APPENDIX 10.10 Alabama Street Effluent Pipeline Studies

10.10.1 Habitat Assessment for the Alabama Street Effluent Pipeline/Redlands Basin Alignment Option for the Clean Water Factory Project



October 19, 2015 JN:131284

SAN BERNARDINO MUNICIPAL WATER DEPARTMENT

397 Chandler Place San Bernardino, California 92408 (626)-858-8677

SUBJECT: Habitat Assessment for the Alabama Street Effluent Pipeline/Redlands Basin Alignment Option for the Clean Water Factory Project Located in the City of San

Bernardino, San Bernardino County, California.

Introduction

Michael Baker International (Michael Baker) conducted a habitat assessment for the proposed Alabama Street Effluent Pipeline/Redlands Basin Alignment Option for the Clean Water Factory Project (project) located in the City of San Bernardino, San Bernardino County, California. Michael Baker biologists Travis J. McGill and Ashley M. Barton inventoried and evaluated the condition of the habitat within the boundaries of the proposed project site on September 21, 2015. This is an addendum to the 2015 Habitat Assessment focusing on the newly proposed pipeline alignment.

The habitat assessment was conducted to characterize existing site conditions and to assess the probability of occurrence of sensitive¹ plant and wildlife species that could pose a constraint to development of this alignment. Special attention was given to the suitability of the habitat on-site to support San Bernardino kangaroo rat (*Dipodomys merriami parvus*), a federally endangered species, Santa Ana River woolly star (*Eriastrum densifolium* ssp. *sanctorum*), a federally and state endangered species, slender-horned spineflower (*Dodecahema leptoceras*), a federally and state endangered species, and other sensitive species identified by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and other electronic databases as potentially occurring in the vicinity of the project site.

Project Location

The proposed pipeline alignment is generally located east of Interstate 215, west of State Route 210, north of Interstate 10, and south of State Route 66 in the City of San Bernardino, San Bernardino

¹ As used in this report, "sensitive" refers to those plant and wildlife species that are federally or State listed, proposed, or candidates; plant species that have been designated a California Native Plant Society Rare Plant Rank; and species that are designated by the California Department of Fish and Wildlife as fully protected, species of special concern, or watch list species.

County, California (Exhibit 1, *Regional Vicinity and Local Vicinity*). The project site is depicted on the Redlands quadrangle of the United States Geological Survey's (USGS) 7.5-minute topographic map series in Sections 8 and 9, Township 1 south, Range 3 west. The current 36-inch Alabama Street effluent pipeline terminates approximately 200 feet west of Alabama Street. The new alignment will connect to the current pipeline and extend easterly within Riversidian alluvial fan sage scrub (RAFSS) habitat for approximately 200 feet to Alabama Street. It will then extend to south along Alabama Street crossing over the Santa Ana River and underneath the Alabama Street Bridge within the existing road right-of-way (Exhibit 2, *Project Site*).

Project Description

The new alignment is proposed to extend the eastern portion of the existing 36-inch Alabama Street effluent pipeline to connect into the existing Redlands Basin. The existing 36-inch Alabama Street effluent pipeline terminates approximately 200 feet west of Alabama Street. The proposed new alignment will connect to the current pipeline and extend easterly for approximately 200 feet to Alabama Street. From there, the pipeline will be installed within the existing Alabama Street right-of-way, and will be installed under the bridge deck and above the Santa Ana River. The pipeline will then outlet into the existing Redlands Basin located approximately 170 feet east of Alabama Street. The new alignment will run 200 feet east through Plunge Creek to Alabama Street.

Methodology

A literature review and records search was conducted to determine which sensitive biological resources have the potential to occur on or within the general vicinity of the project site. In addition to the literature review, a general habitat assessment or field investigation of the project site was conducted to document existing site conditions and determine the site's potential to support sensitive biological resources.

Literature Review

Prior to conducting a field visit, a literature review and records search was conducted for sensitive biological resources potentially occurring on or within the vicinity of the project site. Previously recorded occurrences of sensitive plant and wildlife species and their proximity to the project site were determined through a query of the CNDDB Rarefind 5 software, the California Native Plant Society's (CNPS) Electronic Inventory of Rare, Threatened, and Endangered Plants of California, Calflora Database, compendia of special-status species published by the CDFW, and United States Fish and Wildlife Service (USFWS) species listings, as well as the following resources:

- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey;
- USFWS Critical Habitat designations for Threatened and Endangered Species; and
- USFWS Endangered Species Profiles and Primary Constituent Elements (PCEs) for San Bernardino kangaroo rat



The literature review provided a baseline from which to inventory the biological resources potentially occurring on the project site. Additional recorded occurrences of these sensitive species found on or near the project site were derived from database queries. The CNDDB GIS database was used, in conjunction with ArcMap software, to locate the nearest occurrence and determine the distance from the project site.

Habitat Assessment and Field Investigation

Michael Baker biologists Travis J. McGill and Ashley M. Barton inventoried and evaluated the extent and conditions of the plant communities found within the boundaries of the project site on September 21, 2015. Plant communities identified on aerial photographs during the literature review were verified by walking meandering transects through the plant communities and along the boundaries between plant communities. The plant communities were limited to the 200 foot open area between the end of the existing pipeline and Alabama Street. The small stretch of open habitat was evaluated for its potential to provide suitable habitat for sensitive plant and wildlife species as well as the identification of corridors and linkages that may support the movement of wildlife through the area. All plant and wildlife species observed, as well as dominant plant species within each plant community, were recorded in a standardized field notebook. Observations of wildlife species included scat, trails, tracks, burrows, nests, and visual observation. In addition, site characteristics such as soil condition, topography, presence of indicator species, disturbance, hydrology, jurisdictional features, and evidence of anthropogenic influences on the site were noted.

Existing Site Condition

The project site is relatively flat with no areas of significant topographic relief. According to the USDA NRCS Soil Survey, on-site soils consists of Soboba stony loamy sand, 2 to 9 percent slopes, and psamments, fluvents, and frequently flooded soils. Psamments, fluvents, and frequently flooded soils contain somewhat excessively drained soils with a very low potential for runoff. Soboba stony loamy sand, 2 to 9 percent slopes, consist of excessively drained soils with a very low runoff class.

The proposed 200 foot extension occurs in natural habitats at the eastern end of the San Bernardino International Airport (SBIA) runway. The Santa Ana River lies immediately to the south and a sand/gravel mining operation is to the east.

Vegetation

The proposed 200 foot extension will extend through an intermediate RAFSS plant community associated with Plunge Creek floodplain east of its confluence with the Santa Ana River (Exhibit 3, *Vegetation*). The remainder of the pipeline will extend south and within the right-of-way of Alabama Street, an existing paved road and bridge. No native habitat will be impacted by the north to south portion of the pipeline alignment.

Riversidian Alluvial Fan Sage Scrub (1.6 acres)

The RAFSS plant community within the 200 foot extension is primarily found in association with the



Santa Ana River and Plunge Creek wash system. Plant species within this intermediate RAFSS plant community includes California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), scalebroom (*Lepidospartum squamatum*), yerba santa (*Eriodictyon californicum*), Russian thistle (*Salsola tragus*), and fountaingrass (*Pennisetum setaceum*).

Disturbed (1.0 acres)

Disturbed areas are generally areas that have been subject to human disturbances. The disturbed area near the proposed alignment no longer supports native vegetation and consist of patches of early successional and non-native plant species. This area is limited to the portion where the pipeline will enter the Redlands Basin. Plant species observed within disturbed areas include ripgut brome (*Bromus diandrus*), short podded mustard (*Hirschfeldia incana*), puncture vine (*Tribulus terrestris*), cheeseweed (*Malva parviflora*), white sweetclover (*Melilotus albus*), horseweed (*Erigeron canadensis*), Russian thistle (*Salsola tragus*), and telegraph weed (*Heterotheca grandiflora*).

Developed (3.4 acres)

Developed areas generally encompass all buildings, as well as paved, impervious surfaces. Alabama Street is an impervious, paved surface that runs along the north to south portion of the proposed pipeline alignment. The majority of the development will occur within this developed area.

Wildlife

The project site, particularly the portion of the alignment that will extend through RAFSS habitat, provides substantial habitat for wildlife species. The majority of the wildlife observed during the habitat assessment consisted of avian species included house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), American crow (*Corvus brachyrhynchos*), and great-tailed grackle (*Quiscalus mexicanus*).

No mammals were detected during the habitat assessment. However, mammalian species expected to occur on the project site include California ground squirrel (*Otospermophilus beecheyi*), coyote (*Canis latrans*), cottontail rabbit (*Sylvilagus audubonii*) and kangaroo rats (*Dipodomys* sp.).

Based on the habitats present, the project site provides suitable habitat for various reptilian species. Western fence lizard (*Sceloporus occidentalis*) was the only reptilian species observed during the habitat assessment. Other reptiles expected to occur include side-blotched lizard (*Uta stansburiana*), alligator lizard (*Elgaria coerulea*), pacific rattlesnake (*Crotalus oreganus helleri*) and gopher snake (*Pituophis catenifer catenifer*) within the RAFFS plant community in particular.

No fish or amphibians were observed on the project site during the habitat assessment. The lower reaches of the Santa Ana River provide suitable habitat for various fish species, including the federally threatened Santa Ana sucker (*Catostomus santaanae*) and California species of special concern arroyo chub (*Gila orcuttii*). However, the stretch of the river along Alabama Street is dry most of the year and does not provide suitable habitat for fish or amphibian species.



Nesting Birds

No nesting birds or breeding behaviors were observed during the field survey. On-site vegetation provides suitable nesting opportunities for avian species.

Migratory Corridors and Linkages

Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages, but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet still inadequate for others. Wildlife corridors are features that allow for the dispersal, seasonal migration, breeding, and foraging of a variety of wildlife species. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

Due to the extensive development of the City of San Bernardino, migratory corridors within the city area limited. The Santa Ana River is designated by the County's Land Use Plan as a wildlife corridor. During installation of the proposed pipeline, temporary impacts to wildlife movement may occur within the Santa Ana River. However, development of the proposed project is not expected to have any permanent impacts to wildlife movement. Further, the future project conditions will continue to provide wildlife movement opportunities along the Santa Ana River.

Jurisdictional Areas

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The U.S. Army Corps of Engineers (Corps) Regulatory Branch regulates discharge of dredge or fill materials into "waters of the United States" pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates alterations to streambed and bank under Fish and Wildlife Code Sections 1600 et seq., and the Regional Water Quality Control Board (Regional Board) regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

A formal jurisdictional delineation has not been conducted for the new proposed project alignment. The eastern portion of the pipeline that will extend approximately 200 feet through open RAFSS habitat on the north bank of Plunge Creek immediately east of its confluence with the Santa Ana River. Plunge Creek is a recognized jurisdictional water. Based off of current design plans, the following regulatory approvals are anticipated to be required: Corps CWA Section 404, Regional Board CWA Section 401 Water Quality Certification, and CDFW Section 1602 Streambed Alteration Agreement will be needed if impacts occur to Plunge Creek or the Santa Ana River. Additionally, CDFW may require a 1602 for impacts to the RAFSS plant community.



Conservation Management Plan

When the U.S. Air Force initiated the process of closing Norton Air Force Base and transferring operations and ultimately ownership of the Base airport facilities to the San Bernardino International Airport Authority (SBIAA), a portion of the eastern and southeastern airport property was placed in a Conservation Management Plan (CMP) area after negotiations with the USFWS. The property encompassing the CMP is currently under the authority of the San Bernardino International Airport Authority. The CMPS identifies three (3) management areas as follows: Core Management Area-1 (CMA-1), Core Management Area-2 (CMA-2), and Open Space Management Area (OSMA-1).

Per the current pipeline alignment option for this project, the east to west portion of the existing pipeline runs along the southern boundaries of OSMA-1 and CMA-1. The proposed extension runs approximately 200 feet just outside the southern boundary of CMA-1 before turning south on Alabama Street. Exhibit 5, *Conservation Areas* shows the location of the CMA-1 conservation area. CMA-1 is managed for conservation and any construction or staging within CMA-1 will require coordination with SBIAA and USFWS.

Sensitive Biological Resources

The CNDDB and CNNPS were queried for reported locations of sensitive plant and wildlife species as well as sensitive natural plant communities in the Redlands USGS 7.5-minute quadrangle. A search of published records of these species was conducted within this quadrangle using the CNDDB Rarefind 5 online software and the CNPS's Electronic Inventory of Rare, Threatened, and Endangered Plants of California. The habitat assessment evaluated the conditions of the habitat(s) within the boundaries of the project site to determine if the existing plant communities at the time of this survey have the potential to provide suitable habitat(s) for sensitive plant and wildlife species.

The literature search identified sixteen (16) sensitive plant species, thirty-six (36) sensitive wildlife species, and three (3) CDFW sensitive habitats as having the potential to occur within the Redlands USGS 7.5-minute quadrangle. These sensitive plant and wildlife species were evaluated for their potential to occur on the project site based on habitat requirements, availability/quality of suitable habitat, and known distributions.

Sensitive Plants

Sixteen (16) sensitive plant species have been recorded by the CNDDB and CNPS in the San Redlands quadrangle. No sensitive plant species were observed on-site during the habitat assessment. Based on habitat requirements for specific species and the availability and quality of habitats needed by each sensitive plant species, it was determined the RAFSS plant community associated with Plunge Creek and the Santa Ana River wash, adjacent to Alabama Street, has the potential to provide suitable habitat for sensitive plant species. Based on the results of the habitat assessment, Santa Ana River woolly star was observed on-site. It was also determined the project site has moderate potential to support slender-horned spineflower, Parry's spineflower (*Chorizanthe parryi var. parryi*), and a low potential to support peninsular spineflower (*Chorizanthe leptotheca*) and Plummer's mariposa-lily (*Calochortus plummerae*).



Santa Ana River Woolly Star

Santa Ana River woolly star is a perennial which grows upright to about 3 feet and can be found in dry, sandy soils in open areas on alluvial terraces. It is known only from the Santa Ana River channel, historically from the base of the San Bernardino Mountains downstream to Anaheim. Currently, it can be found mostly in the cities of Mentone and Redlands. Habitat types include both chaparral and alluvial scrub. It is a pioneer subspecies that colonizes washed sand deposits created by sporadic stream flow action. Periodic flooding, scouring, and sediment deposition is important to maintaining Santa Ana River woolly star habitat. This species can be found at elevations ranging from 299 to 2,001 feet above mean sea level and has a blooming period from April to September. The closest occurrence was found on the project site within the Santa Ana River wash (CNDDB, 2014). Santa Ana River woollystar was observed during the 2015 habitat assessment and is known to occur within CMA-1. Focused surveys are recommended during the 2016 blooming season.

Sensitive Wildlife

Thirty-six (36) sensitive wildlife species have been recorded by the CNDDB in the Redlands quadrangle. No sensitive wildlife species were observed on-site during the habitat assessment. Based on the results of the habitat assessment, it was determined that the project site has a high potential to support San Bernardino kangaroo rat, a moderate potential to support Los Angeles Pocket mouse (*Perognathus longimembris brevinasus*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), Cooper's hawk (*Accipiter cooperii*), California gnatcatcher (*Polioptila californica californica*), and burrowing owl (*Athene cunicularia*), and a low potential to support western spadefoot, coast horned lizard (*Phrynosoma blainvillii*), and orangethroat whiptail (*Aspidoscelis hyperythra*). All remaining sensitive wildlife species are presumed to be absent from the project site based on habitat requirements, availability and quality of habitat needed by each species, and known distributions.

San Bernardino Kangaroo Rat

The San Bernardino kangaroo rat is listed as endangered by the Environmental Species Act (ESA) and is designated by the CDFW as a California species of special concern. Its range extends between Riverside and San Bernardino Counties. It can most often be found in alluvial scrub/sage scrub habitats on gravelly and sandy soils along river and stream terraces, or on alluvial fans; its characteristic plant community is Riversidian Alluvial Fan Sage Scrub. Breeding typically occurs between February and October; although one brood is typical, San Bernardino kangaroo rat can breed twice in one year if the food supply is abundant.

A CNDDB query conducted for documented locations of San Bernardino kangaroo rat, and the closet observation for San Bernardino kangaroo rat was documented in the proposed alignment in Plunge Creek where the eastern portion of the pipeline is proposed to cross to Alabama Street (CNDDB, 2006). Without trapping, it should be presumed that San Bernardino kangaroo rat inhabits this portion of the project site.



Sensitive Plant Communities

The CNDDS lists three (3) sensitive plant communities as being identified within the Redlands quadrangle: Southern Coast Live Oak Riparian Forest, Southern Sycamore Alder Riparian Woodland, and RAFSS. One of these sensitive plant communities, RAFSS, is located within the boundaries of the proposed pipeline alignment. RAFSS is considered a CDFW S.1-1 "very threatened" plant community found in association with Plunge Creek and the Santa Ana River wash area within the project footprint.

Critical Habitat

Under the federal Endangered Species Act, "Critical Habitat" is designated at the time of listing of a species or within one year of listing. "Critical Habitat" refers to habitat or a specific geographic area that contains the elements and features that are essential for the survival and recovery of the species. In the event that a project may result in take or in adverse effects to a species' designated Critical Habitat, the project proponent may be required to engage in suitable mitigation. However, consultation for impacts to Critical Habitat is only required when a project has a federal nexus (i.e. occurs on federal land, is issued federal permits [e.g. Corps Section 404 Clean Water Act permit], or receives any other federal oversight or funding). If a project does not have a federal nexus, Critical Habitat consultations are not required.

In 2002 the USFWS designated Critical Habitat for SBKR, and the project site was included within the designated area. Subsequently, in 2008 the USFWS reduced the boundaries of their previously designated Critical Habitat which removed the project site from designation. Finally at the beginning of 2011 the original (2002) designated Critical Habitat was reinstated by a federal district court ruling which overturned the reduced (2008) designated Critical Habitat. Currently the entire project site is located within designated Critical Habitat Unit 1: Santa Ana River Wash (Exhibit 4, *Critical Habitat*).

The Santa Ana River is also designated Critical Habitat (Unit 1) for Santa Ana sucker (*Catostomus santaanae*). However, the portion of the pipeline running north to south on Alabama Street will not affect the Critical Habitat for Santa Ana sucker, since it will be within the existing developed road.

Conclusion

The project consists of a 200 foot extension from the end of an existing pipeline to Alabama Street, a north the south pipeline within Alabama Street, a developed paved road, and terminates at the Redlands Basin at its southern terminus. The existing pipeline occurs within RAFSS habitat on the northern reaches of the Santa Ana River, but no construction is proposed to occur within that area. One (1) plant community was observed during the habitat assessment: RAFSS occurring within the 200 foot east to west extension. In addition there are two (2) areas that would be classified as disturbed, and developed that occur within the north to south pipeline associated with Alabama Street. These areas are not vegetation classifications, rather land cover types.

Santa Ana river woolly star was observed during the 2015 habitat assessment. It is recommended that a sensitive plant survey be conducted during the 2016 blooming season in order to determine the status of



Santa Ana river wooly star, slender-horned spineflower, and other sensitive plant species within the 200 foot extension area that runs through open RAFSS habitat.

Based on habitat requirements for specific species along with the availability and quality of habitats needed by each sensitive wildlife species, it was determined that the project site has a high potential to support San Bernardino kangaroo rat, and a moderate potential to support Los Angeles pocket mouse, northwestern San Diego pocket mouse, Cooper's hawk, California gnatcatcher, and burrowing owl. All remaining sensitive wildlife species have a low potential to occur or are presumed to be absent from the project site based on habitat requirements, availability and quality of habitat needed by each species, and known distributions.

San Bernardino Kangaroo rat is known to occur in the general area, particularly in Plunge Creek and the Santa Ana River wash areas where the eastern portion of the proposed pipeline connects to Alabama Street. A presence/absence trapping surveys for San Bernardino kangaroo rat is recommended.

