# APPENDIX A
# MAPS


# SR-74 Multi-Asset Project
# Project Location Map

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5
Date Printed: 4/17/2025

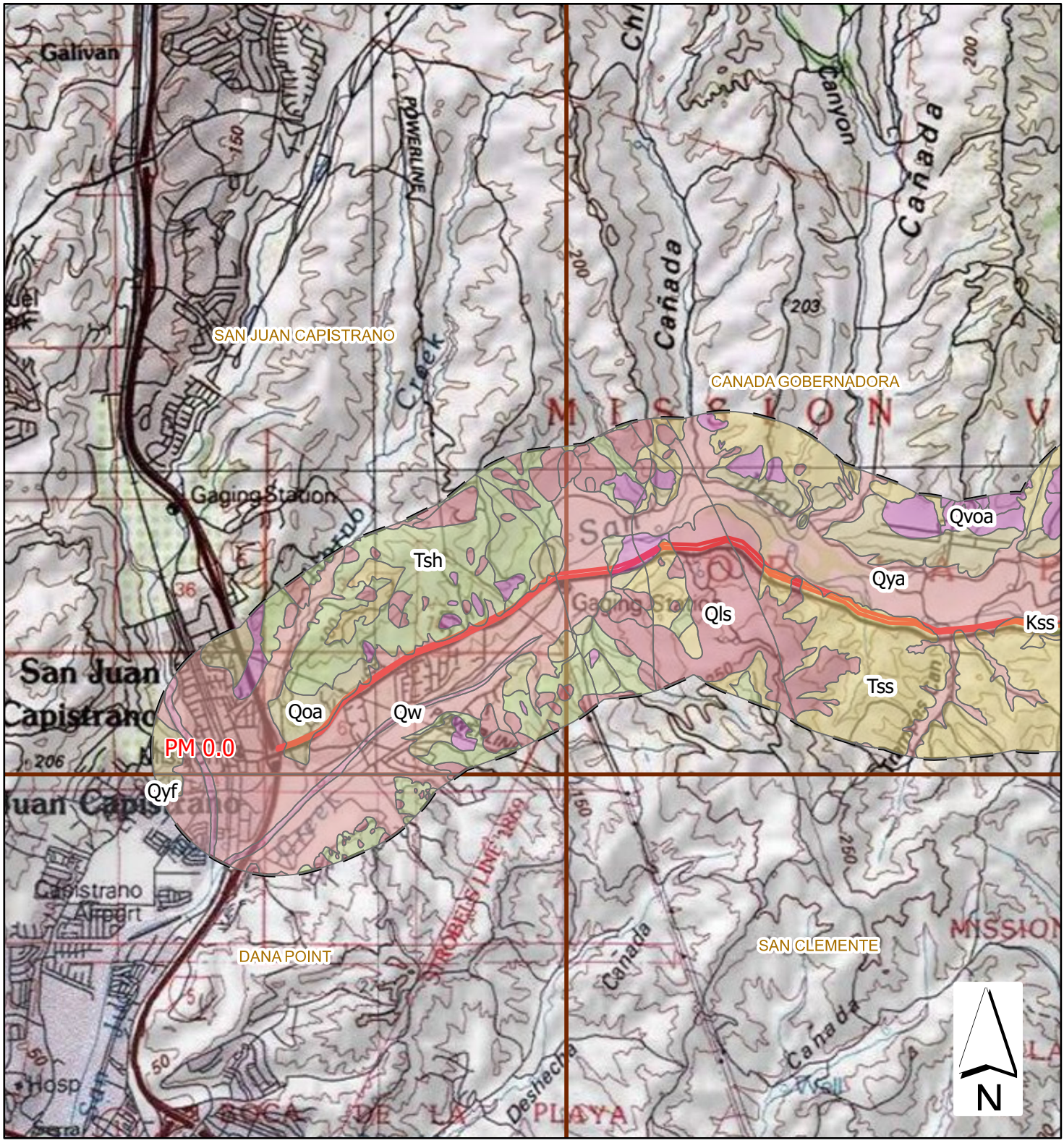
Caltrans

## Legend

Project Area
California 24k Quads

0 0.5 1 2 Miles
0 1,250 2,500 5,000 Meters

1:100,000




# SR-74 Multi-Asset Project
# Geology Map 1 of 2

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5

Caltrans

**Legend**

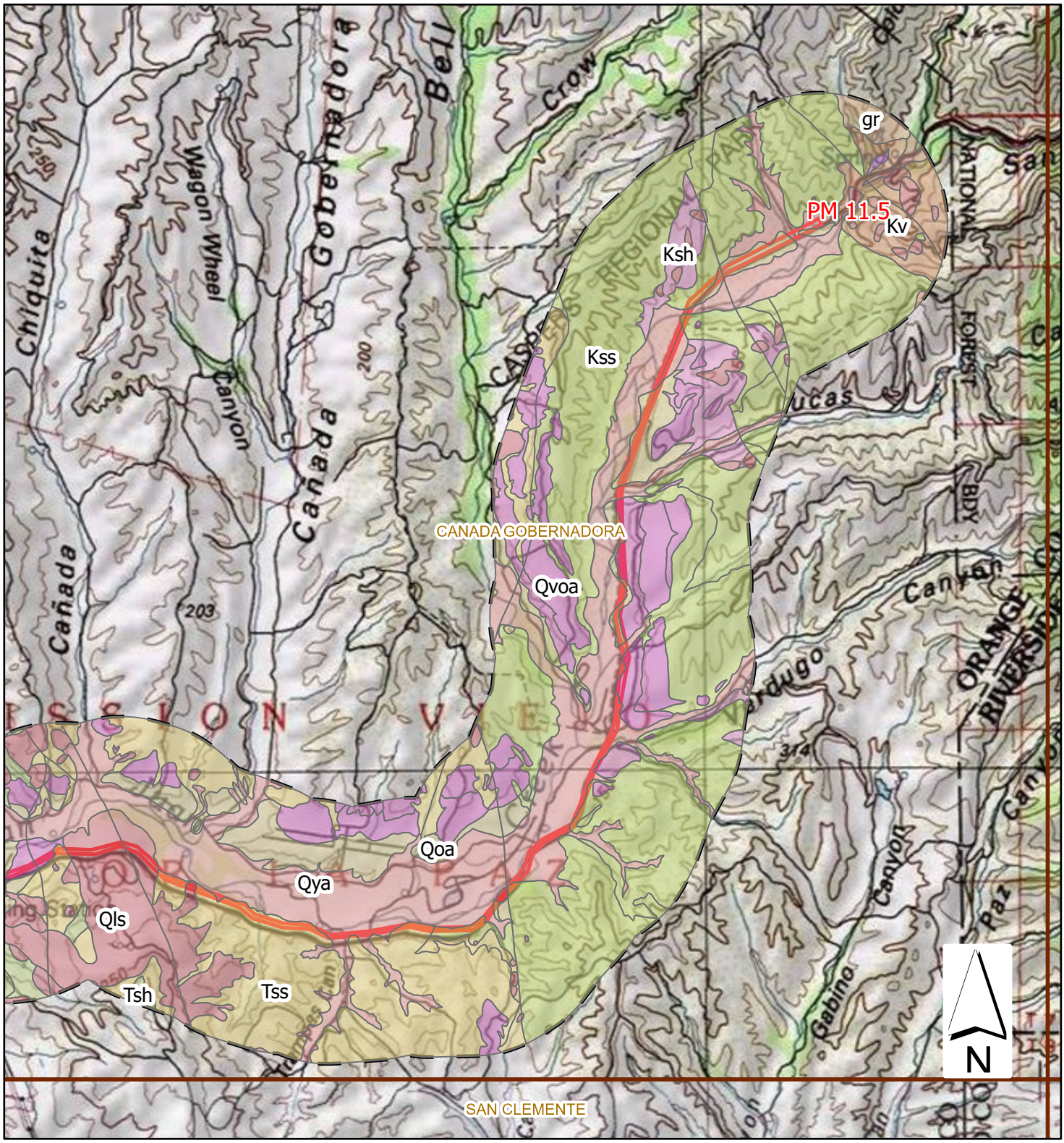
- Project Area
- California 24k Quads
- 1-Mile Buffer

0 0.5 1 2 Miles
0 0.75 1.5 3 Kilometers
1:70,000

**Geologic Units**

- Kss: Williams Formation, Pleasant Sandstone Member
- Qls: Landslide deposits
- Qoa: Old axial-channel deposits
- Qvoa: Very Old Alluvial Valley Deposits
- Qw: Very young wash deposits
- Qya: Young Alluvial Valley Deposits
- Qyf: Young Alluvial Fan Deposits
- Tsh: Capistrano Formation
- Tss: Santiago Formation

Date Printed: 4/17/2025 Created By: Judy Bernal




# SR-74 Multi-Asset Project
# Geology Map 2 of 2

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5

**Legend**

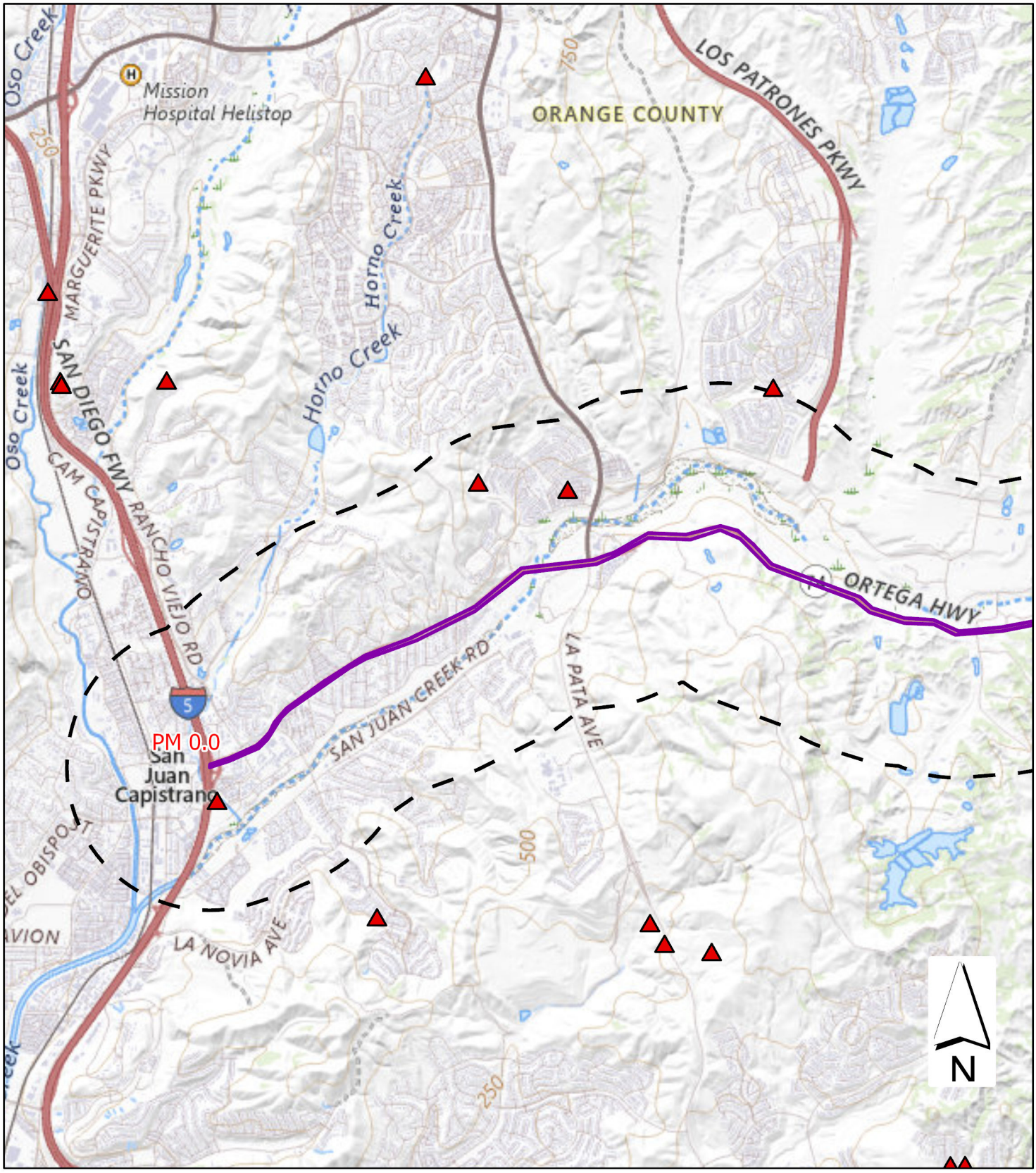
- Project Area
- 1-Mile Buffer
- California 24k Quads

**Geologic Units**

- Ksh: Williams Formation, Shultz Ranch Lower Siltstone
- Kss: Williams Formation, Pleasant Sandstone Member
- Kv: Santiago Peak Volcanics
- Qls: Landslide deposits
- Qoa: Old axial-channel deposits
- Qvoa: Very Old Alluvial Valley Deposits
- Qya: Young Alluvial Valley Deposits
- Tsh: Capistrano Formation
- Tss: San Onofre Breccia
- gr

