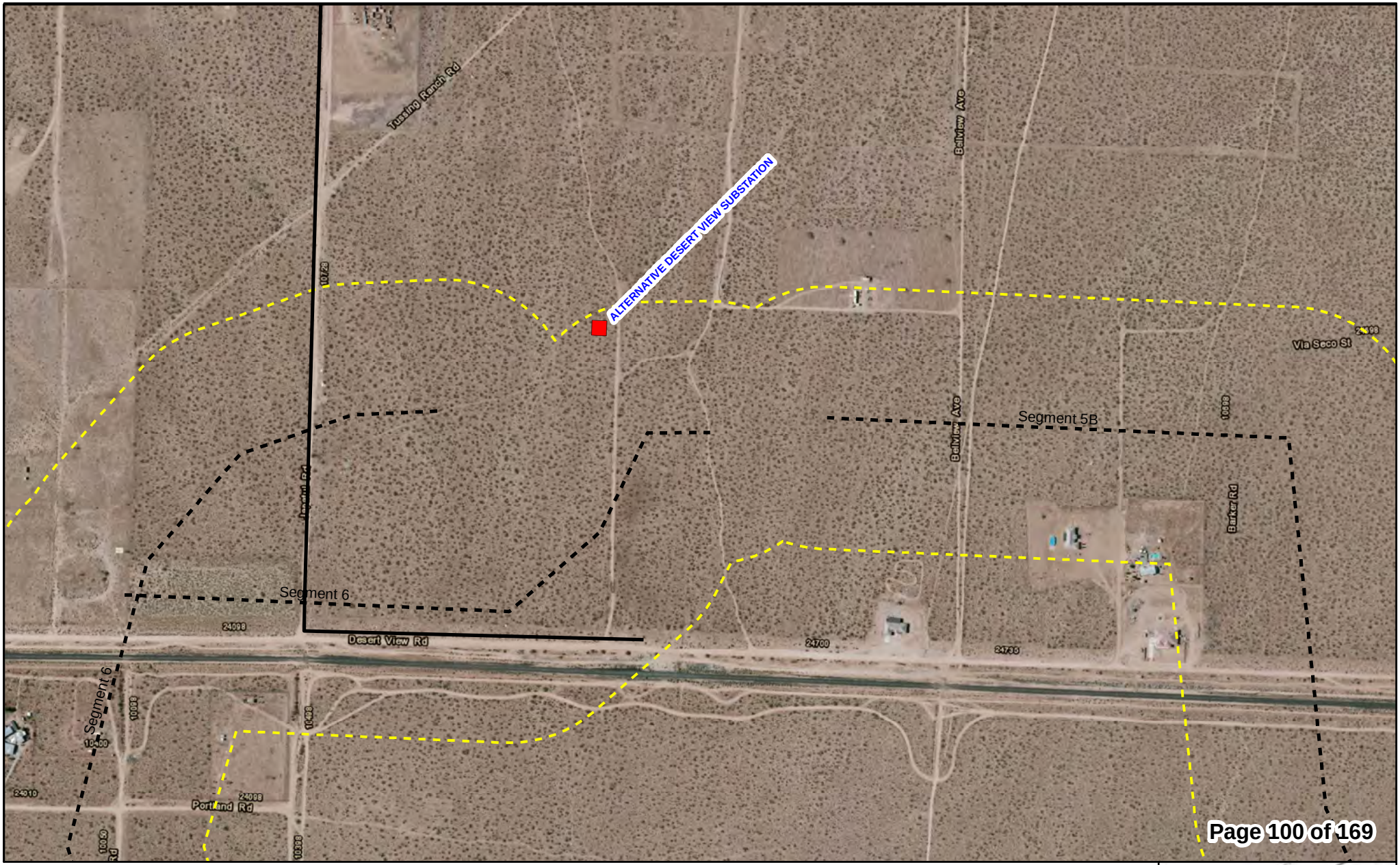

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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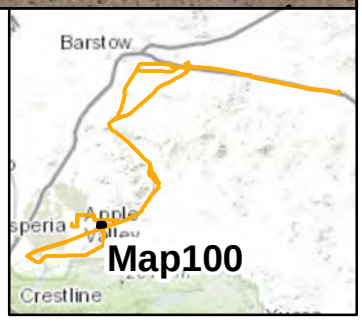

- CWLTP Proposed Transmission Lines
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- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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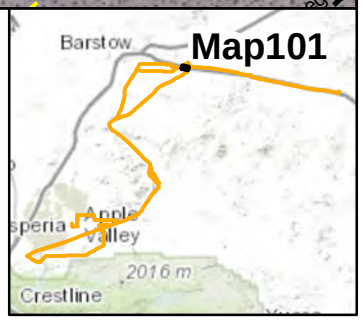

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Waters of the U.S. and State Waters
Waters Survey Identification Number

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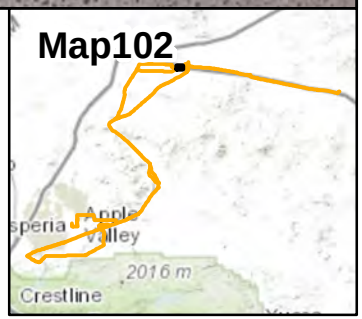

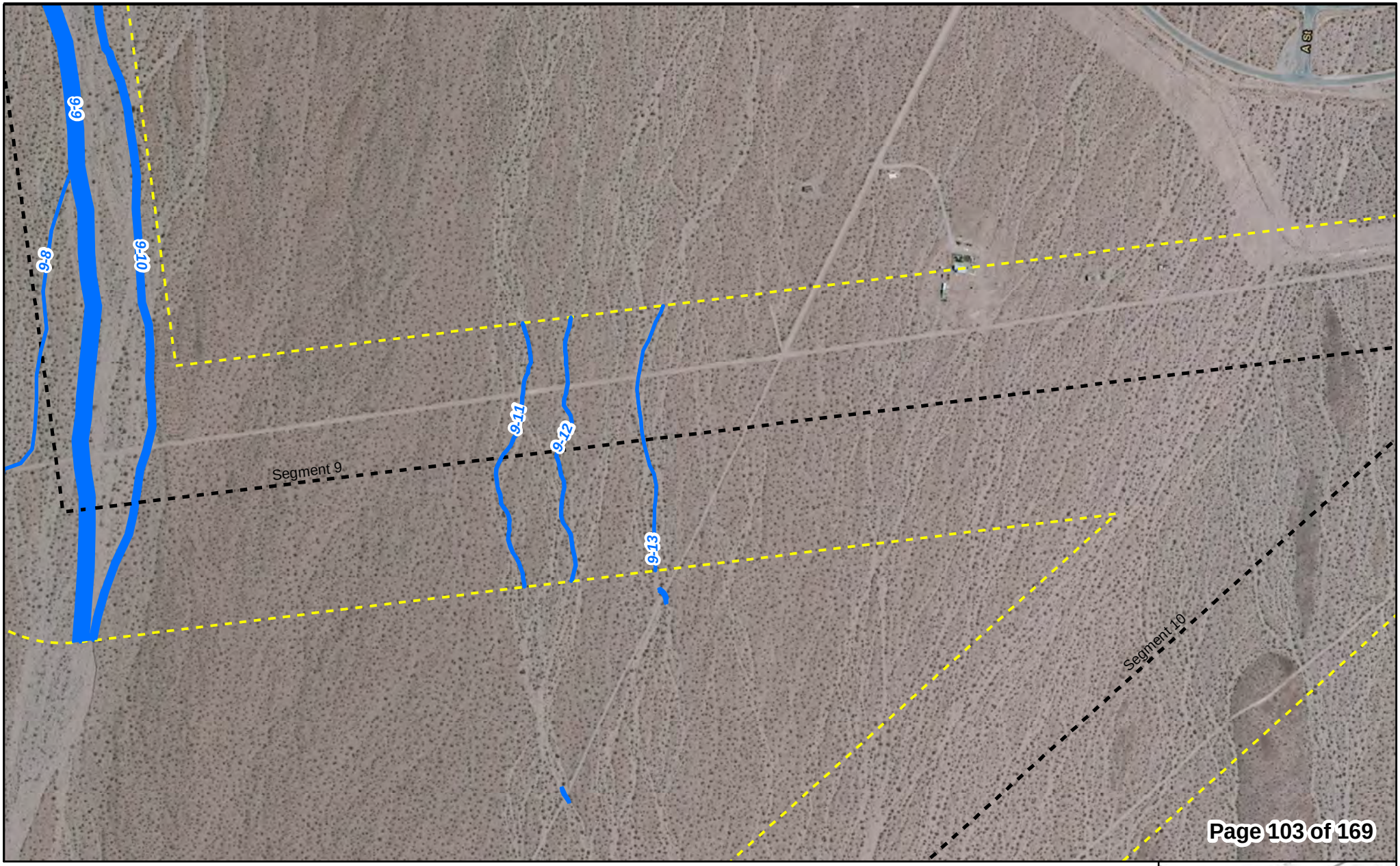

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

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CWLTP Proposed Transmission Lines

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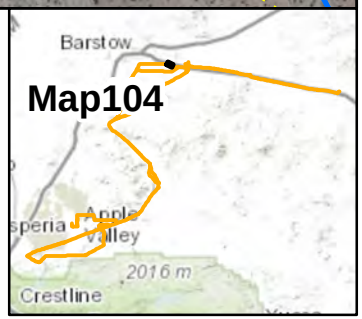

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Waters of the U.S. and State Waters
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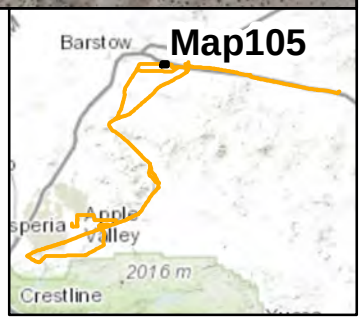
0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

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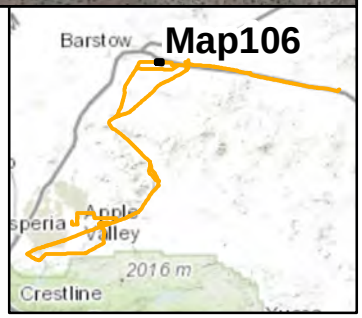

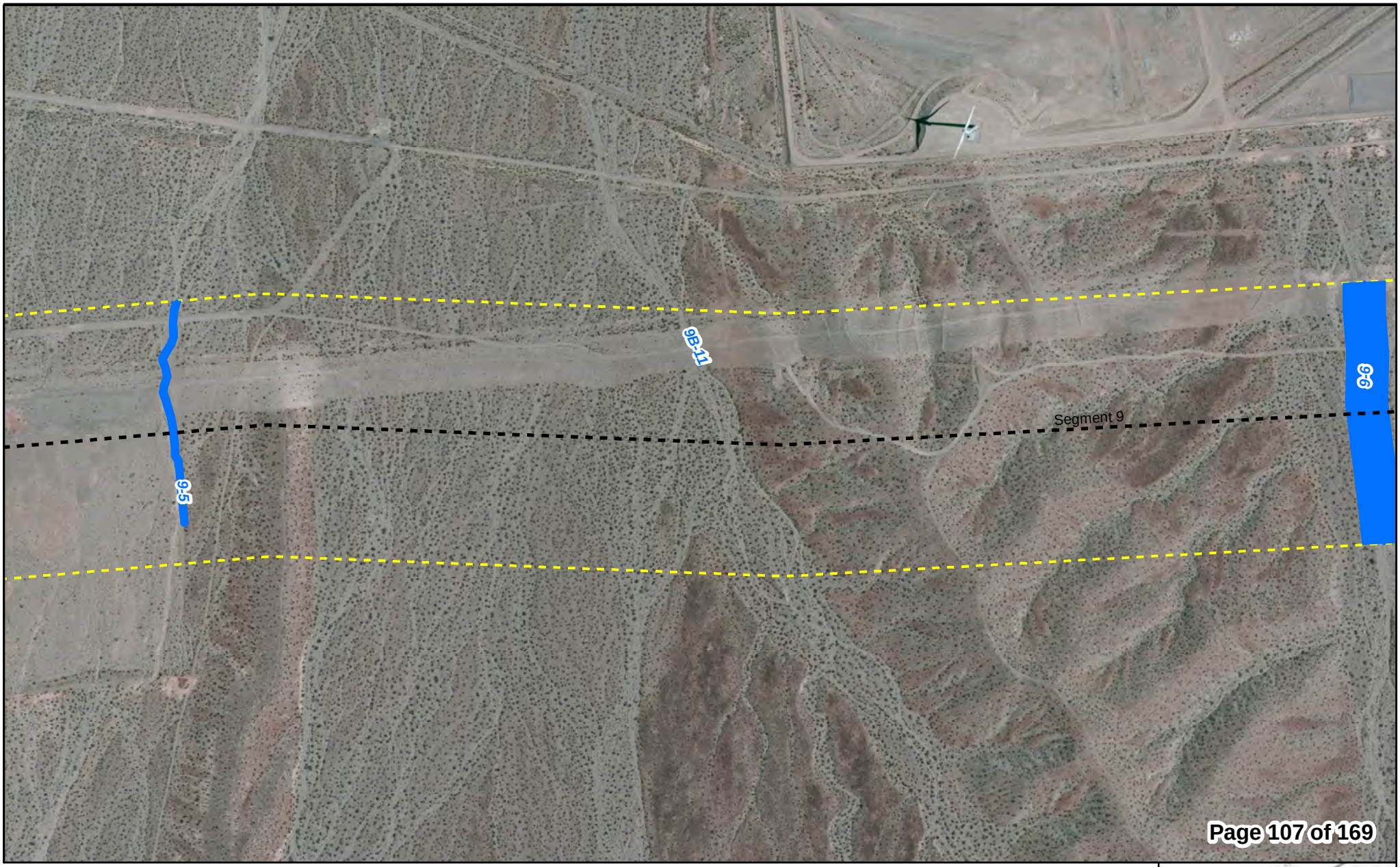

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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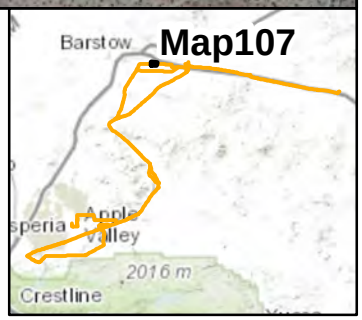

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Waters of the U.S. and State Waters

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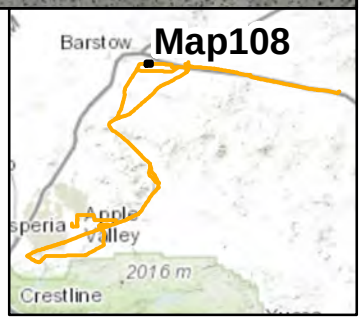

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2013 Survey Area

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Waters of the U.S. and State Waters

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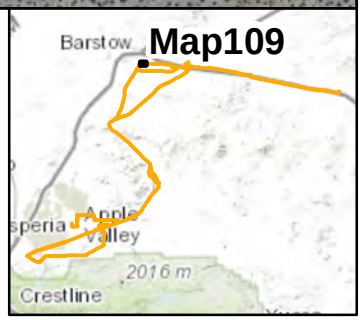

- CWLTP Proposed Transmission Lines
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Waters of the U.S. and State Waters
Waters Survey Identification Number

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Waters of the U.S. and State Waters
Waters Survey Identification Number

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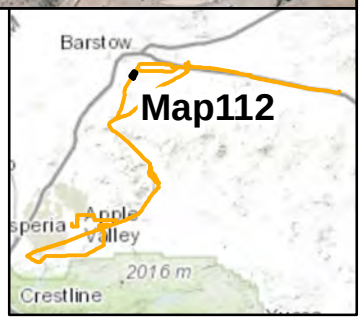
0 255 510 1,020 Feet