A formal jurisdictional delineation has not been conducted for the new proposed project alignment. The eastern portion of the pipeline that will extend approximately 200 feet through open RAFSS habitat on the north bank of Plunge Creek immediately east of its confluence with the Santa Ana River. Plunge Creek is a recognized jurisdictional water. The following regulatory approvals are anticipated: Corps CWA Section 404, Regional Board CWA Section 401 Water Quality Certification, and CDFW Section 1602 Streambed Alteration Agreement will be needed if impacts occur to Plunge Creek or the Santa Ana River. Additionally, CDFW may require a 1602 for impacts to the RAFSS plant community.

Per the current pipeline alignment option for this project, the proposed pipeline will run approximately 200 feet east just outside the southern boundary of CMA-1 to Alabama Street. This conservation management area is located in the immediate vicinity of the eastern and southeastern end of the runway. CMA-1 is managed for conservation and any construction or staging within CMA-1 requires coordination with SBIAA and USFWS.

Recommendations

Due to the presence of open RAFSS habitat, it was determined San Bernardino kangaroo rat has a high potential to occur within the 200 foot extension area. A trapping study of the site is recommended to determine the presence/absence of San Bernardino kangaroo rat in this area.

Santa Ana river woolly star was observed during the 2015 survey. Slender-horned spineflower was not observed during the 2015 habitat assessment. However, the habitat assessment was conducted outside of the appropriate blooming period for both species and does not definitively confirm the presence/absence of the species from the survey area. Therefore, it is recommended that a sensitive plant survey be conducted during the 2016 blooming season in order to determine the status of Santa Ana river wooly star, slender-horned spineflower, and other sensitive plant species within the 200 foot extension area. The focused surveys for Santa Ana river wooly star should occur between the months of May and September. Focused surveys for slender-horned spineflower should occur between the months of April and June.



Any construction or staging within CMA-1 should be coordinated with the SBIAA and USFWS.

Nesting Birds

Vegetation within and adjacent to the project site has the potential to provide suitable nesting opportunities for avian species. Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and Fish and Game Code (Sections 3503, 3503.3, 3511, and 3513 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs). In order to protect migratory bird species, nesting bird clearance surveys need to be conducted prior to any vegetation removal or any ground disturbing activities that may disrupt nesting birds during the nesting season. The nesting season generally extends from February 1 through August 31, but can vary slightly from year to year based upon seasonal weather conditions.

It is recommended that a pre-construction burrowing owl clearance survey be conducted to ensure burrowing owls remain absent from the survey area. The clearance survey should be conducted in accordance with the CDFW 2012 Staff Report on Burrowing Owl Mitigation. Two pre-construction clearance surveys shall be conducted 14-30 days and 24 hours prior to any vegetation removal or ground disturbing activities throughout all areas determined to support suitable habitat for burrowing owls.

A pre-construction clearance survey for nesting birds should be conducted within three (3) days prior to any ground disturbing activities to ensure that no nesting birds will be disturbed during construction. As long as development does not cause direct take of a bird or egg(s) or disrupt nesting behaviors, immediate protections would not be required. The biologist conducting the clearance survey should document a negative survey with a report indicating that no impacts to active avian nests or burrowing owl burrows will occur.

If an active avian nest is discovered during the pre-construction clearance survey, construction activities might have to be rerouted, a no-work buffer² might have to be established around the nest, or construction may be delayed until the nest is inactive. It is recommended that a biological monitor be present to delineate the boundaries of the buffer area if an active nest is observed and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the qualified biologist has determined that young birds have successfully fledged or the nest has otherwise become inactive, a monitoring report shall be prepared and submitted to the City of Rancho Cucamonga for review and approval prior to initiating construction activities within the buffer area. The monitoring report shall summarize the results of the nest monitoring, describe construction restrictions currently in place, and confirm that construction activities can proceed within the buffer area without jeopardizing the survival of the young birds. Construction within the designated buffer area shall not proceed until written authorization is received by the applicant from CDFW.

² The size of the buffer shall be determined by the biologist in consultation with CDFW, and shall be based on the nesting species, its sensitivity to disturbance, and expected types of disturbance. These buffers are typically 300 feet from the nests of non-listed, non-raptors and 500 feet from the nests of listed species or raptors.



Please do not hesitate to contact Thomas J. McGill at (909) 974-4907 or Travis J. McGill at (909) 974-4958 or travismcgill@mbakerintl.com should you have any questions or require further information.

Sincerely,

Thomas J. McGill, Ph.D.

Vice President

Natural Resources

Travis J. McGill

Biologist

Natural Resources

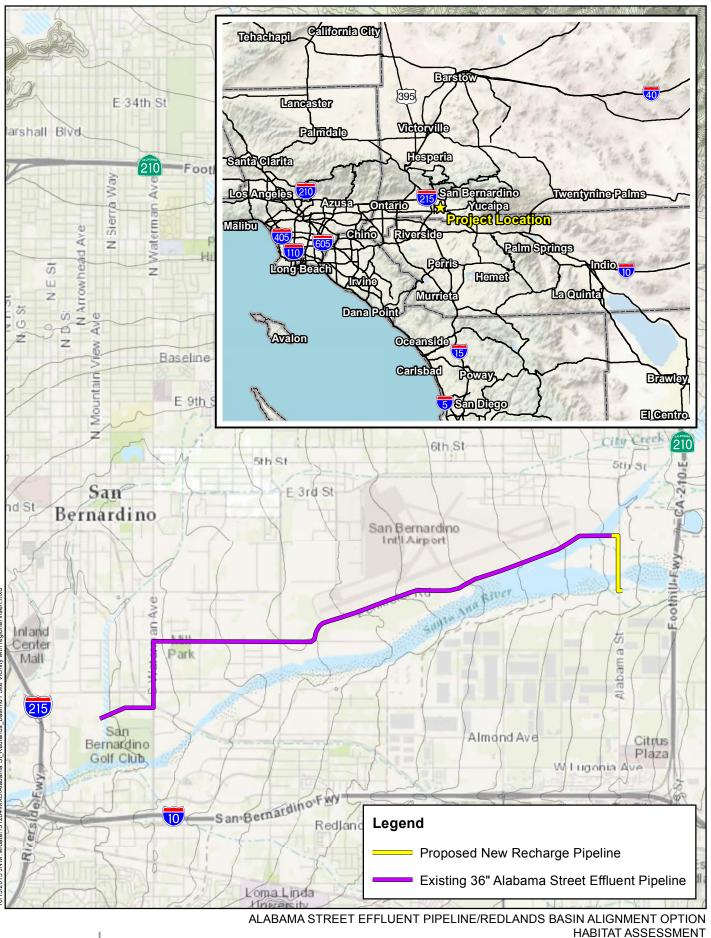
Attachments:

A. Project Exhibits

B. Site Photographs

Attachment A

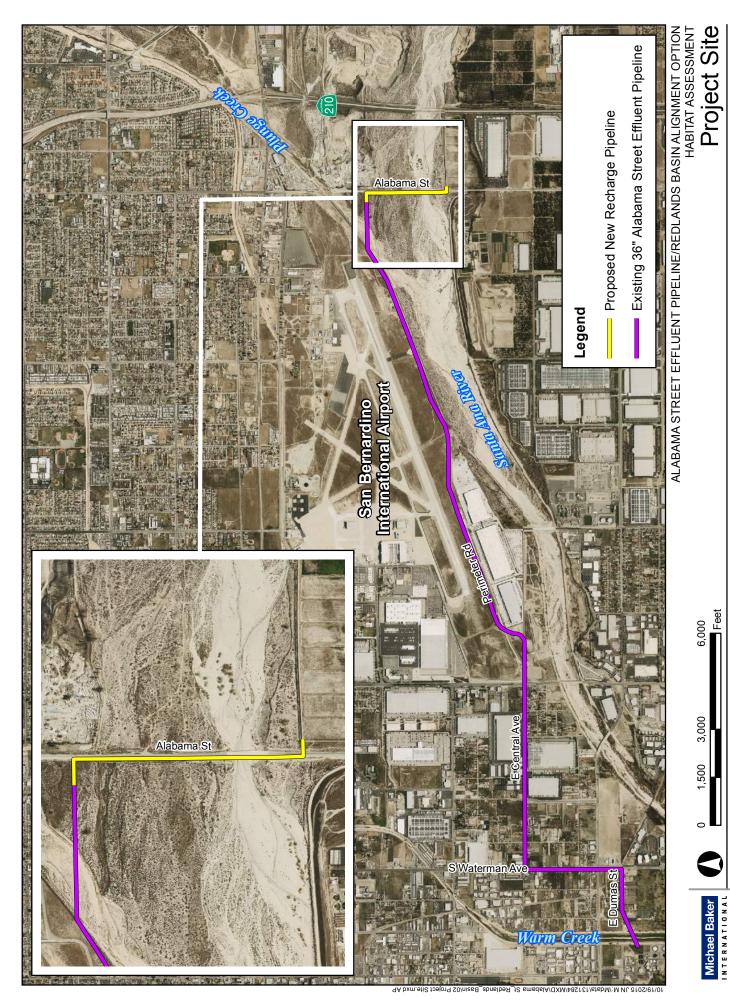
Project Exhibits



0 0.5 1 2 Miles

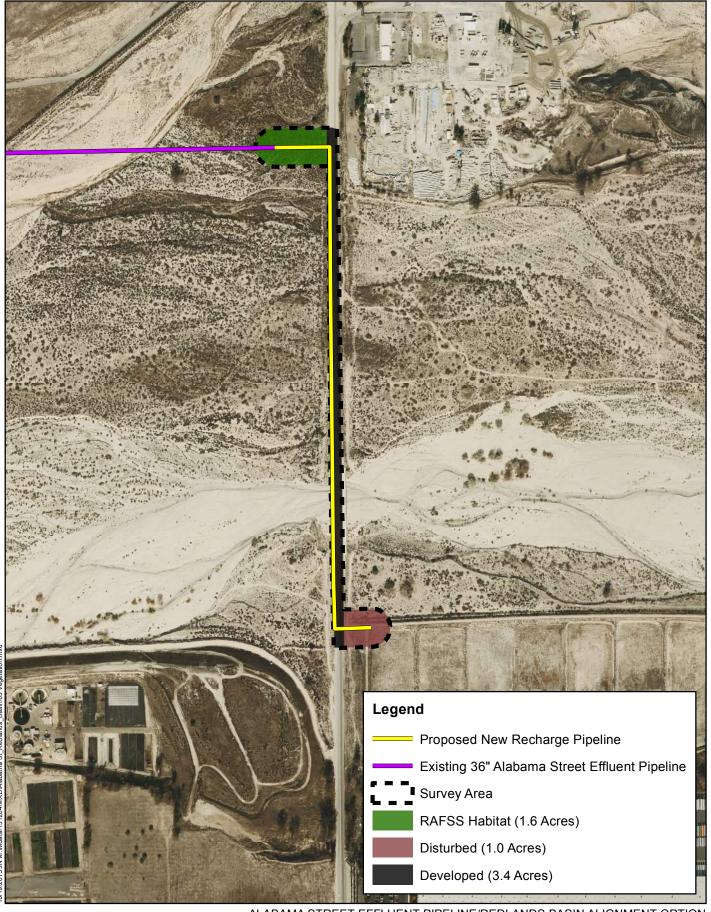
Regional and Local Vicinity

Project Site



3,000 1,500

Michael Baker



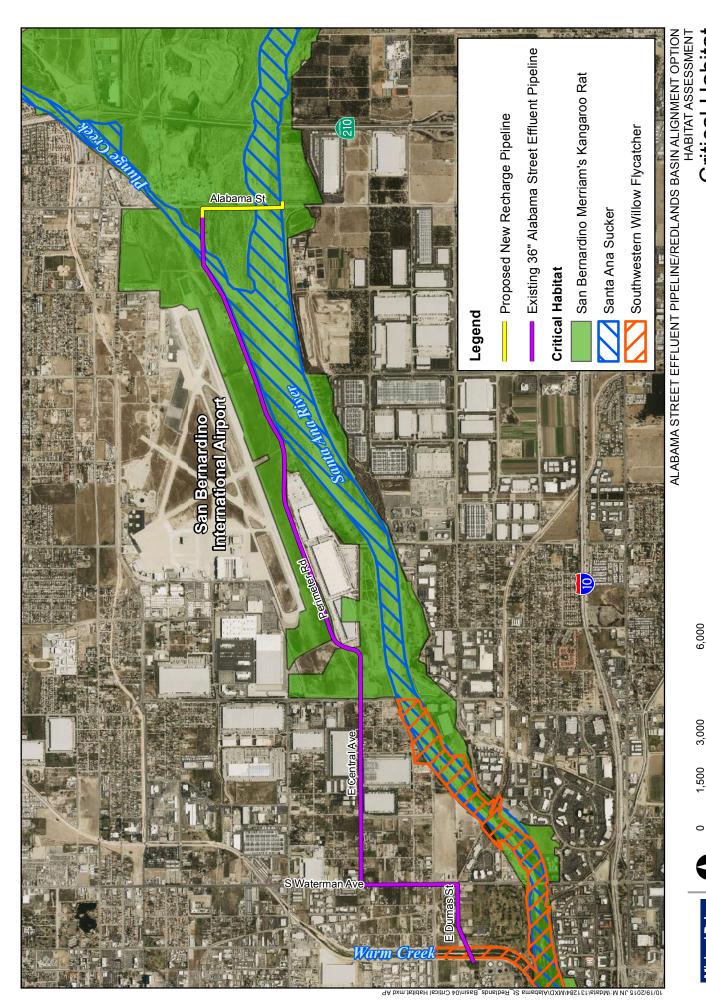
ALABAMA STREET EFFLUENT PIPELINE/REDLANDS BASIN ALIGNMENT OPTION HABITAT ASSESSMENT



0 250 500 1,000 Feet

Vegetation

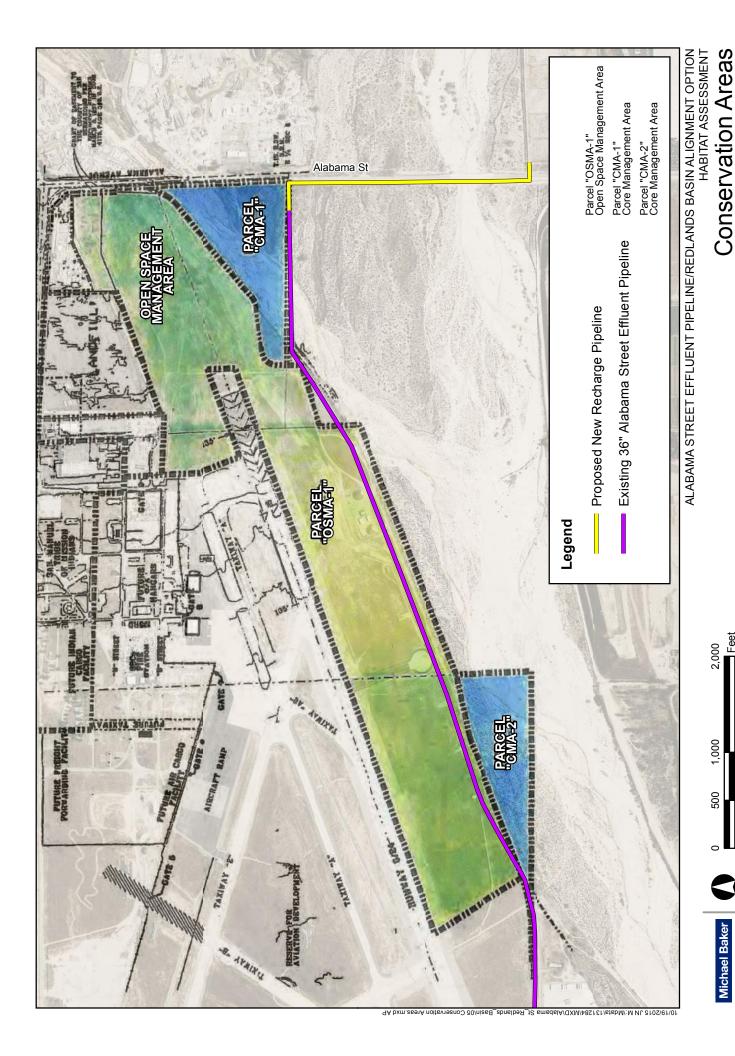
Critical Habitat



3,000 1,500

Feet

Michael Baker



Attachment B

Site Photographs



Photograph 1: Looking northwest where the 200 foot extension is proposed to cross through intermediate RAFSS habitat to Alabama Street. SBIAA can be seen in the background.



Photograph 2: Looking north at the developed/paved area of Alabama Street.





Photograph 3: Looking east at the area along the Santa Ana River.



Photograph 4: Looking southeast at the Redlands Basins where the eastern portion of north to south pipeline extension, which runs along Alabama Street, will terminate.



10.10.2 Cultural Resources Assessment for the Alabama Street Effluent Pipeline

IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES

CLEAN WATER FACTORY PROJECT ALABAMA STREET EFFLUENT PIPELINE ALIGNMENT OPTION

Cities of Redlands and San Bernardino San Bernardino County, California

For Submittal to:

Municipal Water Department City of San Bernardino 300 North D Street San Bernardino, CA 92401 (909) 387-9200

State Water Resources Control Board 1001 I Street/P.O. Box 944212 Sacramento, CA 94244 (916) 341-5690

U.S. Army Corps of Engineers Los Angeles District 915 Wilshire Boulevard, Suite 1101 Los Angeles, CA 90017 (213) 452-3333

Prepared for:

Christine Donoghue, Project Manager Michael Baker International 3536 Concours Street, Suite 100 Ontario, CA 91764 (909) 974-4954

Prepared by:

CRM TECH 1016 East Cooley Drive, Suite A/B Colton, CA 92324 (909) 824-6400

B. Tang, Principal Investigator, HistoryM. Hogan, Principal Investigator, ArchaeologyT. Jacquemain, Historian/Report Writer

March 4, 2016

CRM TECH Project No. 2974A
Approximately six linear miles
USGS San Bernardino South and Redlands, Calif., 7.5' quadrangles
Rancho San Bernardino land grant, T1S R3W and T1S R4W, San Bernardino Baseline and Meridian
Keywords: Phase I historical/archaeological resources survey; Atchison, Topeka and Santa Fe Railway's Kite-Shaped Track (36-006847);
Timber Ditch (PSBR-26H); North Fork Ditch (PSBR-26H)

EXECUTIVE SUMMARY

Between September 2015 and March 2016, at the request of Michael Baker International, CRM TECH performed a cultural resources study on the Area of Potential Effects (APE) for the proposed Alabama Street Effluent Pipeline Alignment Option of the San Bernardino Clean Water Factory Project in the Cities of San Bernardino and Redlands, San Bernardino County, California. As proposed by the San Bernardino Municipal Water Department (SBMWD), the undertaking entails the activation of an existing 36-inch-diameter effluent pipeline and the installation of approximately 200 feet of matching pipeline within the Alabama Street right-of-way to connect the San Bernardino Waste Water Treatment Plant and the Redlands Recharge Basin.

The APE is delineated to encompass the maximum extent of ground disturbance required for the undertaking, including all areas to be impacted by construction activities or by the operation of construction equipment. It measures approximately six miles in total length and ranges from 40 feet to 80 feet in width, generally coinciding with the existing rights-of-way of various public roads where the pipeline route follows such roads. The vertical extent of the APE, or the maximum depth of disturbance, will not exceed 10 feet. Since no aboveground construction is proposed for this undertaking, no additional APE is necessary for visual, atmospheric, or other indirect effects. The entire APE lies in T1S R3W and T1S R4W, San Bernardino Baseline and Meridian, within the boundaries of the Rancho San Bernardino land grant.

