

Figure 3-3. Paleontological Sensitivity Map (Northern Portion)

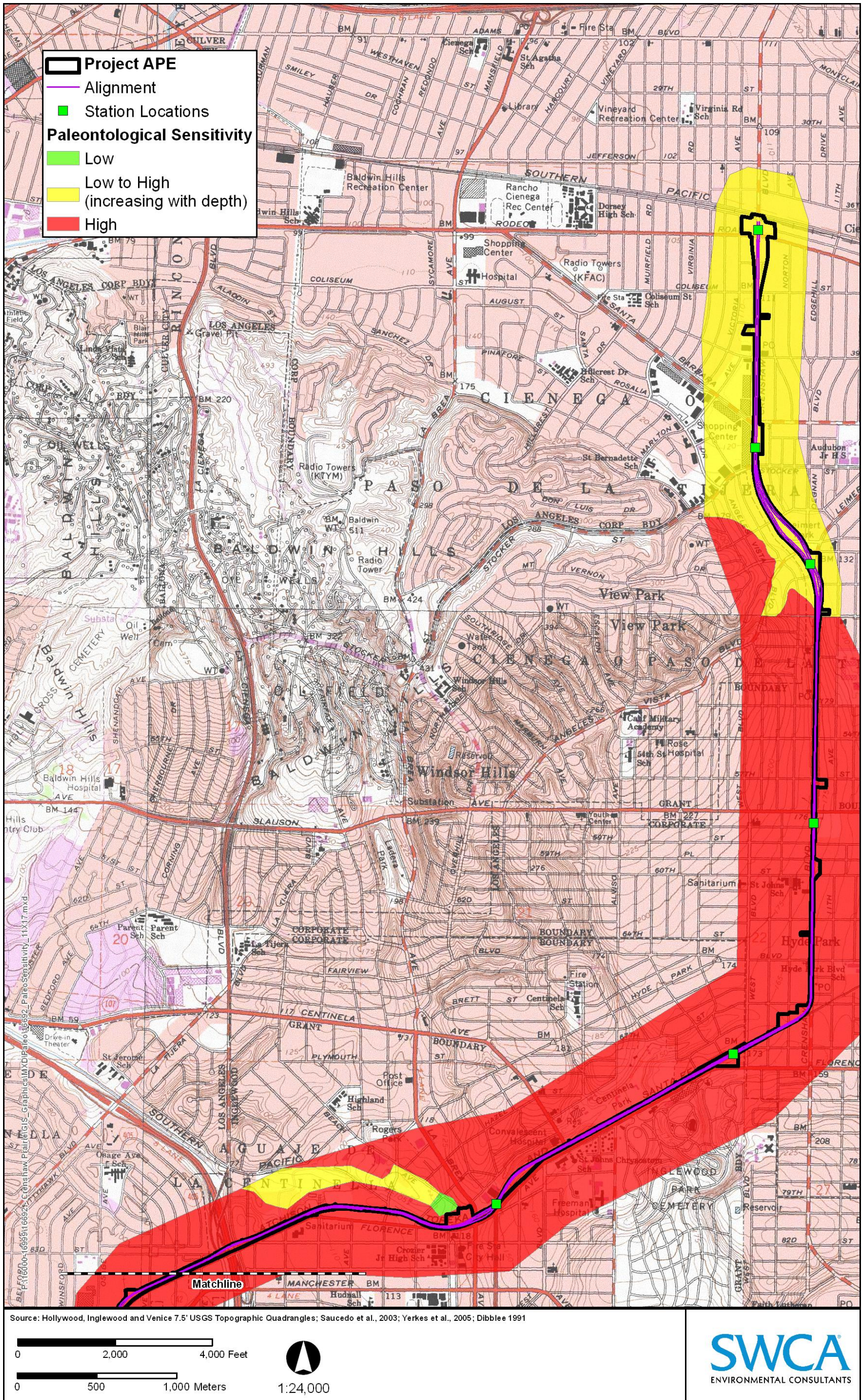
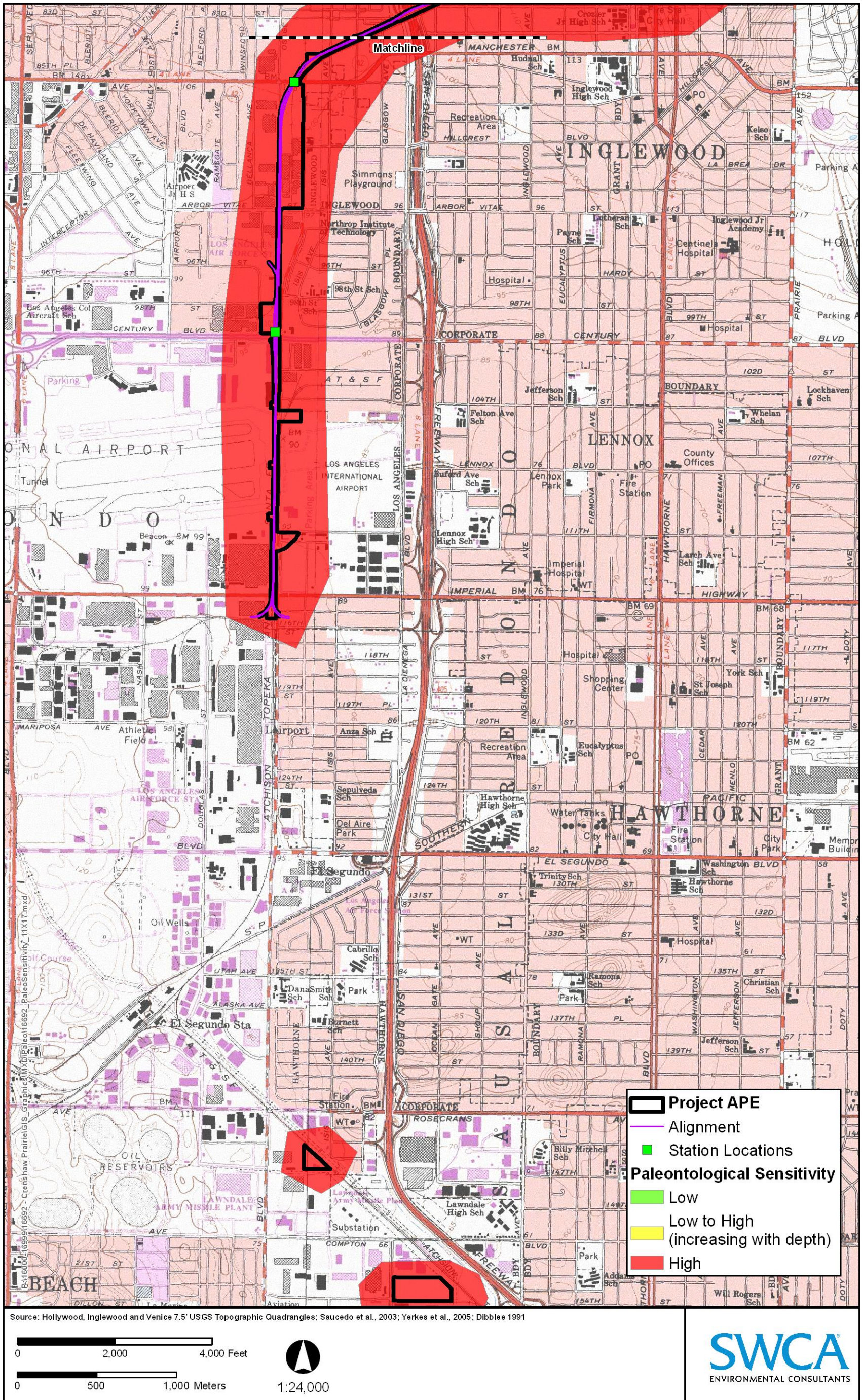


