

California High-Speed Rail Authority

Bakersfield to Palmdale

Project Section

Draft Project Environmental Impact Report/Environmental Impact Statement

Appendix 3.7-B: Potential Additional Section 1600 Resources Memorandum

January 2020



The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019, and executed by the Federal Railroad Administration and the State of California.

TABLE OF CONTENTS

| | | |
|-------|--|----|
| 1 | INTRODUCTION | 1 |
| 1.1 | Purpose of the Document | 1 |
| 2 | REGULATORY SUMMARY | 3 |
| 3 | METHODS | 3 |
| 3.1 | Literature and Dataset Review | 3 |
| 3.2 | Delineation Methods Used to Approximate Potential Additional Section 1600 Resources | 4 |
| 3.2.1 | CDFW Mapping Overview | 4 |
| 3.2.2 | Authority Mapping Overview | 4 |
| 4 | RESULTS | 8 |
| 5 | REFERENCES | 13 |
| 6 | PREPARER QUALIFICATIONS | 15 |

Tables

| | | |
|-----------|---|----|
| Table 3-1 | Feature Type Classification and Crosswalk | 7 |
| Table 4-1 | Authority-Mapped 1600 Resources and Additional Mapped Areas Based on CDFW Methodology in the ARSA ¹ | 9 |
| Table 4-2 | Authority-Mapped Section 1600 Jurisdiction in the Fresno to Bakersfield LGA Area of the Aquatic Resource Study Area ¹ | 12 |
| Table 6-1 | Preparer Qualifications | 15 |

Figures

| | | |
|------------|--|---|
| Figure 1-1 | Bakersfield to Palmdale Project Section Alignment Alternatives Depicting Areas Mapped by the Authority and CDFW for this Evaluation | 2 |
|------------|--|---|

Appendices

| | |
|-------------|--|
| Appendix A: | Authority-Mapped 1600 Resources and Additional Mapped Areas Based on CDFW Methodology |
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ACRONYMS AND ABBREVIATIONS

| | |
|-----------|---|
| ARDR | Aquatic Resources Delineation Report |
| ARSA | Aquatic Resources Study Area |
| Authority | California High-Speed Rail Authority |
| BARTR | Biological and Aquatic Resources Technical Report |
| CFG Code | California Fish and Game Code |
| CDFW | California Department of Fish and Wildlife |
| CCNM | César E. Chávez National Monument |
| LGA | Locally Generated Alternative |
| mi | miles |
| NHD | National Hydrography Dataset |
| NWI | National Wetlands Inventory |
| U.S. | United States |

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1 INTRODUCTION

The California High-Speed Rail Authority¹ (Authority) prepared an Aquatic Resources Delineation Report (ARDR) in 2016 and a Biological and Aquatic Resources Technical Report (BARTR) in 2018 for the Bakersfield to Palmdale Project Section (Authority 2016, Authority 2018a). Both reports evaluated the location and extent of resources in the Aquatic Resources Study Area (ARSA), which included all project alternatives known at the time plus a 250-foot buffer. The California Department of Fish and Wildlife (CDFW) provided comments during a March 2, 2017 BARTR review workshop, stating that some features potentially subject to CDFW Section 1600 jurisdiction may not have been mapped. On March 20 and 21, 2017, CDFW provided the Authority various datasets that included mapped features identifying areas where CDFW believed potential additional resources were located, and CDFW was therefore recommending further field evaluation of those areas. CDFW provided a written description of the contents of the datasets on April 3, 2017 that were reviewed on April 4, 2017 during a joint workshop between the Authority and CDFW.

As part of the original work in preparing the BARTR, field delineations were conducted in the ARSA for all parcels where permission to enter had been granted. As permission to enter agreements are not currently in place for large areas of the ARSA, it was not feasible to conduct additional field delineations upon receiving CDFW's comments. Therefore, to ensure that project impacts to all potential resources are evaluated, the Bakersfield to Palmdale Project Section Environmental Impact Report/Environmental Impact Statement will include the Authority's mapped Section 1600 delineation results, and an estimate of CDFW's potential extent of Section 1600 jurisdiction, based on the agency's interpretation and the datasets it provided in 2017.² For the purpose of this memorandum, the Authority mapped Section 1600 resources include delineation results from the Bakersfield to Palmdale Project Section ARDR (Authority 2016), BARTR (Authority 2018a), César Chávez National Monument (CCNM) Design Options delineations (Authority 2019), and the delineation completed for the Fresno to Bakersfield Locally Generated Alternative (LGA) area³ (Authority 2017, Authority 2018b). Including the Authority's mapped Section 1600 resources and an estimate of CDFW's potential extent of Section 1600 jurisdiction in the Environmental Impact Report/Environmental Impact Statement presents the range of possible interpretations of CDFW Section 1600 jurisdiction in the Bakersfield to Palmdale Project Section with the site access limitations.

1.1 Purpose of the Document

CDFW provided data sets and mapping of additional potential features for the southern extent of the project section, limited primarily to the Los Angeles County subset of the Bakersfield to Palmdale Project Section. CDFW did not provide similar mapped datasets for the remainder of the project section. Therefore, the Authority estimated additional potential resources for the Kern County subset of the Bakersfield to Palmdale Project Section that may fall under Section 1600 jurisdiction, based on CDFW's comments and data methodology for the Los Angeles County area. Figure 1-1 shows the area mapped by the Authority extrapolating from the Los Angeles County data set and the area covered by CDFW's dataset.

¹ Pursuant to 23 USC 327, under the National Environmental Policy Act Assignment Memorandum of Understanding between Federal Railroad Administration and the State of California, effective July 23, 2019, the Authority is the lead agency for the Bakersfield to Palmdale Project Section and this aquatic resources delineation under the National Environmental Policy Act and other federal environmental laws. Under the Memorandum of Understanding, the Authority is the lead agency responsible for environmental reviews and approvals for all Authority Phase 1 and Phase 2 projects.

² The Authority believes that it has properly and adequately mapped the extent of CFG Code Section 1600 resources as reported in its BARTR and ARDR. Likewise, the Authority believes that it has properly mapped the extent of all other aquatic resources, including state waters, as those areas are depicted in the BARTR and ARDR.

³ The portion of the Fresno to Bakersfield LGA alignment from the intersection of 34th Street and L Street to Oswell Street is analyzed in the Fresno to Bakersfield LGA Final Environmental Impact Report. The Authority approved the Fresno to Bakersfield LGA alignment from the City of Shafter through the Bakersfield F Street Station; however, the portion of the Fresno to Bakersfield LGA alignment from the intersection of 34th Street and L Street to Oswell Street has not been approved, as the approval of this portion of the alignment will occur through approval of the Bakersfield to Palmdale Project Section.



Figure 1-1 Bakersfield to Palmdale Project Section Alignment Alternatives Depicting Areas Mapped by the Authority and CDFW for this Evaluation

This technical memorandum provides a summary of the methodology the Authority used to estimate additional potential features that may be regulated by CDFW under Section 1600 of the California Fish and Game Code (CFG Code), per CDFW's comments to the Authority. This memorandum also summarizes potential permanent, temporary, and indirect impacts to the additional potential Section 1600 jurisdictional areas for the entire project section by alternative, as well as for the Authority's mapped Section 1600 resources provided in the BARTR and ARDR.

2 REGULATORY SUMMARY

Section 1602 of the CFG Code requires an entity to notify CDFW before it conducts any activity that would "substantially divert or obstruct the natural flow of, or 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." Once notified, CDFW may require execution of a Streambed Alteration Agreement before the activity may proceed.

Under CFG Code Section 1602, CDFW takes jurisdiction over lakes and streambeds, to top-of-bank or edge of adjacent riparian vegetation where it extends beyond top-of-bank. Although CDFW has not published an official definition of state lakes or streambeds beyond that contained in the CFG Code Section 1600 et seq., state jurisdiction generally includes the streambed/lakebed and bank, together with the adjacent riparian vegetation where present. Some waters regulated by the United States (U.S.) Army Corps of Engineers and State Water Resources Control Board under the Clean Water Act may be regulated by the CDFW. Streambeds and associated riparian areas and artificial watercourses (i.e., canals, ditches, and detention/retention basins) potentially subject to CDFW jurisdiction are present in the Bakersfield to Palmdale Project Section.

A more detailed discussion of the laws, regulations, and orders governing resources were provided in the ARDR and BARTR reports and are included here by reference (Authority 2016, Authority 2018a).

3 METHODS

This section outlines the methodology used by the Authority to identify additional resource areas potentially subject to CDFW Section 1600 jurisdiction in the Kern County portion of the Bakersfield to Palmdale Project Section.

3.1 Literature and Dataset Review

The literature review generally consisted of evaluating the existing background information for non-wetland waters. The following existing resource information related to the project region was reviewed:

- National Wetlands Inventory ([NWI] United States Fish and Wildlife Service 2018)
- National Hydrography Dataset ([NHD] United States Geological Survey 2018)
- Maps produced as part of the ARDR (Authority 2016) and BARTR (Authority 2018a)
- Maps produced as part of the CCNM Design Options Aquatic Resources Memorandum (Authority 2019)
- Maps produced for the Fresno to Bakersfield Project Section Final Wetlands Report for the LGA area (Authority 2017, Authority 2018b)
- Topographic maps and datasets
- Recent aerial imagery
- CDFW-provided datasets of potential additional Section 1600 jurisdictional areas for the Los Angeles County subset of the Bakersfield to Palmdale Project Section

3.2 Delineation Methods Used to Approximate Potential Additional Section 1600 Resources

3.2.1 CDFW Mapping Overview

CDFW provided maps and comments in the form of shapefiles for the portion of the Bakersfield to Palmdale Project Section in Los Angeles County, extending from near Gaskell Road in the north to near Spruce Court in the south (approximately 24.4 miles). CDFW evaluated an area 2,000 feet around the project footprint. The shapefiles depicted many areas not identified as potential Section 1600 jurisdiction by the Authority, but CDFW stated these should be evaluated as potentially jurisdictional until field verification can be completed. These features include ponded areas that CDFW indicated may fall under Section 1600 jurisdiction due to potential connection with washes in extreme flood events, and other features CDFW believes may be washes, including eroded areas, ranch roads, and topographic features that do not convey water in a streambed contained between stream banks. Additionally, the mapping provided by CDFW identified additional lateral areas on either side of top of bank in areas that do have a visible bed and bank as Section 1600 jurisdiction, based on CDFW's assertion that 1600 jurisdiction may extend up hillsides and beyond the stream system. Some of the data is believed to be drawn from NHD, NWI, and Federal Emergency Management Agency data, as well as CDFW's interpretation of aerial imagery and areas CDFW interpreted as low points, and limited windshield surveys. Additionally, CDFW indicated that they reviewed internal modeling data that the Authority was not provided. Some of the datasets CDFW used are known to provide useful background information; however, these datasets have limitations and do not always represent on-the-ground conditions. Limitations include the scale and resolution of base data, which limit the accuracy of resultant spatial data; known limitations of desktop-based methods, including misinterpretation of signatures on aerial imagery; and limited field verification of the actual scale and extent of features. Some datasets, such as the Federal Emergency Management Agency data, are intended to capture the extent of flooding in extreme events and therefore also capture low-lying areas with little relief that are not themselves streams. Additionally, the age of existing background datasets can limit their utility in reflecting current extent of artificial and highly managed features.

3.2.2 Authority Mapping Overview

During the April 4, 2017 workshop, CDFW indicated that because they had limited site access, they relied on aerial imagery and used a worst-case scenario approach in their mapping to identify potential additional areas under their jurisdiction. However, the additional areas that CDFW has indicated may potentially be within their jurisdiction are beyond what the Authority understands to be specified and covered in the CFG Code, and is not consistent with the Authority's delineation experts' permitting experience for other projects in this region that CDFW has permitted (or not required permits for). The Authority's review of the types of additional areas identified by CDFW indicates that they included as potential aquatic resources (e.g., streams, ponded areas) many areas that are undifferentiated from surrounding upland areas and that have no difference in capacity to support wildlife from the surrounding uplands. CDFW also used 'in-house' methodologies in their mapping, which may not be repeatable or reflected/used by other Regions.

In the absence of an adopted formal methodology outlining the identification of CDFW's 1600 jurisdiction, the Authority relied on statute and case law regarding lakes and streams, and identified watercourses that convey water in a streambed, contained within stream banks, and in a directional manner. The Authority mapped features through an objective and repeatable process that relied on evidence of a bed and bank, signs of directional flow, and associated riparian vegetation. Delineation experts used information gathered during windshield surveys and on-the-ground field work to understand and identify the signature of aquatic features on aerial imagery to map jurisdictional areas where access was not granted. This process (i.e., aerial interpretation based on ground-truthing) is consistent with the delineation experts' experience for other projects in this region that CDFW has permitted. CDFW's mapping identified extensive areas that the Authority's work indicates are not existing lakes or streambeds. In short, the

Authority believes that it has properly and adequately mapped the extent of CFG Code Section 1600 resources as reported in the BARTR and ARDR. A more detailed discussion of the Authority’s mapping methodology based on laws, regulations, and orders governing aquatic resources is provided in the ARDR and BARTR (Authority 2016, Authority 2018a).

The following section describes the Authority’s methodology to emulate CDFW’s suggested 1600 resource areas to the greatest extent possible and to generate mapped estimates of additional potential resources that may fall under Section 1600 jurisdiction.

3.2.2.1 Study Area

To evaluate the remaining areas not already reviewed by CDFW, a CDFW Estimation Study Area was generated. This Study Area consisted of existing project alternatives, plus a 250-foot buffer around the project footprint. It extended from the southern limit of the F Street Station (approximately the intersection of 34th Street and L Street to include the Fresno to Bakersfield Project Section LGA area), south through the Bakersfield to Palmdale Project Section ARSA, and ended at Gaskell Road. The CDFW Estimation Study Area included the CCNM Design Option and the Refined CCNM Design Option.

3.2.2.2 Mapping Additional Potential Features

Potential⁴ Channel

A topographic analysis was conducted for linear features identified in the NHD and NWI using ArcGIS spatial analyst tools and a 10-meter digital elevation model to identify low areas that could be potential streams. Potential flow lines were generated from the topographic flow accumulation analysis at these low-lying topographic positions. The resulting lines were smoothed and corrected for noise from the model in areas with relatively little topography and where the model results were clearly not potential streams (such as furrows in farm fields, flat sites in disturbed urban areas, trails, and roads [many such areas were included in the mapping provided by CDFW]). The resulting lines were then reviewed to identify features, that when viewed strictly on an aerial, could be interpreted as potential streams. These areas were not mapped during the work in preparing the BARTR and ARDR because they either did not exhibit concentrated flows that have repeatable boundaries (i.e., bed, bank, or channel) and in accordance with the CFG Code, or were not consistent with the signature of known streams when viewed on aerial imagery based on on-the-ground field work in the project area and when viewed in combination with topographic data.

The upper limit of “concentrated flow” (streams) for the small features identified in the topographic analysis was estimated based on experience and best professional judgement and in comparison with the mapping provide by CDFW. This was necessary due to the limited resolution of available topographic data and aerial imagery in some areas. Additionally, CDFW did not provide a definitive objective criterion that could be used to identify their methodology for determining the upper limits of streams.

The flow line analysis and NHD do not identify the width of potential streams. Therefore, these were estimated using width data from nearby streams collected in the field previously from on-the-ground mapping. Where field data was insufficient, the approximate width of the potential stream was estimated based on experience and best professional judgment and in comparison with the mapping provide by CDFW.

CDFW has stated that its jurisdiction may be wider than the physical top of bank. Therefore, an additional 4-, 6-, and 10-foot buffer was added to the width of first, second, and third order streams, respectively. These buffer widths were based on comments made by CDFW personnel

⁴ The term “potential” as used in this report refers to areas estimated by the Authority based on the limited information provided by CDFW. It does not suggest that the Authority agrees that the approximations of additional areas depicted in this Memorandum are subject to CFG Code 1600 jurisdiction nor that “Potential Channel,” “Potential Riparian,” “Potential Wetlands,” or “Potential Ponding” exhibit the necessary characteristics to make those areas “streams,” “riparian,” “wetlands,” or “ponds.”

when a small subset of streams was visited during field trips (July 2016, September 2016, and January 2017). These buffers were applied to the Authority-mapped streams, as well as the new potential features mapped during this exercise. The resultant stream polygons around each potential stream were then merged to ensure no areas were double counted.

Potential Riparian

Previously mapped riparian vegetation in areas already evaluated was reviewed on recent aerial images. Vegetation that was associated with streams was re-reviewed in the datasets and aerial imagery. Features that could be interpreted as potential riparian canopy when viewed strictly on an aerial, and not captured through the estimation of potential flowlines discussed above, were mapped as additional potential riparian canopy. Potential riparian areas were prioritized over potential stream polygons where overlap occurred to avoid double-counting areas. These areas did not exhibit riparian vegetation in the field, were not associated with streams, or were not consistent with the signature of known riparian vegetation when viewed on aerial imagery based on on-the-ground field work in the project area, and were therefore not mapped in the BARTR and ARDR.

Potential Wetlands

Datasets, topographic maps, and recent high-resolution aerial imagery were re-evaluated for features that could be interpreted as potential wetland features based on visual indicators that, when viewed strictly on aerial imagery, may be interpreted as wetland vegetation. These additional potential wetland areas were primarily adjacent to riparian and streambed features that were mapped in the BARTR and ARDR by the Authority and were characterized as forested wetlands. Wetlands that directly adjoin streams and form part of the riparian canopy would be regulated under CDFW jurisdiction. Other isolated areas not associated with any other feature type that could be interpreted, when viewed strictly on an aerial, to contain hydrophytic plant species and exhibit seasonal wetland hydrology (e.g., potential water or saturation visible on aerials) were included as additional potential Section 1600 resources for this analysis (referred to as “potential slope wetlands”). These additional wetland areas were not mapped during the work in preparing the BARTR and the ARDR because they either did not exhibit positive indicators for hydric soils, hydrology, and wetland/hydrophytic vegetation in the field, or were not consistent with the signature of known wetlands when viewed on aerial imagery based on on-the-ground field work in the project area. Therefore, potential seasonal wetlands are not expected to be under CDFW jurisdiction.

Potential Ponding

The existing published NHD and NWI were evaluated and ponding type features were extracted. Topographic maps and recent high-resolution aerial imagery were reviewed and additional areas that could be interpreted as containing potentially ponding water (i.e., ponds, reservoirs, basins) when viewed strictly on an aerial were mapped. Desert ponded areas are not expected to be under CDFW jurisdiction; however, CDFW indicated that potential ponded areas with connection to riparian/streambed areas may fall under Section 1600 jurisdiction; so these areas were included in CDFW’s shapefiles. Therefore, Authority-mapped ponding areas were reviewed and additional areas that could be interpreted a potentially containing ponding water were mapped. Potential ponded features were merged to ensure no areas were counted more than one time. These areas were not included in the BARTR and ARDR because they are undifferentiated from surrounding areas identified as uplands.

Claypans

Claypans are concentrated in the Antelope Valley portion of the Bakersfield to Palmdale Project Section. Claypans are not lakes, and do not have bed, bank, or directional flow that would be expected with streams. Claypans are therefore not expected to be under CDFW jurisdiction; however, CDFW has indicated that claypans with connectivity to riparian/streambed areas may fall under Section 1600 jurisdiction and these areas were included in CDFW’s shapefiles. Claypans were delineated based on a specific hydrology criterion and methodology (LSA 2016), as detailed in the Bakersfield to Palmdale Project Section BARTR (Authority 2016). Due to this

rigorous and agency-reviewed methodology, the Authority affirms the claypan features as mapped and identified in the BARTR for the Bakersfield to Palmdale Project Section. The U.S. Army Corps of Engineers confirmed that the claypan methodology used was objective, repeatable, and provided results consistent with the results derived by U.S. Army Corps of Engineers’ own studies on Edwards Air Force Base. Therefore, no additional claypan areas were mapped during this evaluation.

3.2.2.3 Feature Type Classification

The existing datasets used to support the CDFW estimation mapping do not categorize features consistently and field verification of feature type was not feasible at this time. Therefore, to estimate the total acreage of each feature type for this evaluation effort, and to compare these findings with the datasets provided by CDFW, feature types were simplified into four categories: potential ponding, potential streambed, potential riparian, and potential seasonal wetlands.

To compare feature types with those mapped by the Authority, as categorized in the BARTR, the Authority-mapped delineation feature types were categorized similarly into these four groups. Table 3-1 provides a crosswalk between the feature types for the Authority-mapped Section 1600 resources and the additional areas mapped using CDFW’s methodology.

Table 3-1 Feature Type Classification and Crosswalk

| Feature Type for the 2016 Authority-Mapped Section 1600 Resources | Feature Type of the Additional Areas Mapped Based on CDFW Methodology |
|--|--|
| Claypans (natural claypans) | Claypans (claypans) |
| Desert Poned Areas (ponding in desert developed areas) In-stream Impoundments Artificial Watercourse – detention/retention basins | Ponding (ponds, reservoirs, basins) |
| Stream and Washes (ephemeral, intermittent, and perennial streams, desert wash) Artificial Watercourse – canals Artificial Watercourse – ditches | Streambeds (ditches, canals, streams, washes that lack significant woody vegetation) |
| Riparian Forested Wetlands | Riparian (riparian areas, forested wetlands) |
| Seasonal Wetlands | Seasonal Wetlands (slope wetlands) |

3.2.2.4 Potential Impact Determination

Upon completion of the desktop delineation, the Kern County additional features dataset was combined with all of the Authority-mapped aquatic resources (regardless of whether they are expected to fall under CDFW jurisdiction or not) and the CDFW-provided mapping for Los Angeles County. The resultant polygons for each feature type were then merged to ensure no areas were double counted. These final features comprise the extent of potential areas subject to Section 1600 jurisdiction within the ARSA based on CDFW’s mapping methodology and their statements regarding potential jurisdictional coverage.

The Authority-mapped Section 1600 resources and potential additional features datasets were clipped to the 250-foot ARSA, with the exception of claypans, which were included in their entirety if any portion of the feature overlapped the ARSA based on the assumption that impacts to any portion of the claypan may disrupt the entire feature (this methodology is consistent with that used in the ARDR and BARTR when determining the extent of resources and potential impacts to those features).

Potential permanent and temporary impacts were calculated for the potential additional features dataset for each alternative, including the CCNM Design Option and the Refined CCNM Design

Option. The same impact calculations were repeated for the Authority's mapped Section 1600 resources dataset for the Bakersfield to Palmdale Project Section (i.e., delineation results from the Bakersfield to Palmdale Project Section ARDR, BARTR, and CCNM Design Options, and the Fresno to Bakersfield LGA area).

4 RESULTS

Additional features potentially subject to Section 1600 jurisdiction based on CDFW's methodology in the Bakersfield to Palmdale Project Section included potential ponding, potential streambed, potential riparian, and potential seasonal (slope) wetland areas. Table 4-1 displays the results of the Authority mapped Section 1600 resources compared to the additional areas mapped based on the CDFW methodology described in this memorandum, for each of the Bakersfield to Palmdale Project Section alternatives.⁵ The Authority-mapped Section 1600 resources for the LGA area is provided in Table 4-2. Appendix A presents mapped resources delineated by both methodologies and as classified herein.

All potential additional resources for the entirety of the Bakersfield to Palmdale Project Section have been included in this memorandum. Mapped areas represent resources that are expected to fall under CDFW jurisdiction by the Authority (i.e., Section 1600 resources depicted in the BARTR and ARDR) or that CDFW has suggested may be subject to Section 1600 jurisdiction or areas they believe warrant additional evaluation when site access is granted.

CDFW is expected to assert jurisdiction over streambeds, including riparian areas, to top of bank or edge of riparian dripline, whichever is greater. CDFW has stated that certain deep impoundments, such as stock ponds, can function similarly to lakes, and that shallow ponded areas with connectivity to streambed or riparian areas may also fall under Section 1600 jurisdiction. Therefore, all ponded areas have been included conservatively for future evaluation. CDFW is not expected to assert jurisdiction over seasonal wetlands not associated with stream channels or ponds, but these have also been included conservatively for future evaluation, as needed.

⁵ For the purpose of this evaluation, the Bakersfield to Palmdale Project Section alternatives extend from the southern terminus of the F Street Station near 34th Street and L Street in Bakersfield to Spruce Court in Palmdale (Table 4-1). The LGA area included in this evaluation extends from the southern terminus of the F Street Station near 34th Street and L Street to Oswell Street in Bakersfield (Table 4-2).

Table 4-1 Authority-Mapped 1600 Resources and Additional Mapped Areas Based on CDFW Methodology in the ARSA¹

| Feature Type | Authority-Mapped 1600 Resources ² | | | Additional Mapping Based on CDFW Methodology ² | | | Difference ² | | |
|--|--|-------------------|------------------|---|--------------------|-------------------|-------------------------|--------------------|-------------------|
| | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact |
| Alternative 1 | | | | | | | | | |
| Claypan | - | - | - | 14.0 | 6.9 | 1.3 | 14.0 | 6.9 | 1.3 |
| Ponding | 58.6 | 26.5 | 3.8 | 2072.7 | 1018.4 | 206.7 | 2014.1 | 991.9 | 202.9 |
| Streambeds | 115.8 (64.0 mi) | 50.4 (26.5 mi) | 8.8 (5.9 mi) | 369.8 (207.7 mi) | 163.8 (92.8 mi) | 40.9 (25.1 mi) | 254.0 (143.7 mi) | 113.5 (66.3 mi) | 32.1 (19.2 mi) |
| Riparian | 57.8 | 12.2 | 3.8 | 78.2 | 20.2 | 5.7 | 20.3 | 8.1 | 1.9 |
| Seasonal Wetland | 4.0 | 2.1 | 0.2 | 13.4 | 6.1 | 1.4 | 9.4 | 4.0 | 1.2 |
| Total Extent of Features | 236.3 | 91.1 | 16.6 | 2548.1 | 1215.4 | 256.0 | 2311.8 | 1124.3 | 239.4 |
| Alternative 2 | | | | | | | | | |
| Claypan | - | - | - | 14.0 | 6.9 | 1.3 | 14.0 | 6.9 | 1.3 |
| Ponding | 57.3 | 24.1 | 3.9 | 2071.1 | 1016.7 | 204.7 | 2013.9 | 992.6 | 200.9 |
| Streambeds | 115.5 (63.6 mi) | 50.4 (26.5 mi) | 8.7 (5.8 mi) | 372.3 (206.7 mi) | 165.2 (90.2 mi) | 40.3 (24.4 mi) | 256.8 (143.0 mi) | 114.7 (63.7 mi) | 31.7 (18.6 mi) |
| Riparian | 57.8 | 12.2 | 3.8 | 78.0 | 20.3 | 5.7 | 20.2 | 8.1 | 1.9 |
| Seasonal Wetland | 4.0 | 2.1 | 0.2 | 13.4 | 6.1 | 1.4 | 9.4 | 4.0 | 1.2 |
| Total Extent of Features | 234.6 | 88.8 | 16.5 | 2548.8 | 1215.1 | 253.4 | 2314.3 | 1126.3 | 236.9 |
| Alternative 2 with CCNM Design Option | | | | | | | | | |
| Claypan | - | - | - | 14.0 | 6.9 | 1.3 | 14.0 | 6.9 | 1.3 |
| Ponding | 57.3 | 24.1 | 3.9 | 2071.2 | 1016.8 | 204.7 | 2014.0 | 992.7 | 200.9 |
| Streambeds | 115.7 (63.7 mi) | 50.6 (26.8 mi) | 8.9 (5.8 mi) | 372.4 (206.7 mi) | 164.5 (89.7 mi) | 41.1 (24.9 mi) | 256.8 (143.0 mi) | 113.9 (62.9 mi) | 32.2 (19.1 mi) |
| Riparian | 57.8 | 12.2 | 3.8 | 78.1 | 20.3 | 5.7 | 20.2 | 8.1 | 1.9 |

| Feature Type | Authority-Mapped 1600 Resources ² | | | Additional Mapping Based on CDFW Methodology ² | | | Difference ² | | |
|--|--|-------------------|------------------|---|---------------------|-------------------|-------------------------|--------------------|-------------------|
| | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact |
| Seasonal Wetland | 4.0 | 2.1 | 0.2 | 13.4 | 6.1 | 1.4 | 9.4 | 3.9 | 1.2 |
| Total Extent of Features | 234.8 | 89.0 | 16.7 | 2549.1 | 1214.5 | 254.2 | 2314.4 | 1125.5 | 237.5 |
| Alternative 2 with Refined CCNM Design Option³ | | | | | | | | | |
| Claypan | - | - | - | 14.0 | 6.9 | 1.3 | 14.0 | 6.9 | 1.3 |
| Ponding | 57.2 | 24.1 | 3.9 | 2071.1 | 1016.7 | 204.7 | 2014.0 | 992.6 | 200.9 |
| Streambeds | 123.3 (69.8 mi) | 54.3 (30.0 mi) | 8.9 (5.9 mi) | 385.6 (220.4 mi) | 176.0 (101.2 mi) | 38.7 (23.1 mi) | 262.3 (150.6 mi) | 121.7 (71.1 mi) | 29.8 (17.2 mi) |
| Riparian | 66.1 | 13.9 | 4.1 | 84.9 | 21.5 | 6.2 | 18.8 | 7.7 | 2.1 |
| Seasonal Wetland | 4.0 | 2.0 | 0.2 | 13.4 | 6.0 | 1.4 | 9.4 | 4.0 | 1.2 |
| Total Extent of Features | 250.6 | 94.2 | 17.1 | 2569.1 | 1227.1 | 252.4 | 2318.5 | 1132.8 | 235.3 |
| Alternative 3 | | | | | | | | | |
| Claypan | - | - | - | 14.0 | 6.9 | 1.3 | 14.0 | 6.9 | 1.3 |
| Ponding | 58.6 | 26.5 | 3.8 | 2076.9 | 1018.8 | 206.6 | 2018.3 | 992.3 | 202.8 |
| Streambeds | 121.5 (66.3 mi) | 51.7 (27.3 mi) | 9.2 (6.1 mi) | 386.1 (210.8 mi) | 167.2 (93.7 mi) | 42.8 (25.3 mi) | 264.6 (144.5 mi) | 115.6 (66.4 mi) | 33.6 (19.2 mi) |
| Riparian | 60.9 | 12.1 | 4.7 | 82.6 | 20.3 | 6.6 | 21.7 | 8.2 | 1.9 |
| Seasonal Wetland | 3.8 | 1.1 | 0.1 | 13.2 | 4.4 | 1.3 | 9.4 | 3.2 | 1.2 |
| Total Extent of Features | 244.9 | 91.3 | 17.9 | 2572.8 | 1217.6 | 258.7 | 2328.0 | 1126.2 | 240.8 |
| Alternative 5 | | | | | | | | | |
| Claypan | - | - | - | 13.8 | 6.7 | 1.3 | 13.8 | 6.7 | 1.3 |
| Ponding | 57.7 | 22.5 | 4.6 | 2019.6 | 957.6 | 221.4 | 1961.9 | 935.2 | 216.8 |
| Streambeds | 116.1 (64.2 mi) | 50.7 (25.7 mi) | 8.4 (5.6 mi) | 369.1 (205.5 mi) | 164.5 (91.2 mi) | 40.2 (25.1 mi) | 253.1 (141.3 mi) | 113.8 (65.5 mi) | 31.8 (19.6 mi) |
| Riparian | 57.8 | 12.2 | 3.8 | 77.9 | 19.4 | 5.7 | 20.1 | 7.3 | 1.9 |

| Feature Type | Authority-Mapped 1600 Resources ² | | | Additional Mapping Based on CDFW Methodology ² | | | Difference ² | | |
|---------------------------------|--|------------------|------------------|---|------------------|------------------|-------------------------|------------------|------------------|
| | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact | Total Mapped in ARSA | Permanent Impact | Temporary Impact |
| Seasonal Wetland | 4.0 | 2.1 | 0.2 | 13.4 | 6.1 | 1.3 | 9.4 | 4.0 | 1.2 |
| Total Extent of Features | 235.6 | 87.5 | 16.9 | 2493.8 | 1154.3 | 269.9 | 2258.3 | 1066.9 | 253.0 |

Source: Additional desktop mapping delineation described herein, ARDR/BARTR Authority-mapped Section 1600 resources (Authority 2016, Authority 2018a), CCNM Design Options Delineation (Authority 2019).

- 1 The Aquatic Resource Study Area includes linear and auxiliary project construction features (i.e., traction power substations, switching stations, paralleling stations, road overcrossings, and heavy maintenance facilities), operations and maintenance facilities and access points, and temporary disturbance areas associated with construction, plus a 250-foot buffer, from the southern terminus of the F Street Station near 34th Street and L Street in Bakersfield to Spruce Court in Palmdale.
- 2 Acreage values are calculated in the Aquatic Resource Study Area, which included all project alternatives known at the time plus a 250-foot buffer. Acreage totals are derived from raw Geographic Information System data, and as a result, they may not exactly equal the sum of the rounded values presented in the table.
- 3 Alternative 2 with the Refined CCNM Design Option is the States Preferred Alternative for the Bakersfield to Palmdale Project Section.

Key

ARSA = Aquatic Resources Study Area

mi = miles

Table 4-2 Authority-Mapped Section 1600 Jurisdiction in the Fresno to Bakersfield LGA Area of the Aquatic Resource Study Area¹

| Feature Type | Authority-Mapped 1600 Resources ² | | |
|---|--|--------------------|------------------|
| | Total Mapped in ARSA | Permanent Impact | Temporary Impact |
| Fresno to Bakersfield Locally Generated Alternative Area | | | |
| Ponding | 1.1 | - | 0.4 |
| Streambeds | 6.8 (1.8 mi) | 0.01 (0.003 mi) | 0.7 (0.1 mi) |
| Total Extent of Features | 7.9 | 0.01 | 1.1 |

Source: Fresno to Bakersfield Locally Generated Alternative delineation (Authority 2016, Authority 2018b).

¹ The Aquatic Resource Study Area includes linear and auxiliary project construction features (i.e., traction power substations, switching stations, paralleling stations, road overcrossings, and heavy maintenance facilities), operations and maintenance facilities and access points, and temporary disturbance areas associated with construction, plus a 250-foot buffer, from the southern terminus of the F Street Station near 34th Street and L Street to Oswell Street in Bakersfield.

² Acreage values are calculated in the Aquatic Resource Study Area, which included all project alternatives known at the time plus a 250-foot buffer. Acreage totals are derived from raw Geographic Information System data, and as a result, they may not exactly equal the sum of the rounded values presented in the table.

Key

ARSA = Aquatic Resources Study Area

mi = miles

5 REFERENCES

- California High-Speed Rail Authority (Authority). 2016. Bakersfield to Palmdale Project Section Aquatic Resources Delineation Report (ARDR). Sacramento, CA and Washington, DC. November.
- . 2017. Fresno to Bakersfield Project Section Final Wetlands Report. Sacramento, CA and Washington, DC. April.
- . 2018a. Bakersfield to Palmdale Project Section Revised Final Draft Biological and Aquatic Resources Technical Report (BARTR). Sacramento, CA and Washington, DC. June.
- . 2018b. Fresno to Bakersfield Project Section Final Supplemental Environmental Impact Report. Sacramento, CA and Washington, DC. October.
- . 2019. Bakersfield to Palmdale Project Section César Chávez National Monument Design Options Aquatic Resources Memorandum. Sacramento, CA and Washington, DC. December.
- Federal Railroad Administration and State of California. 2019. *Memorandum of Understanding between the Federal Railroad Administration and the State of California, Acting Through Its California State Transportation Agency and Its California High-Speed Rail Authority, for the State of California's Participation in the Surface Transposition Project Delivery Program Pursuant to 23 U.S.C. 327*. July 23.
- LSA. 2016. *Detailed Methodology for Delineating Certain Claypans as Special Aquatic Resources (including Wetlands) and Jurisdictional Waters of the State*. February 24, 2016.
- United States Fish and Wildlife Service. 2018. National Wetlands Inventory (NWI). Available online at <http://www.fws.gov/Wetlands/Data/DataDownload.html>. (Accessed January 2019).
- United States Geological Survey (in cooperation with the U.S. Environmental Protection Agency). 2018. "National Hydrography Dataset (NHD)." <http://nhd.usgs.gov/>. (Accessed January 2019).

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6 PREPARER QUALIFICATIONS

This chapter lists the Regional Consultant team members responsible for preparation of this memorandum. Table 6-1 provides a summary of their qualifications, roles, and responsibilities in the preparation of this report.