Segment 8
Stoddard Wells Rd
31199
Stoddard Wells Rd
Johnson Rd
8-22
8-23
8-24
8-24
8-25A
8-25C
8-25B
8-25A
Barstow Rd
247
Page 113 of 169
CWLTP Proposed Transmission Lines
Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation
Waters of the U.S. and State Waters
Waters Survey Identification Number
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255
510
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Feet
Barstow
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Apple Valley
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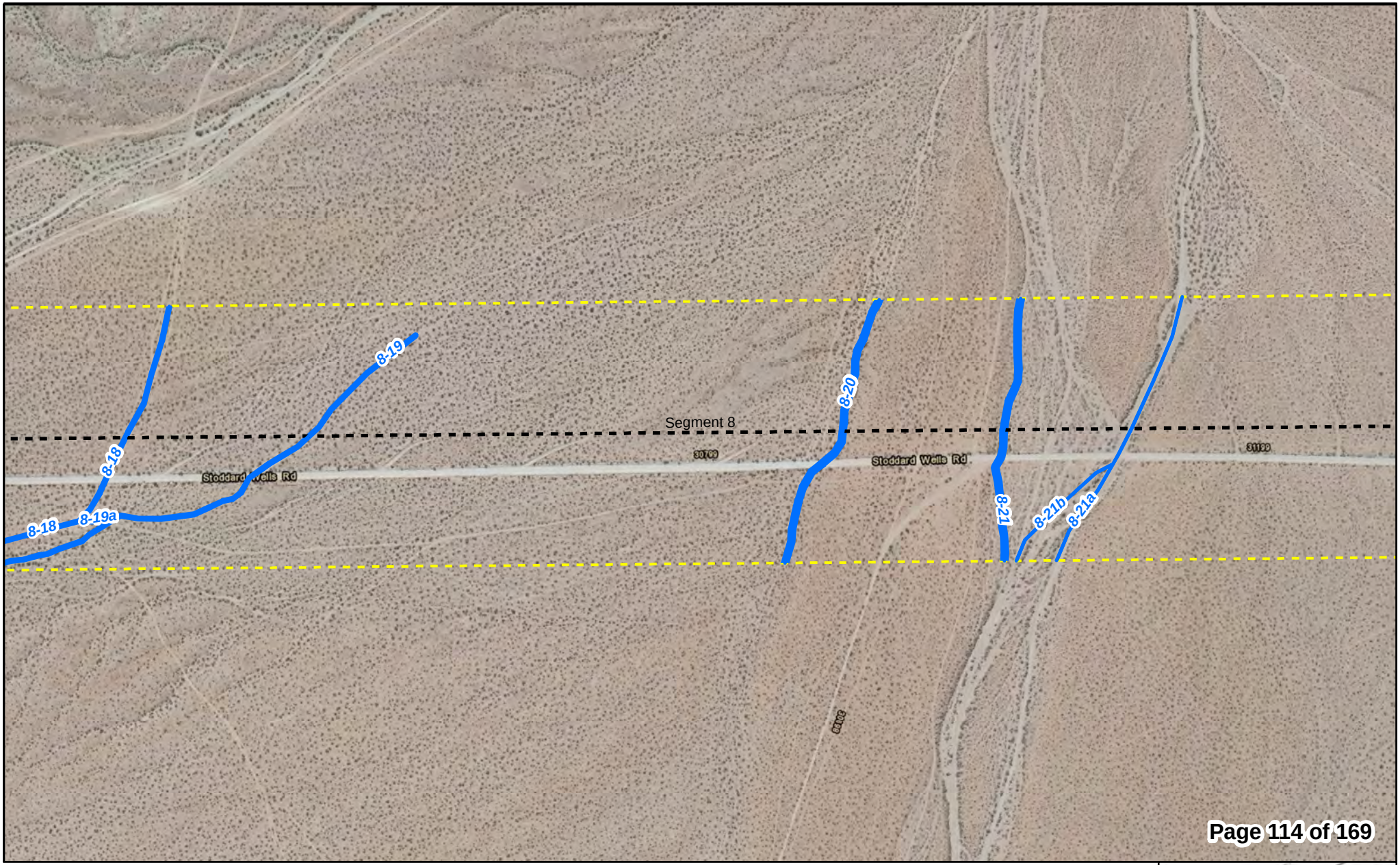

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Proposed Telecommunication Lines

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Waters of the U.S. and State Waters

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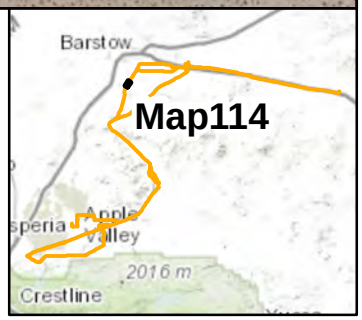

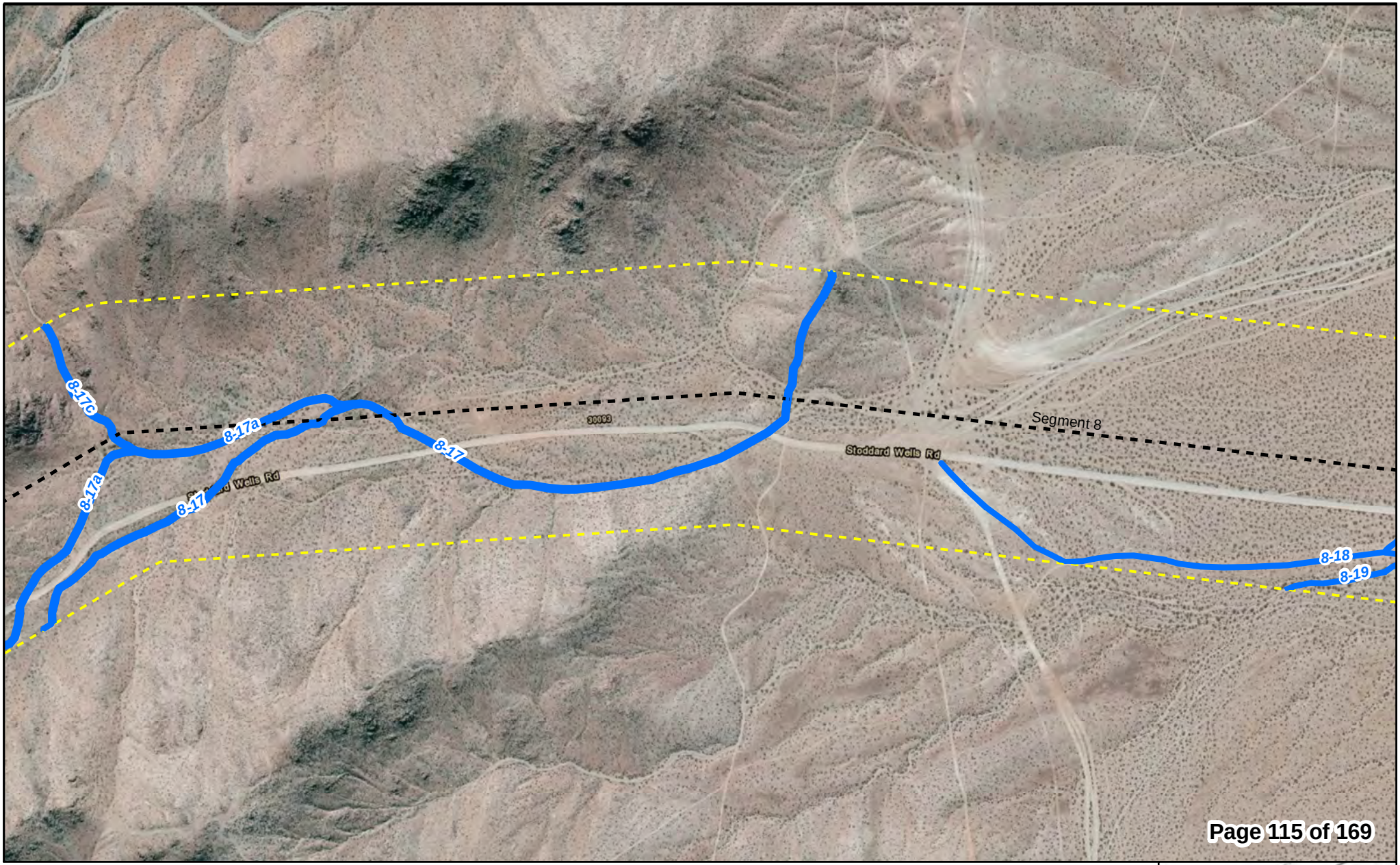

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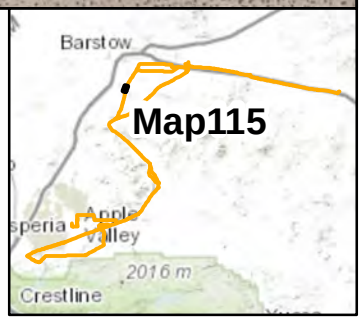

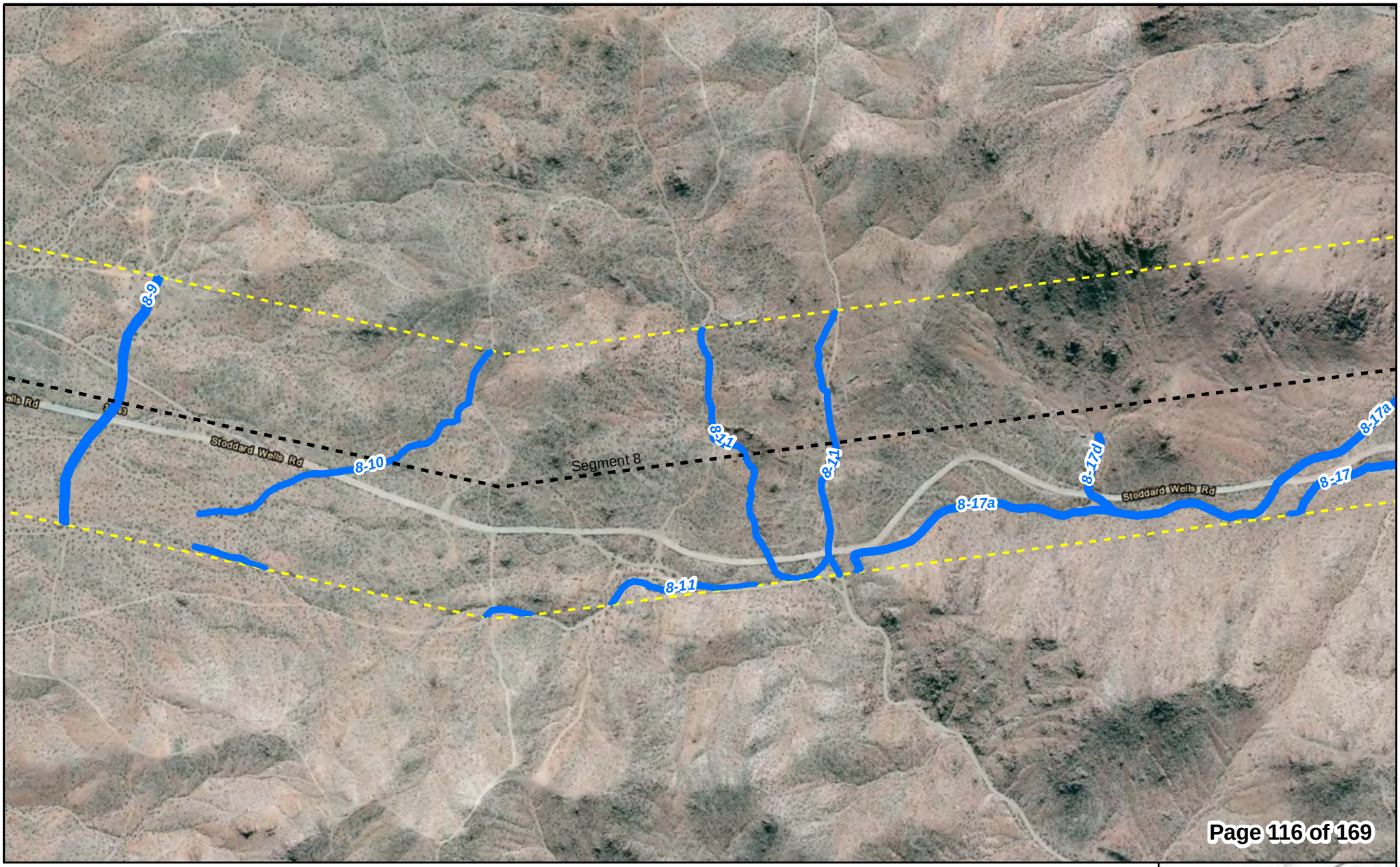

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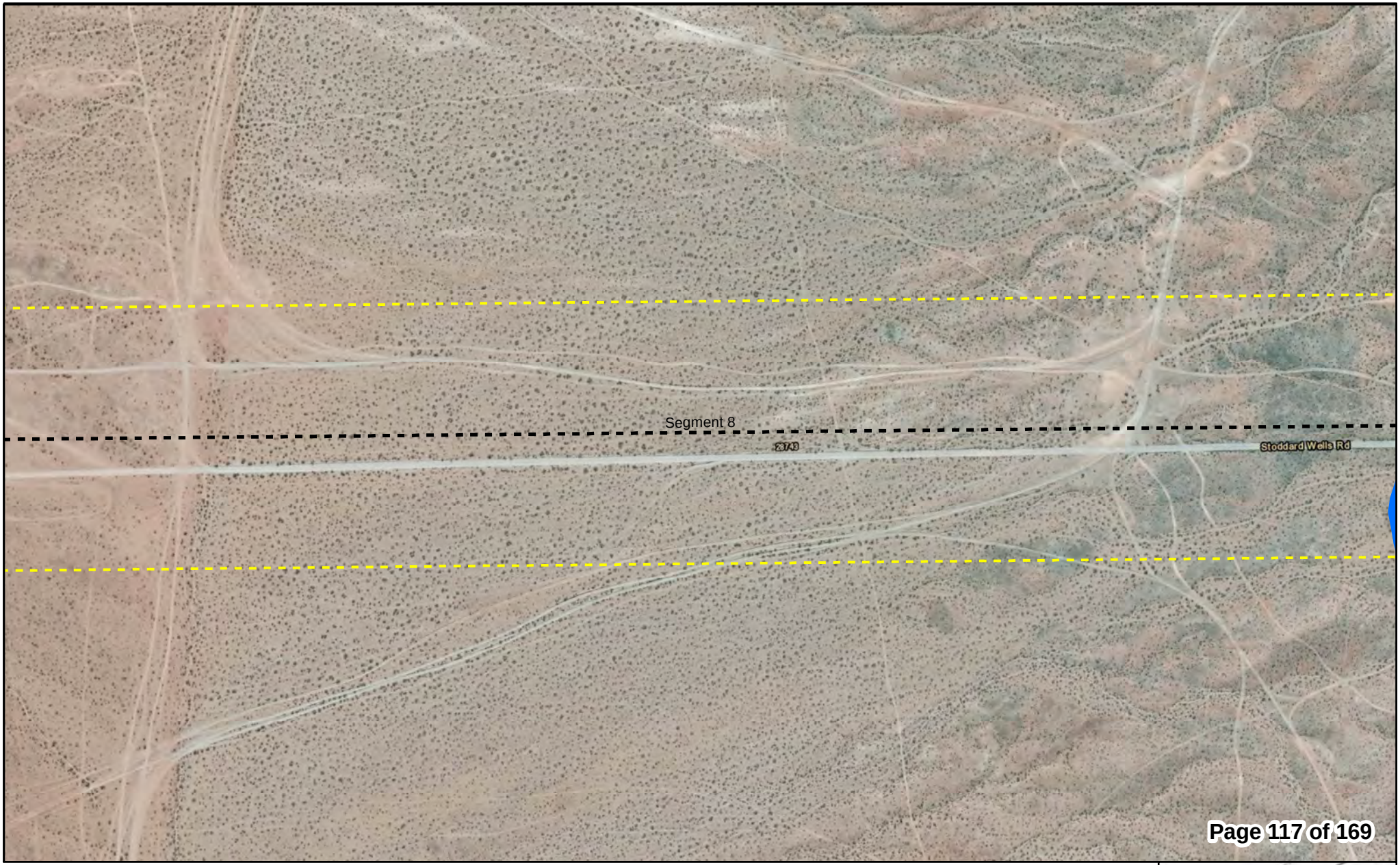