Figure 3-4. Paleontological Sensitivity Map (Southern Portion)



**3.3.2 Quaternary Younger Alluvial Deposits**

Quaternary younger alluvial deposits underlie approximately the northern one-third of the project alignment north of the intersection of Crenshaw Boulevard and West 48th Street to the northern terminus. Surficial deposits of younger Quaternary alluvium consist of unconsolidated gravel, sand, silt, and clay deposited in modern stream channels and fluvial slope wash. These young sediments may overlie older alluvium at varying depths. Older alluvial sediments may be slightly to moderately consolidated but are generally only distinguishable through relative dating and stratigraphic position.

Holocene-aged deposits contain the remains of modern organisms and are too young to contain fossils. Younger alluvial deposits have been determined to have a low potential for paleontological resources. However, because they are often underlain by older alluvium, they are considered to have a paleontological sensitivity ranging from low to high, increasing with depth (see Figures 3-3 and 3-4).

3.4 Museum Records Search Results

Museum collections records maintained by the LACM were searched, and 13 previously recorded vertebrate fossil localities were discovered in the immediate and general vicinity of the project area (Table 3-1). These vertebrate fossil localities were discovered within the same or similar geologic sediments that are present within the project area. Each locality yielded one or more vertebrate fossil specimen, including small terrestrial mammals such as rodents and large megafauna such as mammoths and mastodons. For these localities, the depth of discovery ranged from 6 feet to 40 feet below the ground surface (Rhue, 2011).