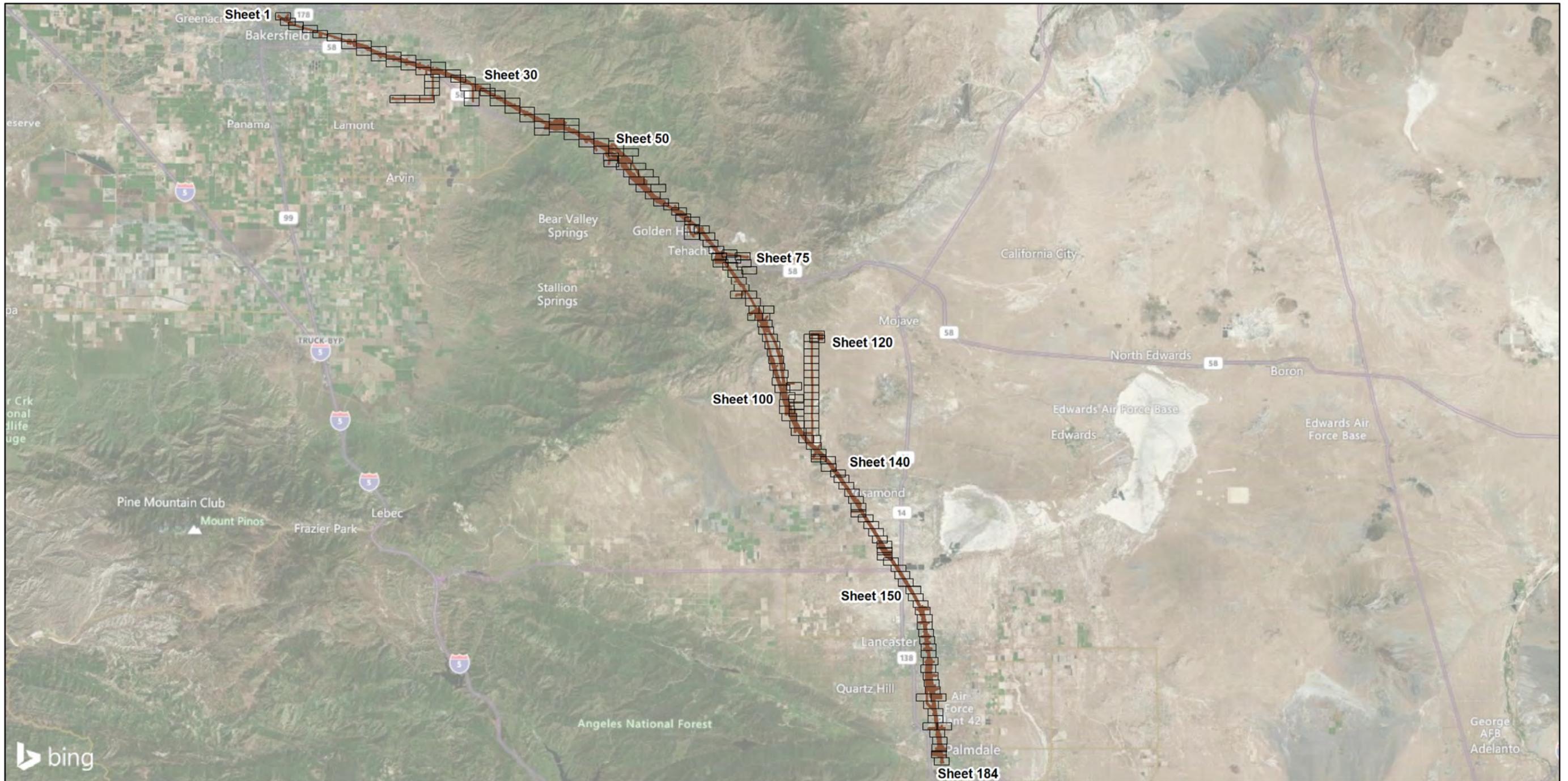
Table 6-1 Preparer Qualifications

| Project Role | Name, Credential | Qualifications |
|---|---|---|
| Regional Consultant Environmental Team | | |
| Project Manager | Shauna Callery, MCRP, MS Senior Project Manager - Planning Rincon Consultants, Inc. | 11 years of experience Master of City and Regional Planning (M.C.R.P.), California Polytechnic State University, San Luis Obispo; M.S., Transportation Engineering, California Polytechnic State University, San Luis Obispo; B.A., International Relations, University of Southern California B.A., Social Sciences, Psychology, University of Southern California |
| Principal Scientist; staff oversight; CRAM practitioner; technical review | Colby J. Boggs, MS Principal/Senior Ecologist Rincon Consultants, Inc. | 20 years of experience M.S., Botany, California State University, Chico B.S., Ecology and Evolution, University of California, Santa Barbara. |
| Task lead; senior staff and delineator | Meg Perry Senior Biologist Rincon Consultants, Inc. | 13 years of experience B.S., Soil Science, California Polytechnic State University, San Luis Obispo |
| Senior staff; document preparation and QA/QC | Jennifer M. Turner, MS Senior Biologist/Program Manager Rincon Consultants, Inc. | 21 years of experience MS, Natural Resources: Wildlife, Humboldt State University BS, Biology, Baldwin-Wallace College |
| Document preparation | Christina Sulzman Senior Biologist Rincon Consultants, Inc. | 22 years of experience BS, Biology and Geography, Valparaiso University |
| GIS analysis and cartography | Marcus Klatt Senior GIS Analyst Rincon Consultants, Inc. | 12 years of experience B.A., Geography, University of California, Santa Barbara |
| Technical editor | April Durham, PhD Senior Technical Editor Rincon Consultants, Inc. | 17 years of experience Ph.D., Comparative Literature and Media Studies, University of California, Riverside M.F.A., Fine Art and Creative Writing, Art Center College of Design B.A., Art and English, California State University San Bernardino |

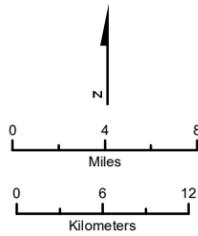
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APPENDIX A: AUTHORITY-MAPPED 1600 RESOURCES AND ADDITIONAL MAPPED AREAS BASED ON CDFW METHODOLOGY

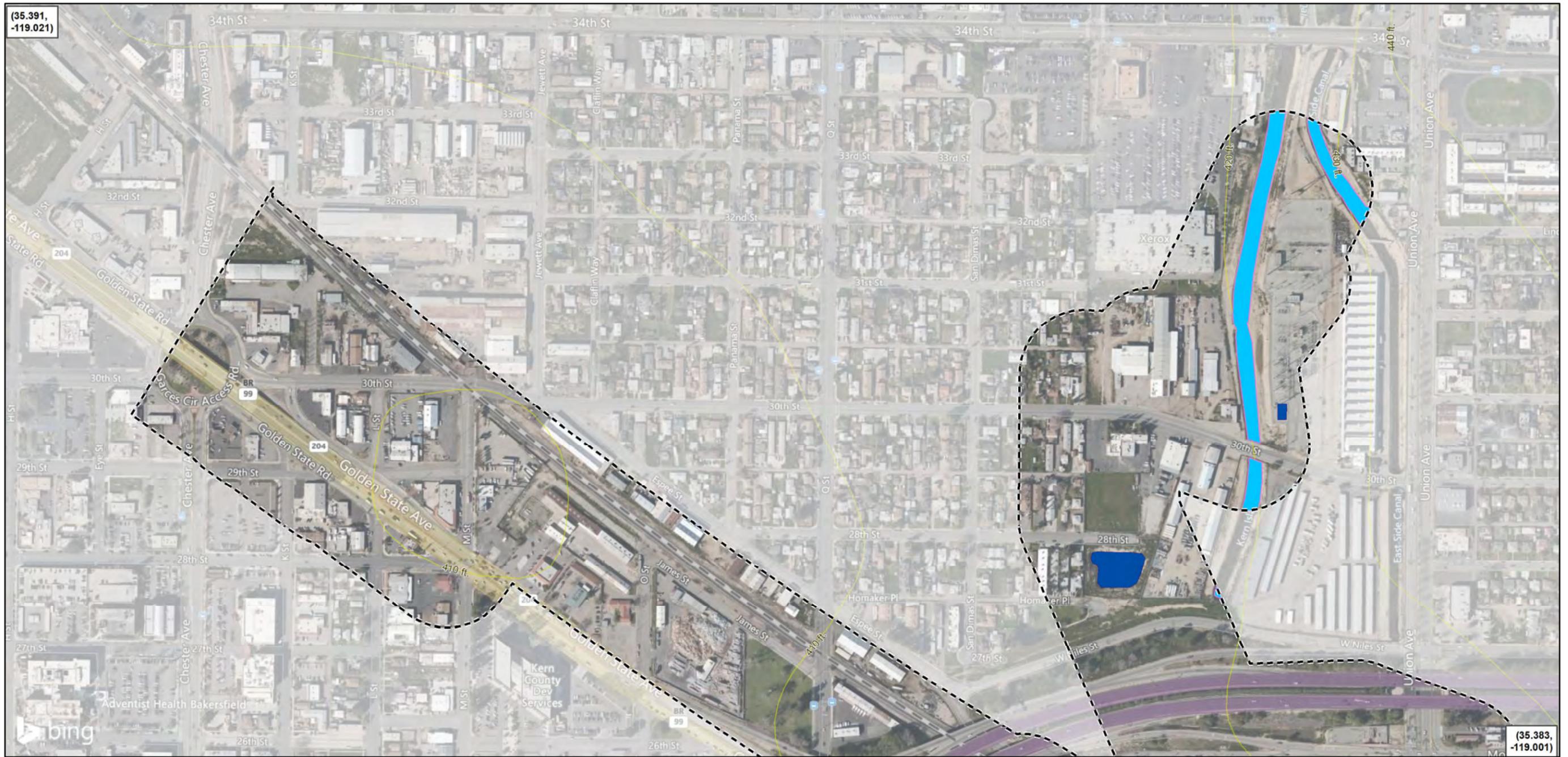
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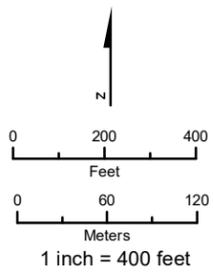
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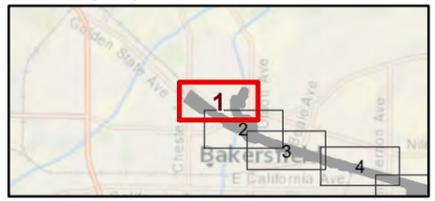
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- Aquatic Resources Study Area (Project Footprint +250ft Buffer)



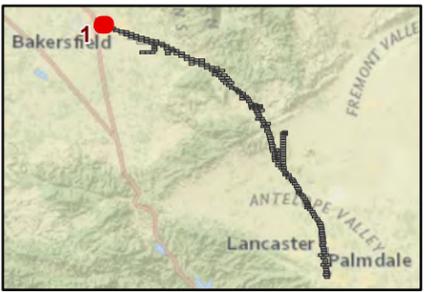
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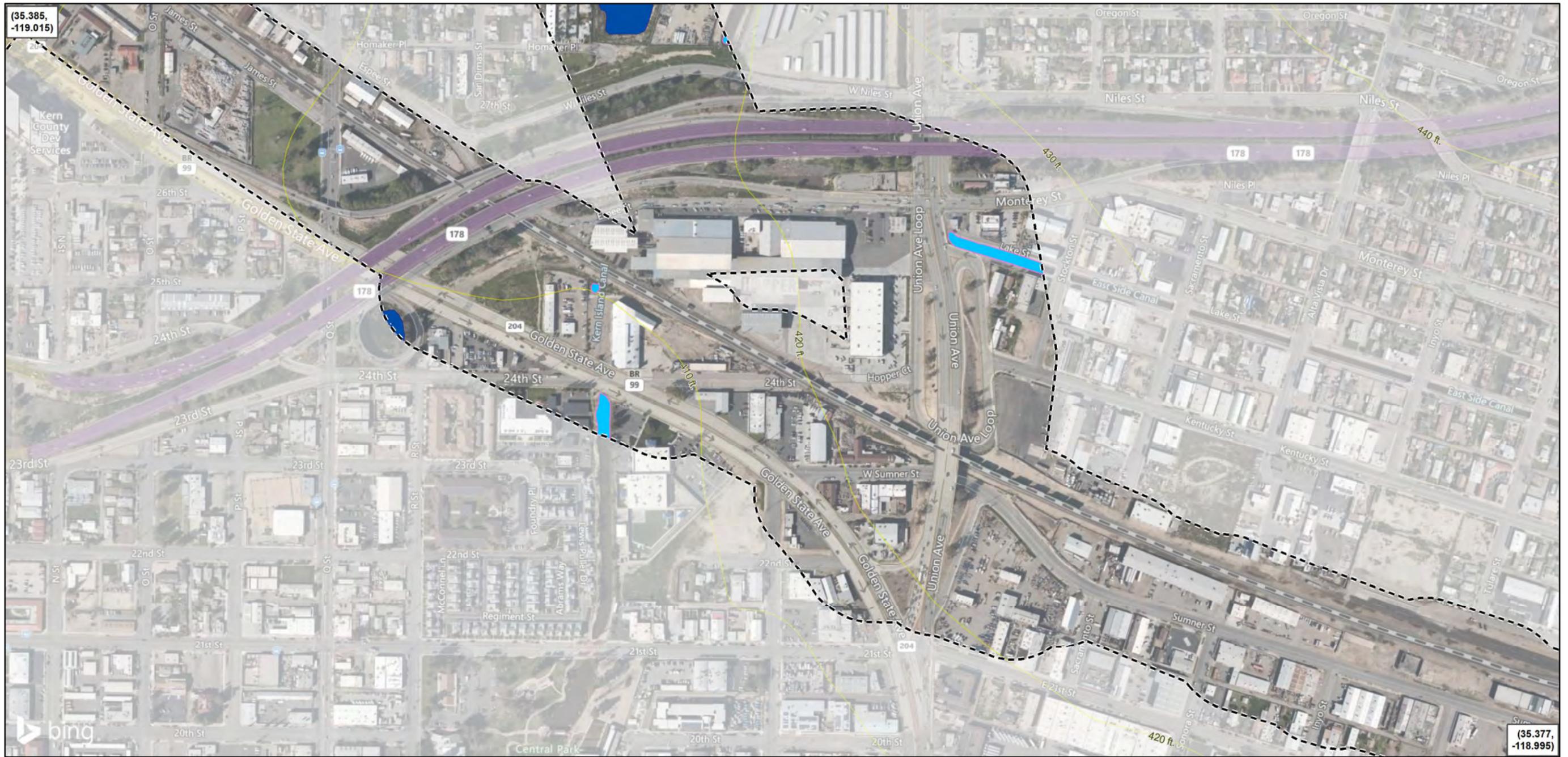
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



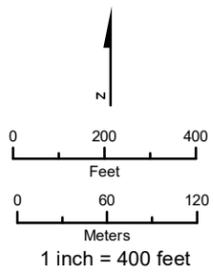
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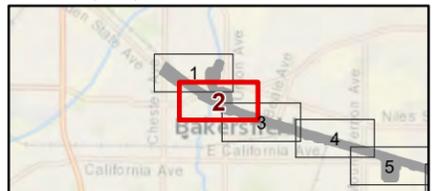
Potential Additional Section 1600 Aquatic Resources



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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Ponding
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Ponding
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



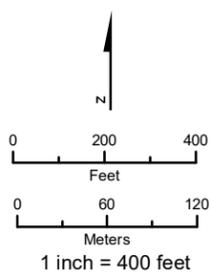
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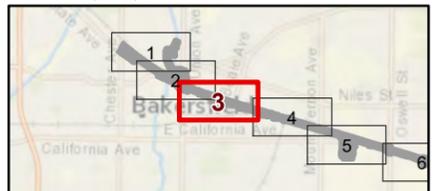
Potential Additional Section 1600 Aquatic Resources



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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour



Coordinate System: NAD 1983 California State Plane V
 Projection: Lambert Conic Conformal
 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).

1 inch = 400 feet

Aquatic Resources Study Area
(Project Footprint +250 ft Buffer)

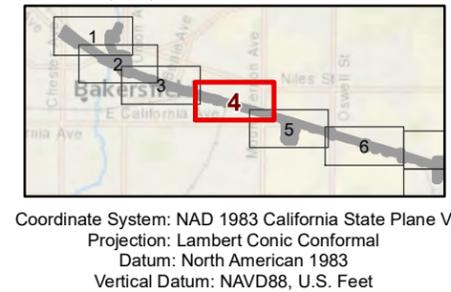
Authority Mapped 1600 Resources
Streambed

Elevation Contour

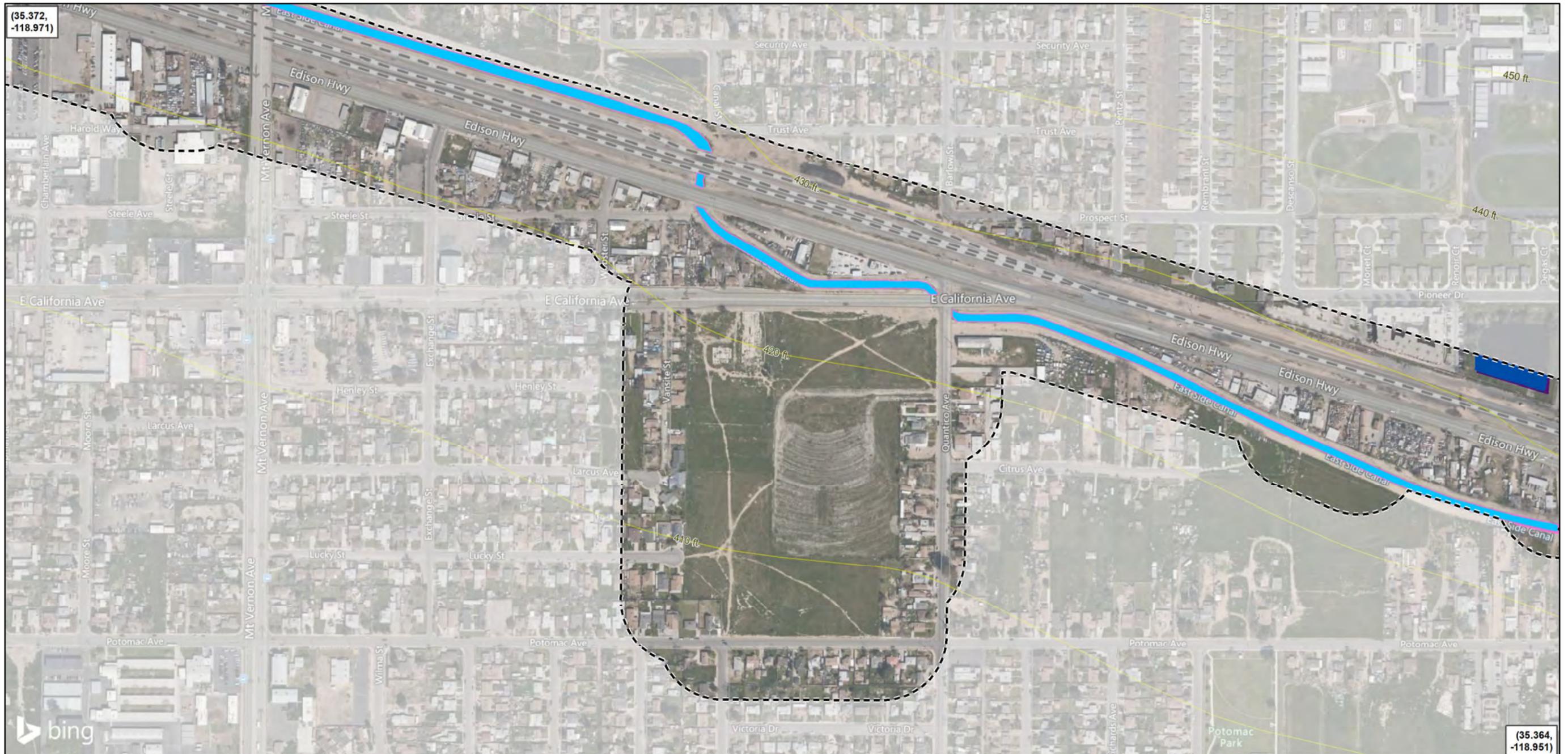
Additional Mapped Areas Based on CDFW Methodology*

*Additionally mapped areas may be obscured due to the small amount of change.

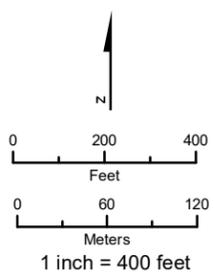
Streambed



Potential Additional Section 1600 Aquatic Resources



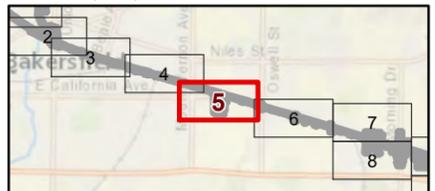
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed

Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.

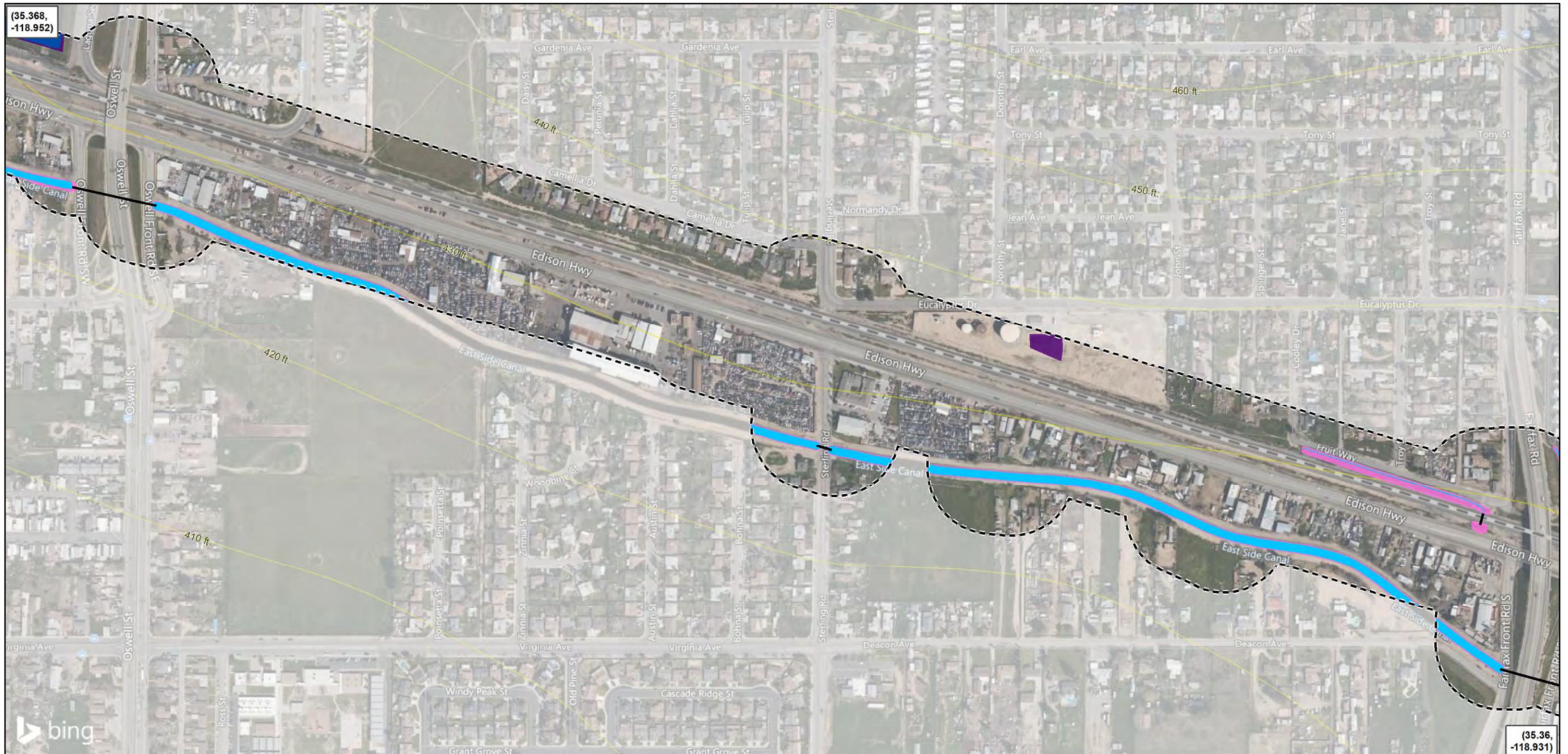
- Ponding
- Streambed



Coordinate System: NAD 1983 California State Plane V
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 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources



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Aquatic Resources Study Area
 (Project Footprint +250 ft Buffer)

Elevation Contour

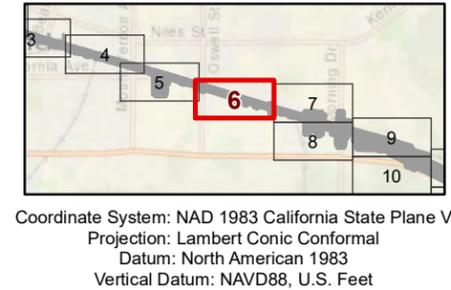
Authority Mapped 1600 Resources

- Ponding
- Streambed

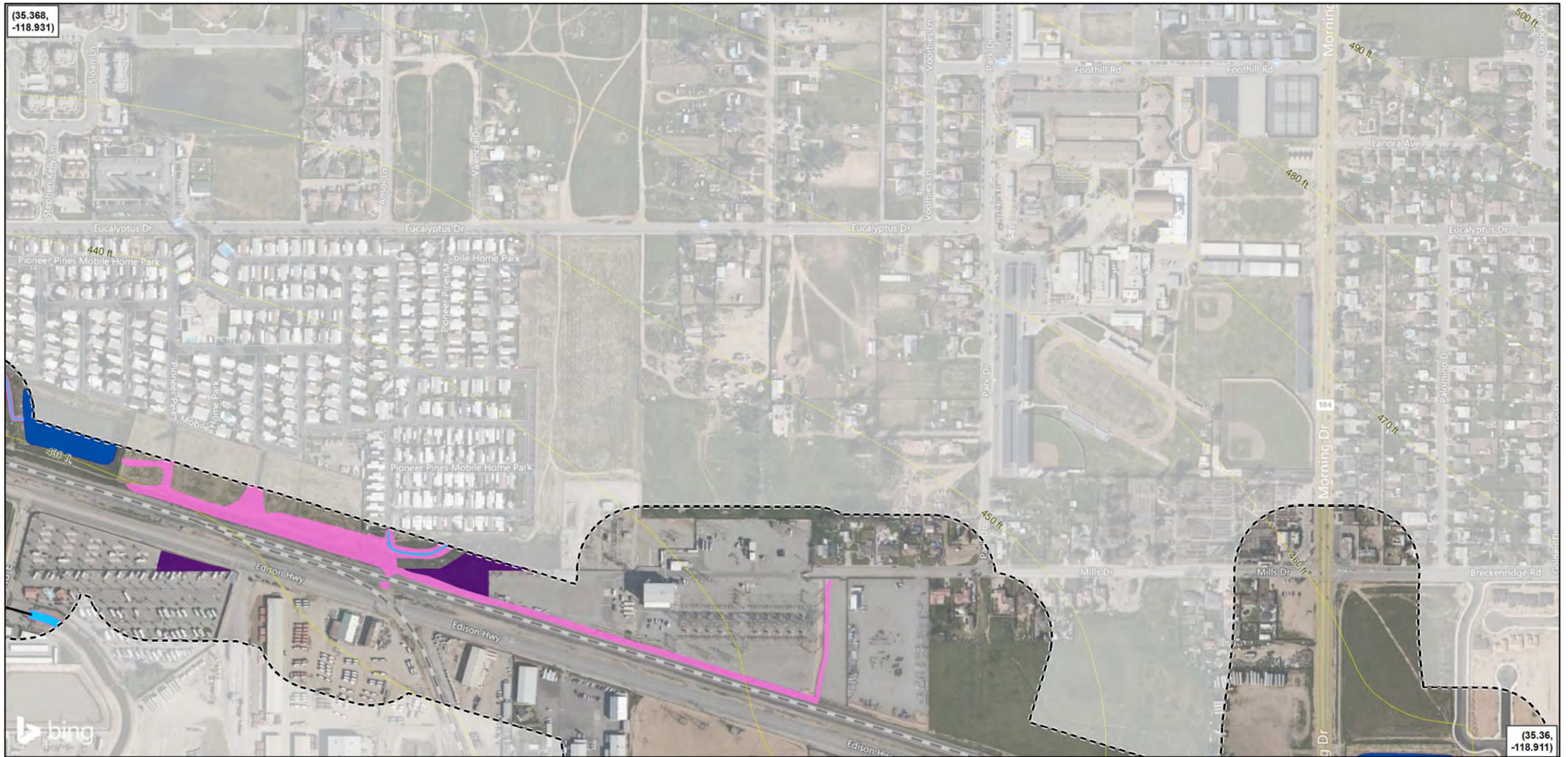
Additional Mapped Areas Based on CDFW Methodology*

**Additionally mapped areas may be obscured due to the small amount of change.*

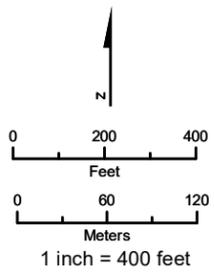
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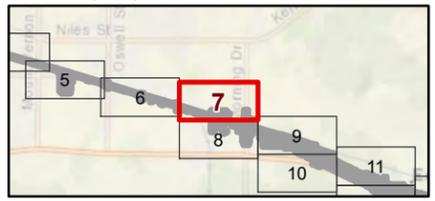
Potential Additional Section 1600 Aquatic Resources



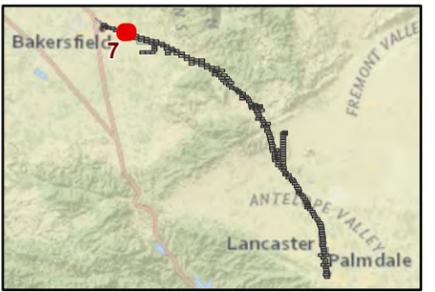
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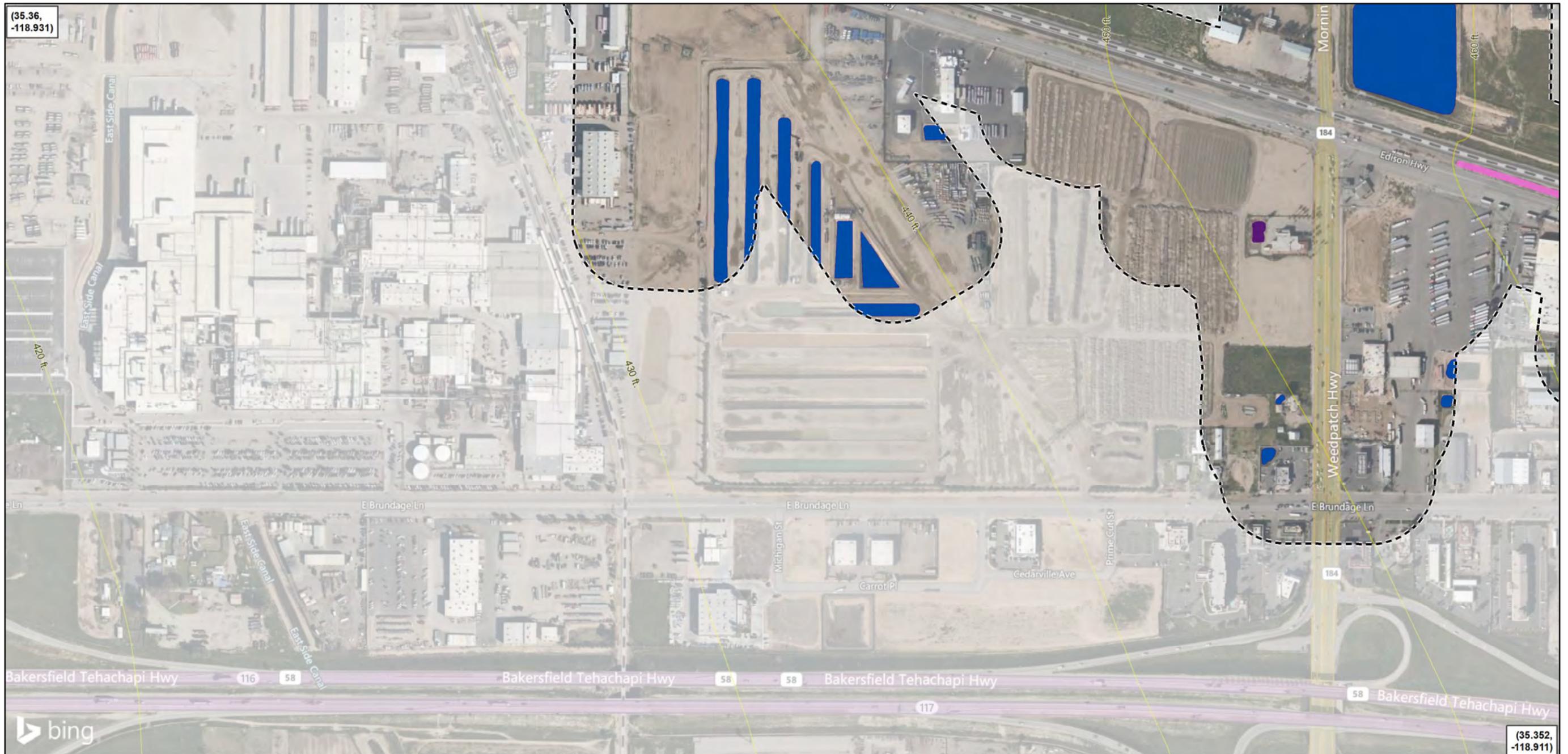
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



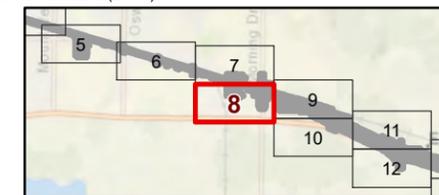
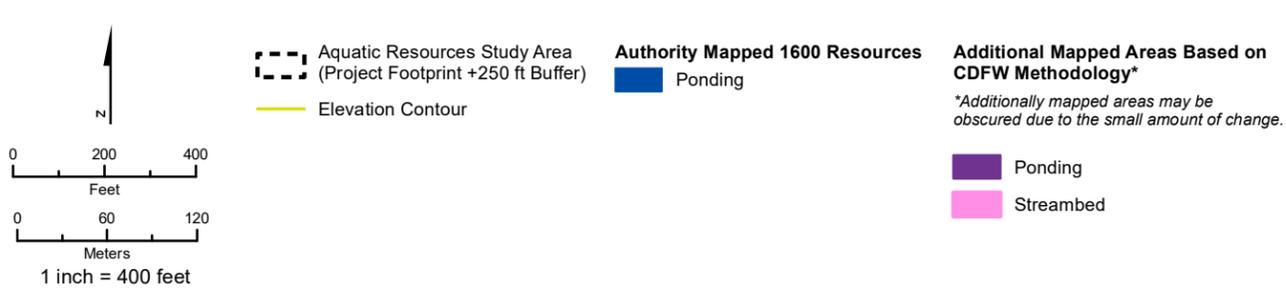
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Potential Additional Section 1600 Aquatic Resources



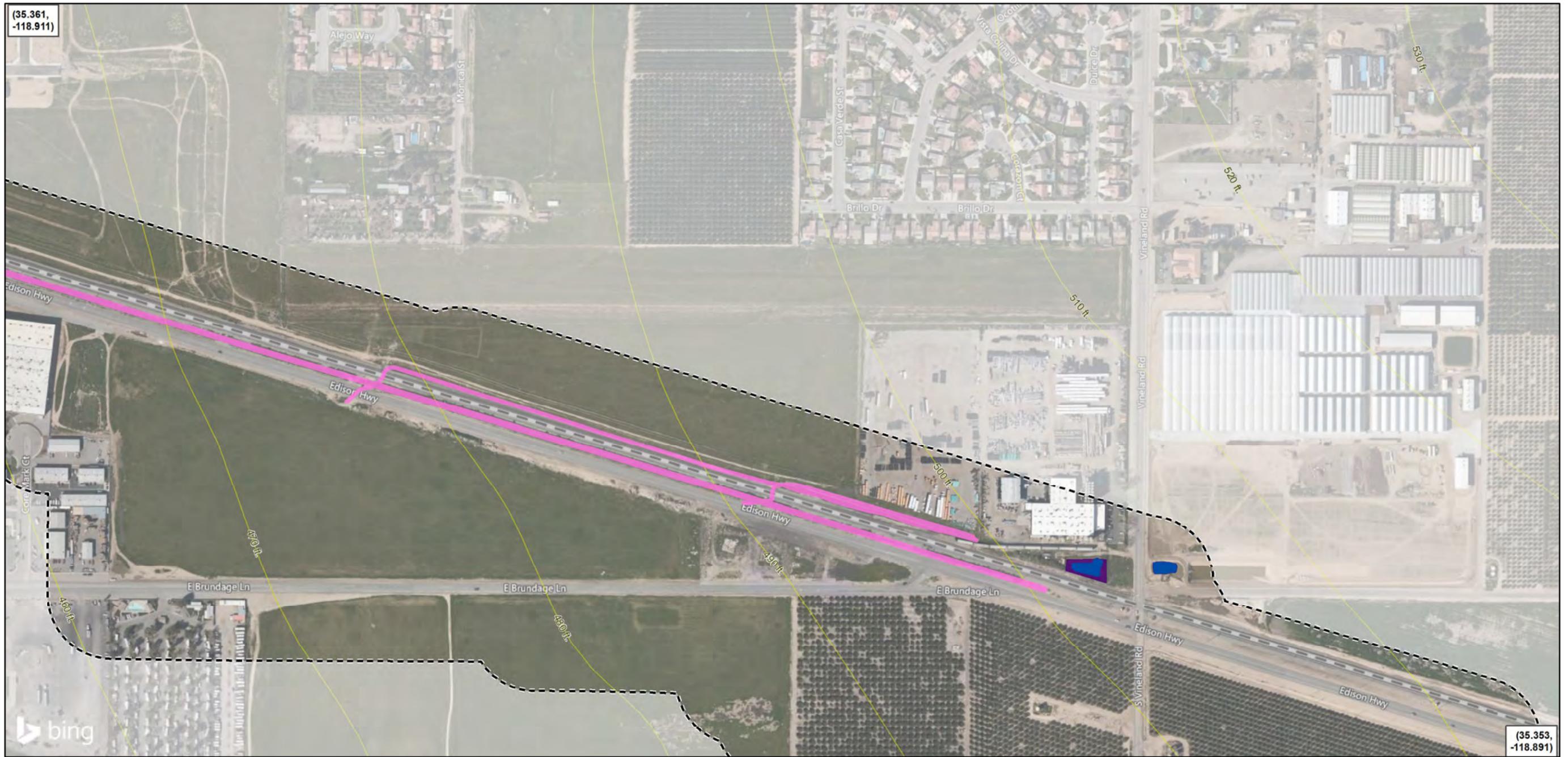
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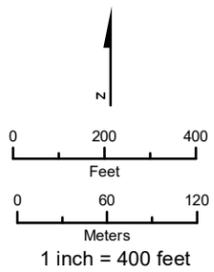
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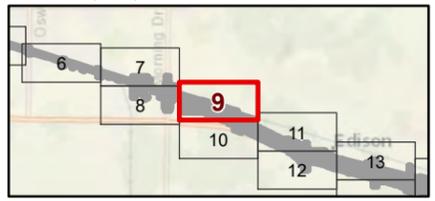
Potential Additional Section 1600 Aquatic Resources



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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



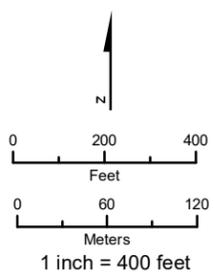
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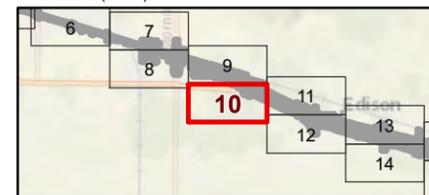
Potential Additional Section 1600 Aquatic Resources



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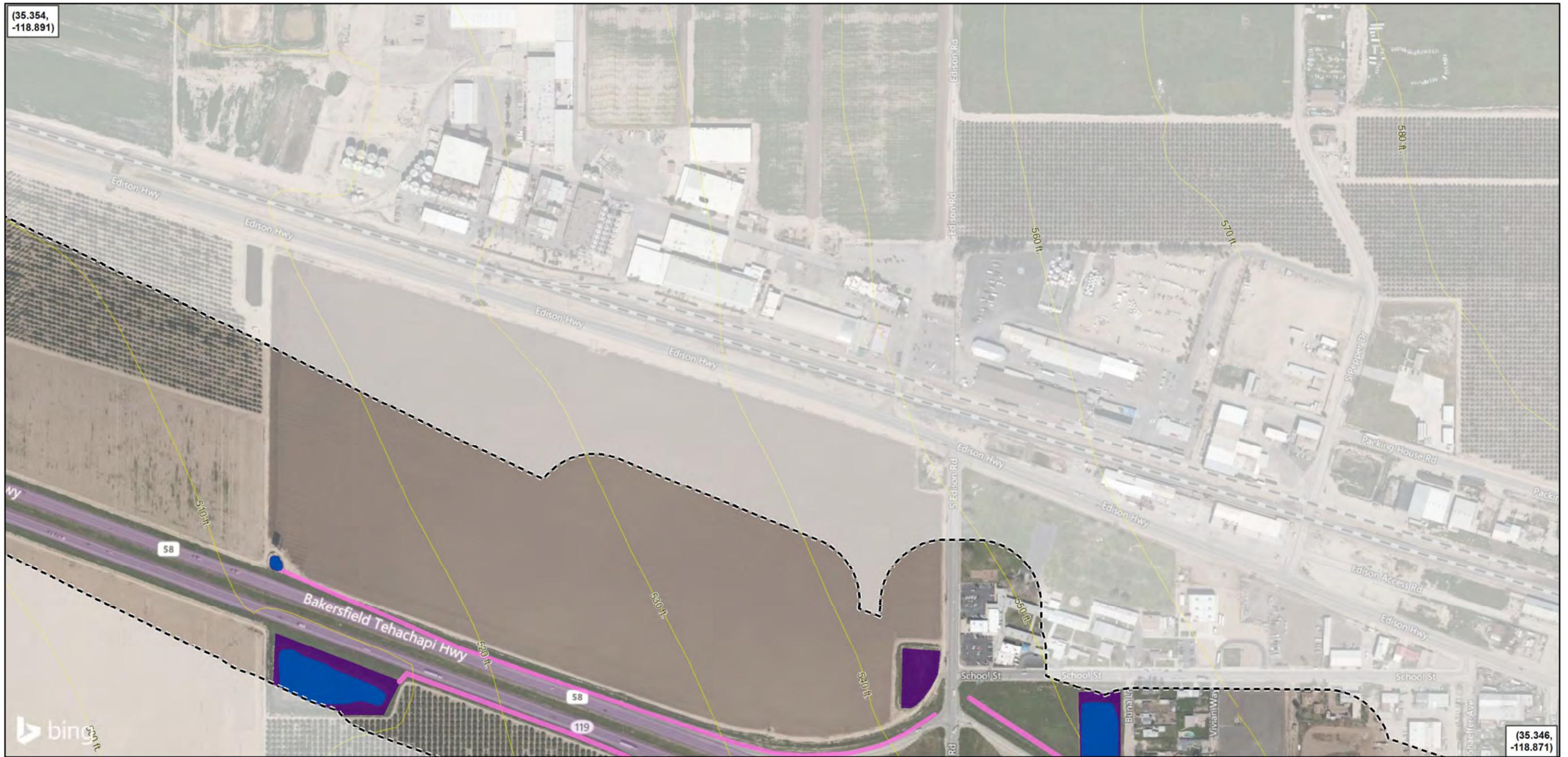
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour



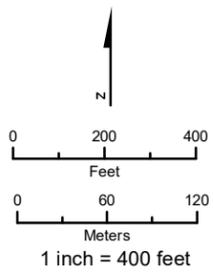
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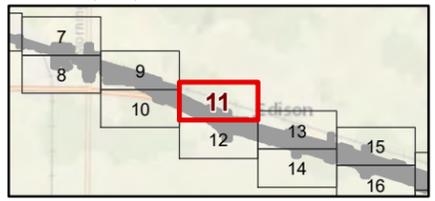
Potential Additional Section 1600 Aquatic Resources



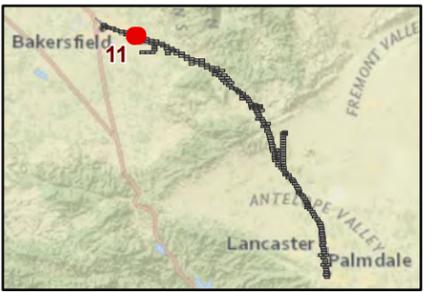
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources (Ponding)
 - Additional Mapped Areas Based on CDFW Methodology* (Ponding)
 - Additional Mapped Areas Based on CDFW Methodology* (Streambed)
- *Additionally mapped areas may be obscured due to the small amount of change.*



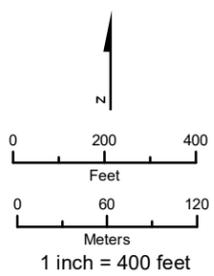
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Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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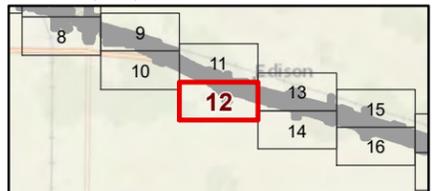


--- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 --- Elevation Contour

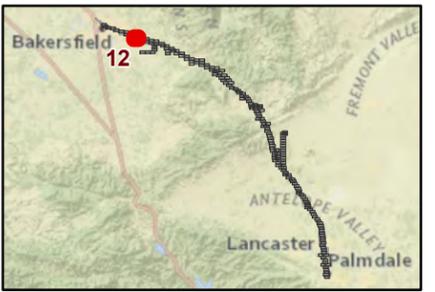
Authority Mapped 1600 Resources
 ■ Ponding

Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.