0 0.5 1 2 Miles
0 0.75 1.5 3 Kilometers
1:70,000

Created By: Judy Bernal




**SR-74 Multi-Asset Project**
**Geology Map 1 of 2**

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5
Date Printed: 5/19/2025

**Legend**

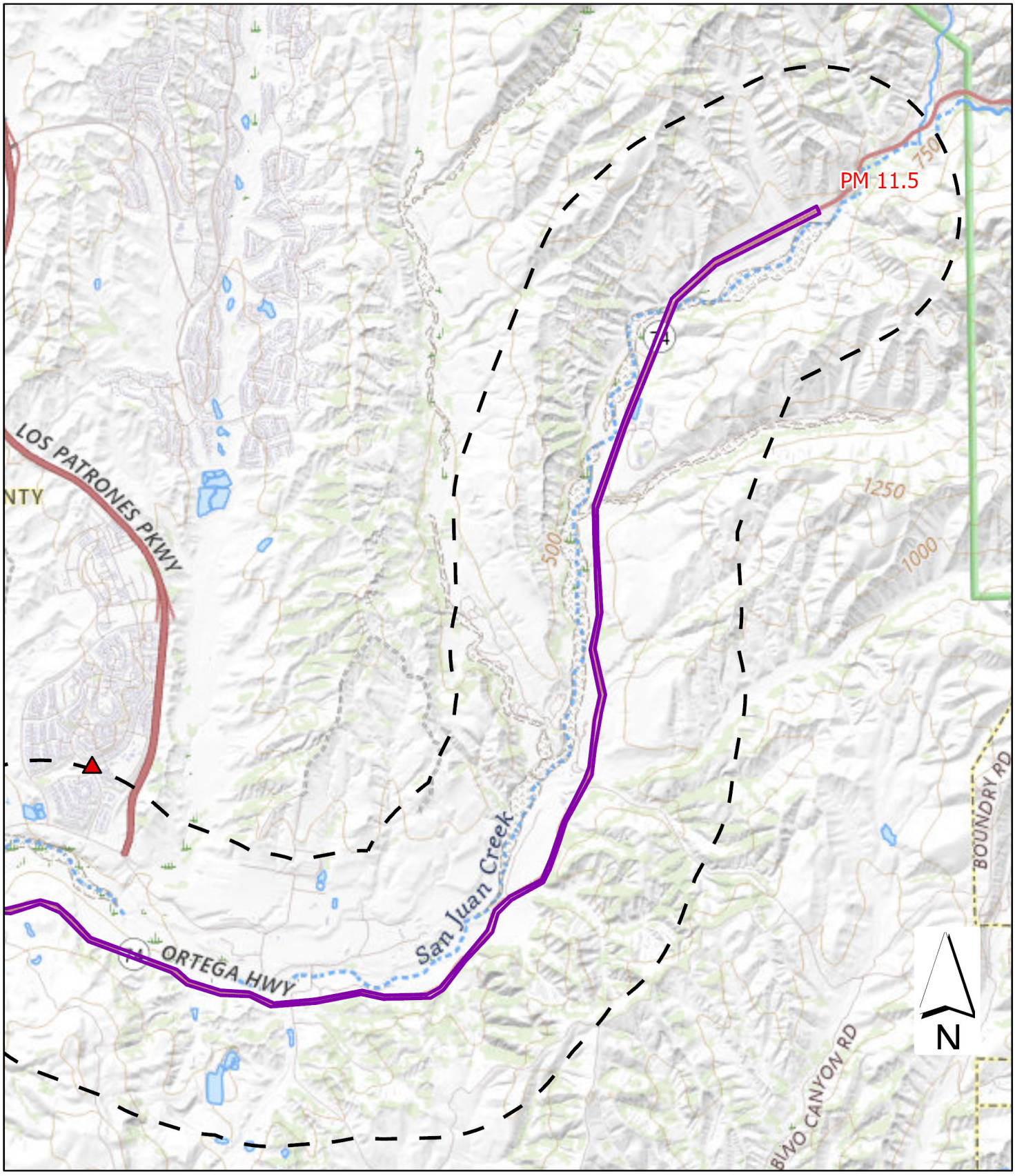
- Project Area
- 1-Mile Buffer
- Fossil Locality (OC Parks)

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

1:60,000

Caltrans

Created By: Judy Bernal




**SR-74 Multi-Asset Project**
**Geology Map 1 of 2**

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5
Date Printed: 5/19/2025

**Legend**

- Project Area
- 1-Mile Buffer
- Fossil Locality (OC Parks)

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers
1:60,000

Caltrans

# APPENDIX B
# PREPARER'S QUALIFICATIONS

# JUDY BERNAL, B.A.

## ASSOCIATE ENVIRONMENTAL PLANNER- PALEONTOLOGIST

### PROFILE

Ms. Bernal earned her bachelor's degree in archaeology/anthropology with a minor in geological sciences from California State University, Long Beach, in 2010. Ms. Bernal has over 10 years of experience in cultural resource management with 3 year of cumulative project experience in Paleontology. As a qualified archaeologist and paleontologist, she has worked on small-and-large scale archaeological and paleontological projects throughout California, including prehistoric and historic cultural properties, Phase II testing, and Phase III data recovery investigations. Ms. Bernal has contributed to writing technical reports and California State Department of Parks and Recreation 523 series Forms. She is experienced in postprocessing geospatial data and converting corrected field data from TerraSync software into ArcGIS software for map preparation for reports and production of agency and client-centric geodatabases.

### PROFESSIONAL EXPERIENCE

**Caltrans, District 12**
1750 E. 4th Street, Suite 100, Santa Ana, CA 92705
Associate Environmental Planner, Archaeologist PQS, Paleontology Coordinator/Lead — Sept 2023-Present

**Material Culture Consulting, Inc.,**
2701-B N. Towne Ave., Pomona, CA, 92716
*Senior Archaeologist/Staff Paleontologist I* — Feb 2023-Sept 2023
*Associate Archaeologist II/Staff Paleontologist I* — July 2020-February 2023
*Archaeology Field Director* — July 2019-2020
*Staff Archaeologist* — July 2016- 2019

**Environmental Science Associates,**
17744 Skypark Circle, Suite 200, Irvine, CA, 92614
*Staff Archaeologist/Paleontologist* — March 2017-June 2019

320 N. Halstead St., Suite 120 Pasadena, CA 91107
*Staff Archaeologist* — July 2016-January 2018

**BRC Consulting, LLC.**
1420 Guadalajara Pl., Claremont, CA 91711
*Staff Archaeologist/ Paleontologist* — August 2014-June 2019

### EXPERIENCE

12 years

### EDUCATION

M.S. Geological Science, Ohio University 2024

B.A. Archaeology/Anthropology minor in Geological Sciences
California State University, Long Beach, 2010

### CERTIFICATION

- OSHA 30 Hours
- ESRI Cartography

### SELECTIVE PROJECT EXPERIENCE [BCR Consulting 2014-2017]

**Solar Various Solar Facility Projects**
**(**Los Angeles, Kern**,** San Bernardino, and San Diego County, CA)
*Staff Archaeologist (Crew Chief)*. Ms. Bernal conducted a CHRIS records search at various Information Centers. Additionally, Ms. Bernal completed multiple pedestrian surveys for a cultural Phase I assessments and drafted new discovery forms [California State Department of Parks and Recreation (DPR) 523 Forms] for submission to State agencies during new resource evaluations and site updates.

**Pacific City Multi-Development Project,**
Huntington Beach, CA
*Staff Archaeologist & Paleontologist*. Ms. Bernal conducted a CHRIS records search at SCCIC Fullerton, completed a 10-acre survey for cultural and paleontological assessments, and provided full time monitoring for cultural burials (precontact) and

paleontological resources. Ms. Bernal also conducted Phase II testing for Paleontological resources and aided in drafting the curation and Paleontological report for Late to Middle Pleistocene (*Qop*) estuarine and colluvial deposits.

## SELECTIVE PROJECT EXPERIENCE [Material Culture Consulting 2017-2023]

### Heavy Tree (formerly Hazardous Tree) Removal Program

Southern California Edison ∞ Sequoia, Sierra, Inyo, Angeles, San Bernardino and Los Padres National Forests, CA
*Assistant Project Manager- Field Director*. Ms. Bernal provides project management and field support to facilitate archaeological field surveys and monitoring for deteriorated poles, system upgrades, and initial studies to support the removal of dead trees threatening SCE facilities. Over the course of the past three years, Ms. Bernal has assisted on multiple task orders. This requires a thorough understanding of mitigation measures for each forest to provide guidance to crews in often remote locations in order to carry out necessary work. Ms. Bernal also assists in QA/QC of technical reports and GIS datasets for submittal to multiple contractors.

### Desktop Review- Helix Environmental Verizon Telecommunication Projects

*Administrative*. Ms. Bernal conducted desktop review for multiple Verizon telecommunication projects using ArcGIS, AGOL, Historic aerials, and other SCE-Helix permitted tools to identify/prepare cultural requirements for each location.

### Desktop Review- SWCA Consultants SCE SUP Programs

*Administrative*. Ms. Bernal conducted cultural desktop review for multiple SUP projects using ArcGIS, AGOL, Historic aerials, and other SCE/SWCA permitted tools to identify/prepare cultural requirements for each Pole-station.

### Wireless Woolsey Fire Power Replacement- Southern California Edison SR#2664159 Project (CASTRO PEAK)

Verizon ∞ Santa Monica Mountains National Recreational Area and Private Lands, Los Angeles County, California
*Field Director.* Ms. Bernal conducted intensive pedestrian surveys alone and as part of multi-company crews. She was responsible for collecting geospatial data on tablets with sub-meter geodes, syncing the data, and relaying important information to office staff. Ms. Bernal was also responsible for filling out appropriate forms and recording new resources found during surveys. Ms. Bernal peer reviewed first and final draft forms of California State Department of Parks and Recreation (DPR) 523 Forms for submission to State agencies and co-authored final Archaeological Resource Management Study Report.

### EC0005 Deteriorated Pole Replace Program MSUP Southern California Edison

Southern California Edison ∞ Sequoia, Sierra, Inyo, Angeles, and San Bernardino National Forests, CA
*Field Director.* Ms. Bernal conducted intensive pedestrian surveys alone and as part of multi-company crews. She was responsible for collecting geospatial data on tablets with sub-meter geodes, syncing the data, and relaying important information to office staff. Ms. Bernal was also responsible for filling out appropriate forms and recording new resources found during surveys. Ms. Bernal also peer reviewed first and final draft forms of California State Department of Parks and Recreation (DPR) 523 Forms for submission to State agencies.

### Transmission Line Rating and Remediation Project (TLRR): CWA L007 G.O. 131-D Project – Angeles National Forest, Los Padres National Forest, Hungry Valley State Vehicular Recreation Area, and Private Lands

Southern California Edison ∞ Valencia, Los Angeles County, CA
*Staff Archaeologist (Crew Chief)*. Ms. Bernal led two-person crews to perform cultural resources surveys across two separate periods. The first survey was performed for the Pardee-Pastoria and Bailey-Pardee 220kV circuits consisting of 321 poles and 71 work areas totaling approximately 562 acres. The second survey was performed along the same circuit but consisted of the remaining 223 poles and associated work areas. The surveys were designed to support the overall analysis of the project.

### Transmission Line Rating and Remediation Project (TLRR): Kern River 66kV

Southern California Edison ∞ Kern and Los Angeles Counties
*Staff Archaeologist (Crew Chief)*. Ms. Bernal led a four-person intensive pedestrian survey and completed California State Department of Parks and Recreation (DPR) 523 Forms. The inventory was completed in accordance with the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, the California Environmental Quality Act (CEQA), and other applicable legislation. The proposed project will mitigate multiple discrepancies through the subtransmission system. The

project traverses approximately 80 miles in central Kern County and northwestern Los Angeles County. The project is located on private property, lands administered by the Sequoia National Forest, Los Padres National Forest, Fort Tejon State Park, and the California Department of Corrections and Rehabilitation.

### Castle Fire Restoration Emergency Work

Southern California Edison ∞ Sequoia National Forest, CA
*Field Director*. Ms. Bernal provides archaeological field surveys and monitoring for emergency fire restoration activities, including line clearing and tree work, along SCE's right-of-way (ROW) due to recent fires in Sequoia National Forest (SNF). Her duties include maintaining communication with all involved parties, interaction with Forest Archaeologist(s), and completing and submitting paperwork and photographic records.

### Deteriorated Pole Replacement Program

Southern California Edison ∞ Inyo National Forest, CA
*Field Director*. Ms. Bernal has provided survey, monitoring, and site testing support as a Field Director for this Program. Field Director support consists of leading crews, coordination with clients and staff, managing paperwork and spatial data, and site recording.

### Operations & Maintenance: Inyo National Forest (INF) Circuit Survey

Southern California Edison ∞ Inyo National Forest, Mono and Inyo Counties, CA
*Field Director*. Ms. Bernal led a team of archaeologists to complete a cultural resources survey of approximately 136.5 linear miles of transmission, subtransmission, and distribution circuits, and approximately 4.74 linear miles of access roads within the INF. SCE expects Operations and maintenance (O&M) activities related to vegetation management and felling of hazard trees to occur around existing facilities. Ms. Bernal also wrote and QA/QC peer review of DPR 523 series forms for project submission to client.

### Transmission Line Rating and Remediation Project (TLRR): Ivanpah-Coolwater-Kramer-Inyokern Project

Southern California Edison ∞ Inyo, Los Angeles, and San Bernardino Counties
*Staff Archaeologist*. Ms. Bernal performed a cultural resources survey that included identifying and recording historic and prehistoric resources along multiple landscapes and contexts. She used tablets to create in-field Series 523 Forms and collect spatial data using Collector and sub-meter geodes. She was responsible for maintaining cultural data for both new and previously recorded resources.

### Transmission Line Rating and Remediation Project (TLRR): Geotechnical Staking Cultural Resource Survey

Southern California Edison ∞ Kern, Inyo, and San Bernardino Counties, CA and Clark County, NV
*Staff Archaeologist*. Ms. Bernal conducted a pre-drilling clearance survey for a geotechnical study around proposed drilling locations for SCE's proposed TLRR projects: Control-Haiwee, Eldorado-Pisgah-Lugo, and Ivanpah-Coolwater-Kramer-Inyokern.

### California Institute for Women Solar Project

California Department of Corrections and Rehabilitation ∞ San Bernardino County
*Staff Archaeologist & Paleontologist*. Ms. Bernal completed an 11- acre pedestrian survey for a cultural and paleontological assessment. Attention was paid to any graded areas and bioturbation for examination of underlying deposits to note the sediments in the project area.

### Rector Reservoir Solar Facility Project

Forefront Power ∞ Napa County
*Staff Archaeologist & Paleontologist*. Ms. Bernal conducted a CHRIS records search at Northwestern Information Center, completed a 1-acre survey for cultural and paleontological assessments, and provided technical support for the report. Attention was paid to any graded areas and bioturbation for examination of underlying sediment to note the sediments in the project area.

### Cameron Substation Photovoltaic Project

San Diego Gas & Electric ∞ San Diego County
*Staff Archaeologist (Crew Chief).* Ms. Bernal conducted a CHRIS records search at the South Coastal Information Center, supervised a 2-person crew to complete a 164.70-acre pedestrian survey, compiled updates for all previously recorded resources within the project's API, and recorded one newly discovered resource.

### Mahal Property Solar Project

Forefront Power ∞ Fresno County
*Staff Archaeologist (Crew Chief).* Ms. Bernal conducted a CHRIS records search at the Southern San Joaquin Valley Information Center and supervised a two-person crew to complete a 9.2-acre pedestrian survey for cultural and paleontological assessments.