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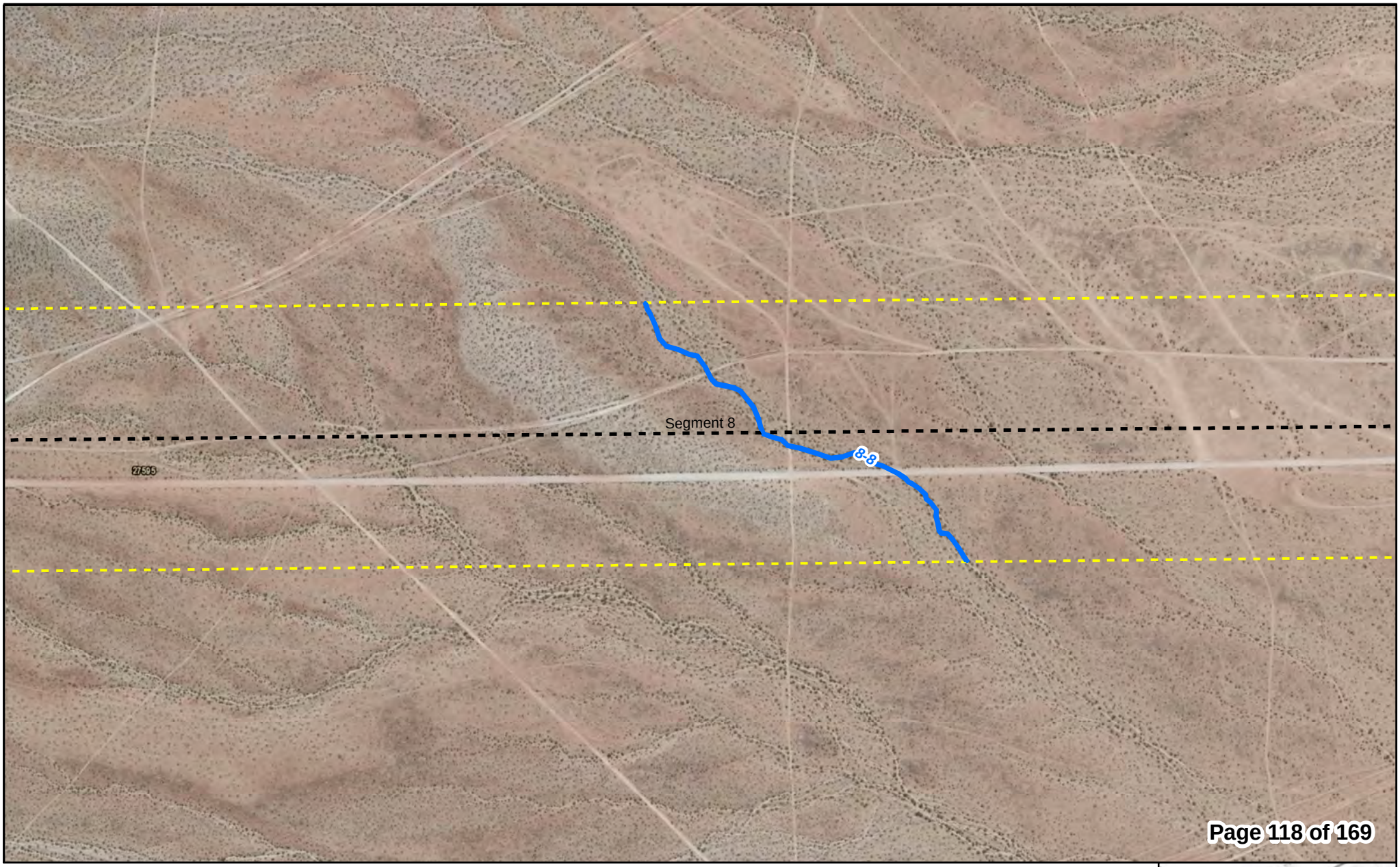

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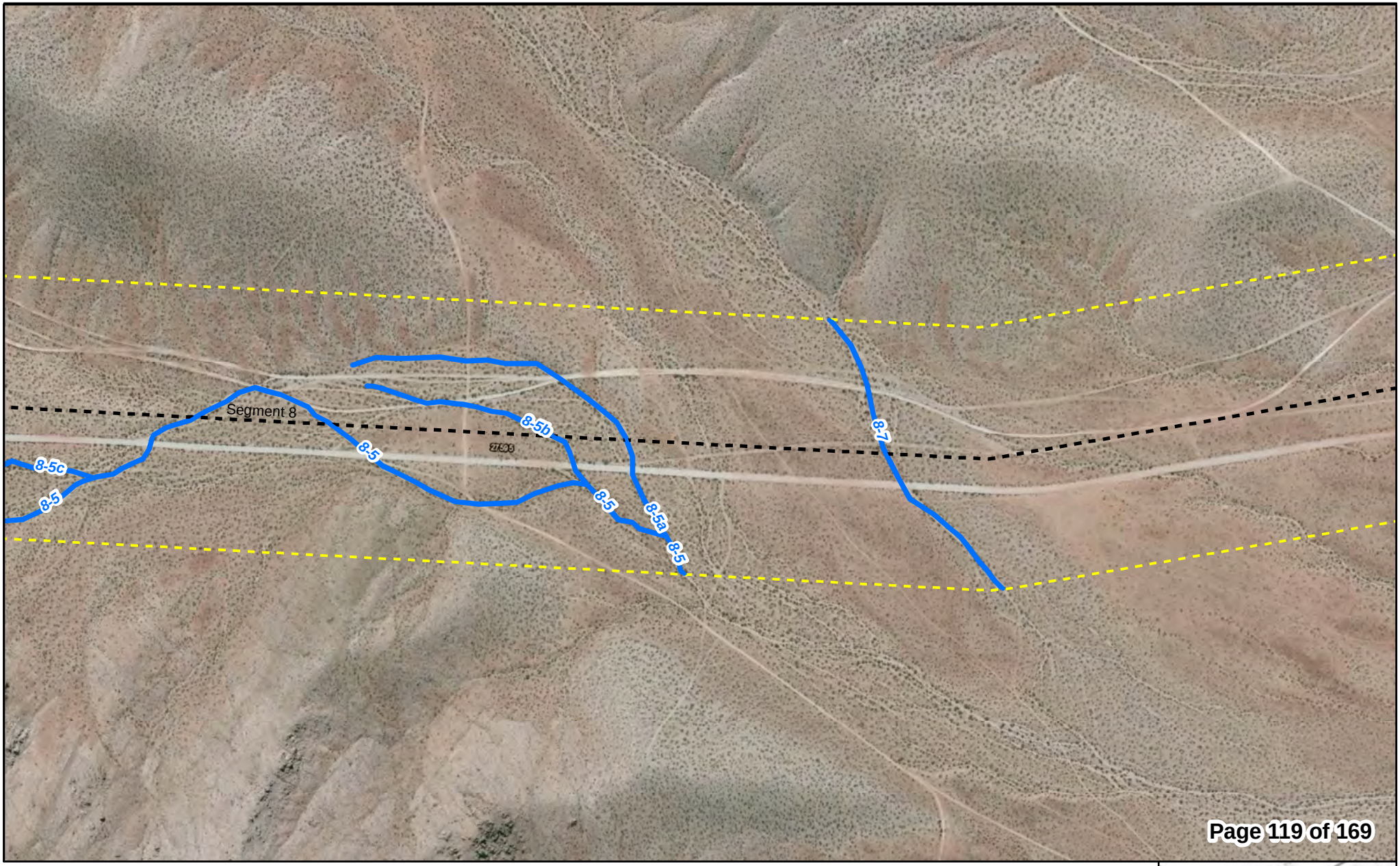

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

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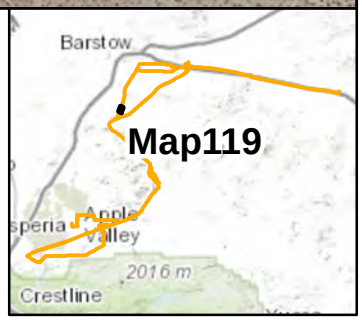

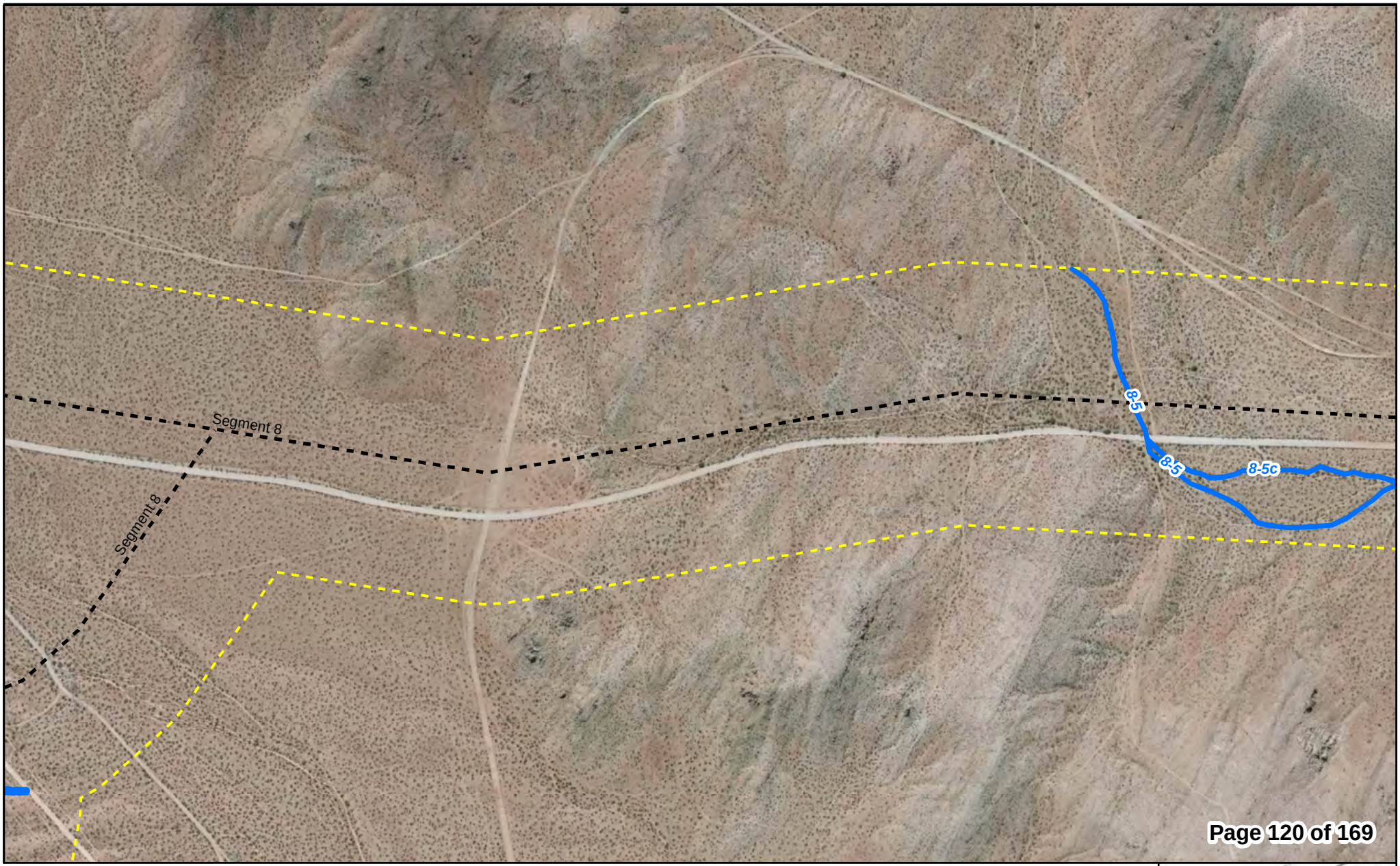

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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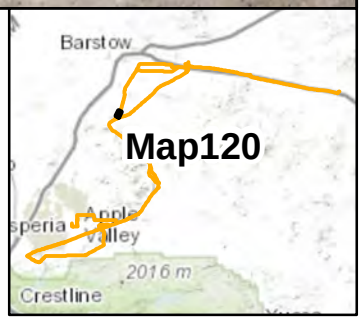

- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

▭ 2013 Survey Area

● Substation

■ Proposed Substation

——— Waters of the U.S. and State Waters
Waters Survey Identification Number

N

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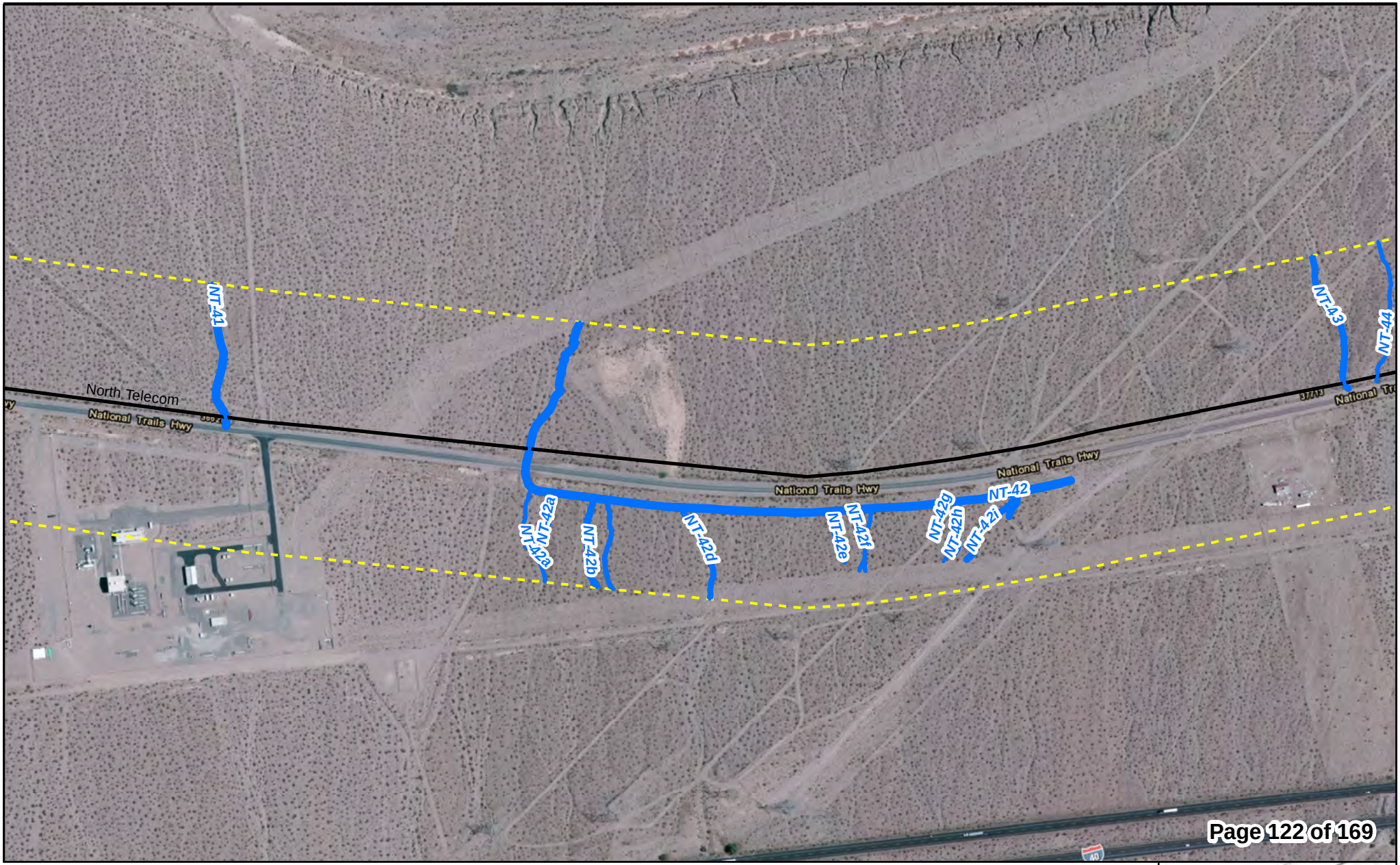

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

Waters Survey Identification Number

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- CWLTP Proposed Transmission Lines
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- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

Waters Survey Identification Number

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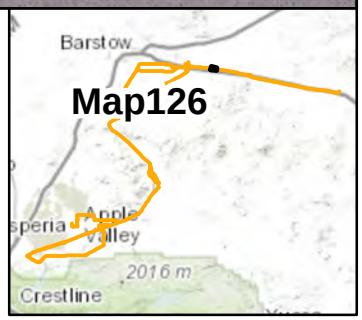

- CWLTP Proposed Transmission Lines
- Proposed Telecommunication Lines
- 2013 Survey Area
- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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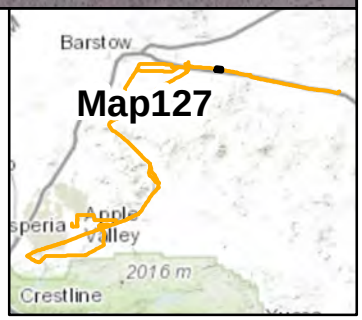