As a part of the environmental review process for the proposed undertaking, the present study was initiated by the SBMWD in compliance with the California Environmental Quality Act (CEQA). As the undertaking requires the review and approval by the U.S. Army Corps of Engineers (USACE) and the State Water Resources Control Board (SWRCB), the study is also intended to comply with Section 106 of the National Historic Preservation Act and the State of California's CEQA-Plus procedures. The purpose of the study is to provide the SBMWD, the USACE, and the SWRCB with the necessary information and analysis to determine whether the proposed project would have an effect on any "historic properties," as defined by 36 CFR 800.16(l), or "historical resources," as defined by Title 14 CCR §15064.5(a)(1)-(3), that may exist in or near the APE.

In order to accomplish this objective, CRM TECH conducted a cultural resources records search, geoarchaeological and historical background research, Native American consultation, and a systematic field survey. The results of these procedures indicate that three historic-period linear features were previously identified as lying across the APE. One of these, the Kite-Shaped Track of the Atchison, Topeka and Santa Fe Railway, has been recorded into the California Historical Resources Inventory and designated Site 36-006847. The other two, PSBR-26H and PSBR-27H, are "pending" sites representing the former courses of the Timber Ditch and the North Fork Ditch, two local irrigation works dating to the mid-19th century.

Site 36-006847 was previously determined not to qualify as a "historic property" or a "historical resource" due to a lack of historical integrity, and the present study concurs with that evaluation. No surface manifestation was found of PSBR-26H and PSBR-27H in or near the APE. Given the extensive changes in the cultural landscape in the vicinity since the 19th century, it is clear that the Timber Ditch and the North Fork Ditch have long since been obliterated. These two "pending" sites,

therefore, exist only on paper at this location. No other potential "historic properties"/"historical resources" were encountered within or adjacent to the APE.

The geoarchaeological analysis suggests that the APE lies in a setting that would not have been considered favorable for long-term habitation in prehistoric times. In the past, few prehistoric archaeological sites have been recorded in the project vicinity, and no prehistoric cultural remains were discovered on the ground surface during the field survey. As virtually the entire APE lies across areas that have been subject to extensive disturbances in the past, either by natural forces or by human activities, the subsurface sediments in the vertical extent of the APE appear to be relatively low in sensitivity for intact, potentially significant archaeological remains of prehistoric origin in buried deposits.

Based on these findings, and pursuant to 36 CFR 800.5(b) and Calif. PRC §21084.1, CRM TECH recommends to the SBMWD, the USACE, and the SWRCB a conclusion that the proposed undertaking will have *No Effect/No Impact* on any "historic properties"/"historical resources." No further cultural resources investigation is recommended for the undertaking unless project plans undergo such changes as to include areas not covered by this study, such as temporary easements required by the pipeline activation process. However, if any buried cultural materials are inadvertently discovered during earth-moving operations associated with the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

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INTRODUCTION

Between September 2015 and March 2016, at the request of Michael Baker International, CRM TECH performed a cultural resources study on the Area of Potential Effects (APE) for the proposed Alabama Street Effluent Pipeline Alignment Option of the San Bernardino Clean Water Factory Project in the Cities of San Bernardino and Redlands, San Bernardino County, California (Fig. 1). As proposed by the San Bernardino Municipal Water Department (SBMWD), the undertaking entails the activation of an existing 36-inch-diameter effluent pipeline and the installation of approximately 200 feet of matching pipeline within the Alabama Street right-of-way to connect the San Bernardino Waste Water Treatment Plant and the Redlands Recharge Basin.

The APE is delineated to encompass the maximum extent of ground disturbance required for the undertaking, including all areas to be impacted by construction activities or by the operation of construction equipment. It measures approximately six miles in total length and ranges from 40 feet to 80 feet in width, generally coinciding with the existing rights-of-way of various public roads where the pipeline route follows such roads (see App. 1). The vertical extent of the APE, or the maximum depth of disturbance, will not exceed 10 feet. Since no aboveground construction is proposed for this undertaking, no additional APE is necessary for visual, atmospheric, or other indirect effects. The entire APE lies in T1S R3W and T1S R4W, San Bernardino Baseline and Meridian, within the boundaries of the Rancho San Bernardino land grant (Fig. 2).

As a part of the environmental review process for the proposed undertaking, the present study was initiated by the SBMWD in compliance with the California Environmental Quality Act (CEQA). As

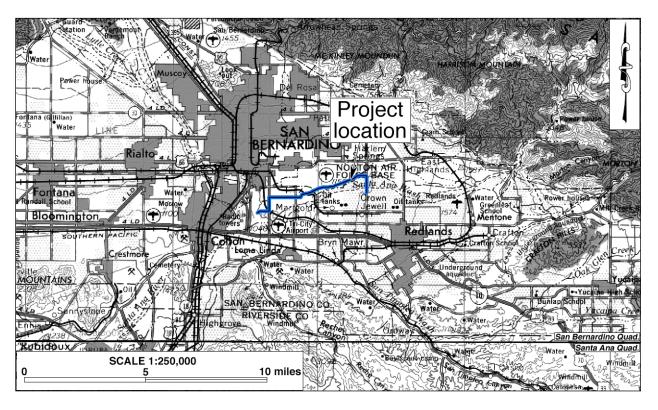


Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 1:250,000 quadrangles [USGS 1969; 1979])

Figure 2. Project location. (Based on USGS San Bernardino South and Redlands, Calif., 1:24,000 quadrangles [USGS 1980; 1996]; see App. 1 for detailed maps of the APE)

the undertaking requires the review and approval by the U.S. Army Corps of Engineers (USACE) and the State Water Resources Control Board (SWRCB), the study is also intended to comply with Section 106 of the National Historic Preservation Act and the State of California's CEQA-Plus procedures. The purpose of the study is to provide the SBMWD, the USACE, and the SWRCB with the necessary information and analysis to determine whether the proposed project would have an effect on any "historic properties," as defined by 36 CFR 800.16(1), or "historical resources," as defined by Title 14 CCR §15064.5(a)(1)-(3), that may exist in or near the APE.

In order to accomplish this objective, CRM TECH conducted a cultural resources records search, geoarchaeological and historical background research, Native American consultation, and a systematic field survey. In order to accomplish this objective, CRM TECH conducted a cultural resources records search, geoarchaeological and historical background research, Native American consultation, and a systematic field survey. The following report is a complete account of the methods and results of the various avenues of research, and the final conclusion of the study.

SETTING

CURRENT NATURAL SETTING

The APE is located in the eastern portion of the San Bernardino Valley, a broad inland valley extending from the southern base of the San Bernardino and San Gabriel Mountains on the north to the Santa Ana Mountains and the Jurupa Hills on the south. The current natural environment of the region is characterized by a temperate Mediterranean climate, with the average maximum temperature in July reaching the high 90s (Fahrenheit) and the average minimum temperature in January hovering around 30°. Rainfall is typically less than 20 inches annually.

The proposed pipeline route traverses residential neighborhoods, commercial and warehouse districts, and a portion of the San Bernardino International Airport, mostly in an urbanized setting. More than half of the APE is contained within the existing rights-of-way of four public streets, namely Dumas Street, Waterman Avenue, Central Avenue, and Alabama Street. The rest of the APE runs across the Warm Creek wash, along the southern edge of the airport, and through a nature conservation area in and near the City Creek and the Santa Ana River washes (Fig. 3).

Overall, the terrain in the APE is relatively level, with elevations ranging between approximately 990 and 1,200 feet above mean sea level, inclining to the northeast. The surface soils in most of the APE have been extensively disturbed by past construction activities associated with the roads and the airport, and by natural erosion such as flooding. Vegetation along the roads in the APE consists mostly of introduced landscaping plants, with scattered low-lying shrubs and grasses within the airport and denser growth of taller shrubs within the washes.

CULTURAL SETTING

Prehistoric Context

The earliest evidence of human occupation in inland southern California was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San



Figure 3. Typical landscapes along the project route. *Clockwise from top left*: Central Avenue at Waterman Avenue, view to the east; access road within the San Bernardino International Airport, view to the southwest; City Creek wash, view to the west; Alabama Street, view to the north. (Photographs taken on October 16 and 21, 2015)

Jacinto Valley, with radiocarbon dates clustering around 9,500 B.P. (Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the Cajon Pass area, typically atop knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural history of southern California has been summarized into numerous chronologies, including the works of Chartkoff and Chartkoff (1984), Warren (1984), and others. The prehistory of Riverside County specifically has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of different cultural horizons vary regionally, the general framework of the prehistory of inland southern California can be broken into three primary periods:

• Paeloindian Period (ca. 18,000-9,000 B.P.): Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leaves diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include

- choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- Archaic Period (ca. 9,000-1,500 B.P.): Archaic sites are characterized by abundant lithic scatters
 of considerable size with many biface thinning flakes, bifacial preforms broken during
 manufacture, and well-made groundstone bowls and basin metates. As a consequence of making
 dart points, many biface thinning waste flakes were generated at individual production stations,
 which is a diagnostic feature of Archaic sites.
- Late Prehistoric Period (ca. 1,500 B.P.-contact): Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

Ethnohistoric Context

The San Bernardino-Redlands area is a part of the homeland of the Serrano Indians, whose traditional territory is centered at the San Bernardino Mountains but also includes the southern rim of the Mojave Desert and most of the San Bernardino Valley. The name "Serrano" was derived from the Spanish word for "mountaineer" or "highlander." The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based on these sources.

Prior to European contact, the Serrano were primarily gatherers and hunters, and occasional fishers, who settled mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. They were loosely organized into exogamous clans, which were led by hereditary heads, and the clans in turn were affiliated with one of two exogamous moieties. The exact nature of the clans, their structure, function, and number are not known, except that each clan was the largest autonomous political and landholding unit, the core of which was the patrilineage. There was no pan-tribal political union among the clans.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was negligible until the 1810s, when a mission *asistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano were removed to the nearby missions. At present, most Serrano descendants are found on the San Manuel and the Morongo Indian Reservations, where they participate in ceremonial and political affairs with other Native American groups on an inter-reservation basis.

Historic Context

The San Bernardino Valley, along with the rest of Alta California, was claimed by Spain in the late 18th century, and the first European explorers traveled through the area as early as 1772, three years after the beginning of Spanish colonization. For nearly four decades afterwards, however, the arid inland valley received little attention from the European colonizers, who concentrated their efforts along the Pacific coast. Following the establishment of Mission San Gabriel in 1771, the San Bernardino Valley became a part of the vast land holdings of that mission. The name "San

Bernardino" was bestowed on the region at least by 1819, when the *asistencia* and an associated mission rancho, both bearing that name, were established in the eastern end of the valley.

Mexico gained independence from Spain in 1821 and the new authorities in Alta California began secularization of the mission system in 1834. During the ensuing decade, mission lands throughout Alta California were surrendered to the Mexican government and subsequently granted to various prominent citizens of the province. In 1842, the former mission rancho of San Bernardino was granted to the Lugos, a prominent Los Angeles family, who were engaged in cattle-raising on the more than 35,000-acre domain. After the American annexation of Alta California in 1848, the Lugos sold the rancho in 1851 to a group of Mormon settlers sent by church leaders in Utah. The group promptly established a fortified settlement and named it Fort San Bernardino.

The early growth of the Mormon colony was promising. It became county seat of the newly created San Bernardino County in 1853, and incorporated as a city the next year. In 1857, however, half of the population was recalled to Utah by Mormon leaders, and the budding town was disincorporated. In the 1880s, spurred by the selection of San Bernardino as the Atchison, Topeka and Santa Fe Railway's regional headquarters, the rise of the profitable citrus industry, and a general land boom that swept through much of southern California, San Bernardino gradually recovered and reincorporated in 1886, embarking on a period of steady growth that lasted well into the 20th century.

During World War II, the growth of San Bernardino was further boosted when a U.S. Army Air Corps pilot training base was established in the southeastern portion of the city in 1941. Renamed the Norton Air Force Base in 1950, over the next 45 years this major military installation proved to be an important catalyst in the local economy. In 1994, however, the base was officially closed, and its 2,400-acre site was transferred to local civilian authorities for redevelopment in 1999, ultimately becoming today's San Bernardino International Airport.

To the southeast of the City of San Bernardino, Frank E. Brown and Edward G. Judson purchased a portion of Rancho San Bernardino and, combining it with other land acquisitions in the vicinity, founded the town of Redlands in the early 1880s. Thanks to the great southern California land boom of the 1880s, a thriving citrus industry that began in the 1870s, and especially the construction of the Bear Valley Reservoir in 1883-1884, the new town was an instant success. The City of Redlands, incorporated in 1888, soon became the best-known winter retreat in the nation. The influx of affluent winter residents from the eastern United States perpetuated for Redlands a popular image characterized by vast stretches of citrus groves surrounding the elegant mansions of the "gentlemen farmers."

Since the mid-20th century, with the increasing diversification of Redlands' economic livelihood, much of the once extensive citrus acreage has given way to urban expansion. Over the last few decades of the 20th century, like many other former small rural towns in southern California, Redlands increasingly took on the characteristics of a "bedroom community." Nevertheless, the "citrus culture" that developed during the late 19th and early 20th centuries continues to be an integral part of the City's identity to the present time.*

^{*} For further discussion of the historical background of San Bernardino and Redlands, see Schuiling (1984) and Moore (1987).

RESEARCH METHODS

RECORDS SEARCH

On October 5, 2015, CRM TECH archaeologist Nina Gallardo (see App. 2 for qualifications) completed a records search at the South Central Coastal Information Center (SCCIC), California State University, Fullerton, which is the State of California's official cultural resource records repository for the County of San Bernardino. During the records search, Gallardo examined maps and records on file at the SCCIC for previously identified cultural resources and existing cultural resources reports within a half-mile radius of the APE. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historical Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

GEOARCHAEOLOGICAL ANALYSIS

As part of the research procedures, CRM TECH principal investigator/archaeologist Michael Hogan and project geologist Harry M. Quinn (see App. 2 for qualifications) pursued geomorphologic analysis to assess the APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through standard surface archaeological survey. Sources consulted for this purpose included topographic and geologic maps published by the U.S. Geological Survey (USGS) and soils reports in the vicinity of the APE. Findings from these sources were used to develop a geomorphologic history of the APE and address geoarchaeological sensitivity of the vertical APE.

HISTORICAL BACKGROUND RESEARCH

Historical background research for this study was conducted by CRM TECH principal investigator/historian Bai "Tom" Tang (see App. 2 for qualifications). In addition to published literature in local and regional history, sources consulted during the research included U.S. General Land Office (GLO) land survey plat maps dated 1858-1876, USGS topographic maps dated 1901-1967, and aerial photographs taken between 1938 and 2012. The historic maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley. The aerial photographs are available at the NETR Online website.

NATIVE AMERICAN PARTICIPATION

On September 28, 2015, CRM TECH submitted a written request to the State of California's Native American Heritage Commission (NAHC) for a records search in the commission's sacred lands file. Following the NAHC's recommendations, CRM TECH further contacted eight tribal representatives in the region, both in writing and by telephone, between October 14 and November 6, 2015, for further information or specific knowledge regarding potential Native American cultural resources that may be present in and near the APE. The correspondence between CRM TECH and the Native American representatives is attached to this report in Appendix 3.

FIELD SURVEY

On October 16 and 21, 2015, CRM TECH archaeologist Daniel Ballester (see App. 2 for qualifications) carried out the archaeological field survey of the APE. In light of past ground disturbances and the reduced paleontological sensitivity, the segments of the project route along paved roads are covered by a reconnaissance-level "windshield survey" from a motor vehicle. The segments within the San Bernardino International Airport, the conservation area, and the washes was surveyed on foot at an intensive level by walking two parallel transects along either side of the project center line, at a distance of approximately 10 meters (approx. 33 feet) from each other, effectively covering a total width of 20 meters (approx. 65 feet) with visual observations.

The levels of survey coverage for each portion of the APE are illustrated in Figure 4. Using these various survey methods, the ground surface in the entire APE was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Visibility of the native ground surface was poor where the project route lies within paved roadbeds or across dense vegetation in parts of the washes, but was good (approx. 70%) where it traverses open land with typical vegetation cover (Fig. 3).

RESULTS AND FINDINGS

PREVIOUS CULTURAL RESOURCES STUDIES IN THE VICINITY

According to SCCIC records, portions of the APE were covered by at least 12 previous cultural resources studies (Fig. 5), but the APE as a whole had not been surveyed systematically prior to this study. As a result of these and other similar studies in the vicinity, three cultural resources were previously identified as lying partially within the APE, including a recorded site, 36-006847, and two "pending" sites, PSBR-26H and PSBR-27H (see App. 1 for site locations). Site 36-006847 represents the once-famed Kite-Shaped Track of the Atchison, Topeka and Santa Fe Railway, while PSBR-26H and PSBR-27H represent the former courses of two local irrigation ditches dating to the mid-19th century, the Timber Ditch and the North Fork Ditch, respectively. These three sites are discussed further below (see "Potential Historic Properties/Historical Resources in the APE").

Outside the APE but within a half-mile radius, at least 30 other previous cultural resources studies have been reported to the SCCIC, which collectively covered more than 80% of the land within the scope of the records search and resulted in the recordation of 53 additional sites and the identification of four additional "pending" sites (see Table 1). All of these sites dated to the historic period, and the majority of them were buildings on the former Norton Air Force Base (now the San Bernardino International Airport). Other sites identified within the scope of the records search included other irrigation works, bridges, refuse scatters, and nearby residences. Other than 36-006847, PSBR-26H, and PSBR-27H, none of the sites was found in the immediate vicinity of the APE, and thus they require no further consideration during this study.

GEOARCHAEOLOGICAL PROFILE

The APE is located on relatively level terrain in and near the Santa Ana River flood plain. Matti et al. (2003:5) map the surface geology in most of the APE as *Qya5*, namely young axial-valley

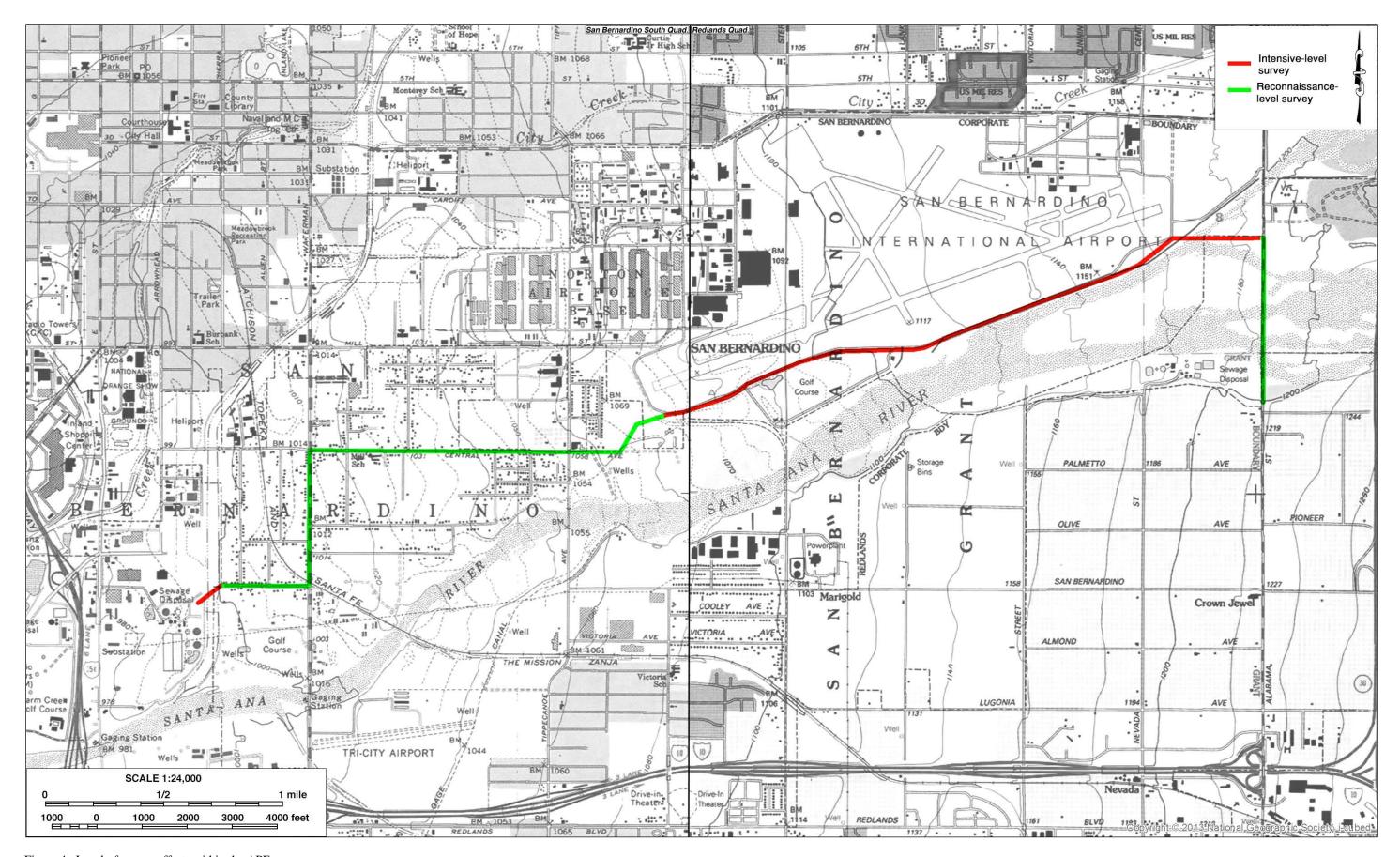


Figure 4. Level of survey efforts within the APE.

