

## **Consolidation of Burrowing Owl Studies**

High Desert Corridor/Los Angeles and San Bernardino Counties

63-mile (101-kilometer) Connection Between SR-14 and SR-18

District 7 & 8 LA & SB-New Highway

Project ID 0712000035

**November 2015**



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## November 2015

US Department of Transportation  
Federal Highway Administration and  
California Department of Transportation  
Los Angeles County Metropolitan Transportation Authority

**Prepared By:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Brad Haley, Senior Biologist  
Phone Number: (909) 307-0046  
215 N. Fifth Street, Redlands, CA 92374  
ECORP Consulting, Inc.

**Recommended for Approval By:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Jeff Johnson, Associate District Biologist  
Phone Number: (213) 897-0404  
Office Name: Environmental Planning  
District/Region 7

**Approved By:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Paul Caron, Senior District Biologist  
Phone Number: (213) 897-0610  
Office Name: Environmental Planning  
District/Region 7



## High Desert Corridor: Consolidation of Burrowing Owl Studies

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The proposed project known as the High Desert Corridor has been in the development and design phase for many years. During this time, design changes have occurred. As a result, numerous biological surveys were conducted to ensure all areas within the proposed project limits were investigated. In response to comments on the 2015 DEIR/EIS regarding difficulty in referring to the numerous technical studies, Caltrans' consultant ECORP Consulting consolidated the burrowing owl surveys into this one brief report and map set for easier referencing in the CEQA/NEPA document. To minimize redundancy and reduce the size of this document, this document is prepared with the intent that only this one consolidated report will be included in the appendices of the Natural Environment Study Report and the Final EIR/EIS documents.

### Methods

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Burrowing owl habitat assessments, focused surveys, and approved modified protocol surveys were conducted by AMEC, ECORP, and Caltrans between 2008 and 2015. All surveys and habitat assessments were performed in accordance with the guidelines of the 1993 and 2012 CDFG Staff Report on Burrowing Owl Mitigation (CDFG 1993 and 2012), Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1997), and Guidance for Burrowing Owl Conservation (CDFG 2008). The following list of studies conducted for burrowing owl is consolidated in this report:

- Habitat Assessment for Burrowing Owl (concurrent with focused desert tortoise surveys), High Desert Corridor (AMEC 2011), San Bernardino County
- Focused Desert Tortoise Survey and Burrowing Owl Habitat Assessment Results Report for the High Desert Corridor Project (ECORP 2011), East Los Angeles County
- Habitat Assessment for Burrowing Owl (concurrent with focused desert tortoise surveys), California Department of Transportation High Desert Corridor Project, State Route 18 West to Los Angeles County Line Burrowing Owl Report (AMEC 2012), San Bernardino County
- Biological Survey Results Report for the State Route 138 New Freeway Construction Project (ECORP 2012), West Los Angeles County – CDFW-approved modified protocol burrowing owl surveys conducted in 2008 (breeding season) and 2009 (winter)
- Habitat Assessment and Focused Burrowing Owl Survey for the Project Known as High Desert Corridor (Caltrans 2015), Los Angeles and San Bernardino Counties

### Results

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A total of 38 live burrowing owl sites<sup>1</sup> were observed during the surveys conducted throughout the alignment between 2008 and 2015. An additional 42 active burrows were observed with evidence of burrowing owl sign and 84 suitable<sup>2</sup> burrowing owl burrows were identified and mapped during the surveys. Attachment 1 contains one map set presenting all of the study areas and survey results

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<sup>1</sup> Burrowing owl sites may have more than one owl present and contain breeding pairs

<sup>2</sup> Potential burrowing owl burrows, but unoccupied and absent of recent sign

recorded during each survey summarized in this report. The individual data set from each report are identified on the map. In addition, incidental burrowing owl observations made during other surveys are also presented. If the reader wishes to review any of the individual technical studies, those reports are available at the following website: [http://www.dot.ca.gov/dist07/HDC/HDC\\_Final\\_EIR-EIS/](http://www.dot.ca.gov/dist07/HDC/HDC_Final_EIR-EIS/). Below are the summarized burrowing owl results:

- Habitat Assessment for Burrowing Owl (concurrent with focused desert tortoise surveys), High Desert Corridor (AMEC 2011), San Bernardino County
  - Total of 21 locations of live burrowing owl sites
    - Nine additional active burrowing owl burrows with sign
    - 67 potential burrowing owl burrows with no evidence of recent sign
- Focused Desert Tortoise Survey and Burrowing Owl Habitat Assessment Results Report for the High Desert Corridor Project (ECORP 2011), East Los Angeles County
  - Total of three locations with either live burrowing owls, or active burrows
    - One live burrowing owl at a burrow
    - One live burrowing owl associated with a burrow
    - One other active burrowing owl burrow, with no individual seen
- Habitat Assessment for Burrowing Owl (concurrent with focused desert tortoise surveys), California Department of Transportation High Desert Corridor Project, State Route 18 West to Los Angeles County Line Burrowing Owl Report (AMEC 2012), San Bernardino County
  - Total of eight locations of live burrowing owls
    - 15 additional active burrowing owl burrows with sign
    - 17 additional potential burrows that were not currently active
- Biological Survey Results Report for the State Route 138 New Freeway Construction Project (ECORP 2012), West Los Angeles County – CDFW-approved modified protocol burrowing owl surveys conducted in 2008 (breeding season) and 2009 (winter)
  - Total of four locations with either live burrowing owls, or active burrows
    - One pair of burrowing owls (pair observed using two burrow locations)
    - One wintering burrowing owl (at different location than described above)
    - Two other active, unoccupied burrowing owl burrows
- Habitat Assessment and Focused Burrowing Owl Survey for the Project Known as High Desert Corridor (Caltrans 2015), Los Angeles and San Bernardino Counties
  - Total of three live breeding burrowing owl locations
    - 14 potentially active burrowing owl burrows with sign

One focus of this consolidated effort is to estimate the number of breeding pairs of burrowing owl and hunting habitat this project would impact should it receive approval. Because various areas of the proposed project limits were studied during different years, the estimate is based on the sum of the highest number of breeding pairs during any given year within each area of study. The area of hunting habitat required and available for each pair was determined by applying information from studies conducted in Imperial Valley, south San Joaquin Valley, South Saskatchewan, Wyoming, North Dakota,

Minnesota, and the San Francisco Bay area to the plant communities surrounding the active breeding burrows.

Studies regarding burrowing owl home range, hunting habitat, and general habitat requirements show a variety of results. A study conducted in Imperial and south San Joaquin Valleys reported over 80 percent of burrowing owl pairs to be observed hunting within 600 meters of their nest, suggesting an approximate range of 279 acres is enough space for a majority of burrowing owls (Shuford, W. D., Gardali, T. 2008). In Saskatchewan Canada, a heavily cultivated area, home ranges occurred from 35 to 1,188 acres. Daytime activities observed were restricted to 250 meters, approximately equivalent to 48 acres of area (USFWS 2003). In addition, during a Saskatchewan vole outbreak, home ranges were approximately 81 acres (Sissons et al. 2001). Based on this data, a buffer radius of 600 meters will be used for burrowing owl mitigation within the Project alignments; however, home-range size is likely related to food abundance, but overall the relationship is still unclear. It is suggested that burrowing owl are mitigated on a case-by-case scenario. Observation of the burrowing owl pair and their surrounding habitat prior to construction and mitigation should be conducted. With input from a lead biologist, an appropriate mitigation plan for each burrowing owl pair affected by Project activities can be determined.

Burrowing owls observed with an associated burrow complex are considered to be breeding pairs. If multiple owls were observed in a single breeding complex, the multiple observations are considered to be one breeding pair. Burrows identified with sign are considered to be potentially active for up to three years (The California Burrowing Owl Consortium, 1993). Since a majority of surveys were conducted over three years ago, many of the active burrows identified may not be considered active anymore. Any potential burrows, meaning burrows that fit size characteristics and habitat requirements for burrowing owl occupancy, were removed from the final cumulative map set since those areas of burrows have no definitive evidence of burrowing owl presence.

Throughout all burrowing owl studies conducted between 2008 and 2015, a total of 63 burrowing owl results are within 500-feet of the proposed alignment. Among these results, 21 are live owl locations, 33 are potential active burrows with sign, and nine are potential burrows that were unlikely active. Based on this consolidated information, it is estimated that there three breeding pairs of burrowing owl within the Project alignment plus a 500-foot buffer at any given year. Table 1 provides the estimated number of live burrowing owl pairs based on the data provided from that year. Attachment 1 also shows the areas of impact within the Project alignments. Each active burrowing owl or active burrow identified within the surveys was given a 600-meter buffer determined by the research presented in this report. These buffers were clipped within all alignments and confined to suitable burrowing owl habitat. Buffer areas shown in Attachment 1 reflect only those burrows that have been active within the last three years. All other burrows identified did not show signs of occupancy during the 2015 Caltrans surveys and were determined to be older than three years and, are therefore, unoccupied and won't require habitat mitigation. Buffers were not applied beyond any roads or other development. In the last three years, a total of three live burrowing owl and an additional 14 potential burrows were identified. A total of 350.9 acres within the Project alignments are affected by active burrowing owl data from the last three years.

**Table 1. Burrowing Owl Pairs by Year of Survey**

Year <sup>3</sup>	2008	2011	2012	2015
<b>Total Estimated Breeding Burrowing Owl Pair</b>	3 to 5	5 to 9	3 to 6	3

Pre-construction surveys will identify any active burrows that may be within the Project impact area. Active burrows identified that will be affected by Project activities will require translocation to a nearby parcel.

### **Literature Cited**

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[Caltrans 2015] California Department of Transportation. 2015. Habitat Assessment and Focused Burrowing Owl Survey for the Project Known as High Desert Corridor.

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[ECORP 2012] ECORP Consulting, Inc. 2012a. Biological Survey Results Report for the State Route 138 New Freeway Construction Project. April 2012.

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<sup>3</sup> Surveys were not conducted every year between 2008 and 2015, results do not reflect the entire Proposed Alignment of the Project surveyed

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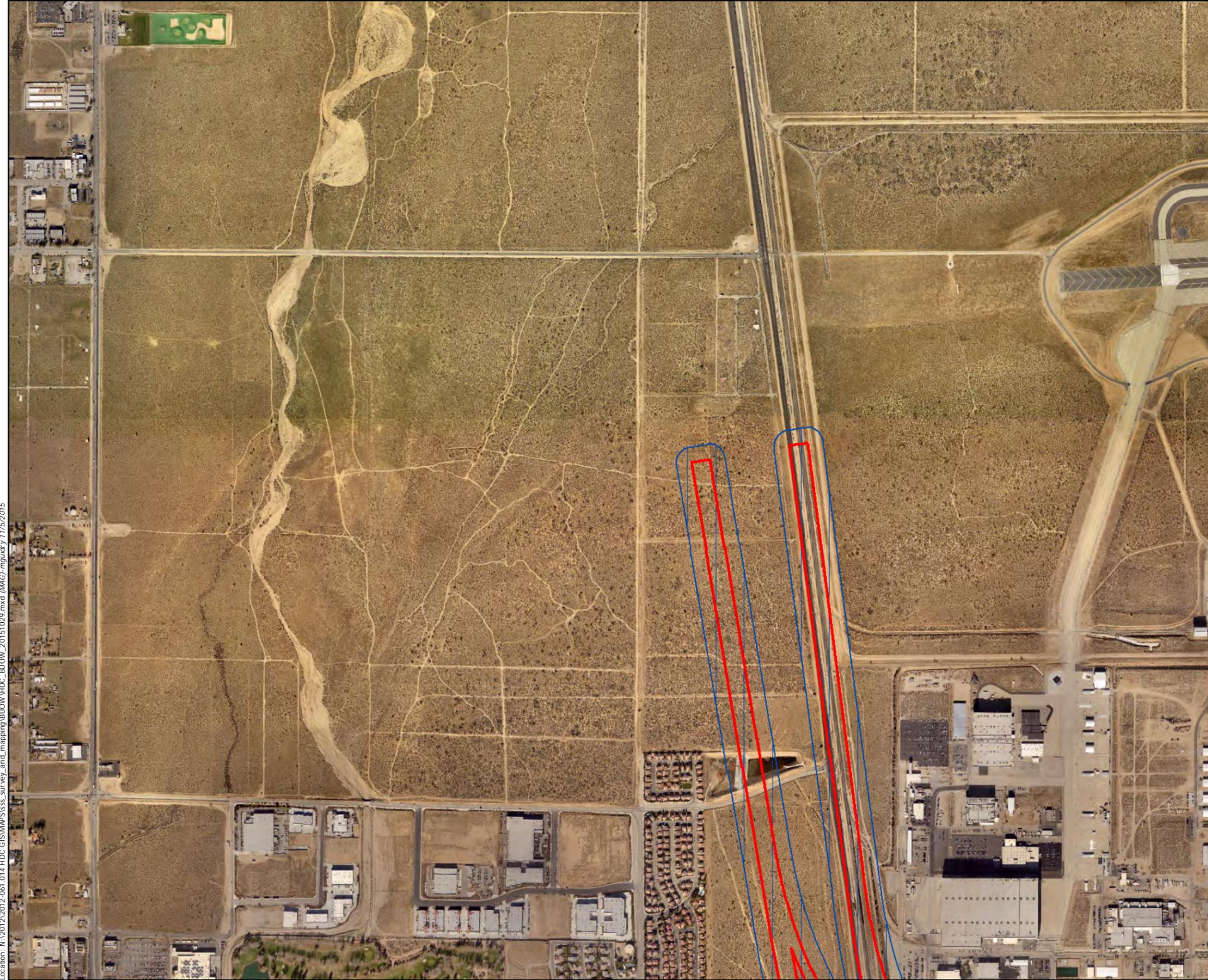
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[USGS] U.S Geological Survey. 2005. Effects of Management Practices on Grassland Birds: Burrowing Owl.

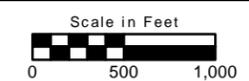
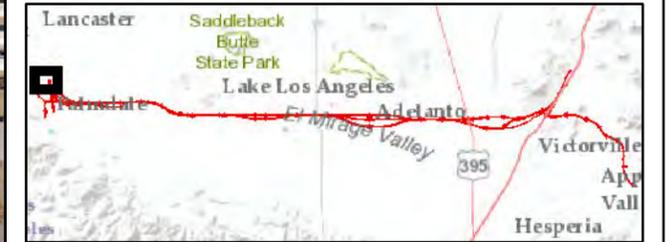
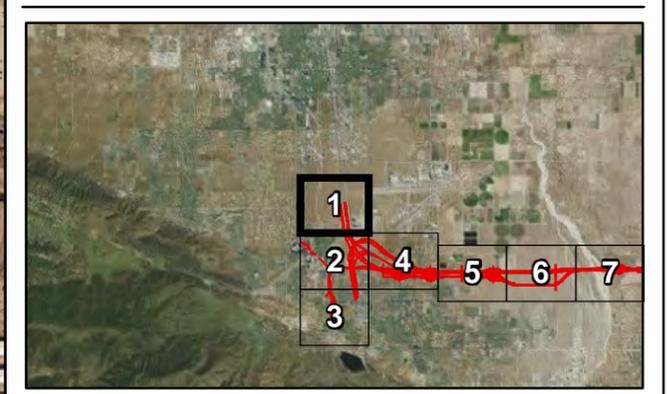


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 1 of 40

- Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
- Survey Area - 2015 - Caltrans



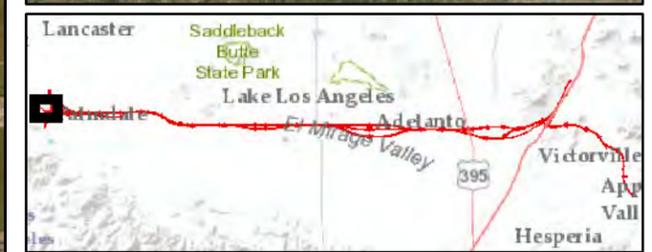
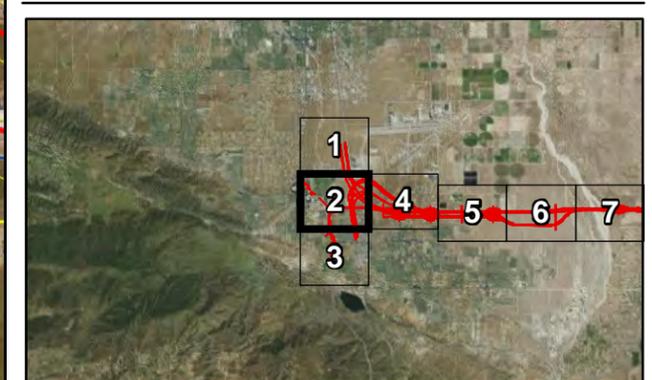
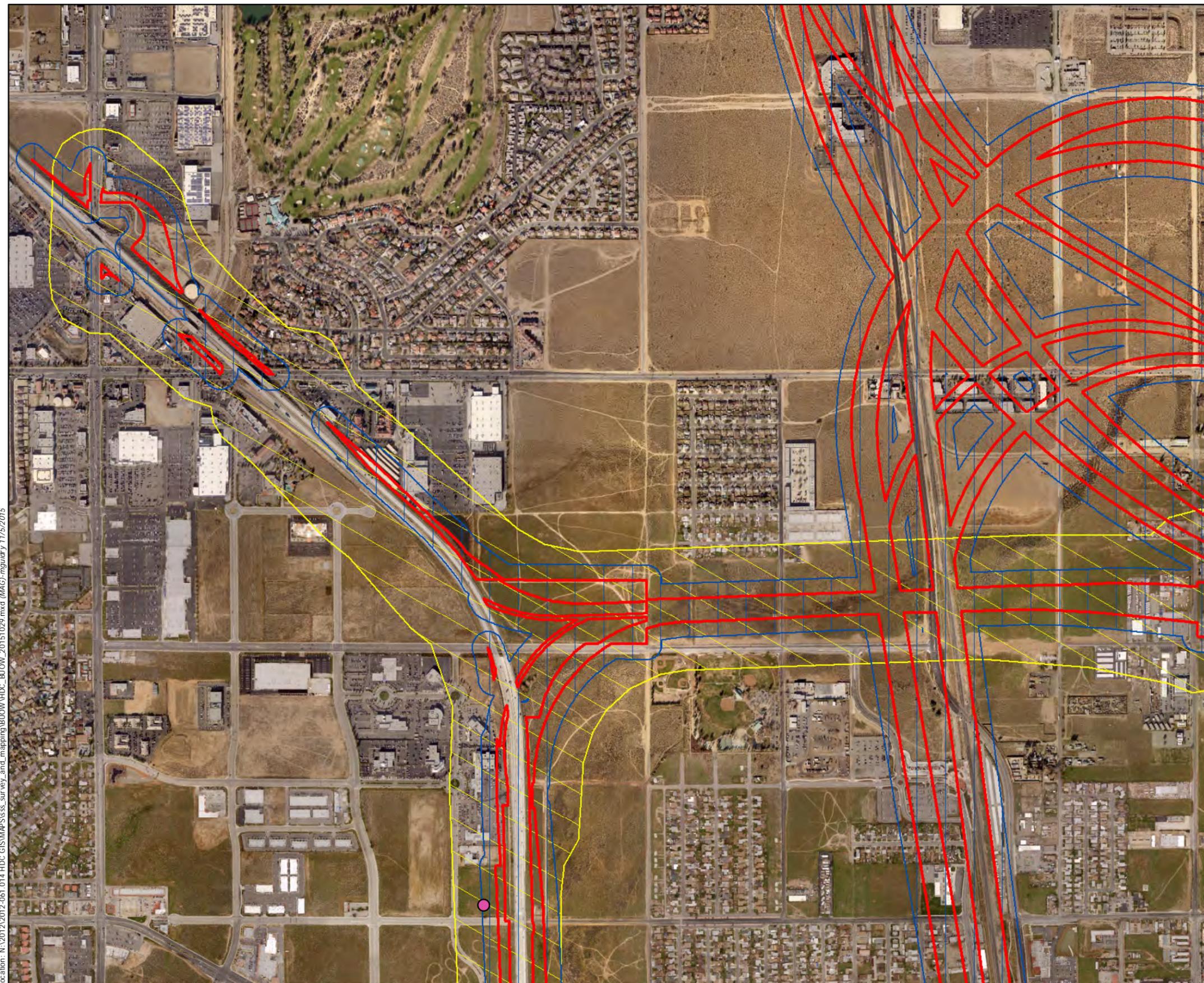
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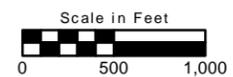


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 2 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- Burrow with Sign - 2008 - ECORP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2008 - ECORP
- Survey Area - 2015 - Caltrans

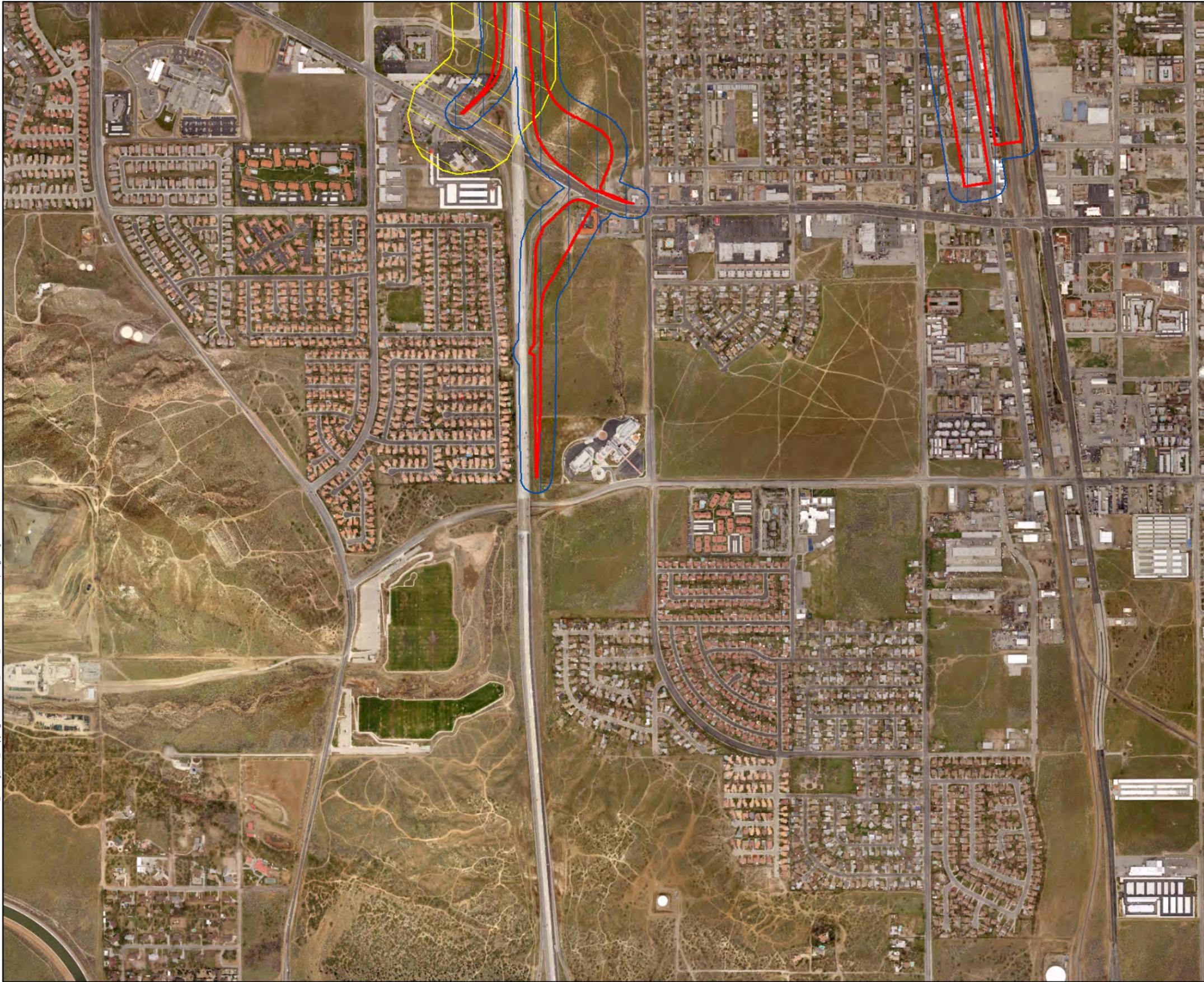


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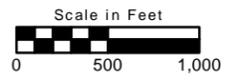
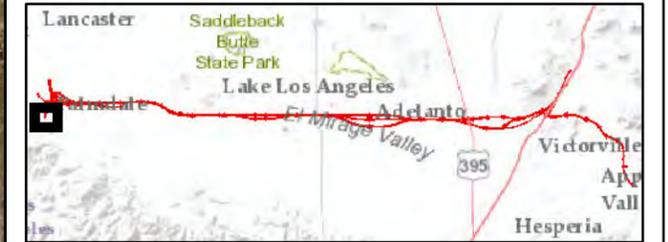
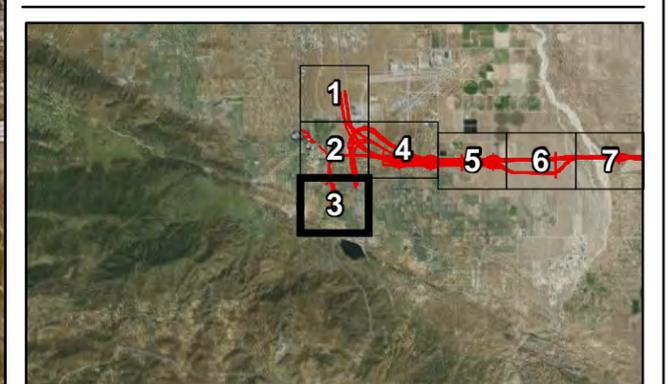