### Construction Package 2-3

TRC Companies ∞ California High-Speed Rail Authority ∞ Fresno, Tulare, and Kern Counties
*Staff Archaeologist and Paleontologist.* Ms. Bernal is performing archaeological and paleontological monitoring, including collaborating with Native American monitors, during earth-moving activities, including grubbing, clearing, grading, and trenching involving native soils in areas identified as sensitive for prehistoric archaeological remains. She has completed worker's environmental awareness training, Pacific Gas & Electric line safety training, and BNSF railroad safety training. The CP 2-3 Project is a 60-mile route located within the counties of Fresno, Tulare, and Kings and includes the construction of at-grade, aerial, and possible below-grade sections of the high-speed train, relocation and possible crossing of BNSF railroad tracks, roadway constructions, and the construction of waterway and wildlife crossings. The joint lead agencies are the Federal Railroad Administration and the California High-Speed Rail Authority (CAHSR) for the National Environmental Policy Act and CASHR for the California Environmental Quality Act.

### U.S. 50 Multimodal Corridor Enhancement and Rehabilitation Project

Caltrans District 3 ∞ Sacramento County
*Staff Paleontologist*. Ms. Bernal provided environmental awareness training to construction crews and performed paleontological monitoring support in compliance with the Paleontological Resources Monitoring Plan for portions of the project that have the potential to affect significant paleontological resources during ground-disturbing activities that affect native or potentially native substrate materials of Pleistocene age or older, including vegetation removal, site preparation, and construction grading and excavation. Paleontological monitoring consists of observing operations and periodically inspecting disturbed, graded, and excavated services. Coordination with the Caltrans Resources Specialist and Construction Resident Engineer is conducted to ensure that monitoring is thorough but does not result in unnecessary delays. The project consisted of constructing approximately 7.5 miles of High Occupancy Vehicle (HOV) lanes in both directions on US 50 from US 50/I-5 Interchange to the US 50/Watt Avenue Interchange. Ms. Bernal also trained a new hire to conduct field monitoring and co-authored the final Paleontological Mitigation Report.

### Wildomar Horizons TR 36672

Helix∞ Project Lennar Communities ∞ Riverside County, CA
*Staff Paleontologist*. Ms. Bernal provided paleontological resource monitoring services during ground-disturbing phases of the project mapped entirely as high paleontological sensitivity Pleistocene-to-Pliocene age Pauba Formation Sandstone Member. The project consisted of the construction of a mixed-use residential and assisted living development located on 22.1 acres in the City of Wildomar. Ms. Bernal assisted in writing the Paleontological Resource Mitigation Plan (PRMP).

### Stratford II RG- West Basin

Helix∞ City of Perris ∞ Riverside County, CA
*Staff Paleontologist*. Ms. Bernal provided paleontological resource monitoring services during ground-disturbing phases of the project mapped entirely as paleontological sensitive Holocene-to-Late- Pleistocene young valley deposit alluvium (Qyv) and Late-to-Middle-Pleistocene old fan deposit alluvial (Qof). The project consisted of the excavation of a basin in relation to the Stratford II Ranch Project (starting at a later date) in an open field in the City of Perris.

### Rancho Diamante TR 35392

Helix∞ City of Lake Elsinore ∞ Riverside County, CA

*Staff Paleontologist*. Ms. Bernal provided paleontological resource monitoring services during ground-disturbing phases of the project mapped entirely as paleontological sensitive Holocene-to-Late- Pleistocene young valley deposit alluvium (Qyv) and Late-to-Middle-Pleistocene old fan deposit alluvial (Qof). The project consisted of the construction of a mixed-use residential and assisted living development located on 22.1 acres in the City of Lake Elsinore.

### Countryside

Helix∞ City of Ontario∞ Riverside County, CA
*Staff Paleontologist*. Ms. Bernal provided paleontological resource monitoring services during ground-disturbing phases of the project mapped entirely as high paleontological sensitive Young Eolian deposits. The project consists of the construction of a residential properties within 11.05 acres in the City of Ontario.

### The Cove

Helix∞ City of Lake Elsinore∞ Riverside County, CA
*Staff Paleontologist*. Ms. Bernal provided paleontological survey for Phase I paleontological sensitive Holocene-to-Late-Pleistocene young valley deposit alluvium (Qyv), Late-to-Middle-Pleistocene old fan deposit alluvial (Qof) and Mesozoic metamorphic rocks. The project consists of the construction of apartments 23.44 acres in the City of Lake Elsinore.

### Palomino Business Park

Caprocks Partners ∞ Riverside County, CA
*Staff Archaeologist/Paleontologist.* Ms. Bernal provided cultural and paleontological resource monitoring services and produced DPR 523 series Forms for project during ground-disturbing phases of the project. The Palomino Business Park Project is redeveloping approximately 110 acres of land within the City of Norco for a new business park that will include industrial, commercial, and office uses. The project includes construction of approximately 2,050,000 square feet of new building space and related onsite and offsite improvements. Ms. Bernal assisted in writing portions of Paleontological Resource Mitigation Plan (PRMP).

### LA Metro Purple Line 3

ICF∞ Los Angeles County, CA
*Staff Paleontologist*. Ms. Bernal provides paleontological resource monitoring services during ground-disturbing phases of the project mapped entirely as high paleontological sensitivity late Holocene to early Pleistocene Quaternary deposits. The project consists of the expanding the current Metro Line to two locations at UCLA and LA Veterans Hospital in the City of Los Angeles.

## SELECTIVE CO-AUTHORSHIP REPORTS

April 2021 Tria Belcourt, Judy Bernal [Cardoza]. *Cultural Resources Monitoring For Southern California Edison's Deteriorated Pole Replacement Project (Td1701348) Along The Fraternity Garden 16-Kv Circuit In The City Of Goleta, On Private Lands, Santa Barbara County, California.*

June 2021 Tria Belcourt, Julia Carvajal, Judy Bernal. *National Park Service Cultural Resources Constraints Report For Sequoia And Kings Canyon National Park Area*

July 2021 Sonia Sifuentes, Judy Bernal. *Archaeological Resource Management Study For Verizon Wireless Woolsey Fire Power Replacement- Southern California Edison Sr#2664159 Project (Castro Peak), Located At 1953 Latigo Canyon Road, Malibu, Santa Monica Mountains National Recreational Area, And Private Lands, Los Angeles County, California.*

August 2021 Sonia Sifuentes, Judy Bernal. *National Park Service Cultural Resources Constraints Report For Santa Monica Mountains National Recreation Area. Ftpb Surveys-Nps-Same #0022*

November 2021 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Deteriorated Pole Replacement Project (Td1409828) Along The Garden 4-Kv Circuit In Near The City Of Santa Barbara, On Private Lands, Santa Barbara County, California.*

November 2021 Tria Belcourt, Sonia Sifuentes, Judy Bernal. *Cultural Resources Constraints Report (Crcr) Heavy Tree Program- Notification #00029-Samo*

December 2021 Tria Belcourt, Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1767988) Along The Stronsnider 16kv Circuit Near Bridgeport, Blm Bishop Field Office, Mono County, California (Im Ca-2021-003, Crup Ca-19-34, Fwa Ca-170-2021-29)*

December 2021 Tria Belcourt, Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1511962) Along The Speth 12-Kv Circuit In The City Of Santa Barbara, On Private Lands, Santa Barbara County, California.*

January 2022 Tria Belcourt, Julia Carvajal, Judy Bernal. *Cultural Resources Study Results For Southern California Edison's Deteriorated Pole Replacement Project (Td1796676 & Td1818016) Along The Isabella-Kern River #3-Lakegen-Weldon 66-Kv Circuit Near Kernville, On Private Lands, Kern County, California.*

March 2022 Tria Belcourt, Julia Carvajal, Judy Bernal, Antonio Ramirez. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1029147) Along The Heavy 33kv Circuit Near Garlock, Blm Ridgecrest Field Office, Kern County, California. (Ca Crup Ca-19-34, Ima Ca-2021-003)*

April 2022 Tria Belcourt, Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1736938) Along The Casa Diablo-Control 115-Kv Circuit, Bureau Of Land Management Bishop Field Office, Mono County, California. (Crup Ca 19-34, Im Ca-2021-003, Fwa Ca-170-2021-29)*

May 2022 Julia Carvajal, Erika Mcmullin, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1658608) Along The Mustang 12-Kv Circuit, Near Wofford Heights, Bureau Of Land Management, Bakersfield Field Office, Kern County, California (Im Ca-2021-003)*

May 2022 Tria Belcourt, Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1767988) Along The Danby 16kv Circuit Near Bridgeport, Blm Bishop Field Office, Mono County, California (Ca Crup Ca-19-34)*

June 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring Report For Southern California Edison's Operations And Maintenance Project (Td1736871) Along The Casa Diablo-Control 115kv Circuit Near Benton, Blm Bishop Field Office, Mono County, California (Im Ca-2021-003, Crup Ca 19-34, Fwa Ca-170-2021-29)*

June 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring Report For Southern California Edison's Operations And Maintenance Project (Td1736816) Along The Casa Diablo-Control 115kv Circuit Near Benton, Blm Bishop Field Office, Mono County, California (Im Ca-2021-003, Crup Ca 19-34, Fwa Ca-170-2021-29)*

July 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Study For Southern California Edison's Operations And Maintenance Project (Td1846651, Td1889570, & Td1846634) Along The Sagehen 12kv Circuit, Bureau Of Land Management Bishop Field Office, Mono County, California (Crup Ca-19-34, Im Ca-2021-003)*

September 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1767985) Along The Strosnider 16kv Circuit Near Bridgeport, Blm Bishop Field Office, Mono County, California (Crup Ca 19-34, Im Ca-2021-003, Fa-680-21-10)*

September 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Study For Southern California Edison's Operations And Maintenance Project (Td1876804, Td1823677, Td1849941, Td1853808, Td1836573, Td1777185, Td1765974) Along The Furnace Creek 33-Kv, Patio 12-Kv, & Baroid 33-Kv Circuits Near Barstow, Bureau Of Land Management Barstow Field Office, San Bernardino County, California (Crup Ca-19-34, Im Ca-2021-003, Fa-680-21-10)*

September 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Study For Southern California Edison's Operations And Maintenance Project (Td1876804, Td1823677, Td1849941, Td1853808, Td1836573, Td1777185, Td1765974) Along The Furnace Creek 33-Kv, Patio 12-Kv, & Baroid 33-Kv Circuits Near Barstow, Bureau Of Land Management Barstow Field Office, San Bernardino County, California (Crup Ca-19-34, Im Ca-2021-003, Fa-680-21-10)*

September 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring For Southern California Edison's Operations And Maintenance Project (Td1370705) Along The Coolwater-Seg 2-Tortilla 115kv Circuit Near Barstow, Blm Barstow Field Office, San Bernardino County, California. (Crup Ca 19-34, Im Ca-2021-003, Fa-680-21-10)*

October 2022 Julia Carvajal, Judy Bernal. *Cultural Resources Monitoring Report For Southern California Edison's Operations And Maintenance Project (Td708737) Along The Conway 16kv Circuit Near Benton, Blm Bishop Field Office, Mono County, California (Im Ca-2021-003, Crup Ca 19-34, Fwa Ca-170-2021-29)*

March 2023 Julia Carvajal, Judy Bernal. Cultural Resources Study For Southern California Edison's Operations And Maintenance Project (Td1886460, Td1891127, Td1719481, Td1900286, Td1711797, Td1833013, Td1891491, Td1657010, Td1787014, Td1850533, Td1757873, Td1757877, Td1837670, Td1805960, Td1994018, Td1990508, Td1994017, Td2035221, Td1718294) Along The Pappas 33kv Circuit Near Rangsburg, Bureau Of Land Management Ridgecrest Field Office, Inyo, Kern And San Bernardino County, California (Crup Ca-22-33, Im Ca-2021-003, Fwa 22-17-Fireim)

April 2023 Marianne Litwin, Judy Bernal. Paleontological Mitigation Report: Us 50 Multimodal Corridor Enhancement And Rehabilitation Project, Sacramento County, California.

## SELECTIVE CALIFORNIA DEPARTMENT OF PARKS AND RECREATION FORMS [DPR] 523 PREPARED

2017 Tria Belcourt, Judy Bernal. DPR UPDATE P-19-188263 [*Historic site*]
2017 Tria Belcourt, Judy Bernal. DPR UPDATE P-37-025282 [*Prehistoric site*]
2020 Judy (Bernal) Cardoza, Sonia SiFuentes. DPR EL_TD1706386_ISO_03 *[Prehistoric isolate]*
2020 Judy (Bernal) Cardoza, Sonia SiFuentes. DPR TD1576593_ISO_005 *[Historic isolate]*
2021 Judy (Bernal) Cardoza. DPR TD1765516_ISO_002 *[Historic isolate]*
2021 Judy (Bernal) Cardoza. DPR TD1847951_SITE_003 [*Prehistoric site*]

2021 Judy (Bernal) Cardoza. DPR MCC_TD_1350486_ISO_002 *[Historic isolate]*
2021 Judy (Bernal) Cardoza. DPR INF_TD1847951_SITE_003 *[Historic site]*
2021 Judy Bernal. DPR INF_TD1847951_SITE_003 *[Historic site]*
2022 Judy Bernal. DPR TD1846635_PW_SITE_001 [*Prehistoric site*]
2022 Judy Bernal. DPR TD1889546_PW_SITE_001 [*Prehistoric site*]
2022 Judy Bernal. DPR TD1933793_PW_SITE_008 [*Prehistoric/Historic site*]
2022 Judy Bernal. DPR TD1748645_PW_SITE_006 [*Historic site*]
2023 Judy Bernal. DPR TD1994017_PW_SITE_001 [*Historic site*]
2023 Judy Bernal. DPR TD1954706_PW_SITE_008 [*Historic site*]
2023 Judy Bernal. DPR UPDATE P-26-000506 [*Prehistoric site*]

## FIELD SCHOOLS

**Sanisera Roman Necropolis Field School- Platges de Fornells, Menorca, Spain:** *Sanisera Archaeology Institute for International Field Schools*
*Crew (2016).* Under the direction of Director, Fernando Contreras, PhD., Ms. Bernal conducted Phase II testing and curation for a Roman gravesite. Additionally, previously excavated human skeletal material was curated at the institute by Ms. Bernal and session participants.

**Mount Trumbull Precontact (Anasazi) Field School- Arizona:** *California State University, Long Beach (CSULB)*
*Crew (2010), Graduate T.A. (2011, 2012).* Under the direction of Instructor, Sachiko Sakai, PhD., Ms. Bernal conducted Phase I and II survey, testing, (ceramic) curation and reporting for the Precontact Anasazi study area of Mount Trumbull, AZ. Testing methods included Total Station, ArcMaps, Ground Penetrating Radio and XRF sourcing. Select ceramic red-and brown ware were collected and curated for thermoluminescence lab work, prepared by Ms. Bernal at CSULB during academic sessions (2011).