■ Ponding
 ■ Streambed



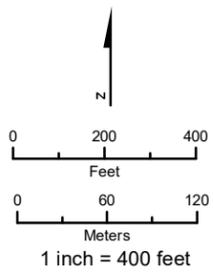
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 Projection: Lambert Conic Conformal
 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources

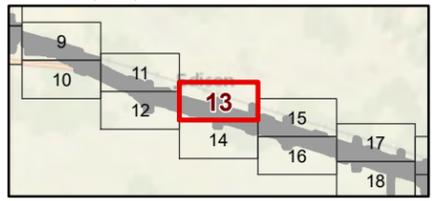


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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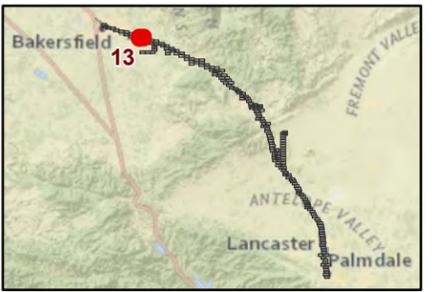


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources - Ponding
- Authority Mapped 1600 Resources - Streambed

- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



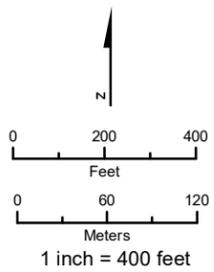
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 Vertical Datum: NAVD88, U.S. Feet



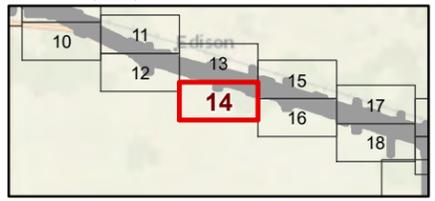
Potential Additional Section 1600 Aquatic Resources



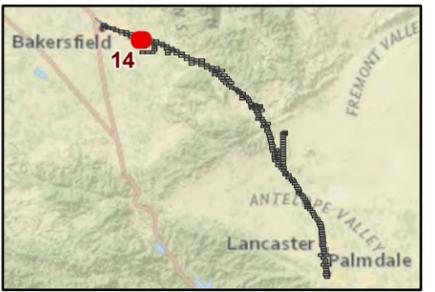
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 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Ponding
 - Additional Mapped Areas Based on CDFW Methodology* Ponding
 - Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



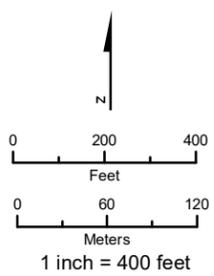
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 Datum: North American 1983
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Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).

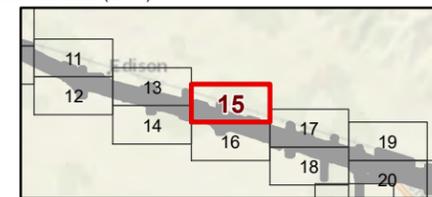


Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 Elevation Contour

Authority Mapped 1600 Resources
 Streambed

Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.

Ponding
 Streambed



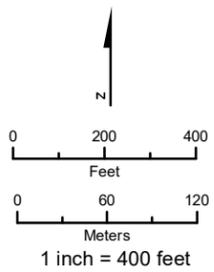
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 Projection: Lambert Conic Conformal
 Datum: North American 1983
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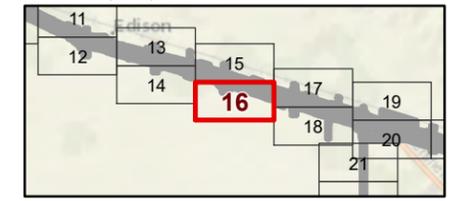
Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Streambed



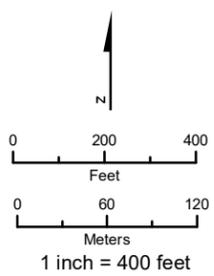
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Potential Additional Section 1600 Aquatic Resources



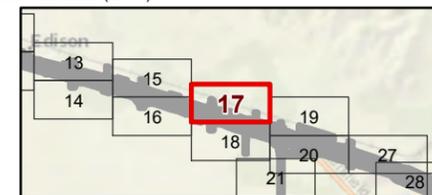
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 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



Legend:
 - Dashed black line: Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Yellow line: Elevation Contour

Authority Mapped 1600 Resources
 - Blue square: Ponding
 - Light blue square: Streambed

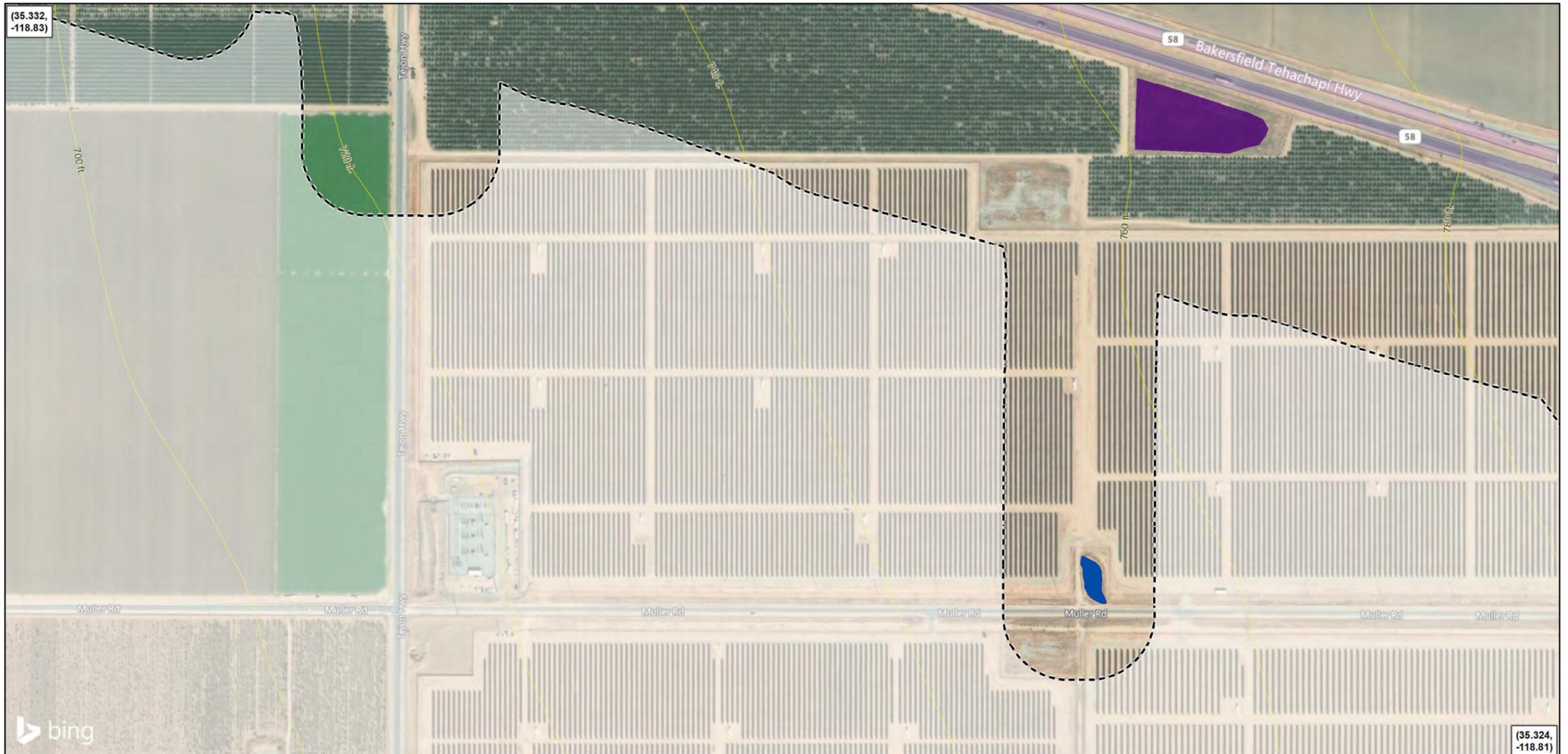
Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.
 - Purple square: Ponding
 - Pink square: Streambed
 - Green square: Riparian



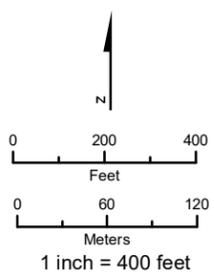
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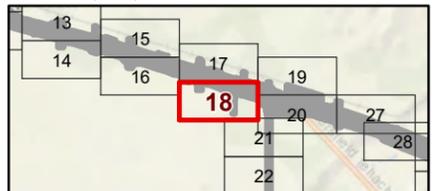
Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Authority Mapped 1600 Resources
 - Additional Mapped Areas Based on CDFW Methodology*
 - Elevation Contour
 - Ponding
 - Ponding
- *Additionally mapped areas may be obscured due to the small amount of change.



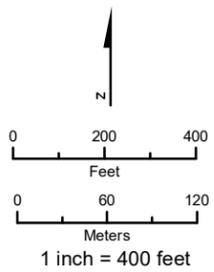
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Potential Additional Section 1600 Aquatic Resources

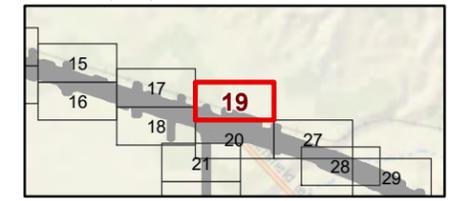


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 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources - Ponding
- Authority Mapped 1600 Resources - Streambed

- Additional Mapped Areas Based on CDFW Methodology***
**Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
 - Streambed
 - Riparian



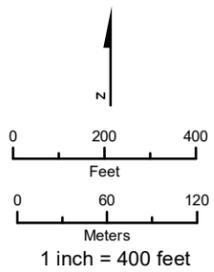
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Potential Additional Section 1600 Aquatic Resources



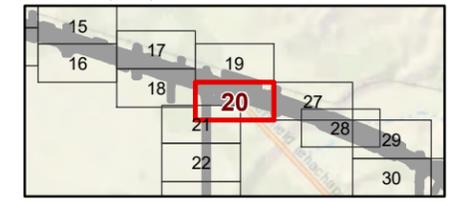
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour

- Authority Mapped 1600 Resources**
- Ponding
 - Streambed

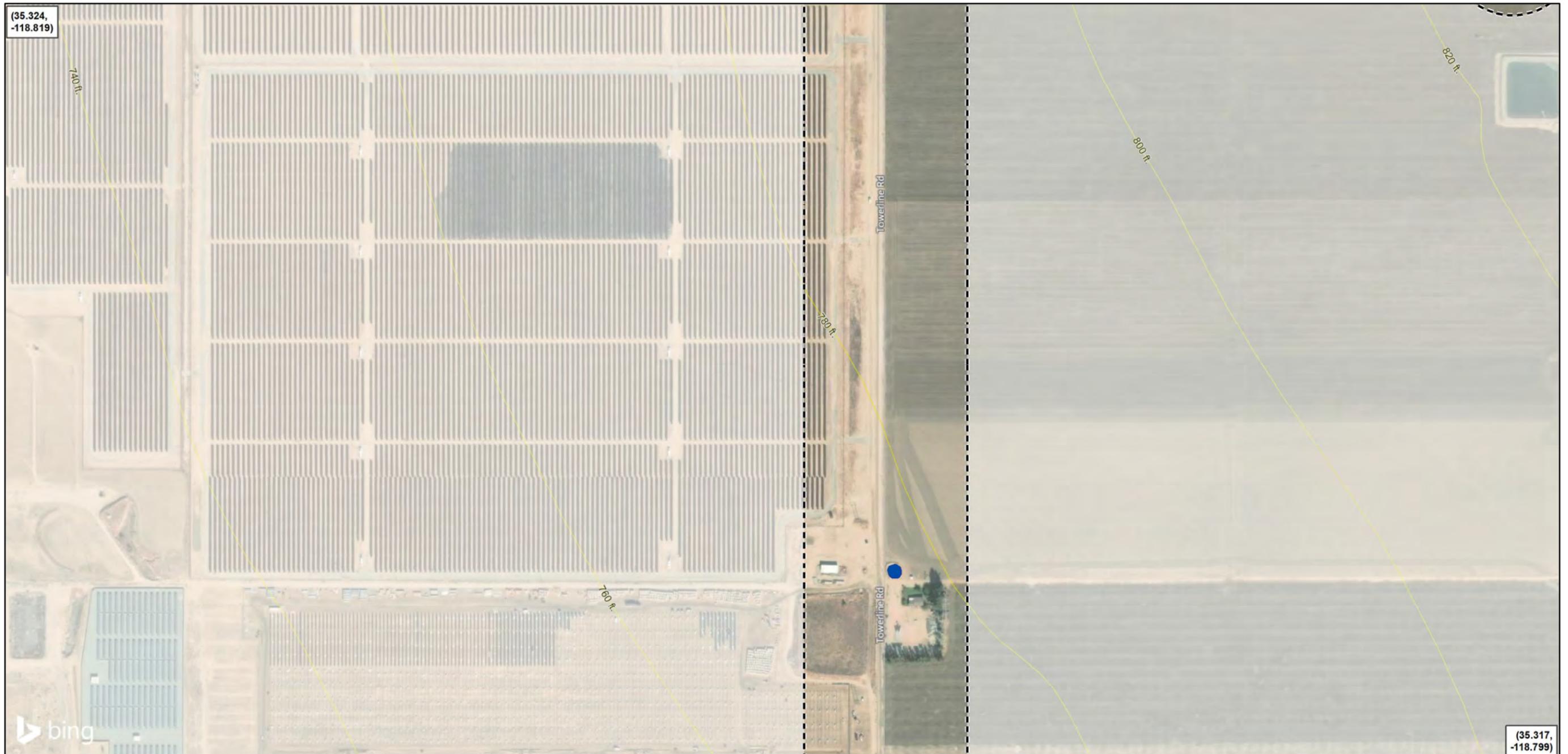
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
 - Streambed



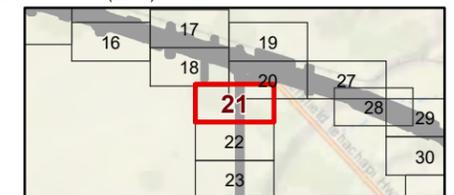
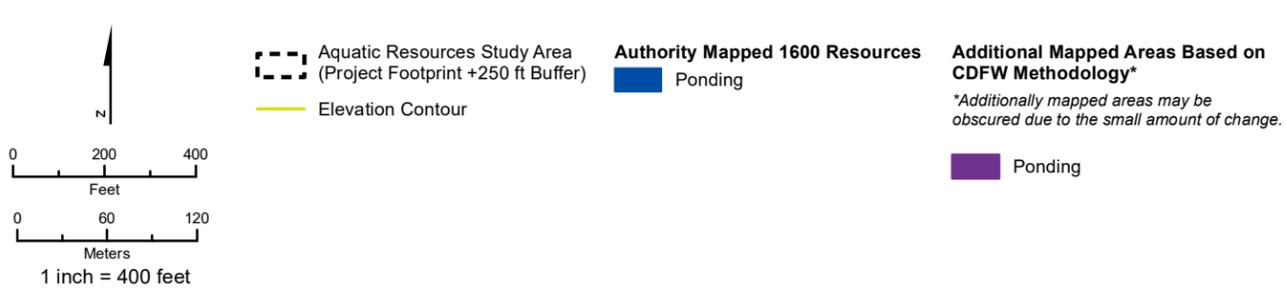
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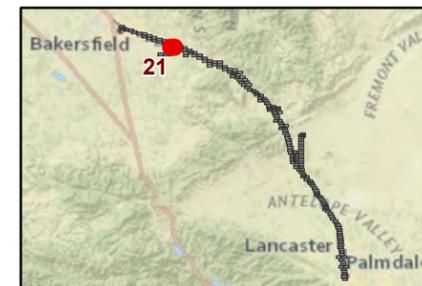
Potential Additional Section 1600 Aquatic Resources



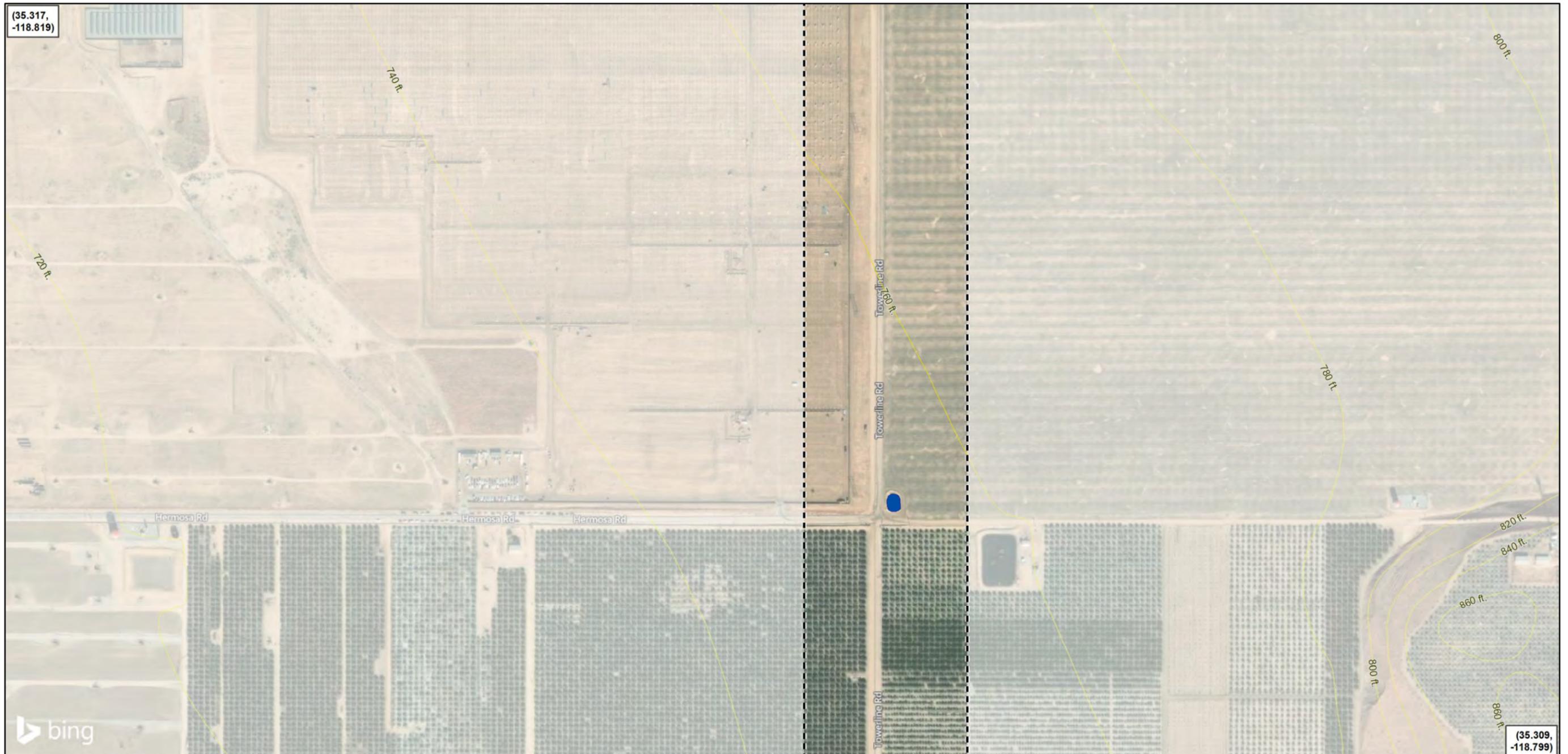
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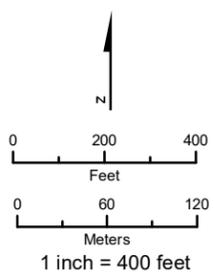
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Potential Additional Section 1600 Aquatic Resources



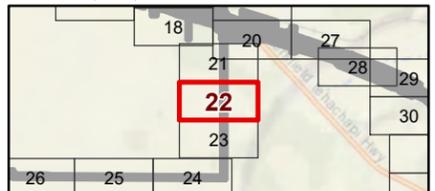
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Authority Mapped 1600 Resources
- Elevation Contour
- Ponding

Additional Mapped Areas Based on CDFW Methodology*
**Additionally mapped areas may be obscured due to the small amount of change.*

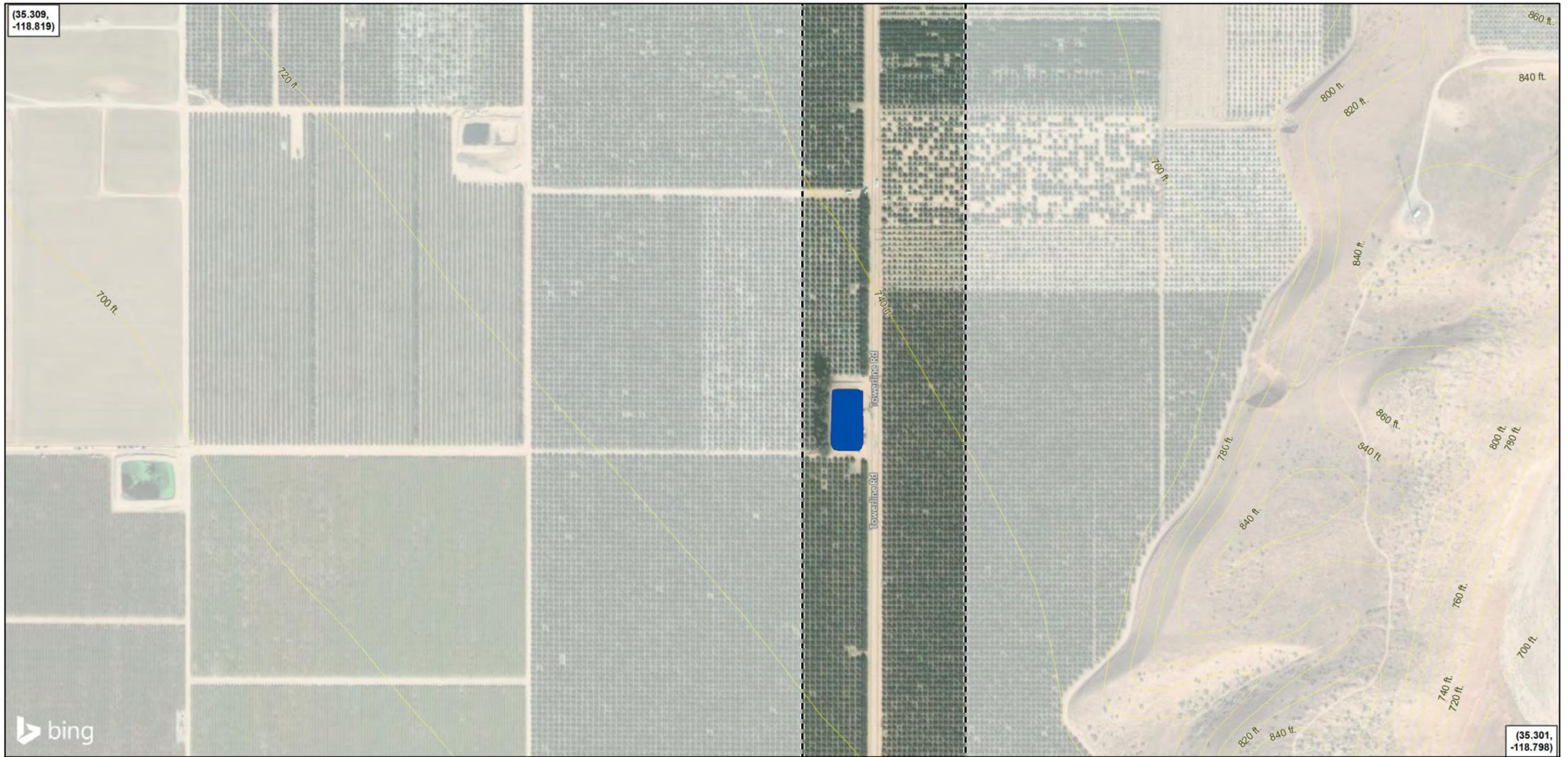
- Ponding



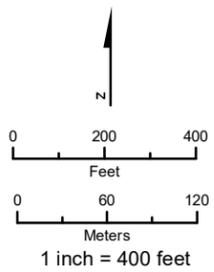
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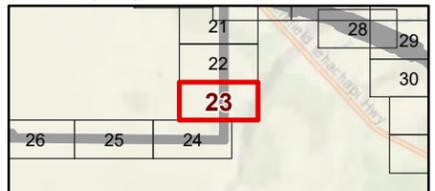
Potential Additional Section 1600 Aquatic Resources



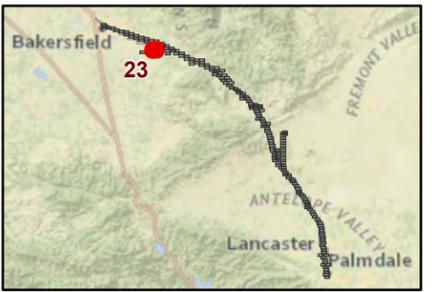
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Authority Mapped 1600 Resources
 - Elevation Contour
 - Ponding
 - Additional Mapped Areas Based on CDFW Methodology*
 - Ponding
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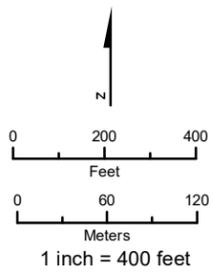
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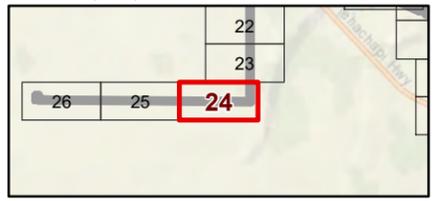
Potential Additional Section 1600 Aquatic Resources



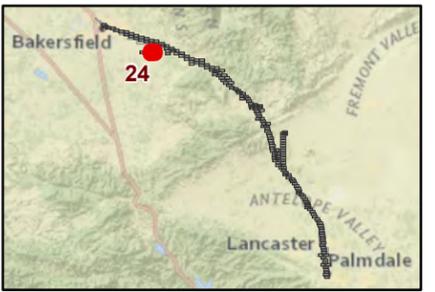
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources
 - Ponding
 - Additional Mapped Areas Based on CDFW Methodology*
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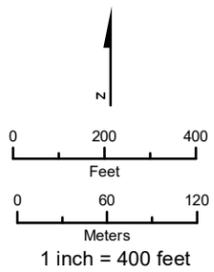
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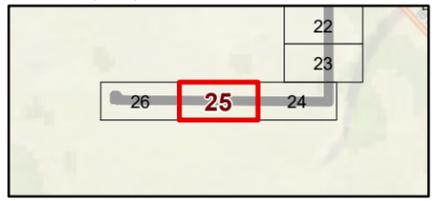
Potential Additional Section 1600 Aquatic Resources



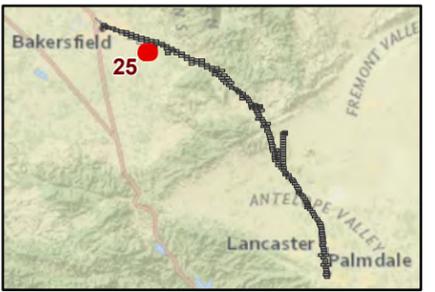
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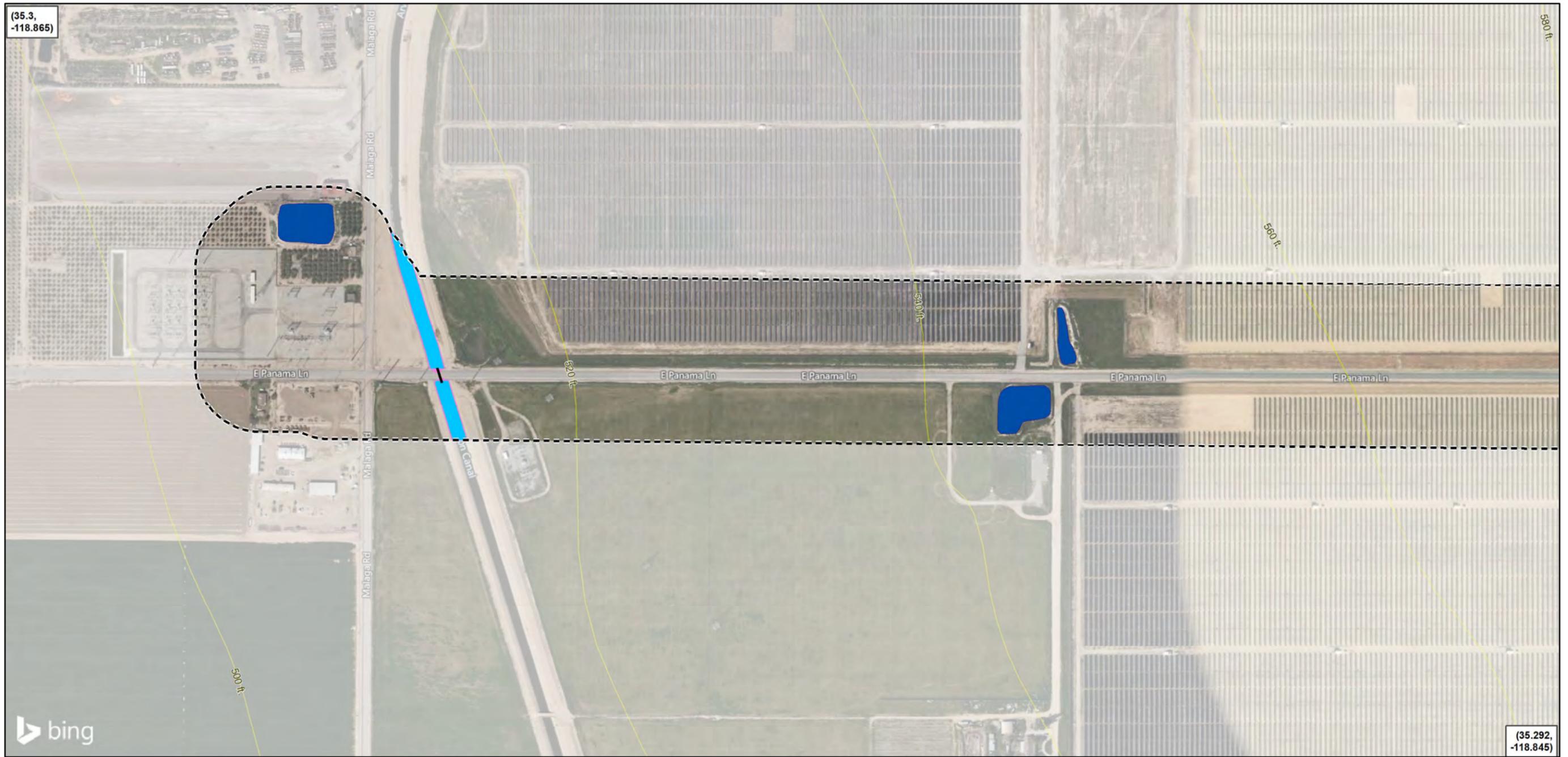
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Authority Mapped 1600 Resources
- Elevation Contour
- Ponding
- Additional Mapped Areas Based on CDFW Methodology*
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- Ponding
- Riparian



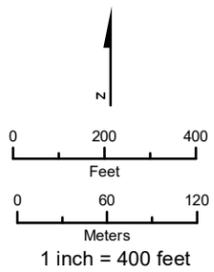
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Potential Additional Section 1600 Aquatic Resources

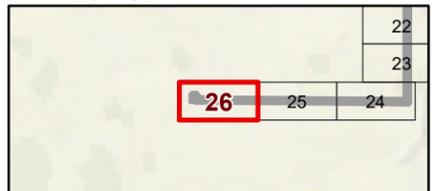


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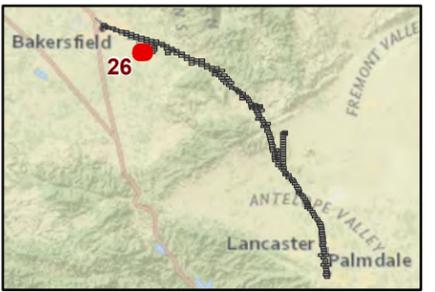


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed

- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed
- Riparian



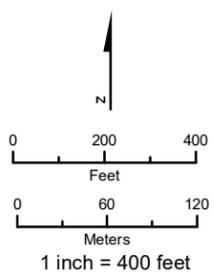
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Potential Additional Section 1600 Aquatic Resources



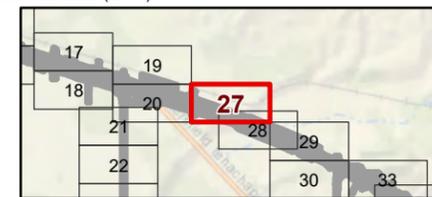
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--- Aquatic Resources Study Area
 (Project Footprint +250 ft Buffer)
 --- Elevation Contour

Authority Mapped 1600 Resources
 ■ Ponding
 ■ Streambed

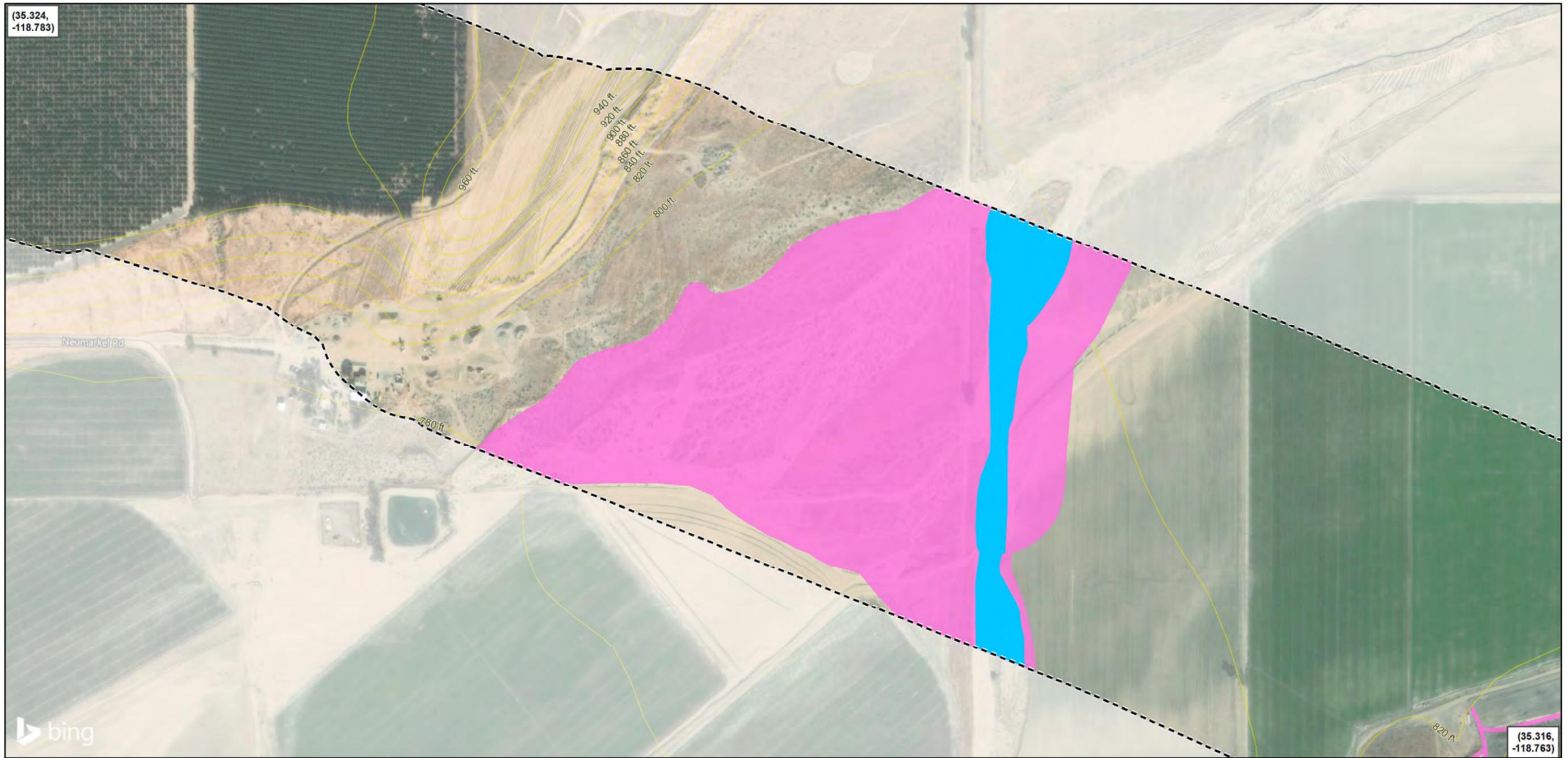
Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.
 ■ Ponding
 ■ Streambed



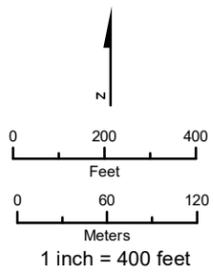
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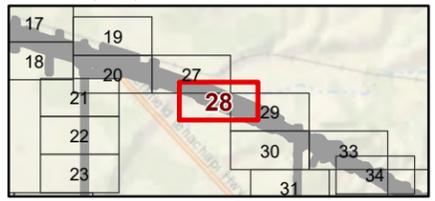
Potential Additional Section 1600 Aquatic Resources