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# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 3 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2008 - ECORP
-  Survey Area - 2015 - Caltrans



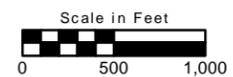
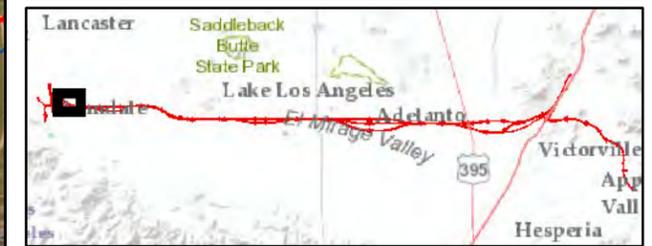
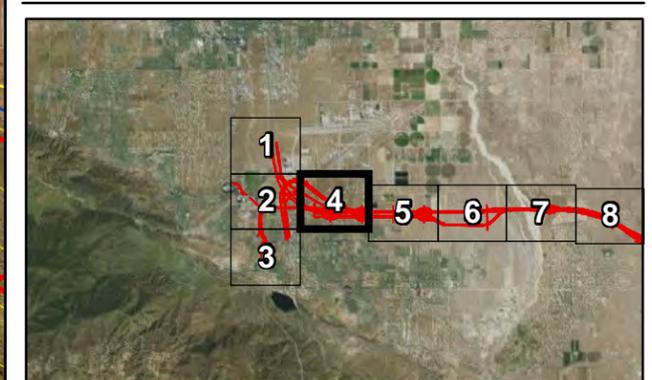


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 4 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2008 - ECORP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2008 - ECORP
- Survey Area - 2015 - Caltrans



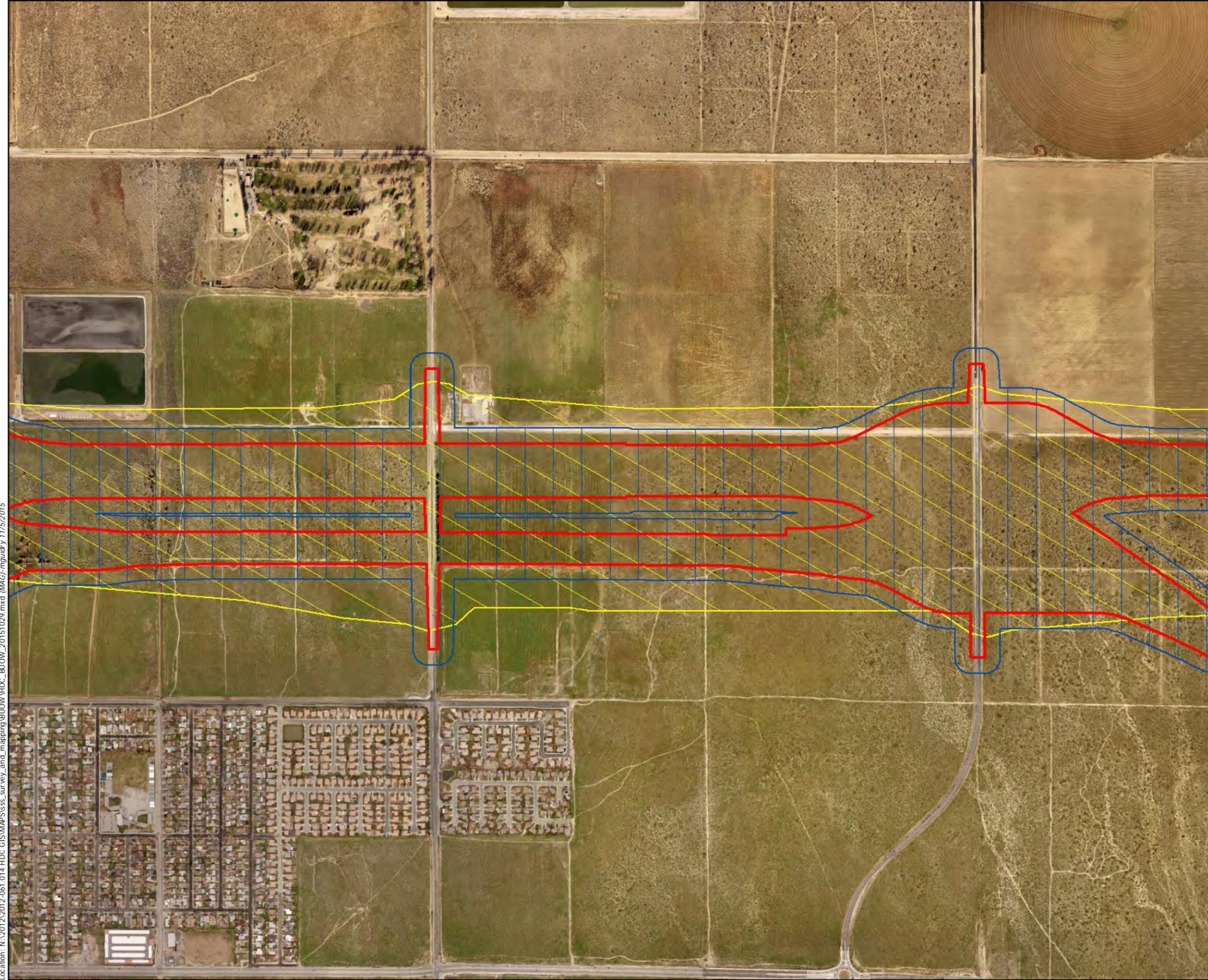
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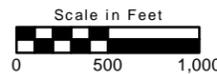
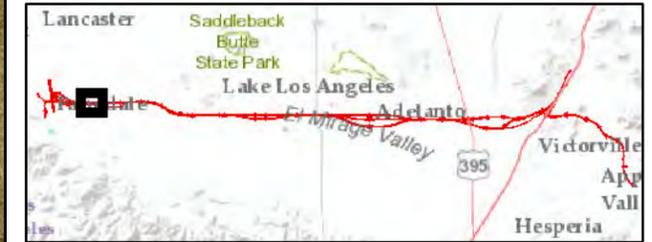
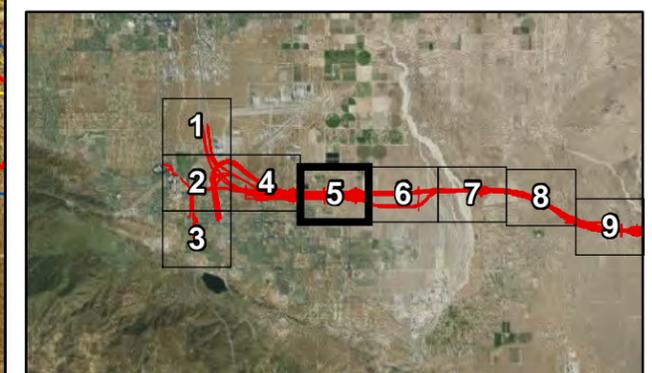


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 5 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2008 - ECORP
-  Survey Area - 2015 - Caltrans



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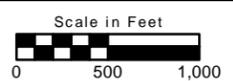
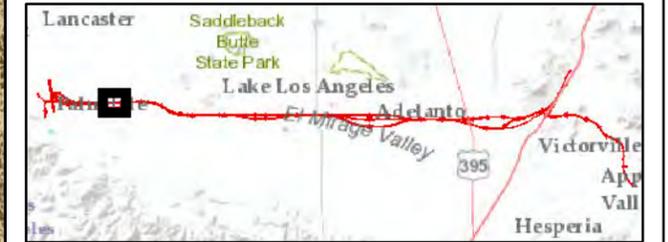
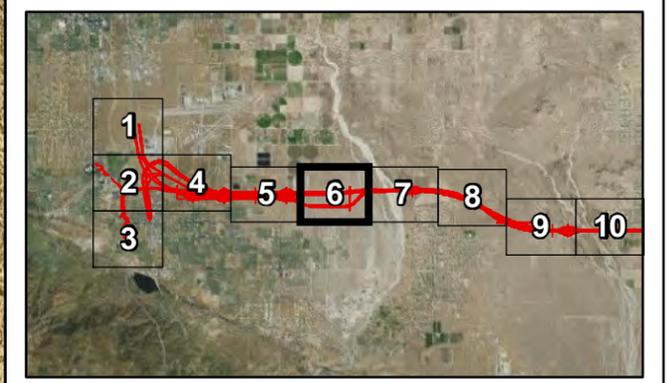
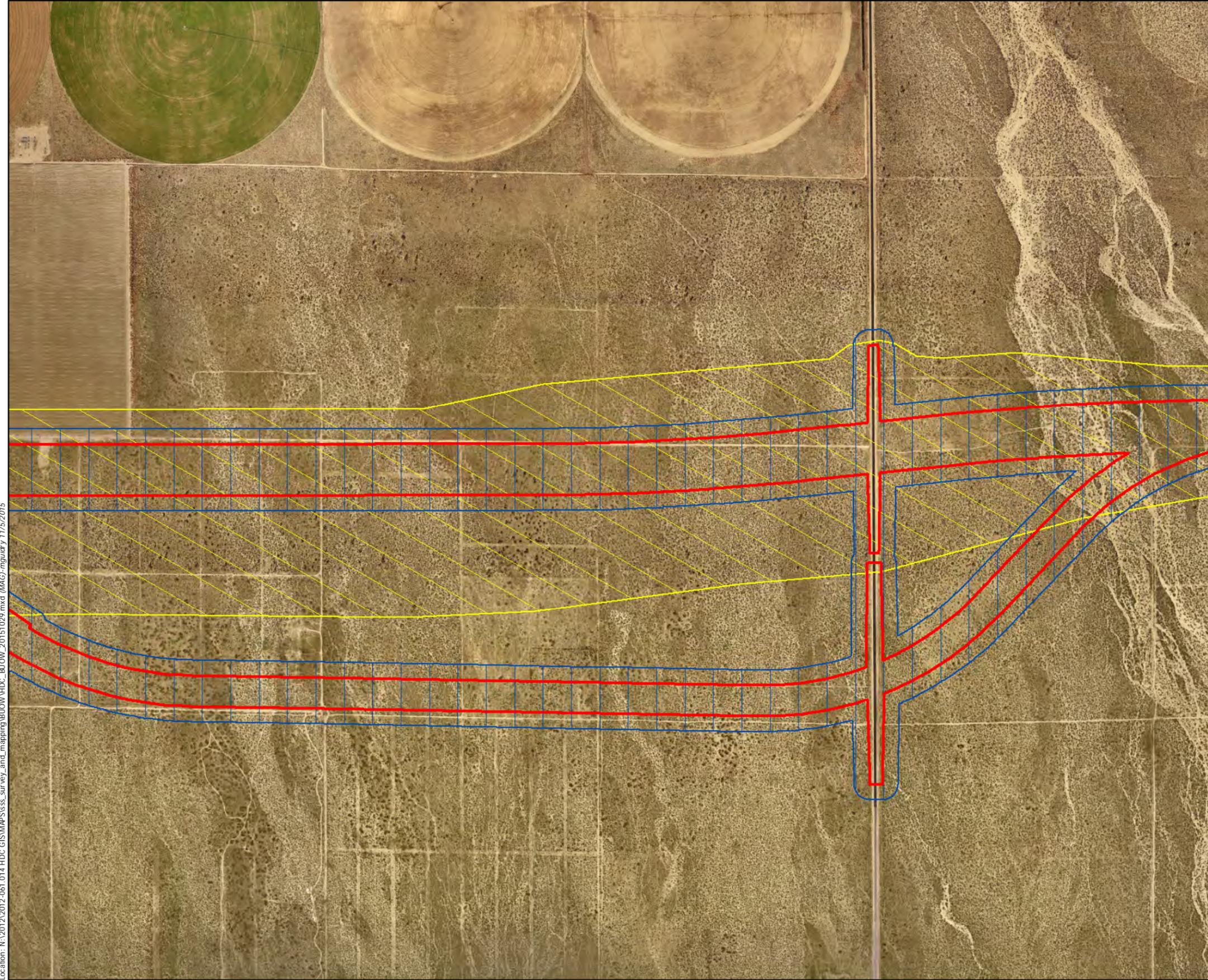




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 6 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2008 - ECORP
-  Survey Area - 2015 - Caltrans

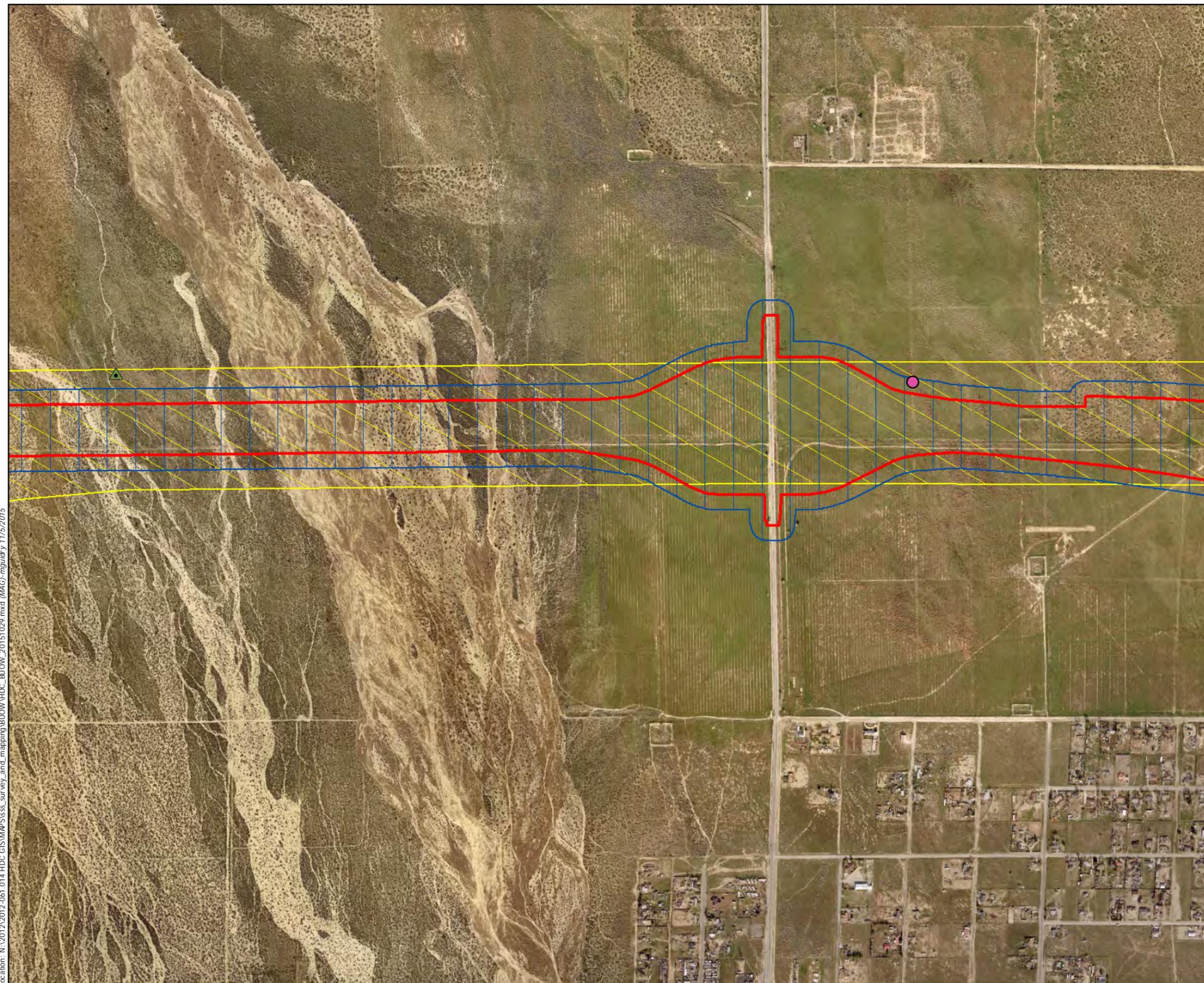
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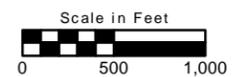
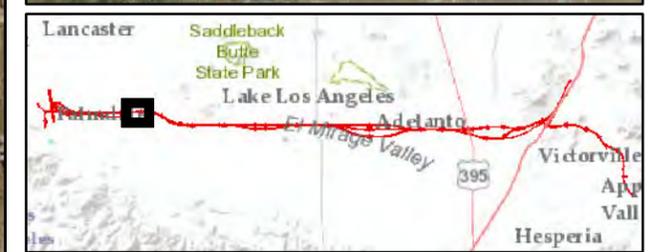
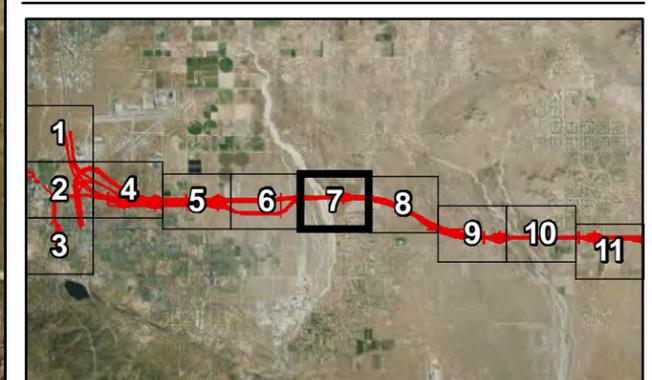


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 7 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2008 - ECORP
- Burrow with Sign - 2008 - ECORP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2008 - ECORP
- Survey Area - 2015 - Caltrans



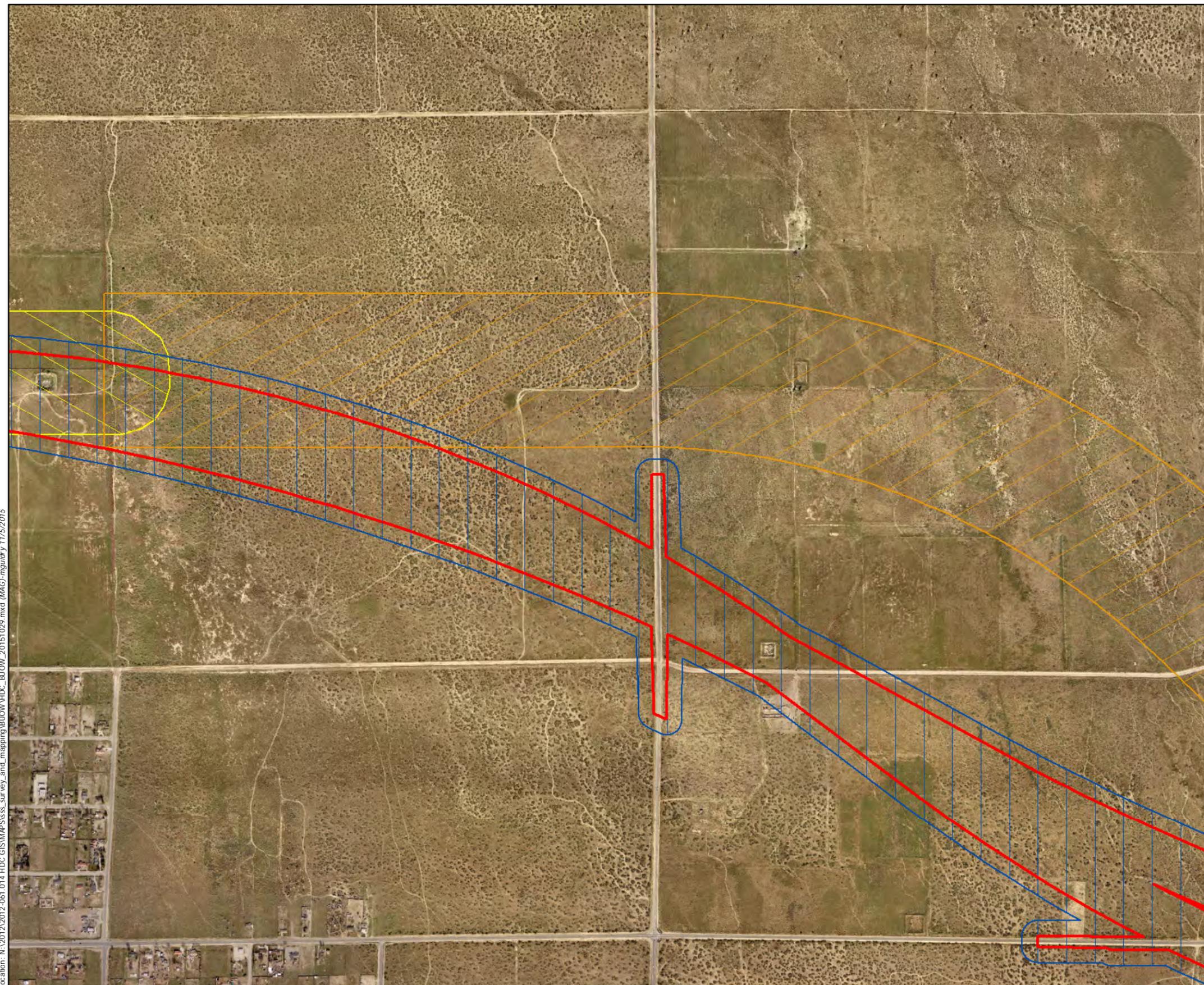
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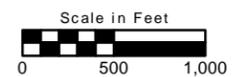
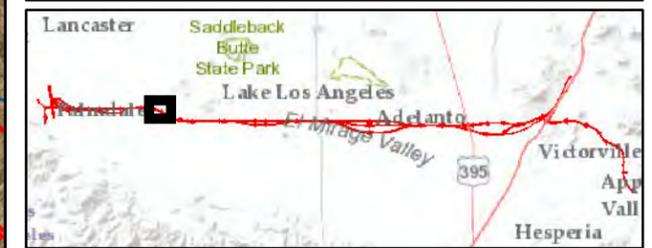
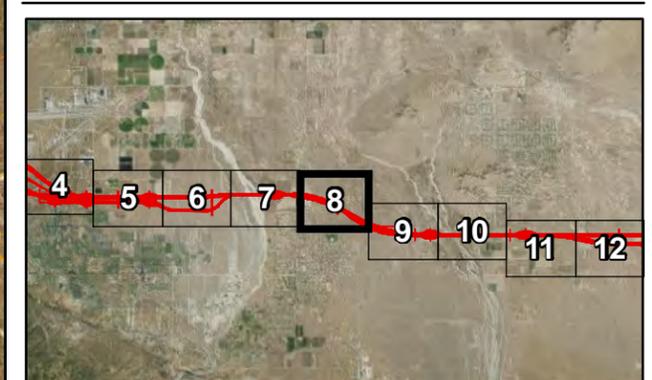


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 8 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2008 - ECORP
-  Survey Area - 2011 - ECORP
-  Survey Area - 2015 - Caltrans