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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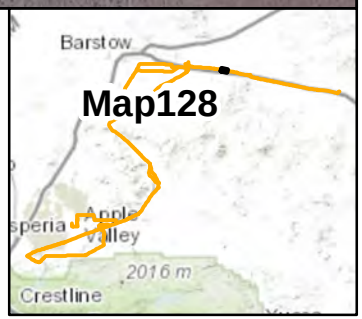

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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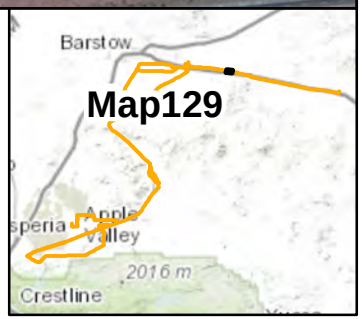

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2013 Survey Area

Substation

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Waters of the U.S. and State Waters

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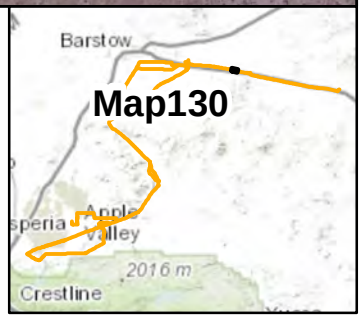

- - - - CWLTP Proposed Transmission Lines
——— Proposed Telecommunication Lines
▭ 2013 Survey Area
● Substation
■ Proposed Substation

——— Waters of the U.S. and State Waters
Waters Survey Identification Number

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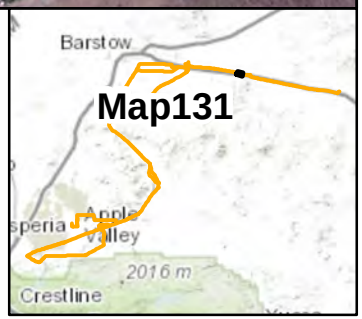

- - - - CWLTP Proposed Transmission Lines

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2013 Survey Area

Substation

Proposed Substation

——— Waters of the U.S. and State Waters

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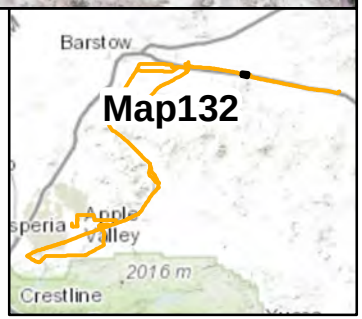

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2013 Survey Area

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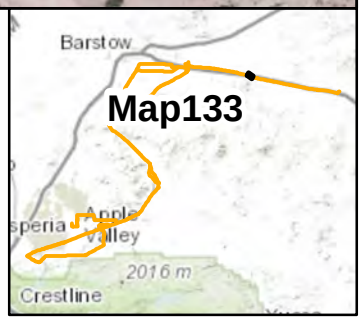

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2013 Survey Area

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Waters of the U.S. and State Waters

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- Proposed Substation

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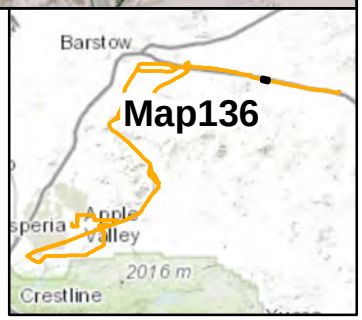

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2013 Survey Area

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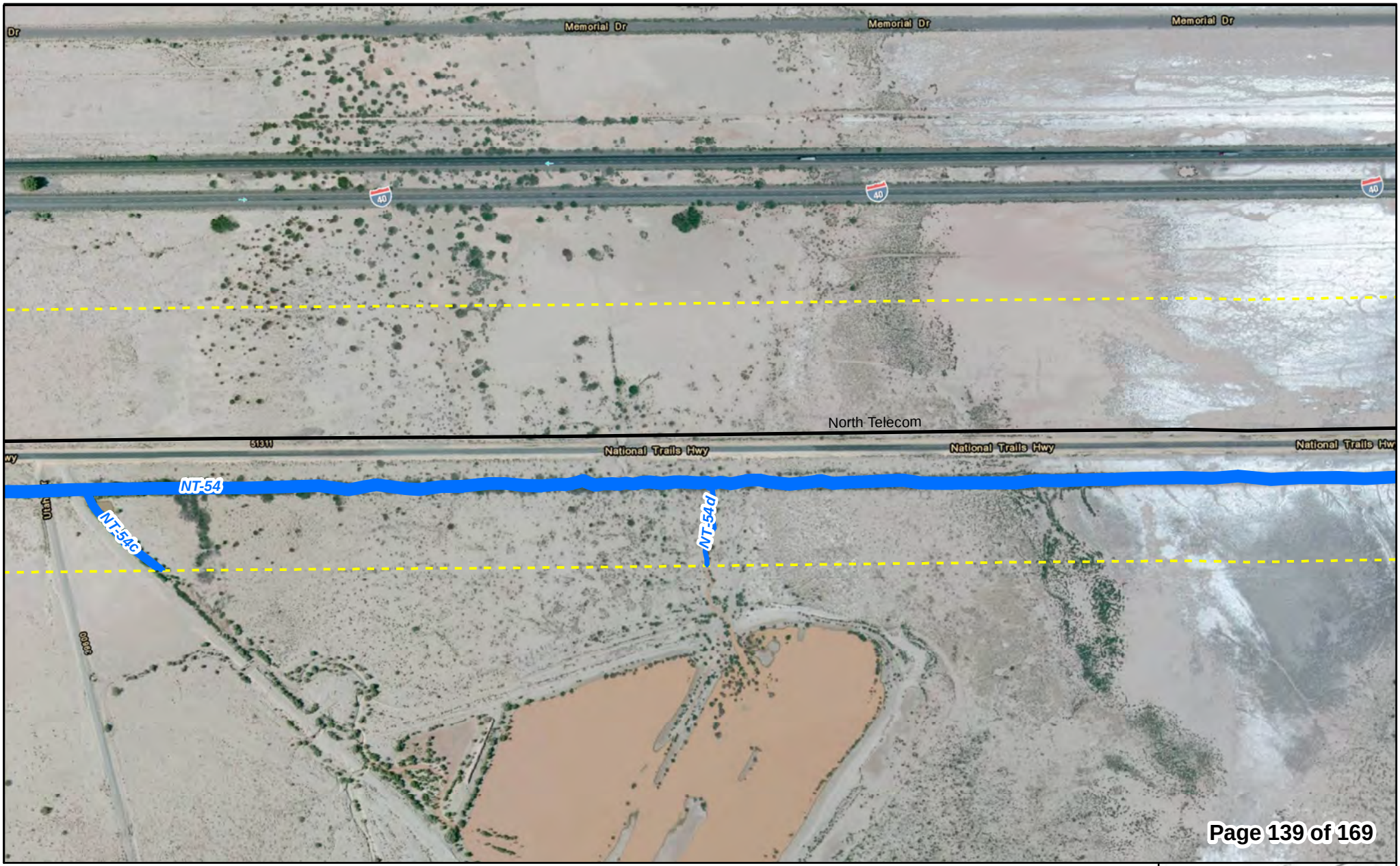

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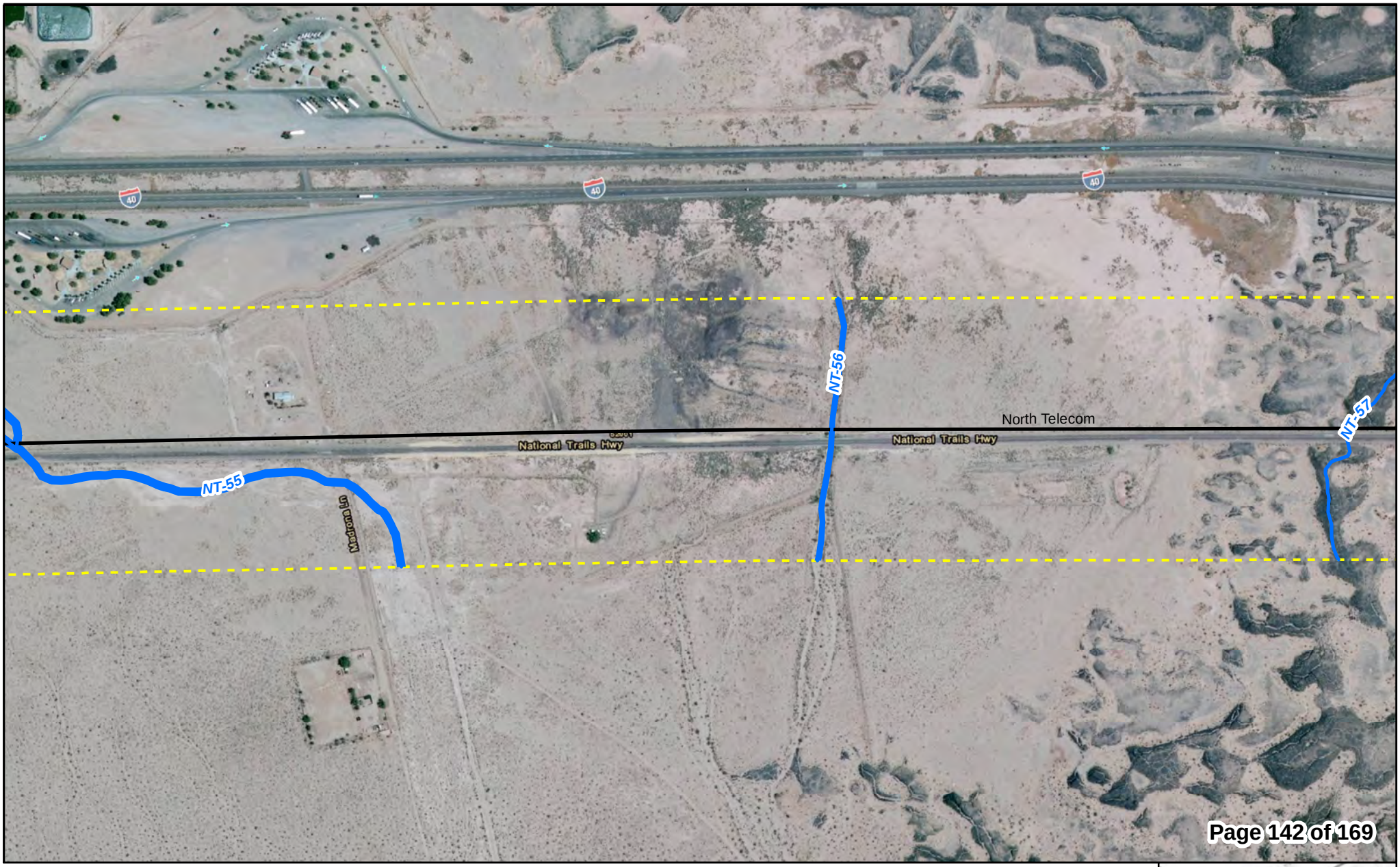

- - - - CWLTP Proposed Transmission Lines

——— Proposed Telecommunication Lines

2013 Survey Area

● Substation

■ Proposed Substation

——— Waters of the U.S. and State Waters

Waters Survey Identification Number

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CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

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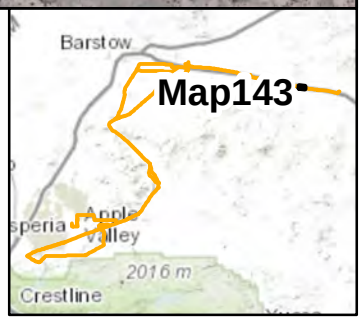

- CWLTP Proposed Transmission Lines
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- Substation
- Proposed Substation

Waters of the U.S. and State Waters
Waters Survey Identification Number

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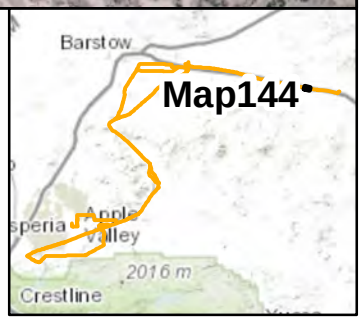

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

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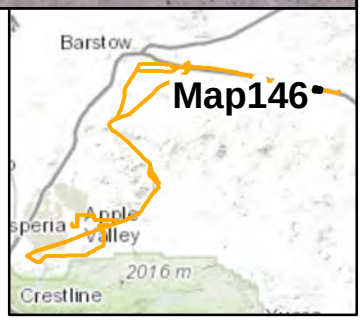

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

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- - - - CWLTP Proposed Transmission Lines
——— Proposed Telecommunication Lines
2013 Survey Area
Substation
Proposed Substation

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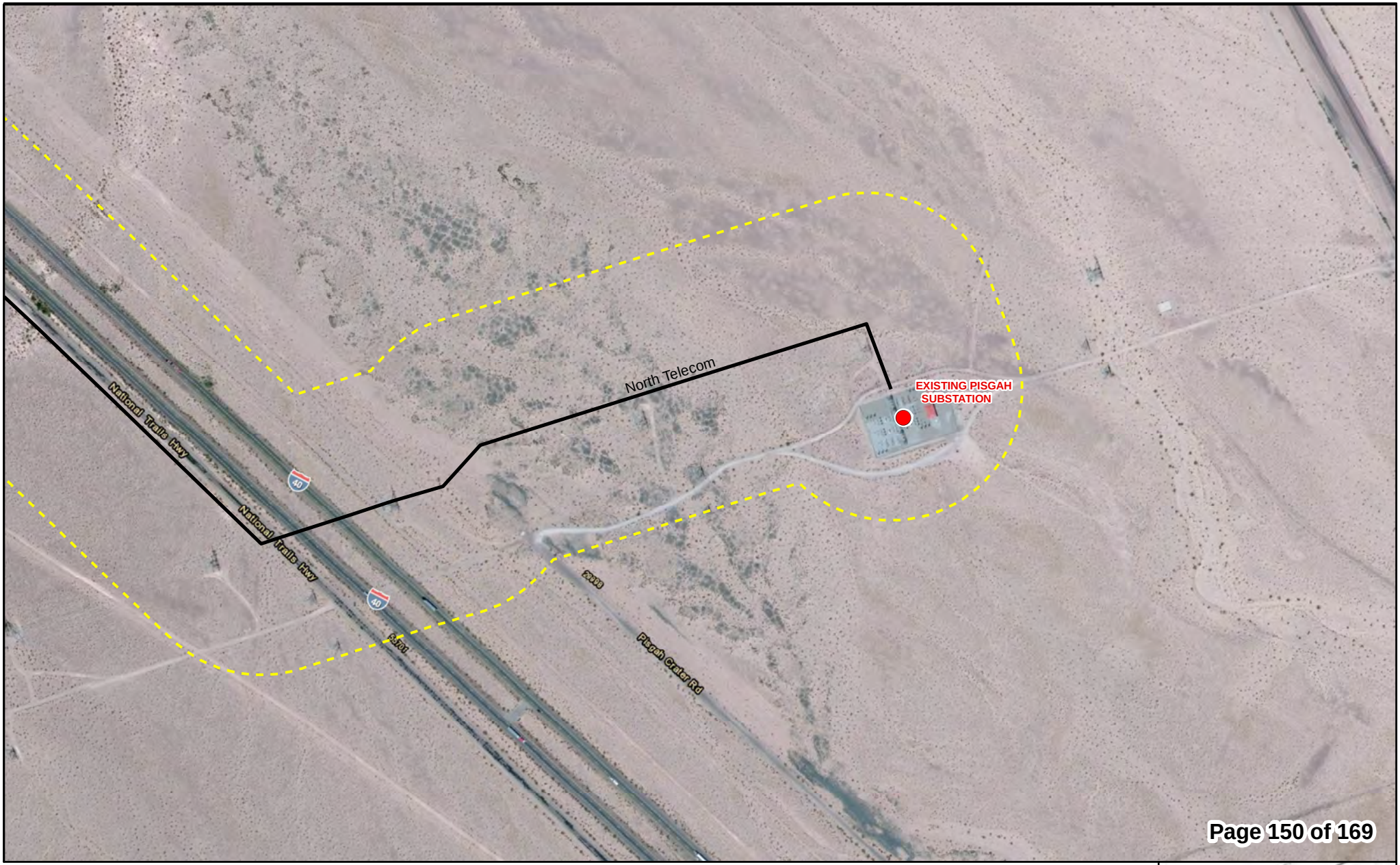