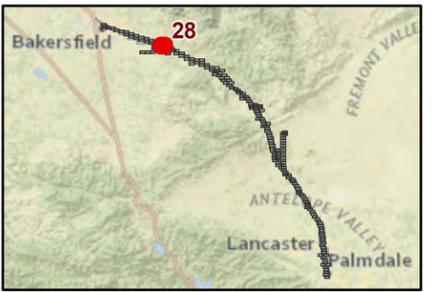
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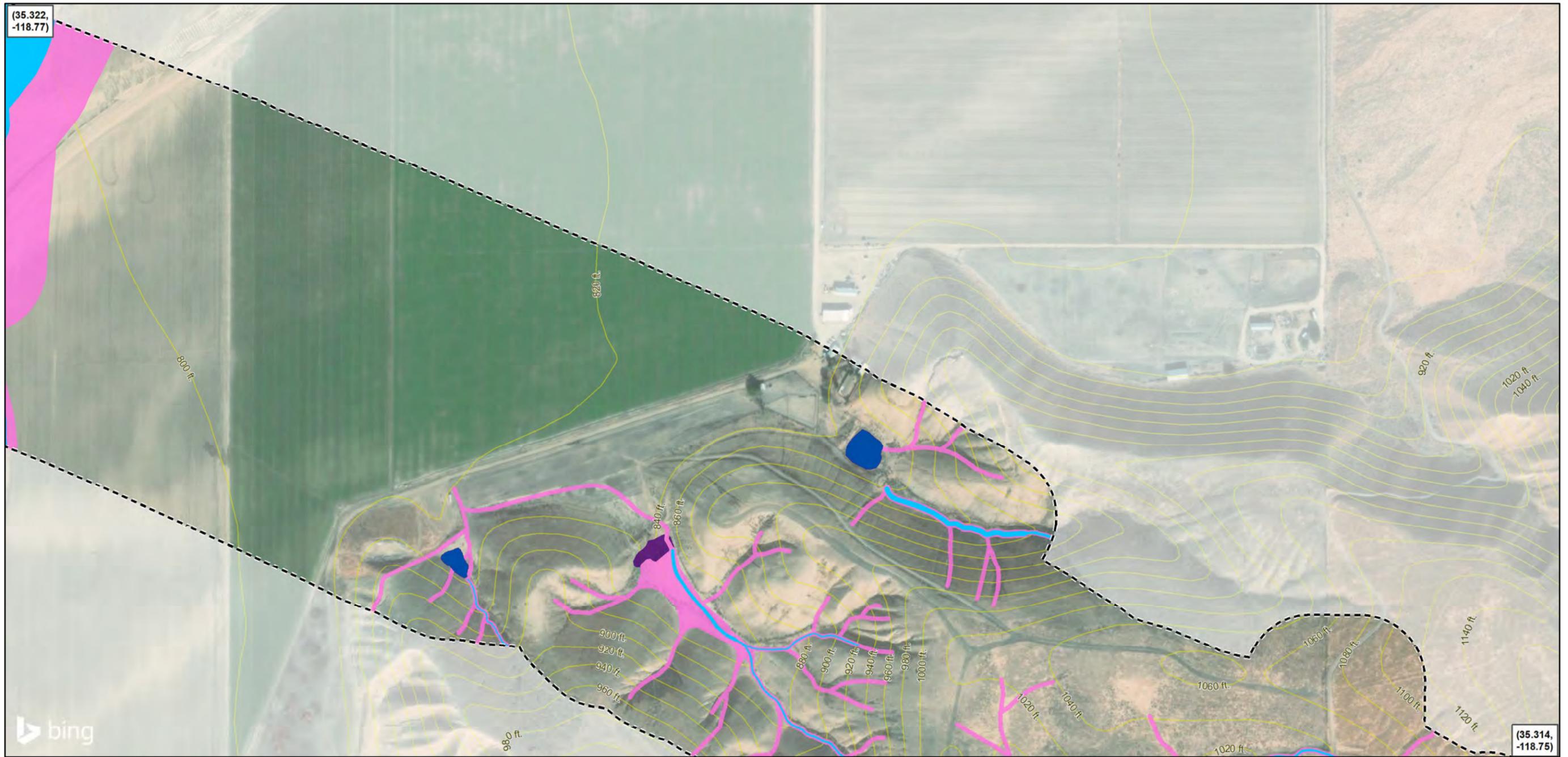
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.*



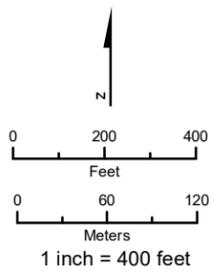
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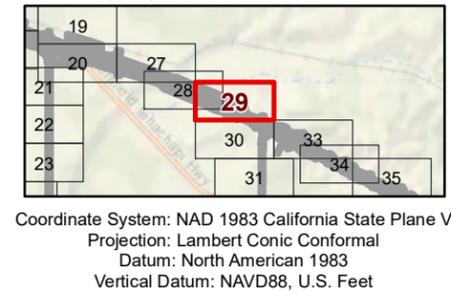
Potential Additional Section 1600 Aquatic Resources



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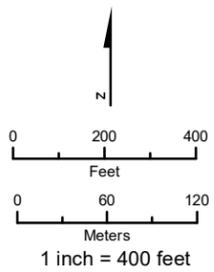
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



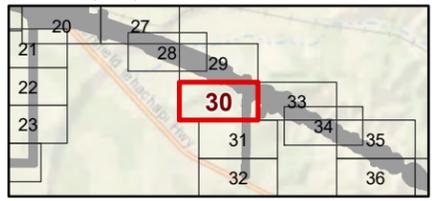
Potential Additional Section 1600 Aquatic Resources



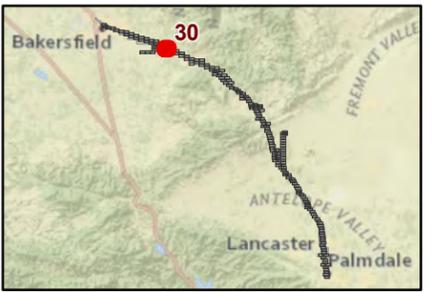
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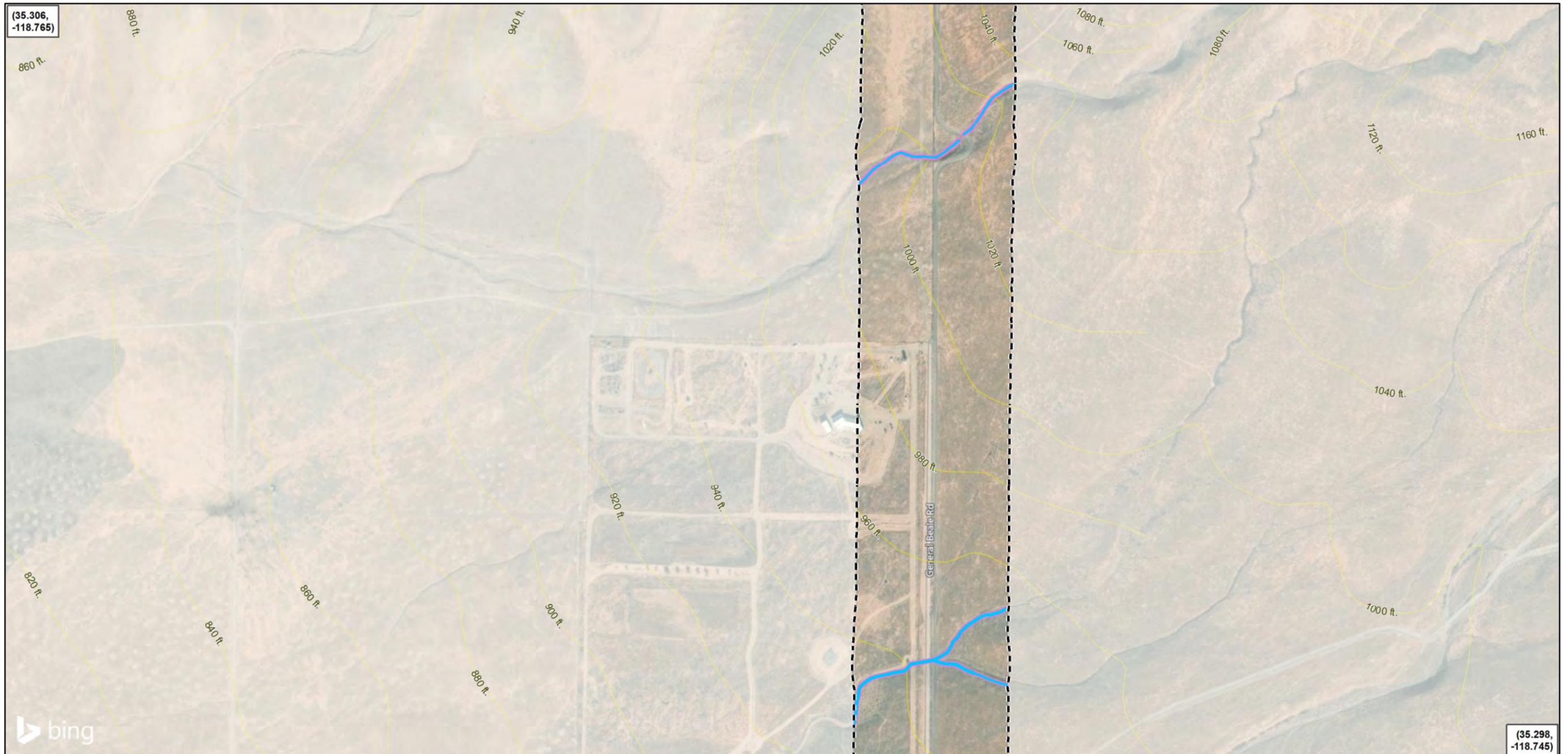
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



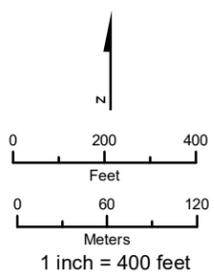
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Potential Additional Section 1600 Aquatic Resources

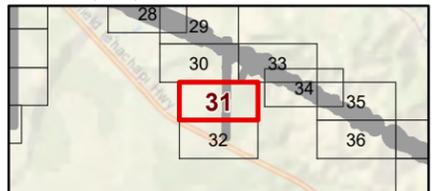


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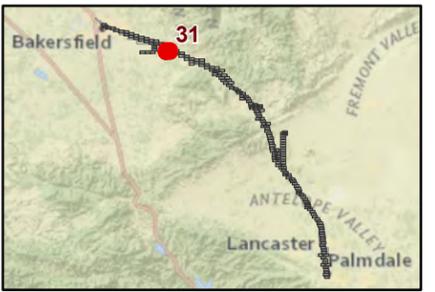


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed

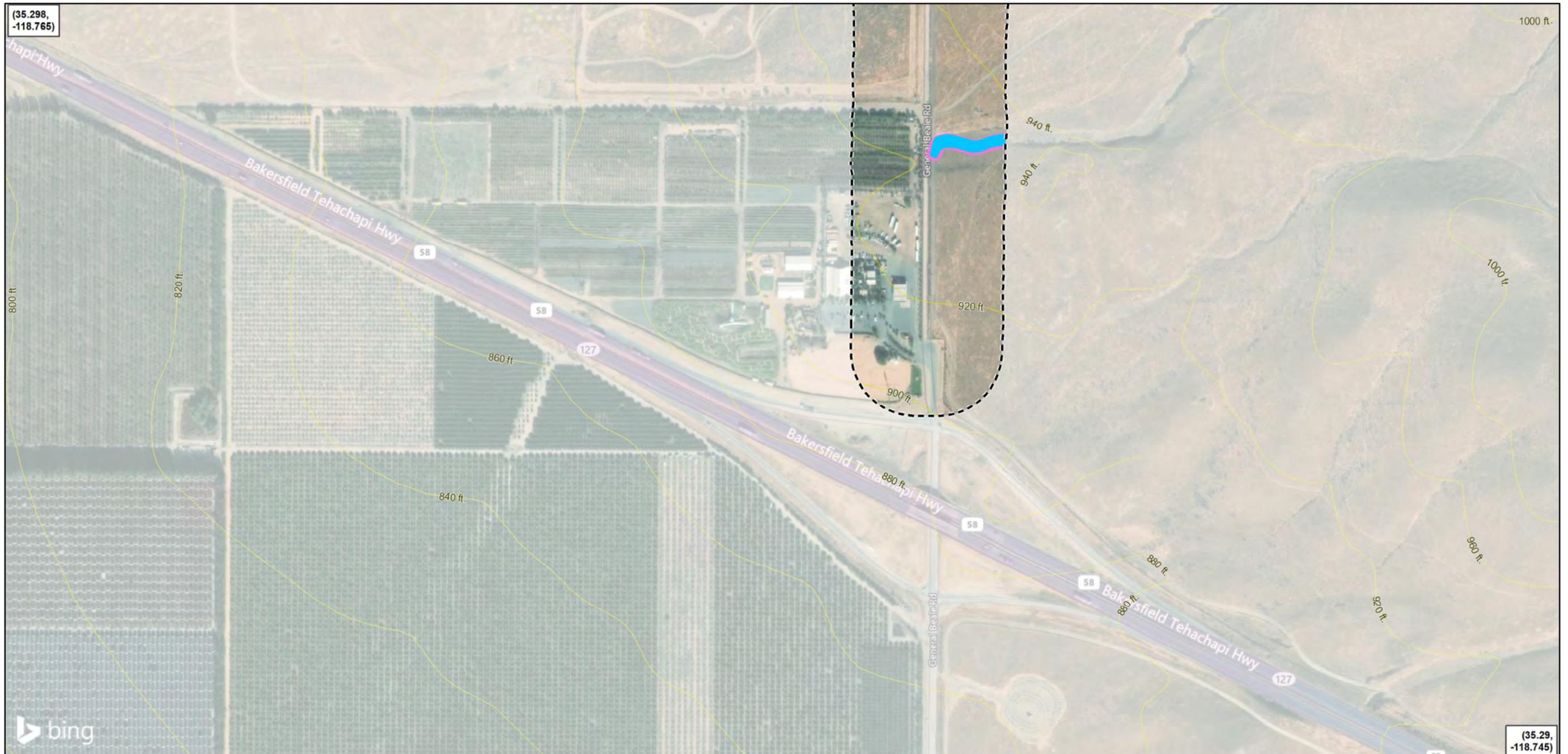
- Additional Mapped Areas Based on CDFW Methodology***
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- Streambed



Coordinate System: NAD 1983 California State Plane V
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 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources



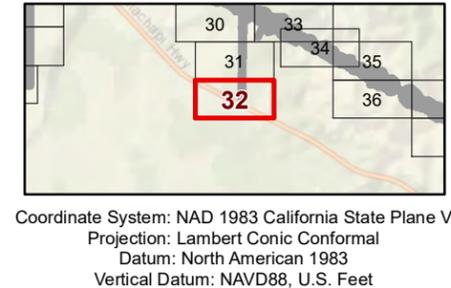
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).

Legend

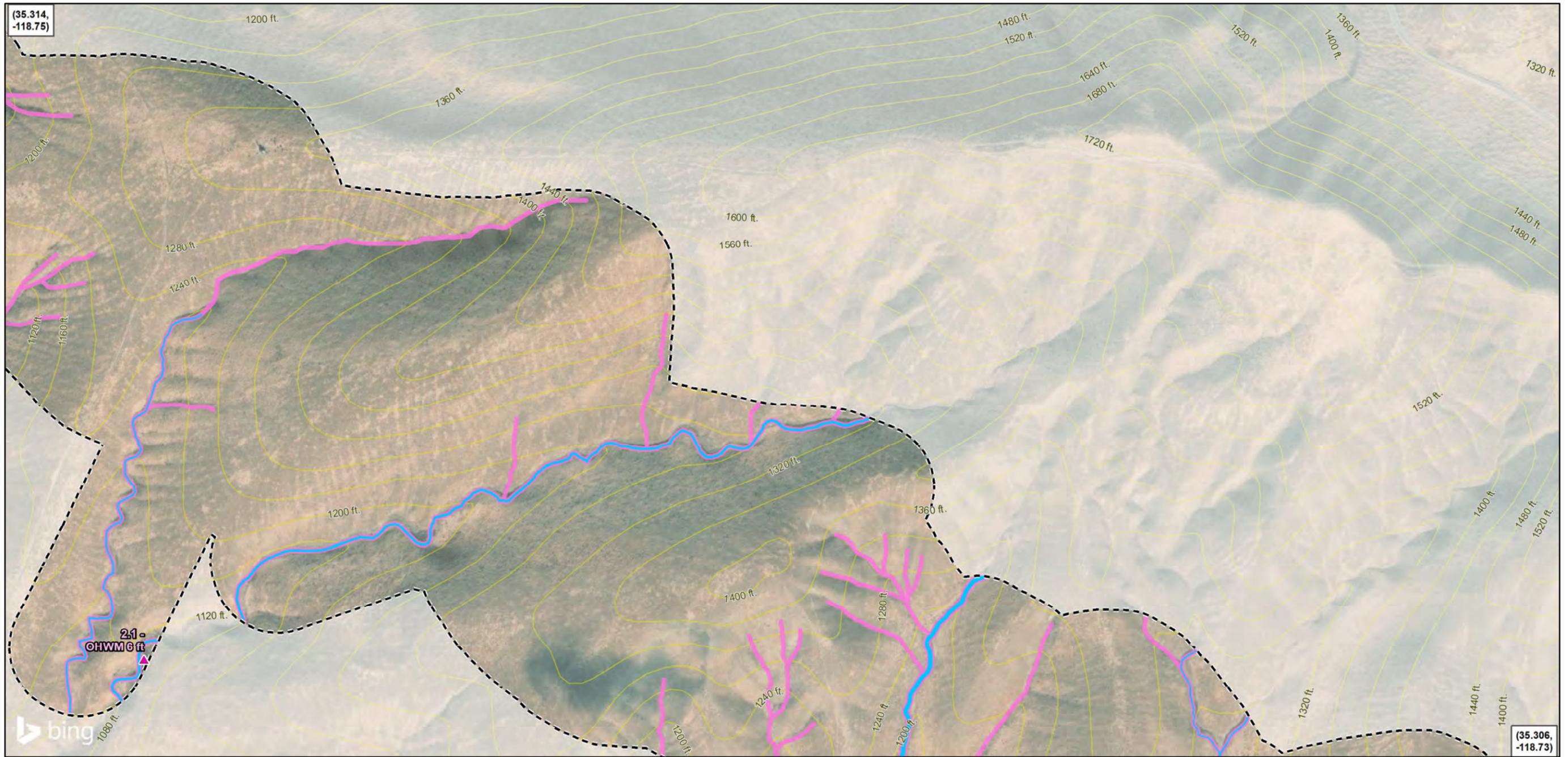
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Additional Mapped Areas Based on CDFW Methodology* Streambed

**Additionally mapped areas may be obscured due to the small amount of change.*

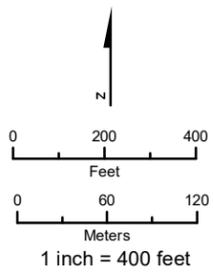
Scale:
 0 200 400 Feet
 0 60 120 Meters
 1 inch = 400 feet



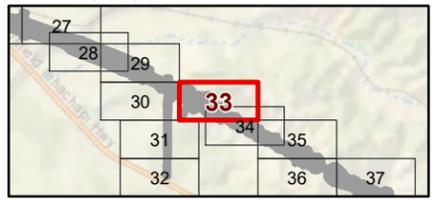
Potential Additional Section 1600 Aquatic Resources



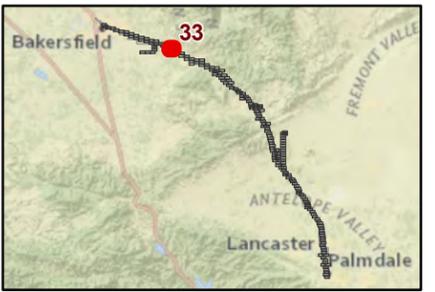
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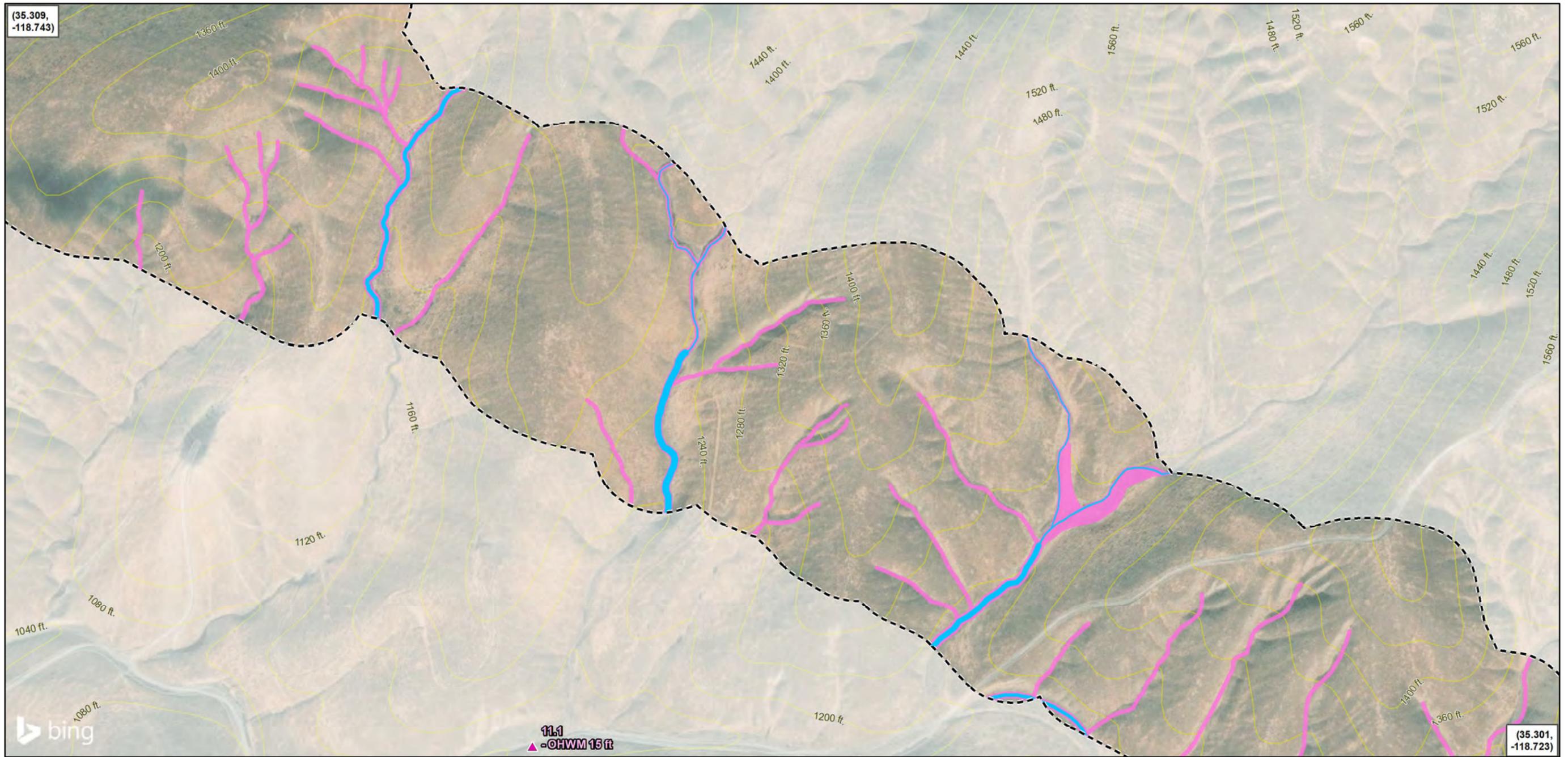
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - ▲ OHWM Data Point
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



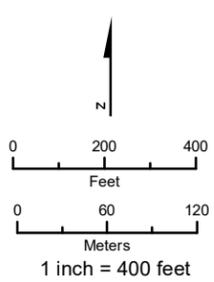
Coordinate System: NAD 1983 California State Plane V
 Projection: Lambert Conic Conformal
 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



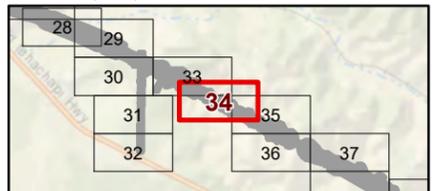
Potential Additional Section 1600 Aquatic Resources



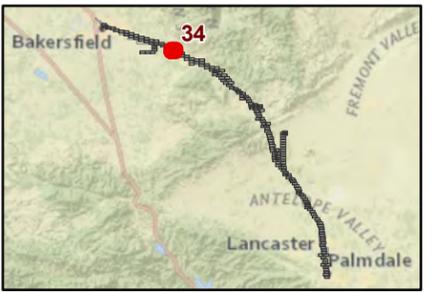
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - OHWM Data Point
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- Additional Mapped Areas Based on CDFW Methodology***
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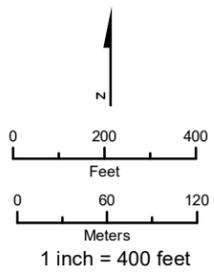
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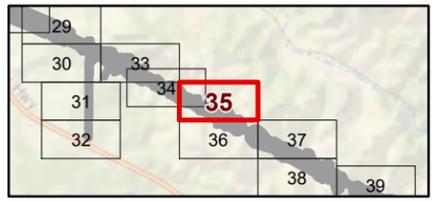
Potential Additional Section 1600 Aquatic Resources



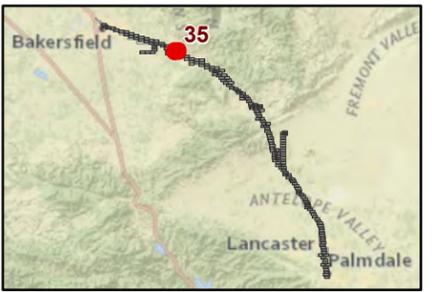
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 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
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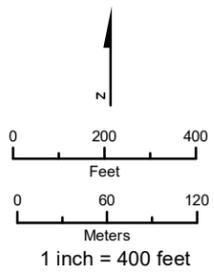
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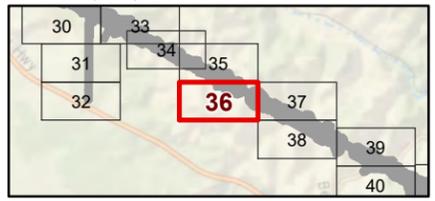
Potential Additional Section 1600 Aquatic Resources



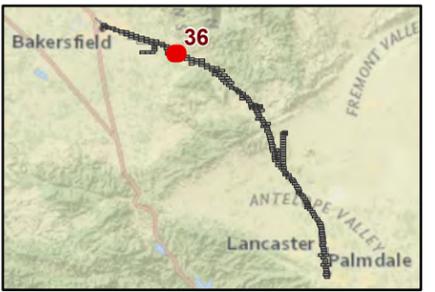
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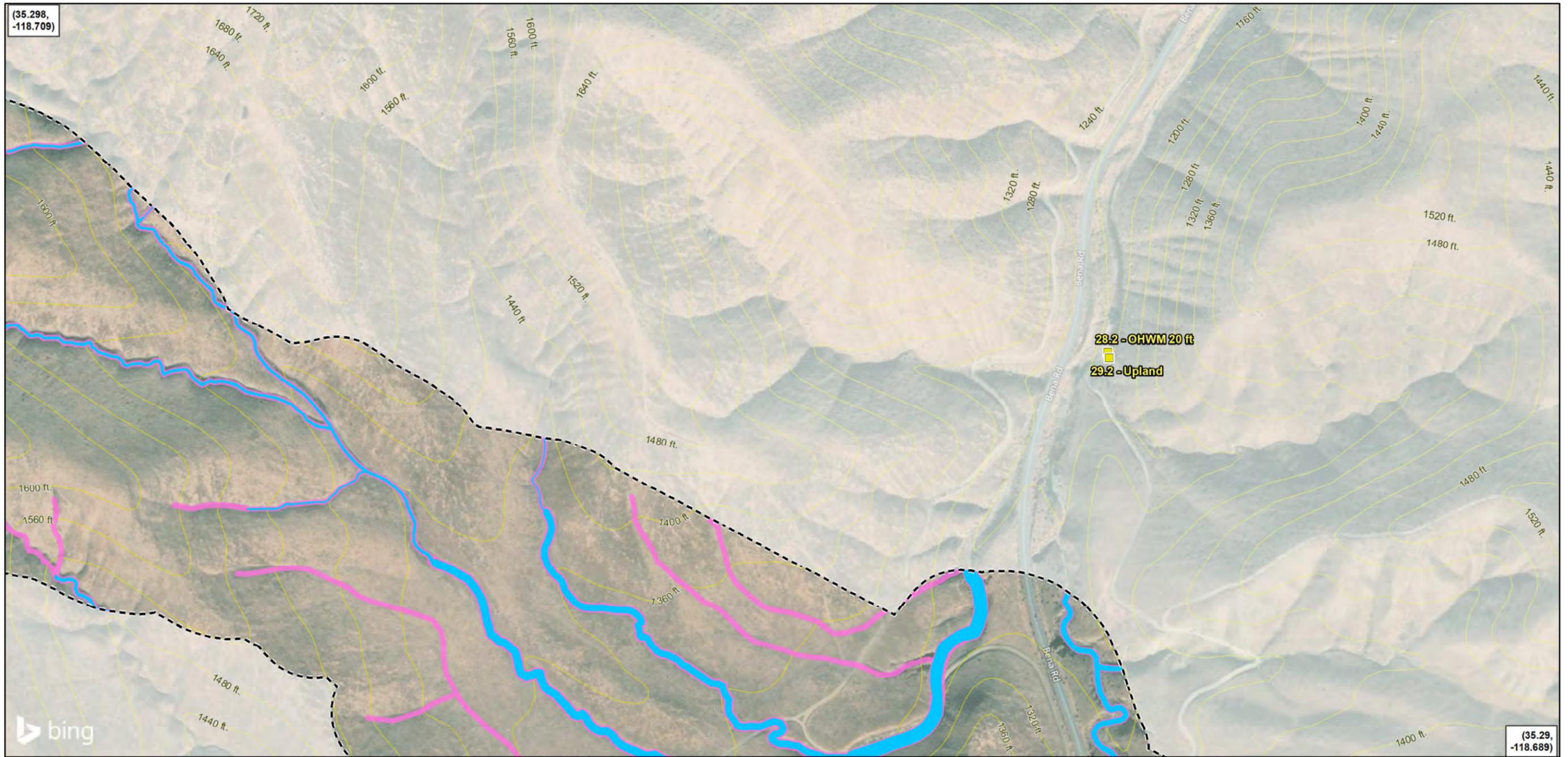
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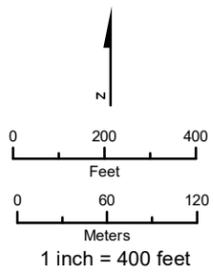
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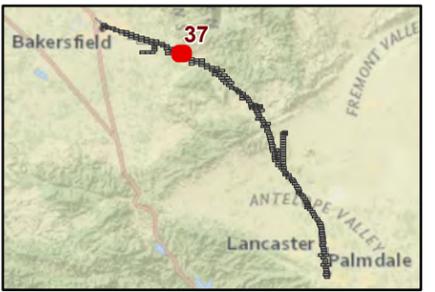
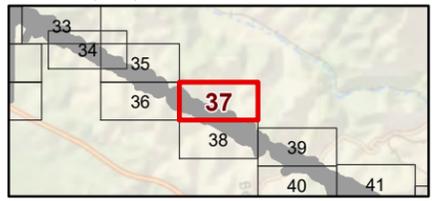
Potential Additional Section 1600 Aquatic Resources



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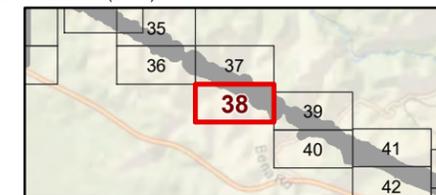
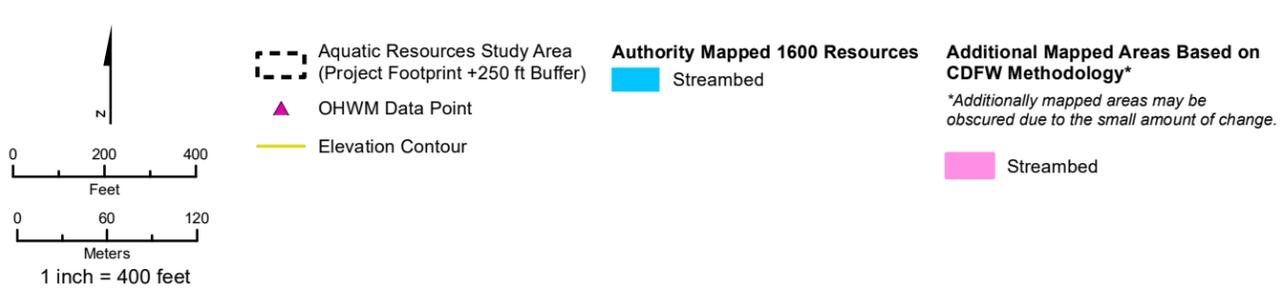
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Wetland Determination Sample Point
 - Elevation Contour
 - Streambed
 - Streambed
- Authority Mapped 1600 Resources**
- Additional Mapped Areas Based on CDFW Methodology***
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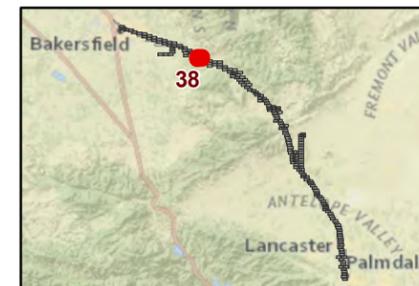
Potential Additional Section 1600 Aquatic Resources



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Coordinate System: NAD 1983 California State Plane V
 Projection: Lambert Conic Conformal
 Datum: North American 1983
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Potential Additional Section 1600 Aquatic Resources



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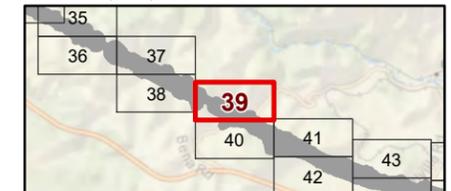
Legend

- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Wetland Determination Sample Point
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Additional Mapped Areas Based on CDFW Methodology* Streambed

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Scale

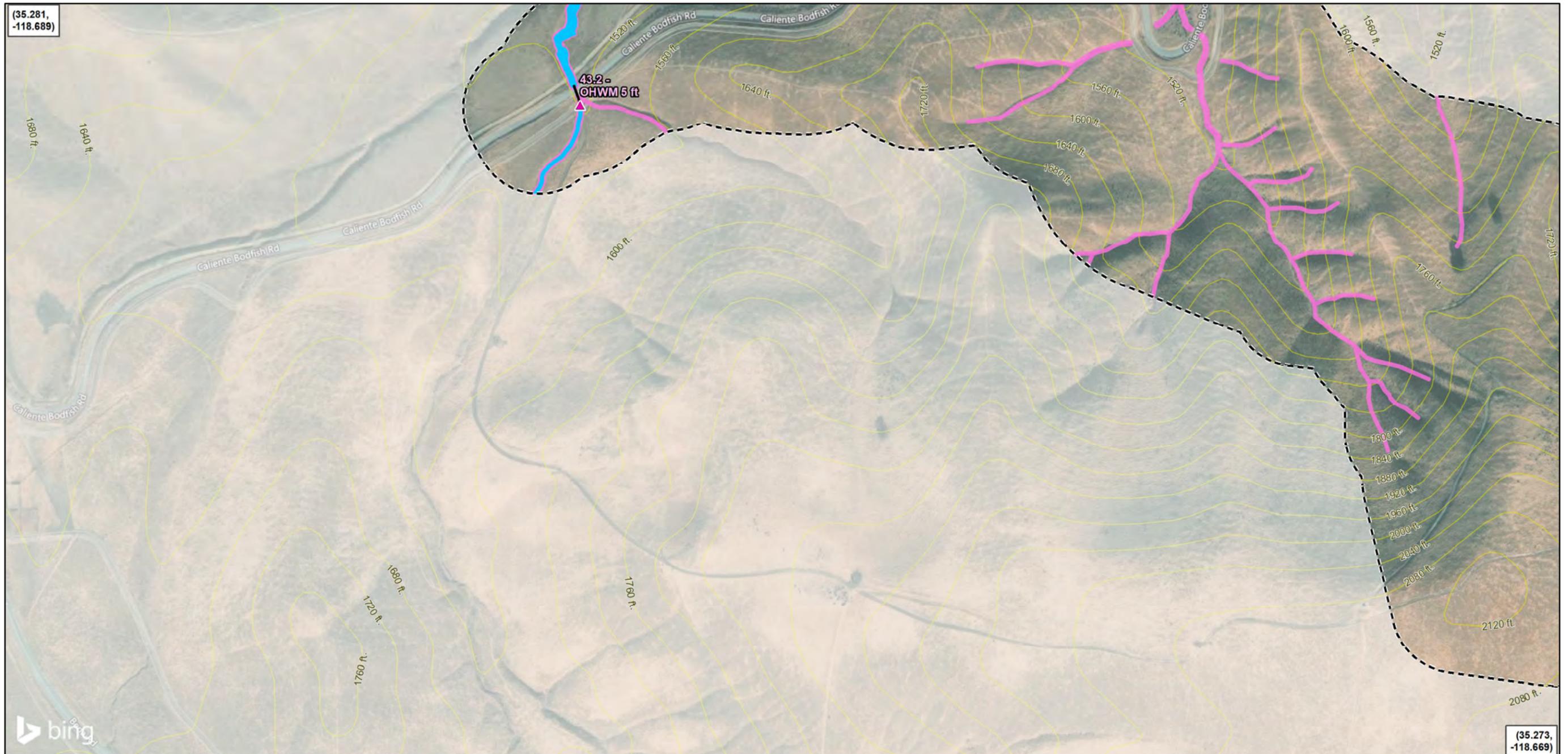
0 200 400 Feet
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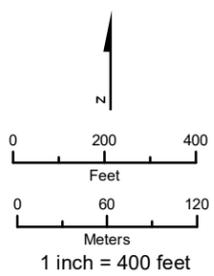
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Potential Additional Section 1600 Aquatic Resources

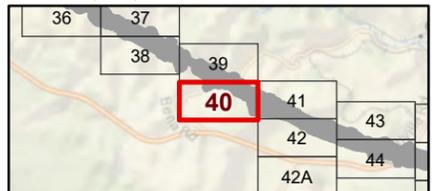


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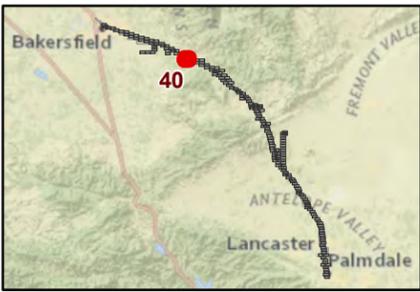


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- OHWM Data Point
- Elevation Contour
- Authority Mapped 1600 Resources Streambed