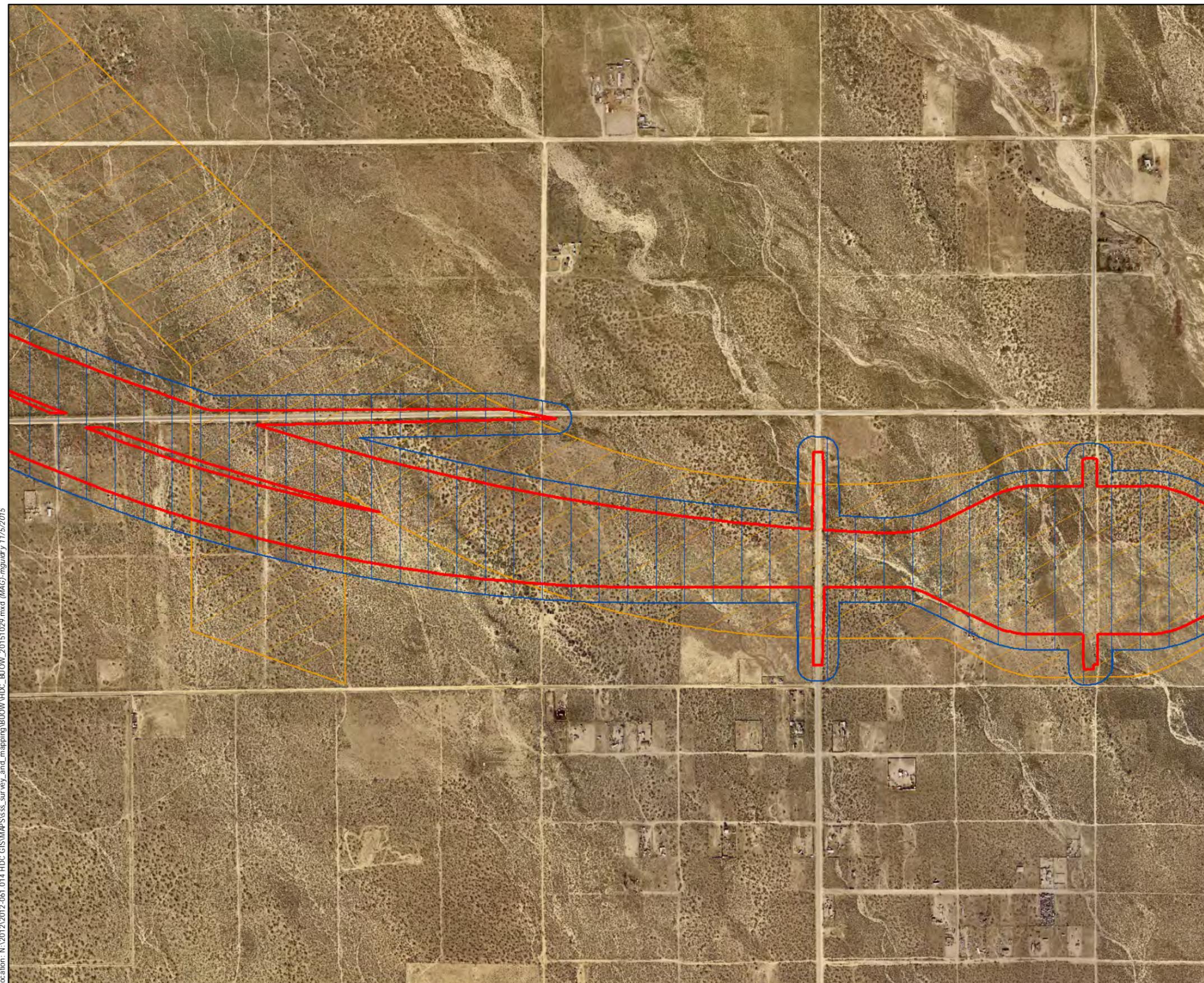
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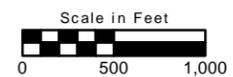
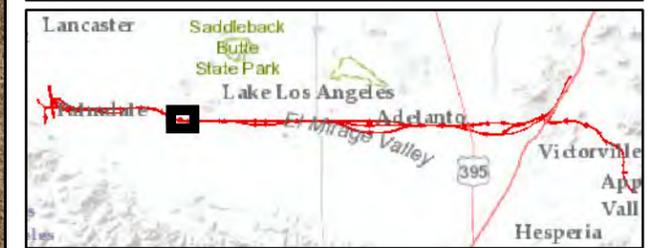
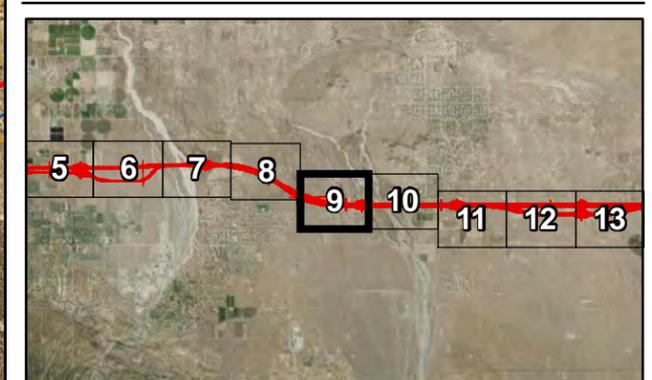


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 9 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - ECORP
-  Survey Area - 2015 - Caltrans



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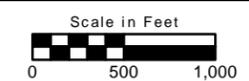
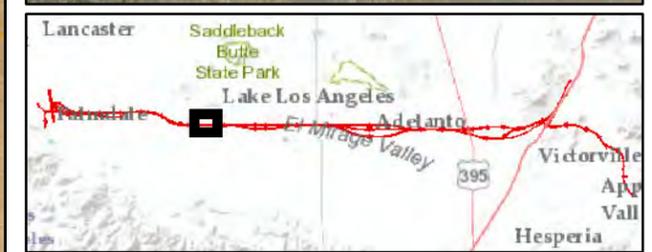
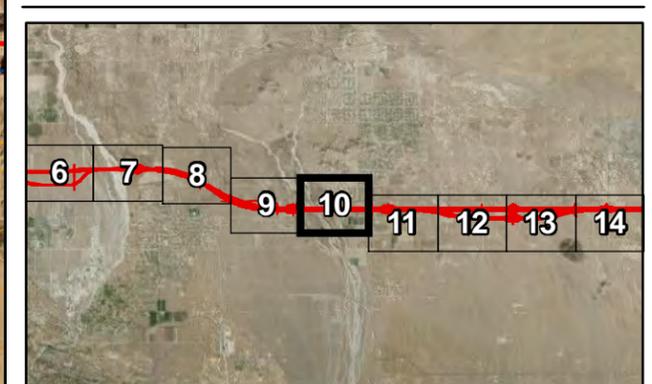




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 10 of 40

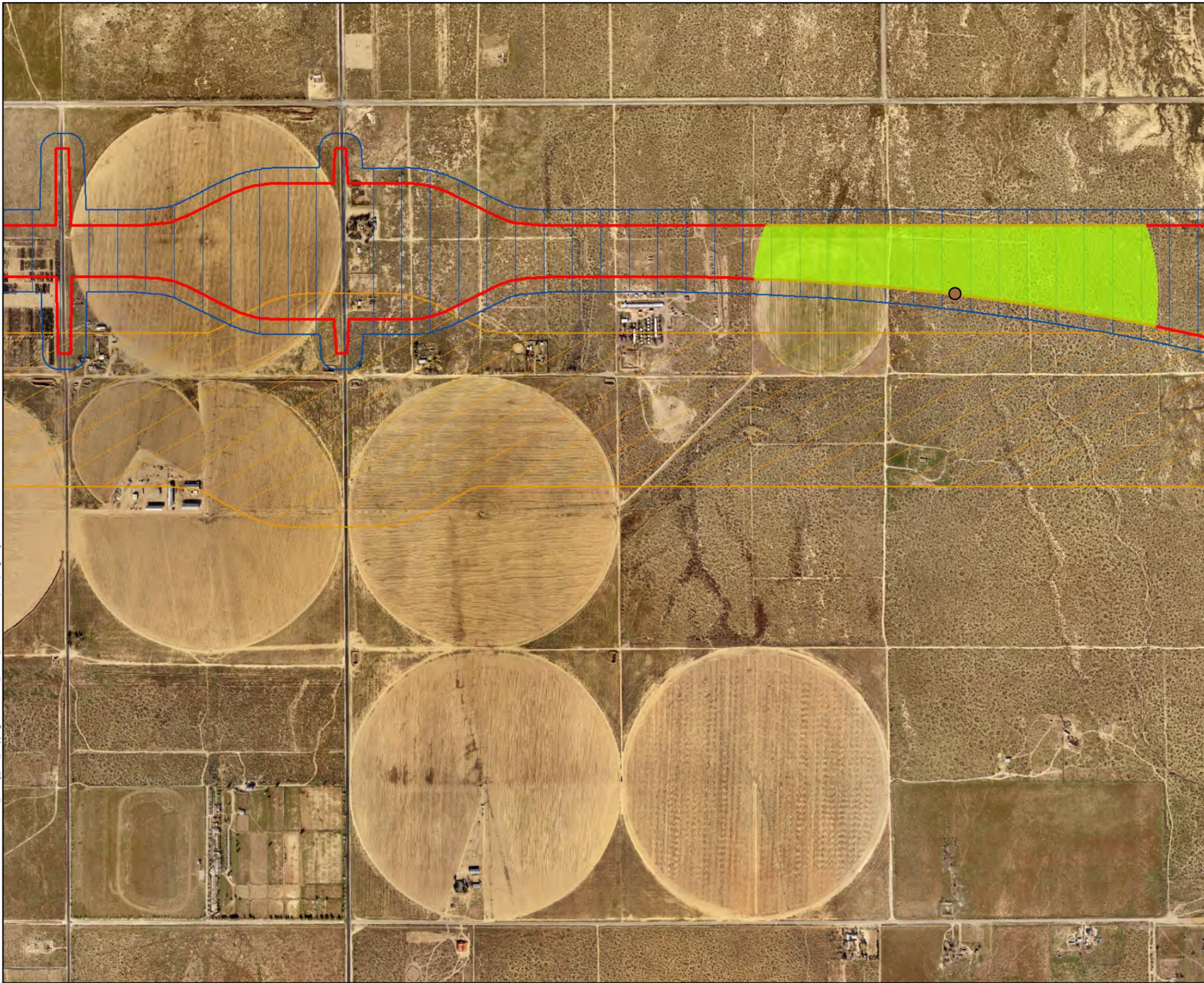
-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
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-  Survey Area - 2015 - Caltrans

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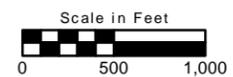
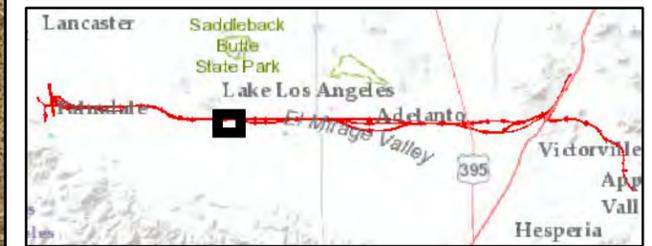
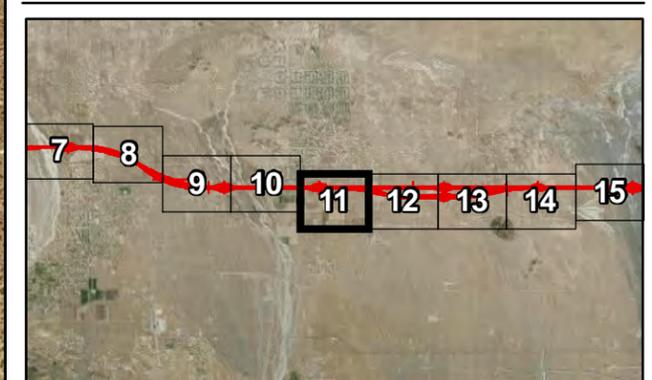


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# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 11 of 40

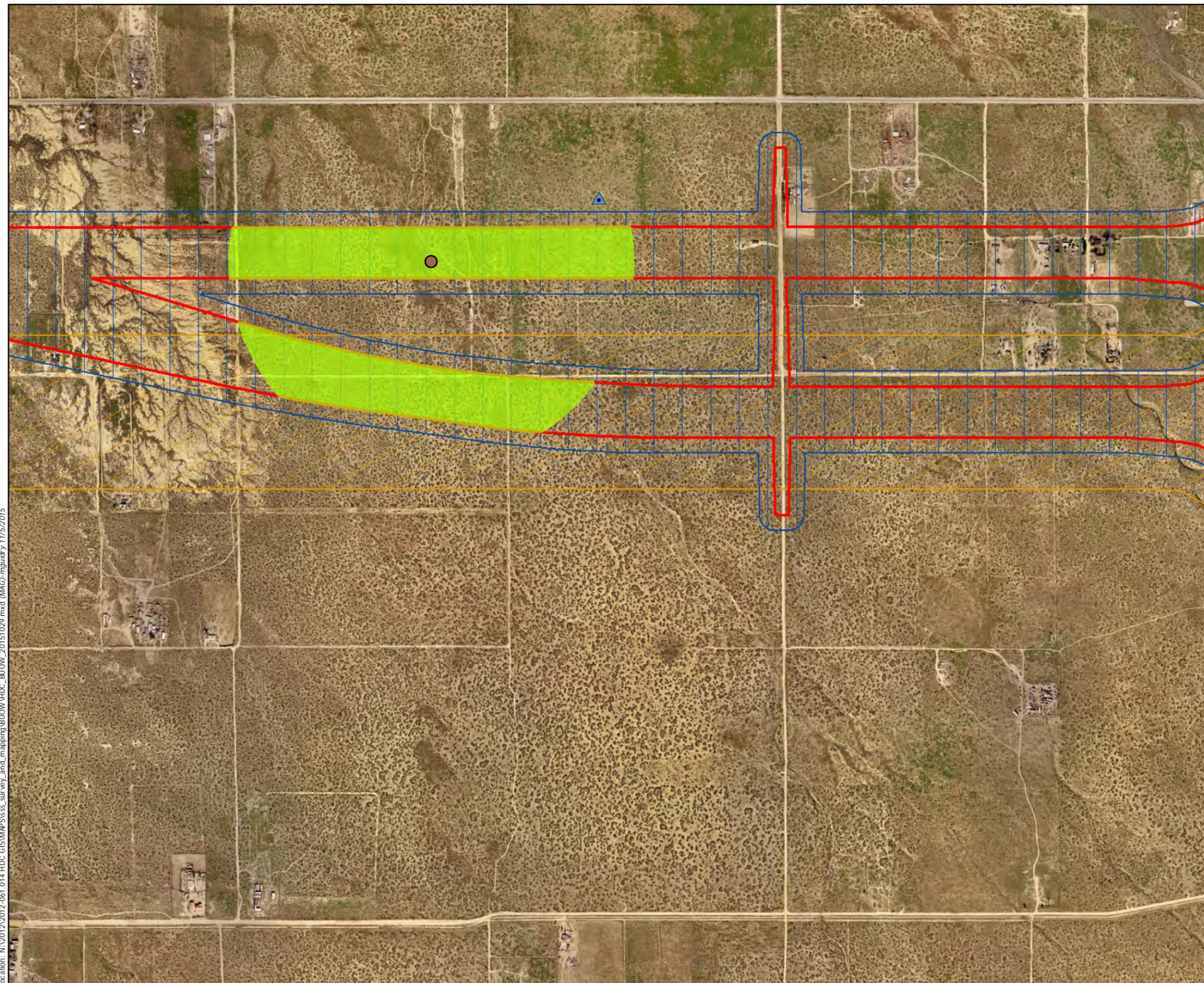
- Impact Area of All Project Alternatives
- BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- Burrow with Sign - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - ECORP
- Survey Area - 2015 - Caltrans



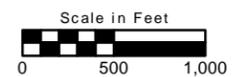
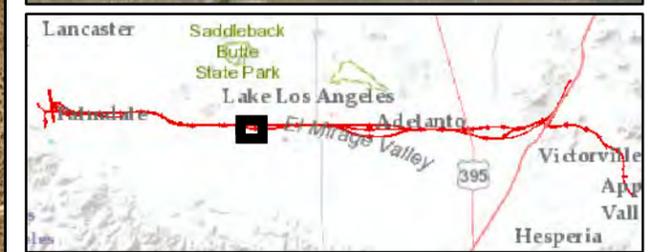
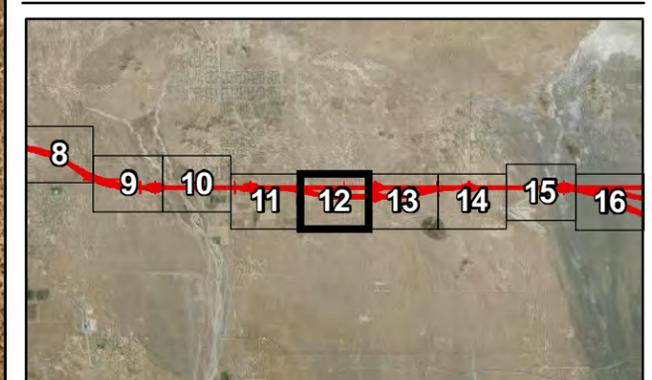


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 12 of 40

- Impact Area of All Project Alternatives
  - BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - ECORP
  - Burrow with Sign - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - ECORP
  - Survey Area - 2015 - Caltrans



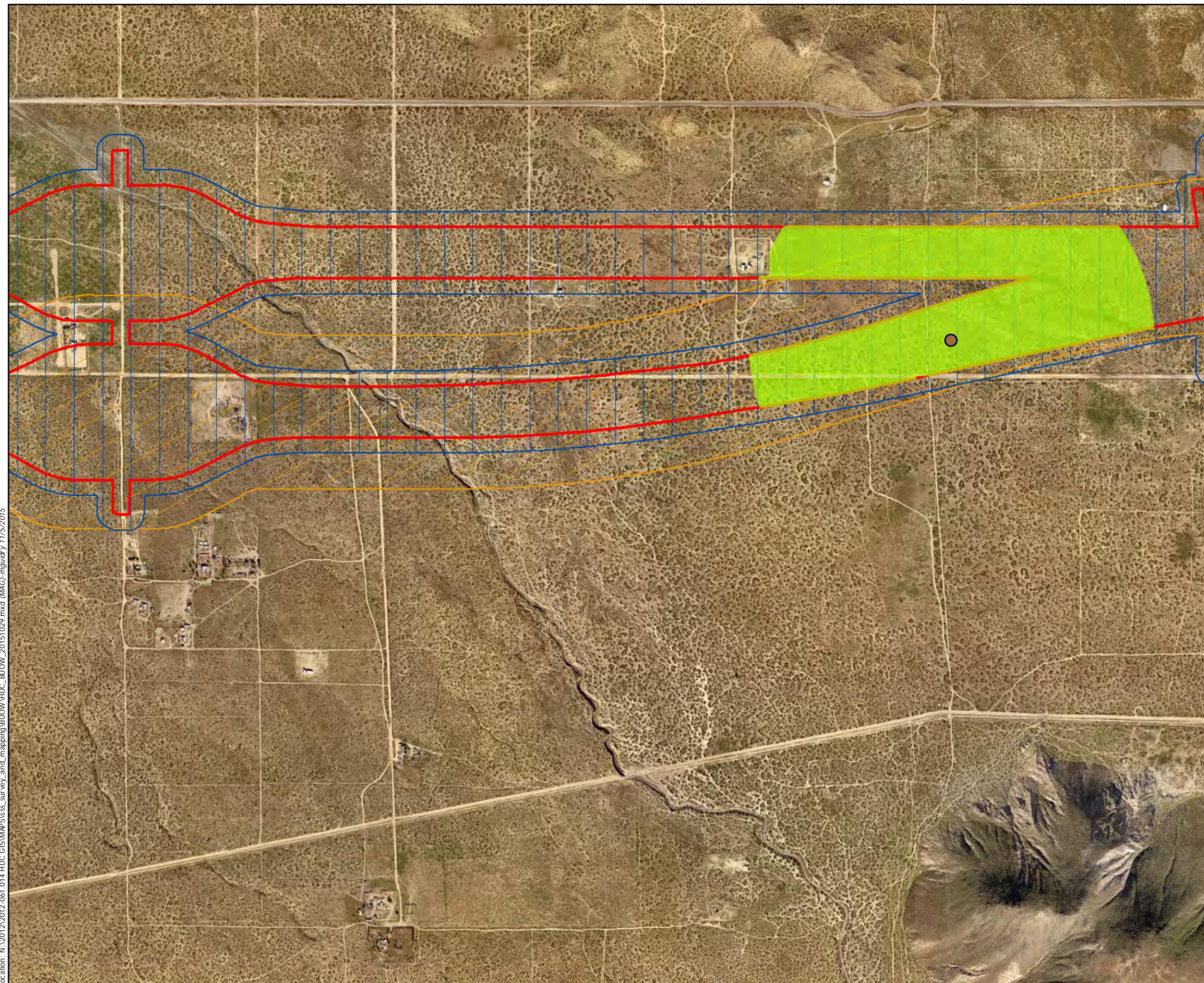
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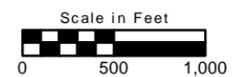
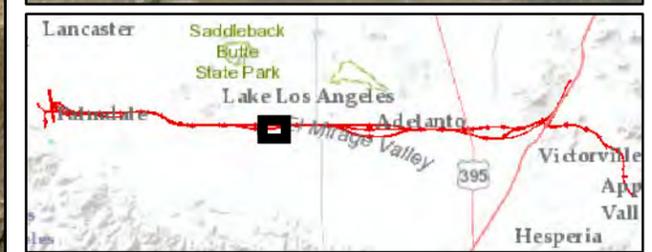
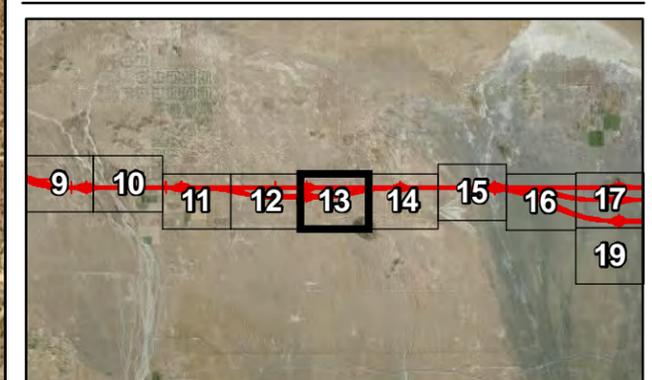


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 13 of 40

- Impact Area of All Project Alternatives
- BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- Burrow with Sign - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - ECORP
- Survey Area - 2015 - Caltrans



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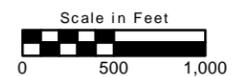
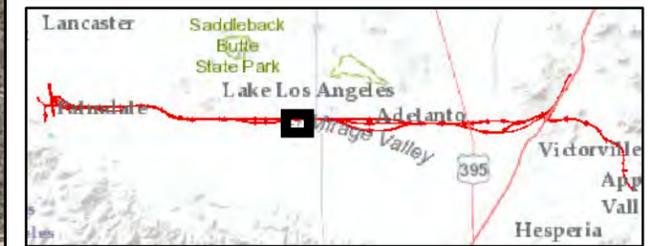
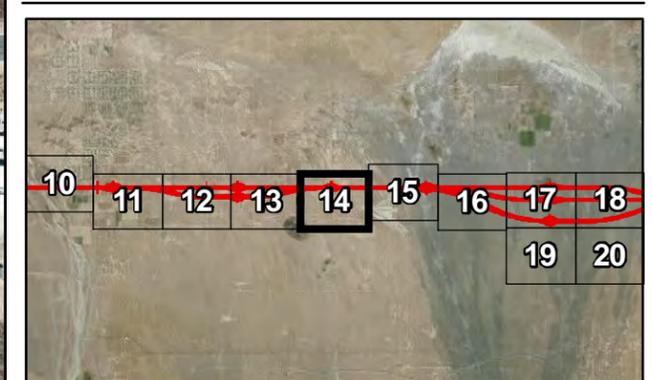


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 14 of 40

-  Impact Area of All Project Alternatives
-  BUOW Proposed Mitigation Area
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - ECRP
-  Survey Area - 2015 - Caltrans