**Precontact Mayan Studies Field School**- El Baul, Guatemala, *CSULB*
*Crew (2010).* Under the direction of Instructor, Hector Neff, PhD., Ms. Bernal conducted Phase I and II survey, testing, and (obsidian) curation for the Precontact Mayan study area of El Baul. Testing methods included Total Station, ArcMaps, Ground Penetrating Radio and XRF sourcing. Select obsidian flakes were collected and curated for XFR lab work, prepared by Ms. Bernal at El Baul project facilities (2010).

## PROFESSIONAL TRAINING

*ArcGIS for Cultural Resources* [Online- 6 Courses] [1/10/2023- Certificate]

*MOOC Cartography* [Online- 6 weeks] [4/6/2023- Certificate]

*Interpretation and Application of Secretary of the Interior's Standards for the Treatment of Historic Properties- OHP eLearning* [3 Modules] [1/2/2023]

***Caltrans Trainings:***

| | |
|---|---|
| Basics of CEQA/NEPA | 9/12/2023 |
| Environmental Commitments Compliance | 11/9/2023 |
| Environmental Academy | 3/8/2024 |
| Introduction to Osteology | 2/15/2024 |
| Section 106 NHPA and PRC 5024 Generalist Workshop | 1/26/2024 |
| Paleontology Workshop | 11/2024 |

# APPENDIX C
# FOSSIL LOCALITY SEARCH RESULTS

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

July 5, 2025

ICF
Attn: Ari Hambley

re: Paleontological resources records search for the Caltrans District 12 SR-74 Project

Dear Ari:

I have conducted a search of our paleontology collection records for the proposed development at the Caltrans District 12 SR-74 Project area as outlined on the portion of the Canada Gobernadora and San Juan Capistrano USGS topographic quadrangle map that you sent to me via e-mail on June 27, 2025. We do not have fossil localities that have been recorded or georeferenced directly within the proposed project area, but we do have fossil localities nearby from similar sedimentary deposits that may occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

| Locality Number | Location | Formation | Taxa | Depth |
|---|---|---|---|---|
| LACM VP 5792; LACM IP 11929 – 11930, 11939-11942 | Marbella Golf & Country Club, San Juan Capistrano | Capistrano Formation (Blancan Sand facies) | White shark (*Carcharodon carcharias*), megalodon shark (*C. megalodon*), requiem shark (*Carcharhinus*),mako sharks (*Isurus planus, I. oxyrinchus*), weasel shark (*Hemipristis serra*), sixgill sharks (*Hexanchus*), eagle ray (*Myliobatis*), sheephead (*Semicossyphus pukcher*); flightless alcid (*Mancalla diegense*), grebe (*Podiceps parvus*), pelicans (Pelecaniformes), cormorant (Phalacrocoracidae); sea lion (Otarinae), earred seal (Otariidae), walrus family (Odobeninae), dugong (Dugongidae), dolphins (*Parapontoporia, Stenella*), sperm whale (*Scaldicetus*), toothed whale (Odontoceti), baleen whale (Mysticeti); western pond turtle (*Clemmys marmorata*), elephant family (Proboscidea), antelope family | Unknown |

| Locality Number | Location | Formation | Taxa | Depth |
|---|---|---|---|---|
| | | | (Antelocapridae), camel family (Camelidae); uncatalogued invertebrates | |
| LACM IP 1144 | San Juan Capistrano (more precise locality not available) | Niguel Formation | Invertebrates (bivalves) | Unknown |
| LACM VP 7296 | West of Calle Bollero, southwest of San Juan Hills Golf Club | Capistrano Formation | White shark (*Carcharodon*) | Unknown |
| LACM IP 8158-8160 | Bean Creek at the North Clay Mine., San Juan Capistrano | Williams Formation (shales) | Invertebrates (uncatalogued) | Surface |
| LACM IP 16858 | Lucas Canyon | Ladd Formation (50 ft from top of shale) | Invertebrates (uncatalogued) | Surface |
| LACM IP 16868 | Baker Canyon | Ladd Formation, Baker Canyon Member (friable conglomerate) | Invertebrates (uncatalogued) | Surface |
| LACM IP 10119 | North of Hill 1645 on Bell Canyon San Juan Divide; Santa Ana Mtns | Williams Formation (sandstone above basal conglomerate) | Invertebrates (uncatalogued) | Surface |
| 49 LACM VP localities | San Juan Capistrano quad | Monterey Formation | Hundreds of specimens including sperm whale (Physeteridae, *Scaldicetus*), baleen whale (Balaenopteridae), walrus (*Imagotaria*); eared seal (*Pithanotaria*), toothed whale (Odontoceti), southern fur seal (Arctocephalus), dugong (*Dusisiren*); turtle (Chelonia); birds (*Gavia, Praemancalla, Puffinus*); other uncatalogued vertebrates | Surface and subsurface |
| LACM VP 3804 | South of Oso Parkway approximately one half mile west of San Diego Freeway | Niguel Formation (brown to buff silt) | Requiem shark (*Carcharodon sulcidens*) | Surface |
| LACM VP 5551 | La Paz Road & Paseo de Valencia | Niguel Formation (middle) | Walrus clade (Odobeninae), primitive baleen whale (*Herpetocetus*), earred seal (Ottariidae), dugong (Dugongidae), baleen whale (Mysticeti) | Unknown |
| LACM VP 1895, CIT592 | Santiago Canyon | Ladd Formation | Fish and other uncatalogued vertebrates | Surface |
| LACM VP 1115 | near Salt Creek Trail in Salt Creek Corridor Regional Park; San Joaquin Hills | Pleistocene terrace deposit | Mammoth (*Mammuthus*) | Unknown |
| LACM VP 1215 | Oso Creek at Crown Valley Parkway, San Juan Capistrano | Unknown formation (late Pleistocene) | Shark, mammals (unspecified) | Surface in stream bed |

*VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface*

This records search is limited to the records of the NHMLA. It is not intended as a paleontological assessment of the project for the purposes of California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA). Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a paleontological assessment be conducted by a paleontologist meeting Federal (43 Code of Federal Regulations Part 49.110) or Society of Vertebrate Paleontology standards for compliance with applicable regulations, such as CEQA or NEPA.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

July 10, 2025

Ari Hambley
ICF
525 B Street, Suite 1700
San Diego, CA 92101

RE: Paleontological Records Search – Caltrans District 12 SR-74 Project

Dear Mr. Hambley:

This letter presents the results of a paleontological records search conducted for the Caltrans District 12 State Route (SR-) 74 Project (Project), located along SR-74 within the City of San Juan Capistrano and unincorporated areas of Orange County, California. The Project alignment follows SR-74 from its intersection with El Camino Real (just west of the SR-74/Interstate [I-] 5 interchange) to a point approximately 1,115 feet northeast of its intersection with Crow Springs Road, with additional spurs to the north and south along I-5 and south along Del Obispo Street.

## Methods

A review of published geological maps covering the Project alignment and surrounding area was conducted to determine the specific geologic units underlying the Project alignment. Each geologic unit was subsequently assigned a paleontological resource potential following Society of Vertebrate Paleontology (SVP) guidelines (SVP, 2010). In addition, a search of the paleontological collection records housed at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur at the Project alignment or within the immediate surrounding area.

## Results

Published geological reports (e.g., Morton and Miller, 2006 and Kennedy and Tan, 2007) covering the Project area indicate that the proposed Project has the potential to impact late Pleistocene- to Holocene-age young axial channel deposits, late Pleistocene- to Holocene-age young landslide deposits, Pleistocene-age old and very old axial-channel deposits, the late Miocene- to early Pliocene-age Capistrano Formation, the middle to late Miocene-age Monterey Formation, the middle Miocene-age San Onofre Breccia, the middle Eocene-age Santiago Formation, the late Cretaceous-age Trabuco Formation, the late Cretaceous-age Williams Formation, the late Cretaceous-age Ladd Formation, and the early Cretaceous-age Santiago Peak Volcanics. These geologic units and their paleontological potential are summarized below.

The SDNHM has seven recorded fossil localities that lie within one mile of the Project alignment. Of these localities, six are from the Capistrano Formation and one is from the Santiago Formation; these localities are discussed in further detail below. A map (Figure 1) and list of the fossil localities are attached as a confidential appendix at the end of this report (Appendix A).

Young axial channel deposits – Late Pleistocene- to Holocene-age (less than 129,000 years old) axial channel deposits occur along San Juan Canyon and in low-lying regions throughout Project

alignment. These deposits occur in modern drainages and are generally considered to be primarily Holocene in age (less than 11,700 years old). Holocene-age axial channel deposits are assigned a low paleontological sensitivity based on their relatively young geologic age and lack of recorded fossil collection localities. However, these deposits likely overlie units with high paleontological potential that could be impacted by deeper construction-related excavations.

Young landslide deposits – Several small sections of the Project alignment are partially underlain by late Pleistocene- and Holocene-age (less than approximately 129,000 years old) landslide deposits derived from the Capistrano Formation, the San Onofre Breccia, and the Santiago Formation. Landslide deposits are variable in nature, ranging from small, shallow slides composed of chaotically oriented, dissociated debris, to large, deep-seated slides composed of slumped, tilted, or rotated masses of coherent bedrock. Because the landslide deposits originated from within undifferentiated deposits of the Capistrano Formation, Santiago Formation, and San Onofre Breccia, which are assigned a high potential, it is possible that fossils may be present within these deposits. Landslide deposits are assigned an undetermined paleontological potential due to the unknown composition of these deposits along the Project alignment. In general, landslides containing slumped intact blocks of strata are assigned a high paleontological potential (because their original stratigraphic context may be discernable), while those composed of chaotic landslide debris have a low paleontological potential (because their original stratigraphic context has been lost).

Old and very old axial-channel deposits – Pleistocene-age (approximately 2.58 million to 11,700 years old) old axial-channel deposits and very old axial-channel deposits underlie very small areas along the northern and southeastern portions of the Project alignment and may underlie young surficial deposits elsewhere along the alignment. Fossils have been collected from Pleistocene-age alluvial deposits at several locations elsewhere in coastal Orange County and San Diego County. Recovered fossils include skeletal remains of reptiles and birds (e.g., pond turtles, lizards, passenger pigeons, and hawks), small bodied mammals (e.g., moles, shrews, mice, and squirrels), and large-bodied mammals (e.g., ground sloths, wolves, bears, tapirs, horses, camels, deer, giant bison, mastodon, and mammoths). Due to the rare but scientifically significant vertebrate fossils discovered elsewhere in Orange County and San Diego County in Pleistocene-age alluvial deposits, they are assigned a high paleontological resource potential.

Capistrano Formation – The late Miocene- to early Pliocene-age (approximately 7 to 5 million years old) Capistrano Formation partially underlies the western portion of the Project alignment and likely underlies young axial channel deposits elsewhere in the western portion of the alignment. The SDNHM has six fossil collection localities from the Capistrano Formation within a one-mile radius of the alignment. These localities produced trace fossils in the form of burrows, as well as fossil impressions and remains of marine invertebrates (e.g., clams and snails) and marine vertebrates (e.g., sharks, toothed whales, fur seals, and baleen whales). The siltstone facies of the Capistrano Formation is known to be abundantly fossiliferous in Orange County, and abundant vertebrate fossils have been collected from the Oso Sand Member of the Capistrano Formation. The Capistrano Formation has produced well preserved and scientifically significant fossil remains of marine organisms (e.g., microfossils, benthic invertebrates, and marine vertebrates, including extinct pinnipeds of several subfamilies), and has also produced a small but significant assemblage of terrestrial mammals, as well as an important flora of terrestrial plants, and is therefore assigned a high paleontological potential.

**Monterey Formation –** The middle to late Miocene-age (approximately 16 to 8 million years old) Monterey Formation was deposited in a series of subsiding, low-oxygen marine basins, in conditions conducive to the gradual accumulation of abundant, undisturbed fine sediments and biogenic debris. The Monterey Formation is mapped at the surface in a small area along the western portion of the Project alignment and may underlie young axial channel deposits elsewhere in the western portion of the alignment. The Monterey Formation has produced extremely diverse assemblages of marine organisms ranging from microscopic diatoms and radiolarians to enormous sharks and baleen whales. The kinds of fossils found in the formation typically vary according to rock type, with diverse assemblages of diatoms, silicoflagellates, and radiolarians more characteristic of the siliceous shales and diatomites, and coccoliths, foraminiferans, sharks, rays, bony fish, sea birds, and marine mammals more characteristic of the phosphatic and calcareous mud shales. Well-preserved fossil remains of marine mammals, including pinnipeds, toothed whales, baleen whales, sea cows, and hippo-like desmostylians have also been recovered from diatomaceous strata of the Monterey Formation. Because of the extremely significant remains of fossil marine mammals, bony fish, and mollusks recovered from the Monterey Formation, it is assigned a high paleontological potential.

**San Onofre Breccia –** The middle Miocene-age (approximately 16 to 11 million years old) marine deposits of the San Onofre Breccia are present in a small area of the western portion of the Project alignment. The San Onofre Breccia has produced fossil remains of marine invertebrates (e.g., foraminifers and bivalves) and mammals (Deméré and Walsh, 1993), and is therefore assigned a high paleontological potential.

**Santiago Formation –** Strata of the middle Eocene-age (approximately 49 to 40 million years old) Santiago Formation occur along the majority of the central portion of the Project alignment. The SDNHM has one recorded fossil locality from Member B of the Santiago Formation within a one-mile radius of Project alignment (SDSNH 6407). This locality produced fossil remains of marine vertebrates (e.g., bony fish) and terrestrial vertebrates (e.g., lizards, rodents, insectivores, and a leptoreodon). Elsewhere in southern California, the Santiago Formation has produced significant terrestrial fossil vertebrate localities and is therefore considered to have a high paleontological potential.

**Trabuco Formation –** The nonmarine deposits of the late Cretaceous-age (approximately 100 to 66 million years old) Trabuco Formation is exposed at the surface along the far northeastern portion of the Project alignment. These deposits are unfossiliferous, and consist of massive conglomerate beds with clasts derived from the Cretaceous Peninsular Ranges batholith and Santiago Peak Volcanics. Due to the lack of known fossil localities, the Trabuco Formation is assigned a low paleontological potential.

**Williams Formation –** The Schulz Ranch and Pleasants Sandstone members of the late Cretaceous-age (approximately 100 to 66 million years old) Williams Formation partially underlie a small area along the central portion of the Project alignment. Elsewhere, the Pleasants Sandstone member commonly produces fossiliferous concretions (Morton and Miller, 2006). Because of the significant Cretaceous-age fossils that have been recovered, the Williams Formation is assigned a high paleontological potential.