CWLTP Proposed Transmission Lines

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2013 Survey Area

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Waters of the U.S. and State Waters

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Waters of the U.S. and State Waters
Waters Survey Identification Number

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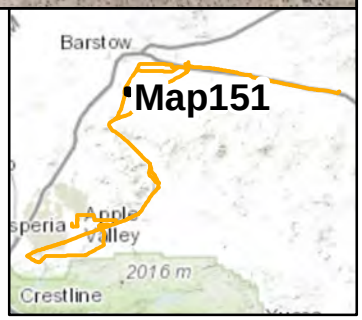

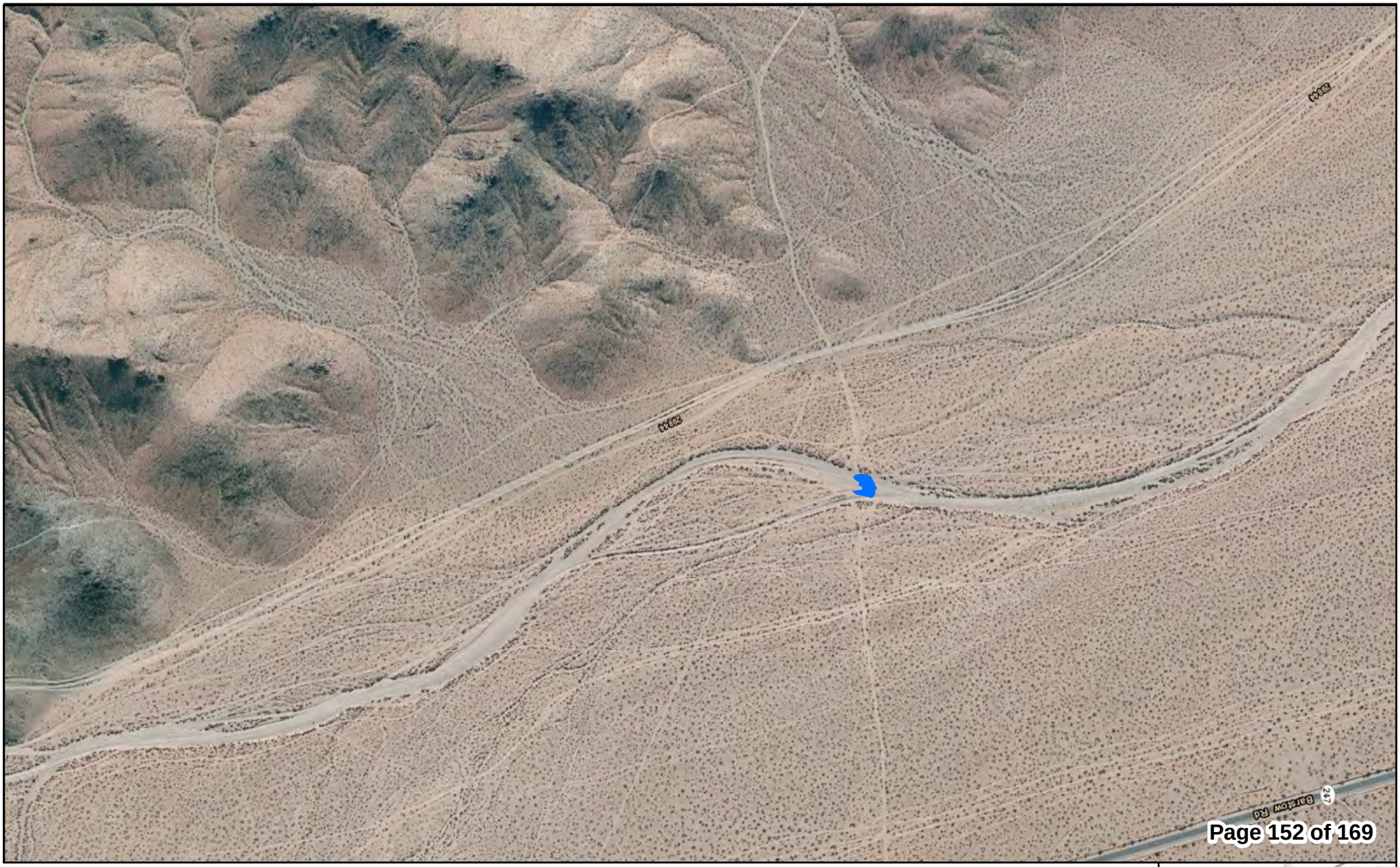

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

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Waters of the U.S. and State Waters

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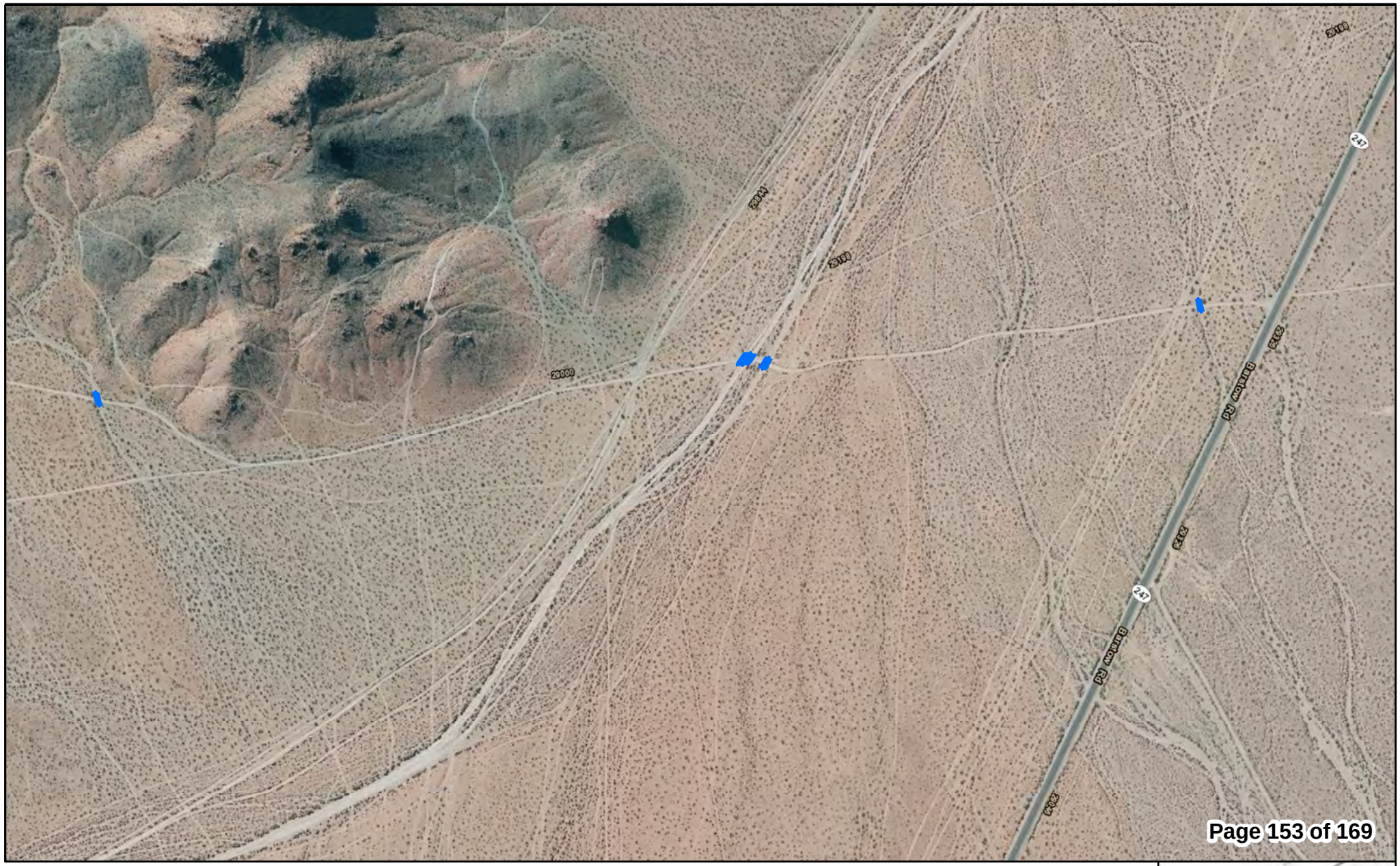

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Waters of the U.S. and State Waters

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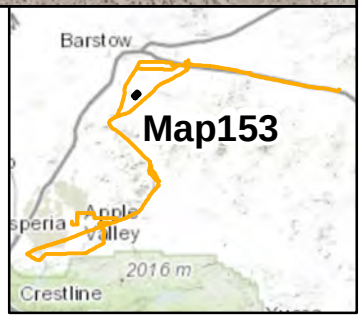

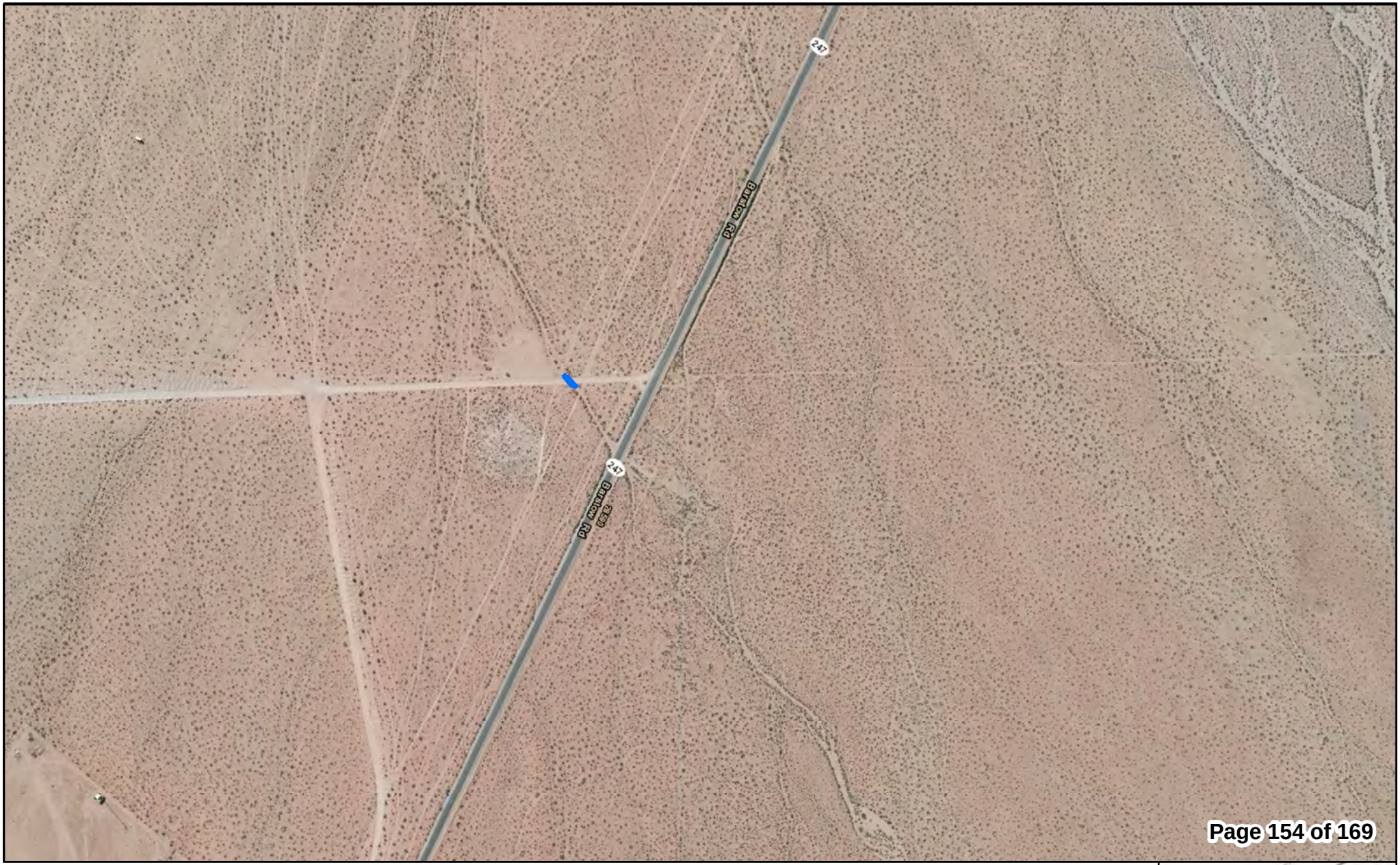

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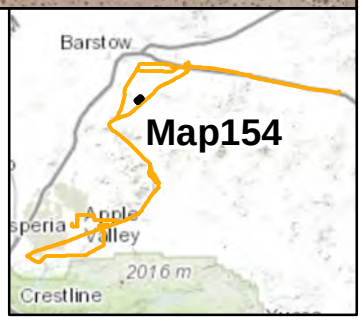

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2013 Survey Area

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Waters of the U.S. and State Waters

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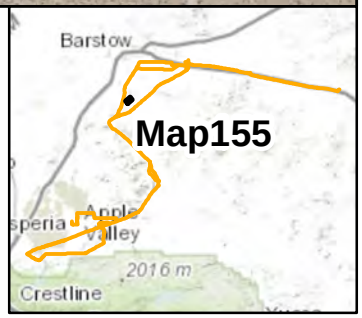