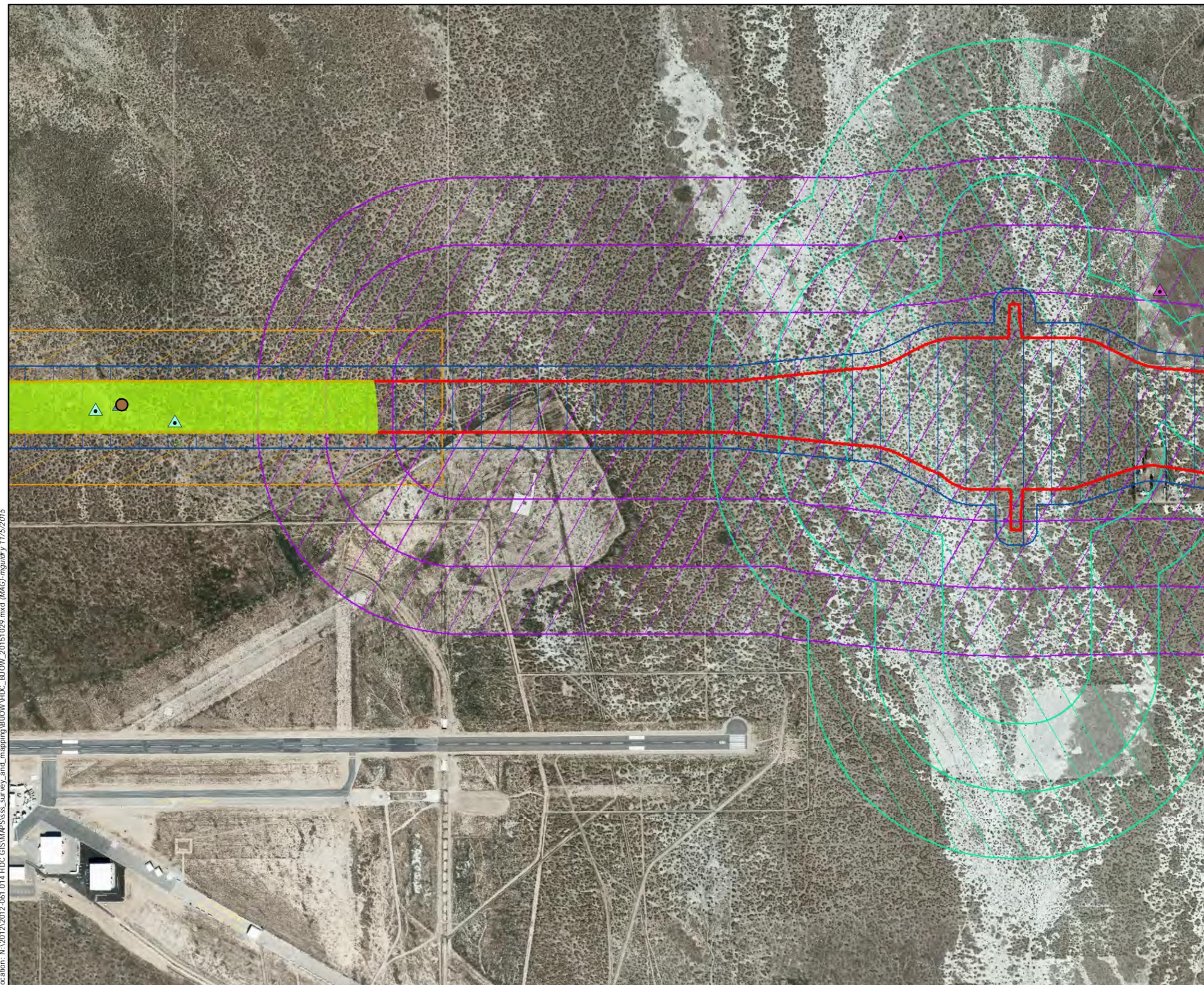
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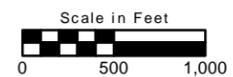
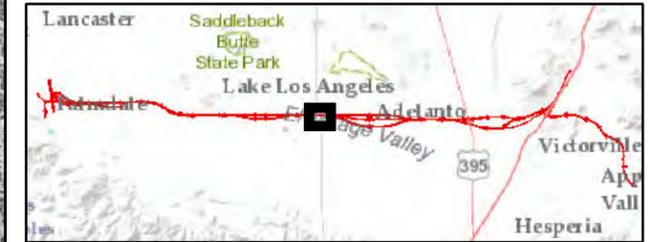
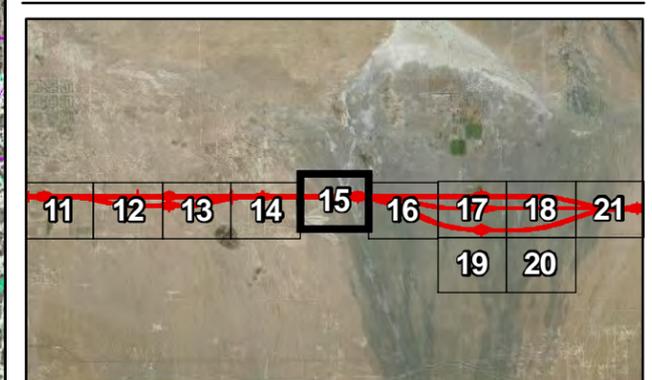


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 15 of 40

- Impact Area of All Project Alternatives
  - BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
  - ▲ Live Burrowing Owl - 2011 - ECORP
  - ▲ Live Burrowing Owl - 2015 - Caltrans
  - Burrow with Sign - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - ECORP
  - Survey Area - 2011 - AMEC
  - Survey Area - 2012 - AMEC
  - Survey Area - 2015 - Caltrans



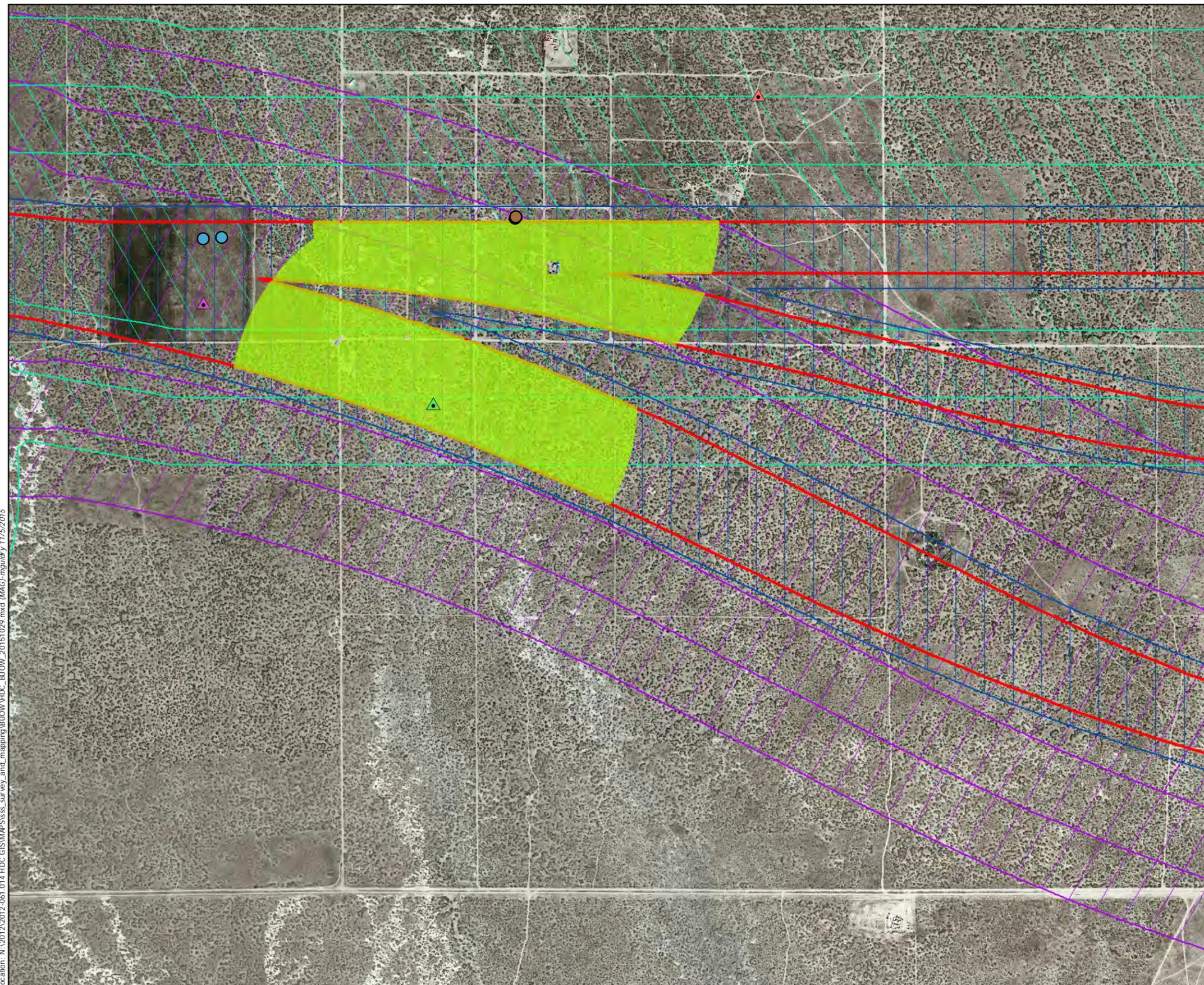
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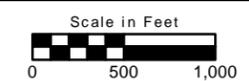
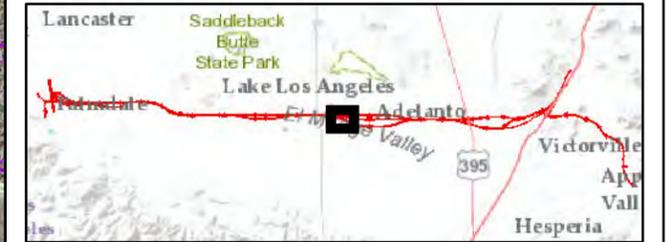
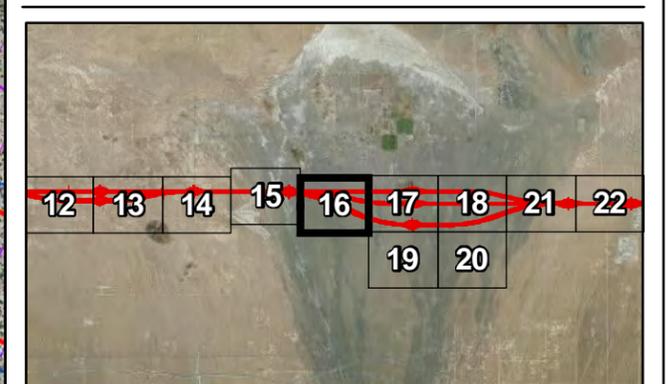


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 16 of 40

- Impact Area of All Project Alternatives
  - BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
  - ▲ Live Burrowing Owl - 2012 - AMEC
  - ▲ Live Burrowing Owl - 2015 - ECORP
  - Burrow with Sign - 2011 - AMEC
  - Burrow with Sign - 2012 - AMEC
  - Burrow with Sign - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
  - Survey Area - 2012 - AMEC
  - Survey Area - 2015 - Caltrans



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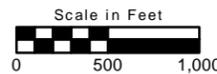
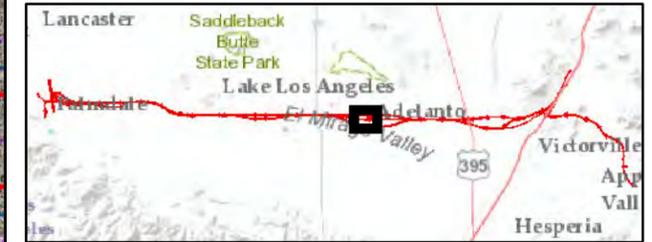
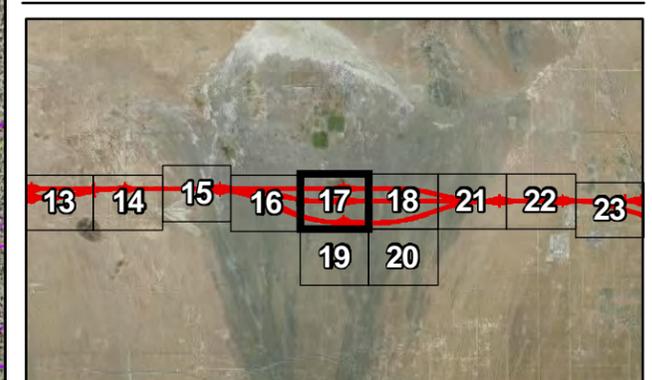
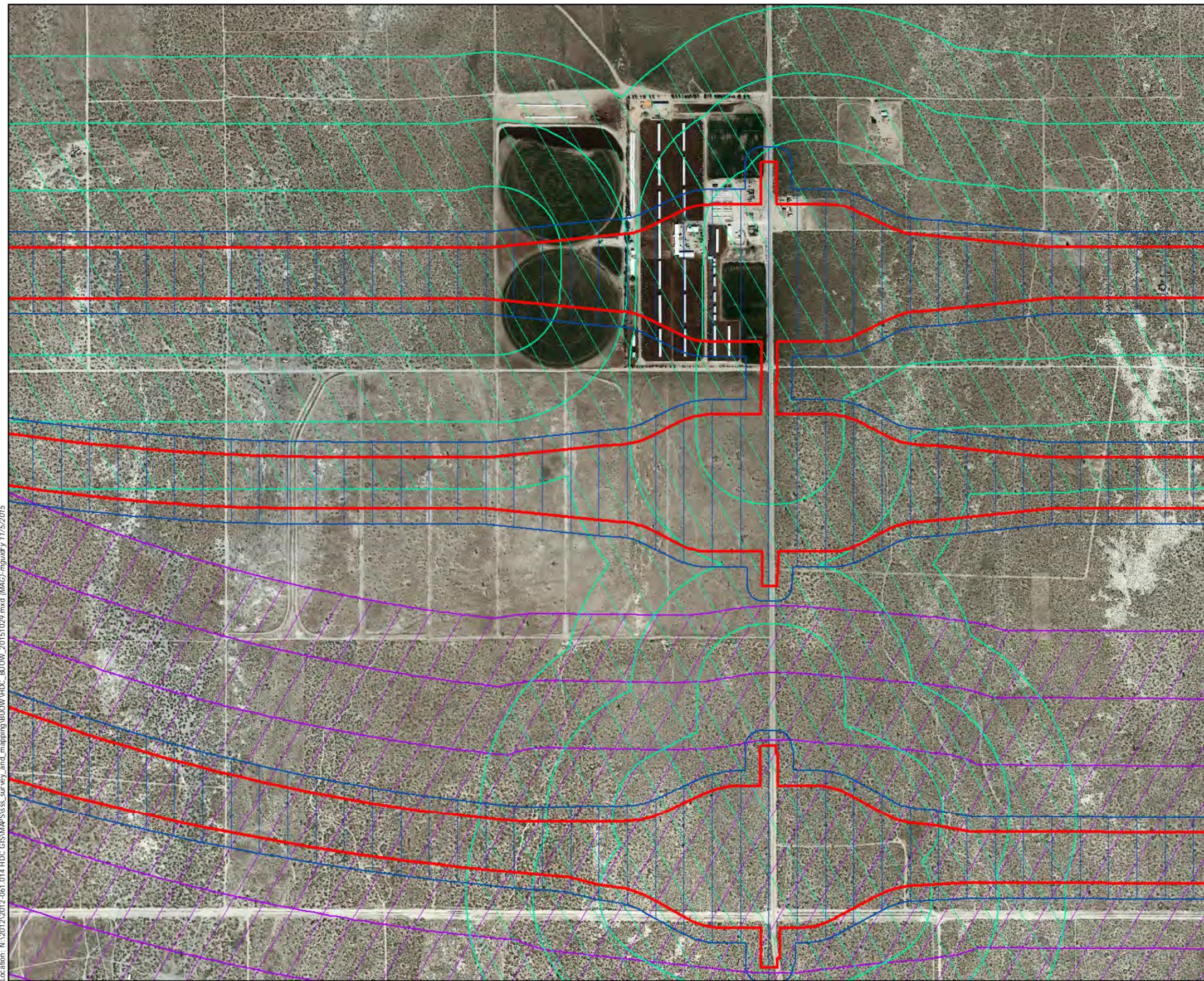




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 17 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans

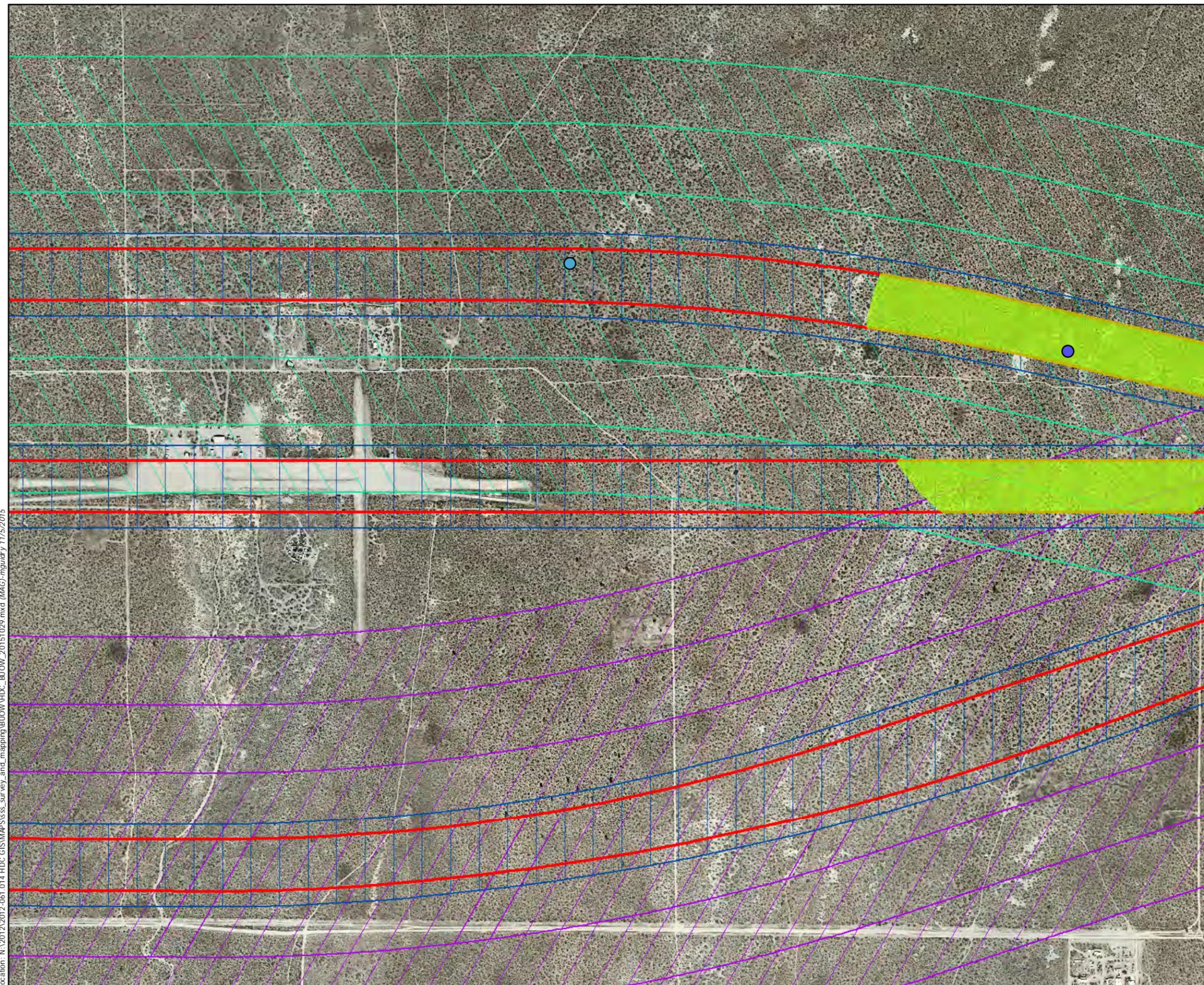
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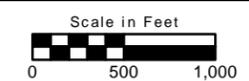
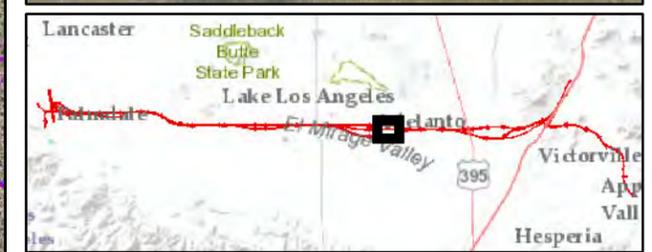
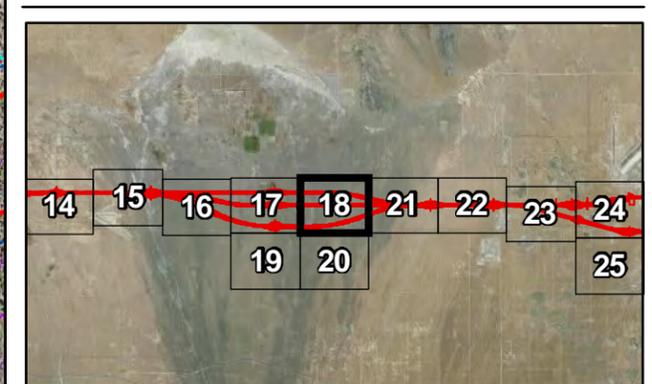


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 18 of 40

- Impact Area of All Project Alternatives
- BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- Burrow with Sign - 2012 - AMEC
- Burrow with Sign - 2015 - ECORP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



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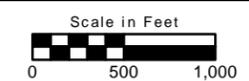
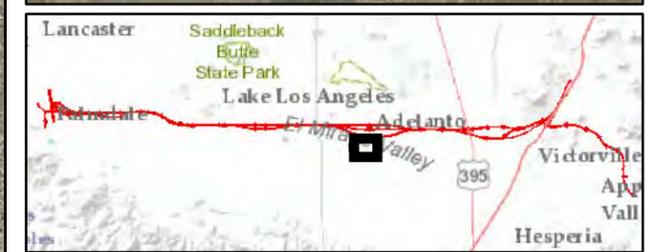
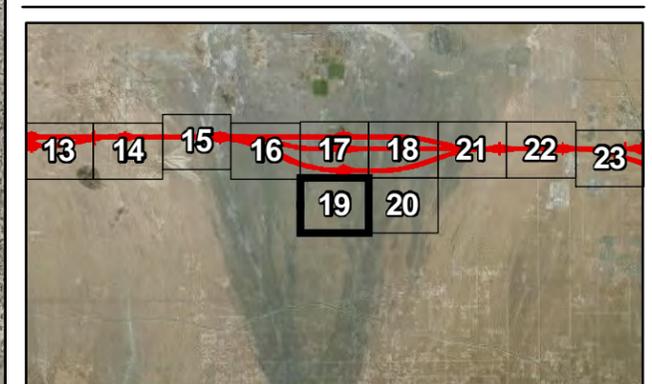
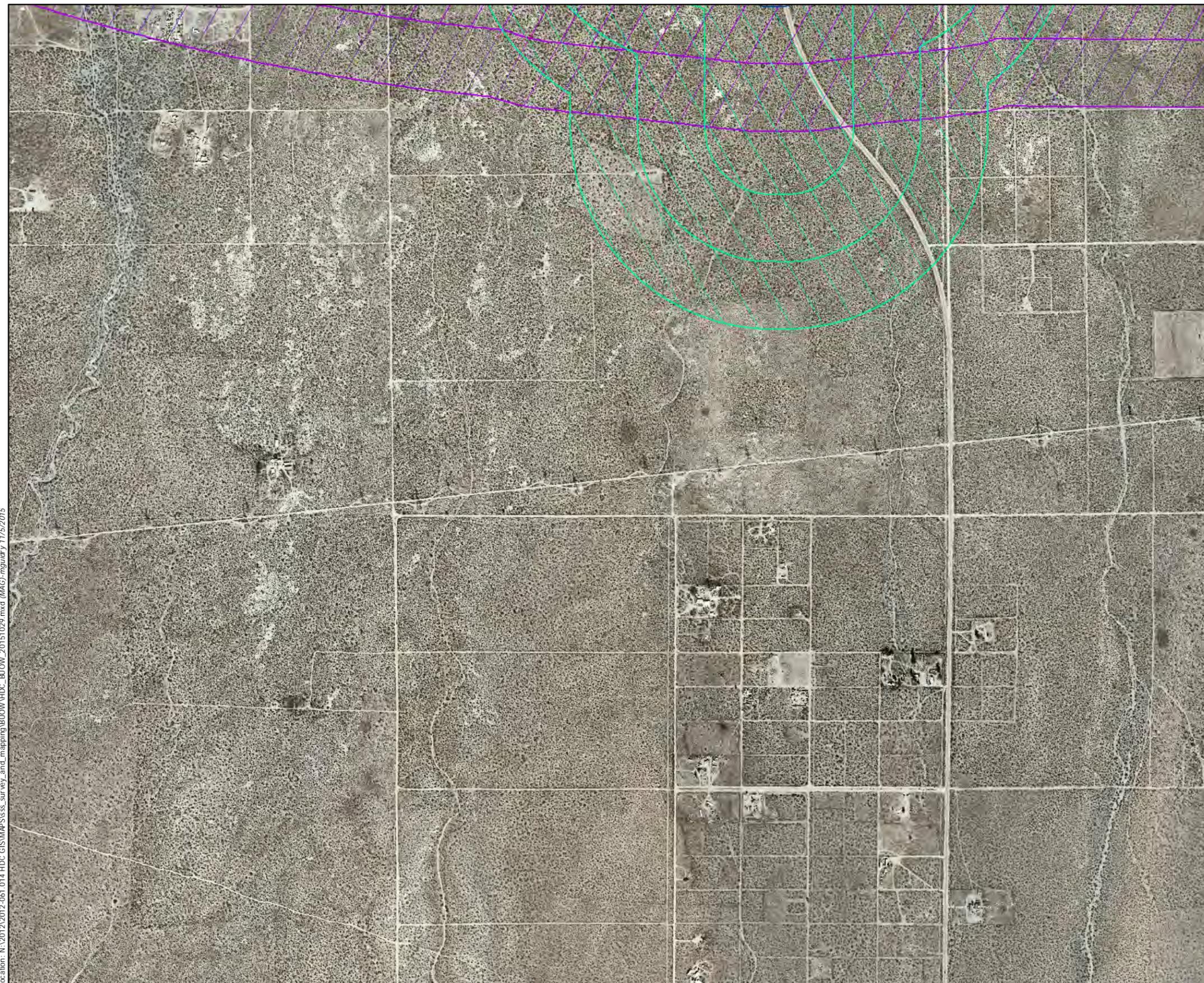