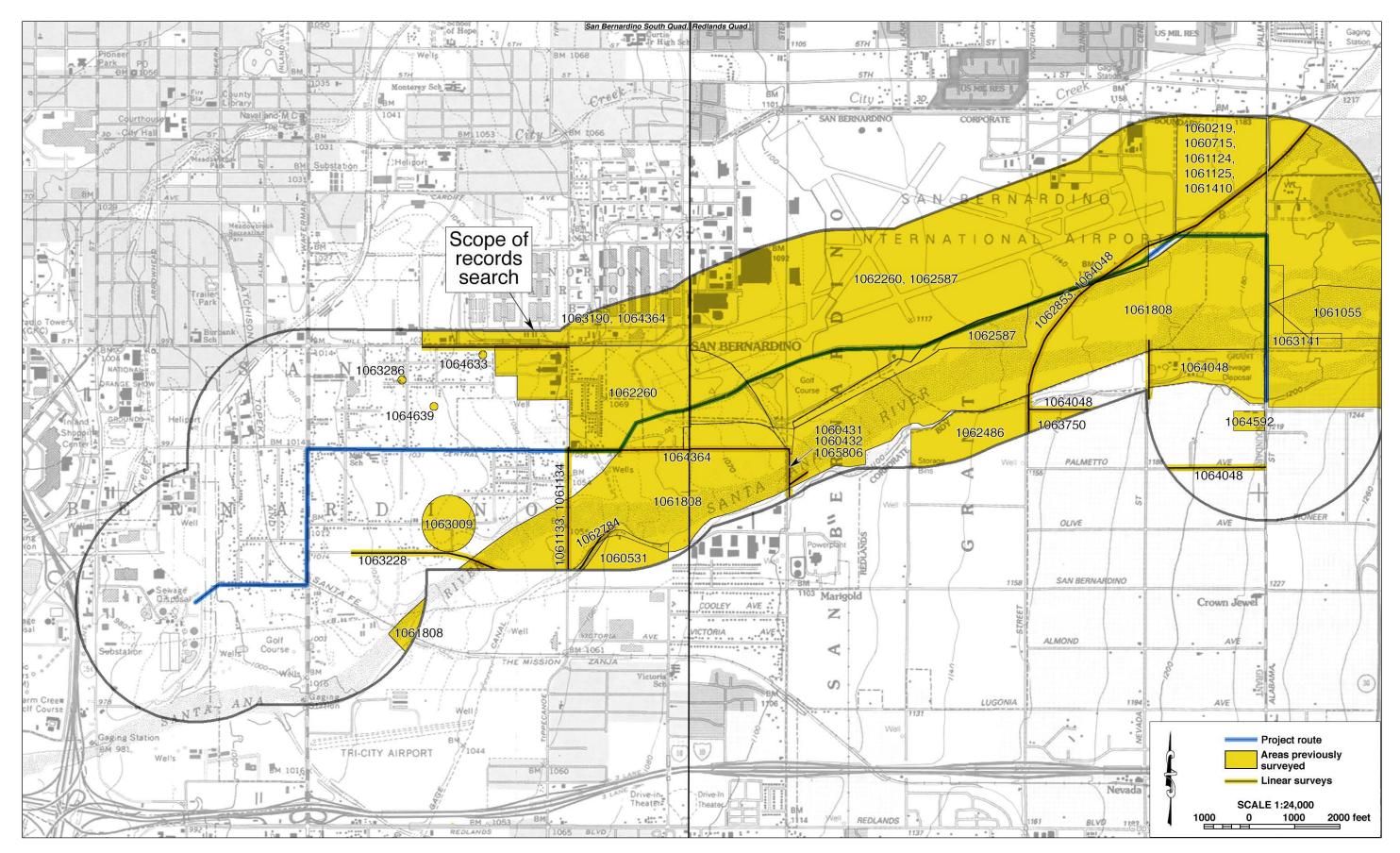


Figure 5. Previous cultural resources studies in the vicinity of the APE, listed by SCCIC file number (see App. 1 for locations of recorded sites in the APE).

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search		
Site No.	Date Recorded	Description
36-006096	Sorensen et al. 1987	Domestic debris scatter
36-006097	Sorensen et al. 1987	Domestic debris scatter
36-006098	Sorensen et al. 1987	Refuse dump
36-006100	Sorensen et al. 1987	Southern Pacific Railroad bridge
36-006103	Sorensen et al. 1987	Atchison, Topeka and Santa Fe Railway bridge
36-006847*	Romani et al. 1990	Kite-Shaped Track, Atchison, Topeka and Santa Fe Railway
36-007139	Swope et al. 1991	Marigold Farms
36-007168	Wlodarski 1992	Canal and waterway
36-009991	Tang 2000	Palm rows (rural historic landscape)
36-013546	Shaver and Shaver 2006	Homestead, olive grove, and concrete-lined pond
36-013547	Shaver and Shaver 2006	Concrete foundation
36-013548	Shaver and Shaver 2006	Concrete foundation
36-015511 to	Schmuecker 1990	Duildings at the Marton Air Faure Dage
36-015526	Schilliecker 1990	Buildings at the Norton Air Force Base
36-015530	Schmuecker 1990	Engine Repair Building at the Norton Air Force Base
36-015532 to	Schmuecker 1990	Buildings at the Norton Air Force Base
36-015547	Schillidecker 1990	Buildings at the Norton All Porce Base
36-015550 to	Schmuecker 1990	Buildings at the Norton Air Force Base
36-015551	Beililiacekei 1990	Buildings at the Norton 7th Force Buse
36-015553 to	Schmuecker 1990	Buildings at the Norton Air Force Base
36-015555		
36-017668	Donaldson 1994	Single-family Residence
36-017723	OHP 1975	Mormon flour mill site
36-017813	Donaldson 1994	Single-family residence
36-023628	Goodwin 2011	Concrete slab foundations of residences
P1074-85H	N/A	Camp Carlton Ditch
P1074-89H	N/A	Rice-Thorn Ditch
P1074-90H	N/A	Johnson Swamp Ditch
P1074-198H	N/A	Camp Carlton
PSBR-26H*	N/A	Timber Ditch
PSBR-27H*	N/A	North Fork Ditch

^{*} Located partially within the APE.

deposits of late Holocene age, which form on low terraces incised into older sediments or over older wash deposits. Morton and Miller (2003) also show surface geology in the APE to be mainly Qya5 with areas of Qw and Qw_I along the Santa Ana River wash. They describe both Qw and Qw_I as very young wash deposits of unconsolidated sand and gravel, and identify both as being late Holocene in age (Morton and Miller 2003:116).

These and other sources consulted for this study indicate that the APE is situated in an area of active washes and alluvial fan deposits that would have been impacted by periodic flooding and thus would not have provided a favorable setting for long-term human habitation in prehistoric times (Woodruff and Brock 1980). Additionally, much of the APE lies within the rights-of-way of public streets, where the subsurface soils typically consist of highly disturbed fill dirt to the depth of five to six feet, and the rest of the APE has also been impacted by past human activities, such as urban development and flood control work. Based on these analyses, the proposed undertaking appears to have a low potential to encounter any intact, potentially significant subsurface archaeological deposits of prehistoric origin.

HISTORICAL OVERVIEW

Historic maps show that in the 1850s, the Mormon stockade known as Fort San Bernardino, located approximately 1.5 miles northwest of the APE at the closest point, was the only notable man-made feature in the project vicinity (GLO 1858; 1876). After the land boom of the 1880s, the area along the project route began to exhibit a cultural landscape that was typical of rural southern California at the time, characterized by widely scattered buildings, most of them presumably farmsteads, lining a loose grid of roads (USGS 1901a; 1901b).

Due to its location along the Santa Ana River, the main natural waterway in the San Bernardino Valley, the area along the project route became the site of a number of irrigation canals and ditches during the latter half of the 19th century (Scott 1977:13). In 1938, a catastrophic flood across southern California changed the course of the Santa Ana River and the geography of the APE (NETR Online 1938-1959; USGS 1943a; 1943b; Cataldo 2002). In the wake of the flood, many of the local creeks were channelized (USGS 1954a; 1954b; NETR Online 1959; Phelps 2012).

In the 1940s-1950s, the Norton Air Force Base became the most prominent feature in the project vicinity (USGS 1954a; 1954b; NETR Online 1959). During the post WWII boom, the area along the project route, like other former rural areas in southern California, entered a period of urban expansion, with the extensive acres of agricultural land gradually giving way to suburban residential tracts and office parks (NETR Online 1959-2012). The drastic changes in land use has greatly altered the formerly agrarian landscape of the area, and in all likelihood obliterated most of the cultural remains from the prehistoric or early historic periods, such as the 19th century irrigation canals.

NATIVE AMERICAN INPUT

In response to CRM TECH's inquiry, the NAHC reports in a letter dated October 7, 2015, that the sacred lands record search identified no Native American cultural resources within the APE, but recommends that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region (see App. 3).

Upon receiving the NAHC's response, CRM TECH initiated correspondence with all seven individuals on the referral list and the tribal organizations they represent. In addition, as recommeded previously by the tribal staff, Raymond Huaute, Cultural Resources Specialist for the Morongo Band of Mission Indians, was also contacted. The written requests for comments were sent to the tribal representatives on October 14, 2015, and follow-up telephone solicitations were carried out on October 28 and November 6, 2015. As of this time, two tribal representatives have responded on behalf of the San Manuel Band of Mission Indians and the Serrano Nation of Mission Indians (see App. 3).

On November 17, 2015, Leslie Mouriquand of the San Manuel Cultural Resources Management Department responded by e-mail on behalf of Daniel McCarthy, department director. In the e-mail, Ms. Mouriquand states that the tribe has no specific information on cultural resources in the APE "other than that there was a known village somewhere near the western end of the pipeline alignment." Based on the APE's close proximity to the Santa Ana River, Ms. Mouriquand considers

the area to be highly sensitive for tribal cultural resources, and recommends archaeological and tribal monitoring of the undertaking if excavations are expected to exceed the depth of previous disturbances.

On October 28, 2015, Goldie Walker, Chairperson of the Serrano Nation of Mission Indians, responded to the inquiry by telephone. During the telephone conversation, Ms. Walker stated that the project location was very sensitive to the tribe, and requested that the APE be subject to a thorough archaeological survey. She requested to be notified if any cultural resources would be found during the survey or future construction activities.

POTENTIAL HISTORIC PROPERTIES/HISTORICAL RESOURCES IN THE APE

As noted above, SCCIC records indicate that three known cultural resources were previously reported as lying partially within the APE, namely 33-006847 (Kite-Shaped Track of the Atchison, Topeka, and Santa Fe Railway), PSBR-26H (Timber Ditch), and PSBR-27H (North Fork Ditch). No additional historical/archaeological sites were identified within or adjacent to the APE during the field survey. Both the Timber Ditch and the North Fork Ditch were evidently built in the 1850s to convey irrigation water from the Santa Ana River to local settlers (Scott 1977:12). While the later history of the Timber Ditch is unclear, the North Fork Ditch was evidently abandoned as early as the 1880s, after a new ditch known as the North Fork Canal was built at higher elevations (*ibid*.:17).

The courses of these ditches across the APE were established solely on the basis of historical maps and other documentation, and not from tangible features of the landscape, and no physical manifestation has been recorded for either of these two "pending" sites during past cultural resources studies in the vicinity. Given the extensive changes in the cultural landscape in the vicinity since the 19th century, it is clear that the Timber Ditch and the North Fork Ditch have long since been obliterated. Not surprisingly, no surface manifestation was found of either PSBR-26H or PSBR-27H during the field survey at their locations across the eastern portion of the APE.

Site 36-006847, the former Atchison, Topeka and Santa Fe (now Burlington Northern Santa Fe) Railway's Kite-Shaped Track, was once a popular railroad excursion route between Los Angeles and the Inland Empire in the late 19th and early 20th centuries, so named because of its resemblance to a racetrack with only one turn and its stretches converging to a point, or essentially a figure "8" (AT&SF n.d.; Moore 1973). After the end of the golden age of the steel rails, most of the eastern portion of the track, known as the Redlands Loop, was abandoned and subsequently dismantled in the 1950s-1980s, leaving only a short spur extending to downtown Redlands from the former nexus in San Bernardino (*Sun* 1956; 1980; 1986; Lawrence 1989:27).

Because of the lack of sufficient historic integrity to relate to the heydays of railroad transportation, Site 36-006847 was previously determined not to meet the definition of a "historic property" or a "historical resource" under Section 106 and CEQA provisions (Tang et al. 2007:18; 2009:18). As observed during the field survey, the rail line crosses the APE near the intersection of Waterman Avenue and Dumas Street, where it appears to be in occasional use as a part of the Burlington Northern Santa Fe Railway system. Like other components of the historic-period transportation infrastructure that remain in use today, the rail line at this location does not demonstrate any distinctively historical characteristics due to past upgrading and maintenance.

MANAGEMENT CONSIDERATIONS

APPLICABLE STATUTORY/REGULATORY FRAMEWORK

The purpose of this study is to identify any "historic properties" or "historical resources" that may exist within or adjacent to the APE. "Historic properties," as defined by the Advisory Council on Historic Preservation, include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior" (36 CFR 800.16(1)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

For CEQA-compliance considerations, the State of California's Public Resources Code (PRC) establishes the definitions and criteria for "historical resources," which require similar protection to what NHPA Section 106 mandates for historic properties. "Historical resources," according to PRC §5020.1(j), "includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- (2) Is associated with the lives of persons important in our past.
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- (4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

DISCUSSION

In summary of the research results presented above, three historic-period linear features were previously identified as lying across the APE. One of these, the Kite-Shaped Track of the Atchison, Topeka and Santa Fe Railway, has been recorded into the California Historical Resources Inventory and designated Site 36-006847. The other two, PSBR-26H and PSBR-27H, are "pending" sites representing the former courses of the Timber Ditch and the North Fork Ditch, two local irrigation works that have long since been abandoned. The locations of PSBR-26H and PSBR-27H were established solely on the basis of historical records, and no surface manifestation of either site was found in or near the APE. These two "pending" sites, therefore, exist only on paper at this location.

Site 36-006847 was previously determined not to qualify as a "historic property" or a "historical resource" due to a lack of historical integrity, as mentioned above. Field observations indicate that the rail line remains in existence and in occasional use. As a working component of the modern transportation infrastructure, the existing rail line does not retain sufficient historical characteristics to relate to its period of significance, namely the 1880s-1910s era, as a result of many decades of upgrading and maintenance. Therefore, this study concurs with the previous determination.

No other potential "historic properties"/"historical resources" were encountered within or adjacent to the APE during this study. The geoarchaeological analysis suggests that the APE lies in a setting that would not have been considered favorable for long-term habitation in prehistoric times. In the past, few prehistoric archaeological sites have been recorded in the project vicinity, and no prehistoric cultural remains were discovered on the ground surface during the field survey. As virtually the entire APE lies across areas that have been subject to extensive disturbances in the past, either by natural forces or by human activities, the subsurface sediments in the vertical extent of the APE appear to be relatively low in sensitivity for intact, potentially significant archaeological remains of prehistoric origin in buried deposits.

Based on these considerations, the present study concludes that no "historic properties" or "historical resources," as defined by Section 106, CEQA, and associated regulations, are present within or adjacent to the APE.

CONCLUSION AND RECOMMENDATIONS

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (Calif. PRC §21084.1). "Substantial adverse change," according to Calif. PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

As stated above, this study concludes that no "historic properties" or "historical resources" are known to exist within or adjacent to the APE, and the subsurface component of the APE appears to be relatively low in sensitivity for intact, potentially significant archaeological remains of prehistoric

origin. Based on these findings, and pursuant to 36 CFR 800.5(b) and Calif. PRC §21084.1, CRM TECH presents the following recommendations to the SBMWD, the USACE, and the SWRCB:

- The proposed undertaking will have *No Effect/No Impact* on any "historic properties"/"historical resources."
- No further cultural resources investigation will be necessary for the undertaking unless project plans undergo such changes as to include areas not covered by this study, such as temporary easements required by the pipeline activation process.
- If any buried cultural materials are inadvertently discovered during earth-moving operations associated with the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

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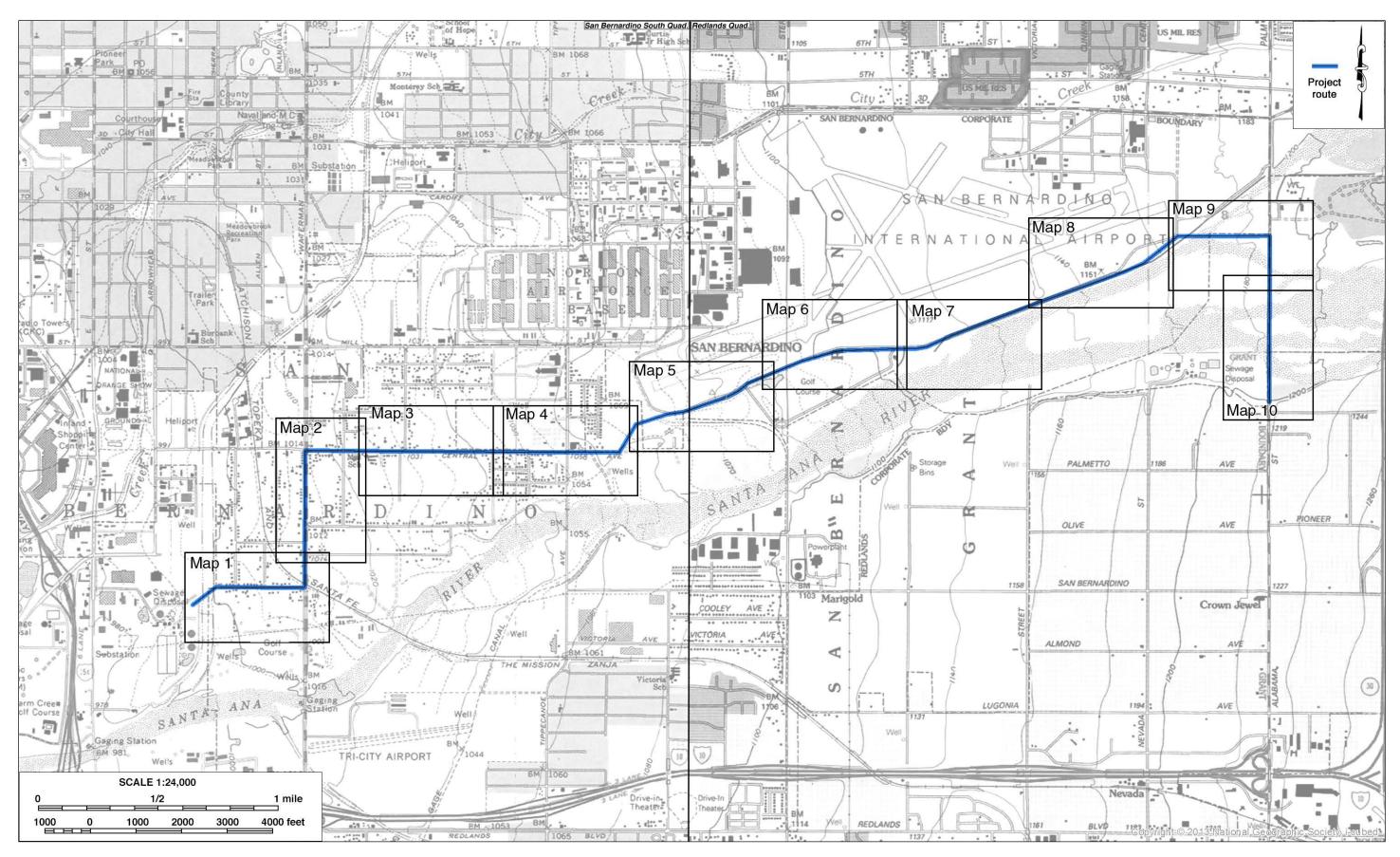
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APPENDIX 1