A field reconnaissance survey was performed to examine the project area for any potential rock outcrops or surface exposures of the underlying geology. A windshield survey was conducted in all areas accessible by automobile. The reconnaissance survey confirmed that the project area is highly disturbed by existing urban structures and no surficial exposures of Quaternary alluvial deposits, young or old, were apparent.



Table 3-1. Previously Discovered Paleontological Resources In and Around the Project Area

LACM Locality Number(s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 1159; just west of the northern terminus of the project area near the intersection of Rodeo Road and Buckingham Road	Quaternary sediments	Pleistocene?	<i>Homo sapiens</i> (human)
LACM 3366, 3367, 3369, and 3370; west of the northern terminus of the project area along the Southern Pacific Railway and Rodeo Road between Crenshaw Boulevard and Ballona Creek	Older Quaternary sediments	Pleistocene	<i>Camelops</i> (camel), <i>Mammut</i> (mastodon), <i>Equus</i> (horse), and <i>Smilodon</i> (sabertooth cat)
LACM 3252; in the Hyde Park area south of Hyde Park Boulevard and east of Crenshaw Boulevard west of 8th Avenue	Older Quaternary sediments	Pleistocene	<i>Bison</i> (bison) and <i>Camelops</i> (camel)
LACM 5888; south of Florence Avenue and east of Crenshaw Boulevard east of 8th Avenue	Older Quaternary sediments	Pleistocene	<i>Mammut</i> (mastodon)
LACM 1170; in Centinela Park, east of Centinela Avenue and bounded on the southeast by Florence Avenue	Quaternary (Late Pleistocene) sands	Late Pleistocene	<i>Fulica americana</i> (coot), <i>Megalonyx jeffersoni</i> (ground sloth), <i>Mammut americana</i> (mastodon), Rodentia (rodent), <i>Mustela frenata</i> (weasel), <i>Smilodon californicus</i> (sabertooth cat) <i>Equus</i> (horse), <i>Platygonus</i> (peccary), <i>Camelops hesternus</i> (camel), <i>Capromeryx minor</i> (pronghorn antelope), <i>Odocoileus hemionus</i> (deer), and <i>Bison antiquus</i> (bison)
LACM 1180; near the intersection of Manchester Avenue and Airport Boulevard	Older Quaternary sediments	Pleistocene	<i>Mammuthus</i> (mammoth), <i>Equus</i> (horse)
LACM 4942; directly across Manchester Avenue from locality LACM 1180	Older Quaternary sediments	Pleistocene	<i>Bison</i> (bison)
LACM 3789; just south of Manchester Avenue east of Bellanca Avenue	Older Quaternary sediments	Pleistocene	<i>Citharichthys stigmaeus</i> (speckled sanddab), <i>Mammuthus</i> (mammoth), and Rodentia (rodent)



LACM Locality Number(s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 7332; north of Century Boulevard and east of Airport Boulevard	Older Quaternary sediments	Pleistocene	<i>Mammuthus</i> (mammoth)
LACM 3264; LAX Airport	Older Quaternary sediments	Pleistocene	Proboscidea (fossil elephant)

Source: Rhue, 2011



4.0 IMPACTS

Surface fossils may be located, evaluated, and salvaged by paleontologists during a field survey prior to a surface-disturbing action. The Crenshaw/LAX Transit Corridor project area surface is largely obscured by urbanization, and a comprehensive field survey was not warranted. However, subsurface fossils that are not visible cannot be located and evaluated prior to ground disturbance. Any estimates of adverse impacts to subsurface fossils can be predicted only by determining the number and types of fossils that occur in the study area, based on projections derived from similar areas. The existence of subsurface fossils can be definitively determined only by monitoring excavations during surface-disturbing actions.

Direct adverse impacts on surface or subsurface paleontological resources are the result of destruction by breakage and crushing, typically in construction-related excavations. In areas containing paleontologically sensitive geologic units, surface disturbance has the potential to adversely impact an unknown quantity of surface and subsurface fossils. Without mitigation, these fossils, as well as the paleontological data they could provide if properly salvaged and documented, could be adversely impacted (destroyed), rendering them permanently unavailable. Direct adverse impacts can typically be mitigated to below a level of significance by implementing paleontological mitigation. Mitigation also creates a beneficial effect because it results in the salvage of fossils that may never have been unearthed via natural processes. With mitigation, these newly salvaged fossils become available for scientific research, education, display, and preservation in perpetuity at a public museum.

Indirect adverse impacts typically include those effects that result from continued implementation of management decisions and resulting activities, including normal ongoing operations of facilities constructed within a given project area. They also occur as the result of constructing new access roads in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological resources through vandalism and unlawful collecting. No indirect impacts are expected as the result of this project because the project area is highly urbanized.