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 19 of 40

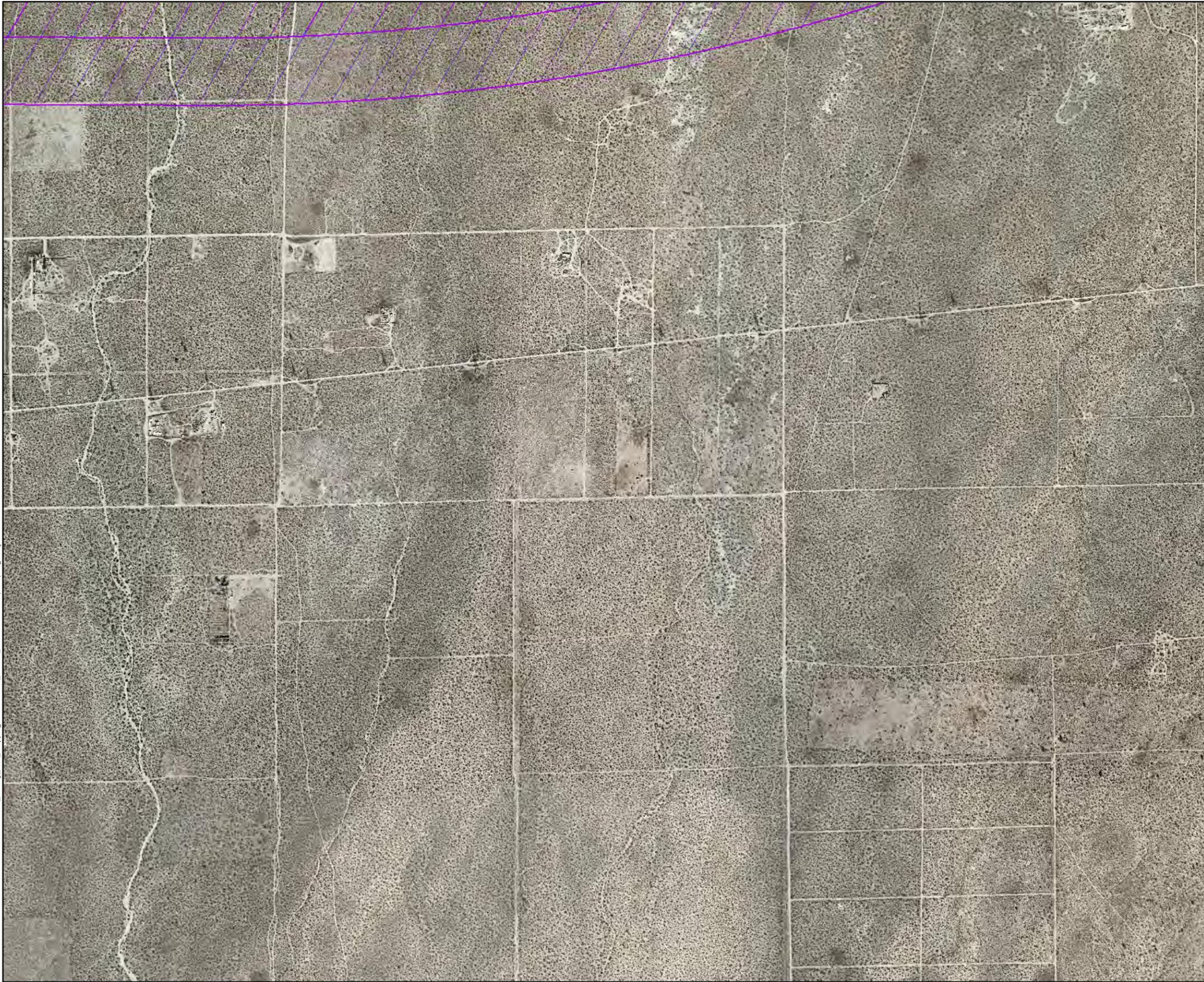
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
  -  Survey Area - 2012 - AMEC
  -  Survey Area - 2015 - Caltrans

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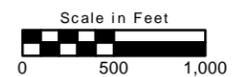
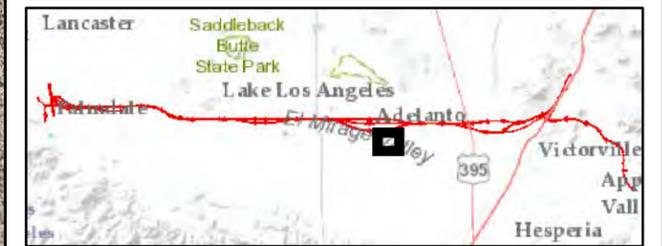
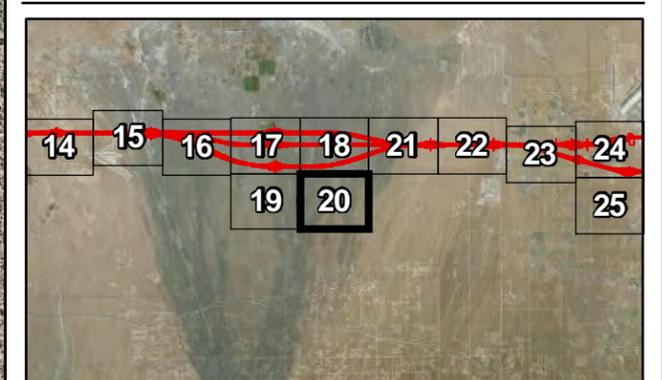
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# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 20 of 40

Burrowing Owl: Survey Year - Company

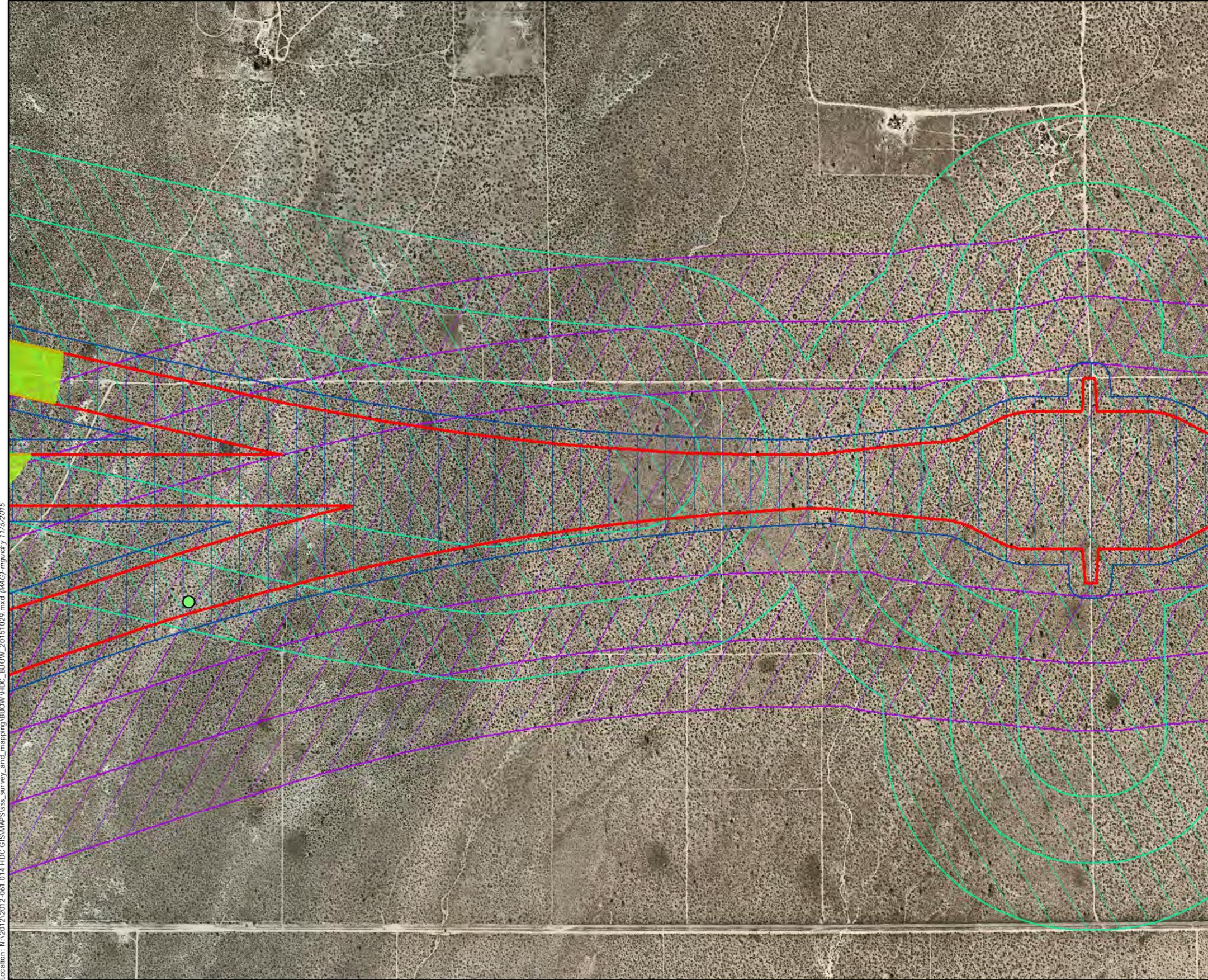
 Survey Area - 2011 - AMEC



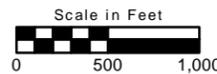
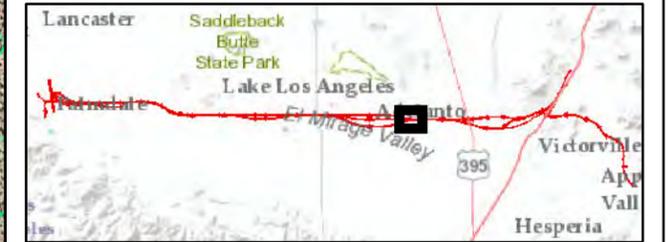
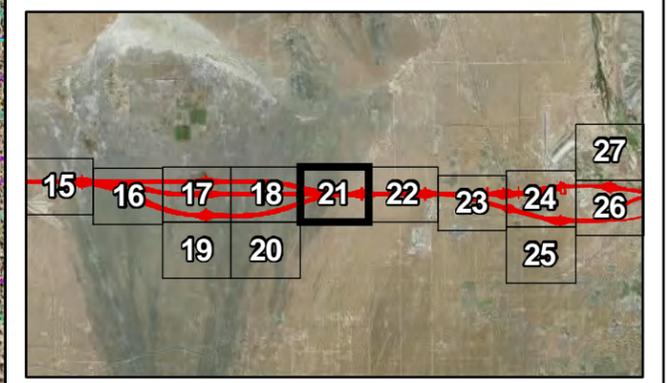


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 21 of 40

- Impact Area of All Project Alternatives
- BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- Burrow with Sign - 2011 - AMEC
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



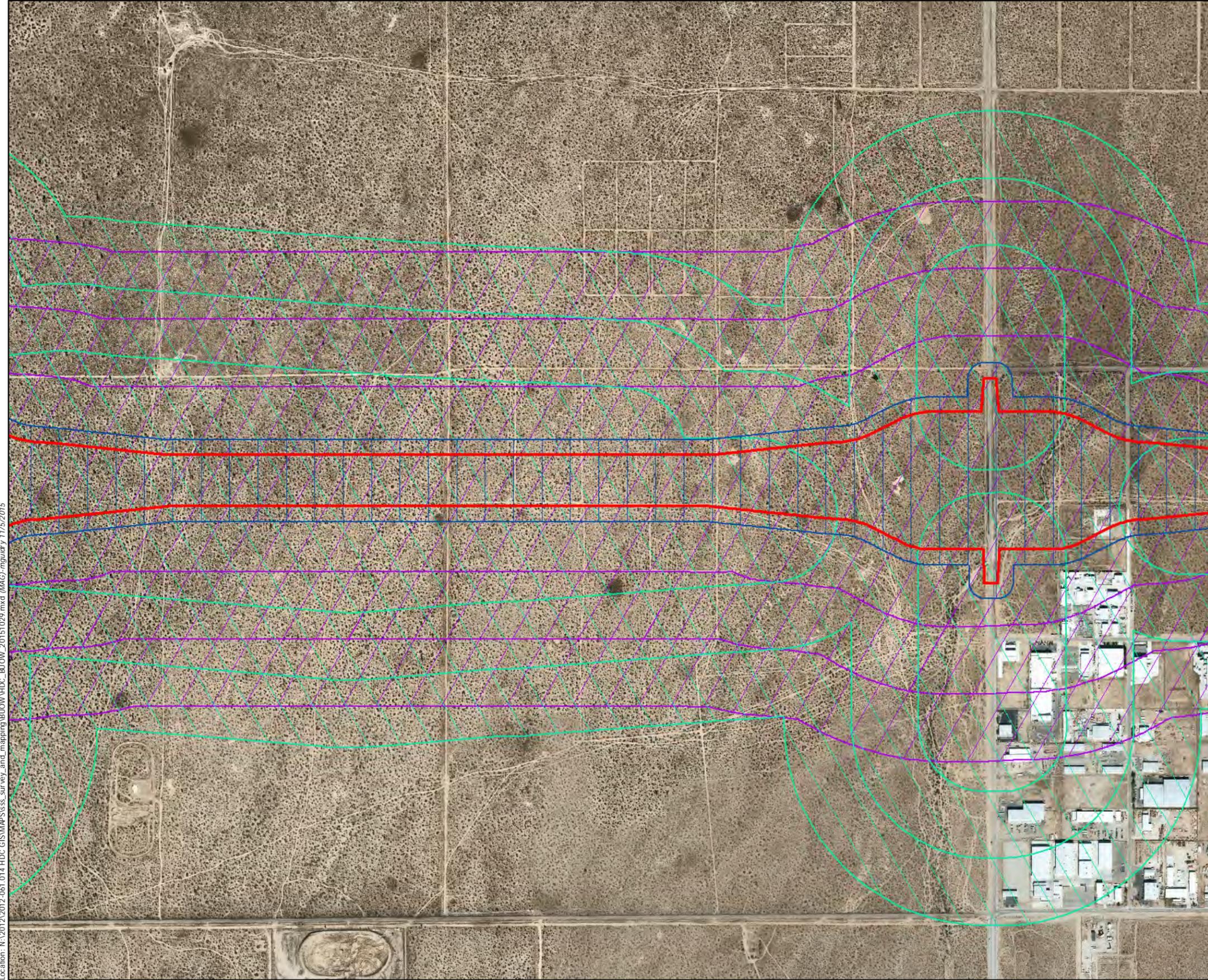
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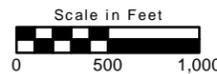
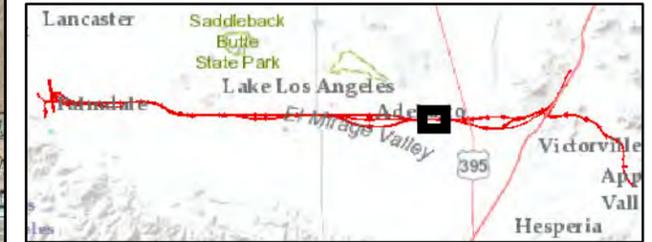
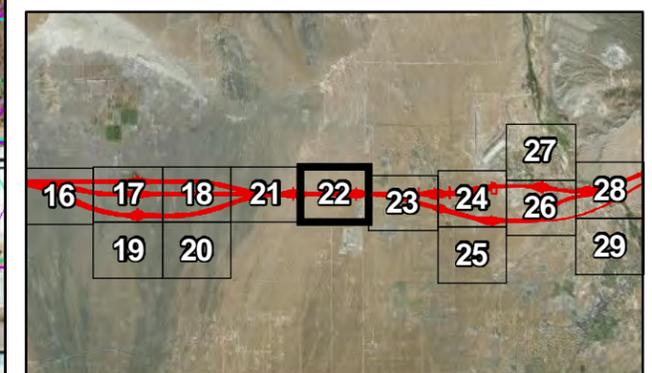


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 22 of 40

- Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



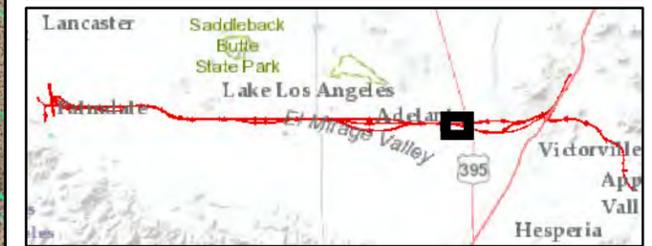
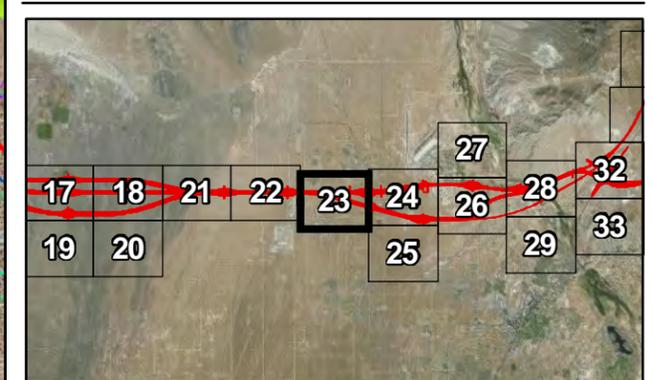
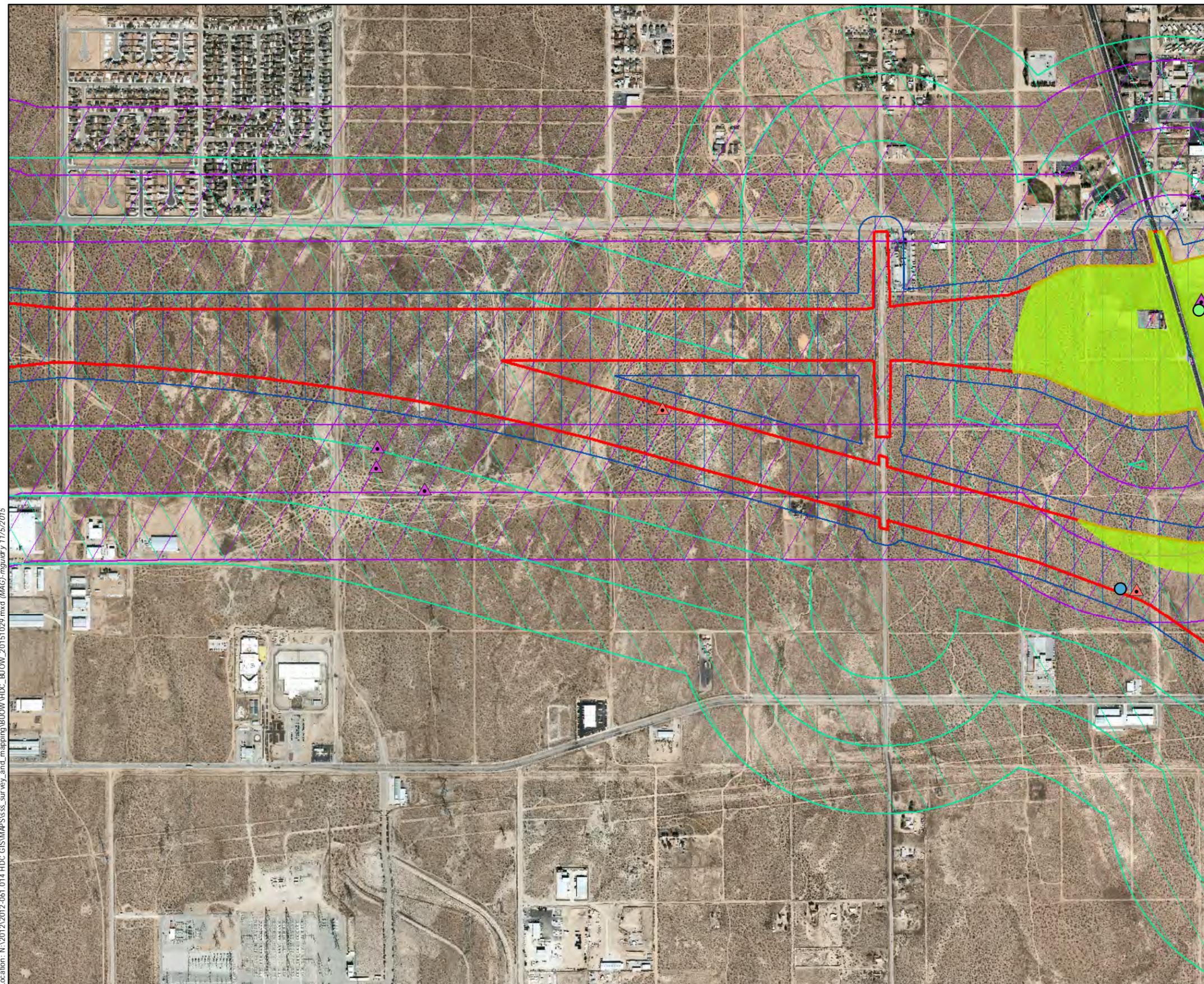
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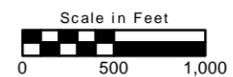


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 23 of 40

- Impact Area of All Project Alternatives
  - BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
  - ▲ Live Burrowing Owl - 2012 - AMEC
  - Burrow with Sign - 2011 - AMEC
  - Burrow with Sign - 2012 - AMEC
  - Burrow with Sign - 2015 - ECRP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
  - Survey Area - 2012 - AMEC
  - Survey Area - 2015 - Caltrans