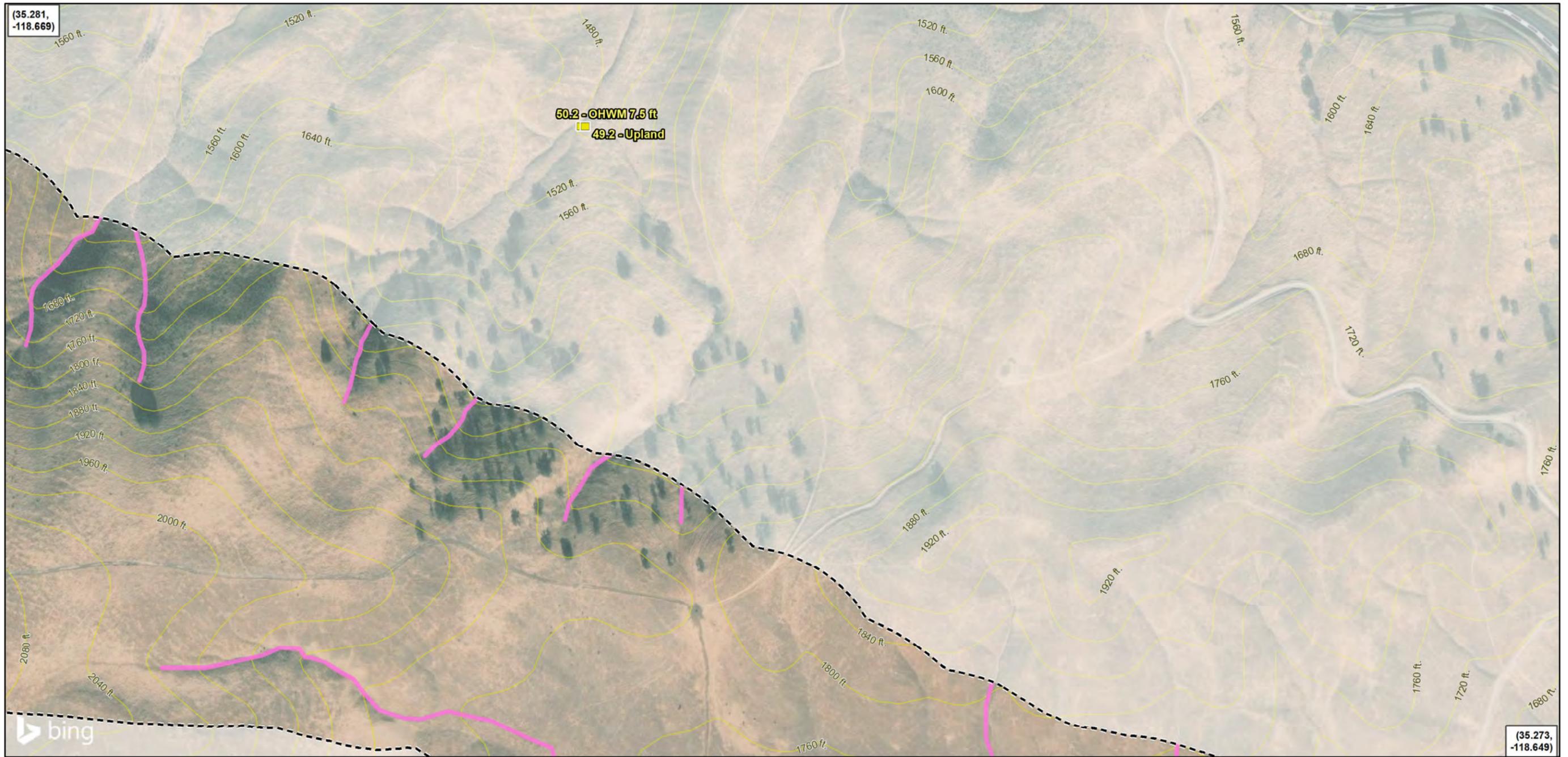
- Additional Mapped Areas Based on CDFW Methodology*
*Additionally mapped areas may be obscured due to the small amount of change.
- Streambed



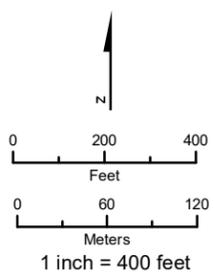
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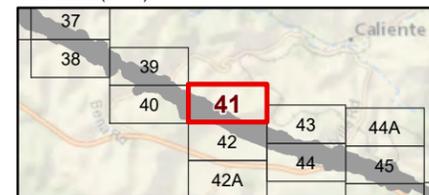
Potential Additional Section 1600 Aquatic Resources



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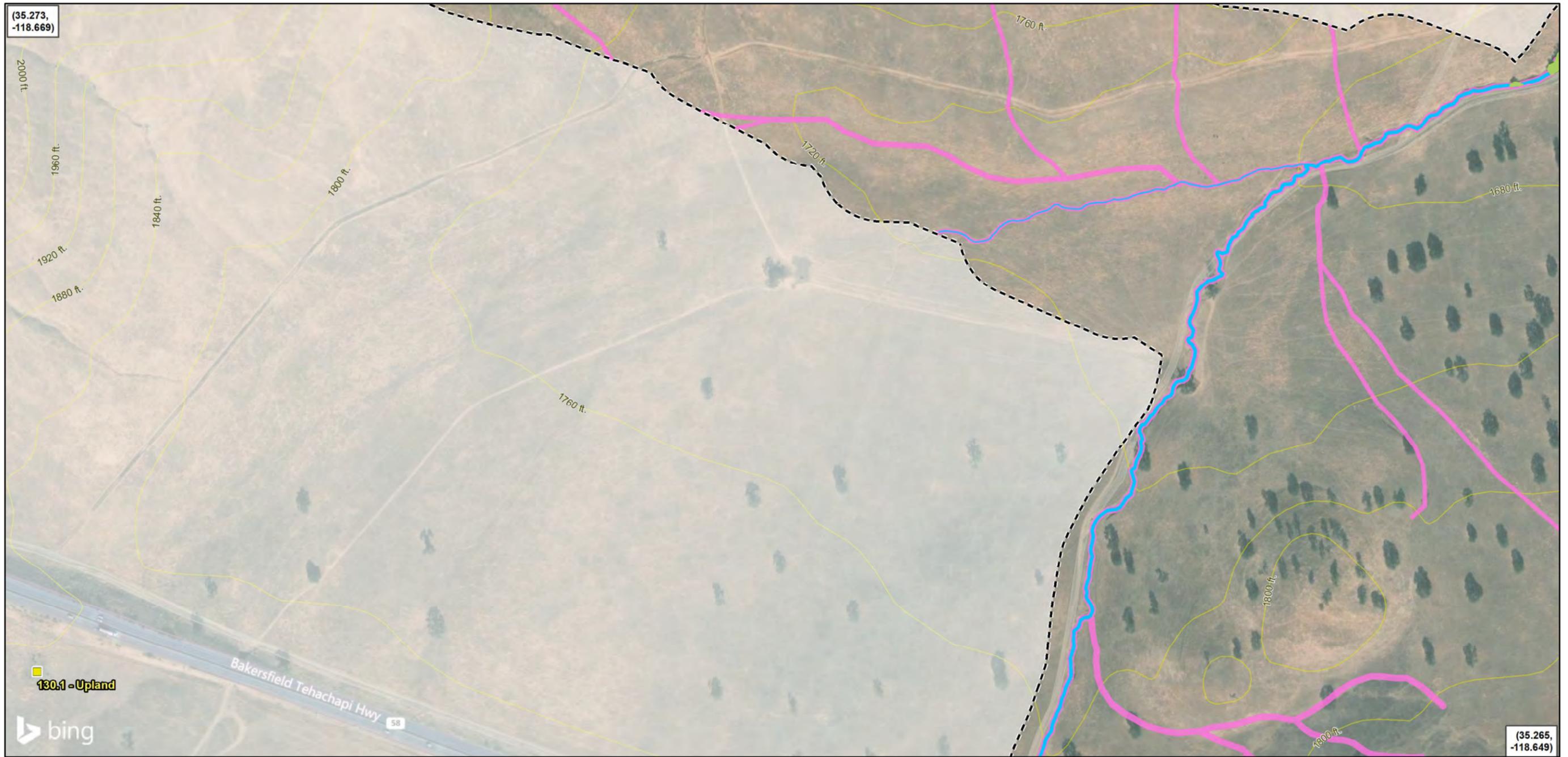
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Wetland Determination Sample Point
 - Elevation Contour
 - Streambed
- Additional Mapped Areas Based on CDFW Methodology***
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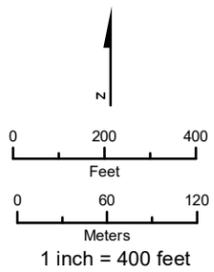
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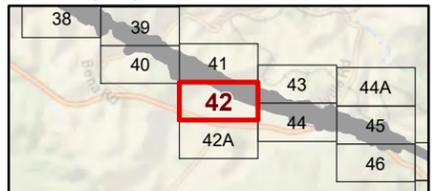
Potential Additional Section 1600 Aquatic Resources



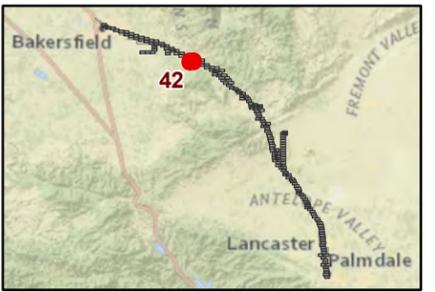
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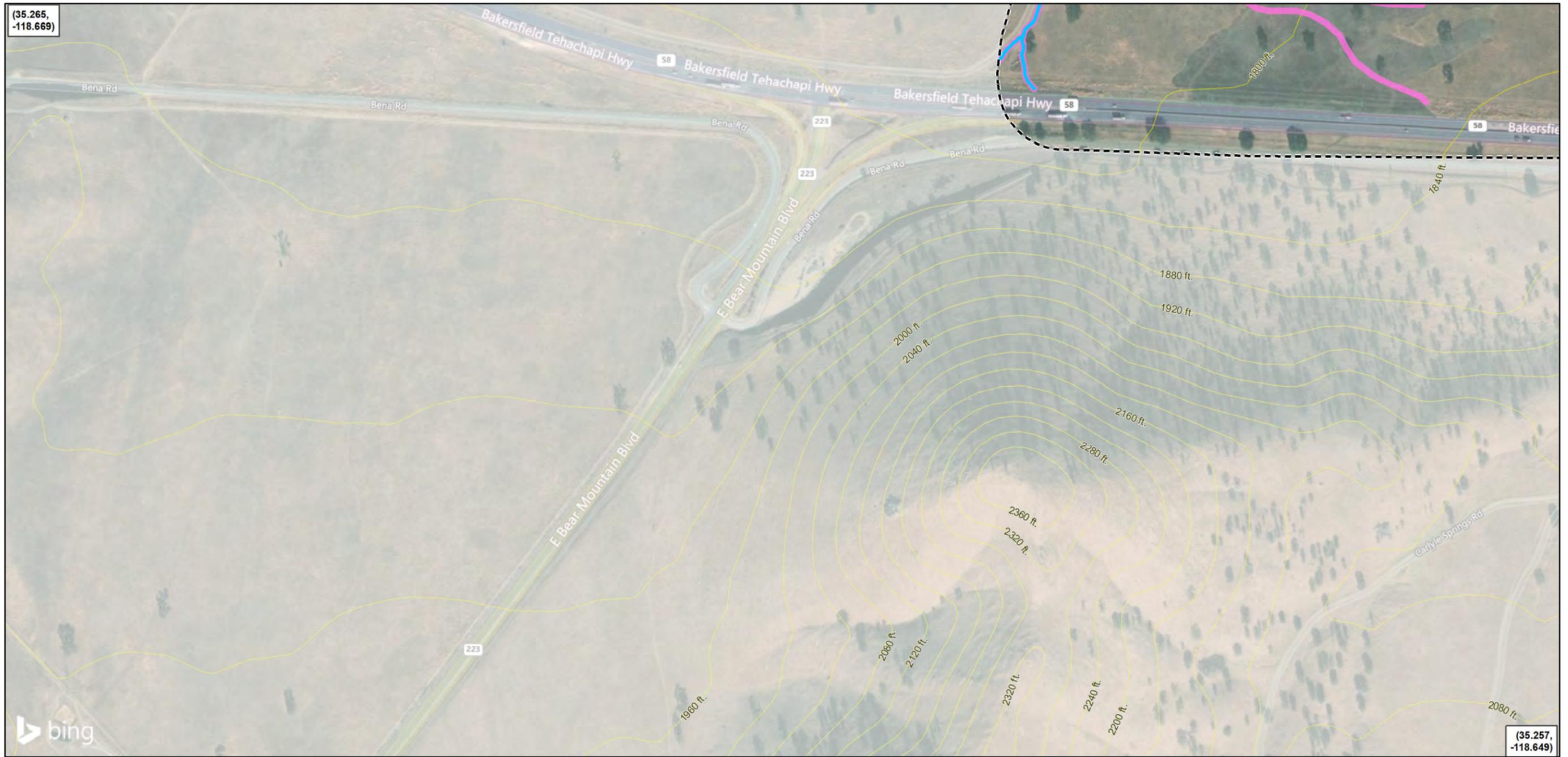
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Wetland Determination Sample Point
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Authority Mapped 1600 Resources Riparian
- Additional Mapped Areas Based on CDFW Methodology* Streambed
- Additional Mapped Areas Based on CDFW Methodology* Riparian



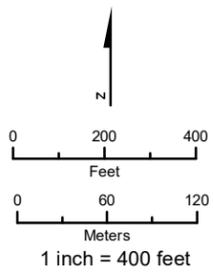
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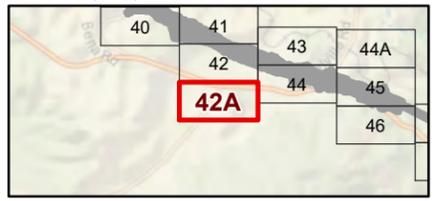
Potential Additional Section 1600 Aquatic Resources



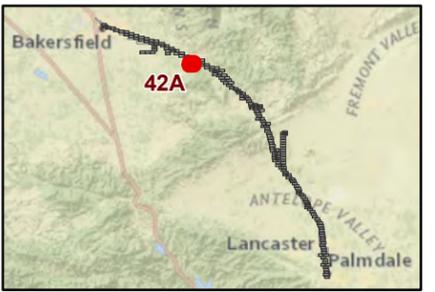
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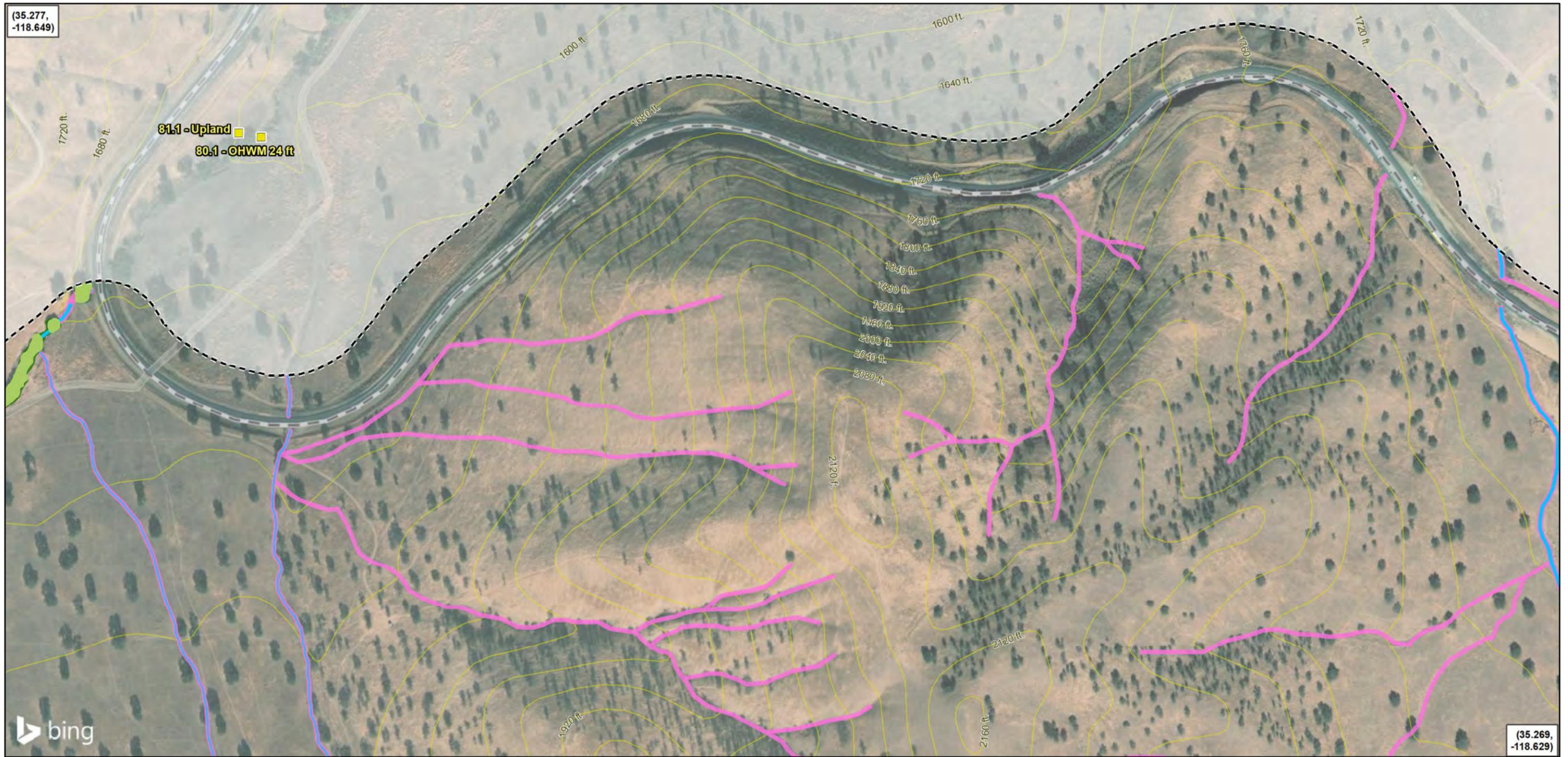
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Streambed
 - Elevation Contour
 - Streambed
- Authority Mapped 1600 Resources**
- Additional Mapped Areas Based on CDFW Methodology***
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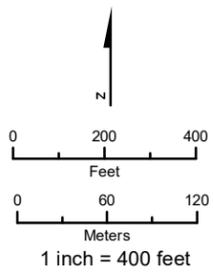
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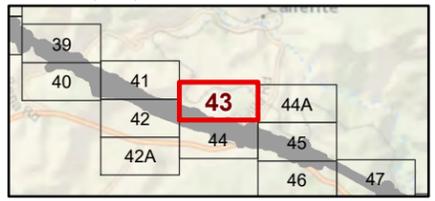
Potential Additional Section 1600 Aquatic Resources



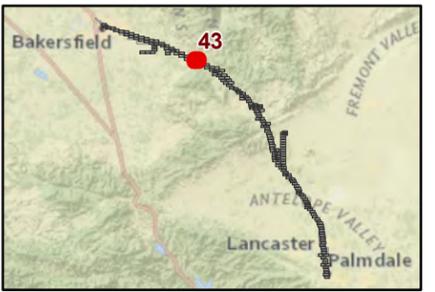
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Wetland Determination Sample Point
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Authority Mapped 1600 Resources Riparian
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Riparian
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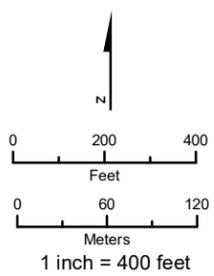
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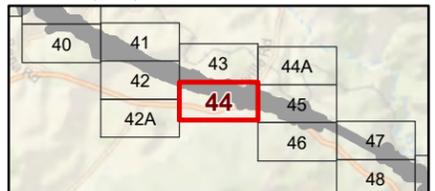
Potential Additional Section 1600 Aquatic Resources



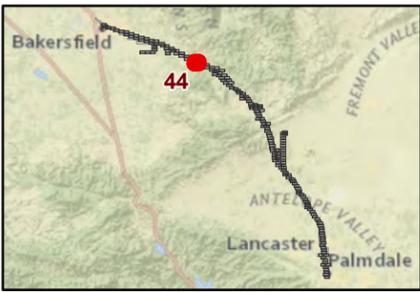
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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
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Potential Additional Section 1600 Aquatic Resources



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0 200 400
Feet

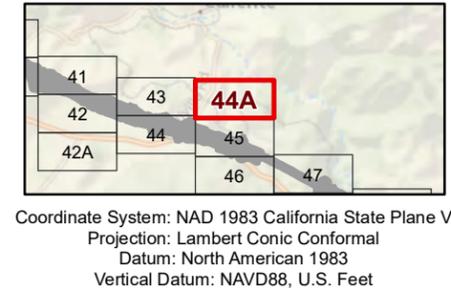
0 60 120
Meters

1 inch = 400 feet

Legend

- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Additional Mapped Areas Based on CDFW Methodology* Streambed

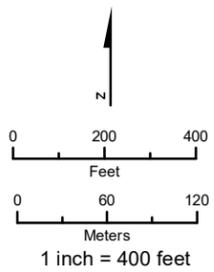
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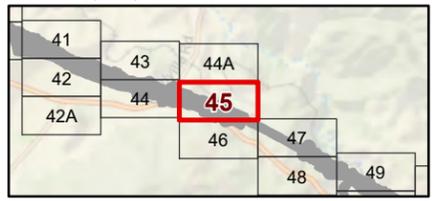
Potential Additional Section 1600 Aquatic Resources



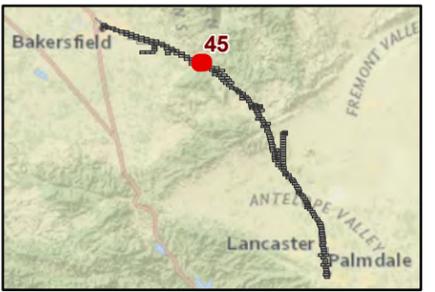
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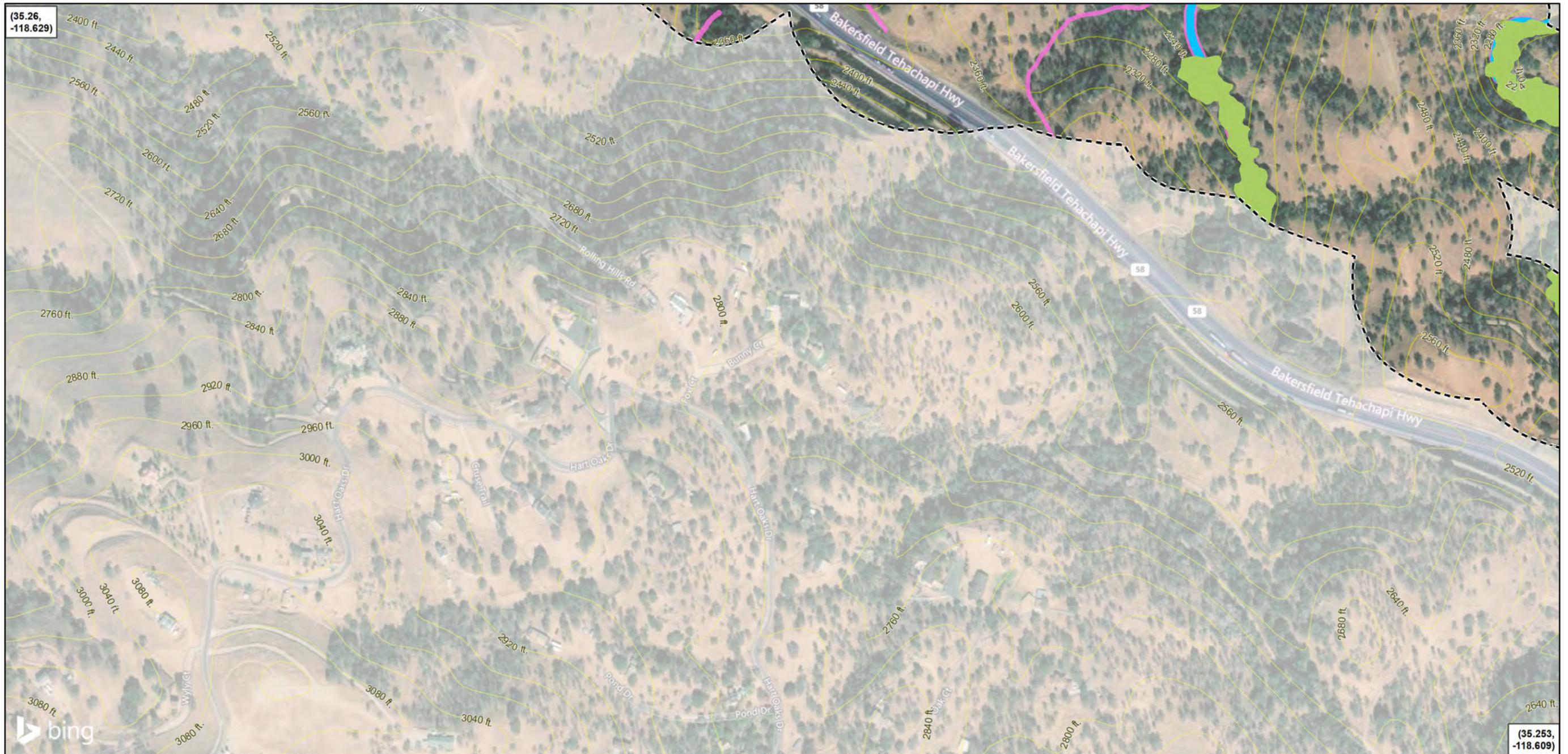
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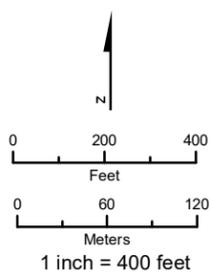
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Potential Additional Section 1600 Aquatic Resources



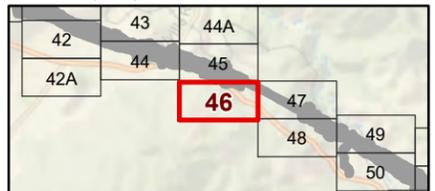
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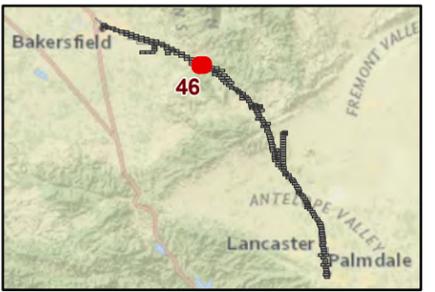
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed
- Riparian

Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.

- Streambed
- Riparian



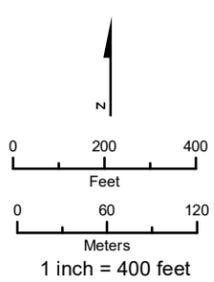
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Potential Additional Section 1600 Aquatic Resources



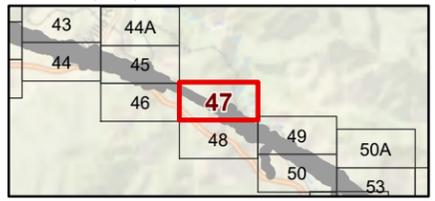
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 SOURCE: Microsoft Corporation Bing Hybrid Imagery ESRI Service Layer (2019); Esri/National Geographic (2019); Phase 4B Engineering data from the CHSR (10/2019); USGS Elevation Contours (2014).



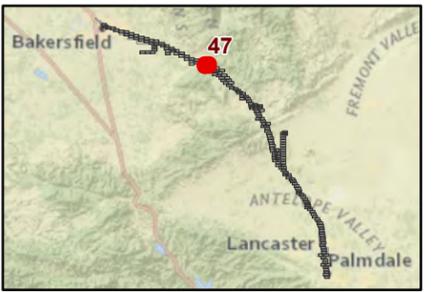
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
 - Streambed
 - Riparian
 - Seasonal Wetland
- Additional Mapped Areas Based on CDFW Methodology***

**Additionally mapped areas may be obscured due to the small amount of change.*

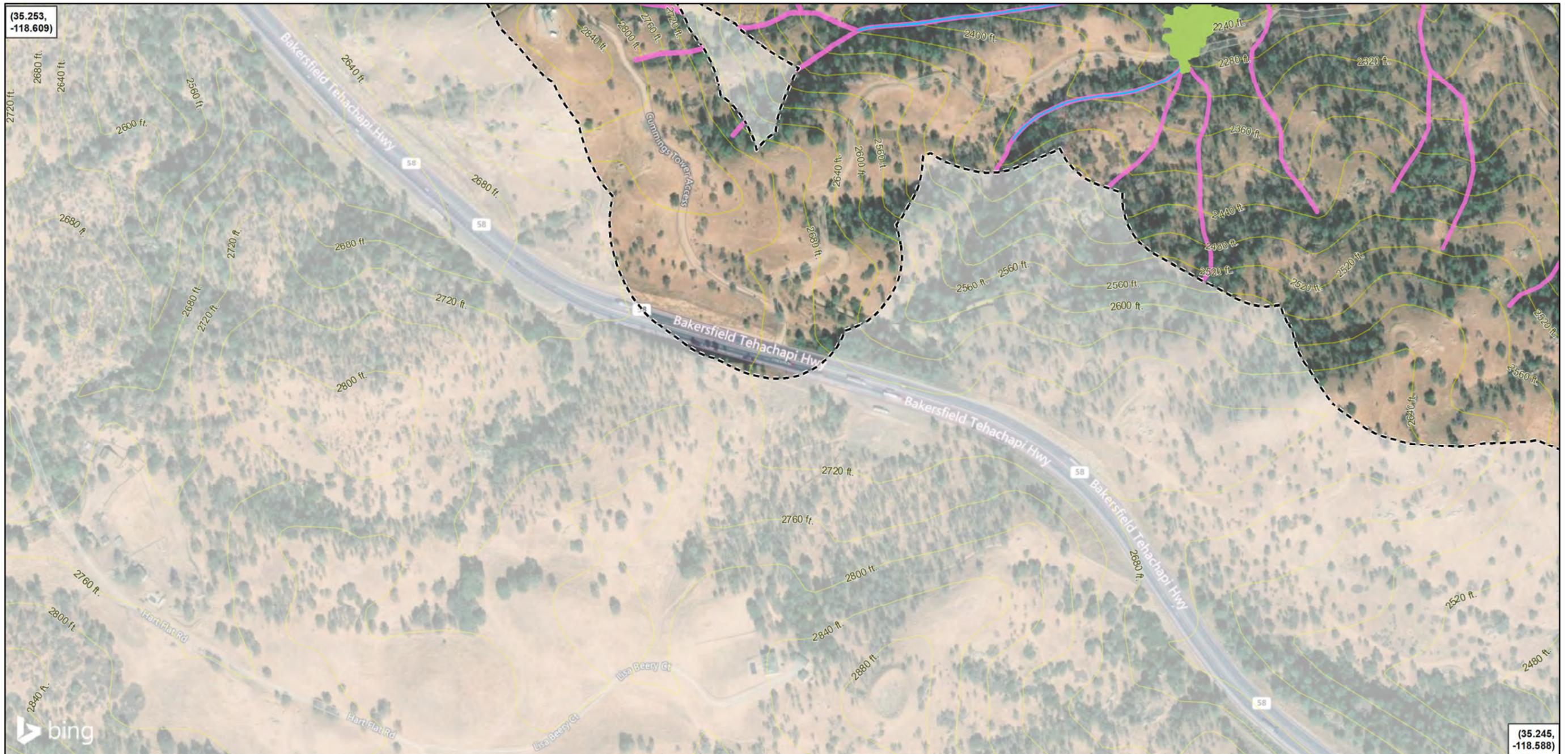
 - Streambed
 - Riparian
 - Seasonal Wetland



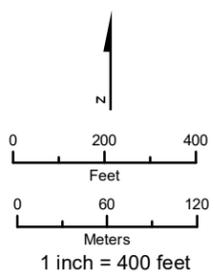
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 Projection: Lambert Conic Conformal
 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources

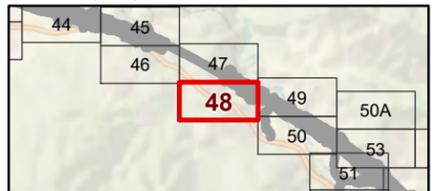


PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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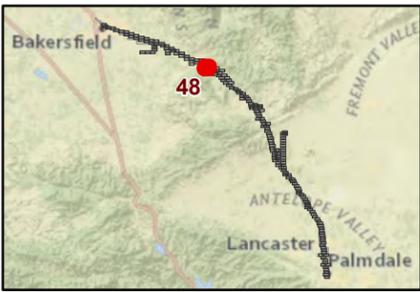


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Authority Mapped 1600 Resources Riparian

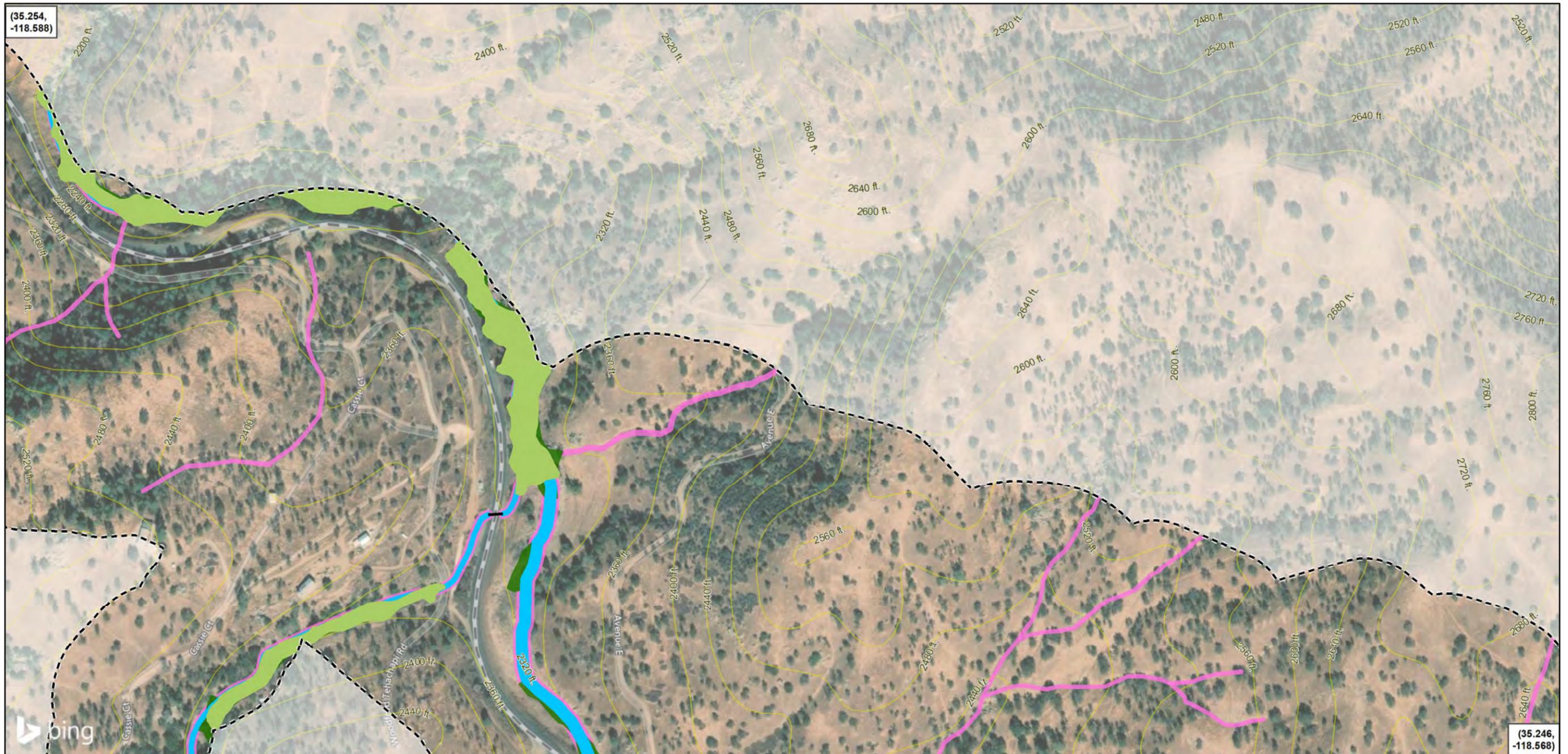
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Streambed
- Riparian



Coordinate System: NAD 1983 California State Plane V
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 Vertical Datum: NAVD88, U.S. Feet

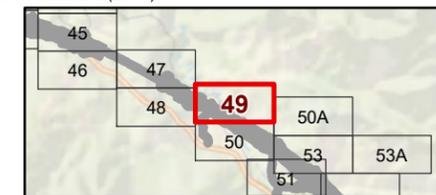


Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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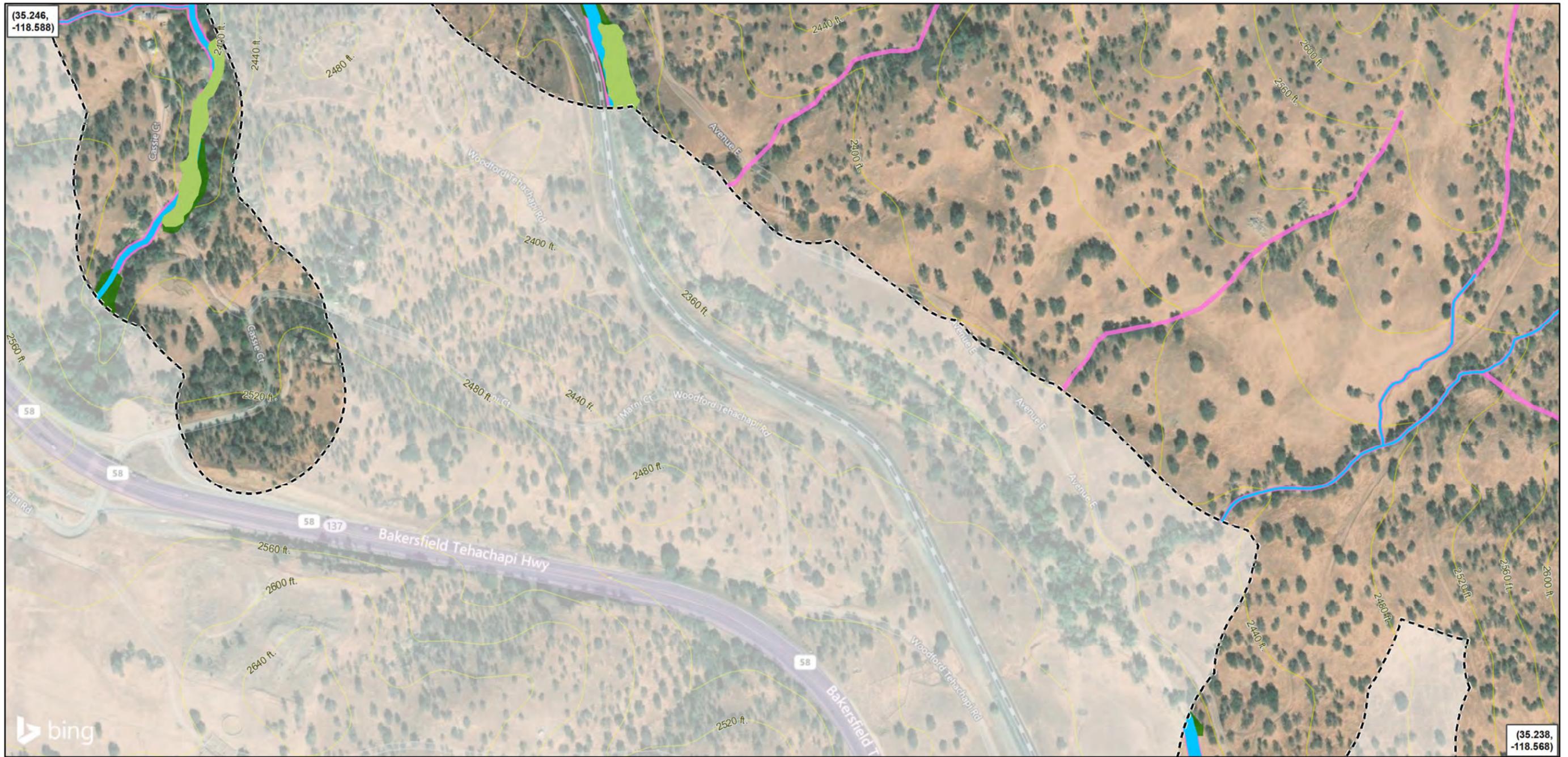
| | | | |
|--|---|---|---|
| | Aquatic Resources Study Area (Project Footprint +250 ft Buffer) | Authority Mapped 1600 Resources Streambed | Additional Mapped Areas Based on CDFW Methodology* <i>*Additionally mapped areas may be obscured due to the small amount of change.</i> |
| | Elevation Contour | Authority Mapped 1600 Resources Riparian | Streambed Riparian |