**Ladd Formation –** The Ladd Formation consists of conglomerate, sandstone, siltstone, and shale that date to the late Cretaceous (approximately 100 to 66 million years old). The Baker Canyon Conglomerate Member of this unit occurs in the northeastern portion of the Project alignment. Undifferentiated Cretaceous-aged sediments of the Ladd Formation have preserved an abundant and

well-preserved assemblage of invertebrate fossils such as ammonites and mollusks in the Santa Ana Mountains (Link and Bottjer, 1982; Morton and Miller 2006; Popenoe, 1937; Sundberg, 1980, 1982). Accordingly, the Ladd Formation is assigned a high paleontological potential.

**Santiago Peak Volcanics –** Crystalline basement rocks of early Cretaceous age (approximately 145 to 125 million years old) are exposed at the surface in the far northeastern portion of the Project alignment. As redefined by Kimbrough et al. (2014), the Santiago Peak Volcanics is now considered an entirely volcanic rock unit of early Cretaceous age that occurs over a 250-kilometer-long belt along the western edge of the Peninsular Ranges batholith from the Santa Ana Mountains in Orange County southward to the Agua Blanca Fault south of Ensenada in northern Baja California, Mexico. No paleontological resources are known from the redefined Santiago Peak Volcanics. Consequently, the Santiago Peak Volcanics are assigned no paleontological resource potential.

## Summary and Recommendations

The high paleontological potential of old and very old axial channel deposits, the Capistrano Formation, the Monterey Formation, the San Onofre Breccia, the Santiago Formation, the Williams Formation, and the Ladd Formation and the undetermined potential of landslide deposits derived from these geologic units (SVP, 2010), as well as the presence of paleontological collection localities in the vicinity of the Project alignment, suggest the potential for construction of the proposed Project to result in impacts to paleontological resources. Any proposed excavation activities that extend deep enough to encounter previously undisturbed deposits of these geologic units (i.e., below the depth of any previously imported artificial fill or disturbed sediments present along the Project alignment) have the potential to impact the paleontological resources preserved therein. If such excavations are required for Project construction, implementation of a complete paleontological resource mitigation program during ground-disturbing activities is recommended.

If you have any questions concerning these findings please feel free to contact me at kmueller@sdnhm.org.

Sincerely,

Kirstin Mueller
Assistant Report Writer
San Diego Natural History Museum

*Enc: Appendix A (Confidential): Figure 1. Map of SDSNH fossil localities in the vicinity of the project site; List of SDSNH fossil localities in the vicinity of the project.*

## Literature Cited

Kennedy, M.P., and Tan, S.S. 2007. Geologic Map of the Oceanside 30' x 60' Quadrangle, California. California Geological Survey, Regional Geologic Map Series 1:100,000 scale, map no. 2.

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Link, M.H., and D.J. Bottjer. 1982. Turbidites and slope facies association, upper Cretaceous Holz shale member of the Ladd formation, Santa Ana Mountains, California; pp. 91–95 in D. J. Bottjer, C. P. Colburn, and J. D. Cooper (eds.), Late Cretaceous Depositional Environments and Paleogeography, Santa Ana Mountains, Southern California. Pacific Section, Society of Economic Paleontologists and Mineralogists, Field Trip Volume and Guidebook.

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SDNHM unpublished paleontological collections data.

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SVP. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology: 1–11.

# Appendix A (Confidential)

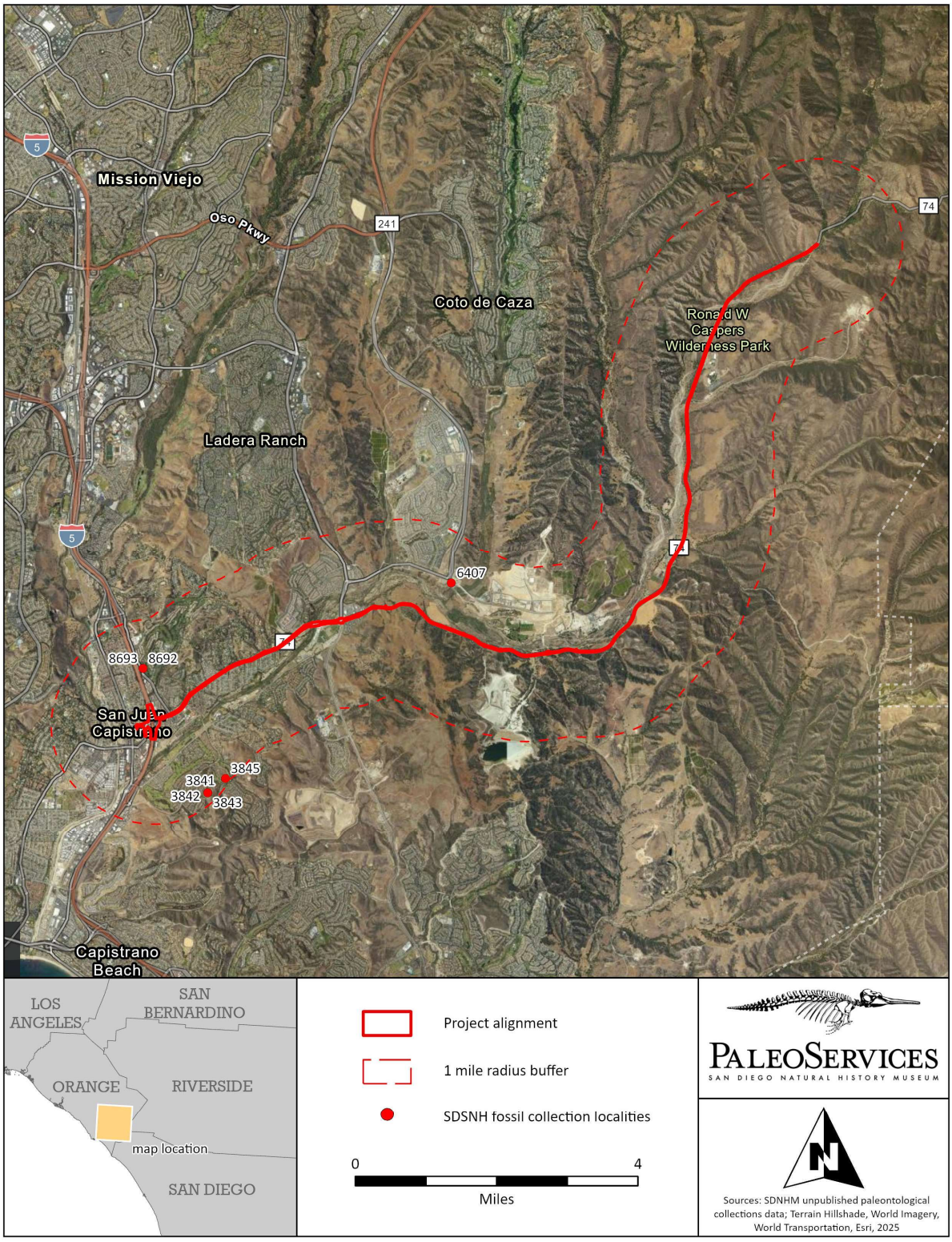
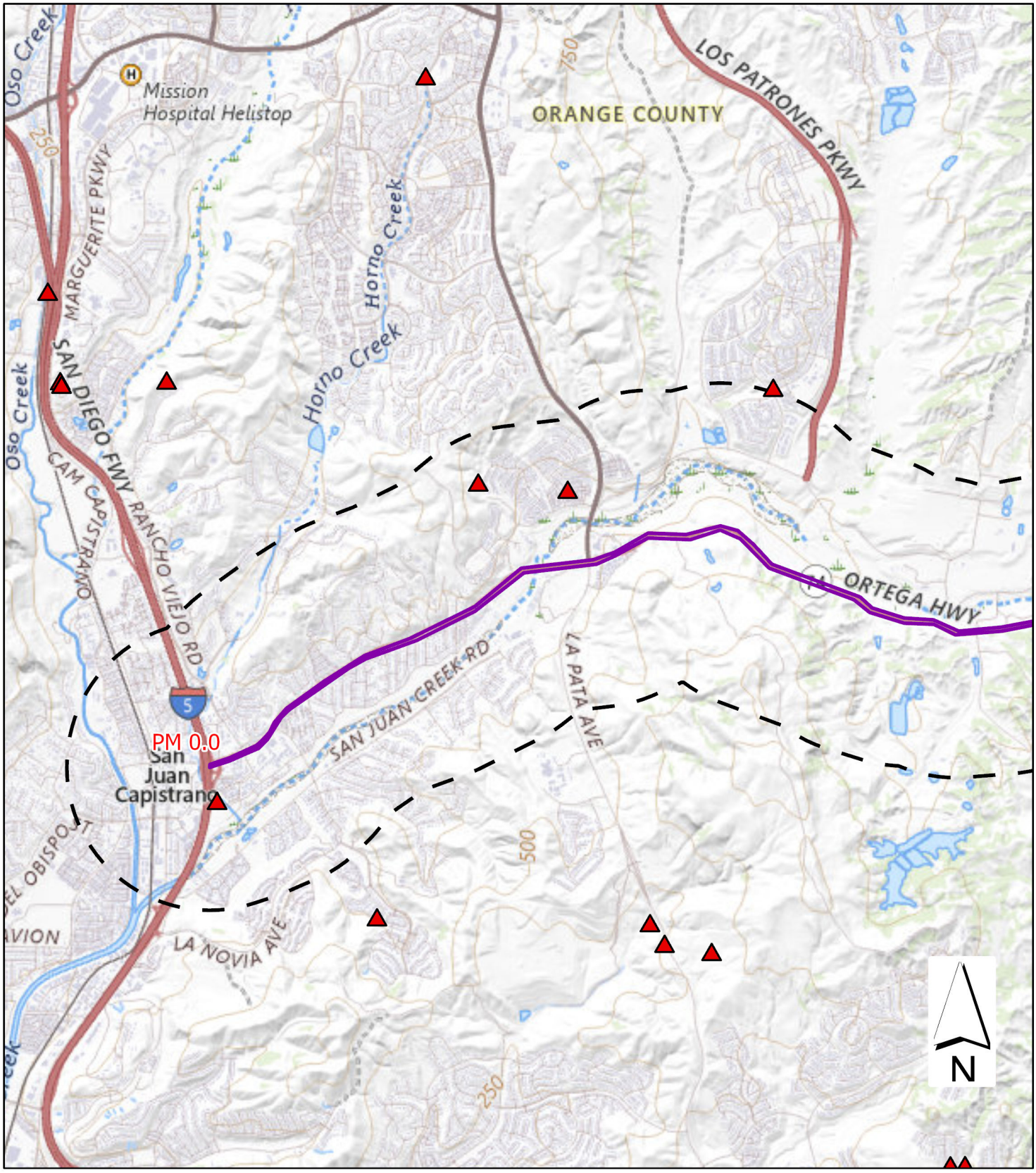



**Figure 1:** Map of the Project site and SDSNH fossil localities in the vicinity of the Project.

**Appendix A: Locality List**
San Diego Natural History Museum
Department of Paleontology

| Locality Number | Locality Name | Location | Elevation (feet) | Geologic Unit | Era | Period | Epoch |
|---|---|---|---|---|---|---|---|
| 3841 | Lomas San Juan | City of San Juan Capistrano, Orange County, California | 330 | Capistrano Formation, siltstone member | Cenozoic | Neogene | early Pliocene |
| 3842 | Lomas San Juan | City of San Juan Capistrano, Orange County, California | 155 | Capistrano Formation, siltstone member | Cenozoic | Neogene | late Miocene |
| 3843 | Lomas San Juan | City of San Juan Capistrano, Orange County, California | 150 | Capistrano Formation, siltstone member | Cenozoic | Neogene | late Miocene |
| 3845 | Lomas San Juan | City of San Juan Capistrano, Orange County, California | 190 | Capistrano Formation, siltstone member | Cenozoic | Neogene | late Miocene |
| 8692 | SDG&E SOCRE | City of San Juan Capistrano, Orange County, California | 205 | Capistrano Formation, siltstone member | Cenozoic | Neogene | late Miocene |
| 8693 | SDG&E SOCRE | City of San Juan Capistrano, Orange County, California | 209 | Capistrano Formation, siltstone member | Cenozoic | Neogene | late Miocene |
| 6407 | Rancho Mission Viejo Substation | Orange County, California | 265 | Santiago Formation, member B | Cenozoic | Paleogene | middle Eocene |

Created By: Judy Bernal




**SR-74 Multi-Asset Project**
**Geology Map 1 of 2**

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5
Date Printed: 5/19/2025

**Legend**

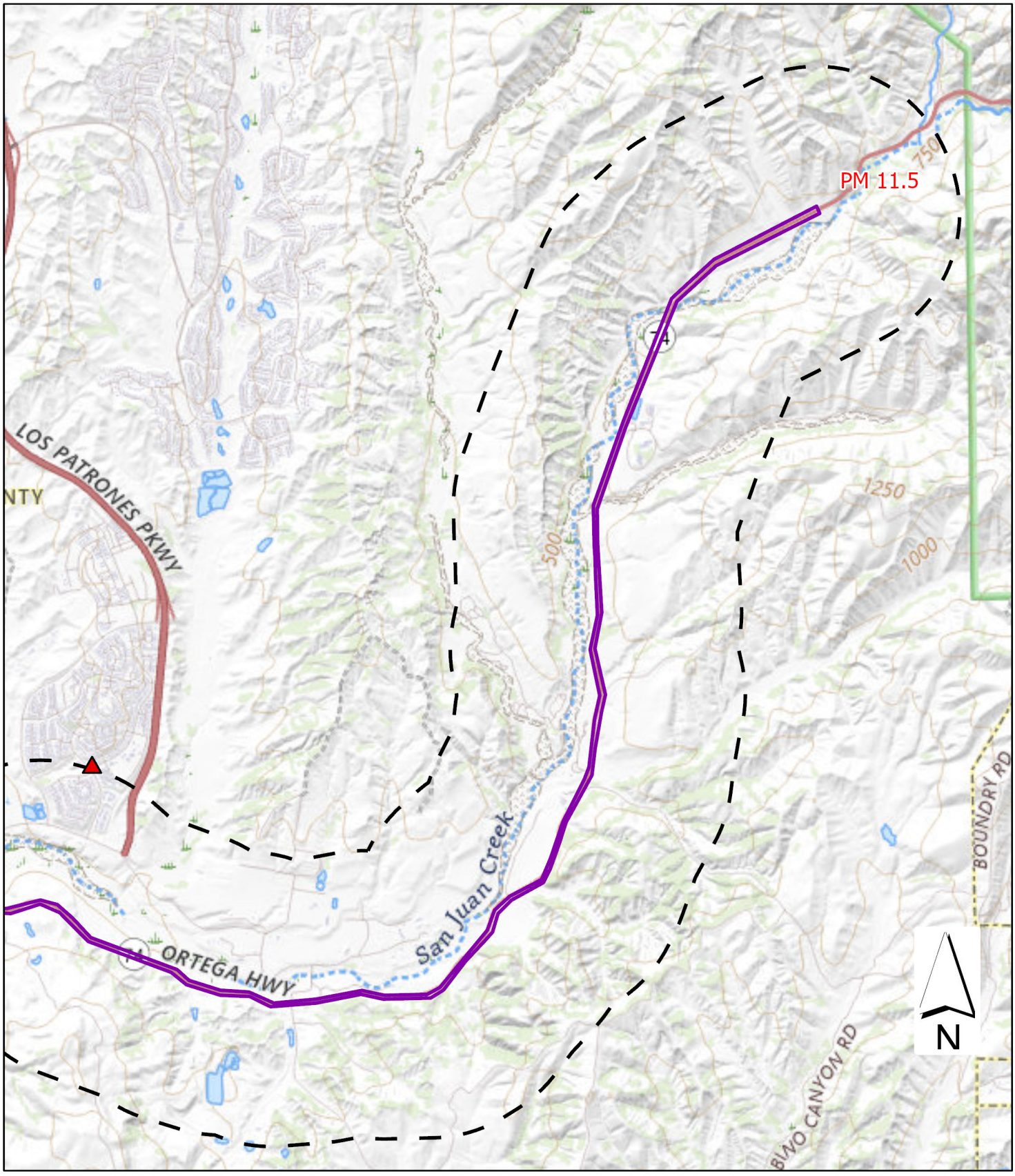
- Project Area
- 1-Mile Buffer
- Fossil Locality (OC Parks)