DETAILED APE MAPS

with Locations of Recorded Cultural Resources in the APE

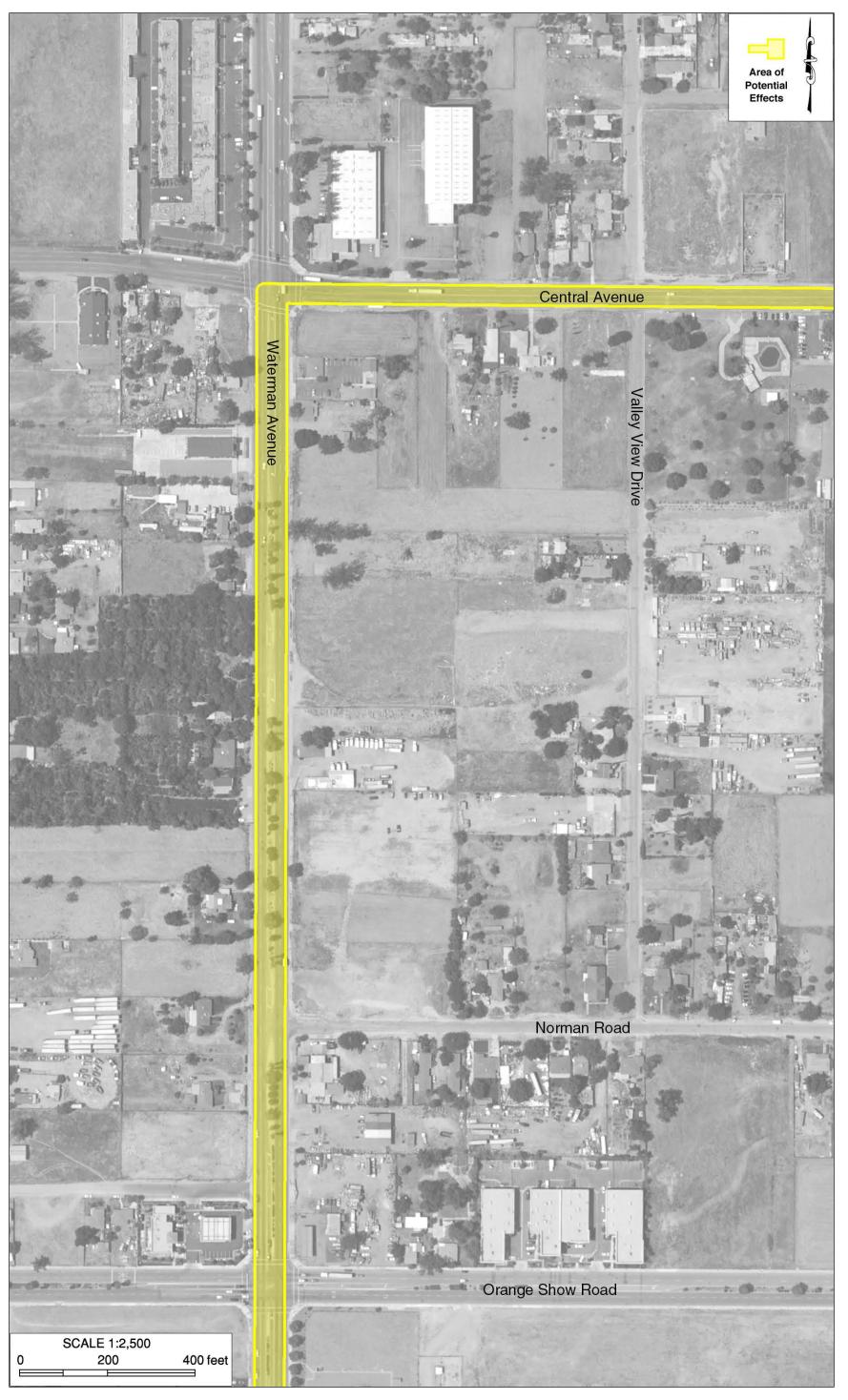
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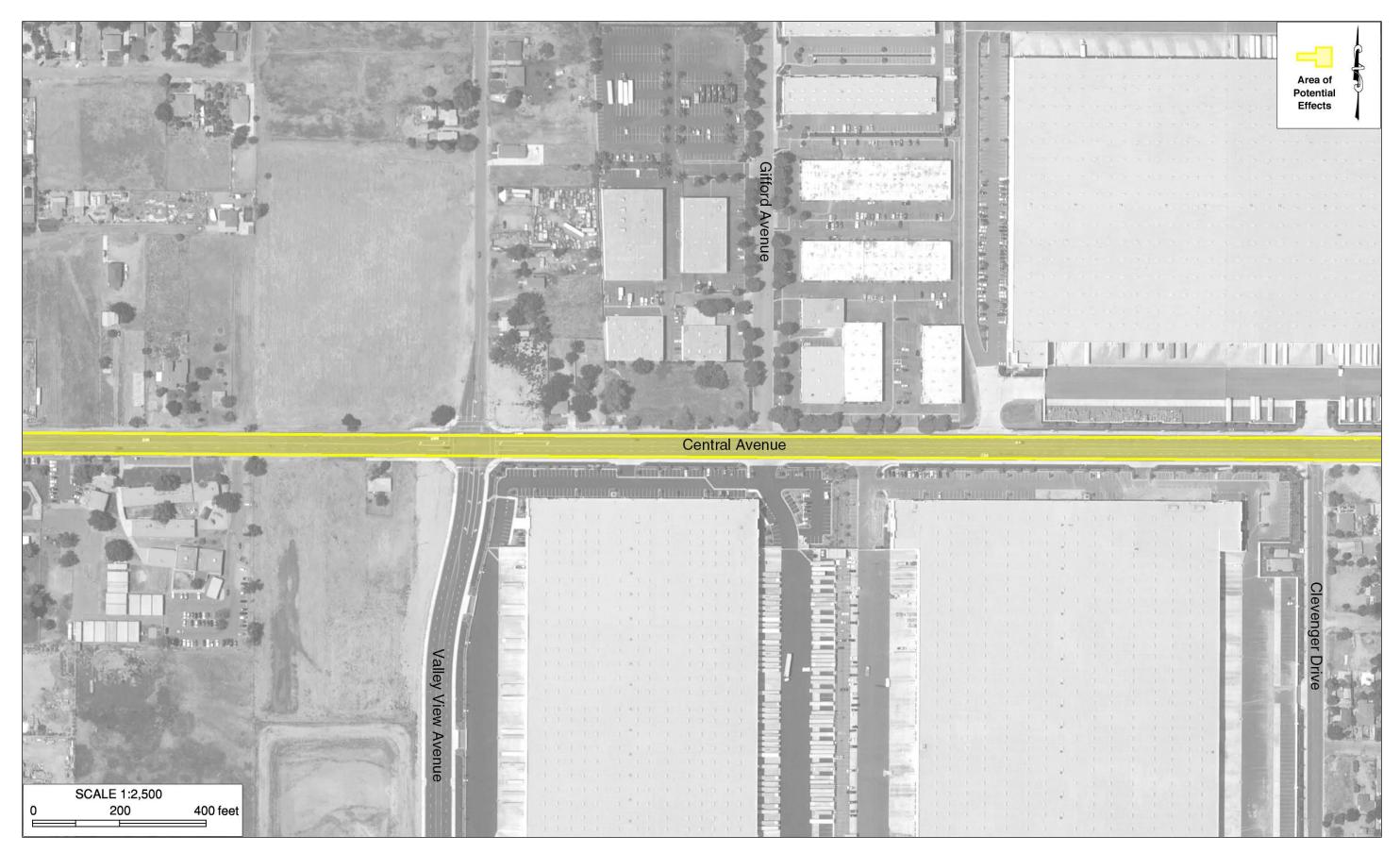
Index Map



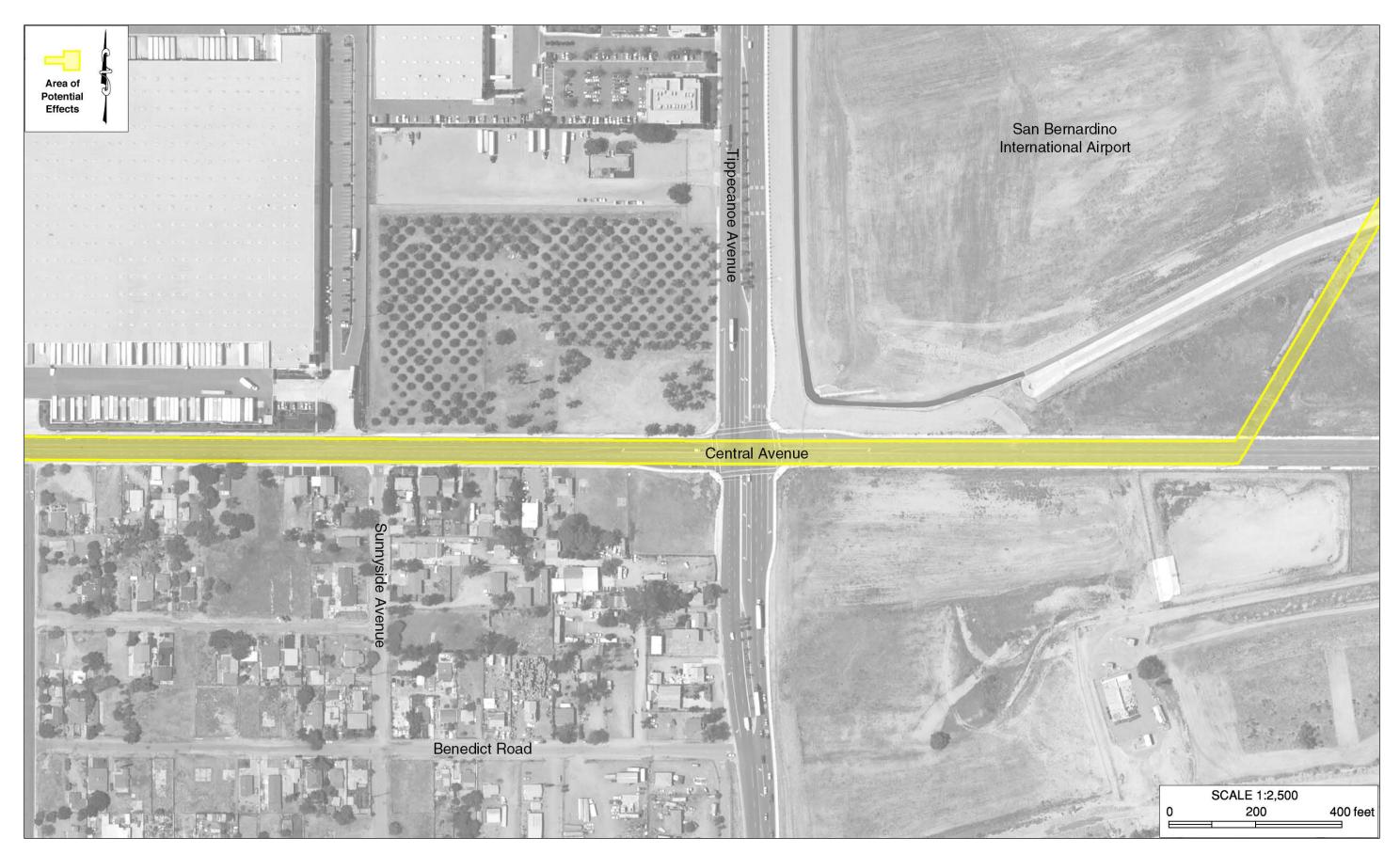
Map 1



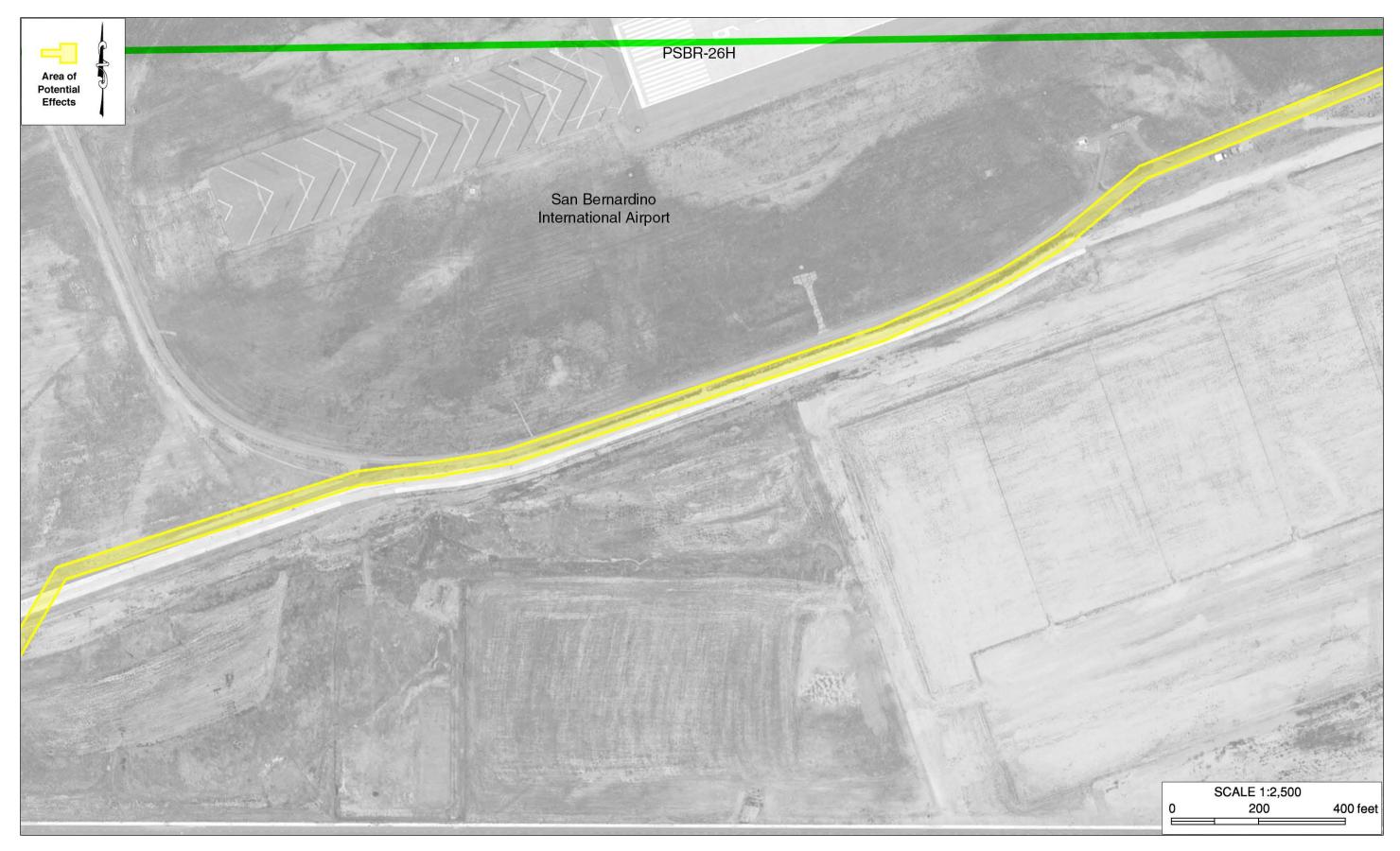
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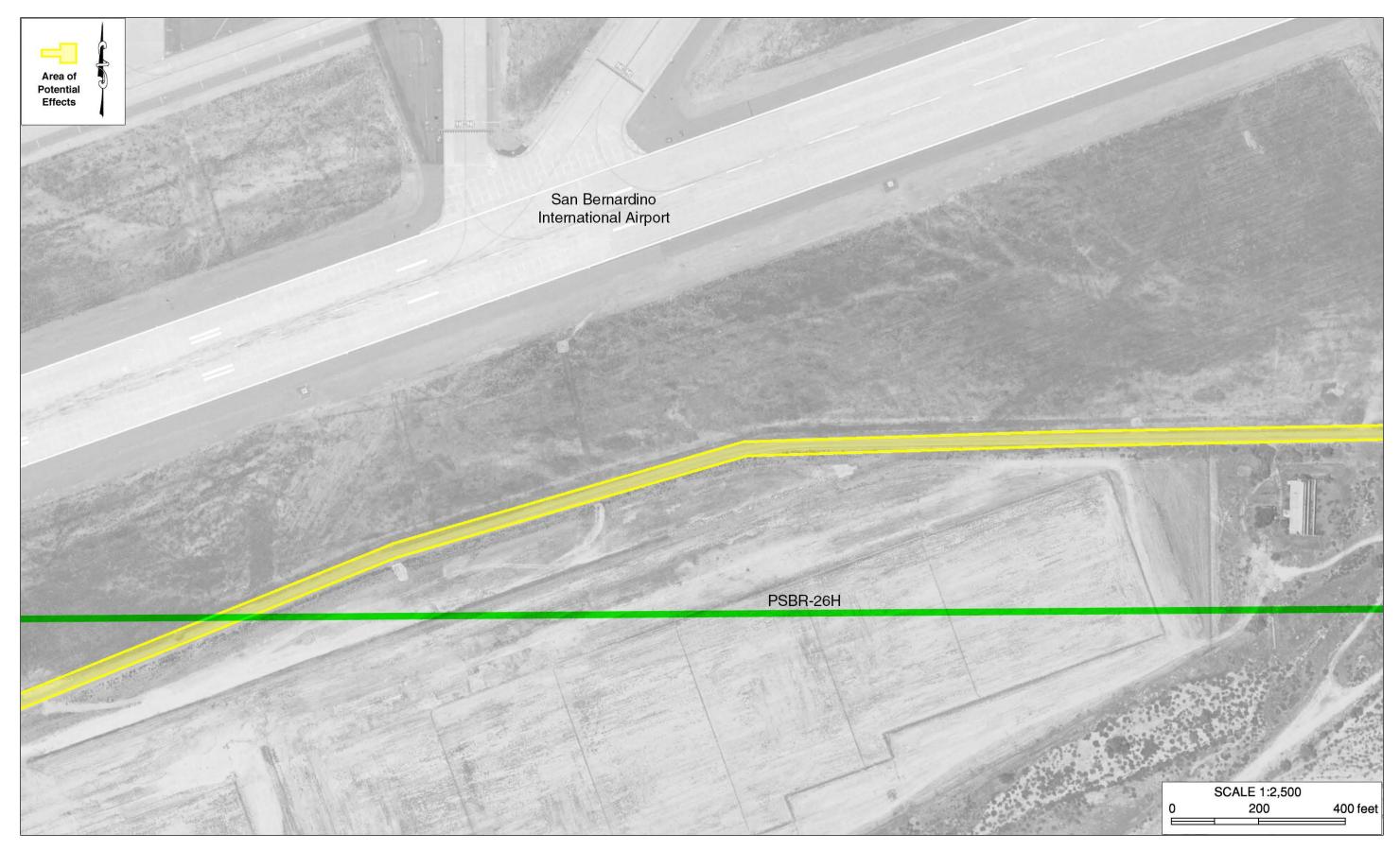
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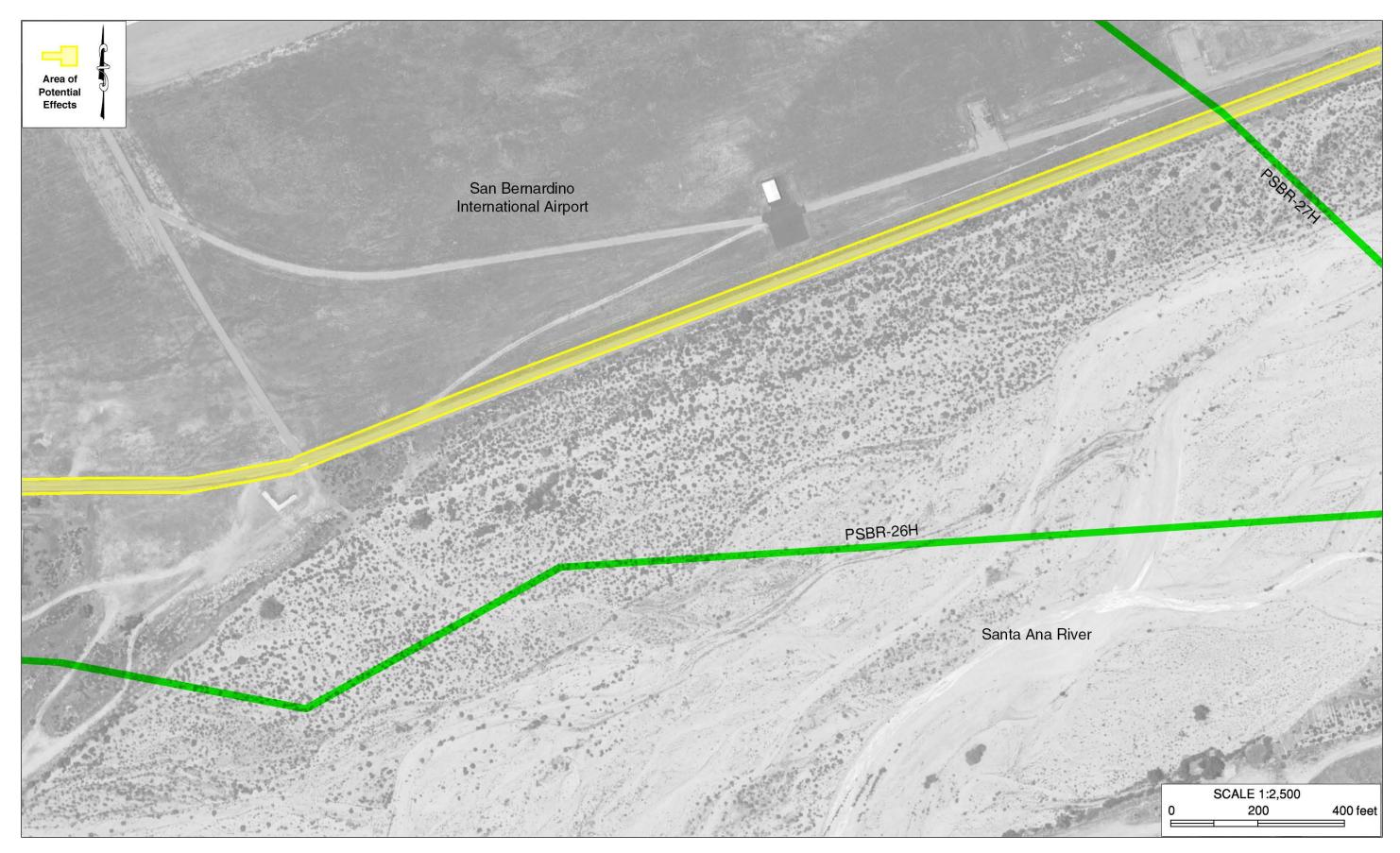
Map 4