Cumulative impacts on the environment can result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions on the cumulative effects area. They can result from individually minor, but collectively significant, actions taken over a period of time. The incremental loss of paleontological resources over a period of time as a result of project-related ground disturbance has the potential to result in significant cumulative effects because it could result in destruction of nonrenewable paleontological resources and irretrievable loss of scientific information. However, when paleontological monitoring and mitigation are implemented prior to and during project construction, fossils are protected and information is obtained. By implementing monitoring and mitigation where feasible, the cumulative effects to paleontological resources resulting from the project would be negligible. Further, any scientifically significant fossils discovered prior to or during ground disturbances related to the project would benefit the scientific community by increasing knowledge associated with the fossils.



5.0 RECOMMENDED MITIGATION MEASURES

5.1 Construction Impacts Mitigation Measures

The following mitigation measures have been developed in accordance with the Society of Vertebrate Paleontology (SVP) (1995) standards and guidelines and meet the paleontological requirements of the California Environmental Quality Act (CEQA). These mitigation measures have been used throughout California and have been demonstrated to be successful in protecting paleontological resources while allowing timely completion of construction.

- A qualified paleontologist would produce a Paleontological Monitoring and Mitigation Plan for the proposed project and supervise monitoring of construction excavations. Paleontological resource monitoring would include inspection of exposed rock units during active excavations within geologically sensitive sediments. The monitor would have authority to temporarily divert grading away from exposed fossils in order to professionally and efficiently recover the fossil specimens and collect associated data. All efforts to avoid delays in project schedules would be made.
- All project-related ground disturbances that could potentially affect previously undisturbed Quaternary older alluvial deposits would be monitored by a qualified paleontological monitor under the supervision of a qualified paleontologist on a full-time basis because these geologic units have been determined to have a high paleontological sensitivity. Very shallow surficial excavations (less than 5 feet) within areas of previous disturbance or areas mapped as Quaternary younger alluvial deposits or artificial fill would be monitored on a part-time basis to ensure that underlying sensitive units (i.e., older alluvium) are not adversely affected. The location of subsurface sensitive sediments would be determined by the qualified paleontologist upon review of project grading plans.
- To prevent construction delays, paleontological monitors would be equipped with the necessary tools for the rapid removal of fossils and retrieval of associated data. This equipment would include handheld global positioning system receivers, digital cameras, and cell phones, as well as a tool kit with specimen containers, matrix sampling bags, field labels, field tools (awls, hammers, chisels, shovels, etc.), and plaster kits. At each fossil locality, field data forms would be used to record pertinent geologic data, stratigraphic sections would be measured, and appropriate sediment samples would be collected and submitted for analysis.
- The collected fossils would be transported to a paleontological laboratory for processing where they would be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and repositied in a designated paleontological curation facility (such as the Natural History Museum of Los Angeles County [LACM]).
- The qualified paleontologist would prepare a final monitoring and mitigation report to be filed, at a minimum, with Los Angeles County Metropolitan Transportation Authority (Metro) and the repository. The final report would include, but not be limited to, a discussion of the results of the mitigation and monitoring program, an evaluation and analysis of the fossils collected (including an assessment of their significance, age, and geologic context), an itemized inventory of fossils collected, a confidential appendix of locality and specimen data with locality maps and



photographs, an appendix of curation agreements and other appropriate communications, and a copy of the project-specific paleontological monitoring and mitigation plan.

5.2 Operational Impacts Mitigation Measures

No mitigation would be required because operational impacts to paleontological resources are not expected.



6.0 CONCLUSIONS

The potential for direct and indirect effects to paleontological resources is best estimated by the amount of ground disturbance within paleontologically sensitive units associated with a proposed action. Thus, the potential for project-related impacts to paleontological resources increases as the amount of surface disturbance within paleontologically sensitive geologic formations increases.

Construction of the project could require various levels of ground disturbances in the paleontologically sensitive Quaternary older alluvial deposits. Implementing proper mitigation measures, including construction monitoring where feasible, would reduce potential impacts to paleontological resources to below the level of significance.

6.1 National Environmental Policy Act Findings

The results of this analysis indicate that the geologic units underlying the project area are paleontologically sensitive and that construction of the project has the potential to impact previously undiscovered (buried) paleontological resources. By implementing the mitigation measures identified in Section 5, the potential direct and cumulative effects to paleontological resources resulting from the project would be negligible. Furthermore, scientifically significant fossils discovered prior to or during ground disturbances related to the project would benefit the scientific community by increasing knowledge associated with the fossils.