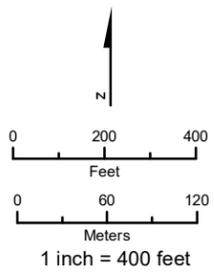
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 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources

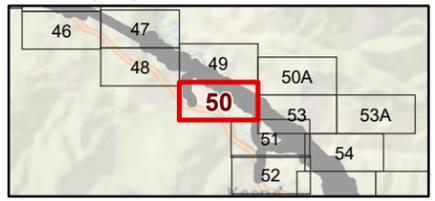


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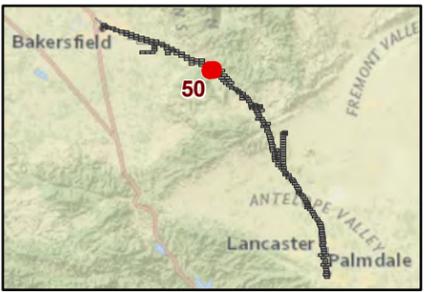


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Riparian

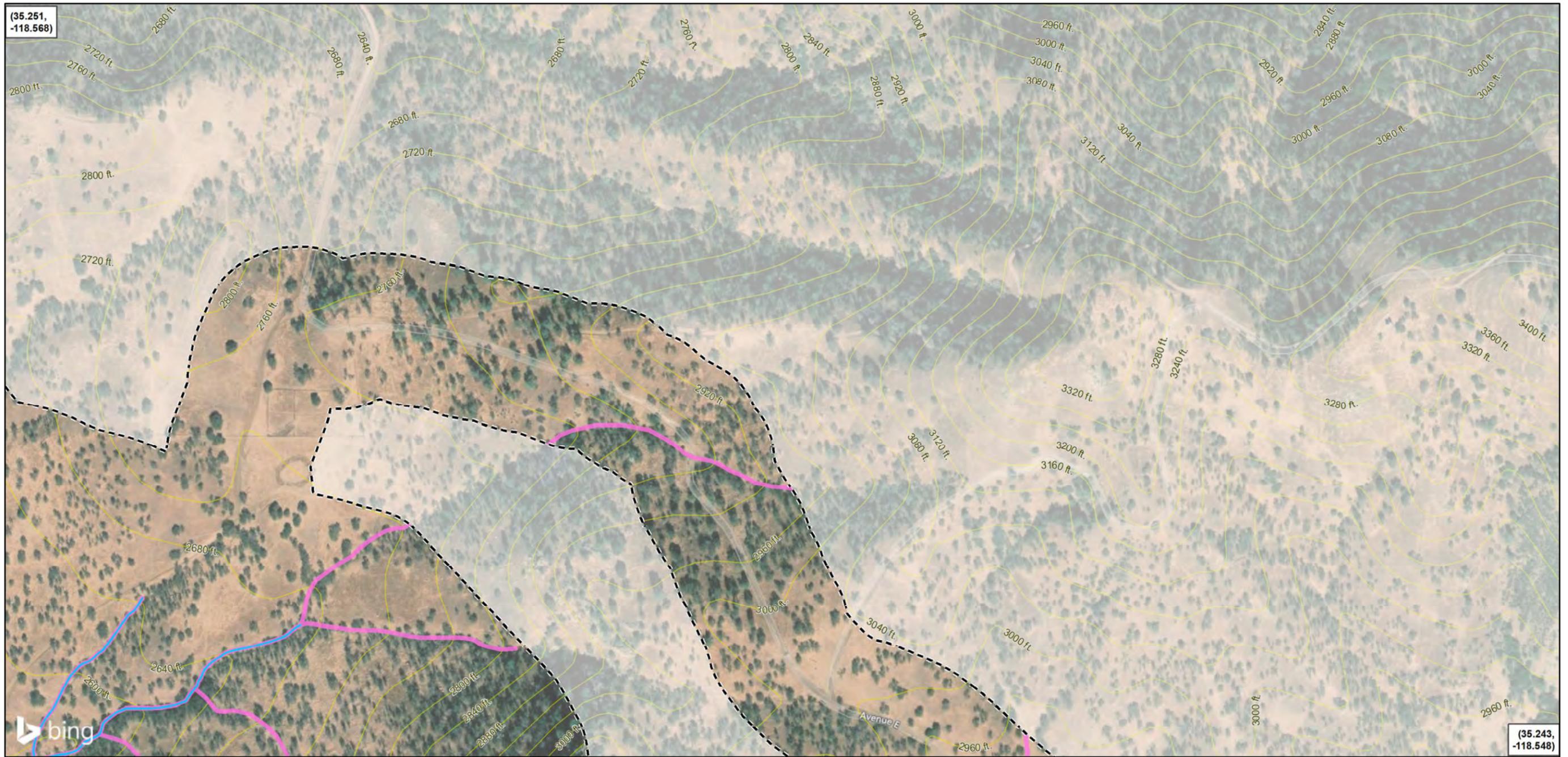
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Streambed
 - Riparian



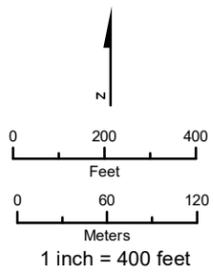
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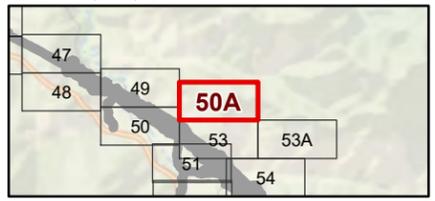
Potential Additional Section 1600 Aquatic Resources



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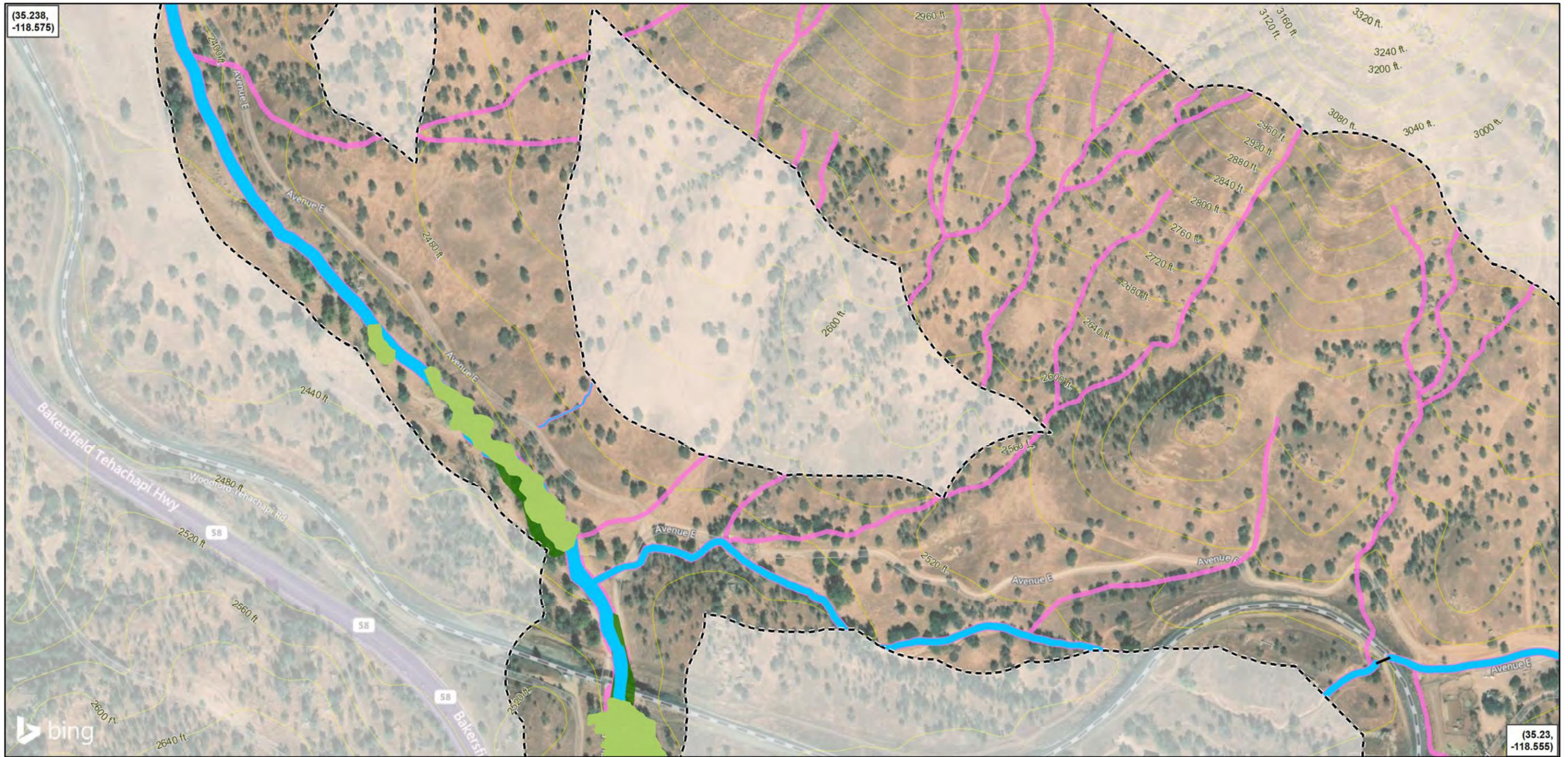
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
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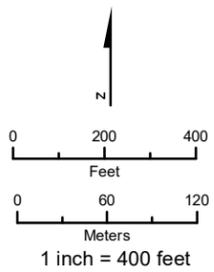
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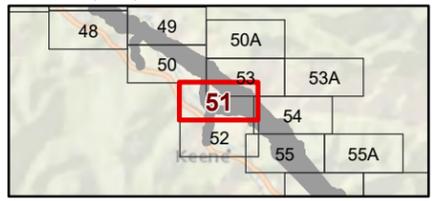
Potential Additional Section 1600 Aquatic Resources



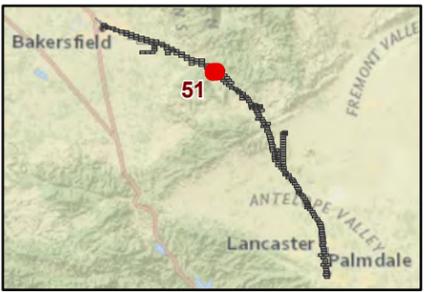
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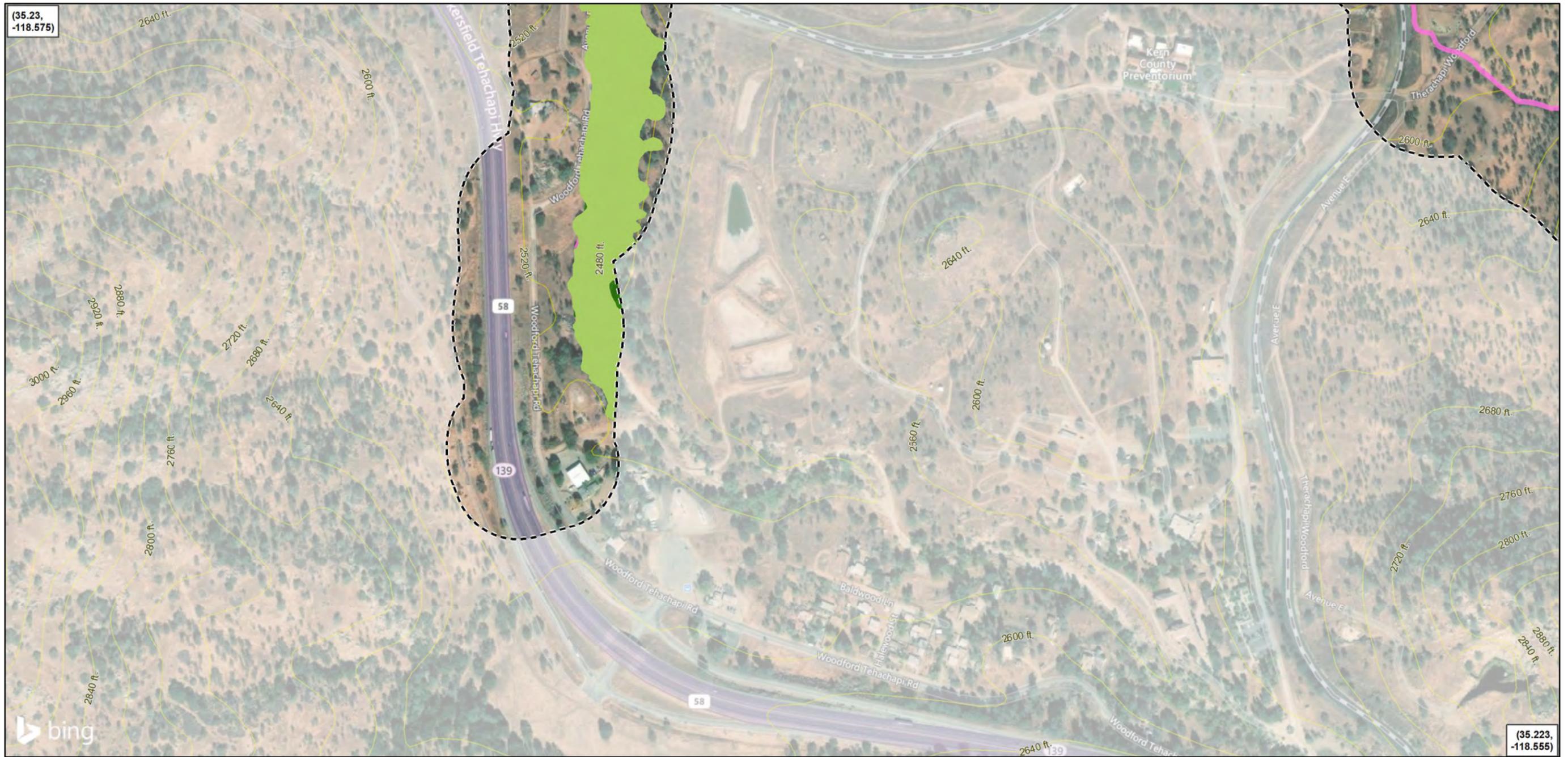
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed
- Riparian
- Additional Mapped Areas Based on CDFW Methodology***
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- Riparian



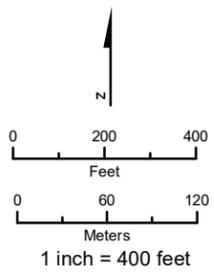
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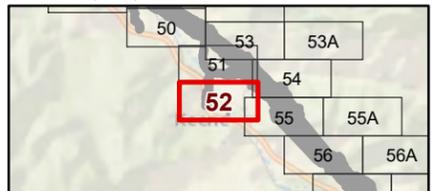
Potential Additional Section 1600 Aquatic Resources



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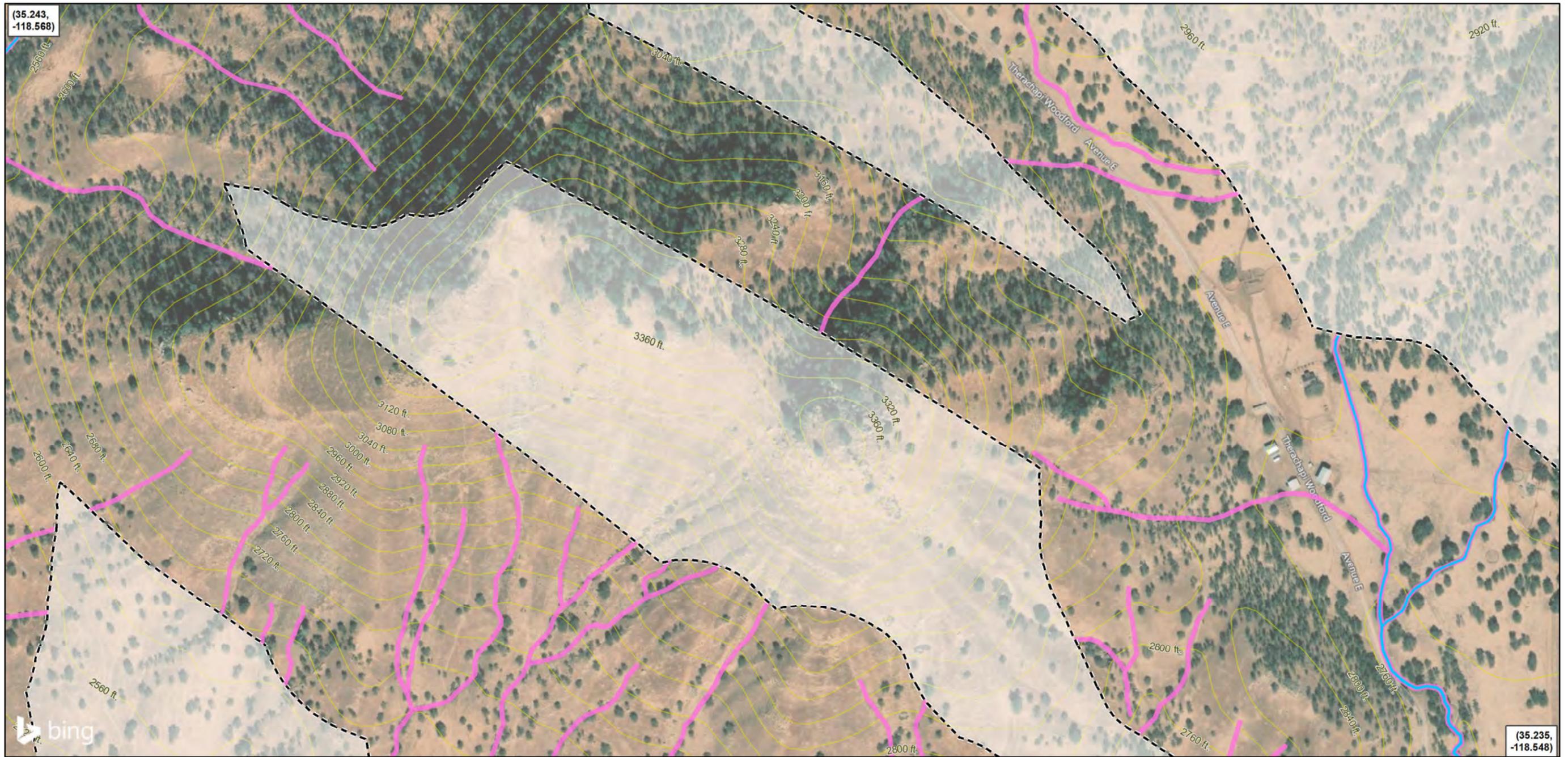
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Authority Mapped 1600 Resources
 - Streambed
 - Elevation Contour
 - Riparian
 - Riparian
- Additional Mapped Areas Based on CDFW Methodology***
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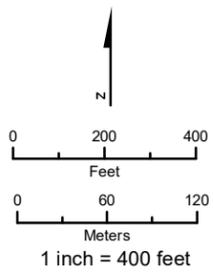
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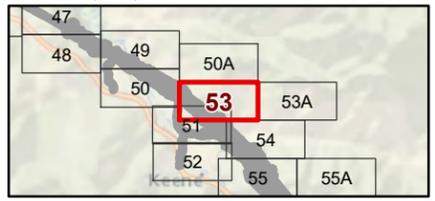
Potential Additional Section 1600 Aquatic Resources



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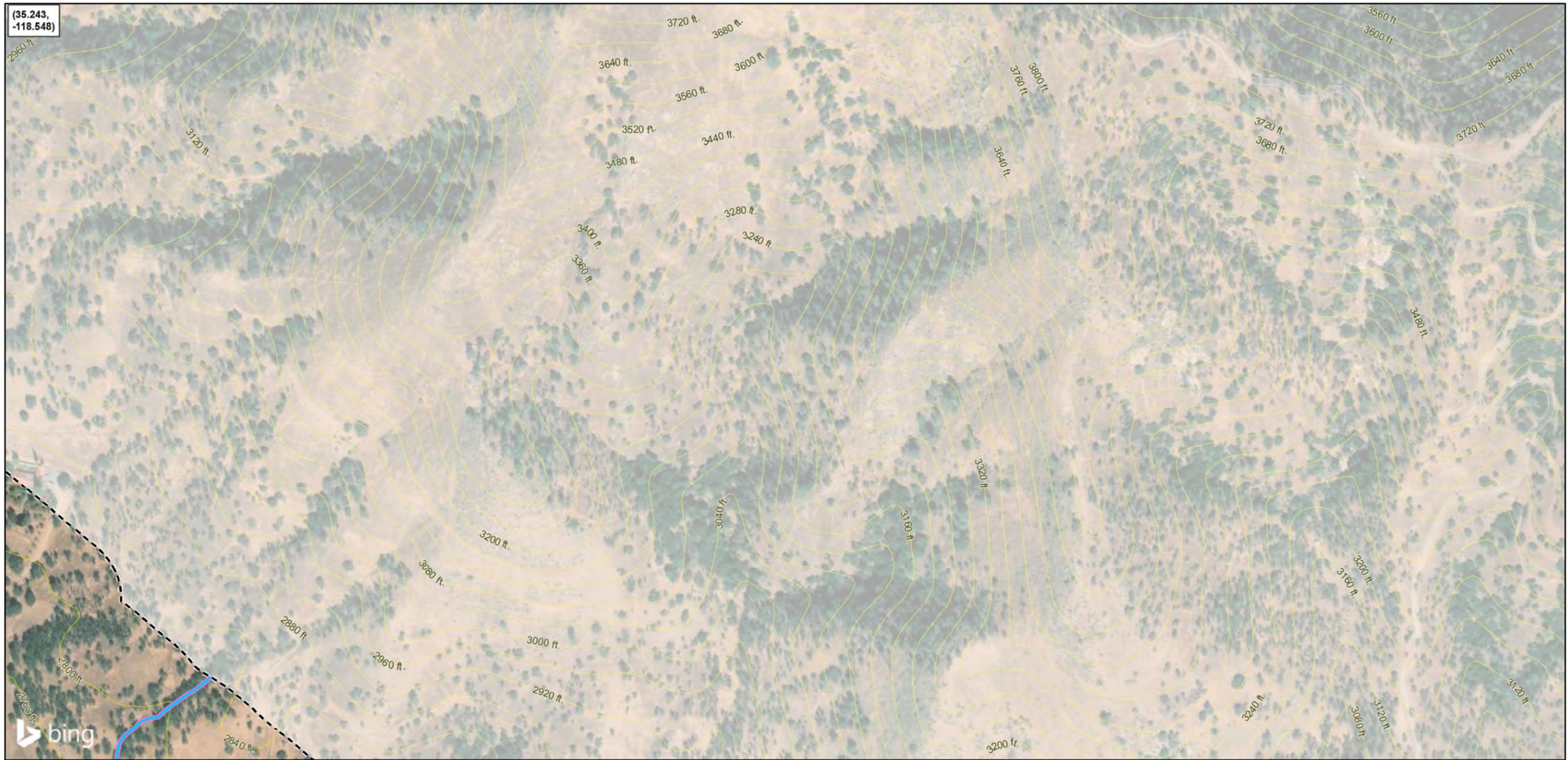
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



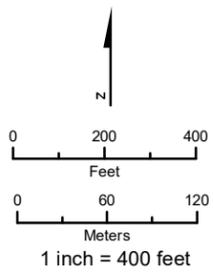
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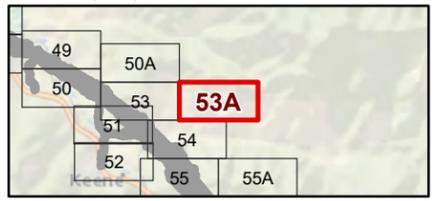
Potential Additional Section 1600 Aquatic Resources



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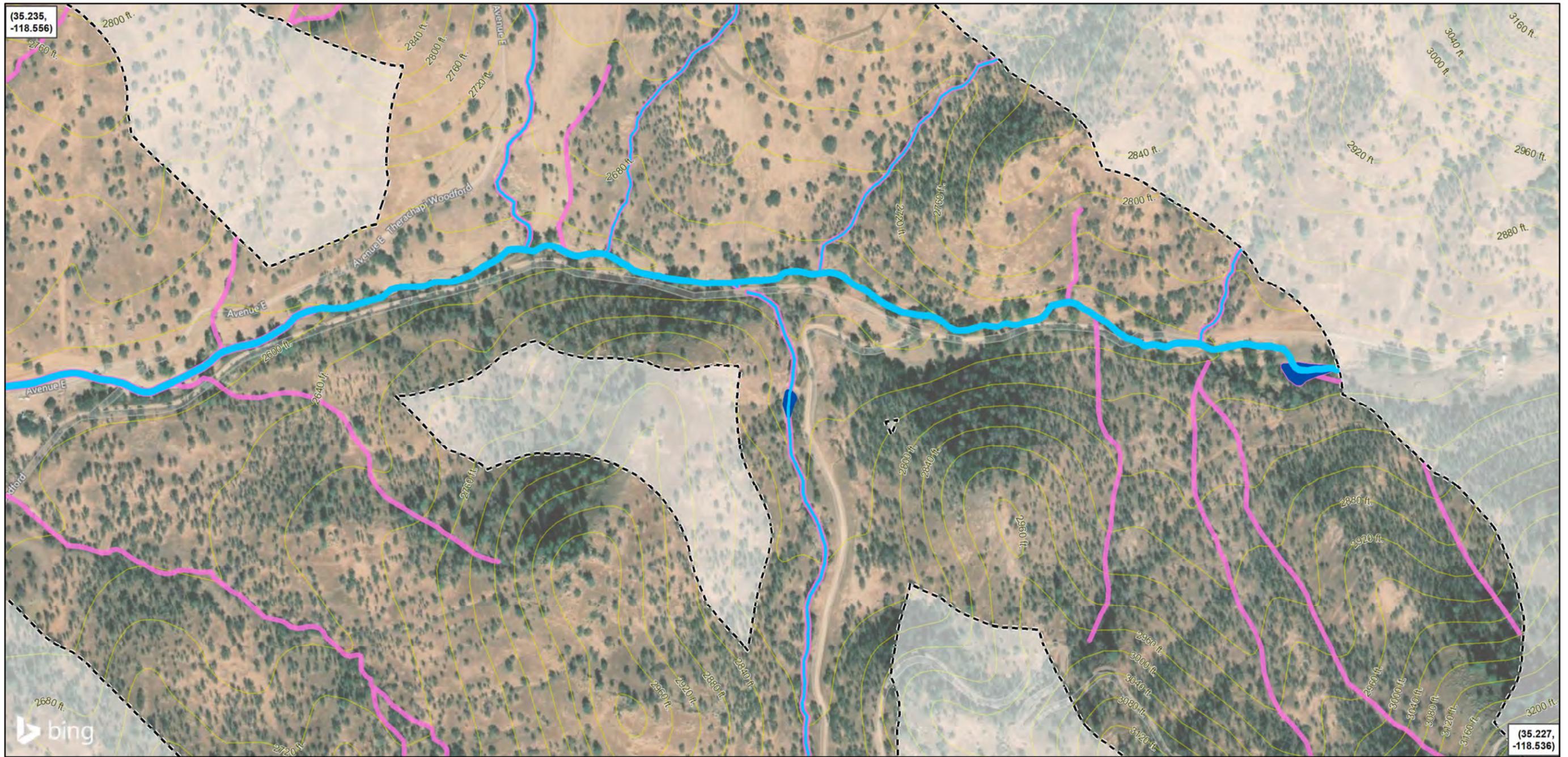
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
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 - Authority Mapped 1600 Resources Streambed
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- Additional Mapped Areas Based on CDFW Methodology***
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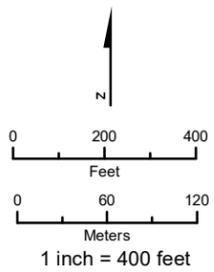
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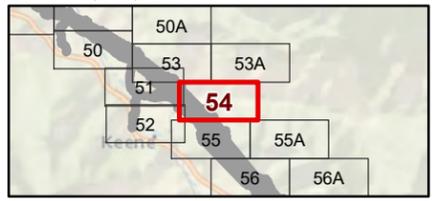
Potential Additional Section 1600 Aquatic Resources



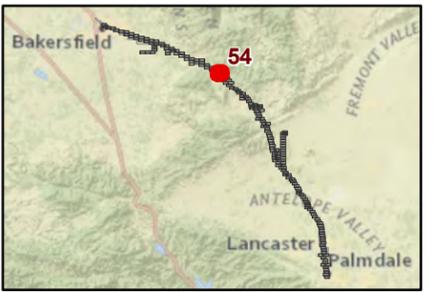
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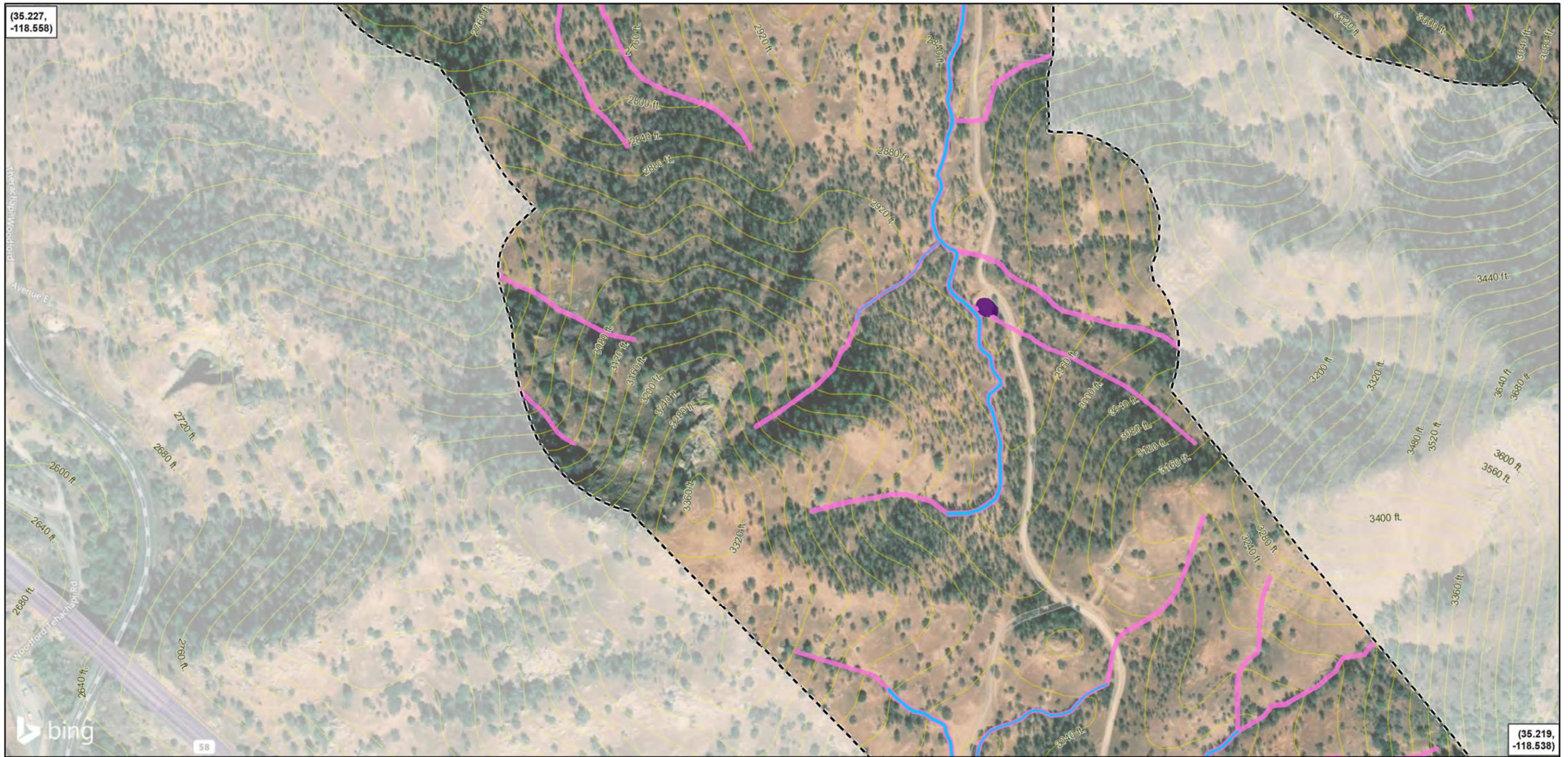
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources
 - Ponding
 - Streambed
 - Additional Mapped Areas Based on CDFW Methodology*
 - Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



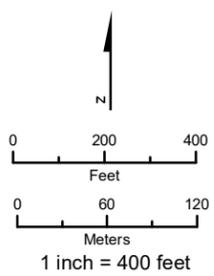
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Potential Additional Section 1600 Aquatic Resources

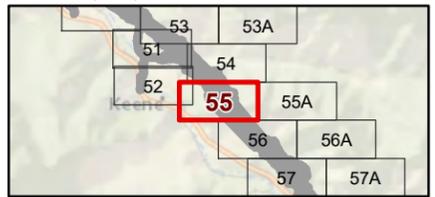


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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed

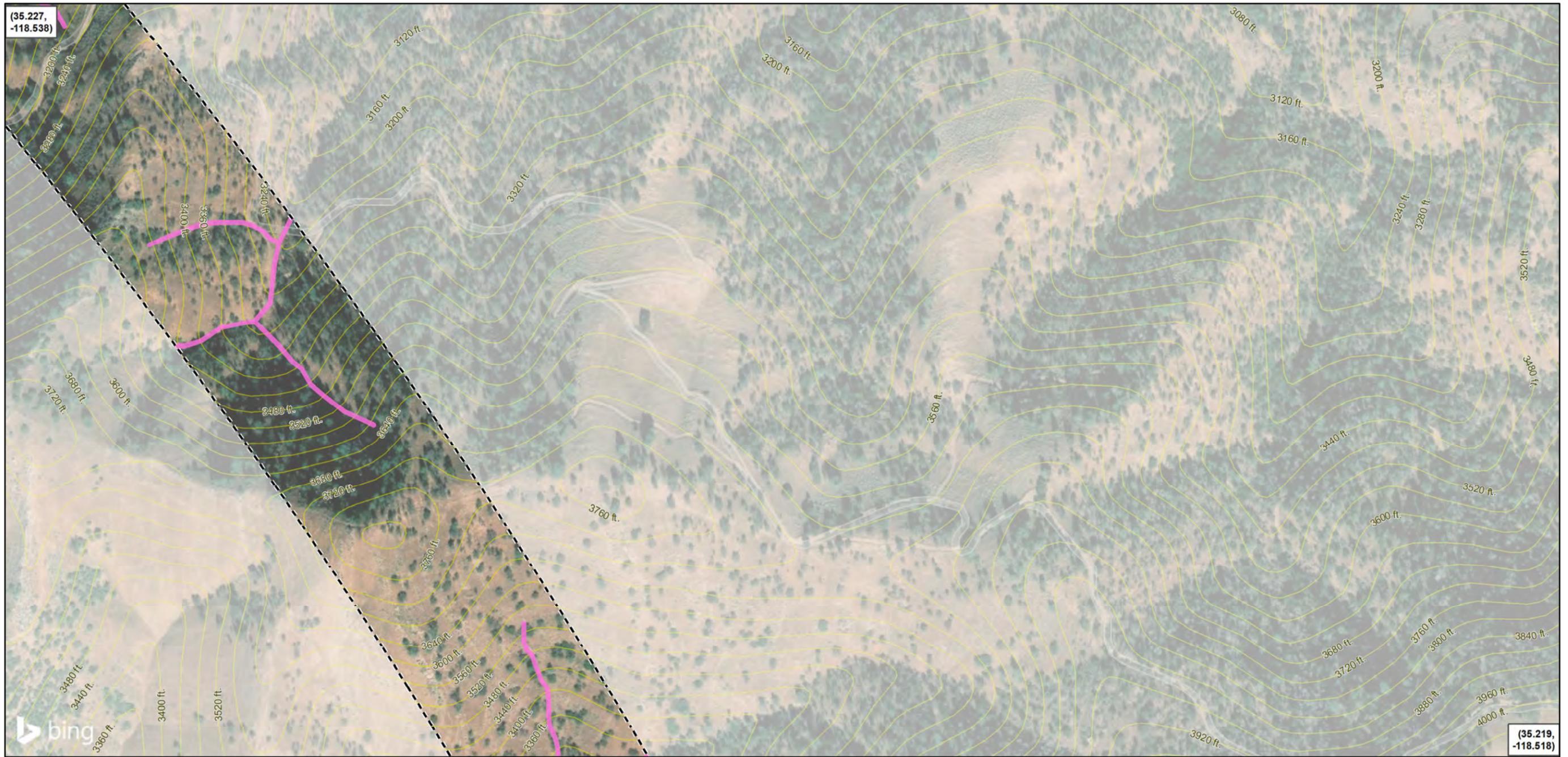
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



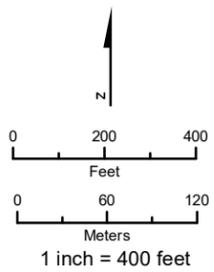
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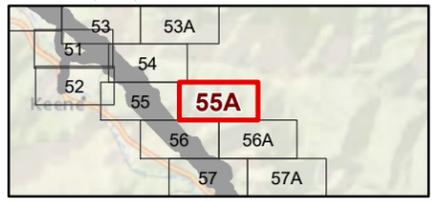
Potential Additional Section 1600 Aquatic Resources



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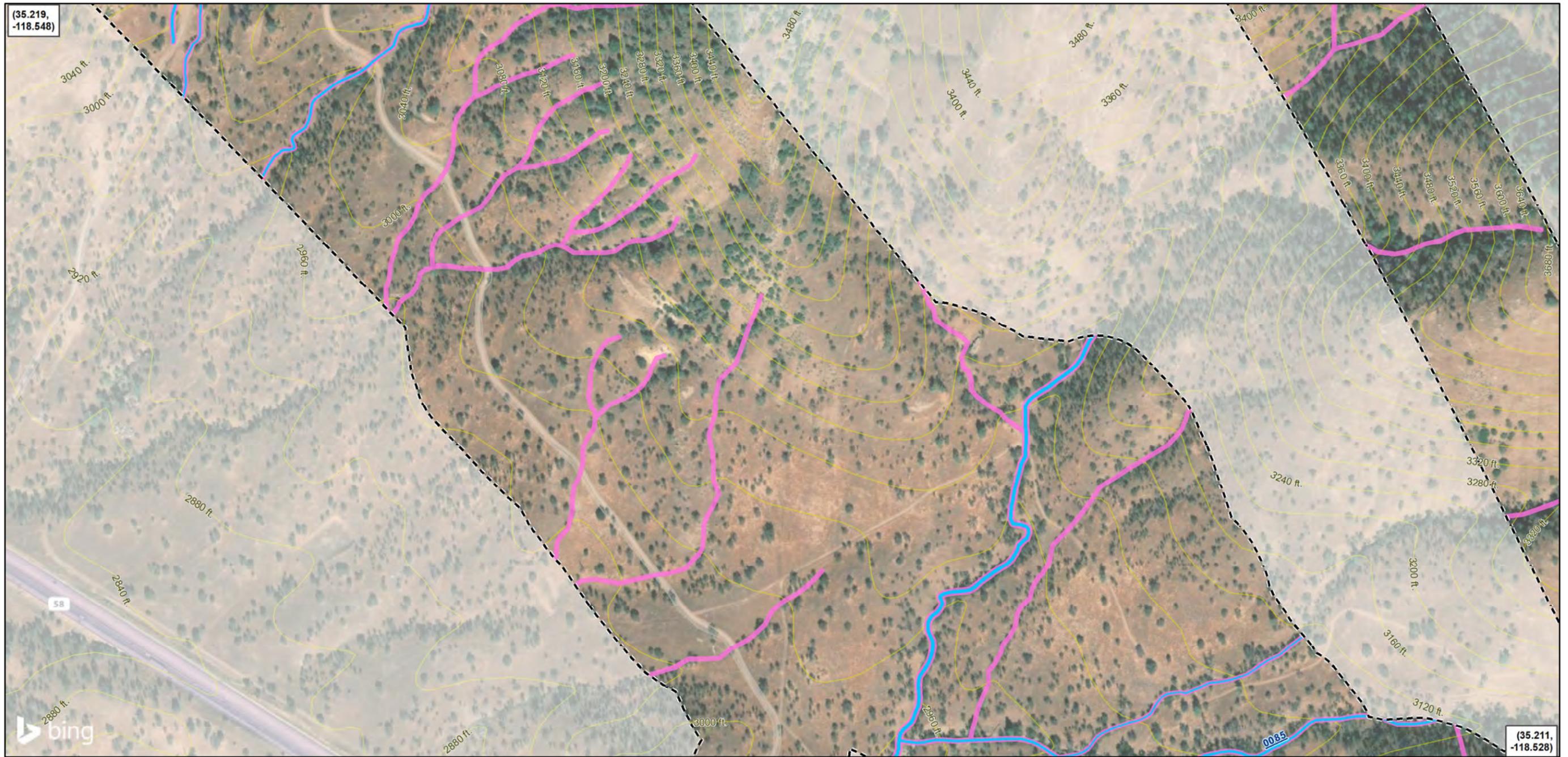
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Streambed
- Additional Mapped Areas Based on CDFW Methodology***
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Coordinate System: NAD 1983 California State Plane V
 Projection: Lambert Conic Conformal
 Datum: North American 1983
 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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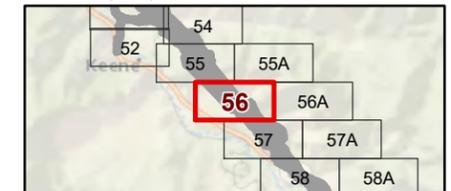
Legend

- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed
- Additional Mapped Areas Based on CDFW Methodology* Streambed

**Additionally mapped areas may be obscured due to the small amount of change.*

Scale: 1 inch = 400 feet

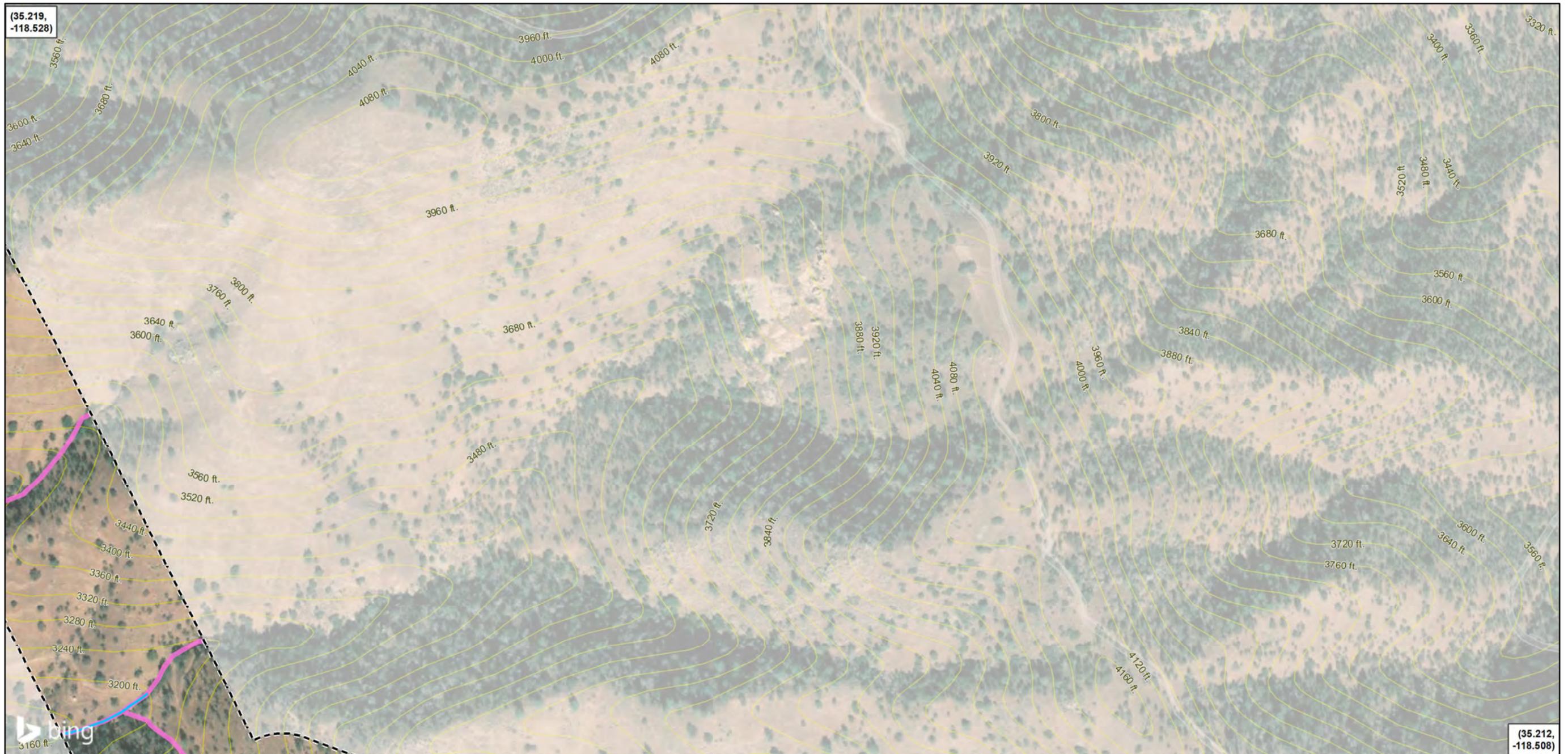
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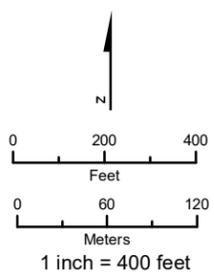
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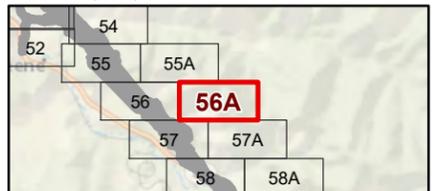
Potential Additional Section 1600 Aquatic Resources



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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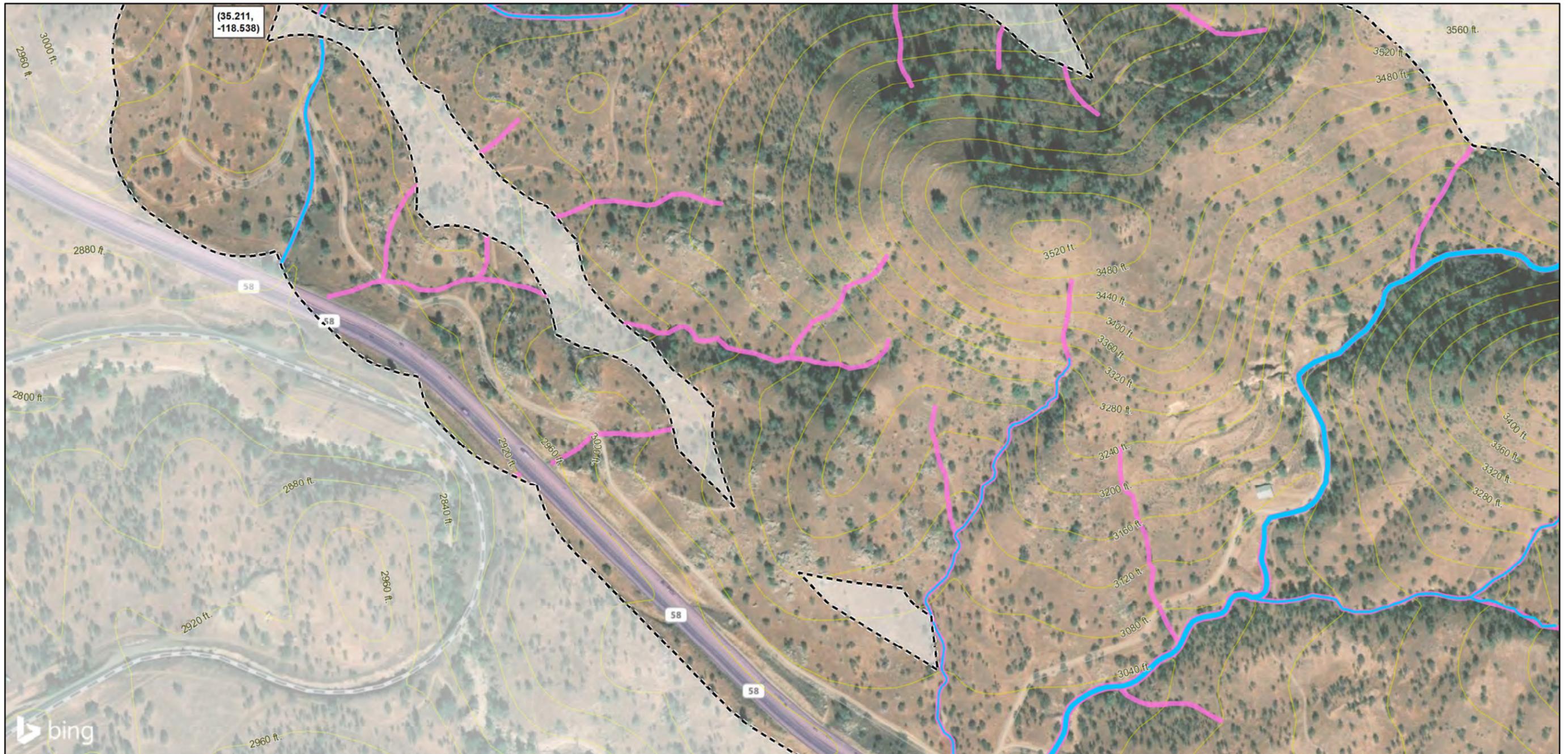
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
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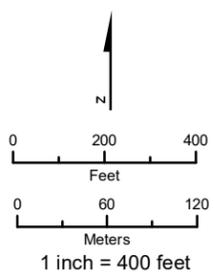
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 Vertical Datum: NAVD88, U.S. Feet



Potential Additional Section 1600 Aquatic Resources

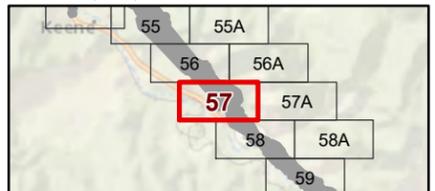


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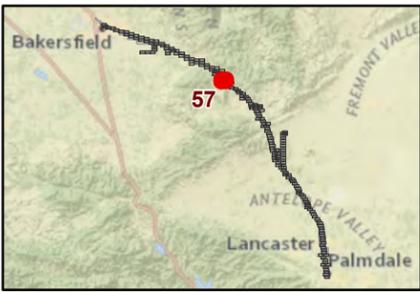


- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources Streambed

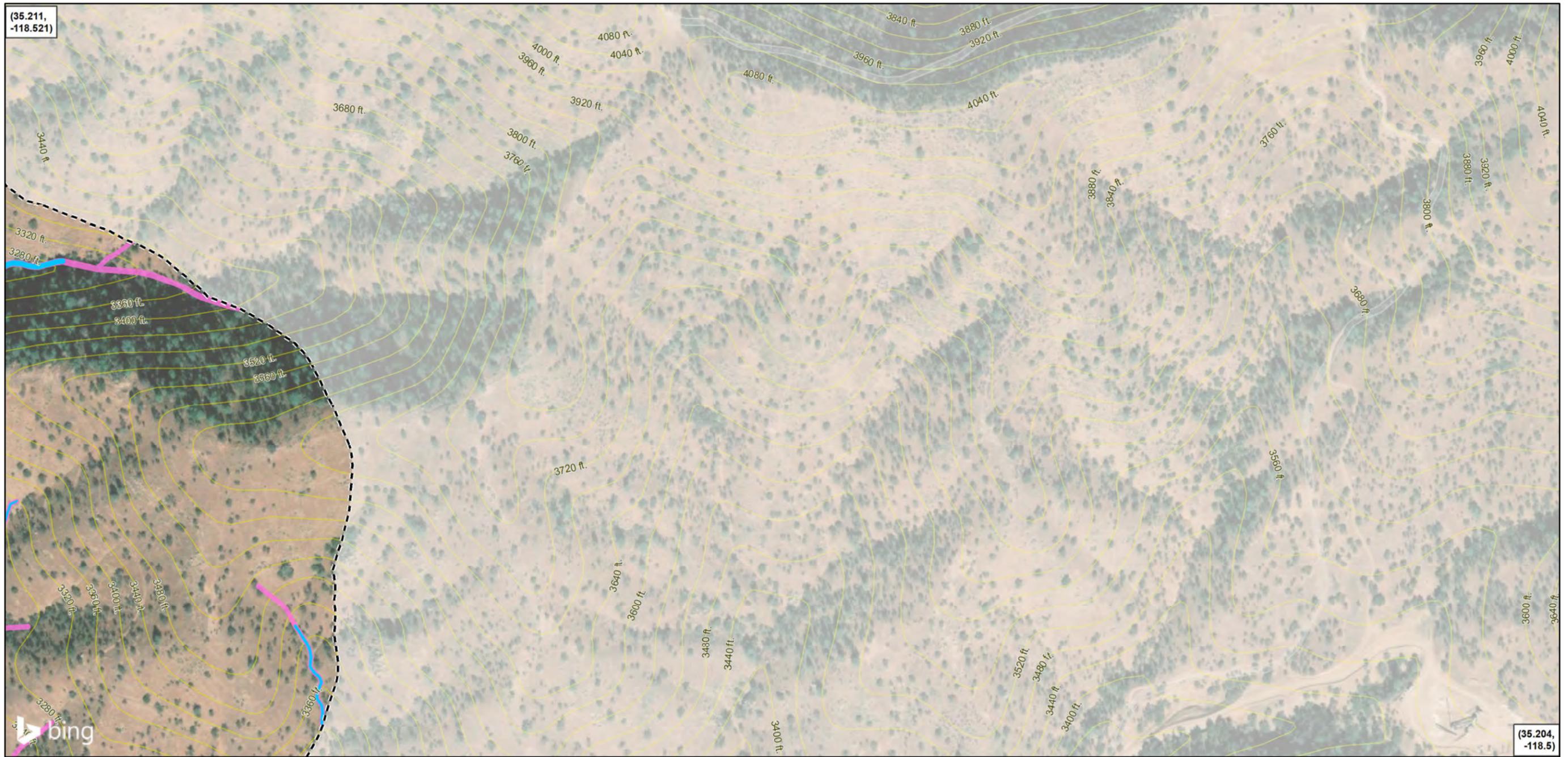
- Additional Mapped Areas Based on CDFW Methodology*
 *Additionally mapped areas may be obscured due to the small amount of change.
- Streambed



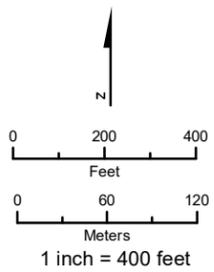
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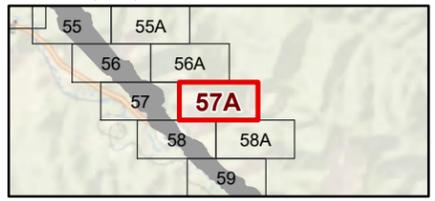
Potential Additional Section 1600 Aquatic Resources



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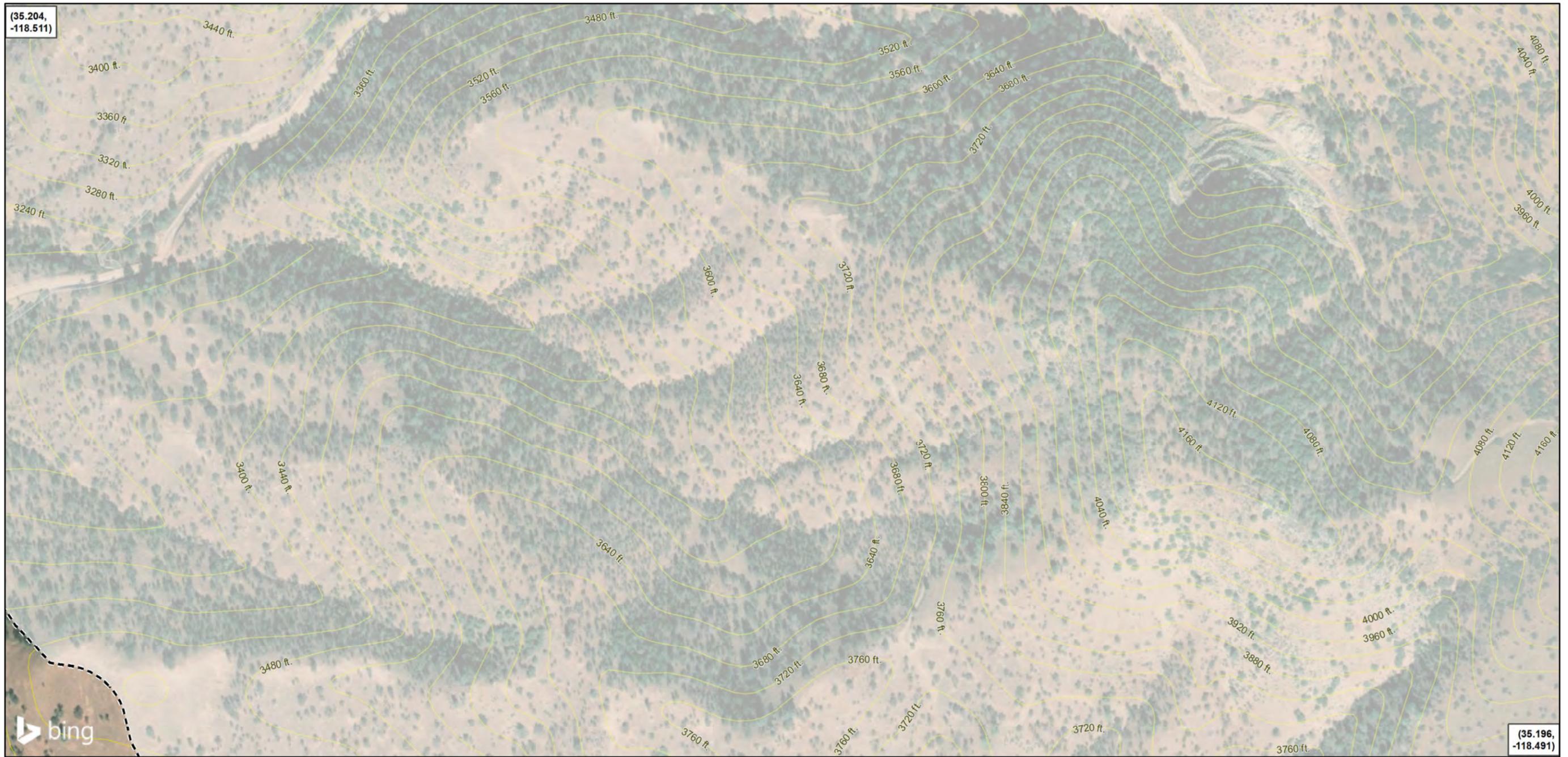
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Streambed
 - Elevation Contour
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- Authority Mapped 1600 Resources**
- Additional Mapped Areas Based on CDFW Methodology***
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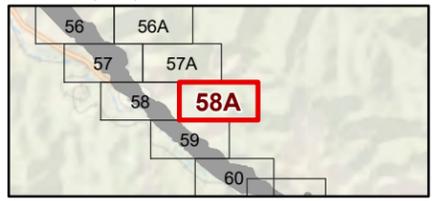
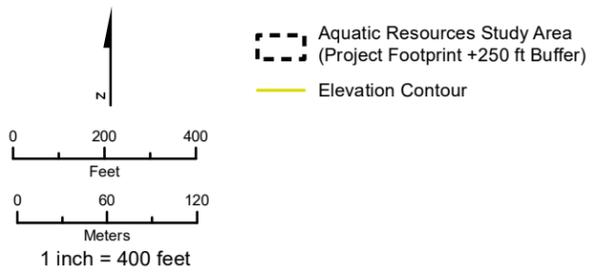
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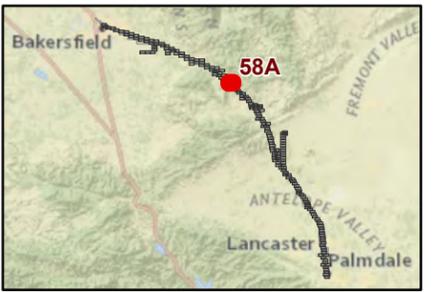
Potential Additional Section 1600 Aquatic Resources



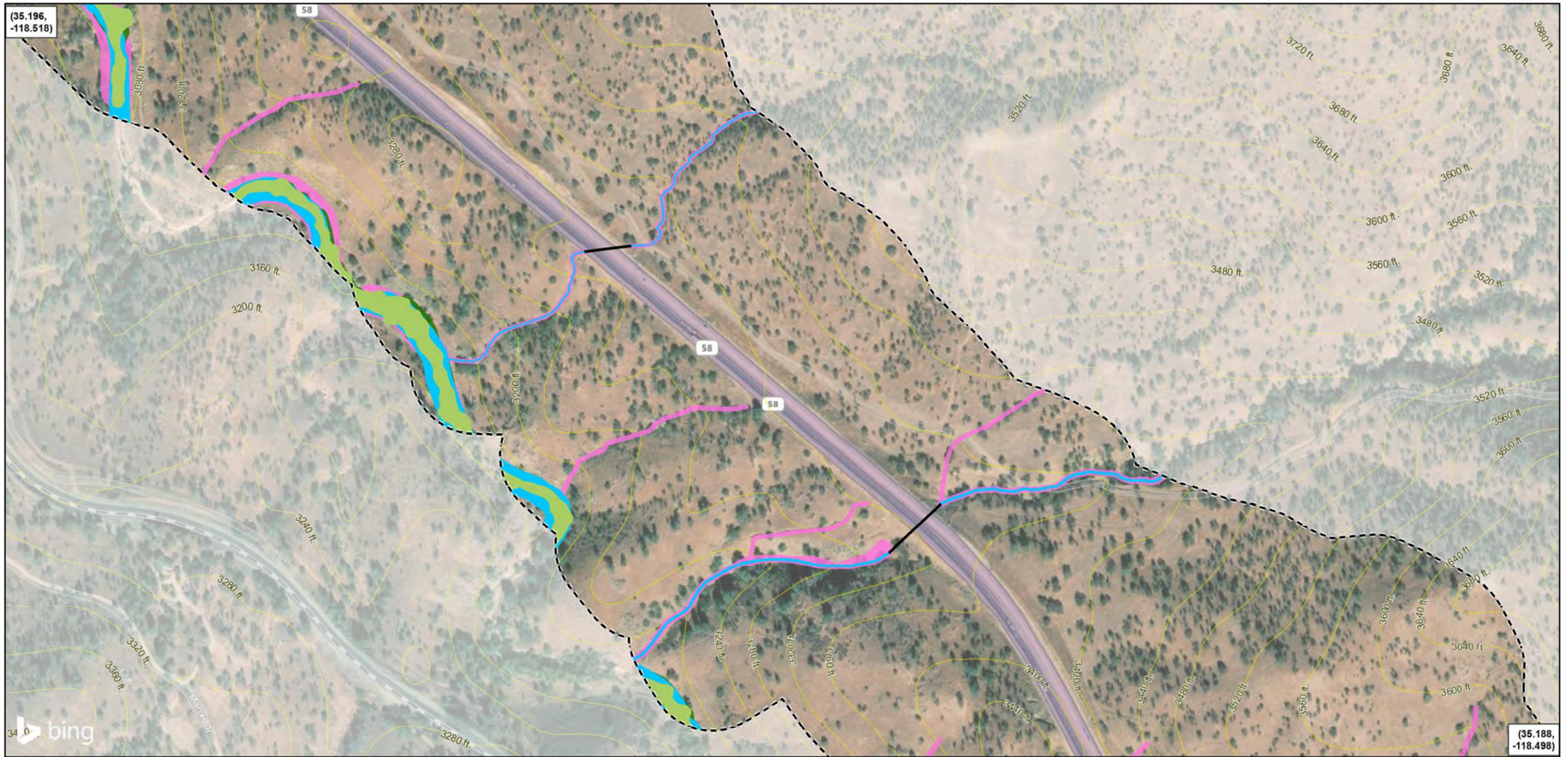
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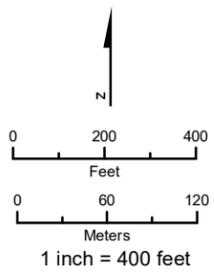
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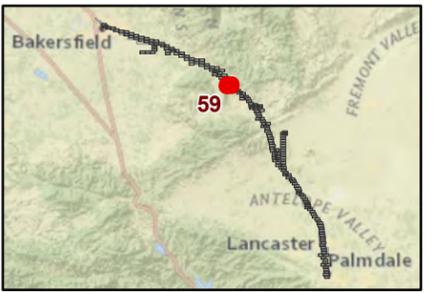
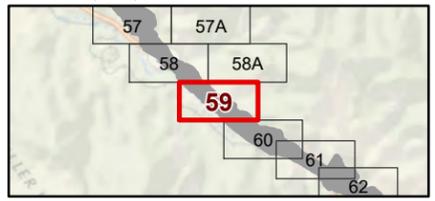
Potential Additional Section 1600 Aquatic Resources



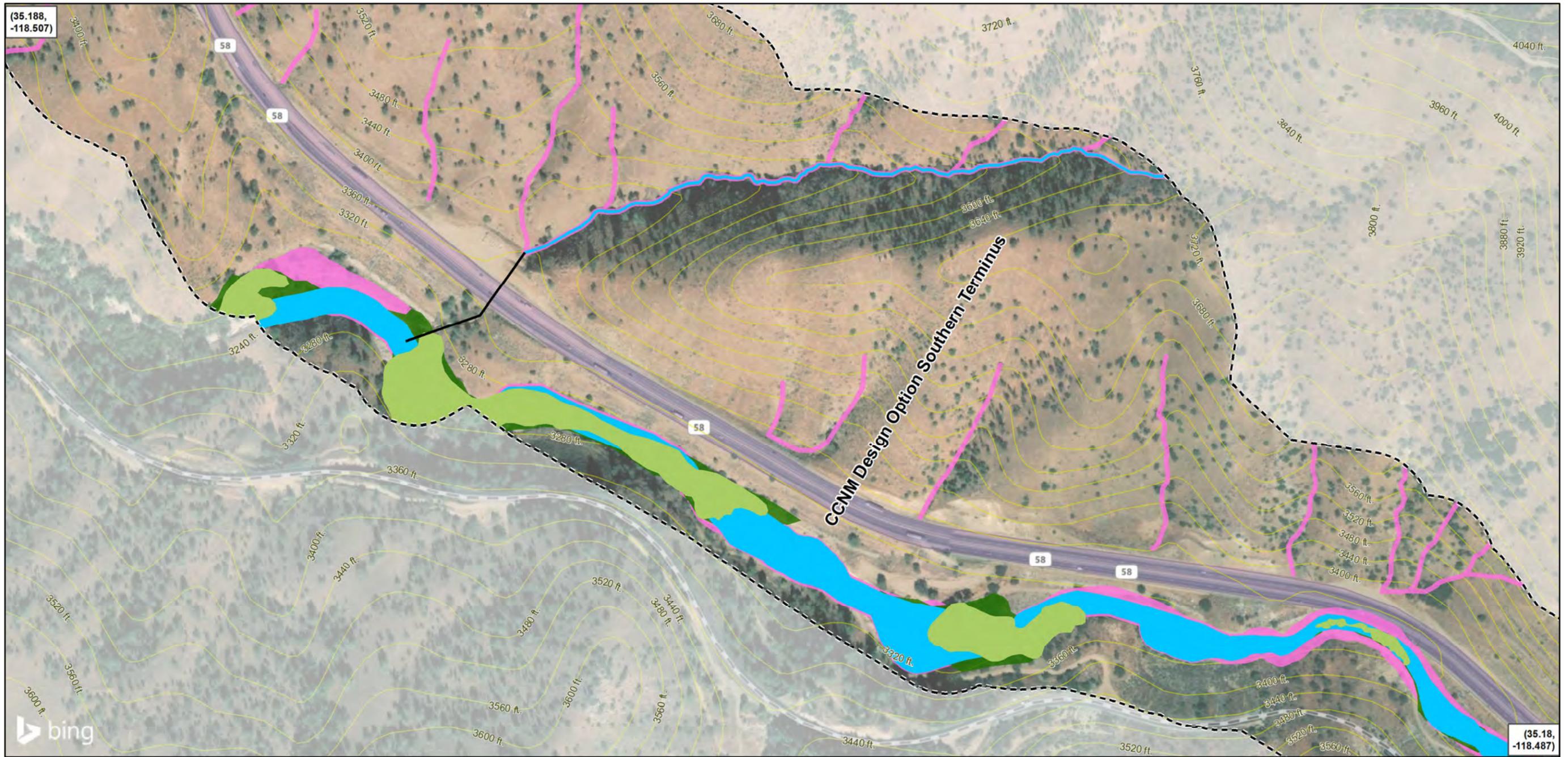
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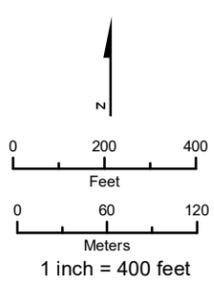
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources - Streambed
 - Authority Mapped 1600 Resources - Riparian
 - Additional Mapped Areas Based on CDFW Methodology* - Streambed
 - Additional Mapped Areas Based on CDFW Methodology* - Riparian
- *Additionally mapped areas may be obscured due to the small amount of change.*



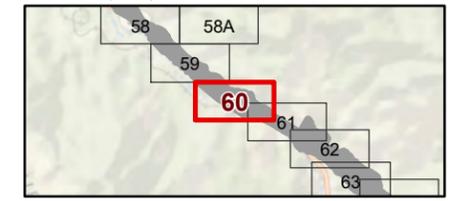
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PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
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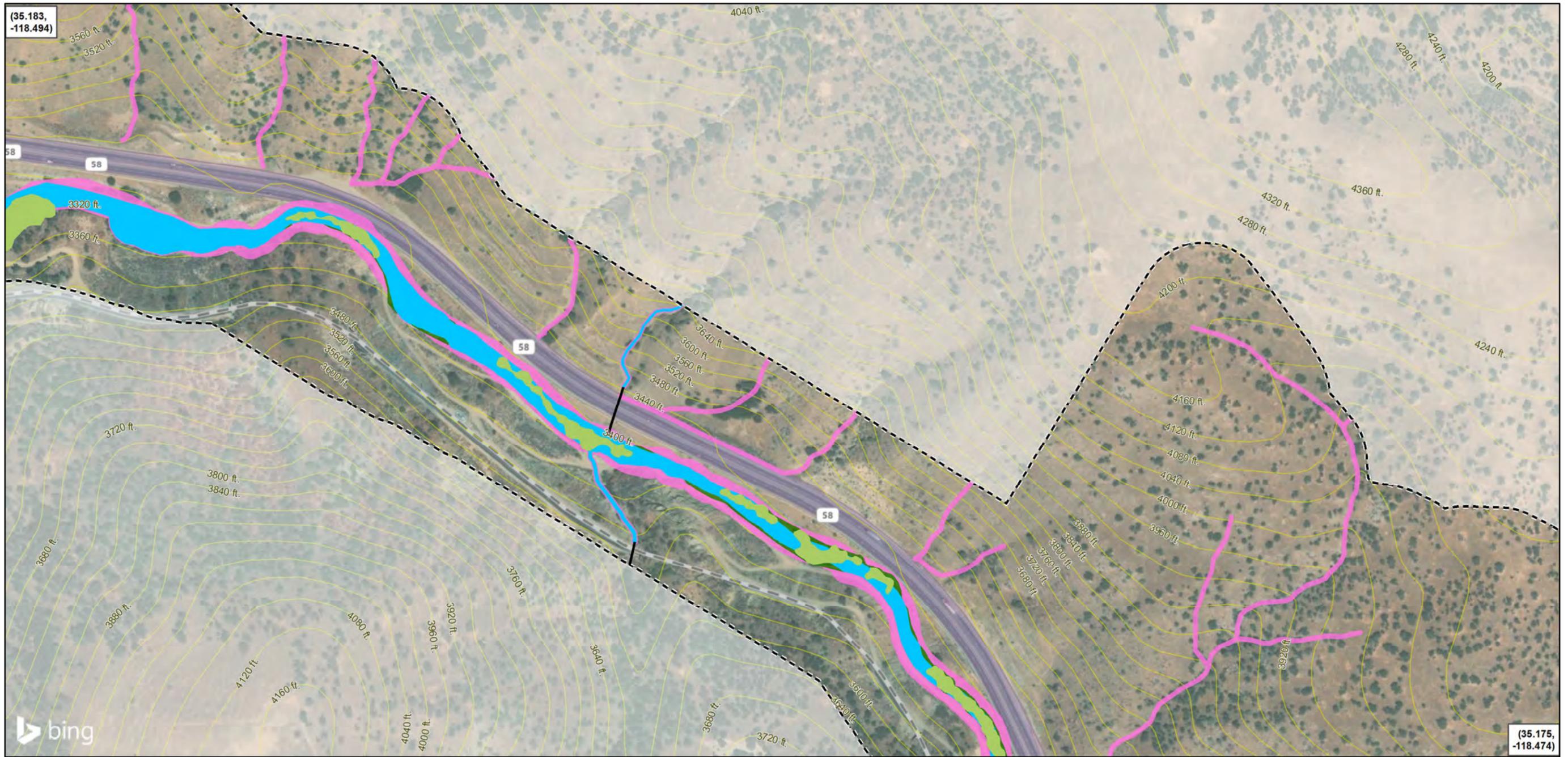
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 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Authority Mapped 1600 Resources Riparian
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Riparian
- *Additionally mapped areas may be obscured due to the small amount of change.



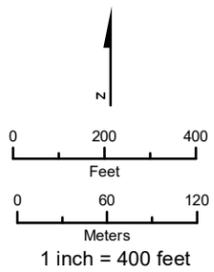
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 Datum: North American 1983
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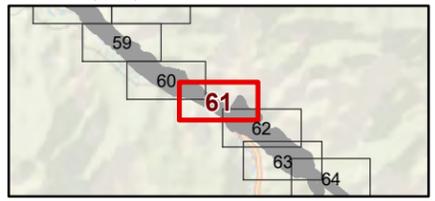
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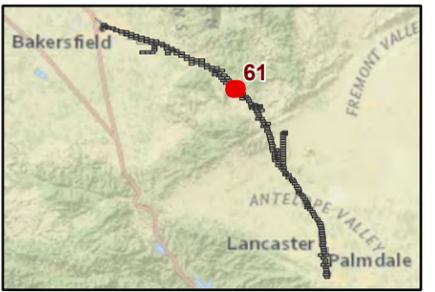
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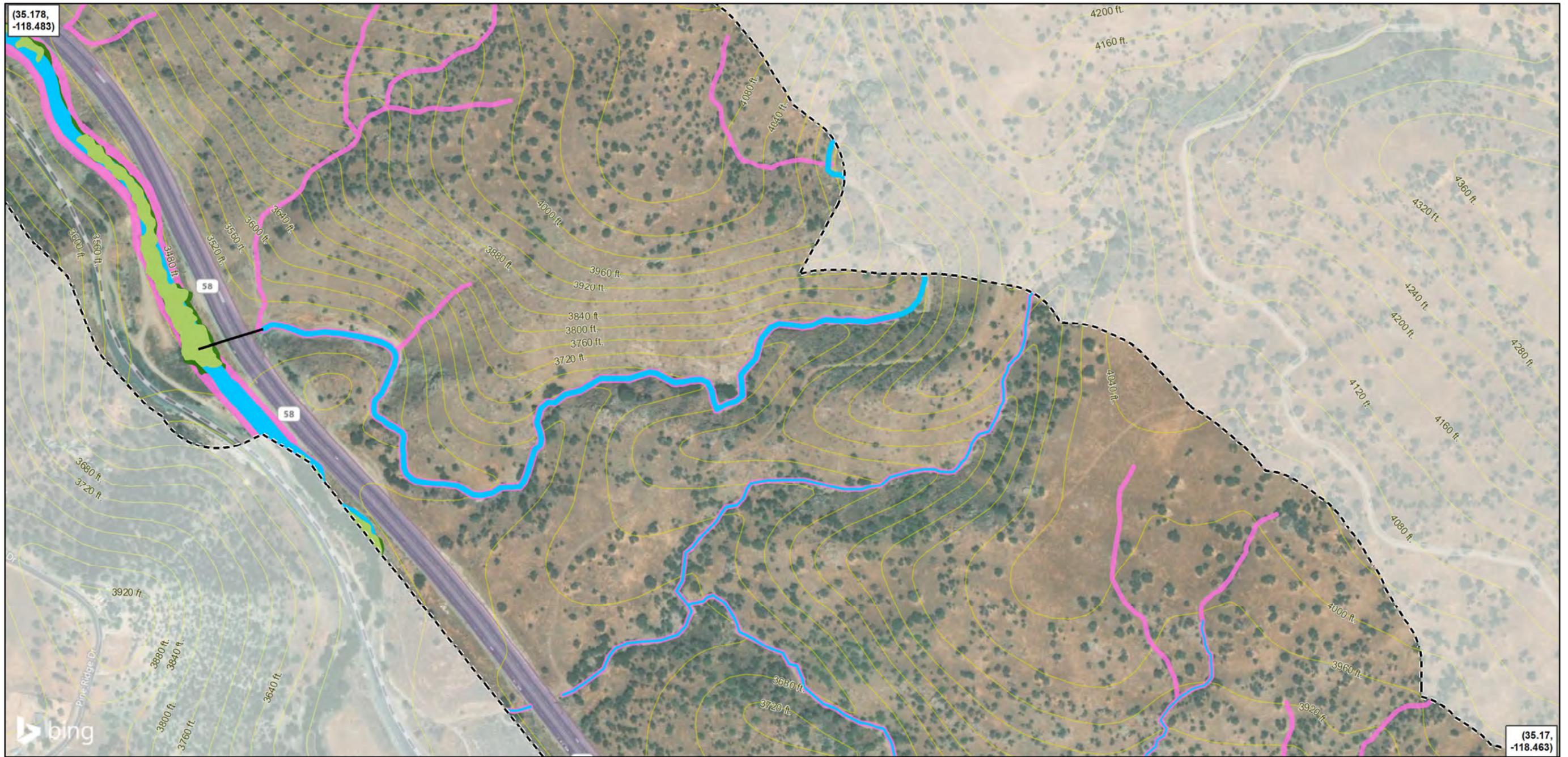
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed
- Riparian
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Streambed
- Riparian