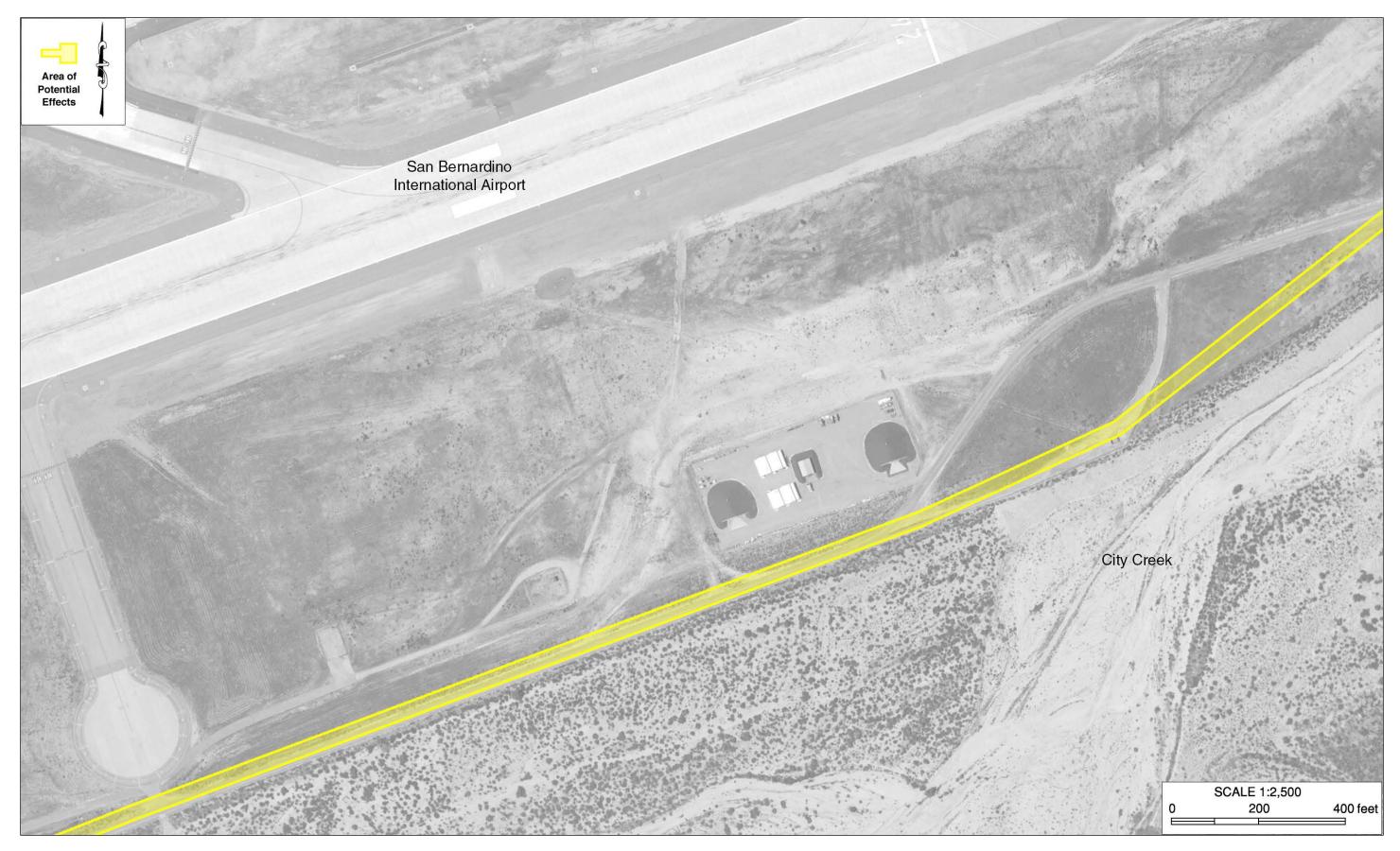
Map 5



Map 6



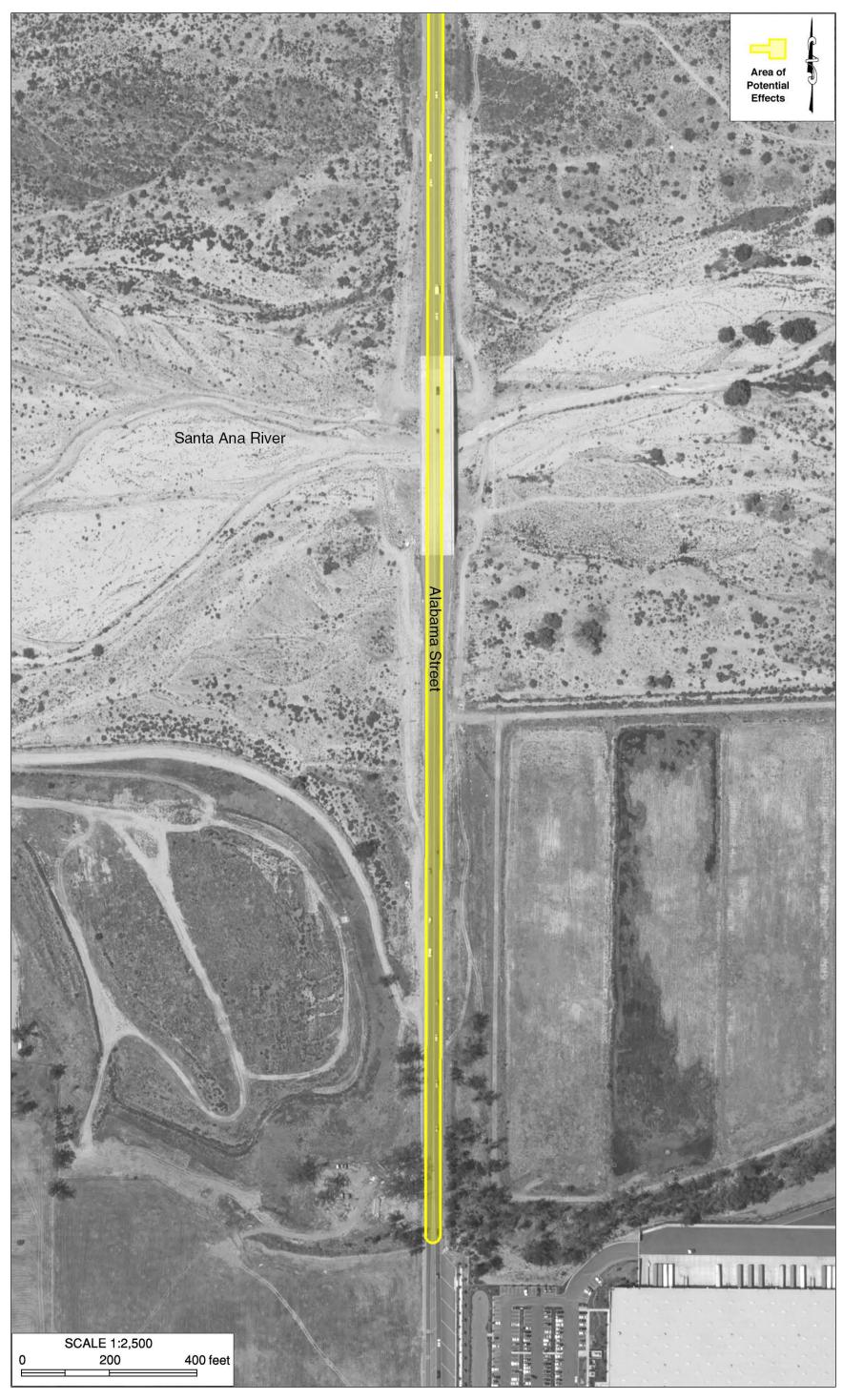
Map 7



Map 8



Map 9



Map 10

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APPENDIX 2: PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic
	Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the
	Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Honors and Awards

1988-1990	University of California Graduate Fellowship, UC Riverside.
1985-1987	Yale University Fellowship, Yale University Graduate School.
1980, 1981	President's Honor List, Northwestern University, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST Michael Hogan, Ph.D., RPA*

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	Section 106—National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands.
1992-1998	Assistant Research Anthropologist, University of California, Riverside
1992-1995	Project Director, Archaeological Research Unit, U. C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C.
	Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U. C. Riverside.
1984-1998	Archaeological Technician, Field Director, and Project Director for various southern
	California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

Memberships

* Register of Professional Archaeologists; Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

PROJECT HISTORIAN/REPORT WRITER Terri Jacquemain, M.A.

Education

2004

	Riverside.	
	M.A. thesis: Managing Cultural Outreach, Public Affairs and Tribal Policies of	
	the Cabazon Band of Mission Indians, Indio, California; internship served as	
	interim Public Information Officer, Cabazon Band of Mission Indians, June-	
	October, 2002.	
2002	B.S., Anthropology, University of California, Riverside.	
2001	Archaeological Field School, University of California, Riverside.	

A.A., Riverside Community College, Norco Campus. 1991

Professional Experience

- 2003-Historian/Architectural Historian/Report Writer, CRM TECH, Riverside/ Colton, California.
 - Author/co-author of legally defensible cultural resources reports for CEQA and NHPA Section 106;

M.A., Public History and Historic Resource Management, University of California,

- Historic context development, historical/archival research, oral historical interviews, consultation with local communities and historical organizations;
- Historic building surveys and recordation, research in architectural history; architectural description

2002-2003	Teaching Assistant, Religious Studies Department, University of California,	
	Riverside.	
2002	Interim Public Information Officer, Cabazon Band of Mission Indians.	
2000	Administrative Assistant, Native American Student Programs, University of	
	California, Riverside.	
1997-2000	Reporter, Inland Valley Daily Bulletin, Ontario, California.	
1991-1997	Reporter, The Press-Enterprise, Riverside, California.	

Membership

California Preservation Foundation.

PROJECT ARCHAEOLOGIST Daniel Ballester, M.S.

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California,
	Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2007	Certificate in Geographic Information Systems (GIS), California State University,
	San Bernardino.
2002	"Historic Archaeology Workshop," presented by Richard Norwood, Base
	Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside,
	California.

Professional Experience

2002-	Field Director, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

PROJECT ARCHAEOLOGIST Nina Gallardo, B.A.

Education

B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience

2004- Project Archaeologist, CRM TECH, Riverside/Colton, California.

• Surveys, excavations, mapping, and records searches.

Honors and Awards

2000-2002 Dean's Honors List, University of California, Riverside.

PROJECT GEOLOGIST Harry M. Quinn, M.S.

Education

- 1978 Certificate in Archaeology, University of California, Los Angeles.
- 1968 M.S., Geology, University of Southern California, Los Angeles.
- 1964 B.S., Geology, Long Beach State College, Long Beach.
- 1962 A.A., Los Angeles Harbor College, Wilmington.
- 2001 "The Art and Science of Flintknapping," presented by Jeanne D. Binning, Zzyzx.
- "Certified Local Government Preservation Commission, Board, and Staff Training Program," presented by the California Preservation Foundation, Long Beach and Palm Springs.
- 1998 "Historic Archaeology Workshop," presented by Richard Norwood, Torres-Martinez Indian Reservation.
- 1997 "Native American Archaeology," presented by Russell Kaldenberg, College of the Desert, Palm Desert.
- 1996-1998 "Project Archaeology," presented by BLM and DOE, North Palm Springs.
- 1996 "Mojave Desert Heritage Interagency Workshop," Palm Springs,.
- 1996 "Cultural Resources and CEQA: Your Responsibility," presented by the Association of Environmental Professionals, Hemet.
- 1991 "Ceramic Workshop," presented by Dr. Jerry Schaefer, Palm Springs.
- 1990 "Introduction to Coachella Valley Archaeology," presented by Anne Duffield, Palm Desert.
- 1989 "Prehistoric Rock Art and Archaeology of the Southern California Deserts," presented by Anne Duffield, UC Riverside Extension, Palm Springs.

Professional Experience

- 1998- Project Archaeologist/Field Director, CRM TECH, Riverside/Colton, California.
- 1994-1996 Environmental Geologist, E.C.E.S., Inc., Redlands, California.
- 1992-1998 Independent Geological/Archaeological/Environmental Consultant, Pinyon Pines.
- 1988-1992 Project Geologist/Director of Environmental Services, STE Associates/Soil and Testing Engineers, San Bernardino, California.
- 1966-1988 Geologist/Senior Geologist, Texaco, Inc., Los Angeles; Tenneco Oil Exploration and Production, Englewood, Colorado; Loco Exploration, Inc., Aurora, Colorado; Jirsa Environmental Services, Norco, California.

Memberships

Society for American Archaeology; Society for California Archaeology; Archaeological Survey Association of Southern California; Coachella Valley Archaeological Society (President, 1993-1994, 2000; Vice President, 1992, 1995-1999, 2001; Basic Archaeology Training Course Instructor, 1996-2000; Environmental Assessment Committee Chair, 1997-1999); Coachella Valley Historical Society; Malki Museum; Southwest Museum; El Paso Archaeological Society; Ohio Archaeological Society; West Virginia Archaeological Society; Museum of the Fur Trade; Cahokia Mounds Association.

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APPENDIX 3

* Eight local Native American representatives were contacted; a sample letter is included in this report.

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SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd, Suite 100 West Sacramento, CA 95691 (916) 373-3710 (916) 373-5471 – Fax nahc@nahc.ca.gov

Project: Alabama Street 36-Inch Effluent Reclamation Pressure Line Project (CRM TECH #2974)
County: San Bernardino
USGS Quadrangle Name: Redlands and San Bernardino South, Calif.
Township 1 South Range 3-4 West SB BM; Section(s) Within the Rancho San Bernardino land grant)
Company/Firm/Agency: CRM TECH
Contact Person: Nina Gallardo
Street Address: 1016 E. Cooley Drive, Suite A/B
City: Colton, CA Zip: 92324
Phone: (909) 824-6400 Fax: (909) 824-6405
Email: ngallardo@crmtech.us
Project Description: The primary component of the project is to make improvements to the existing recycled water system of the San Bernardino Municipal Water Department in the City of San Bernardino, San Bernardino County, California.

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100 West SACRAMENTO, CA 95691 (916) 373-3710 Fax (916) 373-5471



October 7, 2015

Nina Gallardo CRM TECH 1016 E. Cooley Drive, Suite A/B Colton, CA 92324

Sent by E-mail: ngallardo@crmtech.us Number of Pages: 2

Re.: Alabama Street 36-Inch Effluent Reclamation Pressure Line Project (CRM TECH #2974), San Bernardino County

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File was completed for your project area with negative results, based on the USGS quadrangle information you provided. Please note that the absence of specific site information in the Sacred Lands File does not indicate the absence of Native American cultural resources in any APE. Other sources of cultural resources information should be contacted regarding known and recorded sites.

Please contact all of the people on the attached list. The list should provide a starting place to locate areas of potential adverse impact within the APE. I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: rw_nahc@pacbell.net.

Sincerely,

Rob Wood

Associate Governmental Program Analyst

Native American Contact List San Bernardino County October 7, 2015

Ernest H. Siva

Morongo Band of Mission Indians Tribal Elder

9570 Mias Canyon Road Banning

,CA 92220

Serrano Cahuilla

siva@dishmail.net

(951) 849-4676

Lynn Valbuena, Chairwoman 26569 Community Center Serrano , CA 92346 Highland

San Manuel Band of Mission Indians

San Manuel Band of Mission Indians

, CA 92346

26569 Community Center Drive

dmccarthy@sanmanuel-nsn.gov

(909) 864-8933 Ext 3248

(909) 862-5152 Fax

Daniel McCarthy, M.S., Director-CRM Dept.