6.2 California Environmental Quality Act Determinations

The California Environmental Quality Act (CEQA) threshold of significance for a significant impact to paleontological resources is reached when a project is determined to “directly or indirectly destroy a significant paleontological resource or unique geologic feature.” In general, for project areas that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources.

By implementing the mitigation measures identified in Section 5, potential construction impacts to paleontological resources resulting from the project could be reduced to below the level of significance.



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CRENSHAW/LAX TRANSIT CORRIDOR PROJECT

Project No. PS-4330-1968

Cultural Resources – Archaeology Technical Report



Prepared for:



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March 2011



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1.0 SUMMARY

1.1 Purpose and Scope

SWCA Environmental Consultants (SWCA) conducted an archaeological survey of the approximately 8.5-mile-long direct area of potential effects (APE) for the proposed Crenshaw/LAX Transit Corridor Project. The Corridor is located within the Cities of Los Angeles and Inglewood in Los Angeles County, California. The proposed project would improve transit infrastructure by extending light rail transit approximately 8.5 miles from the Metro Green Line Aviation/LAX Station to the Exposition Light Rail Transit (LRT) line at the intersection of Exposition and Crenshaw Boulevards. The Crenshaw/LAX Line would join the Metro Green Line at the Aviation/LAX Station and extend to the Exposition Line Crenshaw Station in the north. Metro Green Line service could also be extended north to serve the new Century Station for transfers to the Los Angeles International Airport (LAX). These improvements would benefit people throughout Los Angeles County.

1.2 Dates of Investigation

SWCA conducted a cultural resources records search for the project on January 2, 2008. The Native American Heritage Commission (NAHC) performed a Sacred Lands File search for the project on June 15, 2010. SWCA conducted an archaeological survey of the direct APE on February 7, 2011. This report was completed on March 4, 2011.

1.3 Investigation Constraints

Because of the urban nature of the project area, the majority of the direct APE is covered in buildings, pavement, or landscaping. Consequently, ground-surface visibility ranged from extremely poor (0–5 percent) to fair (30 percent) throughout the project area. Average visibility was extremely poor (less than 5 percent). Three areas of the direct APE could not be accessed due to fencing (see Section 4.4.2).

1.4 Summary of Findings

The records and literature search indicates that three previously recorded archaeological resources are located within a 0.25-mile radius of the APE. Two of these resources are prehistoric archaeological sites, and the nature of the third is unknown due to missing site forms. Of the three previously recorded archaeological resources, none are located within the direct APE. One (CA-LAN-80) is located immediately adjacent to the direct APE and two (CA-LAN-171 and CA-LAN-1336) are within 0.25 mile of the direct APE. The records and literature search also identified 50 previously conducted cultural resources studies within a 0.25-mile radius of the APE. Fourteen of these studies include part of the project direct APE, and five are adjacent to the direct APE.

The NAHC Sacred Lands File search indicated the presence of cultural resources within 0.5 mile of the project area that are important to Native Americans. The NAHC response included a list of nine Native American contacts that may have knowledge of cultural resources in the project area. SWCA sent letters that included location maps and a description of the proposed project and its APE to these contacts via U.S. mail. Each



letter was followed by a telephone call. Two of the Native American contacts provided input, as is documented in Table 3-1.

During the survey of the direct APE, SWCA did not encounter any newly identified archaeological resources within the direct APE. SWCA personnel did attempt to re-locate a previously recorded site (CA-LAN-80) located immediately adjacent to the direct APE. Re-location of this site was attempted due to the presence of previously recorded, deeply buried human remains, indicating the potential for similar discoveries during ground-disturbing activities within the direct APE. The survey did not re-locate the site; a Wal-Mart and parking lot currently occupy the site's location and no evidence of the site is currently visible.

1.5 Potential Impacts

Background research indicates there is the potential to encounter subsurface archaeological deposits during construction of the proposed project. As a result, most of the direct APE is considered sensitive for the presence of historical resources, including both prehistoric and historic archaeological sites. The Locally Preferred Alternative (LPA) has the potential to alter, remove, or destroy previously unrecorded archaeological resources and previously undiscovered portions of site CA-LAN-80 within the APE. These potential impacts include direct construction impacts and direct cumulative impacts.

1.6 Recommendations

Although no previously recorded archaeological resources are present within the direct APE, there is still the potential to encounter previously unrecorded resources during construction of the proposed project. Implementation of mitigation measure AR-1, Treatment of Previously Unrecorded Archaeological Resources would reduce both direct and cumulative impacts to any previously unrecorded archaeological resources that may be encountered during construction. After mitigation, potential construction and cumulative impacts would not be significant under both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.7 Disposition of Data

This report will be filed with the Federal Transit Administration (FTA); Metro; PB Americas; the South Central Coastal Information Center (SCCIC) located at California State University, Fullerton; and SWCA. All field notes and records related to the project will remain on file at the Pasadena office of SWCA.