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

1:60,000

Caltrans

Created By: Judy Bernal




**SR-74 Multi-Asset Project**
**Geology Map 1 of 2**

12-ORA-74
Project EA: 0R990
Project ID: 1219000072
Post Mile (PM): 0.0/11.5
Date Printed: 5/19/2025

**Legend**

- Project Area
- 1-Mile Buffer
- Fossil Locality (OC Parks)

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers
1:60,000

Caltrans

# APPENDIX D
# FIELD SURVEY FORMS

California Department of Transportation

**DISTRICT 12**
Environmental Department- Specialist Unit
1750 East 4th Street, Suite 100 | SANTA ANA, CA 92705
(657) 328-6000 | FAX (657) 328-6522 TTY 711

# Daily Survey Form- Paleontological

| | |
|---|---|
| Project Name | SR-74 Multi- Asset Project |
| Project EA/No. | EA 0R990/ 1219000072 (Post Mile [PM] 0.0/11.5) |
| Date | 4/16/2025 |
| Surveyor(s) | Judy Bernal and Victoria Stosel |
| Start Time | 8 AM |
| End Time | 12 PM |
| Location(s) | State Route (SR) – 74 (EB/WB ROW) |
| Location Type | Caltrans ROW at various PM |
| Were Native Sediments Observed? | Yes |
| Was Bedrock Observed | Yes |
| Other | POSITIVE Survey for exposed high potential units; Negative fossil resources surface survey |
| Starting Depth Below Street or Below Original Ground Level | Surface survey only |
| Comments | Survey included only the Temporary and Permanent Layout (L) Sheets below:<br>• Layout 15: PM 3.6 (**Drainage impact** & Pavement Delineation)<br>• Layout 17: PM 4.3 (**Drainage impact** & Pavement Delineation)<br>• Layout 21: PM 5.2/5.3 (**Drainage impact** & Pavement Delineation)<br>• Layout 22: PM 5.4/5.7 (Pavement Delineation)<br>• Layout 26: PM 6.4/6.7 (Pavement Delineation & Roadside Sign)<br>• Layout 27: PM 6.7/7.0 (Pavement Delineation & Roadside Sign)<br>• Layout 32: PM 8.0/8.2 (Pavement Delineation & Roadside Sign)<br>• Layout 41: PM 10.3/10.6 (Pavement Delineation & Roadside Sign & MGS upgrades)<br><br>Roadside areas ranged from disturbed at edge of pavement and shoulders/turn outs to undisturbed (bedrock cuts). Native bedrock units observed along SR-74. Visibility limited by dense vegetation including foxtail and other tall grasses, California sage, rabbit brush, oak trees, and floral varieties (native and invasive). *No fossil resources were observed.* |

## Lithology Unit

| Lithology 1: Quaternary Young Landslide Deposits (*Qyls*) | |
|---|---|
| Formation (and Member) Name | Young landslide deposits, undivided |
| Age | Holocene and late Pleistocene |
| Color | Light brown |
| Sorting | Poor |
| Angularity | Subangular to subrounded |
| Grain Size | Coarse-to-fine grained |
| Compaction | n/a |
| Clast | Conglomerate lenses |
| Mineralization | n/a |
| Sedimentary Structures | Generally, lacks sedimentary context; slope-failure deposits that consist of displaced bedrock blocks and or chaotically mixed rubble (Morton & Miller 2006) |
| Bottom Contact | n/a |
| Thickness (in feet) | ~4 meters height exposed along roadside sidewall cut, above street surface (depth unknown) |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: *Low to High Potential (depending on depths)*<br>Photo No.: Figures 1-2<br>Scope of Work/PM: **Drainage impact** & Pavement Delineation PM 3.6/3.7 |

## Lithology Unit

| Lithology 2: Quaternary Young Alluvial Deposits (*Qya*) | |
|---|---|
| Formation (and Member) Name | Young axial-channel deposits |
| Age | Holocene and late Pleistocene |
| Color | Light brown, brown and grey |
| Sorting | Poor |
| Angularity | Angular cobbles, subangular to angular pebbles |
| Grain Size | Cobble to fine silt and sand |
| Compaction | Poor |
| Clast | Conglomerate |
| Mineralization | n/a |
| Sedimentary Structures | Slightly to moderately consolidated silt, sand, and gravel deposits (Morton & Miller 2006) |
| Bottom Contact | n/a |
| Thickness (in feet) | Drainage cut exposed approx. 100-cm height. Depths unknown |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: *Low Potential*<br>Photo No.: Figure 5-6<br>Scope of Work/PM: **Drainage impact** & Pavement Delineation PM 5.1/5.3 (L-21); Pavement Delineation & Roadside Sign PM 6.4/6.8 (L-26 & 27); Pavement Delineation PM 10.3/10.4 (L-41) |

## Lithology Unit

| Lithology 3: Quaternary Very Old Alluvial Deposits (*Qvoa*) | |
|---|---|
| Formation (and Member) Name | Very old axial-channel deposits, Unit 3 |
| Age | Middle and late Pleistocene |
| Color | Brown and reddish-brown |
| Sorting | Poor |
| Angularity | Subangular to subrounded |
| Grain Size | Coarse to fine-grained sand |
| Compaction | n/a |
| Clast | *conglomerate* |
| Mineralization | *n/a* |
| Sedimentary Structures | In areas east and west of the mouth of the Santa Ana River, unit consists of alluvial deposits, but locally includes regolith or pedogenic-soil profile developed on San Timoteo Beds (Morton & Miller 2006). |
| Bottom Contact | n/a |
| Thickness (in feet) | n/a |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: Low Potential<br>Photo No.: Figure 14<br>Scope of Work/PM: Pavement Delineation PM 10.3/10.4 (L-41) |

| | |
|---|---|
| | Potentially these deposits appear to belong to younger or older quaternary alluvial in the area mapped as Ladd Formation. The Ladd Formation was not observed at these PM locations mapped as such. |

## Lithology Unit

| Lithology 4: Williams Formation (*Kwi*) | |
|---|---|
| Formation (and Member) Name | Williams Formation, Schulz Ranch Member (upper sandstone) |
| Age | Late Cretaceous |
| Color | Brown, yellow, and reddish-brown |
| Sorting | Well sorted |
| Angularity | subrounded |
| Grain Size | Coarse grained |
| Compaction | Well compacted *with Laminar bedding observed* |
| Clast | n/a |
| Mineralization | n/a |
| Sedimentary Structures | Marine sandstone and conglomerate- coarse grained matrix supported pebbles and cobbles and sparse siltstone interbeds (Morton & Miller 2006) |
| Bottom Contact | n/a |
| Thickness (in feet) | ~4 meter height exposed roadside cut, above surface level, depths unknown |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: Very High Potential<br>Photo No.: Figures 11-12 |

| | |
|---|---|
| | Scope of Work/PM: Pavement Delineation PM 5.6/5.7 (L-22); Pavement Delineation PM 6.9/7.0 (L-27) |

## Lithology Unit

| Lithology 5: Santiago Formation (*Tsn*) | |
|---|---|
| Formation (and Member) Name | Santiago Formation |
| Age | Middle Eocene |
| Color | Grey and light brown/white |
| Sorting | Well sorted |
| Angularity | n/a |
| Grain Size | Very fine-grained silt-and-sand |
| Compaction | Highly compacted |
| Clast | n/a |
| Mineralization | n/a |
| Sedimentary Structures | Continental and marine sandstone and conglomerate (Morton & Miller 2006) |
| Bottom Contact | n/a |
| Thickness (in feet) | ~6 meters height exposed roadside cut, above surface level |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: Very High Potential<br>Photo No.: Figures 4, 7-8<br>Scope of Work/PM: **Drainage Impact** PM 4.3 (L-17); Pavement Delineation & Roadside Sign PM 5.4/5.5 (L-22) |

| | |
|---|---|
| | |

## Lithology Unit

| Lithology 6: Ladd Formation (*Kld*) | ← NOT APPLICABLE |
|---|---|
| Formation (and Member) Name | Ladd Formation, Baker Canyon Conglomerate Member |
| Age | Late Cretaceous |
| Color | n/a |
| Sorting | n/a |
| Angularity | n/a |
| Grain Size | n/a |
| Compaction | n/a |
| Clast | n/a |
| Mineralization | n/a |
| Sedimentary Structures | Marine and locally nonmarine (?) conglomerate (Morton & Miller 2006) |
| Bottom Contact | n/a |
| Thickness (in feet) | n/a |
| Starting Depth (in feet) | n/a |
| Ending Depth (in feet) | n/a |
| Comments | Caltrans scale: High Potential<br>Photo No.: n/a<br>Scope of Work/PM: Pavement Delineation PM 10.3/10.4 (L-41)<br><br>NO EVIDENCE OF LADD FORMATION OBSERVED WITHIN MAPPED LOCATIONS AT APPROX. PM 10.2/10.4- Deposits appear to belong to younger or older quaternary alluvial of adjacent bedding (Figure 14) |

| Photo Log | Date: 4/16/2025 |
|---|---|

Figure 1. Drainage location proposed along EB SR-74, PM 3.6. View north. Location Sheet: Layout-15

Figure 2. Qyls deposits, close up,EB SR-74 ROW (Red 100 cm scale used in image). Location Sheet: Layout-15

Figure 3. Drainage location proposed along EB SR-74, approx. 125-ft west of PM 4.3 . View north. Location Sheet: Layout-17

Figure 4. Tsn deposits, close up,EB SR-74 ROW approx. 125-ft east of drainage feature (window survey, no scale). Location Sheet: Layout-17

Figure 5. Drainage location proposed along WB SR-74, approx. 170-ft east of PM 5.2. View north. Location Sheet: Layout-21

Figure 6. Qya deposits, close up,WB SR-74 ROW (Red 100 cm scale used in image). Location Sheet: Layout-21

Figure 7. Pavement Delineation and Roadside Signage proposed along WB SR-74, PM 5.4/5.5. View west. Location Sheet: Layout-22

Figure 8. Tsn deposits, close up,EB SR-74 ROW (no scale), PM 5.4/5.5. Location Sheet: Layout-22

Figure 9. Pavement Delineation and Roadside Signage proposed along EB SR-74, PM 6.5/6.6. View west. Location Sheet: Layout-26

Figure 10. Pavement Delineation and Roadside Signage proposed along EB SR-74, PM 6.5/6.6. View west. Location Sheet: Layout-26

Figure 11. Pavement Delineation and Roadside Signage proposed along SR-74, PM 6.9/7.0. View sw/west. Location Sheet: Layout-27

Figure 12. Kwi deposits, close up,EB SR-74 ROW (no scale), PM 6.9/7.0. Location Sheet: Layout-27

Figure 13. Pavement Delineation and Roadside Signage proposed along EB SR-74, PM 8.0/8.1. View east. Location Sheet: Layout-32

Figure 14. Qvoa deposits, close up, EB SR-74 ROW (Red 100 cm scale used in image), PM 8.0. Location Sheet: Layout-32


Figure 15. Pavement Delineation and Roadside Signage proposed along SR-74, PM 10.2/10.3. View east. Location Sheet: Layout-32 (Google Earth Image accessed 4/16/2025)


Figure 16. Pavement Delineation and MGS Replacements proposed along SR-74, PM 10.4. View east. Location Sheet: Layout-41 (Google Earth Image accessed 4/16/2025)

Figure 17. Qoa (?)-Alluvial deposits, close up, approx. 25 ft. south of EB SR-74 ROW (Red 100 cm scale used in image), PM 10.2/10.3. Location Sheet: Layout-41

# APPENDIX E

# PRELIMINARY PROJECT PLANS & CROSS SECTIONS

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 12 | Ora | 74 | 0.0/11.5 | | |

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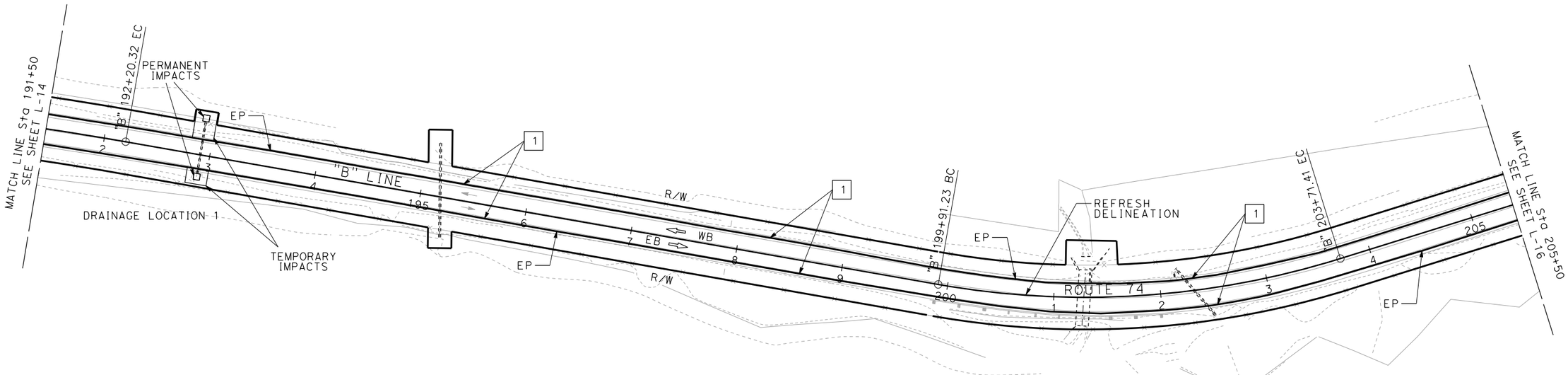