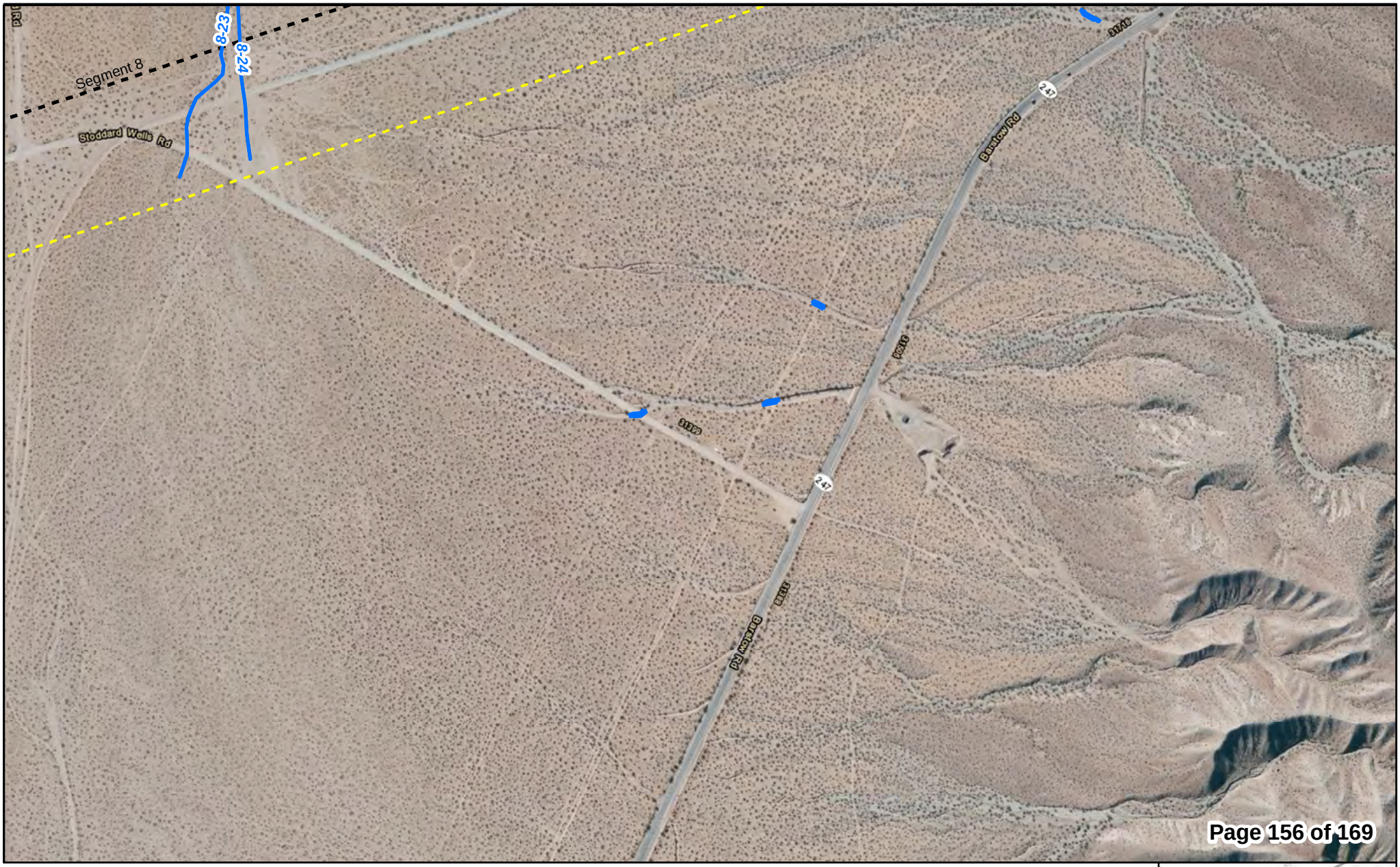

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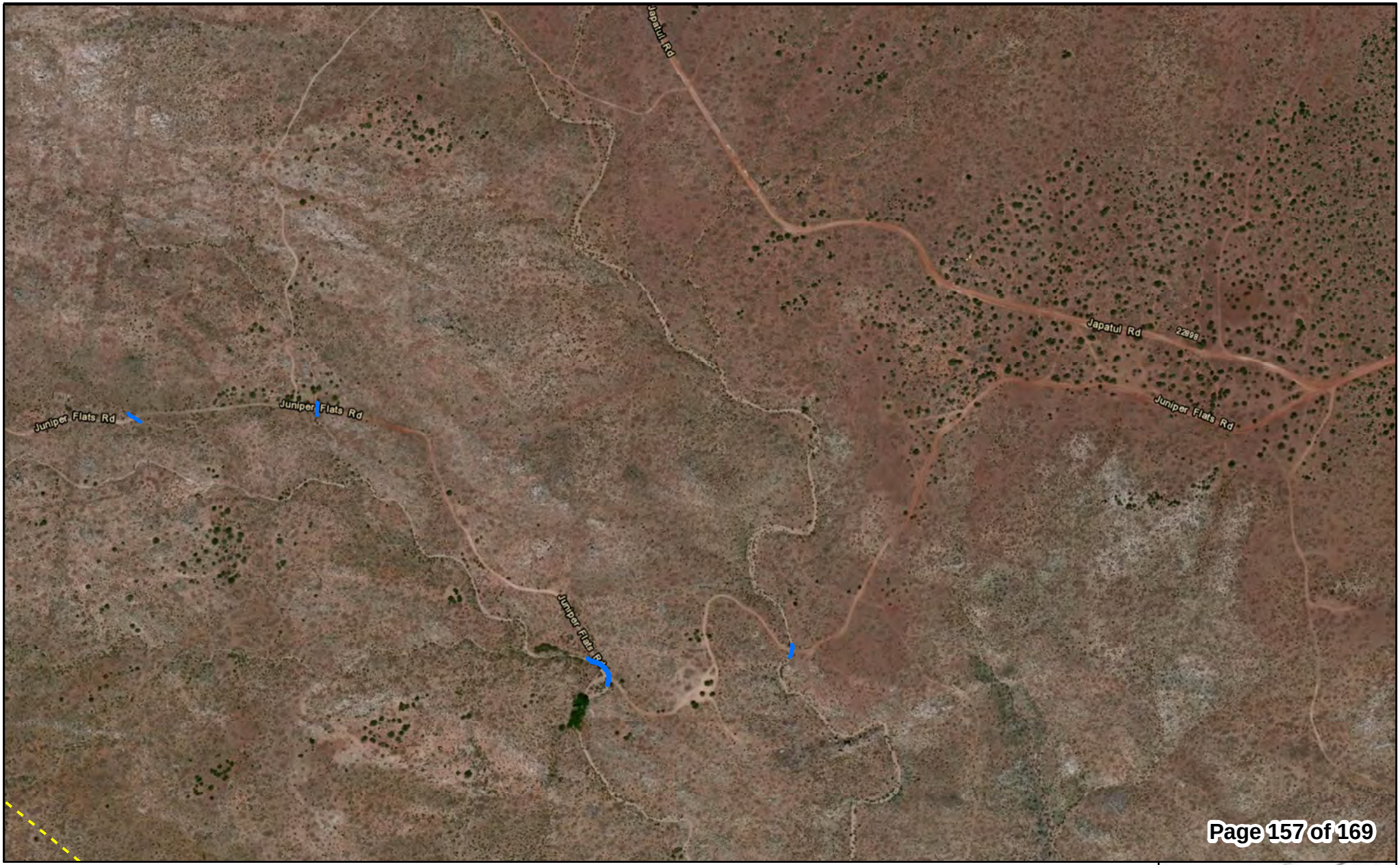

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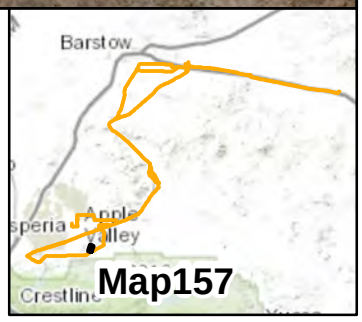

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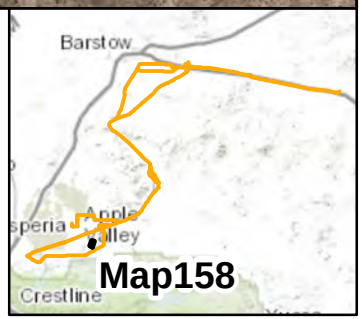

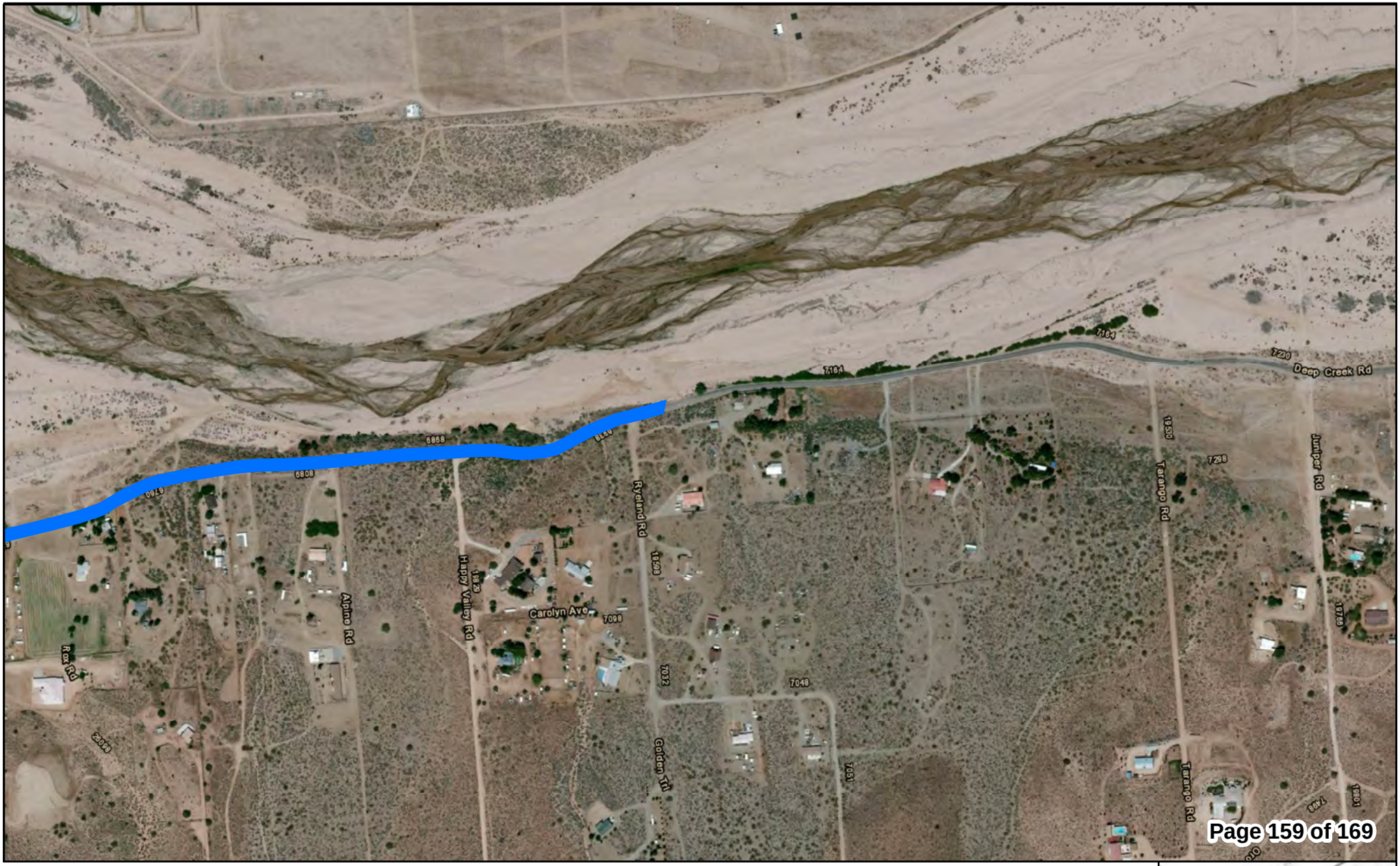

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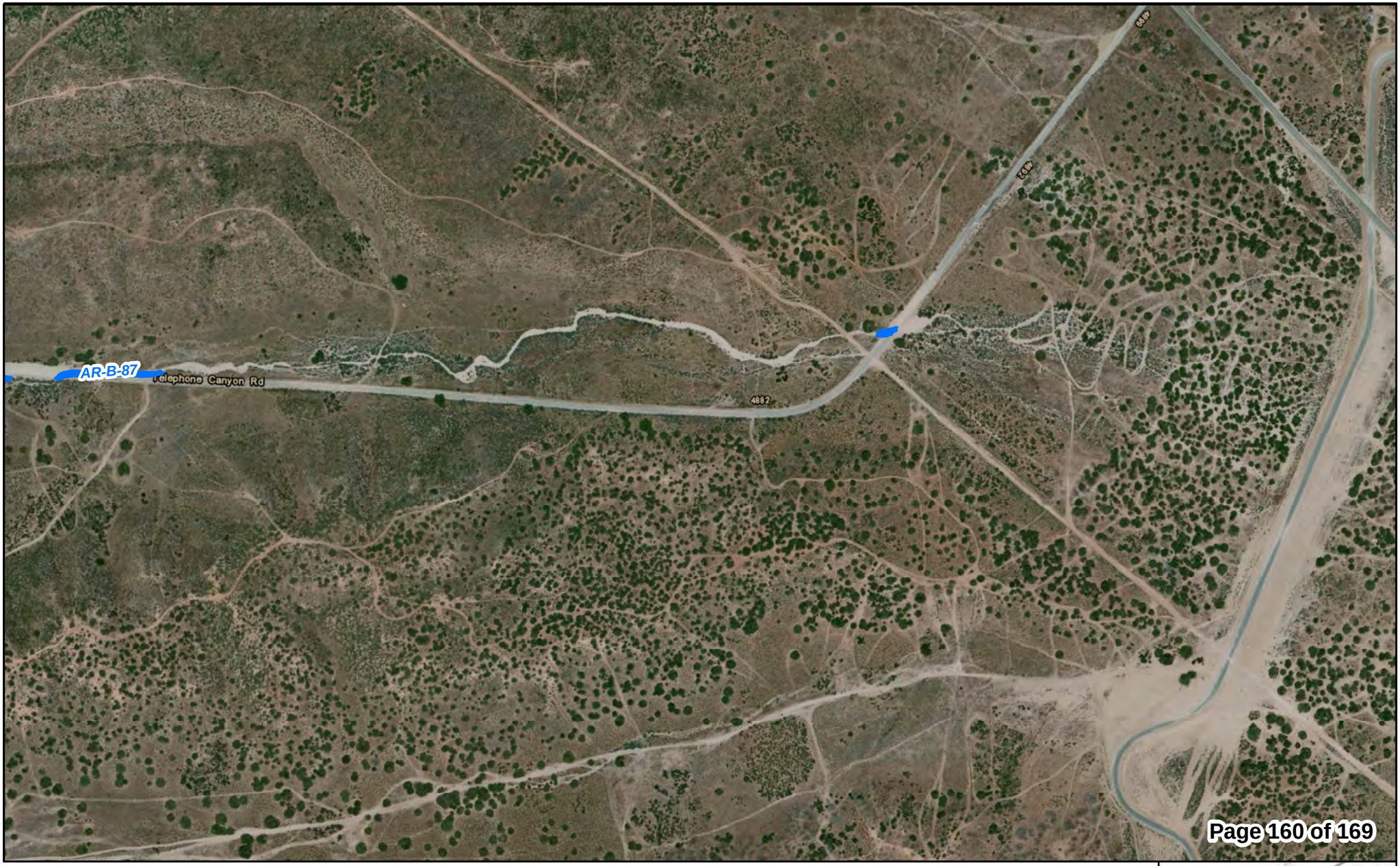

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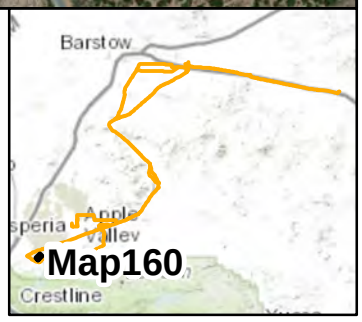

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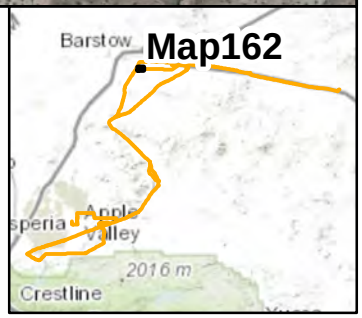

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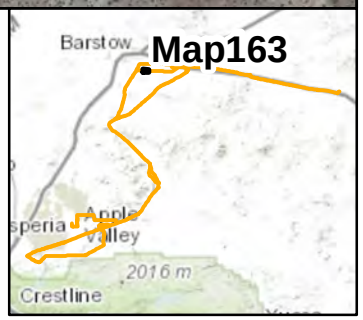

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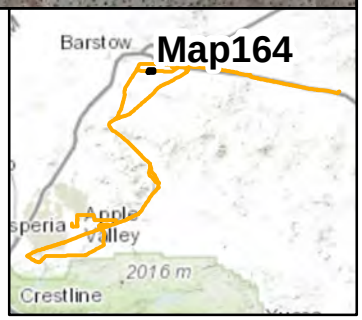