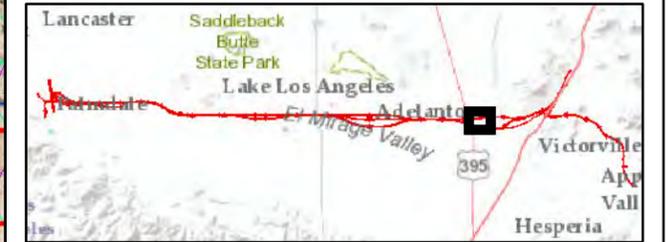
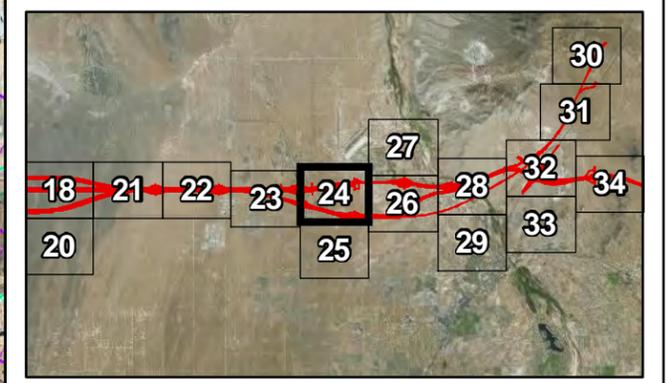
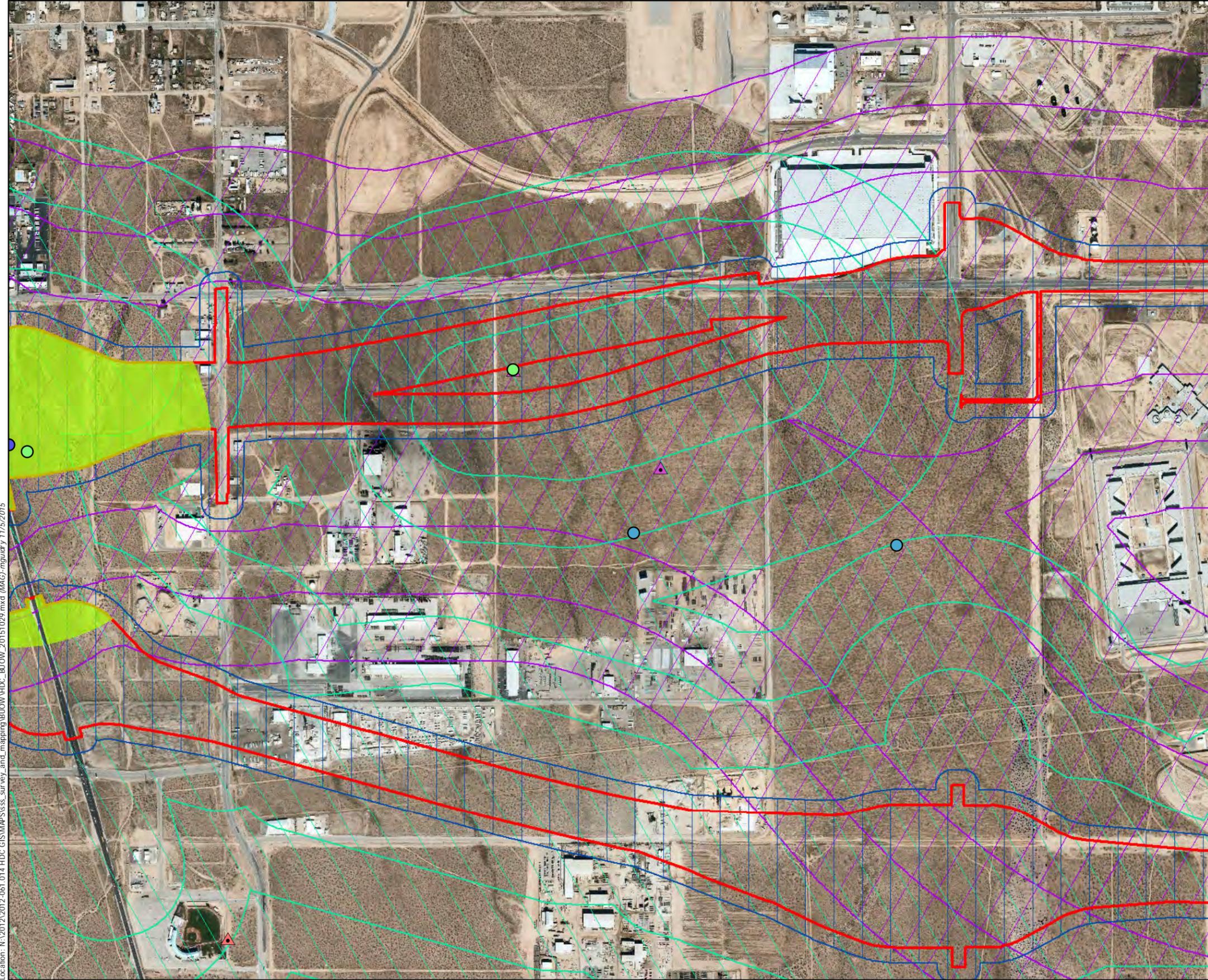
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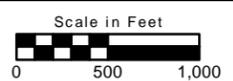


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 24 of 40

- Impact Area of All Project Alternatives
  - BUOW Proposed Mitigation Area
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
  - ▲ Live Burrowing Owl - 2012 - AMEC
  - Burrow with Sign - 2011 - AMEC
  - Burrow with Sign - 2012 - AMEC
  - Burrow with Sign - 2015 - ECORP
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
  - Survey Area - 2012 - AMEC
  - Survey Area - 2015 - Caltrans



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# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 25 of 40

Category - Survey Year - Company

● Burrow with Sign - 2012 - AMEC

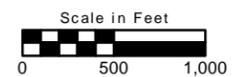
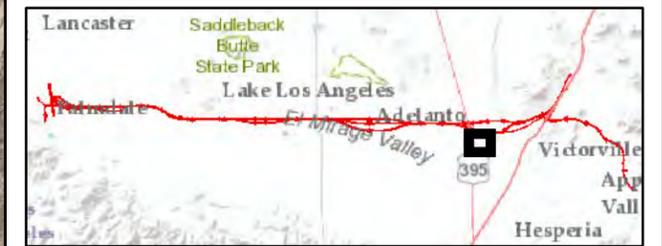
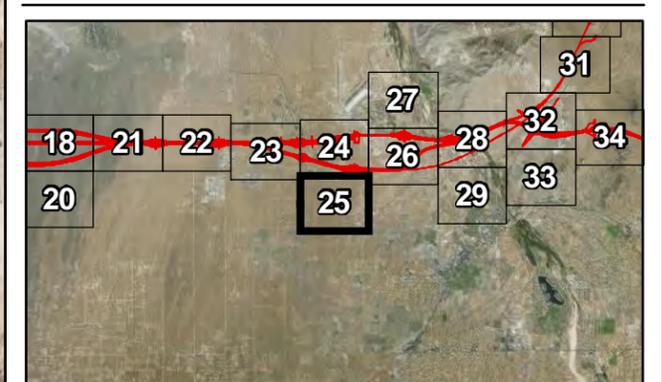
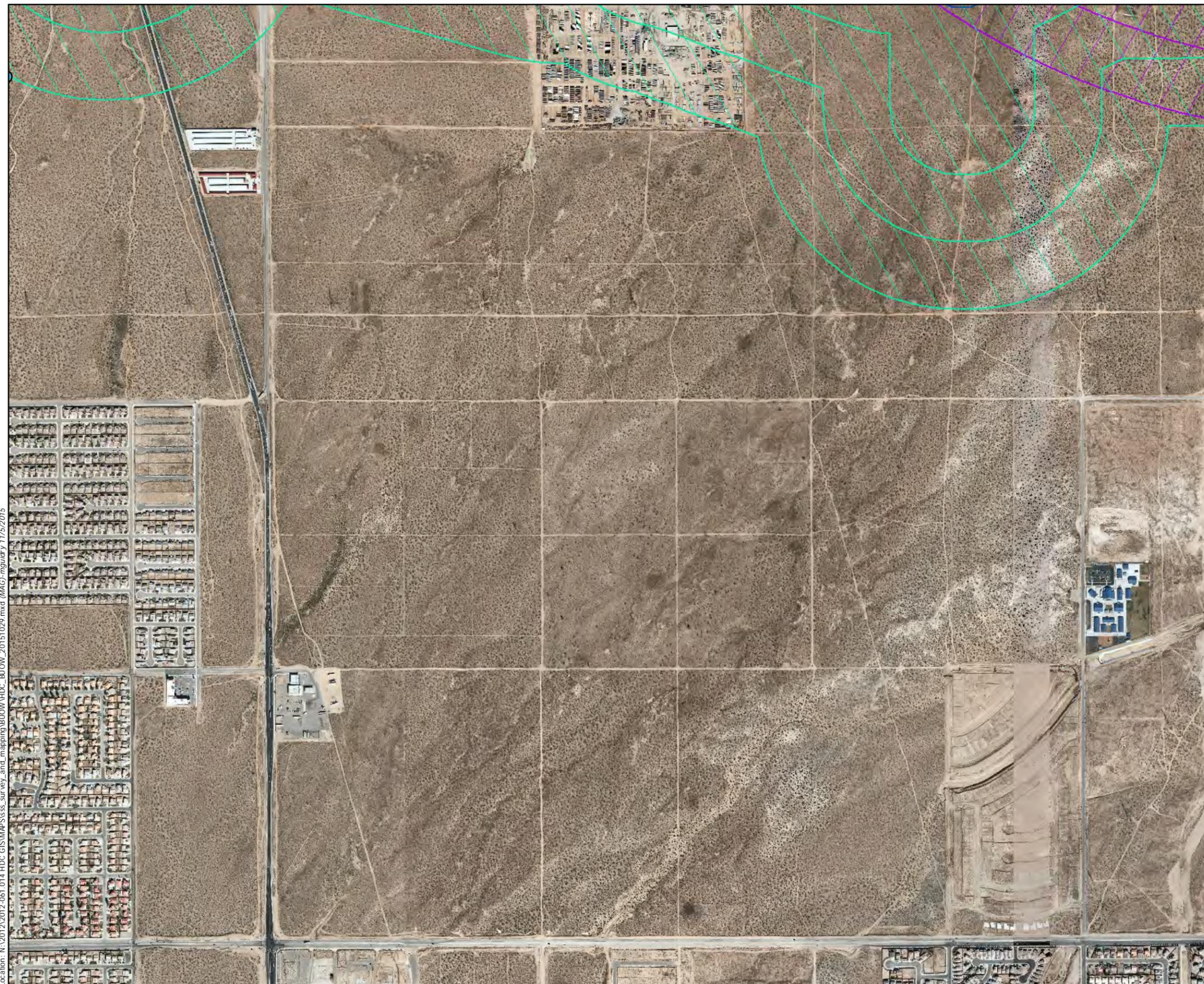
Burrowing Owl: Survey Year - Company

▭ Survey Area - 2011 - AMEC

▭ Survey Area - 2012 - AMEC

▭ Survey Area - 2015 - Caltrans

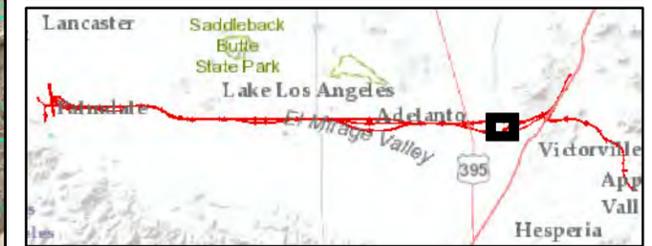
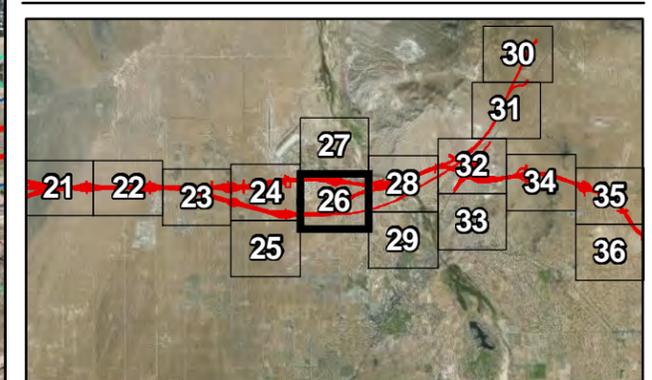
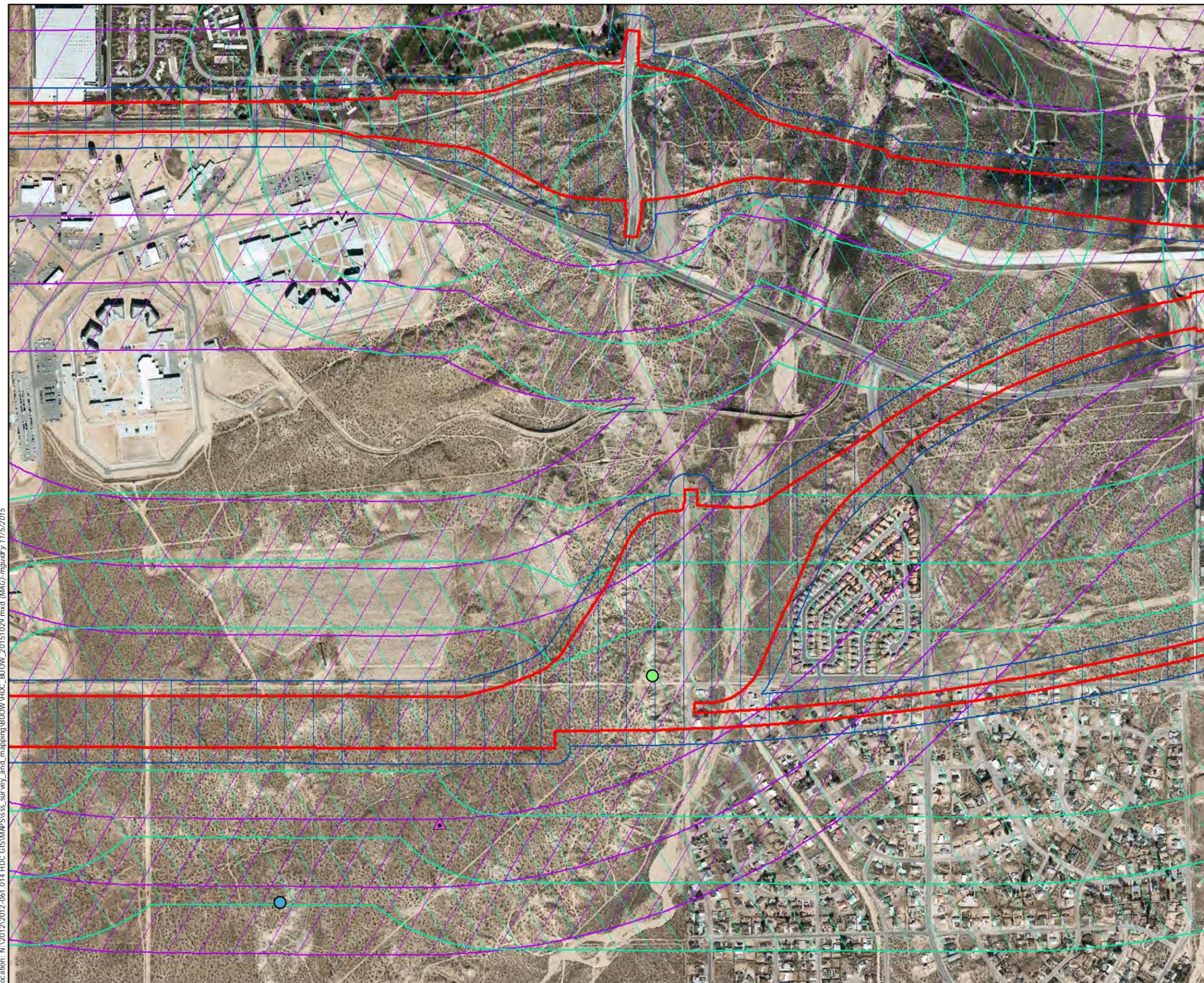
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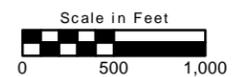


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 26 of 40

-  Impact Area of All Project Alternatives
- Category - Survey Year - Company
-  Live Burrowing Owl - 2011 - AMEC
-  Burrow with Sign - 2011 - AMEC
-  Burrow with Sign - 2012 - AMEC
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans



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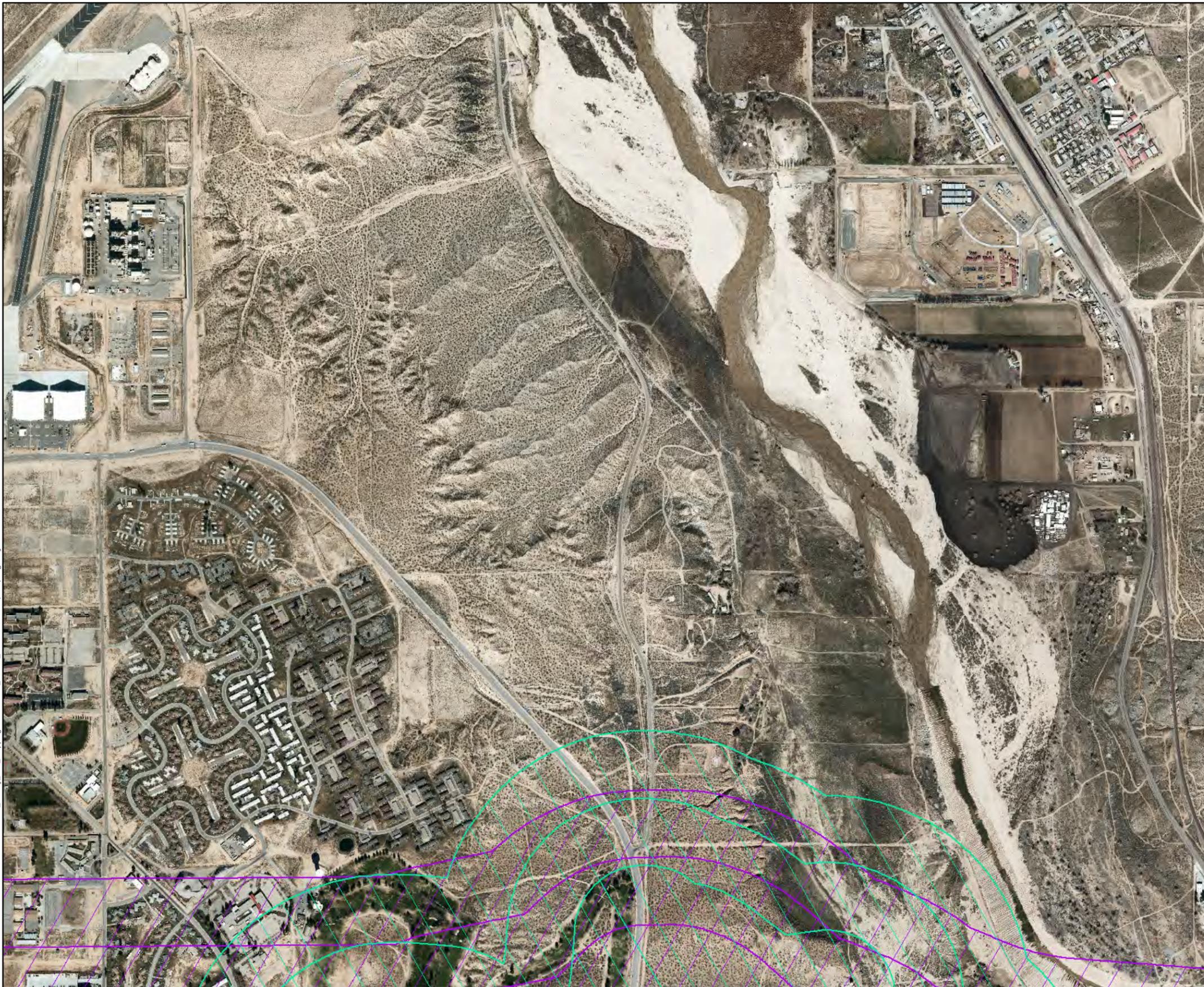




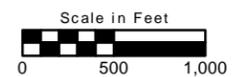
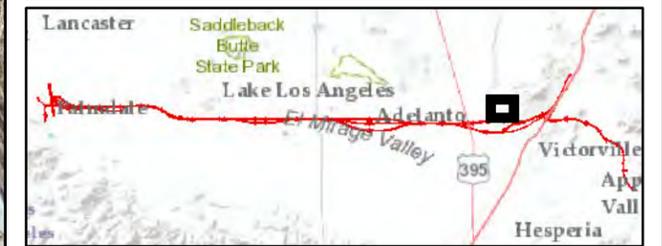
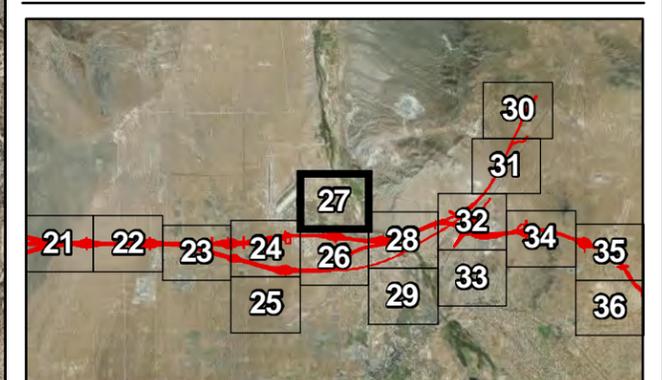
# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 27 of 40

Burrowing Owl: Survey Year - Company

-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC



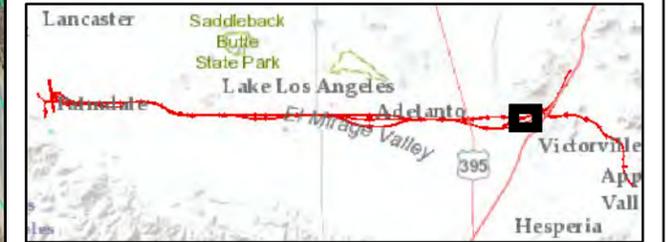
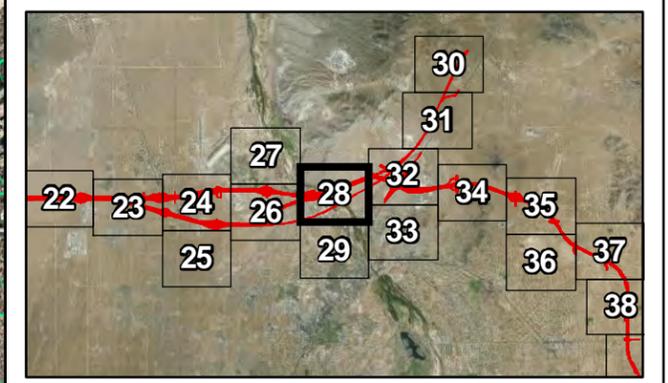
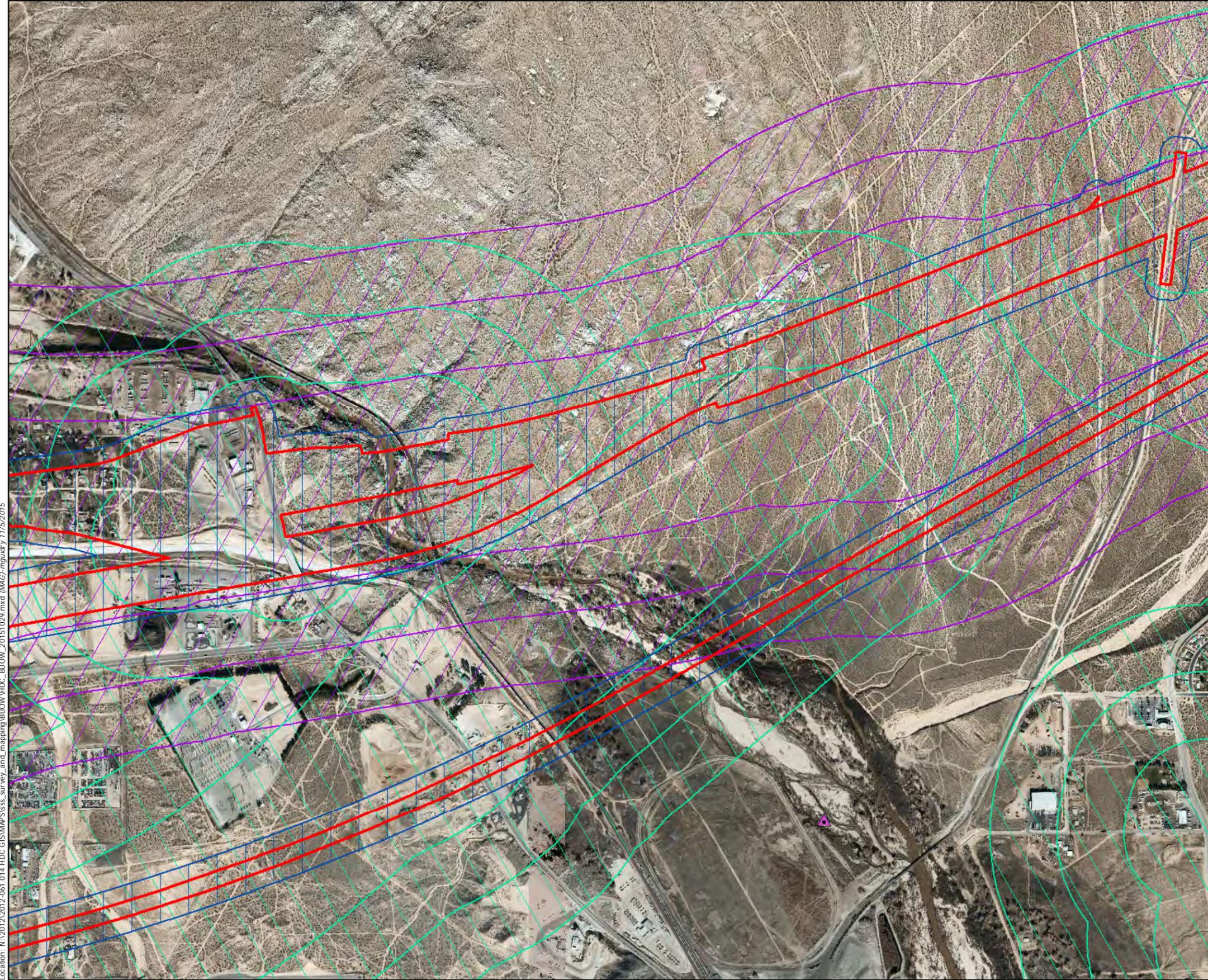
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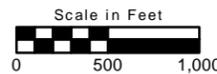