(909) 864-8933

(909) 864-3370 Fax

Morongo Band of Mission Indians

Denisa Torres, Cultural Resources Manager

12700 Pumarra Road Banning

,CA 92220

Cahuilla Serrano

dtorres@morongo-nsn.gov

(951) 849-8807

(951) 572-6004 Fax

(951) 572-6004 Fax

Morongo Band of Mission Indians

Robert Martin, Chairperson 12700 Pumarra Rroad

Cahuilla

Banning

, CA 92220

Serrano

(951) 849-8807

(951) 755-5200

(951) 922-8146 Fax

Serrano Nation of Mission Indians Goldie Walker, Chairwoman

P.O. Box 343

(909) 528-9027 (909) 528-9032 Serrano

Serrano

Patton

Highland

, CA 92369

San Fernando Band of Mission Indians John Valenzuela, Chairperson

P.O. Box 221838

Fernandeño

Newhall A CA 91322

Tataviam

tsen2u@hotmail.com

Serrano

(661) 753-9833 Office

(760) 885-0955 Cell

(760) 949-1604 Fax

Vanyume Kitanemuk

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Alabama Street 36-Inch Effluent Reclamation Pressure Line Project (CRM TECH #2974), San Bernardino County.

Robert Martin, Chairperson Morongo Band of Mission Indians 49750 Seminole Drive Cabazon, CA 92220

RE: Alabama Street Effluent Pipeline, San Bernardino Clean Water Factory Project Approximately Six Linear Miles of Pipeline in the City of San Bernardino San Bernardino County, California CRM TECH Contract #2974A

Dear Mr. Martin:

I am writing to inform you of a proposed pipeline installation and improvement project in the City of San Bernardino, which is currently the subject of a CEQA-Plus environmental review. The Area of Potential Effects (APE) for the undertaking encompasses approximately six linear miles of pipeline alignment, mostly along an existing pipeline and nearly all within existing street right-of-ways. The accompanying map, based on the USGS Redlands and San Bernardino South, Calif., 7.5' quadrangles, depicts the location of the APE in a portion of the Rancho San Bernardino land grant lying within T1S R3W and T1S R4W, SBBM. CRM TECH has been hired by Michael Baker International to conduct a cultural resource study, including the Native American scoping, for this undertaking.

According to records on file at the South Central Coastal Information Center (SCCIC), three previously recorded cultural resources are known to cross various segments of the APE, including the famed "Kite-Shaped Track" of the Santa Fe Railway (36-006847) and two historic-period ditches (PSBR-26H and PSBR-27H). Outside of the project boundaries but within a half-mile radius, SCCIC records show that 57 additional cultural resources have been reported, none of which was of prehistoric—i.e., Native American—origin. The majority were historic-period buildings associated with the former Norton Air Force Base, along with a few other ditches, bridges, refuse scatters, and single-family residences.

In a letter dated October 7, 2015, the Native American Heritage Commission reports that the sacred lands record search identified no Native American cultural resources within the APE, but recommends that local Native American groups be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the APE.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the APE that need to be taken into consideration as part of the cultural resources investigation. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agency, namely the San Bernardino Municipal Water Department. We would also like to clarify that CRM TECH, as the cultural resources consultant for the project, is not the appropriate entity to initiate government-to-government consultation or AB 52 compliance. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo CRM TECH 1016 E. Cooley Drive, Suite A/B Colton, CA 92324 From: Daniel McCarthy < DMcCarthy@sanmanuel-nsn.gov>

Sent: Thursday, October 22, 2015 11:03 AM

To: Nina Gallardo

Subject: CRM TECH# 2974A Alabama Street pipeline Scoping response

Nina,

We received your scoping inquiry, dated October 14, 2015, inquiring about tribal cultural resources in the vicinity of the proposed Alabama Street Pipeline project. While the project is within the Tribe's ancestral territory, we do not have specific information about cultural resources at the project location, other than that there was a known village somewhere near the western end of the pipeline alignment. Given that the pipeline is adjacent or very near the Santa Ana River watercourse, we feel that the potential for subsurface tribal cultural resources is higher. We recommend that if the proposed pipeline is installed at depth greater than previous disturbance, that archaeological and tribal monitoring to be recommended during construction. Is there any new right-of-way being designated for this pipeline where no previous ground disturbance has taken place?

Leslie Mouriquand MA, RPA for

Daniel McCarthy, MS, RPA Director Cultural Resources Management Department San Manuel Band of Mission Indians 26569 Community Center Drive Highland, CA 92346 Office: 909 864-8933 x 3248

Cell: 909 838-4175

dmccarthy@sanmanuel-nsn.gov

TELEPHONE LOG

Name	Tribe/Affiliation	Telephone Contacts	Comments
Raymond Huaute,	Morongo Band of	11:50 am, October 28, 2015;	Left messages; no response to
Cultural Resource	Mission Indians	9:37 am, November 6, 2015	date.
Specialist			
Robert Martin,	Morongo Band of	None	Raymond Huaute is the
Chairperson	Mission Indians		designated spokesperson for the
			tribe (see above).
Ernest H. Siva, Tribal	Morongo Band of	11:52 am, October 28, 2015;	Left messages; no response to
Elder	Mission Indians	9:38 am, November 6, 2015	date.
Denisa Torres, Cultural	Morongo Band of	None	Raymond Huaute is the
Heritage Program	Mission Indians		designated spokesperson for the
Coordinator			tribe (see above).
John Valenzuela,	San Fernando	11:55 am, October 28, 2015;	Left messages; no response to
Chairperson	Band of Mission	9:41 am, November 6, 2015	date.
	Indians		
Daniel McCarthy,	San Manuel Band	None	Leslie Moriquand responded by
Director of Cultural	of Mission Indians		e-mail on behalf of Mr.
Resources Management			McCarthy on October 22, 2015
Department			(copy attached).
Lynn Valbuena,	San Manuel Band	None	Daniel McCarthy is the
Chairwoman	of Mission Indians		designated spokesperson for the
			tribe (see above).
Goldie Walker,	Serrano Nation of	11:57 am, October 28, 2015;	Ms. Walker found the project
Chairperson	Indians	4:05 pm, October 28, 2015	location to be very sensitive to
			the tribe, and requested a
			thorough archaeological survey
			of the APE. She further
			requested to be notified if any
			cultural resources would be found
			during the survey or future
			construction activities.

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

CLEAN WATER FACTORY PROJECT ALABAMA STREET EFFLUENT PIPELINE ALIGNMENT OPTION

Cities of Redlands and San Bernardino San Bernardino County, California

For Submittal to:

Municipal Water Department City of San Bernardino 300 North D Street San Bernardino, CA 92401 (909) 387-9200

State Water Resources Control Board 1001 I Street/P.O. Box 944212 Sacramento, CA 94244 (916) 341-5690

U.S. Army Corps of Engineers Los Angeles District 915 Wilshire Boulevard, Suite 1101 Los Angeles, CA 90017 (213) 452-3333

Prepared for:

Christine Donoghue, Project Manager Michael Baker International 3536 Concours Street, Suite 100 Ontario, CA 91764 (909) 974-4954

Prepared by:

CRM TECH 1016 East Cooley Drive, Suite A/B Colton, CA 92324 (909) 824-6400

Harry M. Quinn, Geologist/Paleontologist Terri Jacquemain, Report Writer

March 4, 2016

CRM TECH Project No. 2974P
Approximately six linear miles
USGS San Bernardino South and Redlands, Calif., 7.5' quadrangles
Rancho San Bernardino land grant, T1S R3W and T1S R4W, San Bernardino Baseline and Meridian

EXECUTIVE SUMMARY

Between September 2015 and March 2016, at the request of Michael Baker International, CRM TECH performed a paleontological resource assessment on the Area of Potential Effects (APE) for the proposed Alabama Street Effluent Pipeline Alignment Option of the San Bernardino Clean Water Factory Project in the Cities of San Bernardino and Redlands, San Bernardino County, California. As proposed by the San Bernardino Municipal Water Department (SBMWD), the project entails the activation of an existing 36-inch-diameter effluent pipeline and the installation of approximately 200 feet of matching pipeline within the Alabama Street right-of-way to connect the San Bernardino Waste Water Treatment Plant and the Redlands Recharge Basin.

The APE is delineated to encompass the maximum extent of ground disturbance required for the project, including all areas to be impacted by construction activities or by the operation of construction equipment. It measures approximately six miles in total length and ranges from 40 feet to 80 feet in width, generally coinciding with the existing rights-of-way of various public roads where the pipeline route follows such roads. The vertical extent of the APE, or the maximum depth of disturbance, will not exceed 10 feet. The entire APE lies in T1S R3W and T1S R4W, San Bernardino Baseline and Meridian, within the boundaries of the Rancho San Bernardino land grant.

As a part of the environmental review process for the proposed project, the present study was initiated by the SBMWD in compliance with the California Environmental Quality Act (CEQA). As the project requires the review and approval by the U.S. Army Corps of Engineers (USACE) and the State Water Resources Control Board (SWRCB), the study is also intended to comply with the National Environmental Policy Act (NEPA). The purpose of the study is to provide the SBMWD, the USACE, and the SWRCB with the necessary information and analysis to determine whether the proposed project would adversely affect any significant paleontological resources, as required by CEQA and NEPA regulations, and to design a paleontological mitigation program if necessary.

In order to identify any paleontological resource localities that may exist in or near the APE and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated records searches at the appropriate repositories, conducted a literature search, and carried out a systematic field survey, in accordance with the guidelines of the Society of Vertebrate Paleontology. The results of these research procedures indicate that the surface deposits in and near the APE consist of disturbed younger alluvium of Holocene age, which are low in potential for any significant, nonrenewable fossil remains. However, older, undisturbed Pleistocene-age sediments may be present in the APE at depths greater than 10-15 feet below the current ground surface, and these sediments are considered high in potential for paleontological resources.

Given its 10-foot maximum depth of excavations, the proposed project appears unlikely to encounter any paleontologically sensitive sediments. However, if any trenching, excavations, or other earthmoving operations reach beyond the depth of 10 feet during the project, a paleontological mitigation program will become necessary. As the primary component of the mitigation program, all ground disturbances beyond the depth of 10 feet should be monitored for paleontological resources that may be unearthed.

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INTRODUCTION

Between September 2015 and March 2016, at the request of Michael Baker International, CRM TECH performed a paleontological resource assessment on the Area of Potential Effects (APE) for the proposed Alabama Street Effluent Pipeline Alignment Option of the San Bernardino Clean Water Factory Project in the Cities of San Bernardino and Redlands, San Bernardino County, California (Fig. 1). As proposed by the San Bernardino Municipal Water Department (SBMWD), the project entails the activation of an existing 36-inch-diameter effluent pipeline and the installation of approximately 200 feet of matching pipeline within the Alabama Street right-of-way to connect the San Bernardino Waste Water Treatment Plant and the Redlands Recharge Basin.

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As a part of the environmental review process for the proposed project, the present study was initiated by the SBMWD in compliance with the California Environmental Quality Act (CEQA). As

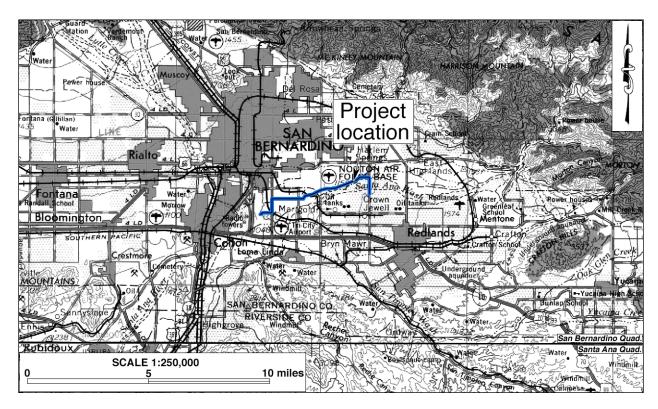


Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 1:250,000 quadrangles, 1969/1979 editions)

Figure 2. Project location. (Based on USGS San Bernardino South and Redlands, Calif., 1:24,000 quadrangles, 1980/1996 editions)

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the project requires the review and approval by the U.S. Army Corps of Engineers (USACE) and the State Water Resources Control Board (SWRCB), the study is also intended to comply with the National Environmental Policy Act (NEPA). The purpose of the study is to provide the SBMWD, the USACE, and the SWRCB with the necessary information and analysis to determine whether the proposed project would adversely affect any significant paleontological resources, as required by CEQA and NEPA regulations, and to design a paleontological mitigation program if necessary.

In order to identify any paleontological resource localities that may exist in or near the APE and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated records searches at the appropriate repositories, conducted a literature search, and carried out a systematic field survey, in accordance with the guidelines of the Society of Vertebrate Paleontology. The following report is a complete account of the methods, results, and final conclusion of this study.

PALEONTOLOGICAL RESOURCES

DEFINITION

Paleontological resources represent the remains of prehistoric life, exclusive of any human remains, and include the localities where fossils were collected as well as the sedimentary rock formations in which they were found. The defining character of fossils or fossil deposits is their geologic age, which is typically regarded as older than 10,000 years, the generally accepted temporal boundary marking the end of the last late Pleistocene glaciation and the beginning of the current Holocene epoch.

Common fossil remains include marine shells; the bones and teeth of fish, reptiles, and mammals; leaf assemblages; and petrified wood. Fossil traces, another type of paleontological resource, include internal and external molds (impressions) and casts created by these organisms. These items can serve as important guides to the age of the rocks and sediments in which they are contained, and may prove useful in determining the temporal relationships between rock deposits from one area and those from another as well as the timing of geologic events.

Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, limestone, claystone, or shale). Because of the infrequency of fossil preservation, fossils, particularly vertebrate fossils, are considered to be nonrenewable paleontological resources. Occasionally fossils may be exposed at the surface through the process of natural erosion or as a result of human disturbances; however, they generally lay buried beneath the surficial soils. Thus, the absence of surface fossils does not preclude the possibility of their being present within subsurface deposits, while the presence of fossils at the surface is often a good indication that more remains may be found in the subsurface.

SIGNIFICANCE CRITERIA

According to guidelines proposed by Eric Scott and Kathleen Springer of the San Bernardino County Museum, paleontological resources can be considered to be of significant scientific interest if they meet one or more of the following criteria:

- 1. The fossils provide information on the evolutionary relationships and developmental trends exhibited among organisms, living or extinct;
- 2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
- 3. The fossils provide data regarding the development of biological communities or the interactions between paleobotanical and paleozoological biotas;
- 4. The fossils demonstrate unusual or spectacular circumstances in the history of life; and/or
- 5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations. (Scott and Springer 2003:6)

PALEONTOLOGICAL SENSITIVITY

The fossil record is unpredictable, and the preservation of organic remains is rare, requiring a particular sequence of events involving physical and biological factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved within the fossil record; soft tissues not intimately connected with the skeletal parts, however, are the least likely to be preserved (Raup and Stanley 1978). For this reason, the fossil record contains a biased selection not only of the types of organisms preserved but also of certain parts of the organisms themselves. As a consequence, paleontologists are unable to know with certainty, the quantity of fossils or the quality of their preservation that might be present within any given geologic unit.

Sedimentary units that are paleontologically sensitive are those geologic units (mappable rock formations) with a high potential to contain significant nonrenewable paleontological resources. More specifically, these are geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or are likely to be present. These units include, but are not limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical extent as well as sedimentary rock units temporally or lithologically amenable to the preservation of fossils.

A geologic formation is defined as a stratigraphic unit identified by its lithic characteristics (e.g., grain size, texture, color, and mineral content) and stratigraphic position. There is a direct relationship between fossils and the geologic formations within which they are enclosed, and with sufficient knowledge of the geology and stratigraphy of a particular area, it is possible for paleontologists to reasonably determine its potential to contain significant nonrenewable vertebrate, invertebrate, marine, or plant fossil remains.

The paleontological sensitivity for a geologic formation is determined by the potential for that formation to produce significant nonrenewable fossils based on what fossil resources the particular geologic formation has produced in the past at other nearby locations. Determinations must consider not only the potential for yielding vertebrate fossils but also the potential for a few significant fossils that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data.

The Society of Vertebrate Paleontology (1995) issued a set of standard guidelines intended to assist paleontologists to assess and mitigate any adverse effects/impacts to nonrenewable paleontological resources. The Society defined three potential categories of paleontological sensitivity for geologic

units that might be impacted by a proposed project. These categories are described below, along with the criteria used to establish their sensitivity.

- **High sensitivity**: Geologic units assigned to this category are considered to have a high potential for significant nonrenewable vertebrate, invertebrate, marine, or plant fossils. Sedimentary rock units in this category contain a relatively high density of recorded fossil localities, have produced fossil remains in the vicinity, and are very likely to yield additional fossil remains.
- **Low sensitivity**: Geologic units are assigned to this category when they have produced no or few recorded fossil localities and are not likely to yield any significant nonrenewable fossil remains.
- **Undetermined sensitivity**: Geologic units are assigned to this category when there is limited exposure of the rock units in the area and/or the rock units have been poorly studied.

SETTING

REGIONAL GEOLOGIC SETTING

Geologically, the Cities of San Bernardino and Redlands are located in the northern portion of the Peninsular Ranges Province, which is bounded on the north by the Transverse Ranges Province, on the northeast by the Colorado Desert Province, and on the west by the Pacific Ocean (Jenkins 1980; Harms 1996:150). The Peninsular Ranges Province consists of a well-defined geologic and physiographic unit occupying the southwest portion of the State of California and extending south to the tip of Baja California (Jahns 1954:29; Harms 1996:130).

More specifically, San Bernardino and Redlands lie in the eastern portion the San Bernardino Valley, a broad inland valley extending from the southern base of the San Bernardino and San Gabriel Mountains on the north to the Santa Ana Mountains and the Jurupa Hills on the south. An alluvial valley associated with the Santa Ana River and its tributaries, this structurally depressed trough is filled with sediments of Miocene through Recent age (Harms 1996:15).

The San Bernardino Valley, the Jurupa Mountains, and the Chino Basin are among the many tectonically controlled basins and ridges within the Perris Block. English (1926) defined the Perris Block as a region between the San Jacinto and Elsinore-Chino fault zones, bounded on the north by the Cucamonga (San Gabriel) Fault and on the south by a vaguely delineated boundary near the southern end of the Temecula Valley. This structural block has been active since Pliocene time (Woodford et al. 1971:3421). The Pliocene- and Pleistocene-age non-marine sedimentary rocks found in the valley areas have produced a few vertebrate fossils, as well as a few invertebrate fossil remains (Mann 1955:13).

CURRENT NATURAL SETTING

The current natural environment of the eastern San Bernardino Valley region is characterized by a temperate Mediterranean climate, with the average maximum temperature in July reaching the high 90s (Fahrenheit) and the average minimum temperature in January hovering around 30°. Rainfall is typically less than 20 inches annually, occurring mostly during a few major storms between November and March.



Figure 3. Typical landscapes along the project route. *Clockwise from top left*: Central Avenue at Waterman Avenue, view to the east; access road within the San Bernardino International Airport, view to the southwest; City Creek wash, view to the west; Alabama Street, view to the north. (Photographs taken on October 16 and 21, 2015)

The proposed pipeline route traverses residential neighborhoods, commercial and warehouse districts, and a portion of the San Bernardino International Airport, mostly in an urbanized setting. More than half of the APE is contained within the existing rights-of-way of four public streets, namely Dumas Street, Waterman Avenue, Central Avenue, and Alabama Street. The rest of the APE runs across the Warm Creek wash, along the southern edge of the airport, and through a nature conservation area in and near the City Creek and the Santa Ana River washes (Fig. 3).