2.0 INTRODUCTION

This technical report identifies archaeological resources and analyzes the potential effects of the construction and implementation of the planned Crenshaw Transit Corridor Project. Historic built environment and paleontological resources are addressed in separate reports.

2.1 Regulatory Setting

National Environmental Policy Act (NEPA) guidelines require compliance with related Federal laws that require the identification of historic properties and consideration of project-related effects on those properties. This report was prepared to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and with regulations contained in 36 Code of Federal Regulations (C.F.R.) Part 800. These regulations require Federal agencies to consider the effects of proposed projects on historic properties as part of the environmental assessment process.

This report was also prepared to comply with requirements of California Environmental Quality Act (CEQA) and the CEQA guidelines (CERES, 2009) as they apply to cultural resources. Under CEQA, it is necessary for a lead agency to evaluate proposed projects for the potential to cause significant impacts on historical resources. A proposed project that may affect historical resources is submitted to the State Historic Preservation Officer for review and comment prior to project approval by the lead agency and before any project-related clearance, demolition, or construction activities have commenced. If a proposed project could be expected to cause substantial adverse change to a historical resource, environmental clearance for the project would require the evaluation of alternatives and/or implementation of mitigation measures to reduce or avoid impacts. If a project is expected to result in an impact on historical resources, CEQA guidelines require analysis of a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project and avoid or substantially lessen any significant impacts on the historical resource.

Properties that may be historic properties/historical resources within the identified project's area of potential effects (APE) were evaluated for National Register of Historic Places (NRHP) eligibility, according to criteria set forth in 36 C.F.R. Part 60.4. The age criterion for inclusion in the NRHP is 50 years and older, except in cases of overriding significance (Criteria Consideration G). Consequently, properties that will be more than 50 years old upon completion of construction in 2018 were included in this analysis. The properties were also considered for California Register of Historical Resources (CRHR) eligibility; although there is no established age threshold for the CRHR, the same 50-year cutoff was used for this project. Under Public Resources Code (P.R.C.) Section 5024.1, the CRHR was established to serve as an authoritative guide to the state's significant historical and archaeological resources.

If a proposed project and its related impacts would adversely affect the values of an archaeological resource that is either listed in or determined eligible for inclusion in the NRHP or CRHR, such effects and/or impacts would be considered adverse.



2.2 Project Personnel

SWCA archaeologist Cheryle Hunt, B.A., conducted the pedestrian survey for the project. Robert S. Ramirez, M.A., Registered Professional Archaeologist (RPA), coauthored the report with John Dietler, Ph.D., RPA, who also served as principal investigator for the project. SWCA GIS specialist Emily Kochert created the maps and figures used in this report. Lara Bjork served as technical editor for this report. Shannon Carmack served as cultural resources task manager and Cara Corsetti served as the project manager.

2.3 Project Description

This section describes the alternatives that have been carried forward for study in the Final Environmental Impact Report that satisfy the purpose and need of the project. Details of the No Build and Locally Preferred Alternatives, including design options and phasing options (minimum operable segments [MOS]) are described below.

2.3.1 No Build Alternative

Transit service under the No Build Alternative is focused on the preservation of existing services and projects. The No Build Alternative does not include any major service improvements or new transportation infrastructure beyond what is listed in Metro's 2009 Long-Range Transportation Plan.

2.3.2 Locally Preferred Alternative

The Crenshaw/LAX Transit Corridor Project is a proposed transit infrastructure improvement project that would extend approximately 8.5 miles from the Metro Green Line Aviation/LAX Station to the Exposition Light Rail Transit (LRT) line (under construction) at the intersection of Exposition and Crenshaw Boulevards (Figure 2-1). The alignment would be double-tracked and would comprise at-grade street, at-grade railroad, aerial, and below-grade sections. The planned Metro Crenshaw Line would join the Metro Green Line at the Aviation/LAX Station and extend to the Exposition Line Crenshaw Station in the north. Metro Green Line service can also be extended north to serve the new Aviation/Century Station for transfers to the Los Angeles International Airport (LAX). Metro will also consider two MOSs. MOS-1 would extend from the Metro Green Line to the Martin Luther King Jr. Station. The incorporation of Design Option 6 would include the remaining underground segment to connect the Crenshaw/Martin Luther King Jr. Station to the Crenshaw/Exposition Station. MOS-2 would extend from the Metro Exposition Line to the Aviation/Century Station. MOS-2 would include the incorporation of Design Option 6 into the base project. These improvements would provide regional benefits to people throughout Los Angeles County.