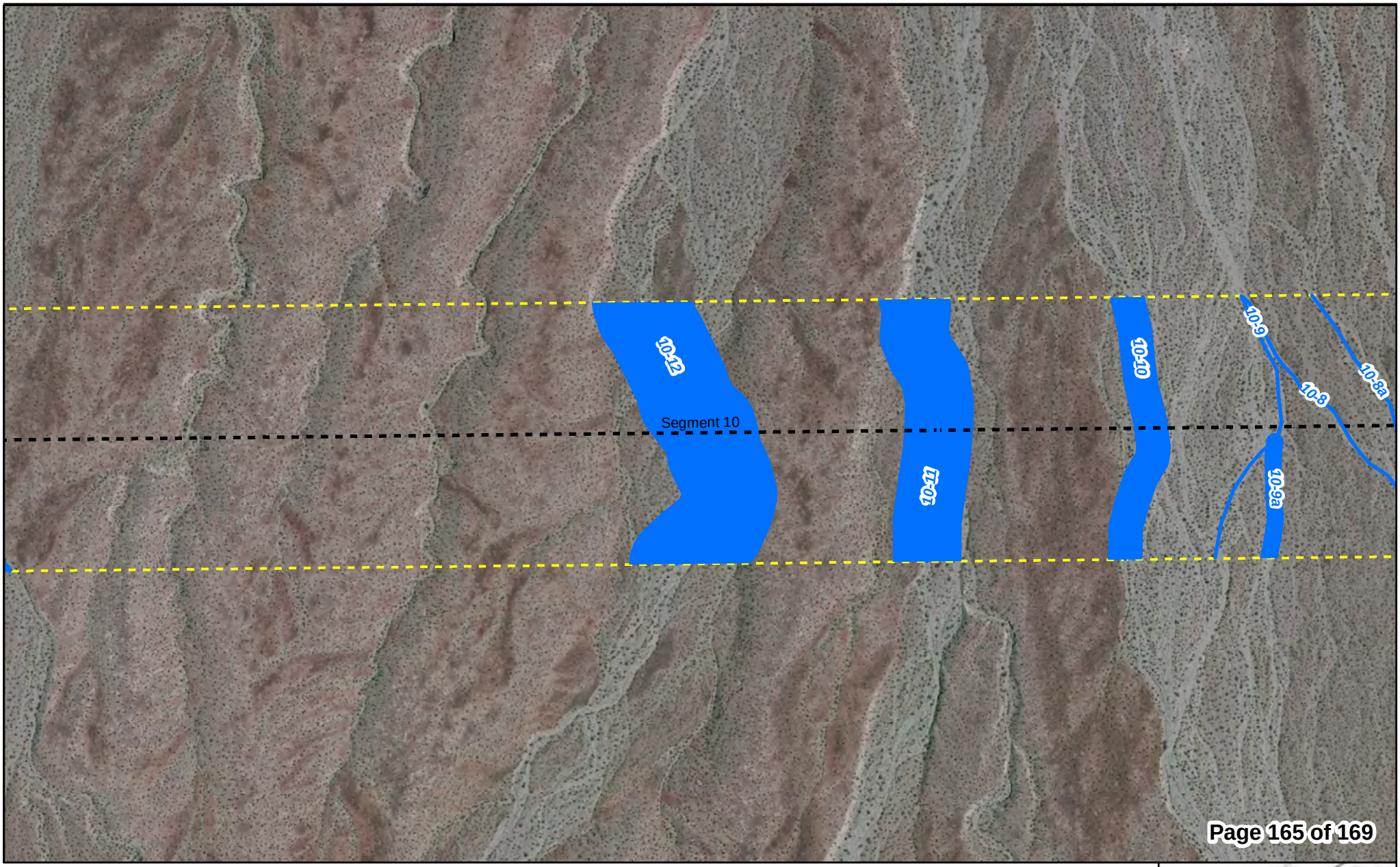

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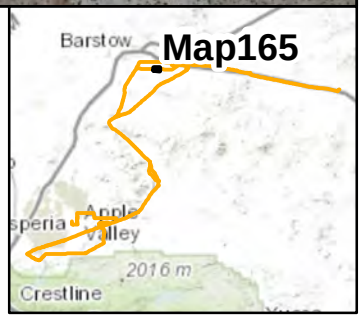
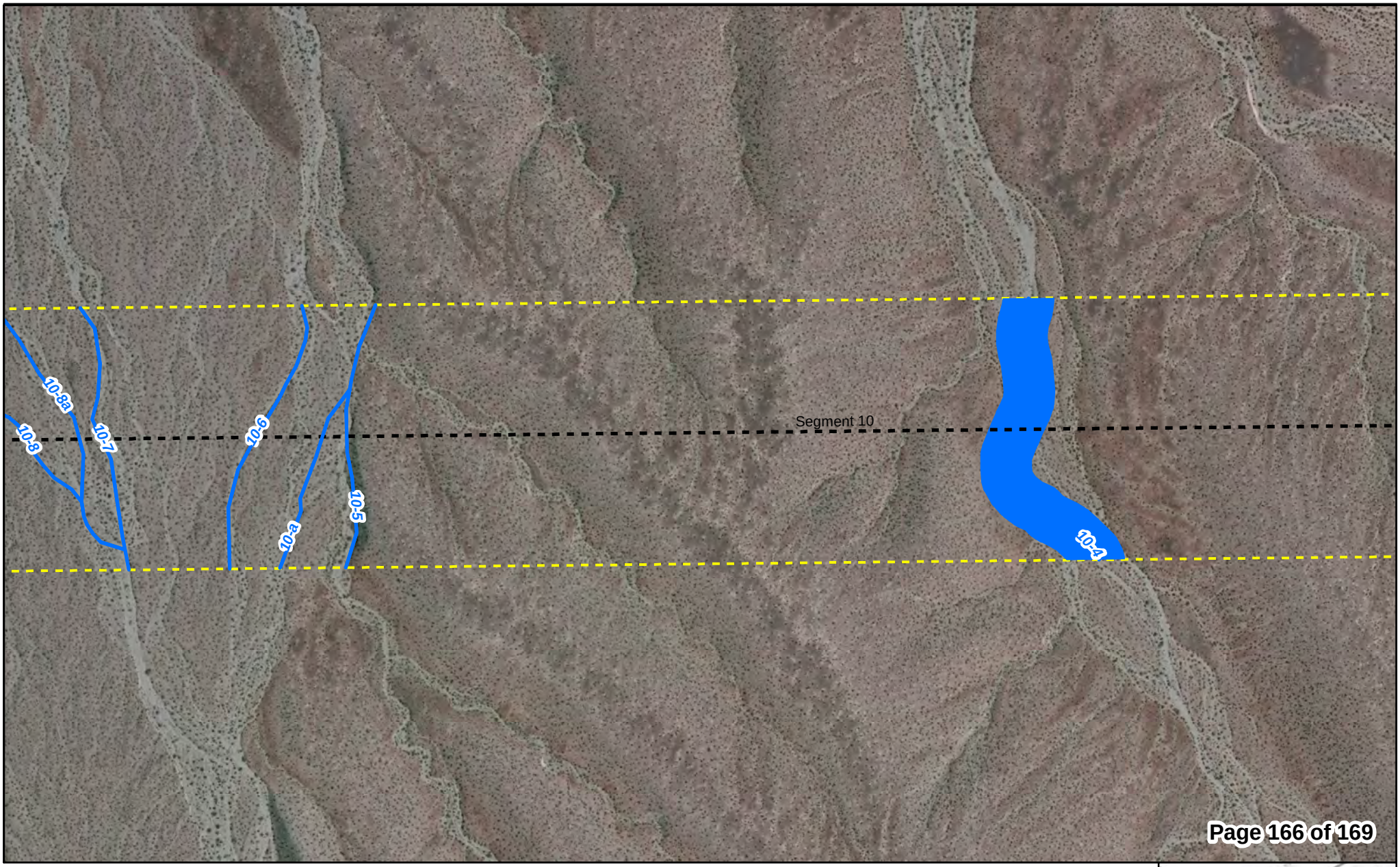
0 255 510 1,020 Feet





CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

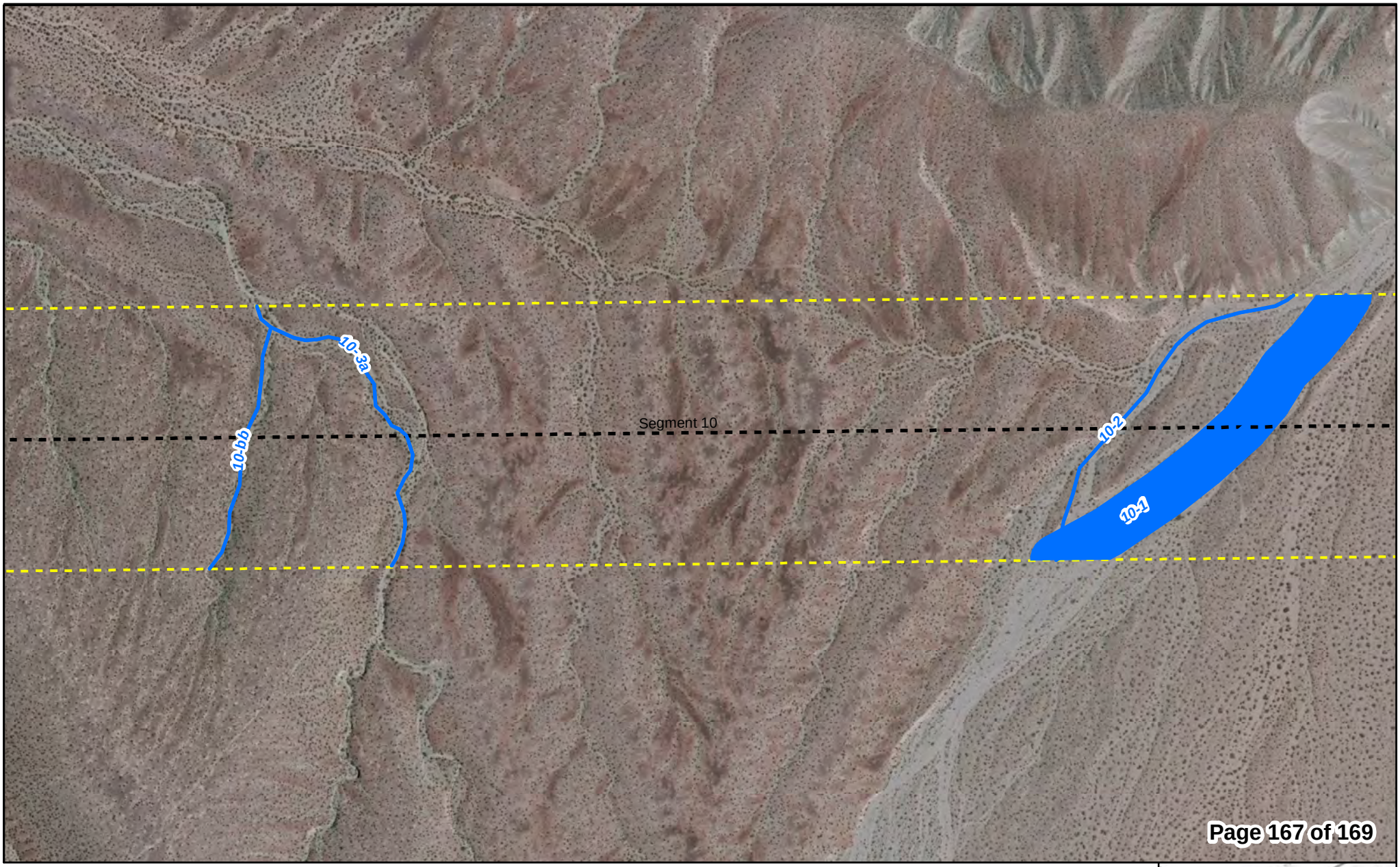
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

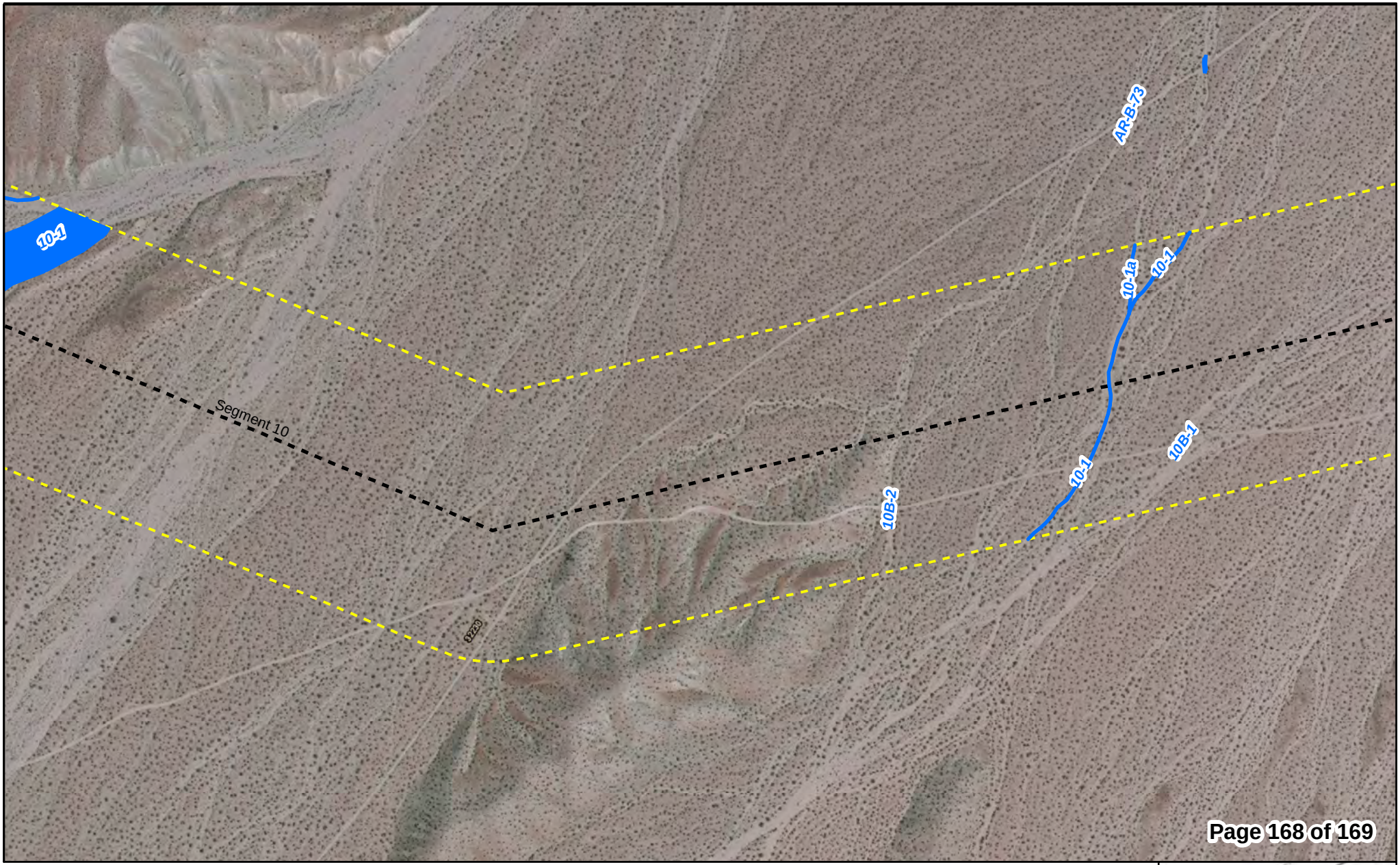
Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet



CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

CWLTP Proposed Transmission Lines

Proposed Telecommunication Lines

2013 Survey Area

Substation

Proposed Substation

Waters of the U.S. and State Waters

Waters Survey Identification Number

N

0 255 510 1,020 Feet

ATTACHMENT C

Drainage Table

Waters Within The Survey Corridors

Segment	Waters Survey Identification	Width	Length (feet)	Acres
North Telecom	NT-42	10	2771	2.096
North Telecom	NT-42i	8	421	0.255
North Telecom	NT-42g	5	111	0.047
North Telecom	NT-42h	4	267	0.084
North Telecom	NT-42f	5	428	0.159
North Telecom	NT-42e	5	208	0.083
North Telecom	NT-42d	7	385	0.208
North Telecom	NT-42c	6	355	0.164
North Telecom	NT-42b	8	356	0.221
North Telecom	NT-38	7	376	0.208
North Telecom	NT-41	10	562	0.433
North Telecom	NT-42a	5	655	0.248
North Telecom	NT-43	8	548	0.336
North Telecom	NT-46	5	1627	0.601
North Telecom	NT-47	7	439	0.241
North Telecom	NT-48	9	531	0.376
North Telecom	NT-49	5	1056	0.397
North Telecom	NT-50	9	716	0.497
North Telecom	NT-51	8	474	0.292
North Telecom	NT-45	7	469	0.257
North Telecom	NT-44	5	556	0.212
North Telecom	NT-52	8	568	0.348
North Telecom	NT-53	15	579	0.674
North Telecom	NT-53a	10	221	0.186
North Telecom	NT-54c	10	431	0.333
North Telecom	NT-54a	8	377	0.233

Segment	Waters Survey Identification	Width	Length (feet)	Acres
North Telecom	NT-54b	5	386	0.148
North Telecom	NT-54e	3	400	0.091
North Telecom	NT-54f	5	497	0.189
North Telecom	NT-54g	5	795	0.304
North Telecom	NT-54h	5	329	0.126
North Telecom	NT-54	15	24559	27.785
North Telecom	NT-55	10	3800	2.820
North Telecom	NT-55a	10	530	0.408
North Telecom	NT-55b	5	621	0.236
North Telecom	NT-56	7	1011	0.533
North Telecom	NT-57	3	1175	0.266
North Telecom	NT-58	10	1026	0.773
North Telecom	NT-58a	4	287	0.088
North Telecom	NT-59	5	1213	0.456
North Telecom	NT-60	9	518	0.359
North Telecom	NT-61	10	1221	0.918
North Telecom	NT-1	7	1261	0.665
North Telecom	NT-3	5	1021	0.385
North Telecom	NT-7	4	1285	0.387
North Telecom	NT-11	6	223	0.099
North Telecom	NT-12	5	693	0.263
North Telecom	NT-14	7	1184	0.624
North Telecom	NT-13	4	637	0.195
North Telecom	NT-18	5	1027	0.387
North Telecom	NT-20	4	812	0.246
North Telecom	NT-21	5	1171	0.440
North Telecom	NT-22	4	772	0.234