**LAYOUT**
SCALE: 1" = 50'

**L-15**

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 2992
PROJECT NUMBER & PHASE 12190000720

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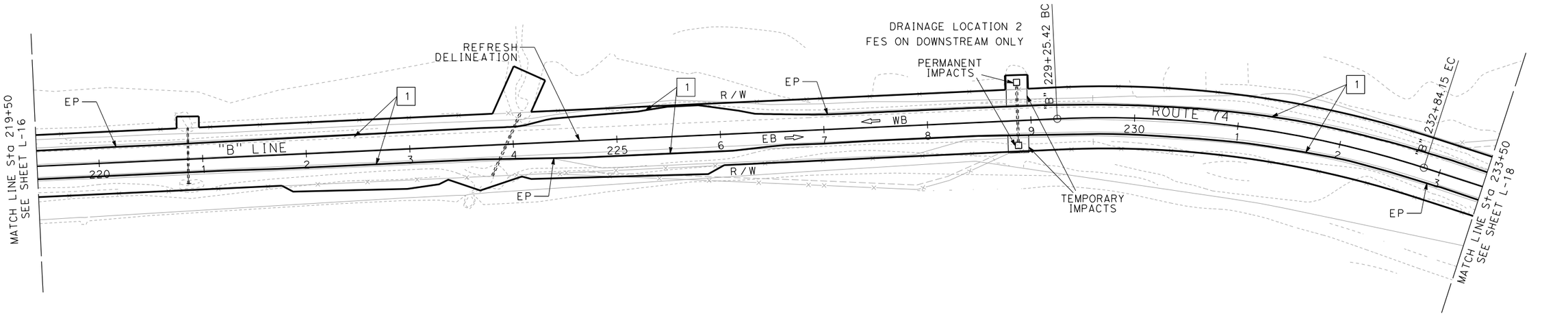


**LAYOUT**
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**L-17**

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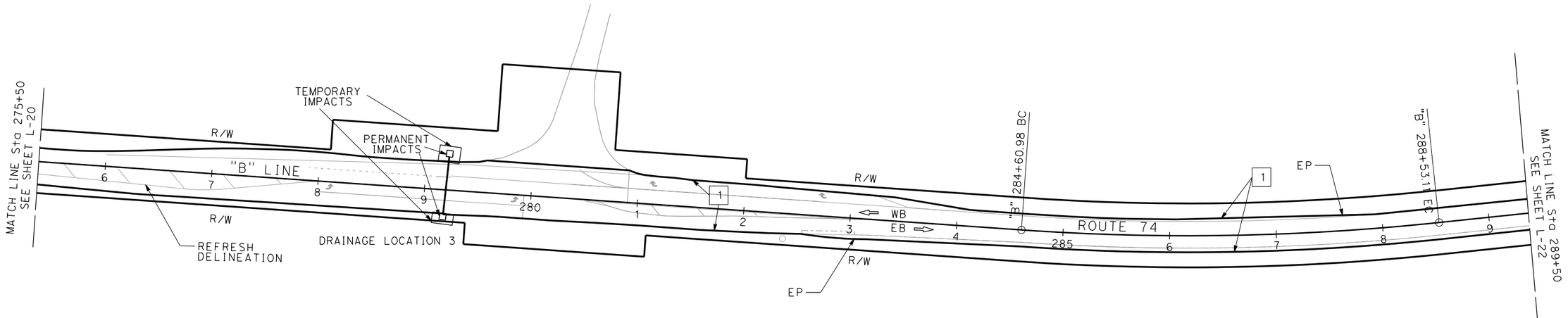


**LAYOUT**
SCALE: 1" = 50'

**L-21**

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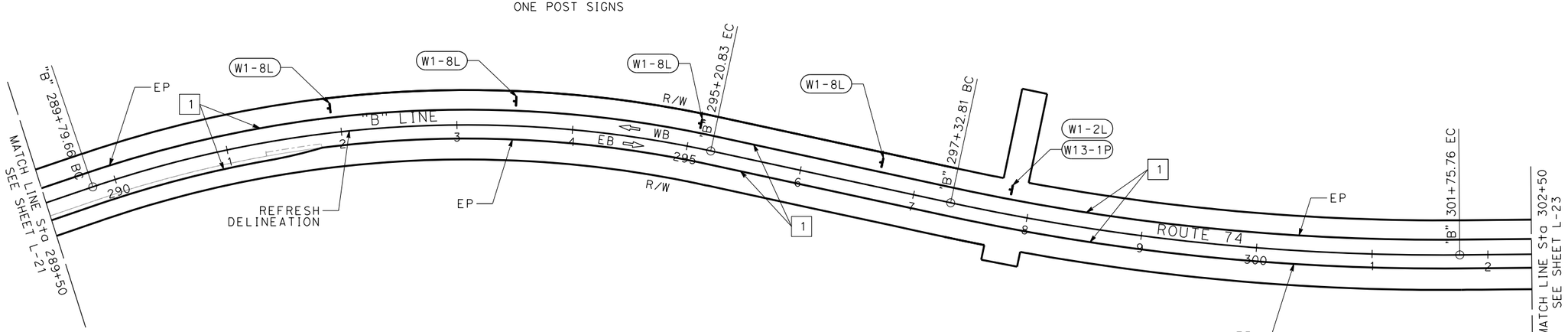


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**L-22**

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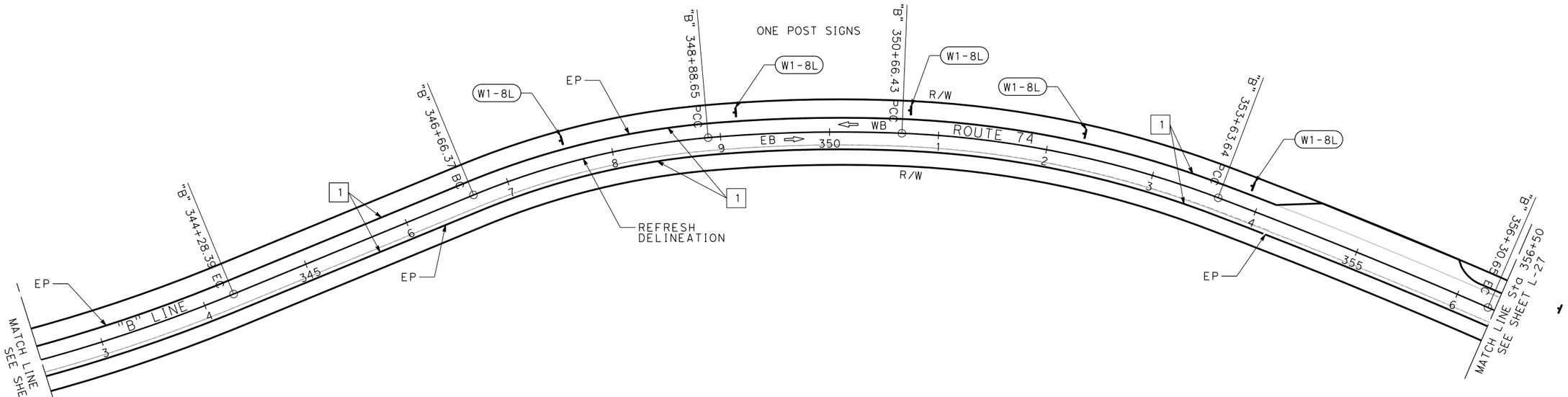


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**L-26**

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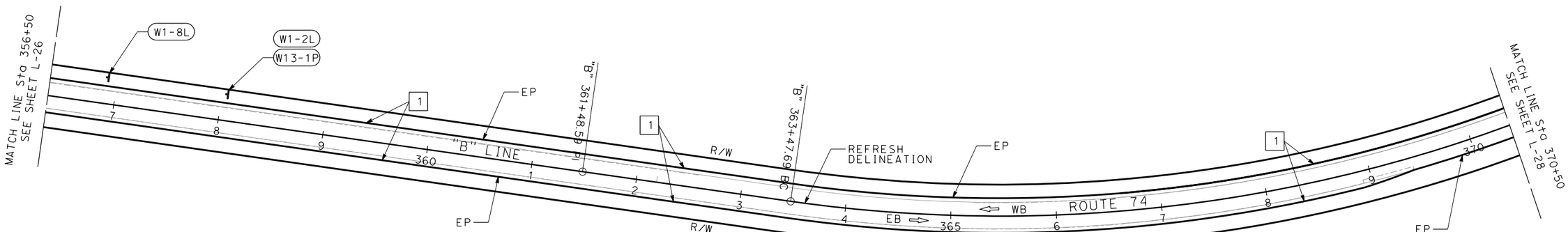


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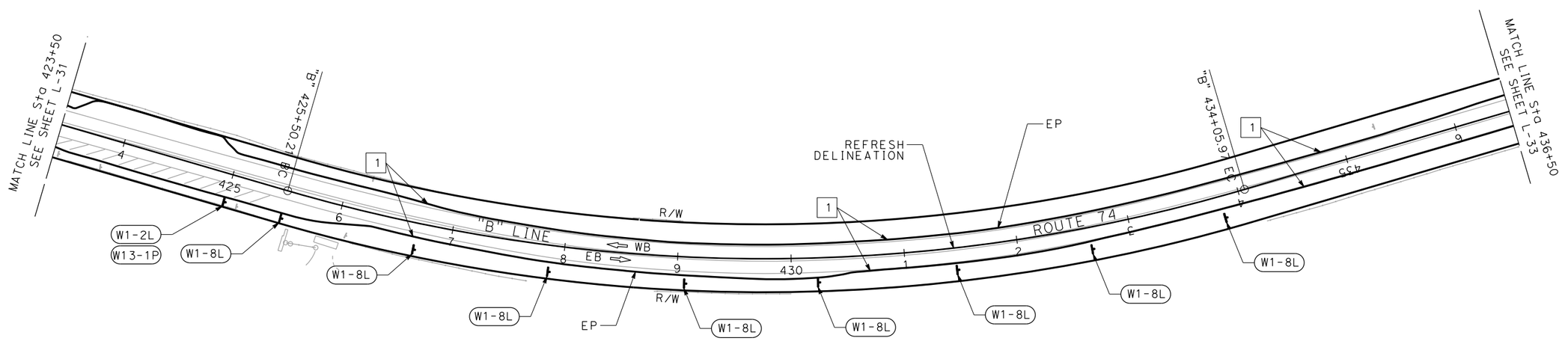


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**LAYOUT**
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**L-32**

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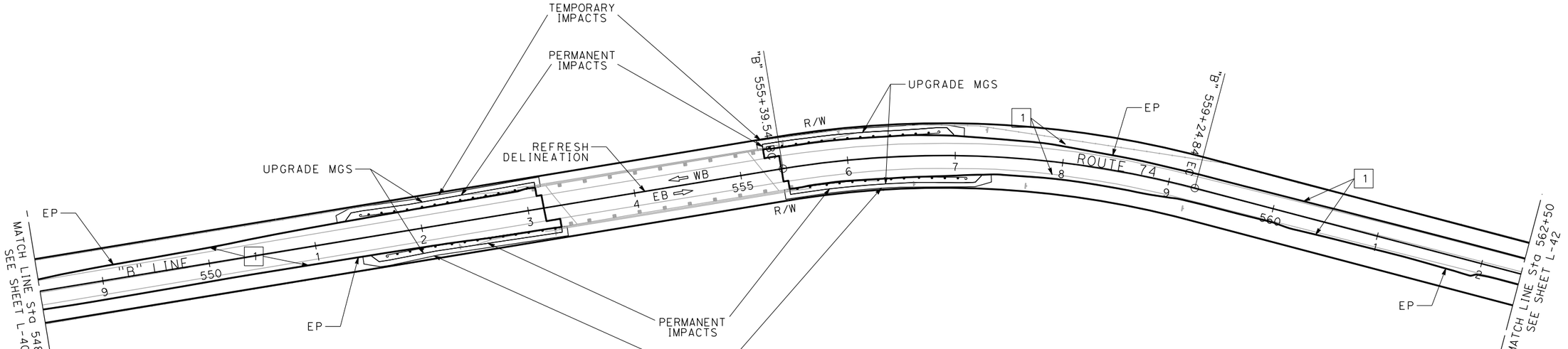


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**L-41**

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| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
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**TYPICAL PAVEMENT STRUCTURAL SECTIONS:**

1 — 0.20' RHMA-G
0.20' COLD PLANE AC PAVEMENT

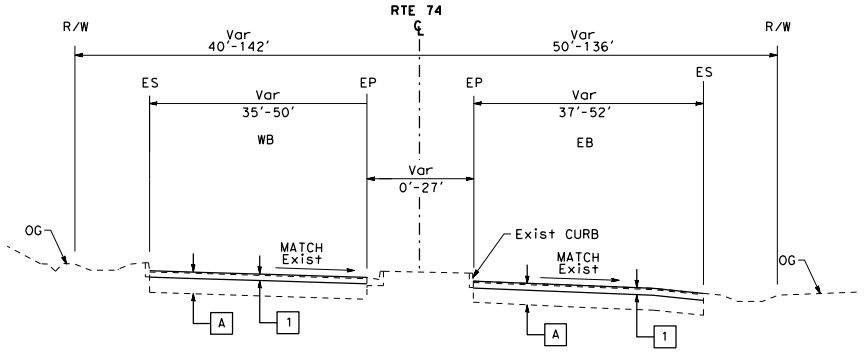
**EXISTING PAVEMENT STRUCTURAL SECTIONS:**