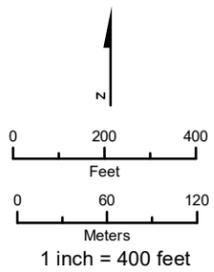
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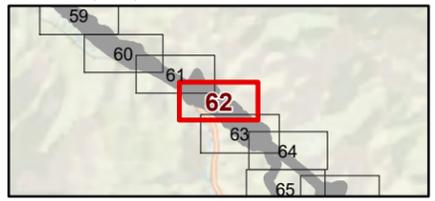
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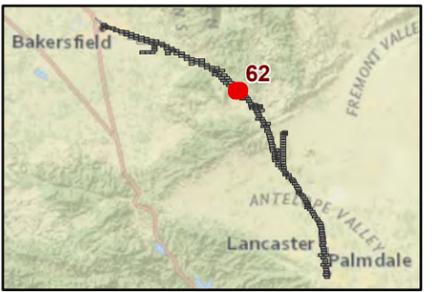
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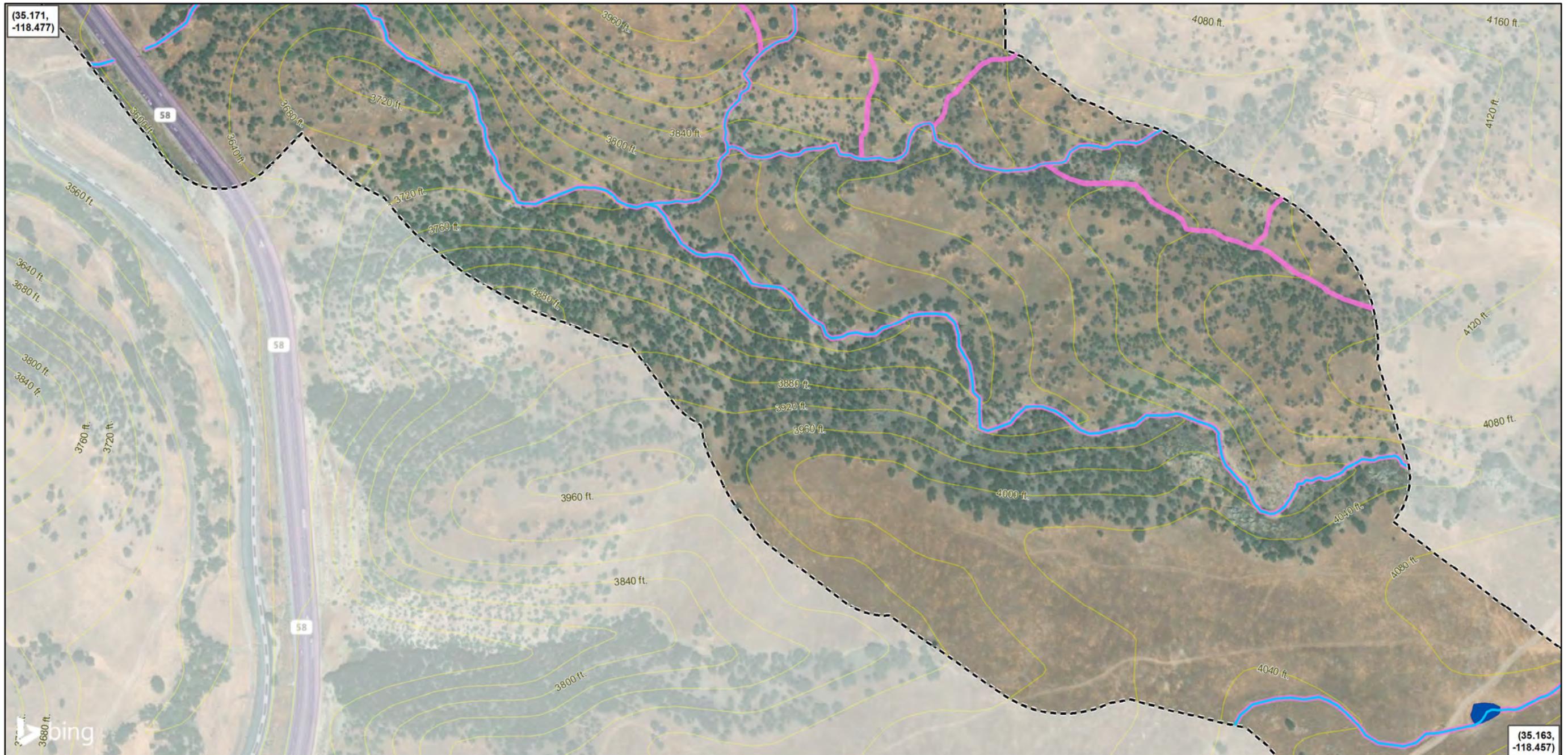
- | | | |
|---|--|--|
| Aquatic Resources Study Area (Project Footprint +250 ft Buffer) | Authority Mapped 1600 Resources | Additional Mapped Areas Based on CDFW Methodology* |
| Elevation Contour | Streambed | <i>*Additionally mapped areas may be obscured due to the small amount of change.</i> |
| | Riparian | Streambed |
| | | Riparian |



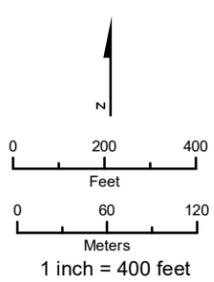
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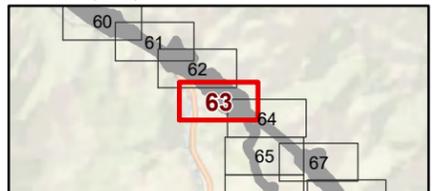
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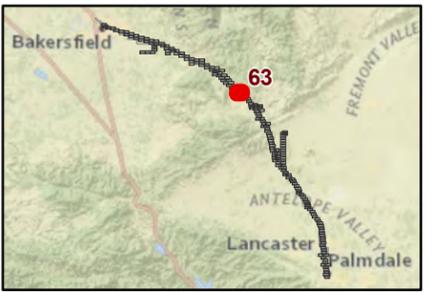
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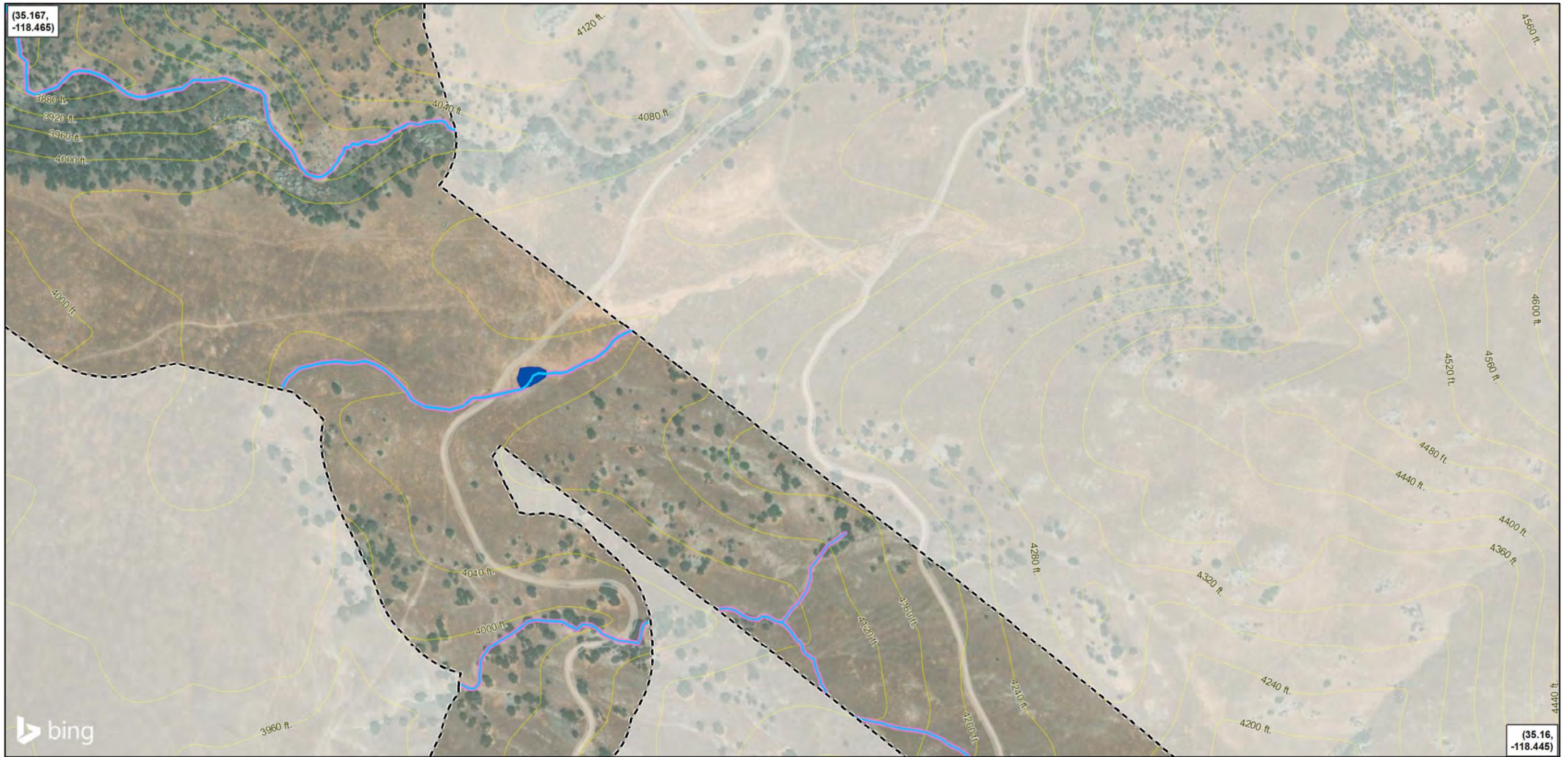
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Authority Mapped 1600 Resources Ponding
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Ponding
- *Additionally mapped areas may be obscured due to the small amount of change.*



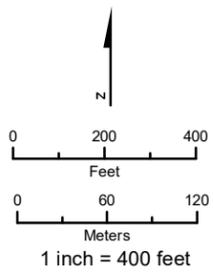
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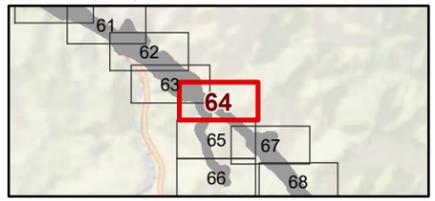
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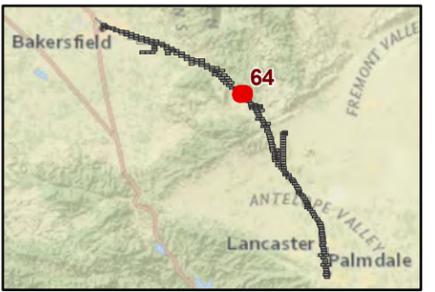
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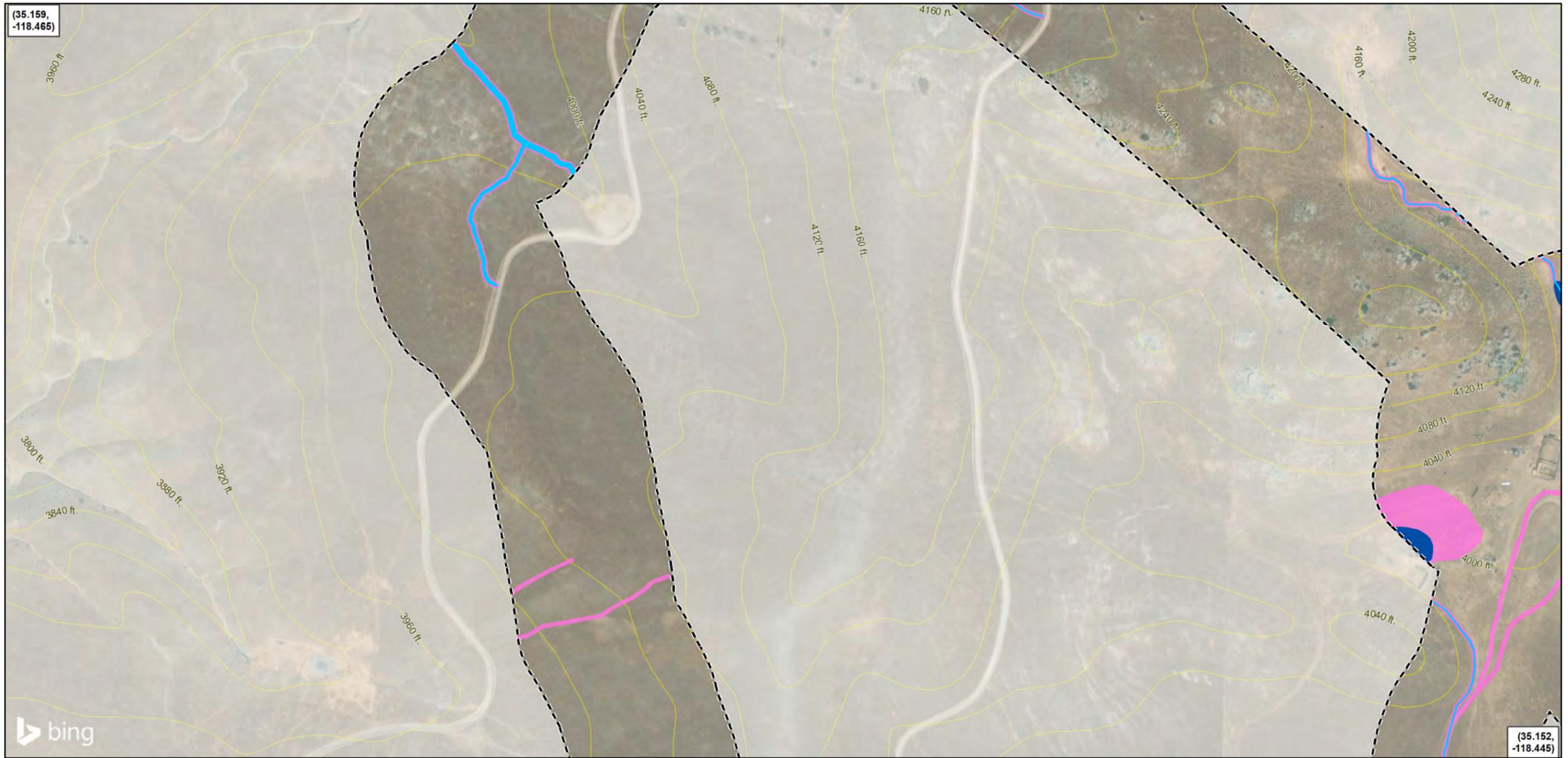
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- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



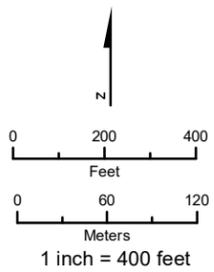
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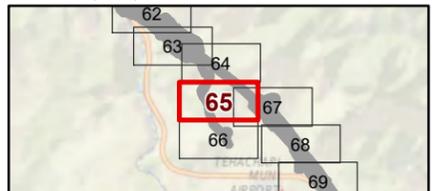
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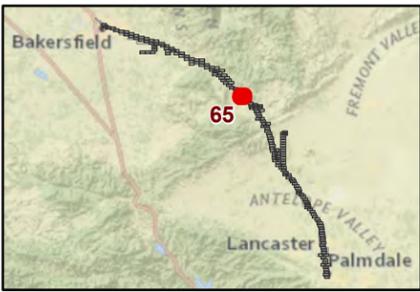
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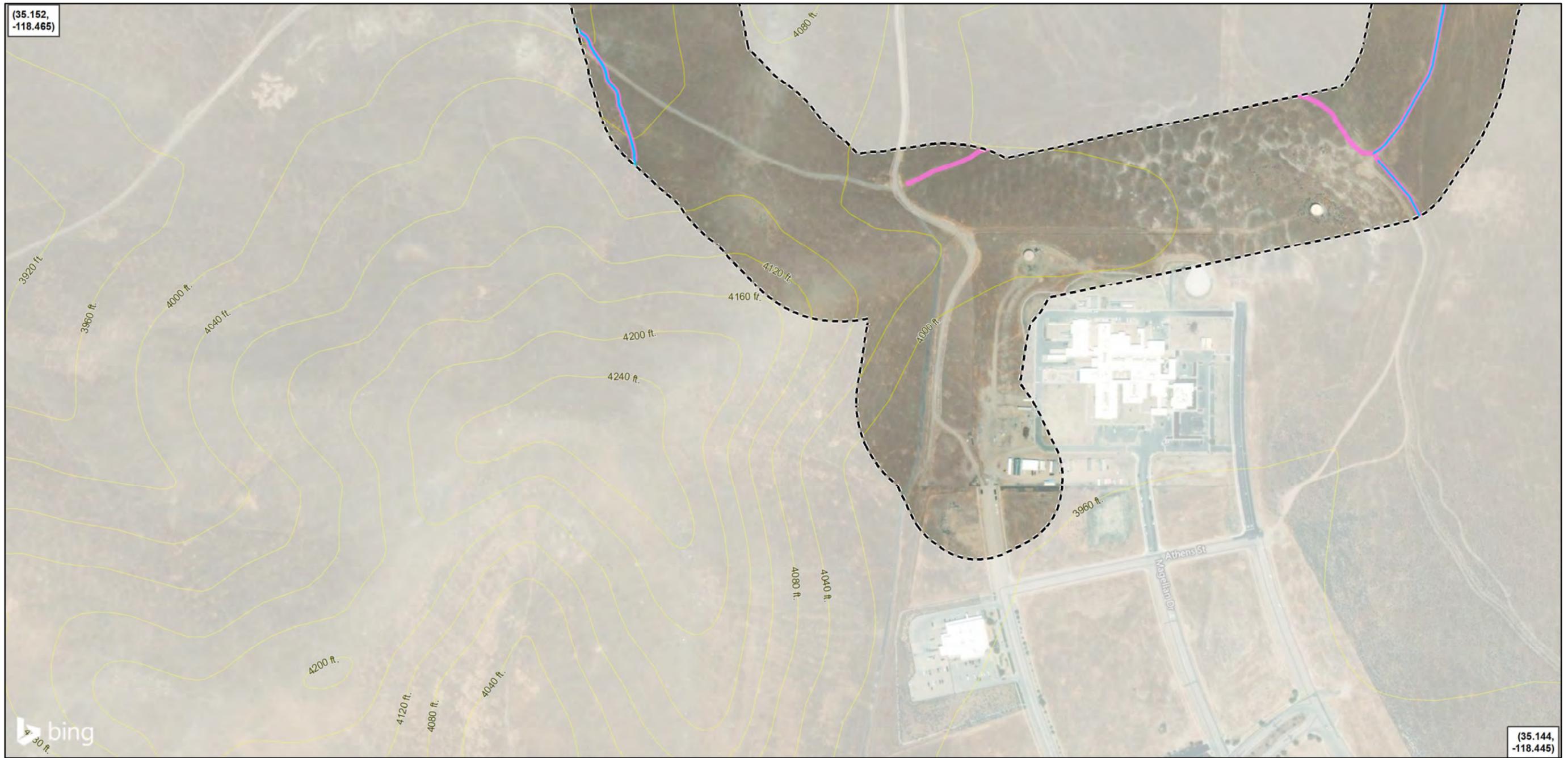
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- Elevation Contour
- Authority Mapped 1600 Resources**
- Ponding
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Ponding
- Streambed



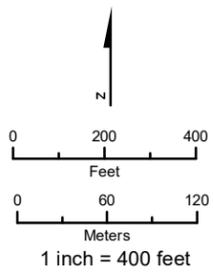
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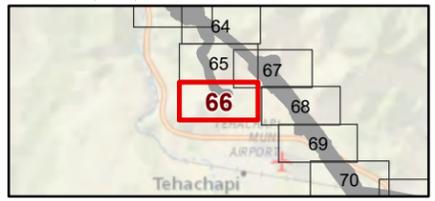
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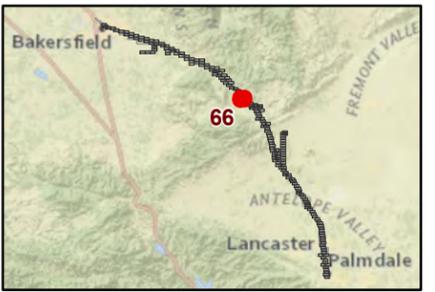
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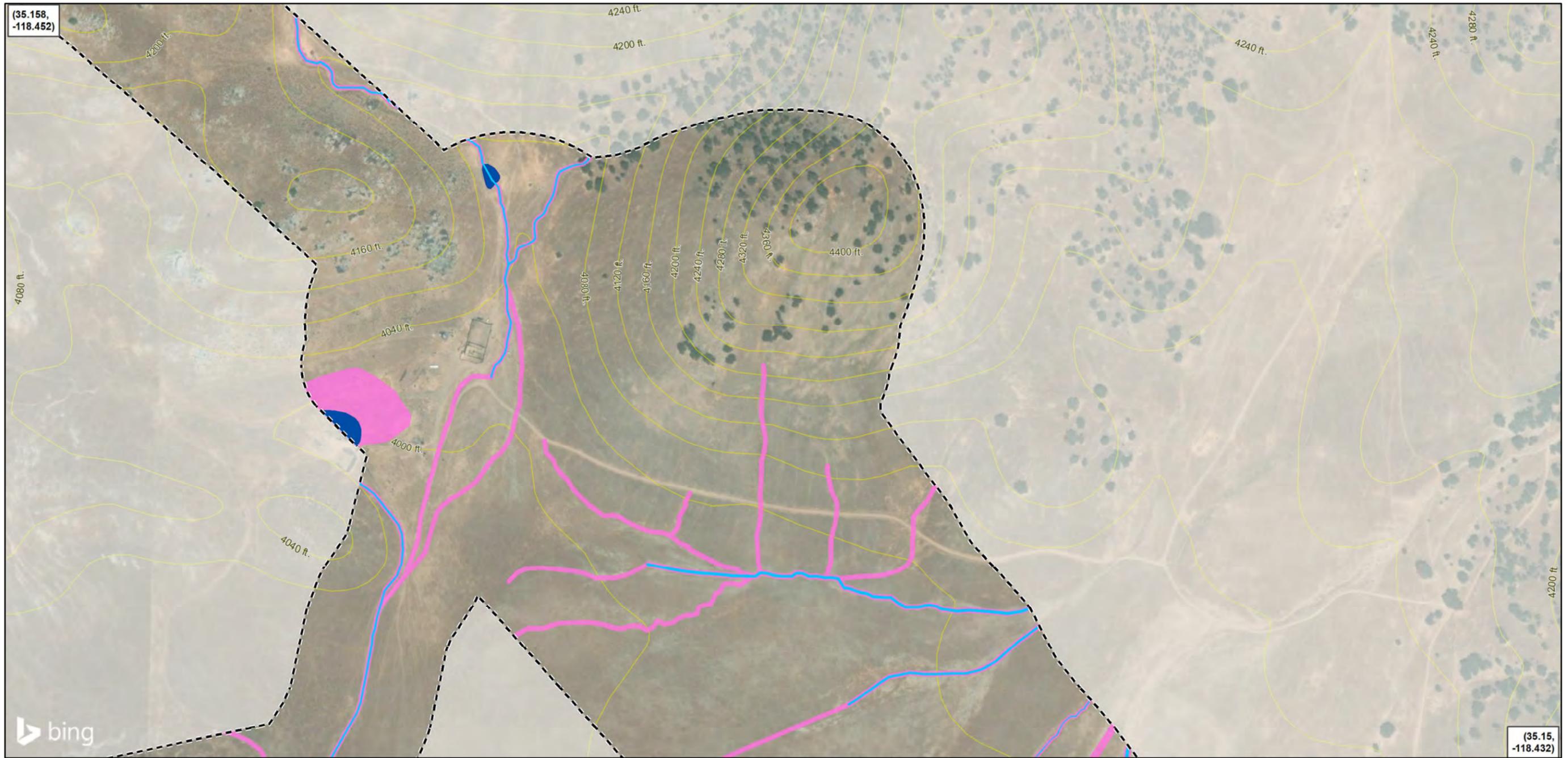
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Elevation Contour
 - Authority Mapped 1600 Resources Streambed
 - Additional Mapped Areas Based on CDFW Methodology* Streambed
- *Additionally mapped areas may be obscured due to the small amount of change.



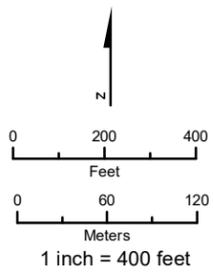
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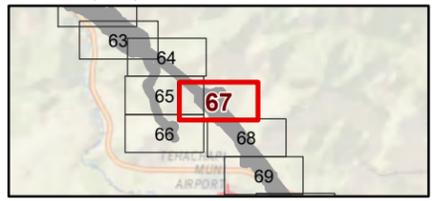
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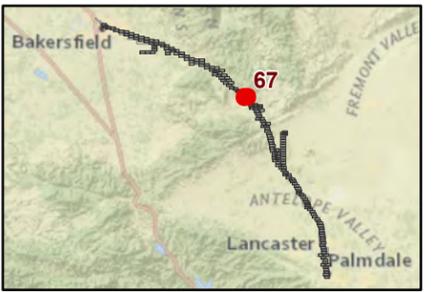
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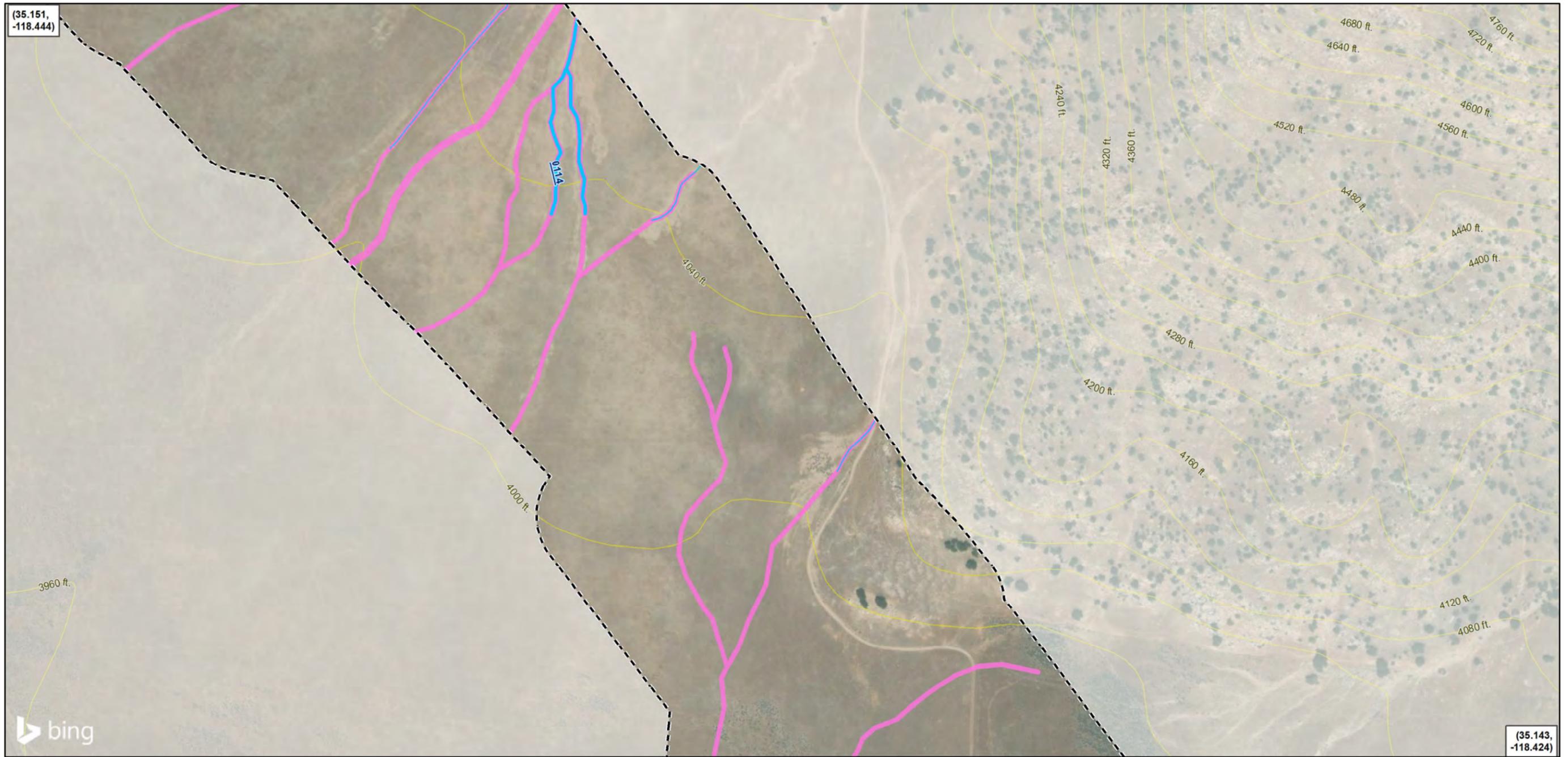
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 - Elevation Contour
 - Authority Mapped 1600 Resources - Ponding
 - Authority Mapped 1600 Resources - Streambed
 - Additional Mapped Areas Based on CDFW Methodology* - Ponding
 - Additional Mapped Areas Based on CDFW Methodology* - Streambed
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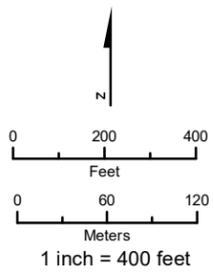
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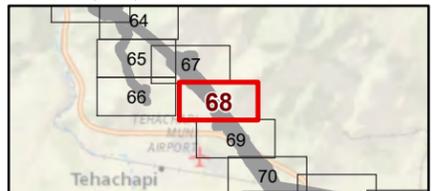
Potential Additional Section 1600 Aquatic Resources



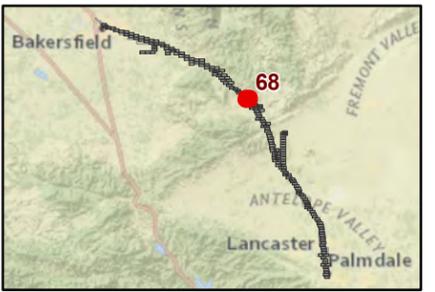
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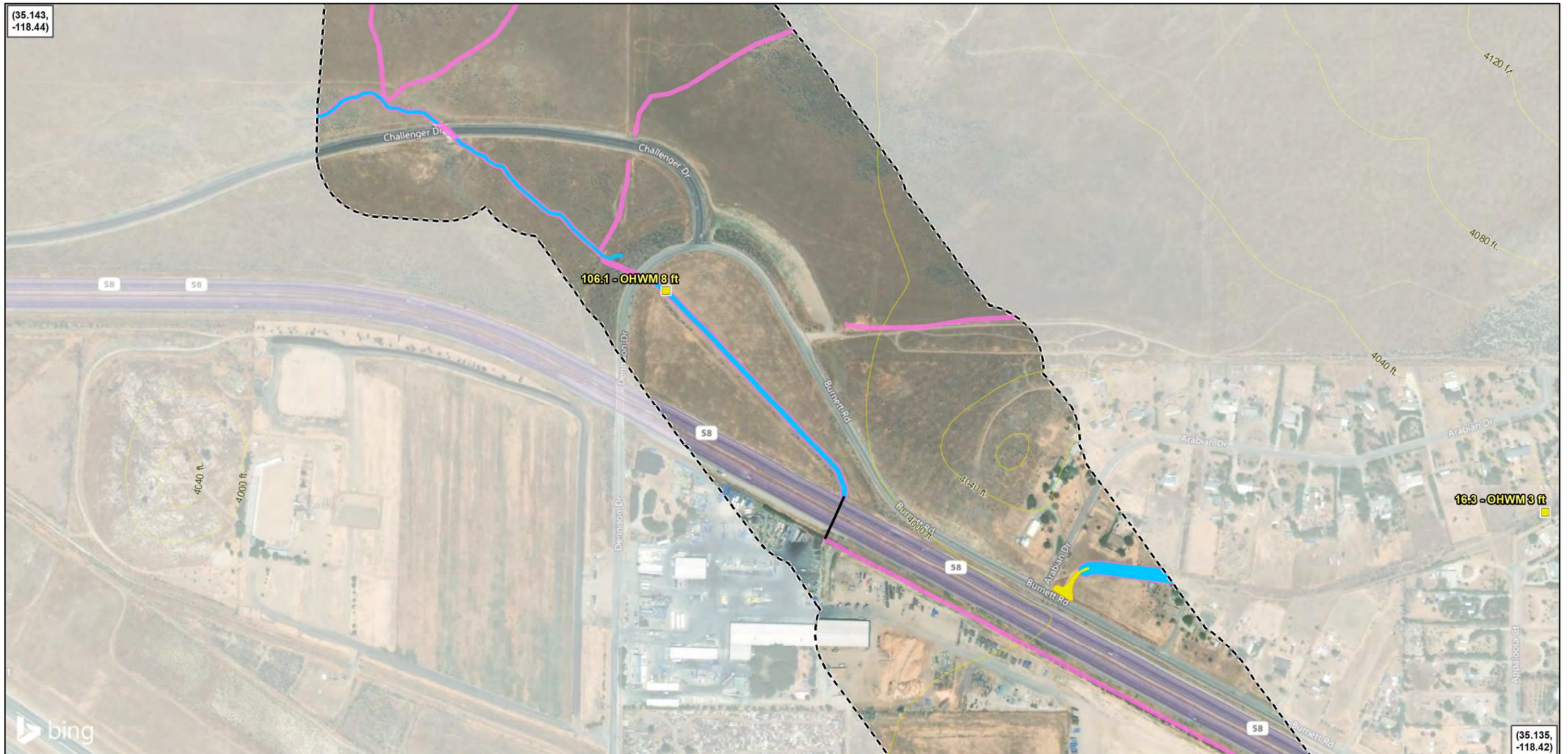
- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
- Elevation Contour
- Authority Mapped 1600 Resources**
- Streambed
- Additional Mapped Areas Based on CDFW Methodology***
- *Additionally mapped areas may be obscured due to the small amount of change.*
- Streambed



Coordinate System: NAD 1983 California State Plane V
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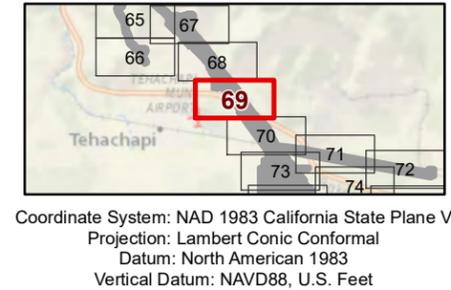


Potential Additional Section 1600 Aquatic Resources

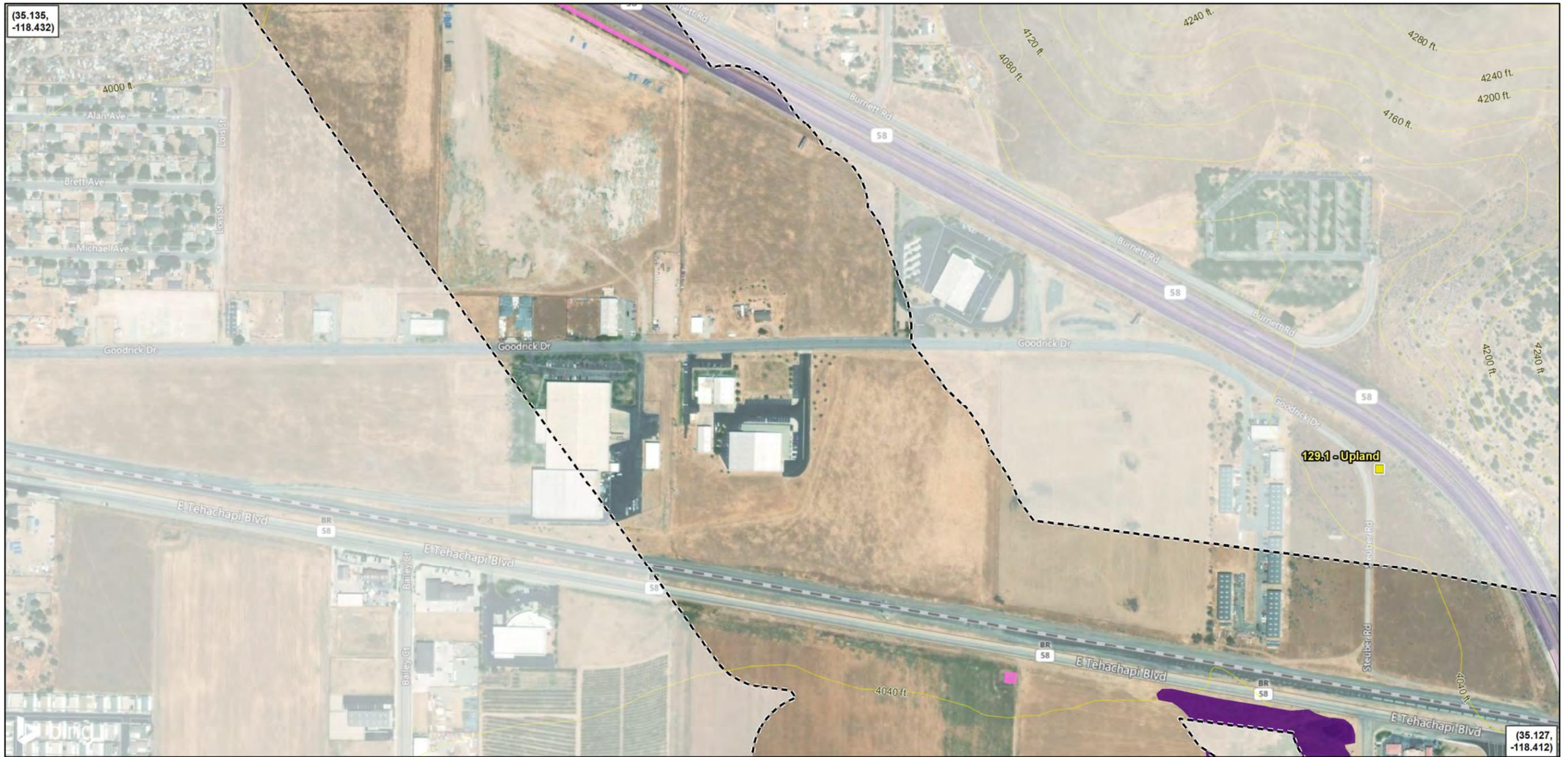


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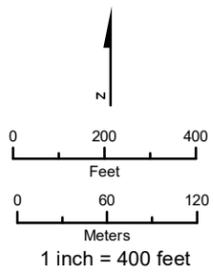
| | | | |
|--|---|---|--|
| | Aquatic Resources Study Area (Project Footprint +250 ft Buffer) | Authority Mapped 1600 Resources Streambed | Additional Mapped Areas Based on CDFW Methodology* <i>*Additionally mapped areas may be obscured due to the small amount of change.</i> Streambed Seasonal Wetland |
| | Wetland Determination Sample Point | Elevation Contour | |



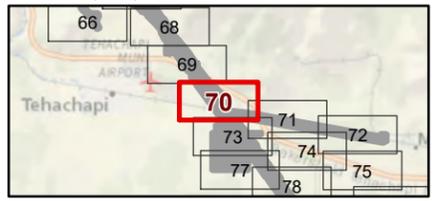
Potential Additional Section 1600 Aquatic Resources



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- Aquatic Resources Study Area (Project Footprint +250 ft Buffer)
 - Wetland Determination Sample Point
 - Elevation Contour
 - Ponding
 - Streambed
- Additional Mapped Areas Based on CDFW Methodology***
 *Additionally mapped areas may be obscured due to the small amount of change.



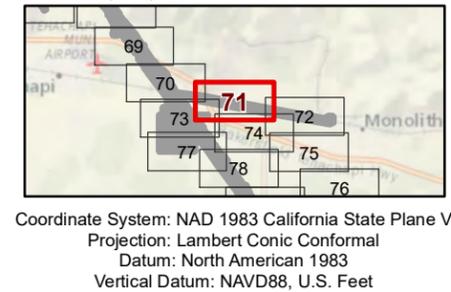
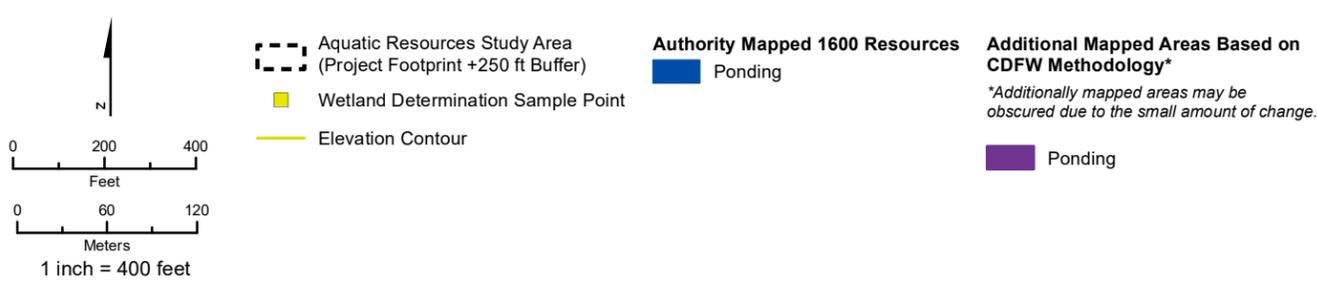
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Potential Additional Section 1600 Aquatic Resources



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Potential Additional Section 1600 Aquatic Resources