Overall, the terrain in the APE is relatively level, with elevations ranging between approximately 990 and 1,200 feet above mean sea level, inclining to the northeast. The surface soils in most of the APE have been extensively disturbed by past construction activities associated with the roads and the airport, and by natural erosion such as flooding. Vegetation along the roads in the APE consists mostly of introduced landscaping plants, with scattered low-lying shrubs and grasses within the airport and denser growth of taller shrubs within the washes.

METHODS AND PROCEDURES

RECORDS SEARCH

The records search services for this study were provided by the Regional Paleontological Locality Inventory at the San Bernardino County Museum in Redlands and the Natural History Museum of Los Angeles County in Los Angeles. These institutions maintain regional paleontological site records in their files, as well as supporting maps and documents. The records search results are used to identify all known previously performed paleontological resource assessments as well as known paleontological localities within a one-mile radius of the project area.

LITERATURE REVIEW

In addition to the records searches, CRM TECH geologist/paleontologist Harry M. Quinn, California Professional Geologist #3477 (see App. 1 for qualifications), pursued a literature review on the project area. Sources consulted during the research include primarily topographic, geologic, and soil maps of the San Bernardino-Redlands area, published geologic literature pertaining to the project location, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys in the vicinity.

FIELD SURVEY

October 16 and 21, 2015, CRM TECH field director/paleontological surveyor Daniel Ballester (see App. 1 for qualifications) carried out the field survey of the APE. In light of past ground disturbances and the reduced paleontological sensitivity, the segments of the project route along paved roads are covered by a reconnaissance-level "windshield survey" from a motor vehicle. The segments within the San Bernardino International Airport, the conservation area, and the washes was surveyed on foot at an intensive level by walking two parallel transects along either side of the project center line, at a distance of approximately 10 meters (approx. 33 feet) from each other, effectively covering a total width of 20 meters (approx. 65 feet) with visual observations.

The levels of survey coverage for each portion of the APE are illustrated in Figure 4. Using these various survey methods, the ground surface in the entire APE was systematically and carefully examined for any indications of paleontological remains and to verify the geological formations and the soil types. Visibility of the native ground surface was poor where the project route lies within paved roadbeds or across dense vegetation in parts of the washes, but was good (approx. 70%) where it traverses open land with typical vegetation cover (Fig. 3).

RESULTS AND FINDINGS

RECORDS SEARCHES

The Natural History Museum of Los Angeles County and the San Bernardino County Museum found no known paleontological localities within or in the immediate vicinity of the project area (McLeod 2015; Scott 2015; see App. 2). According to the museums, surface soils within the APE consist of Quaternary alluvium that is not paleontologically sensitive, but both museums note that these sediments may overlie older Pleistocene alluvium in the subsurface that, if present, and depending upon its lithology, may have a high potential to contain significant fossil vertebrate remains. According to the San Bernardino County Museum, however, excavations that do not reach beyond 15 feet in depth are unlikely to encounter these older sediments (Scott 2015).

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Figure 4. Level of survey efforts within the APE.

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LITERATURE REVIEW

Jahns (1954:Plate 3) maps the surface geology of the APE as *Qal*, or alluvium of Recent age, described as "alluvial-fan, flood-plain, swamp, lake, and dune deposits." Bortugno and Spittler (1986) map the APE as *Qw*, or wash deposits of Holocene age. Clarke (1978-1979) maps most the APE as *Qt* with some *Qcs* in the eastern portion. He defines *Qt* as stream terrace deposits and *Qcs* as stream channel sands, both of Quaternary age. *Qt* is described as "poorly consolidated or unconsolidated submature, arkosic sands and gravels" (*ibid*.:68). It is subdivided into five types based upon the age, with *T1* being the oldest and *T5* the youngest. The *Qt* in the APE is identified as *T5*, described as "immediately adjacent to the active floodplains and only a few feet above it" (*ibid*.:71). *Qcs* is found in all presently active stream channels, washes, and floodplains (*ibid*.:73).

Matti et al. (2003:5) map the surface geology in most of the APE as Qya5, namely young axial-valley deposits of late Holocene age, which form on low terraces incised into older sediments or over older wash deposits. Morton and Miller (2003) also show surface geology in the APE to be mainly Qya5 with areas of Qw and Qw_I along the Santa Ana River wash (Fig. 5). They describe both Qw and Qw_I as very young wash deposits of unconsolidated sand and gravel, and identify both as being late Holocene in age (Morton and Miller 2003:116).

Dibblee (2004) maps the surface geology of the APE as mainly Qa with some Qg at the eastern end. He defined Qa as Holocene-age "alluvial sand and clay of valley areas, covered with gray silt; includes alluvial pebbly sand adjacent to mountain terranes surficial sediments," and Qg as Holocene-age "alluvial gravel and sand of stream channels" (ibid.). This Holocene-age alluvium is underlain by older alluvium at some unknown depth.

Woodruff and Brock (1980:Map Sheets 8 and 9) map the surface soils at this location as mainly TvC with some Gr, HaC, Ps, and SpC near the eastern end. TvC belongs to the Tujunga series and forms on alluvial fans composed of granitic alluvium (ibid.:15). Ps belongs to the Psamments and Fluvents, frequently flooded series, and consists of sandy and gravelly material in intermittent streambeds of the Santa Ana River (ibid.). HaC belongs to the Hanford Series and forms in recent granitic alluvium on valley floors and alluvial fans (ibid.). Gr belongs to the Grangeville Series and forms on nearly level soil on the slopes of alluvial fans (ibid.). SpC belongs to the Soboba Series and develops on long, broad, smooth alluvial fans (ibid.).

FIELD SURVEY

The field survey did not encounter any surface manifestation of potential paleontological resources. The exposed ground surface in the APE, especially on open land in the conservation area and along the various washes, was closely inspected for any evidence of fossilized faunal or floral remains, but none was found.

DISCUSSION

The results of the research procedure completed during this study indicate that the surface sediments in the APE are of Holocene age, have been extensively disturbed, and thus have a low potential for

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Figure 5. Geologic map of the project vicinity. (Source: Morton and Miller 2003)

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containing significant, nonrenewable paleontological resources. These younger surface sediments, however, may rest directly on top of older Pleistocene-age alluvium that has a high paleontological potential. While no fossil localities have been reported in or near the APE, the subsurface lithology that may be present at this location has produced significant fossils of extinct Ice Age animals and plants in other portions of the Inland Empire. The older Pleistocene-age sediments are not expected to be present in sediments above 10-15 feet in depth, but if encountered during the project will require monitoring for possible discovery of paleontological resources. Soil boring logs, if available, may help determined the precise depth at which the Pleistocene-age sediments would be reached.

CONCLUSION AND RECOMMENDATIONS

In summary of the information and analysis presented above, the surface deposits in and near the APE consist of disturbed younger alluvium of Holocene age, which are low in potential for any significant, nonrenewable fossil remains. However, older, undisturbed Pleistocene-age sediments may be present in the APE at depths greater than 10-15 feet below the current ground surface, and these sediments are considered high in potential for paleontological resources.

Given its 10-foot maximum depth of excavations, the proposed project appears unlikely to encounter any paleontologically sensitive sediments. However, if any trenching, excavations, or other earthmoving operations reach beyond the depth of 10 feet during the project, a paleontological mitigation program will become necessary. The mitigation program should be developed in accordance with the provisions of CEQA (Scott and Springer 2003) as well as the proposed guidelines of the Society of Vertebrate Paleontology (1995), and should include but not be limited to the following:

- All ground disturbances beyond the depth of 10 feet should be monitored for paleontological
 resources that may be unearthed. The monitor should be prepared to quickly salvage
 paleontological remains as they are unearthed to avoid construction delays, and should collect
 samples of sediments that are likely to contain small fossils. However, the monitor must have
 the power to temporarily halt or divert construction equipment to allow for the removal of
 abundant or large specimens.
- The sediment samples collected during the field procedures should be processed for small fossil remains, and the recovered specimens should be prepared for proper identification and permanent curation at a repository with permanent retrievable storage.
- A report of findings, including an itemized inventory of recovered specimens, should be prepared upon completion of the work outlined above. The approval of the report and the inventory by the lead agency or agencies would signify completion of the mitigation program.

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APPENDIX 1 PERSONNEL QUALIFICATIONS

PROJECT GEOLOGIST/PALEONTOLOGIST Harry M. Quinn, M.S.

Education

- 1968 M.S., Geology, University of Southern California, Los Angeles, California.
- 1964 B. S., Geology, Long Beach State College, Long Beach.
- 1962 A.A., Los Angeles Harbor College, Wilmington North Palm Springs, California.
- Graduate work oriented toward invertebrate paleontology; M.S. thesis completed as a stratigraphic paleontology project on the Precambrian and Lower Cambrian rocks of Eastern California.

Professional Experience

2000-	Project Paleontologist, CRM TECH, Riverside/Colton, California.
1998-	Project Archaeologist, CRM TECH, Riverside/Colton, California.
1992-1998	Independent Geological/Geoarchaeological/Environmental Consultant, Pinyon Pines,
	California.
1994-1996	Environmental Geologist, E.C E.S., Inc, Redlands, California.
1988-1992	Project Geologist/Director of Environmental Services, STE, San Bernardino, California.
1987-1988	Senior Geologist, Jirsa Environmental Services, Norco, California.
1986	Consulting Petroleum Geologist, LOCO Exploration, Inc. Aurora, Colorado.
1978-1986	Senior Exploration Geologist, Tenneco Oil E & P, Englewood, Colorado.
1965-1978	Exploration and Development Geologist, Texaco, Inc., Los Angeles, California.

Previous Work Experience in Paleontology

- 1969-1973 Attended Texaco company-wide seminars designed to acquaint all paleontological laboratories with the capability of one another and the procedures of mutual assistance in solving correlation and paleo-environmental reconstruction problems.
- 1967-1968 Attended Texaco seminars on Carboniferous coral zonation techniques and Carboniferous smaller foraminifera zonation techniques for Alaska and Nevada.
- 1966-1972, 1974, 1975 Conducted stratigraphic section measuring and field paleontological identification in Alaska for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic and Mesozoic rocks and some Tertiary rocks, including both megafossil and microfossil identification, as well as fossil plant identification.
- 1965 Conducted stratigraphic section measuring and field paleontological identification in Nevada for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic rocks and some Mesozoic and Tertiary rocks. The Tertiary work included identification of ostracods from the Humboldt and Sheep Pass Formations and vertebrate and plant remains from Miocene alluvial sediments.

Memberships

Society of Vertebrate Paleontology; American Association of Petroleum Geologists; Canadian Society of Petroleum Geologists; Rocky Mountain Association of Geologists, Pacific Section; Society of Economic Paleontologists and Mineralogists; San Bernardino County Museum.

Publications in Geology

Five publications in Geology concerning an oil field study, a ground water and earthquake study, a report on the geology of the Santa Rosa Mountain area, and papers on vertebrate and invertebrate Holocene Lake Cahuilla faunas.

PALEONTOLOGICAL SURVEYOR/FIELD DIRECTOR Daniel Ballester, M.S.

Education

2013 1998 1997	M.S., Geographic Information System (GIS), University of Redlands, California. B.A., Anthropology, California State University, San Bernardino. Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2007	Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.

 Cross-trained in paleontological field procedures and identifications by CRM TECH Geologist/Paleontologist Harry M. Quinn.

Professional Experience

2002-	Field Director/GIS Spe	ecialist CRM TECH	Riverside/Colton	California
2002-	Tield Director/Org Spe	Ciansi, Civil I ECII,	Kiveisiue/Conon,	Camonia.

- Report writing, site record preparation, and supervisory responsibilities over all
 aspects of fieldwork and field crew. Manages and updates CRM TECH's GIS
 database, produces maps and extracts data using GIS. Manages field crews for
 field surveys, testing and data recovery projects. Oversees work to ensure correct
 procedures.
- 2011-2012 GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California.
 - Created archaeological site maps based off points taken with hand-held GPS unit; responsible for accurately inputting data.
- 2009-2010 Field Crew Chief, Garcia and Associates, San Anselmo, California.
- 2009-2010 Field Crew, ECorp, Redlands.
- 1999-2002 Project Archaeologist, CRM TECH, Riverside, California.
 - Conducted field surveys, site recording, site testing and data recovery; familiar with all types of prehistoric and historic period sites.
- 1998-1999 Field Crew, K.E.A. Environmental, San Diego, California.
 - Two and a half months of excavations on Topomai village site, Marine Corp Air Station, Camp Pendleton.
- 1998 Field Crew, A.S.M. Affiliates, Encinitas, California.
 - Two weeks of excavations on a site on Red Beach, Camp Pendleton, and two weeks of survey in Camp Pendleton, Otay Mesa, and Encinitas.
- 1998 Field Crew, Archaeological Research Unit, University of California, Riverside.
 - Two weeks of survey in Anza Borrego Desert State Park and Eureka Valley, Death Valley National Park.

REPORT WRITER Terri Jacquemain, M.A.

Education

2004

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	Riverside.	
	• M.A. thesis: Managing Cultural Outreach, Public Affairs and Tribal Policies of the Cabazon Band of Mission Indians, Indio, California; internship served as	
	interim Public Information Officer, Cabazon Band of Mission Indians, June-	
	October, 2002.	
2002	B.S., Anthropology, University of California, Riverside.	
2001	Archaeological Field School, University of California, Riverside.	
1991	A.A., Riverside Community College, Norco Campus.	

Professional Experience

2003-	Historian/Architectural Historian/Report Writer, CRM TECH, Riverside/ Colton,
	California.

• Author/co-author of legally defensible cultural resources reports for CEQA and NHPA Section 106;

M.A., Public History and Historic Resource Management, University of California,

- Historic context development, historical/archival research, oral historical interviews, consultation with local communities and historical organizations;
- Historic building surveys and recordation, research in architectural history; architectural description

2002-2003	Teaching Assistant, Religious Studies Department, University of California,
	Riverside.
2002	Interim Public Information Officer, Cabazon Band of Mission Indians.
2000	Administrative Assistant, Native American Student Programs, University of
	California, Riverside.
1997-2000	Reporter, Inland Valley Daily Bulletin, Ontario, California.
1991-1997	Reporter, The Press-Enterprise, Riverside, California.

Membership

California Preservation Foundation.

APPENDIX 2

RECORDS SEARCH RESULTS





Museum

Leonard X. Hernandez Interim Museum Director

7 October 2015

CRM Tech attn: Nina Gallardo 1016 E. Cooley Drive, Suite "B" Colton, CA 92324

PALEONTOLOGY LITERATURE AND RECORDS REVIEW, ALABAMA re: STREET 36" EFFLUENT RECLAMATION PRESSURE LINE PROJECT, CITY <u>AND COUNTY OF SAN BERNARDINO, CALIFORNIA</u>

Dear Ms. Gallardo.

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a records search for the above-referenced property in the City of San Bernardino, San Bernardino County. The proposed project alignment traverses portions of section 7 (projected), Township 1 South, Range 3 West, as well as portions of sections 13, 14, 15, and 22 (all projected), Township 1 South, Range 4 West, San Bernardino Base and Meridian, as seen on the Redlands, California and the San Bernardino South, California 7.5' United States Geological Survey topographic quadrangle maps (1967 editions, photorevised 1988 and 1980, respectively).

Previous geologic mapping of the region including the proposed study area (Bortugno and Spittler, 1986; Matti and others, 2003; Morton and Miller, 2003) indicates that the various proposed project alignments cross surface exposures of young alluvial valley deposits (= unit Qyas) dating to the Holocene Epoch, overlain and incised in some areas by recent wash alluvium $(= Ow, Ow_1)$. These Holocene sediments have low potential to contain fossil resources, and so are assigned low paleontologic sensitivity. These sediments may overlie Pleistocene older alluvium in the subsurface; if present, and depending upon its lithology, this older alluvium may have high potential to contain significant nonrenewable paleontologic resources, and so would be assigned high paleontologic sensitivity. Pleistocene alluvium elsewhere throughout inland Riverside and San Bernardino Counties and the Inland Empire has been repeatedly demonstrated to have high paleontologic sensitivity (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously - known paleontologic resource localities are recorded from along the proposed project corridor, nor within at least one mile in any direction.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development has low potential to cause significant adverse impacts to nonrenewable paleontologic resources. Holocene alluvial sediments present at the surface are too young geologically to have potential to contain significant fossil resources. No program to mitigate impacts to resources is therefore recommended for excavation in the Holocene sediments.

However, Pleistocene older alluvium may be present at depth. If present, this alluvium may have high paleontologic sensitivity, depending upon its lithology and depositional context. It cannot be determined a priori from the available geologic mapping at what depths such Pleistocene sediments might be encountered; for the purposes of this report, it is inferred that such sediments may be present at depths in excess of 15' below the existing ground surface. If excavation is restricted to depths of approximately 15' below the existing ground surface, or less, then older Pleistocene sediments are not expected to be encountered. At these depths, no program to mitigate adverse impacts to paleontologic resources is recommended at this time.

In the event that excavation is expected to exceed 15' below the existing ground surface in depth, a qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources, including full curation of recovered significant resources (see Scott and others, 2004). This mitigation program should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology.

The County of San Bernardino (Development Code §82.20.040) defines a qualified vertebrate paleontologist as meeting the following criteria:

<u>Education</u>: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology).

<u>Professional experience</u>: At least five years professional experience with paleontologic (not including cultural) resources, including the collection, identification and curation of the resources.

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include, but not be limited to:

(a) <u>Field survey before grading</u>. In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring.

- (b) Monitoring during grading. A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Paleontologic monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.
- (c) <u>Recovered specimens</u>. Qualified paleontologic personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.
- (d) <u>Identification and curation of specimens.</u> Qualified paleontologic personnel shall identify and curate specimens into the collections of the Division of Geological Sciences, San Bernardino County Museum, an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until curation into an established museum repository has been fully completed and documented.
- (e) <u>Report of findings.</u> Qualified paleontologic personnel shall prepare a report of findings with an appended itemized of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino County Museum, will signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology Division of Geological Sciences San Bernardino County Museum



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

tel 213.763.DINO www.nhm.org

Vertebrate Paleontology Section Telephone: (213) 763-3325 Fax: (213) 746-7431 e-mail: smcleod@nhm.org

21 October 2015

CRM Tech 1016 East Cooley Drive, Suite B Colton, CA 92324

Attn: Nina Gallardo, Project Archaeologist

re: Paleontological resources for the proposed Alabama Street 36-Inch Effluent Reclamation Pressure Line Project, CRM Tech Contract # 2974, in San Bernardino, San Bernardino County, project area

Dear Nina:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Alabama Street 36-Inch Effluent Reclamation Pressure Line Project, CRM Tech Contract # 2974, in San Bernardino, San Bernardino County, project area as outlined on the portions of the San Bernardino South and Redlands USGS topographic quadrangle maps that you sent to me via e-mail on 28 September 2015. We do not have any vertebrate fossil localities that lie directly within the proposed project area, but we do have localities farther afield from sedimentary deposits similar to those that may occur subsurface in the proposed project area.

The entire proposed project area has surface deposits composed of soil and younger Quaternary Alluvium, derived as fluvial overbank deposits from the Santa Ana River that currently flows immediately to the south. Typically these types of deposits do not contain significant vertebrate fossils in the uppermost layers, but at depth they always have the potential to contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from somewhat similar deposits is LACM 4540, south-southeast of the proposed project area on the northeastern side of the San Jacinto Valley just west of Jack Rabbit Trail, that produced a specimen of fossil horse, *Equus*. Our next closest fossil vertebrate locality from similar deposits

is LACM 7811, west-southwest of the proposed project area near Mira Loma, that produced a fossil specimen of coachwhip, *Masticophis flagellum*.

Shallow excavations in the younger Quaternary Alluvium exposed throughout the proposed project area probably will not encounter any significant vertebrate fossils. Deeper excavations that extend down into older sedimentary deposits, however, may well uncover significant vertebrate fossil remains. Any substantial excavations below the uppermost layers, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod, Ph.D. Vertebrate Paleontology

Summel a. M. Leod

enclosure: invoice

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