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 28 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



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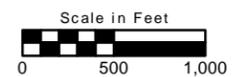
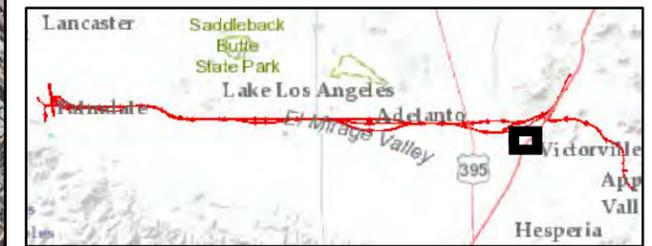
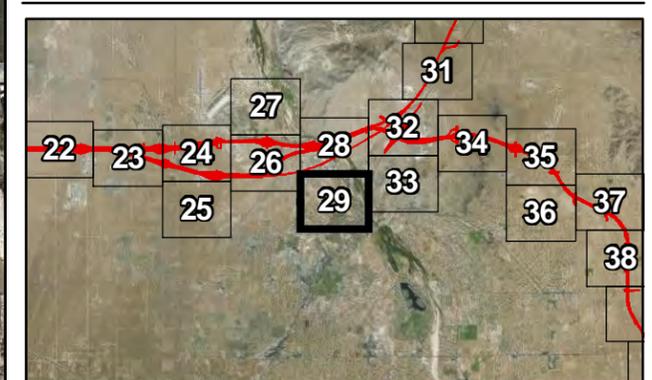
# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 29 of 40

Burrowing Owl: Survey Year - Company

 Survey Area - 2012 - AMEC



Location: N:\2012\2012-061-014 HDC GIS\Map\SSS\_survey\_and\_mapping\BUOW\HDC\_BUOW\_20151029.mxd (MAG) mguldray 11/5/2015

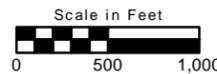
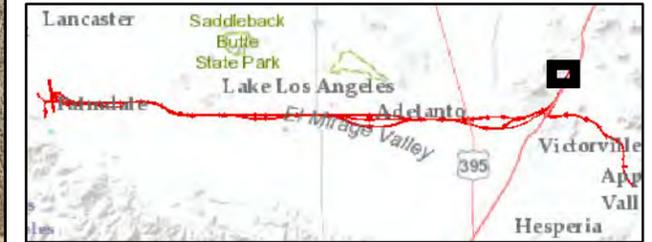
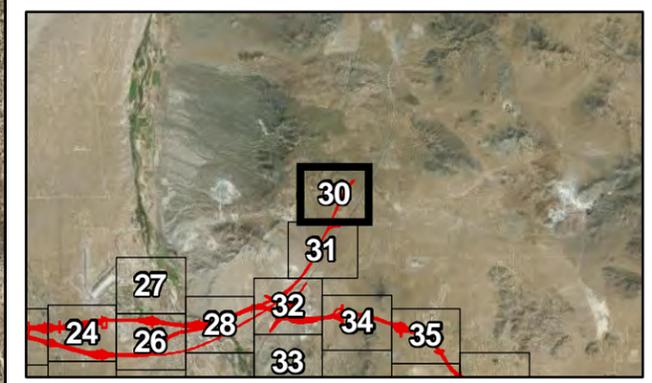




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 30 of 40

- Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
- Survey Area - 2015 - Caltrans

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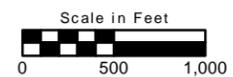
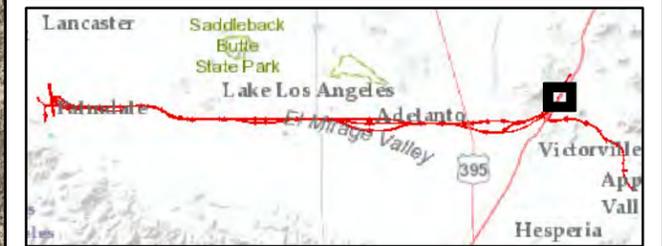
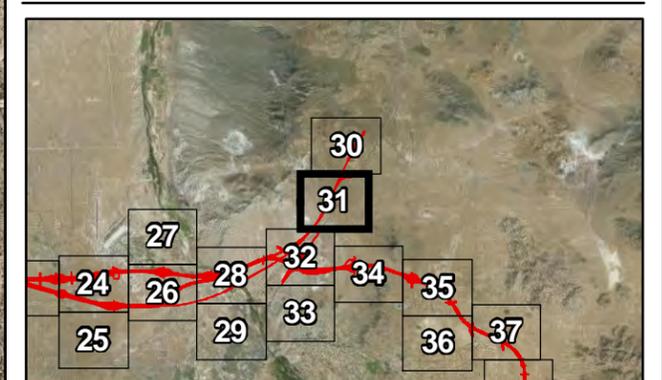




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 31 of 40

- Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans

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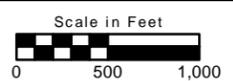
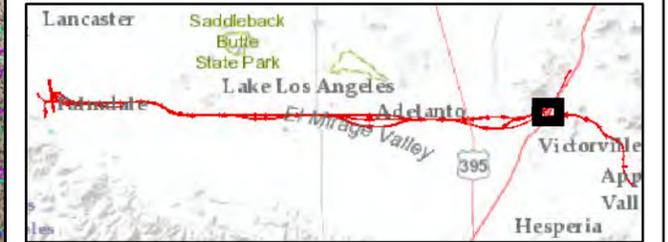
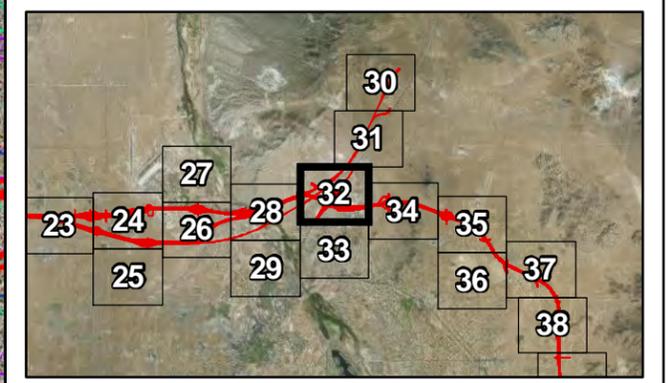
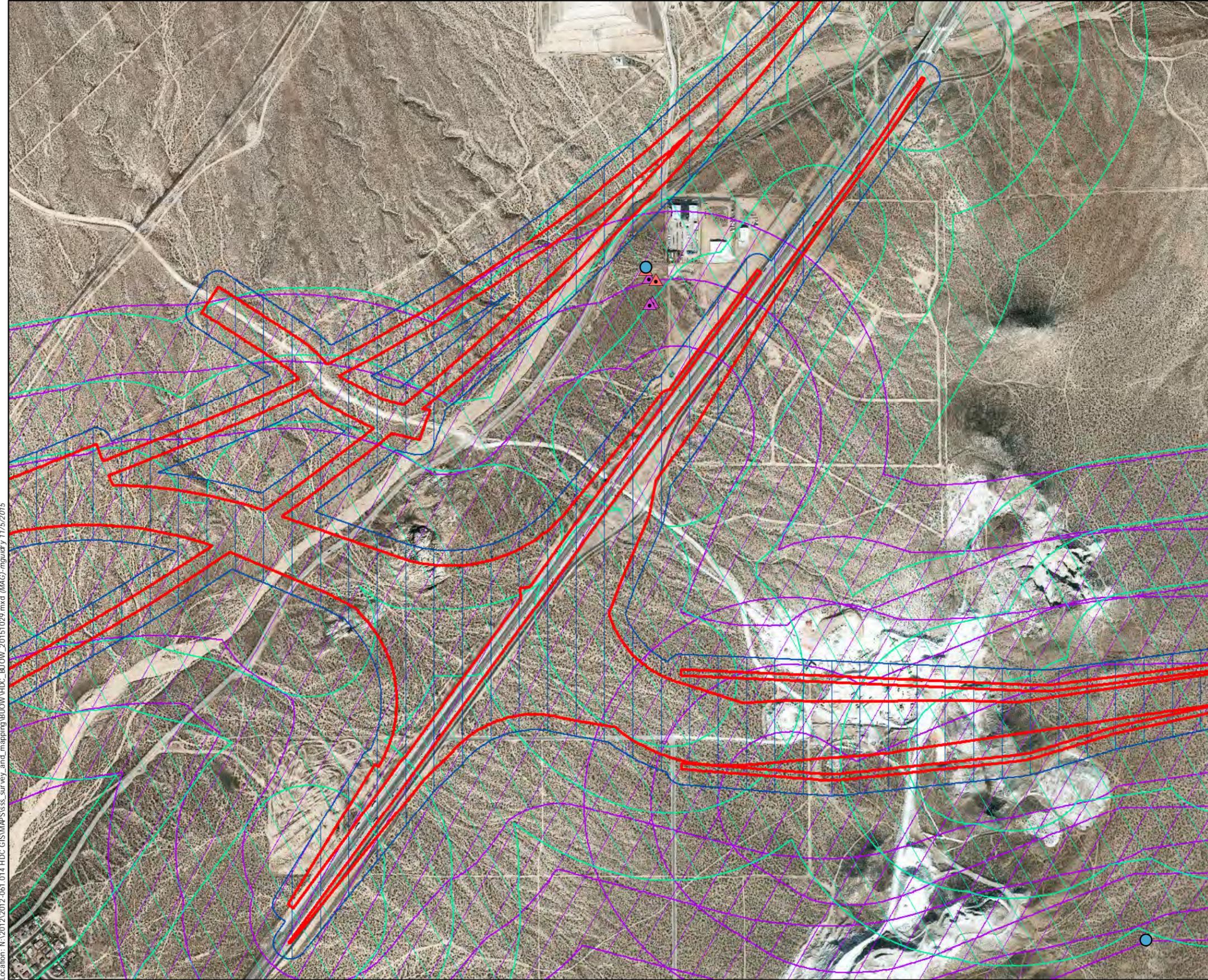




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 32 of 40

-  Impact Area of All Project Alternatives
- Category - Survey Year - Company
-  Live Burrowing Owl - 2011 - AMEC
-  Live Burrowing Owl - 2012 - AMEC
-  Burrow with Sign - 2012 - AMEC
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans

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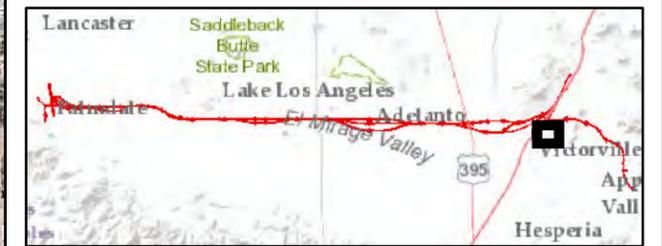
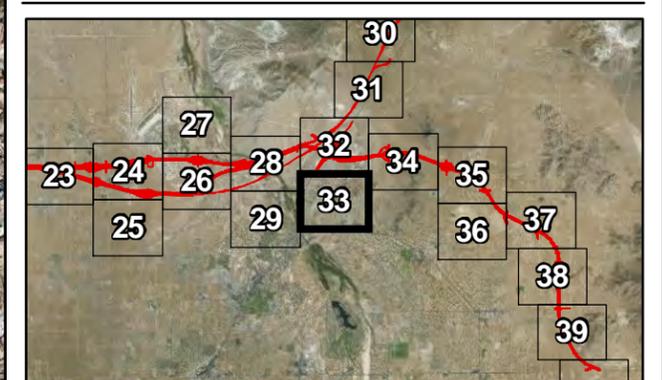




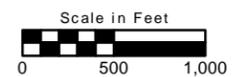
# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 33 of 40

Burrowing Owl: Survey Year - Company

-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC



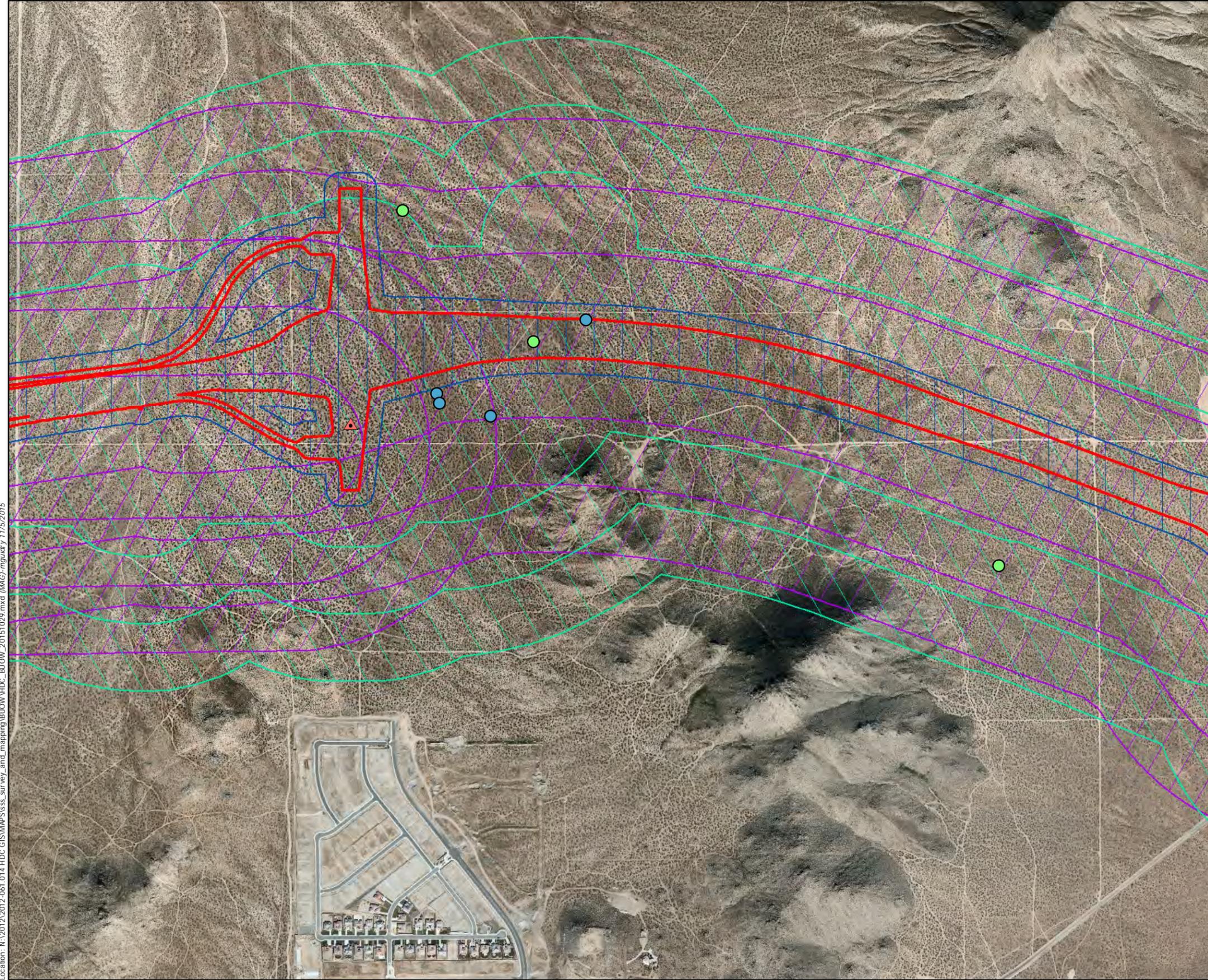
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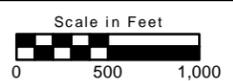
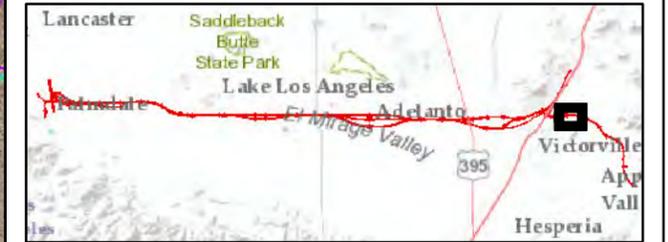
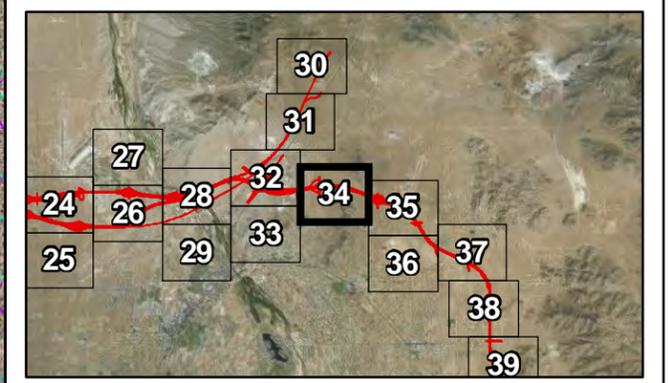


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 34 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2012 - AMEC
- Burrow with Sign - 2011 - AMEC
- Burrow with Sign - 2012 - AMEC
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



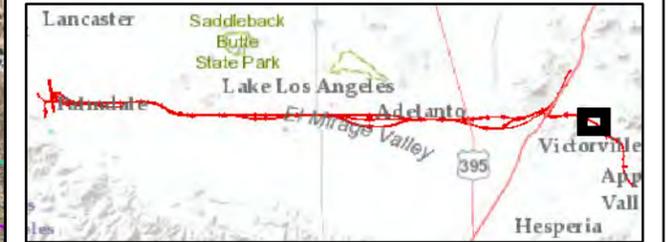
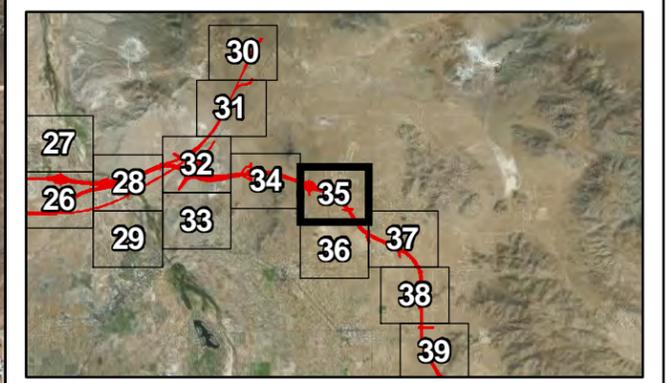
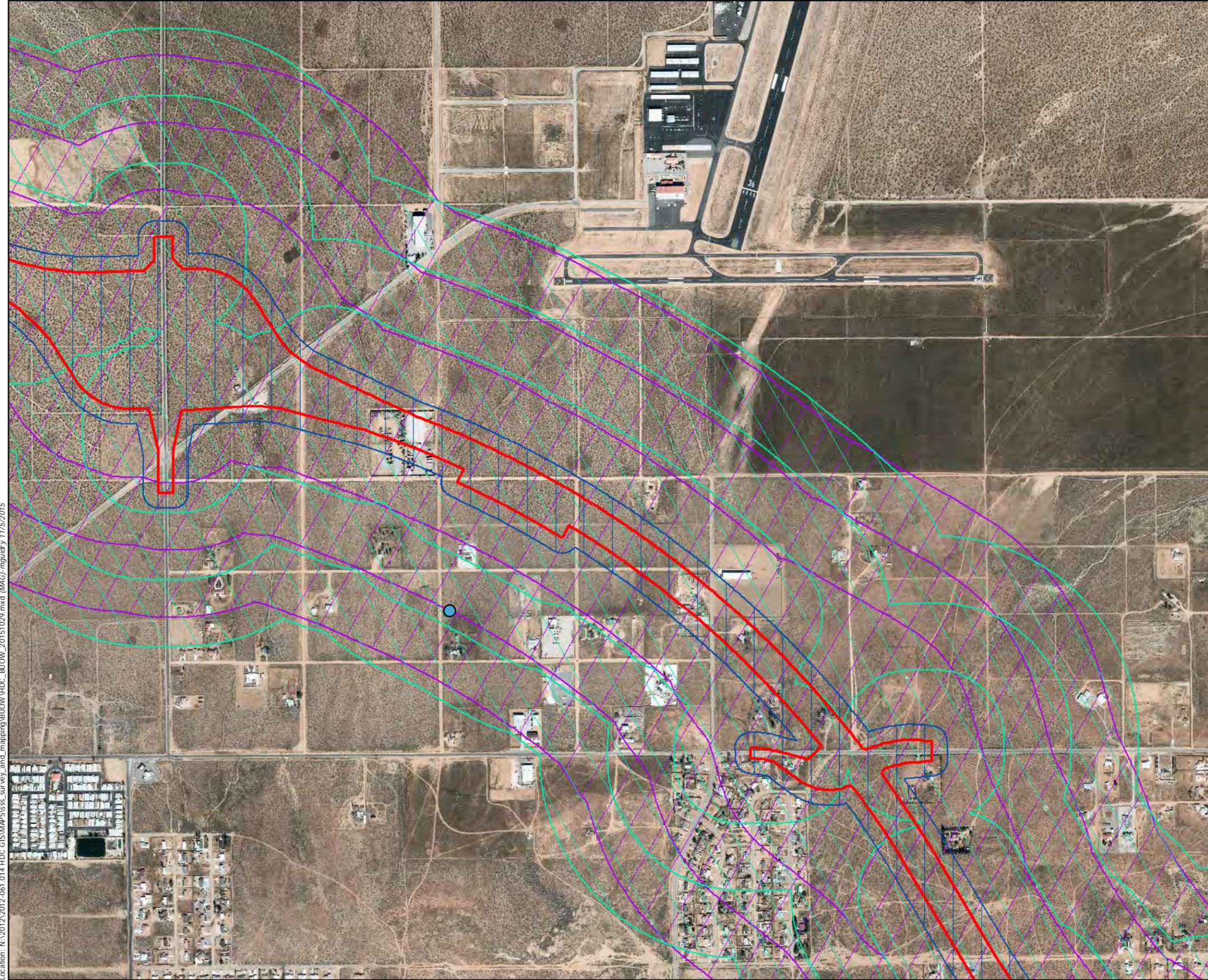
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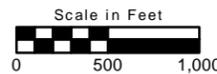


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 35 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
- Burrow with Sign - 2012 - AMEC
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