A — 0.20' Min-1.20' Max RHMA-G
0.15'-1.20' HMA
VARIES AB

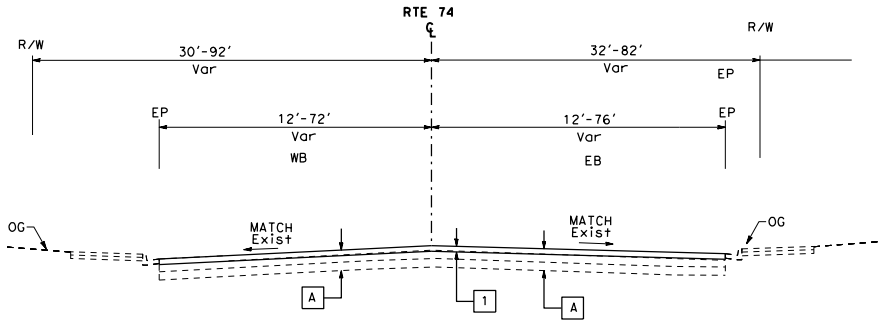
B — 0.65' HMA (TYPE A)
1.5' CLASS 2 AB

C — 0.2' RHMA-G
0.5'-0.6' AC
VARIES AB

D — 0.5' - 0.85' AC
VARIES AB




**ROUTE 74**
PM 2.0/3.0




**ROUTE 74**
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# TYPICAL CROSS SECTIONS

NO SCALE

X-1

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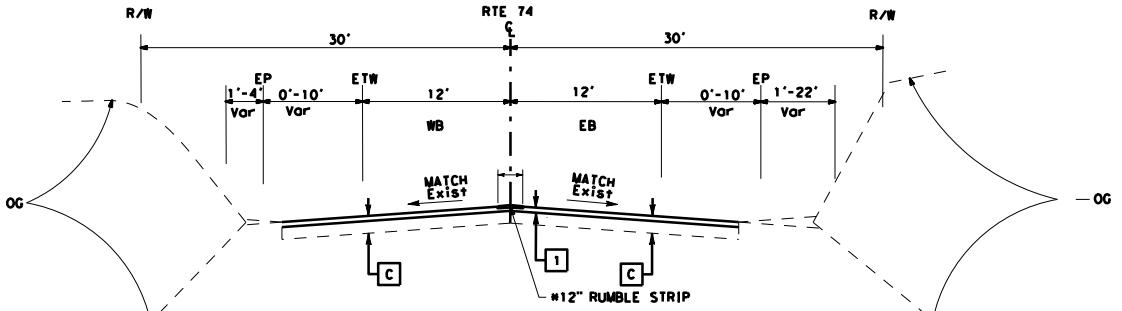
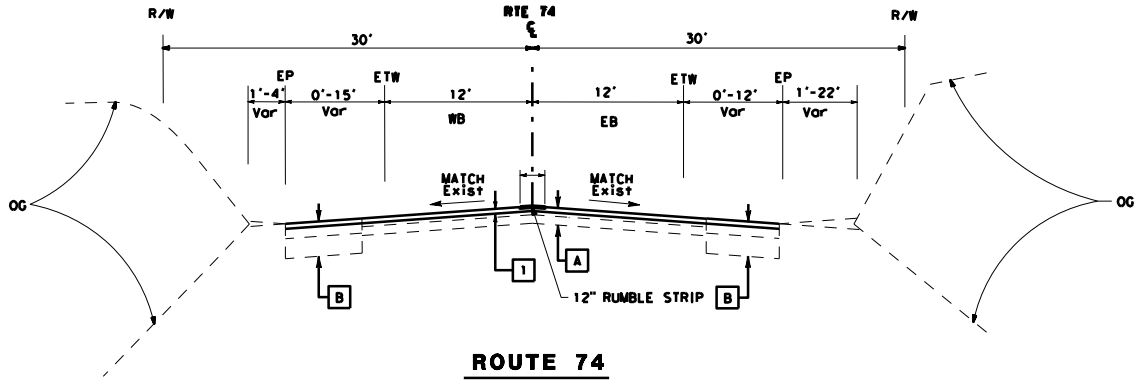



**ROUTE 74**
**PM 5.0/11.5**
**#PM 5.0/10.0**




**ROUTE 74**
**PM 3.0/5.0**

# TYPICAL CROSS SECTIONS

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X-2

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UNIT 3064

PROJECT NUMBER & PHASE 12220000761

# APPENDIX F
# TOPOGRAPHIC MAPS

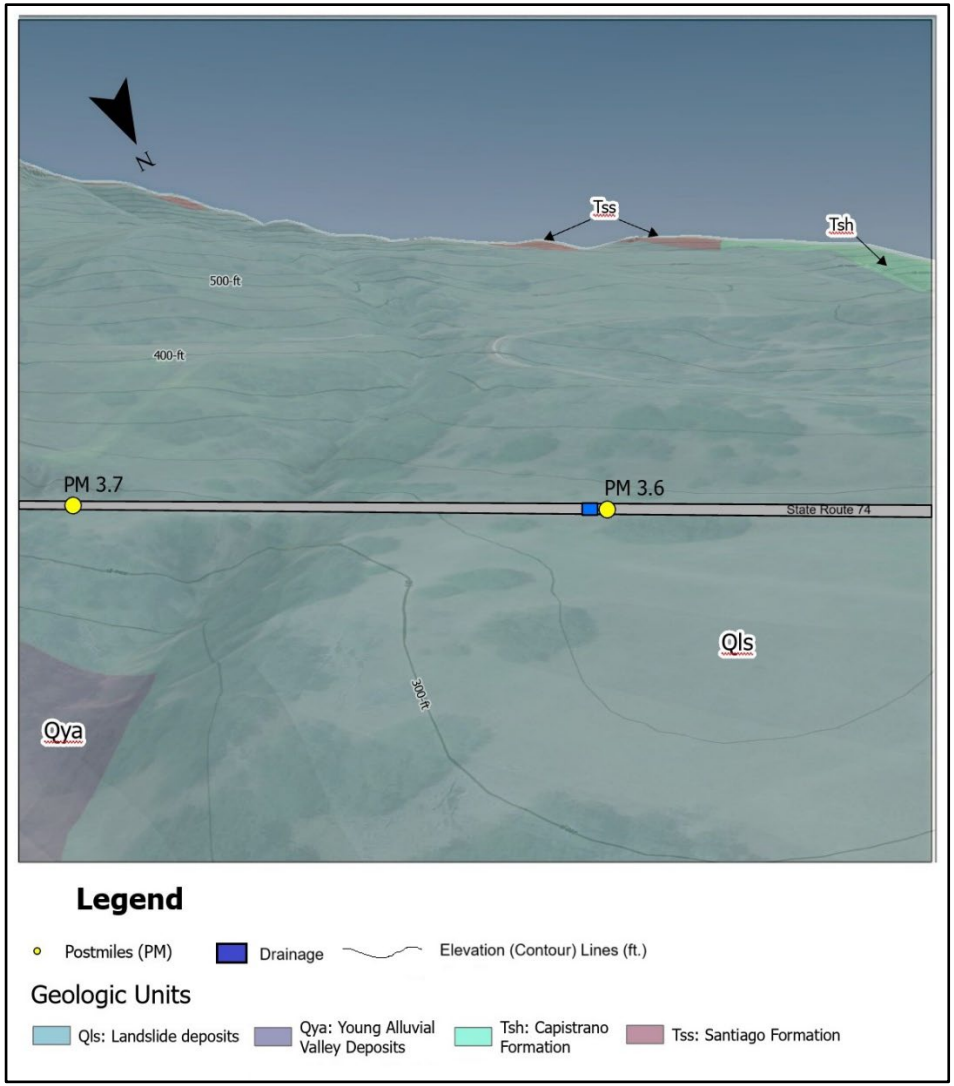


*Figure A. Drainage Location 1 at PM 3.6. 90° plan facing. View south/southeast.*

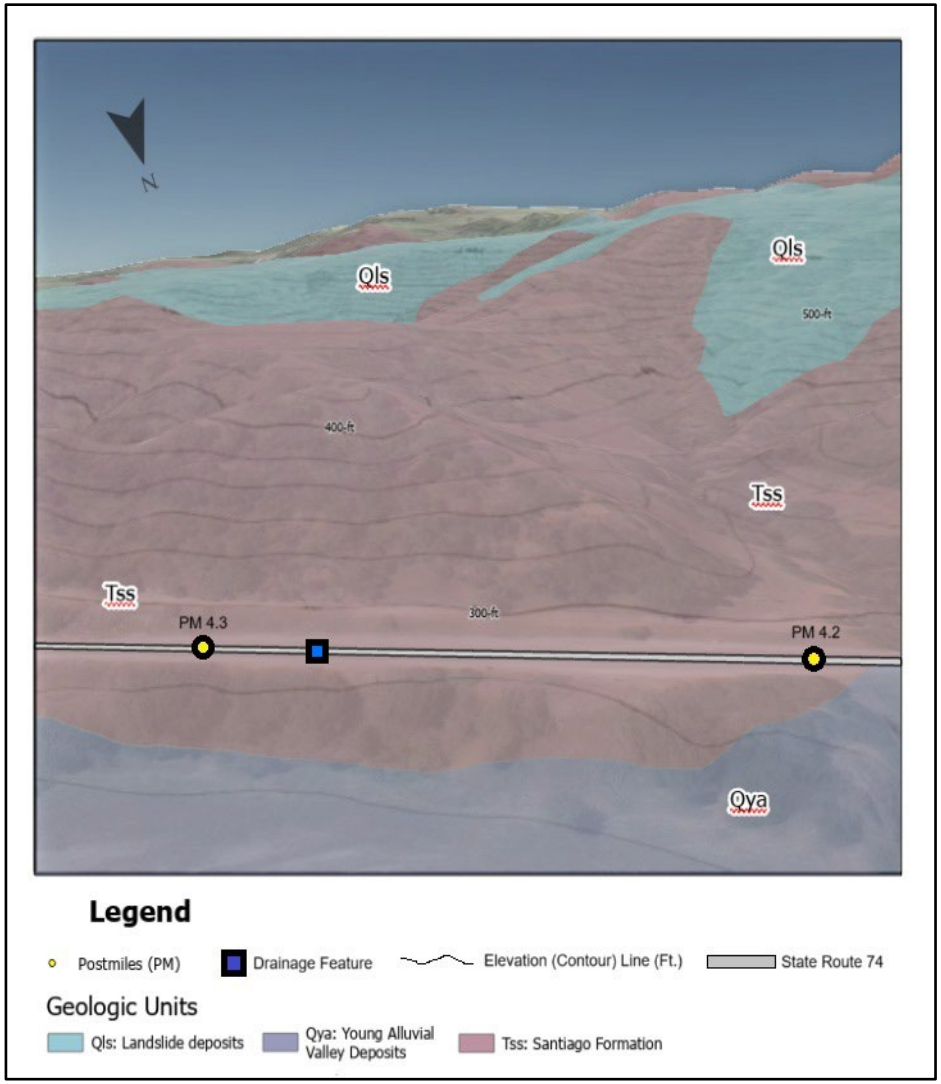


*Figure B. Drainage Location 2 at PM 4.2/4.3. 90° plan facing. View south/southeast.*

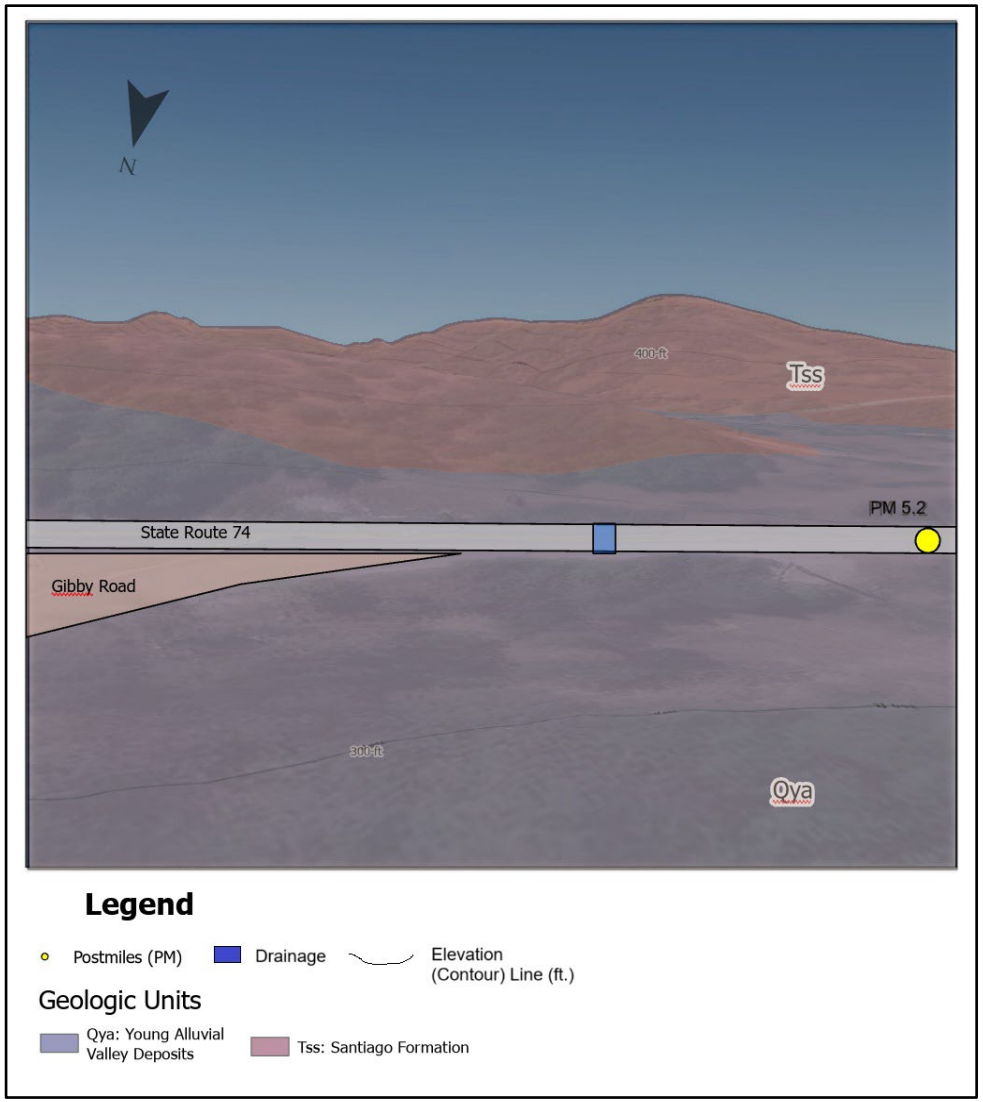


*Figure C. Drainage Location 3 at PM 5.2. 80° plan facing.*
*View south/southeast.*