Segment	Waters Survey Identification	Width	Length (feet)	Acres
North Telecom	NT-23	6	1275	0.576
North Telecom	NT-23a	6	704	0.321
North Telecom	NT-25	6	1354	0.611
North Telecom	NT-26	4	1119	0.337
North Telecom	NT-31	10	1478	1.113
North Telecom	NT-32	6	1099	0.496
North Telecom	NT-2	5	1029	0.387
North Telecom	NT-4	9	1019	0.691
North Telecom	NT-5	8	1243	0.754
North Telecom	NT-8	3	1522	0.344
North Telecom	NT-16	4	735	0.223
North Telecom	NT-15	2	194	0.030
North Telecom	NT-15a	3	132	0.032
North Telecom	NT-24	4	674	0.204
North Telecom	NT-36	9	1662	1.125
North Telecom	NT-39	9	2367	1.611
North Telecom	NT-40	6	5053	2.286
North Telecom	NT-49a	7	273	0.149
North Telecom	NT-54d	6	323	0.149
North Telecom	NT-25a	3	159	0.038
Segment 1	1-36	7	3492	1.846
Segment 1	1-35	10	1450	1.074
Segment 1	1-34	10	1230	0.936
Segment 1	1-33	15	1176	1.339
Segment 1	1-32	15	628	0.730
Segment 1	1-32a	15	1342	1.439
Segment 1	1-30	5	2166	0.818

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 1	1-29	8	1419	0.854
Segment 1	1-27	50	1212	4.631
Segment 1	1-28	20	1019	1.535
Segment 1	1-26	10	3301	2.483
Segment 1	1-24b	8	4778	2.882
Segment 1	1-22	10	1654	1.254
Segment 1	1-21	2	1456	0.219
Segment 1	1-20	10	956	0.729
Segment 1	1-19	2	1156	0.174
Segment 1	1-14	15	1051	1.206
Segment 1	1-11	8	1241	0.747
Segment 1	1-12	8	1448	0.872
Segment 1	1-10	50	1239	4.611
Segment 1	1-9	4	52	0.016
Segment 1	1-8	4	1281	0.386
Segment 1	1-7	20	1124	1.692
Segment 1	1-6	6	928	0.422
Segment 1	1-5	5	1073	0.406
Segment 1	1-4	4	1237	0.372
Segment 1	1-3	6	1136	0.513
Segment 1	1-2	10	793	0.604
Segment 1	1-13b	8	1279	0.770
Segment 1	1-6a	6	1201	0.546
Segment 1	1-9b	4	1666	0.502
Segment 1	1-9a	4	1081	0.326
Segment 1	1-11b	8	224	0.141
Segment 1	1-11a	8	1311	0.796

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 1	1-13c	8	1536	0.922
Segment 1	1-26a	6	2617	1.172
Segment 1	1-26d	6	698	0.321
Segment 1	1-26b	6	619	0.286
Segment 1	1-26c	6	396	0.185
Segment 1	1-24a	6	732	0.338
Segment 1	1-24j	6	682	0.314
Segment 1	1-24i	6	294	0.140
Segment 1	1-24h	6	136	0.068
Segment 1	1-24f	6	319	0.151
Segment 1	1-24e	6	303	0.140
Segment 1	1-24d	6	160	0.075
Segment 1	1-24c	6	52	0.027
Segment 1	1-25	35	1097	2.130
Segment 1	1-24g	6	785	0.360
Segment 10	10B-1	6	125	0.064
Segment 10	10B-2	8	79	0.060
Segment 10	10B-4	8	227	0.143
Segment 10	10B-3	5	270	0.104
Segment 10	10B-5	4	271	0.083
Segment 10	10B-6	3	192	0.044
Segment 10	10-1	4	1372	0.411
Segment 10	10-1a	4	255	0.078
Segment 10	10-2	4	1457	0.439
Segment 10	10-1	60	1519	6.773
Segment 10	10-3a	4	1374	0.415
Segment 10	10-bb	4	967	0.293

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 10	10-4	60	1189	5.362
Segment 10	10-5	4	1027	0.309
Segment 10	10-6	4	1074	0.324
Segment 10	10-a	4	740	0.225
Segment 10	10-8	4	1237	0.374
Segment 10	10-8a	4	836	0.253
Segment 10	10-7	4	1041	0.314
Segment 10	10-11	80	1030	6.186
Segment 10	10-12	110	1169	9.551
Segment 10	10-13	40	1027	3.108
Segment 10	10-13a	8	554	0.340
Segment 10	10-14	60	1106	4.995
Segment 10	10-14a	30	1002	2.338
Segment 10	10-15	4	1165	0.351
Segment 10	10-16	4	1358	0.409
Segment 10	10-16a	4	1006	0.305
Segment 10	10-16b	4	654	0.198
Segment 10	10-17	80	1698	10.070
Segment 10	10-17a	4	957	0.291
Segment 10	10-18	60	1502	6.768
Segment 10	10-10	40	1030	3.106
Segment 10	10-9	4	1108	0.335
Segment 10	10-9a	20	442	0.711
Segment 2	2-10c	6	1356	0.615
Segment 2	2-10e	6	822	0.374
Segment 2	2-10b	6	475	0.222
Segment 2	2-10a	10	535	0.412

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 2	2-10	12	1442	1.272
Segment 2	2-9	4	5212	1.566
Segment 2	2-8a	8	2992	1.808
Segment 2	2-8	5	4063	1.514
Segment 2	2-7b	30	3101	7.181
Segment 2	2-7a	6	1061	0.482
Segment 2	2-7	2	5907	0.886
Segment 2	2-5b	5	1343	0.508
Segment 2	2-4	4	2374	0.716
Segment 2	2-2b	10	644	0.495
Segment 2	2-2	8	4175	2.518
Segment 2	2-2a	8	1086	0.666
Segment 2	2-1c	5	6882	2.575
Segment 2	2-1a	5	1568	0.587
Segment 2	2-1b	5	461	0.179
Segment 2	2-AR-6	7	1489	0.789
Segment 2	2-AR-6	7	457	0.251
Segment 2	2-10b	12	275	0.261
Segment 2	2-10a	12	634	0.600
Segment 2	2-7c	2	149	0.023
Segment 3	2-10d	6	2461	1.112
Segment 3	2-10f	6	350	0.165
Segment 3	2-10g	6	462	0.211
Segment 5	5-18	4	1324	0.400
Segment 5	5-17a	8	1189	0.702
Segment 5	5-17b	8	993	0.611
Segment 5	5-16	12	1037	0.938

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 5	5-15	20	1228	1.857
Segment 5	5-14a	10	1229	0.917
Segment 5	5-14b	10	569	0.438
Segment 5	5-13	8	1160	0.711
Segment 5	5-12	5	862	0.327
Segment 5	5-10f	10	418	0.310
Segment 5	5-10d	15	1931	2.110
Segment 5	5-10c	15	860	0.974
Segment 5	5-11b	15	485	0.565
Segment 5	5-10b	15	235	0.291
Segment 5	5-9b	15	292	0.374
Segment 5	5-9a	15	566	0.661
Segment 5	5-7	8	1070	0.644
Segment 5	5-6	8	432	0.273
Segment 5	5-8	10	1095	0.823
Segment 5	5-5	5	1062	0.400
Segment 5	5-3	5	968	0.365
Segment 5	5-4	5	752	0.285
Segment 5	5-4a	5	246	0.097
Segment 5	5-2	8	1088	0.656
Segment 5	5-1	6	773	0.353
Segment 6	6B-4	7	762	0.399
Segment 6	6B-3	10	1797	1.339
Segment 6	6B-2	6	418	0.196
Segment 6	6B-1	2	155	0.024
Segment 6	6-7	2	1600	0.241
Segment 6	6-6	8	955	0.582

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 6	6-5	8	1102	0.664
Segment 6	6-4a	10	403	0.313
Segment 6	6-4	4	1090	0.328
Segment 6	6-2	2	1093	0.165
Segment 6	6-3	2	1489	0.224
Segment 6	6-1	2	925	0.140
Segment 6	6-8	3	4037	0.912
Segment 6	6-10	2200	1022	174.651
Segment 6	6-11	20	1109	1.709
Segment 6	6-13	2	1092	0.164
Segment 6	6-13a	2	457	0.069
Segment 6	6-12	2	809	0.122
Segment 6	6-15	4	1121	0.335
Segment 6	6-14	4	886	0.270
Segment 6	6-16a-AR	8	1184	0.719
Segment 6	6-16	40	1238	3.691
Segment 6	6-18a	8	541	0.332
Segment 6	6-18	8	793	0.484
Segment 6	6-17	40	2482	7.232
Segment 7	7-4	20	1484	2.172
Segment 7	7-3	13	1450	1.452
Segment 7	7-2	968	1256	86.373
Segment 8	8B-5	4	2930	0.884
Segment 8	8B-1	7	2306	1.225
Segment 8	8B-1a	5	498	0.192
Segment 8	8B-1b	5	1052	0.397
Segment 8	8B-2	7	1478	0.784

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 8	8B-4	7	523	0.284
Segment 8	8B-3	7	157	0.087
Segment 8	8-5	6	4557	2.058
Segment 8	8-5c	6	1043	0.478
Segment 8	8-5b	6	981	0.450
Segment 8	8-5a	6	1570	0.716
Segment 8	8-7	6	1258	0.568
Segment 8	8-8	6	1735	0.783
Segment 8	8-9	12	1045	0.944
Segment 8	8-AR-19	8	284	0.168
Segment 8	8-10	8	1407	0.853
Segment 8	8-AR-19a	8	187	0.111
Segment 8	8-11	8	2990	1.759
Segment 8	8-17d	10	347	0.281
Segment 8	8-17a	10	3496	2.642
Segment 8	8-17	10	3928	2.945
Segment 8	8-17c	10	624	0.479
Segment 8	8-18	7	2736	1.441
Segment 8	8-19	7	1952	1.029
Segment 8	8-19a	7	140	0.083
Segment 8	8-20	10	1095	0.824
Segment 8	8-21	10	1020	0.768
Segment 8	8-22	10	1044	0.786
Segment 8	8-24	4	969	0.292
Segment 8	8-23	4	940	0.286
Segment 8	8-25A	6	1794	0.810
Segment 8	8-25C	6	221	0.103

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 8	8-25B	8	337	0.211
Segment 8	8-25	14	1661	1.747
Segment 8	8-26	14	1736	1.828
Segment 8	8-27	15	1628	1.859
Segment 8	8-21a	4	1119	0.337
Segment 8	8-21b	4	531	0.162
Segment 8	8-1c	7	283	0.154
Segment 8	8-1b	7	417	0.229
Segment 8	8-1a	7	618	0.335
Segment 8	8-1b	7	99	0.061
Segment 8	8-1a	7	141	0.084
Segment 8	8-1	7	5915	3.035
Segment 9	9B-1	5	1469	0.552
Segment 9	9B-1a	5	30	0.014
Segment 9	9B-3	10	111	0.103
Segment 9	9B-4	8	83	0.062
Segment 9	9B-5	6	116	0.059
Segment 9	9B-6	4	86	0.029
Segment 9	9B-7	10	115	0.106
Segment 9	9B-8	6	112	0.058
Segment 9	9B-9	5	91	0.036
Segment 9	9B-10	5	203	0.081
Segment 9	9B-11	4	141	0.046
Segment 9	9B-12	3	104	0.025
Segment 9	9B-13	7	150	0.089
Segment 9	9B-14	3	167	0.039
Segment 9	9B-15	15	195	0.264

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Segment 9	9B-16	15	243	0.318
Segment 9	9-13	4	1040	0.313
Segment 9	9-12	5	1054	0.397
Segment 9	9-11	5	1067	0.402
Segment 9	9-8	4	1847	0.558
Segment 9	9-9	20	3297	4.966
Segment 9	9-10	10	3220	2.423
Segment 9	9-2	18	71	0.092
Segment 9	9-5	10	871	0.666
Segment 9	9-4	10	1113	0.837
Segment 9	9-3	9	1093	0.740
Segment 9	9-6	50	1002	3.774
Segment 9	9-7	80	1040	6.348
Segment 9	9-3a	6	1368	0.616
South Telecom	ST-1	10	903	0.670
South Telecom	ST-2	8	265	0.166
South Telecom	ST-3	4	349	0.107
Access Road	AR-B-87	9	515	0.330
Access Road	AR-B-88	10	73	0.053
Access Road	AR-B-7	7	67	0.035
Access Road	AR-B-9	4	57	0.017
Access Road	AR-B-8	4	123	0.038
Access Road	AR-B-10	3	56	0.013
Access Road	AR-B-1	600	0	34.223
Access Road	AR-B-21	8	421	0.247
Access Road	AR-B-19	8	0	0.006
Access Road	AR-B-11	3	71	0.016

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Access Road	AR-B-12	3	52	0.012
Access Road	AR-B-13	3	52	0.012
Access Road	AR-B-14	4	59	0.018
Access Road	AR-B-15	2	51	0.008
Access Road	AR-B-16	6	148	0.066
Access Road	AR-B-17	5	51	0.019
Access Road	AR-B-90	4	53	0.016
Access Road	AR-B-91	5	51	0.019
Access Road	AR-B-92	7	97	0.049
Access Road	AR-B-93	5	346	0.114
Access Road	AR-B-20	8	0	0.006
Access Road	AR-B-18	7	59	0.035
Access Road	AR-B-23	9	59	0.039
Access Road	AR-B-22	7	50	0.027
Access Road	AR-B-24	5	79	0.029
Access Road	AR-B-25	4	69	0.021
Access Road	AR-B-26	6	61	0.027
Access Road	AR-B-27	9	62	0.042
Access Road	AR-B-29	5	54	0.020
Access Road	AR-B-31	8	61	0.043
Access Road	AR-B-30	6	51	0.026
Access Road	AR-B-32	5	0	0.002
Access Road	AR-B-33	6	108	0.048
Access Road	AR-B-40	5	53	0.022
Access Road	AR-B-41	5	0	0.002
Access Road	AR-B-42	7	22	0.016
Access Road	AR-B-48	6	65	0.029

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Access Road	AR-B-49	5	69	0.028
Access Road	AR-B-50	2	124	0.019
Access Road	AR-B-51	5	59	0.022
Access Road	AR-B-52	3	72	0.016
Access Road	AR-B-53	3	53	0.012
Access Road	AR-B-54	4	51	0.015
Access Road	AR-B-59	7	54	0.028
Access Road	AR-B-60	6	53	0.024
Access Road	AR-B-67	5	54	0.020
Access Road	AR-B-68	4	57	0.017
Access Road	AR-B-69	5	53	0.020
Access Road	AR-B-70	4	51	0.015
Access Road	AR-B-71	7	63	0.032
Access Road	AR-B-72	6	61	0.027
Access Road	AR-B-73	5	89	0.033
Access Road	AR-B-75	7	57	0.034
Access Road	AR-B-74	6	53	0.024
Access Road	AR-B-79	15	58	0.064
Access Road	AR-B-80	7	150	0.077
Access Road	AR-B-81	6	53	0.024
Access Road	AR-B-82	8	50	0.030
Access Road	AR-B-83	8	126	0.075
Access Road	AR-B-94	25	58	0.124
Access Road	AR-B-84	10	479	0.333
Access Road	AR-B-85	15	247	0.256
Access Road	AR-B-86	7	68	0.035
Access Road	AR-B-95	8	55	0.033

Segment	Waters Survey Identification	Width	Length (feet)	Acres
Access Road	AR-B-96	15	58	0.066
Access Road	AR-B-97	10	51	0.038
Access Road	AR-B-98	8	51	0.030
Access Road	AR-B-99	8	64	0.038
Access Road	AR-B-4	3	0	0.001
Access Road	AR-B-5	2	0	0.000
Access Road	AR-B-6	3	75	0.017
Access Road	AR-B-2	4	56	0.015
Access Road	AR-B-89	8	62	0.037