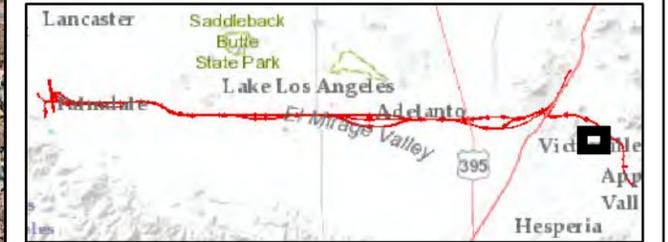
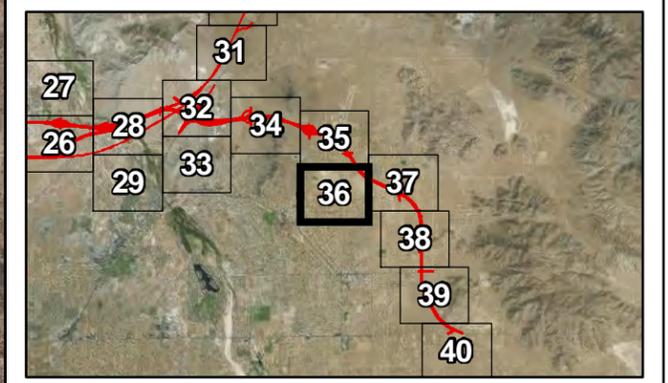
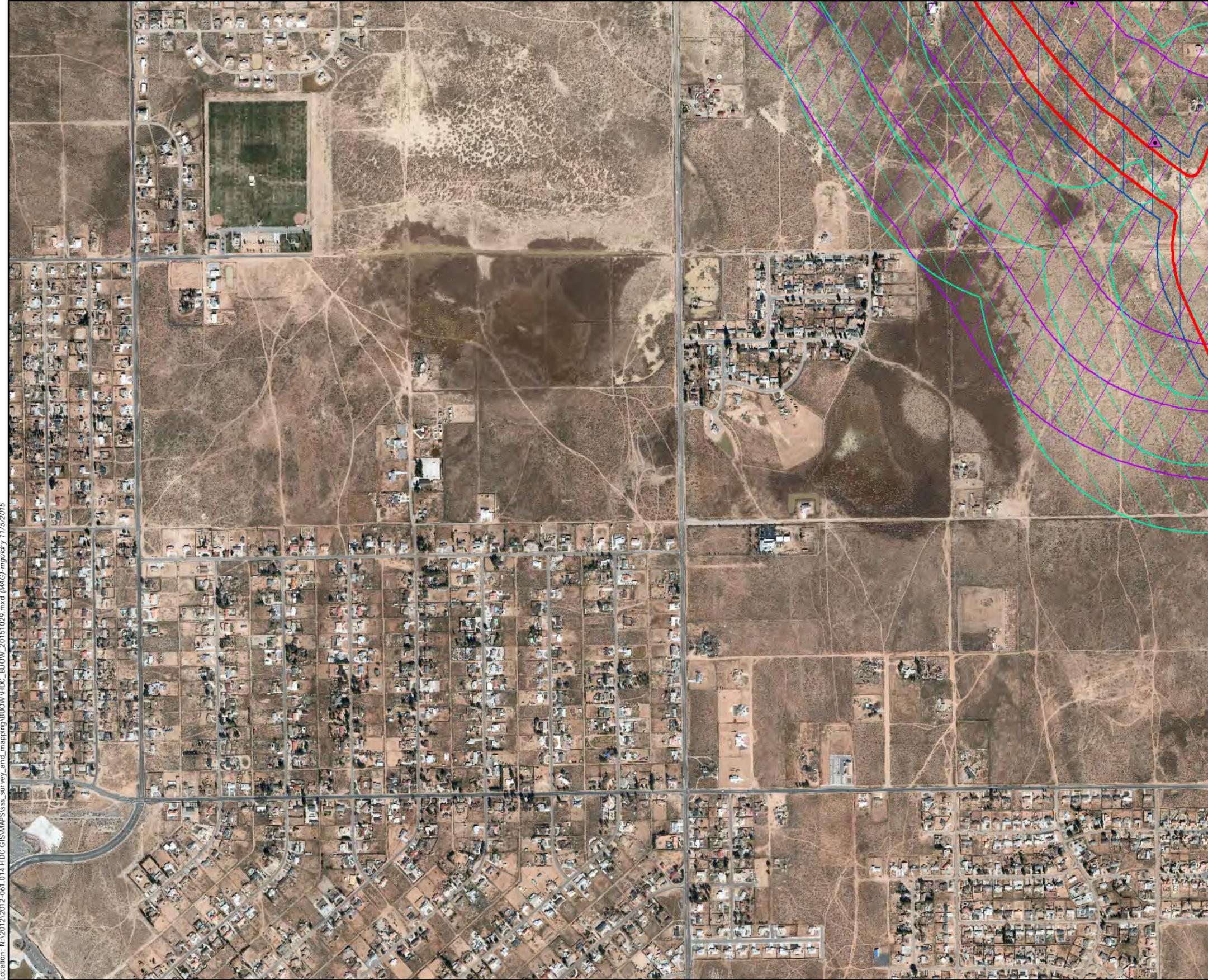
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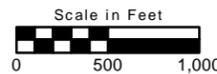


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 36 of 40

-  Impact Area of All Project Alternatives
- Category - Survey Year - Company
-  Live Burrowing Owl - 2011 - AMEC
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans



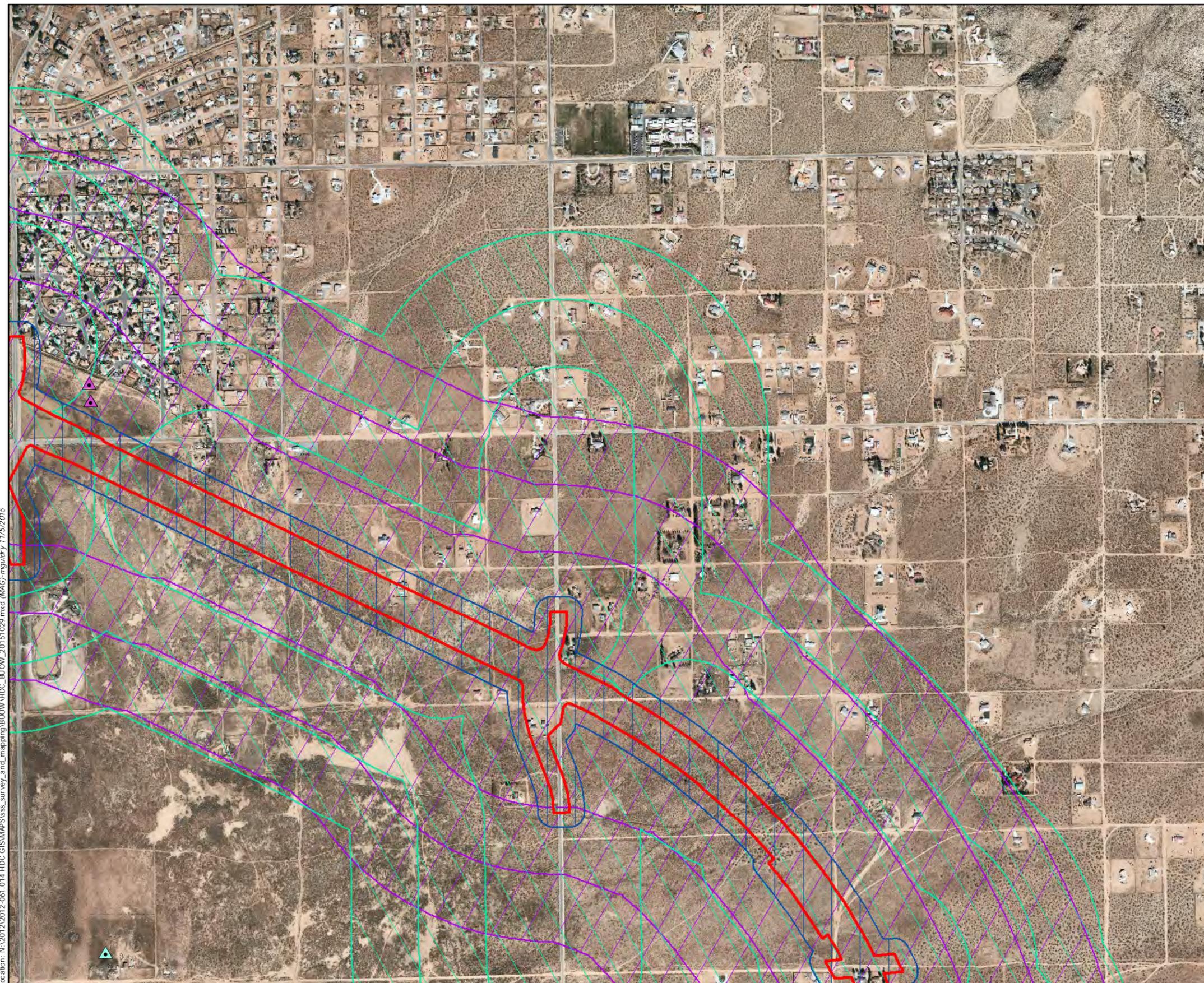
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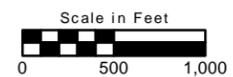
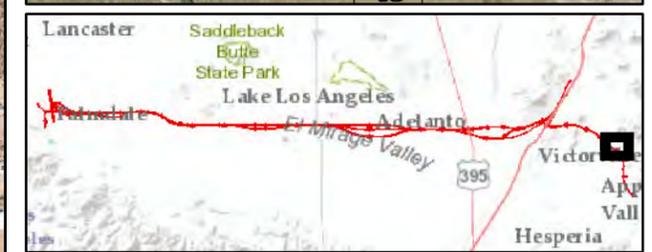
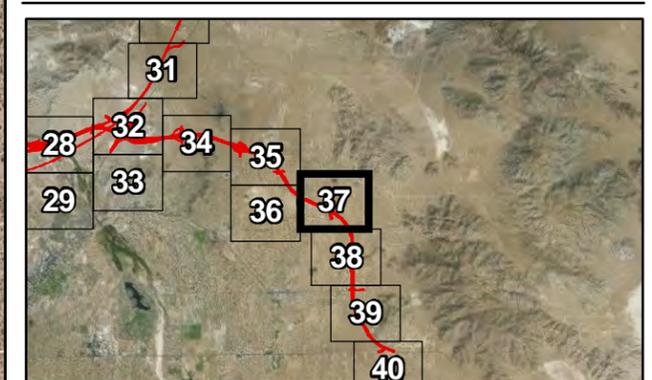


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 37 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2011 - AMEC
- ▲ Live Burrowing Owl - 2015 - Caltrans
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



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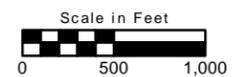
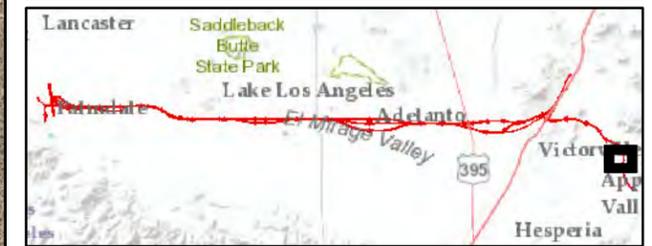
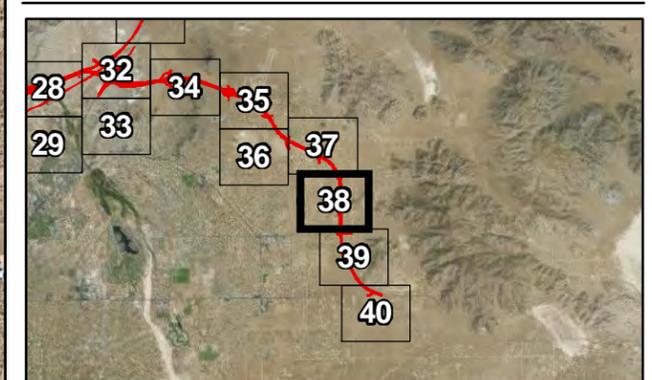
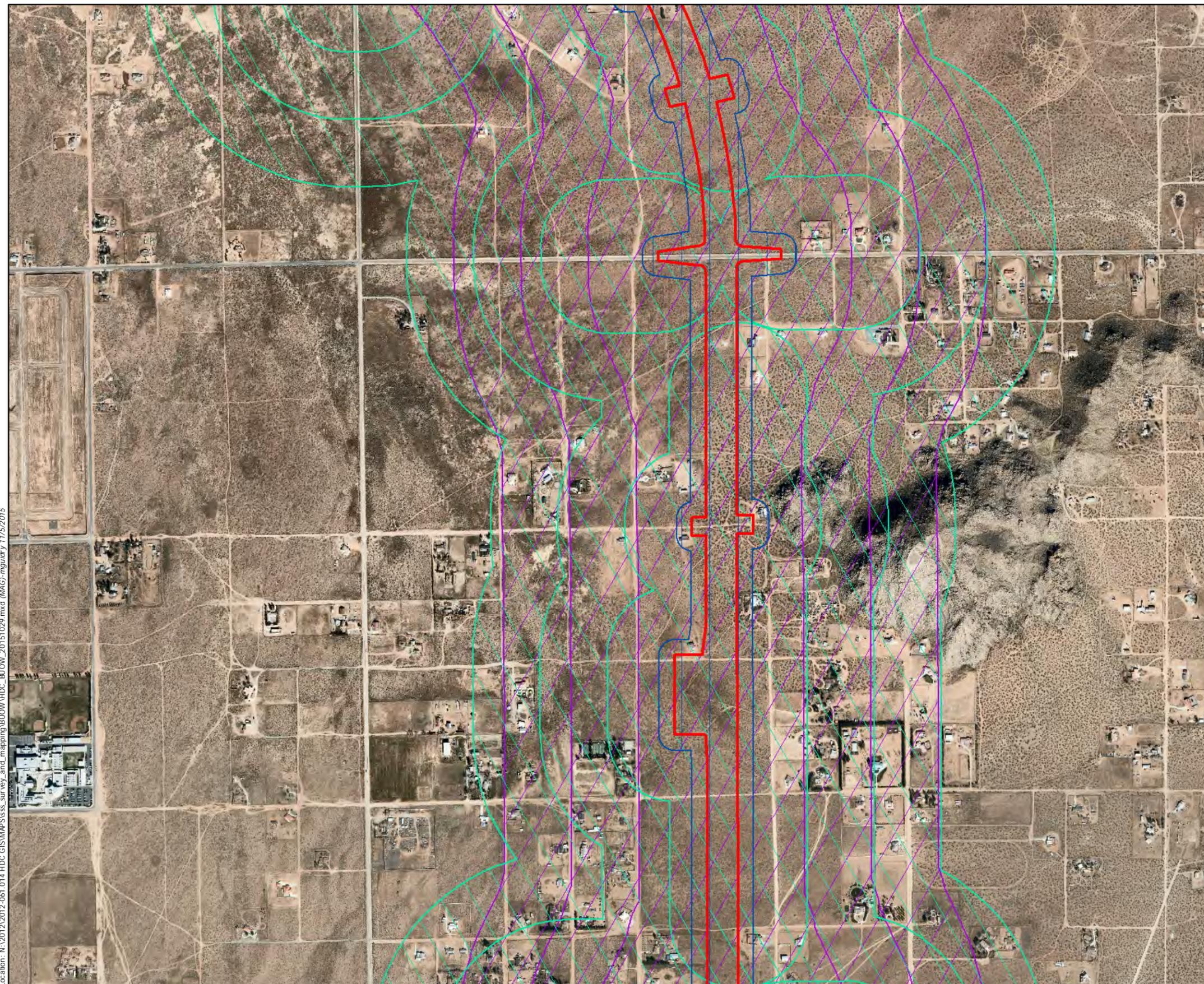




# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 38 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans

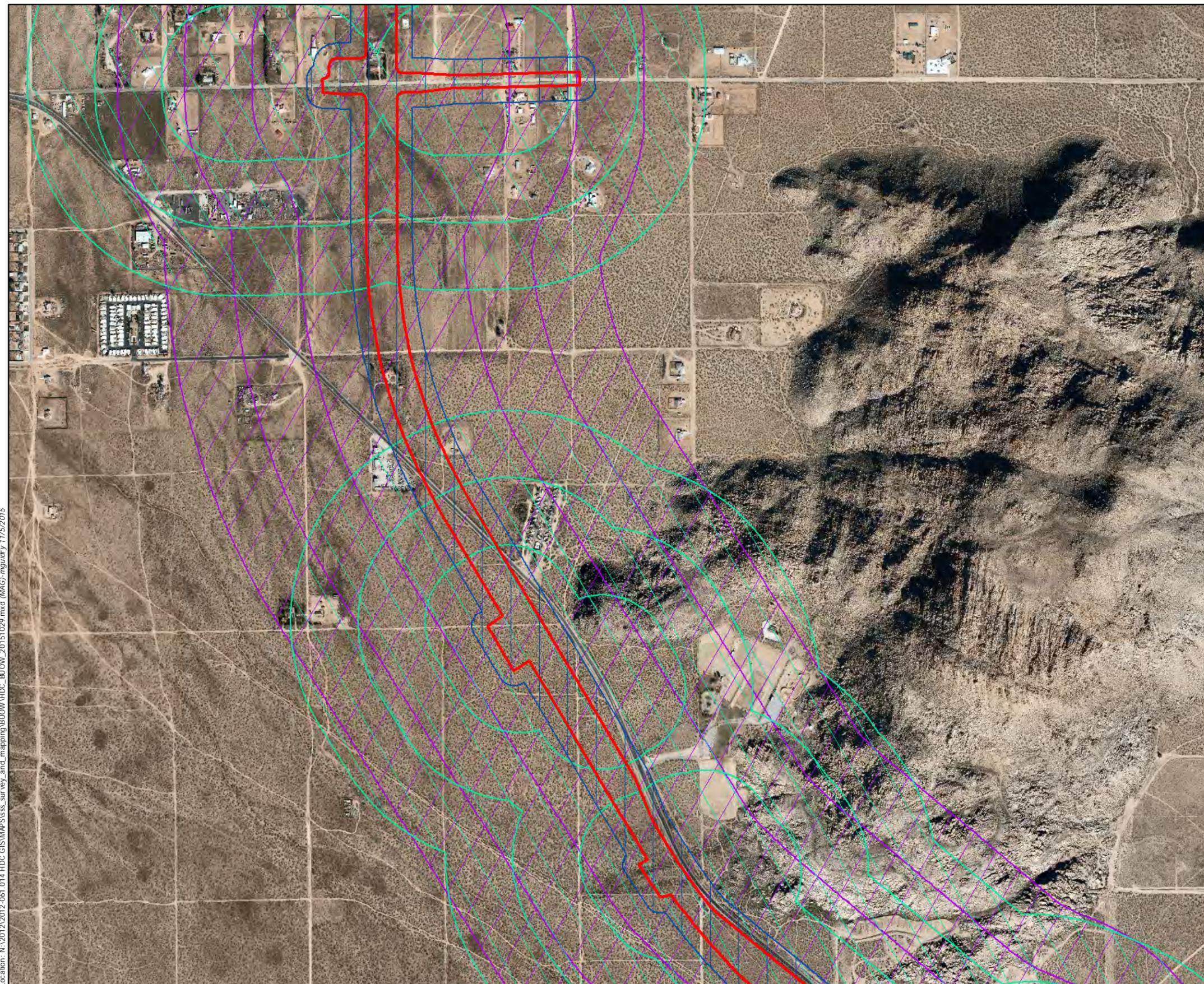
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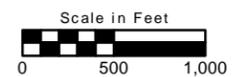
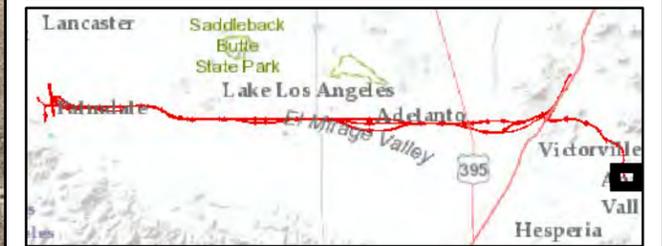
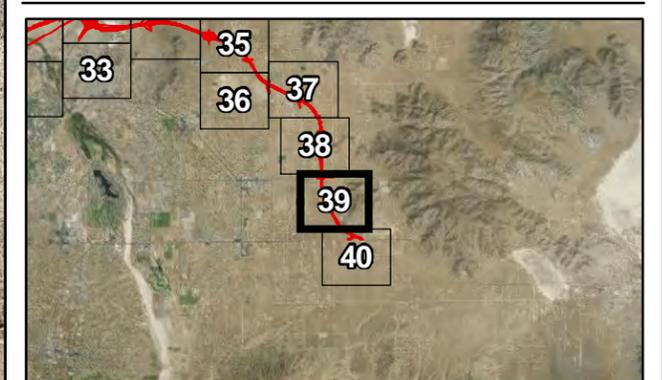


# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 39 of 40

-  Impact Area of All Project Alternatives
- Burrowing Owl: Survey Year - Company
-  Survey Area - 2011 - AMEC
-  Survey Area - 2012 - AMEC
-  Survey Area - 2015 - Caltrans



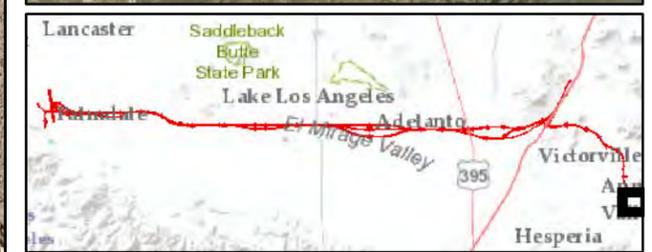
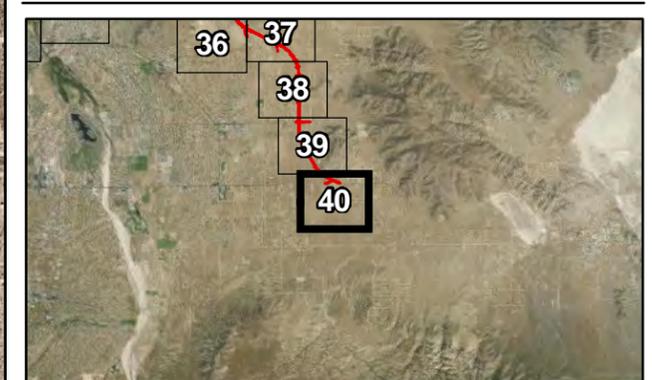
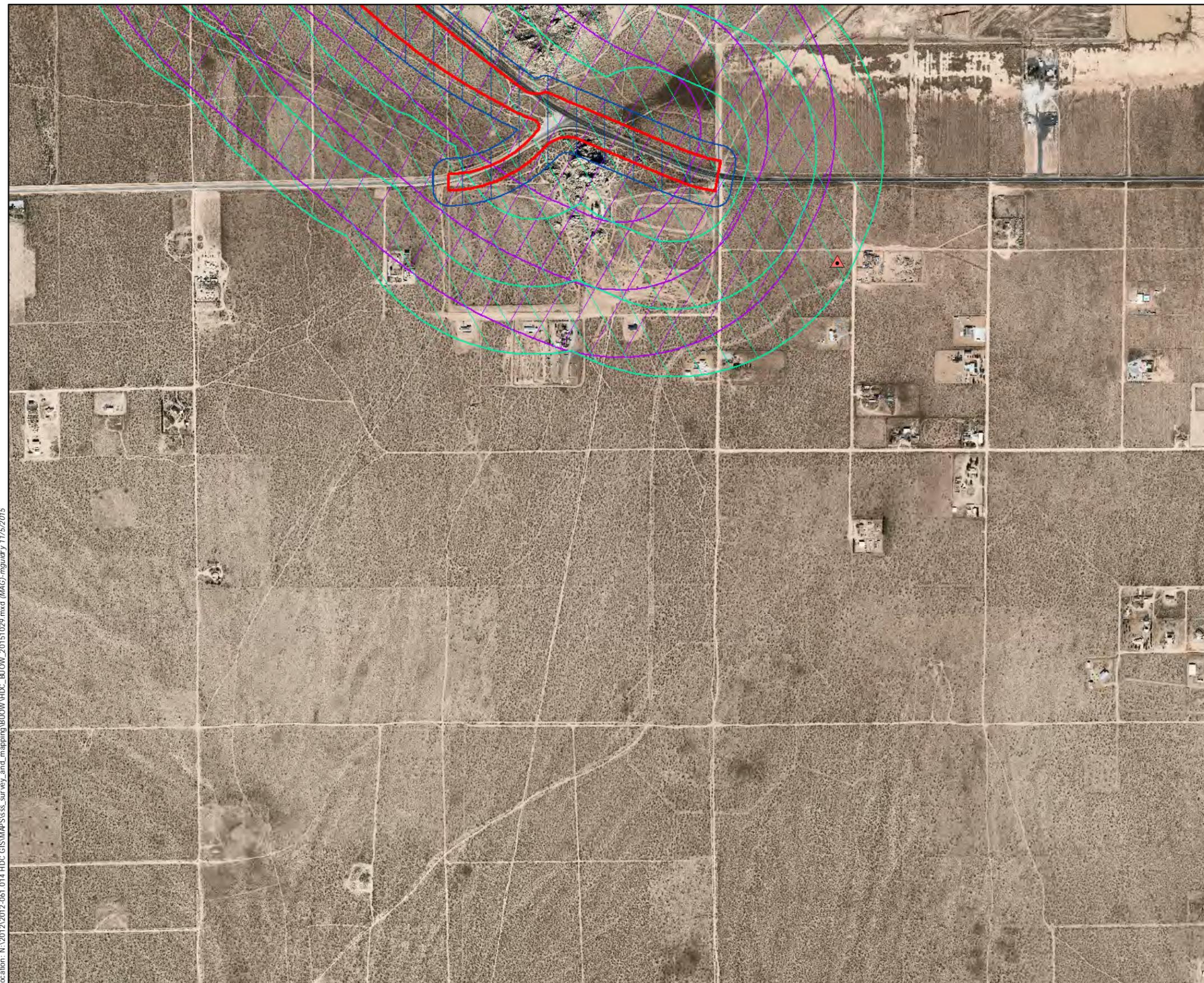
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# Attachment 1. Consolidation of Burrowing Owl Studies Sheet: 40 of 40

- Impact Area of All Project Alternatives
- Category - Survey Year - Company
- ▲ Live Burrowing Owl - 2012 - AMEC
- Burrowing Owl: Survey Year - Company
- Survey Area - 2011 - AMEC
- Survey Area - 2012 - AMEC
- Survey Area - 2015 - Caltrans



Location: N:\2012\2012-061-014 HDC GIS\MAPS\ssss\_survey\_and\_mapping\BUOW\HDC\_BUOW\_20151029.mxd (MAG) mgulder 11/5/2015