Figure 2-1. Project Alignment



Source: Parsons Brinkerhoff, 2011.



2.3.2.1 Grade separations

Proposed grade separations (Figure 2-2) are to be located:

- Along Crenshaw Boulevard between Exposition Boulevard and 48th Street (below grade)
- Between 60th Street and Harbor Subdivision

Along Harbor Subdivision (see Figure 2-2):

- Between Crenshaw Boulevard and Victoria Avenue
- Across La Brea Avenue (below grade)
- Across La Cienega Boulevard/I-405 Freeway (aerial)
- Across Manchester Avenue (aerial)
- Across Century Boulevard (aerial)
- Adjacent to the LAX south runways (below-grade trench)
- Across Centinela Avenue (below grade) (design option)

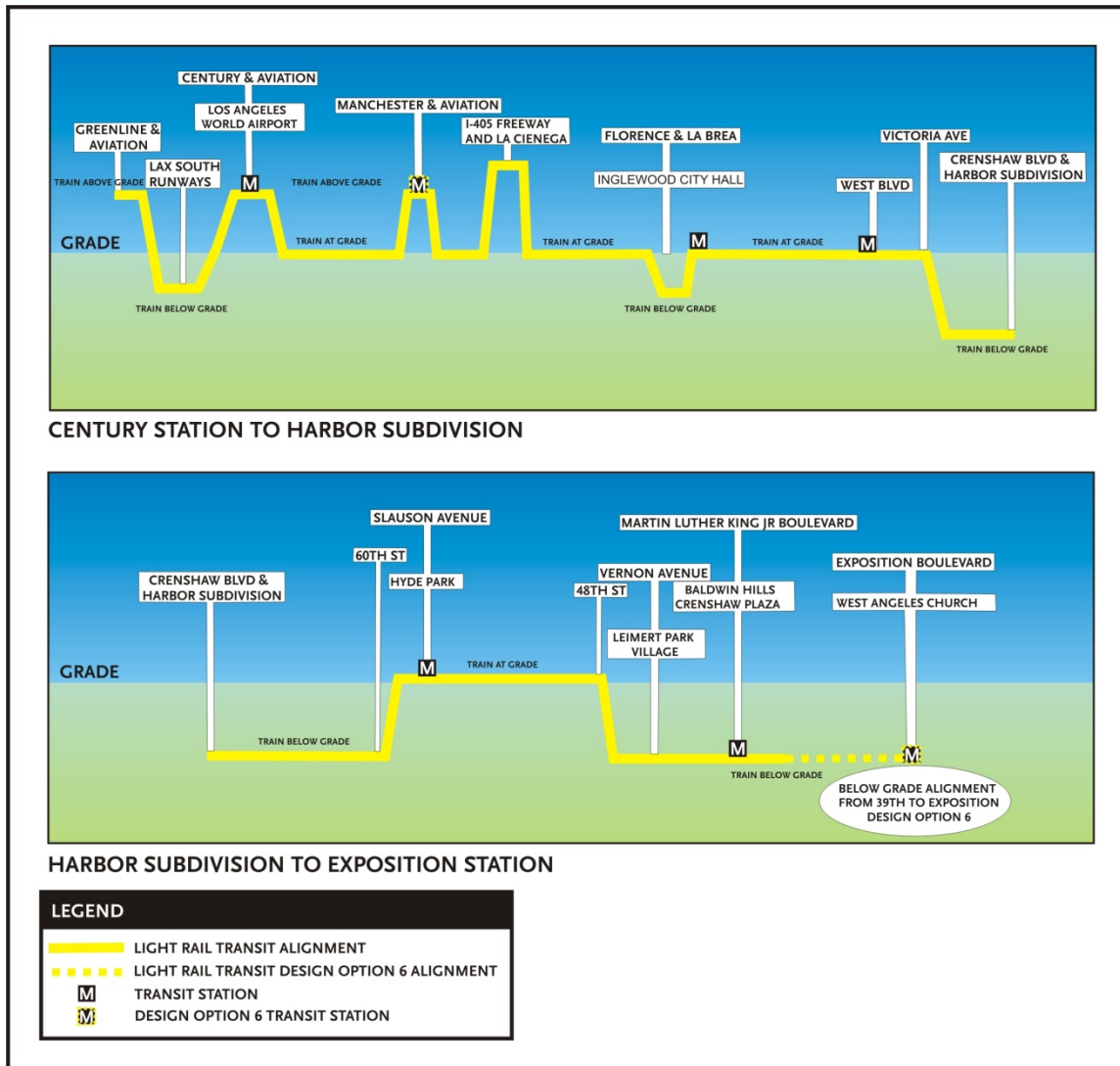
2.3.2.2 Stations

Proposed station locations are planned as follows:

- Century: Aerial station on Century Boulevard just north of the northwest corner of Aviation and Century Boulevards.
- La Brea: At-grade station just north of Market Street, to the west of Florence Avenue.
- West: At-grade center platform station just south of Redondo Boulevard, to the west of West Boulevard.
- Slauson: At-grade center platform station on Crenshaw Boulevard, just south of Slauson Avenue.
- Martin Luther King Jr.: Underground station on Crenshaw Boulevard, just south of Martin Luther King Jr. Boulevard
- Exposition: Underground station on Crenshaw Boulevard just south Exposition Boulevard.
- Optional Manchester: At-grade station east of Manchester Avenue or aerial station across Manchester Avenue, to the west of Aviation Boulevard.
- Optional Vernon Station: Below-grade station on Crenshaw Boulevard, south of Vernon.



Figure 2-2. Vertical Profile for the Crenshaw/LAX LRT Line



Source: TAHA, 2011.

2.3.2.3 Maintenance Yard

The Crenshaw/LAX LRT Project would require a new maintenance and operations facility. The facility would provide light rail vehicle (LRV) service and maintenance and storage for vehicles that are not in service. Proposed maintenance facility locations include:

- Site 14: 17.6-acre site bound by Arbor Vitae to the north and Harbor Subdivision to the east.
- Site 15: 20.5-acre site bound by Harbor Subdivision to the west, Aviation Boulevard to the east, and Arbor Vitae Street to the south.



- Site D22N: 3.5-acre site located in the city of Hawthorne, bound by Harbor Subdivision to the north and Isis Avenue to the east.
- Site 17: 14.2-acre site located in the city of Redondo Beach, bound by Redondo Beach Avenue to the west and Harbor Subdivision to the east.

2.3.2.4 Route Alignment and Termini

The alignment would begin at the existing Metro Green Line Aviation/LAX Station which is in an aerial configuration, and transition to a below-grade trench configuration, south of 111th Street, as it passes adjacent to the LAX south runways. After clearing the south runways north of 104th Street, the alignment would transition to an aerial configuration across Century Boulevard. At Century Boulevard, the LRT alignment would be on a new bridge constructed west of, and adjacent to, the existing railroad bridge.

The alignment would transition to an at-grade configuration north of the Wally Park structure and operate at-grade across Arbor Vitae Street and would transition to an aerial structure across Manchester Avenue. The alignment would transition back to grade level for at-grade crossings at Isis and Hindry Avenues. The LRT alignment would transition to an aerial configuration across La Cienega Boulevard and the I-405 Freeway, and would return to grade before Oak Street.

The alignment would continue at grade to the east with at-grade crossings at Oak Street, Cedar Street, Ivy Street, and Eucalyptus Avenue. The alignment would descend to a below-grade trench configuration under La Brea Avenue with an open-cut station to the east of La Brea Avenue. The alignment would transition back to grade east of La Brea Avenue until Victoria Avenue. At-grade crossings would occur at Centinela Avenue, West Boulevard and Brynhurst Avenue and an at-grade station would be located to the west of West Boulevard.

West of Victoria Avenue, the alignment would transition to a below-grade tunnel and continue along the Harbor Subdivision until Crenshaw Boulevard, where it would continue north under Crenshaw Boulevard until north of 59th Place, where it would transition to grade level through a portal in the middle of the Crenshaw Boulevard median. The alignment is required to be below-grade under this segment of Crenshaw Boulevard because the street right-of-way width is 100 feet, which would be insufficient to accommodate an at-grade LRT without reducing roadway lane capacity.

The alignment would travel at grade in a new median of Crenshaw Boulevard south of 59th Street to 48th Street. The frontage roads along Crenshaw Boulevard would be eliminated where the alignment is operating at grade. There would be an at-grade station in the median of Crenshaw Boulevard, south of Slauson Avenue. The alignment would transition to a below-grade configuration north of 48th Street through a portal in the median of Crenshaw Boulevard. The alignment would be below grade for the remainder of the alignment, either to the MOS-1 at Martin Luther King Jr. Boulevard or at Exposition Boulevard, with the incorporation of Design Option 6. The below-grade alignment could be built as either a bored or cut-and-cover tunnel. The choice of tunneling methodology will be based on an analysis of the length and depth of the tunnel section. Below-grade stations would be located in the median of Crenshaw Boulevard at



Martin Luther King Jr. and Exposition Boulevards, with portal entrances on properties adjacent to Crenshaw Boulevard.

MOS-2 would follow the same alignment described above, but would begin at the Crenshaw/Exposition Station with the incorporation of Design Option 6 and would terminate at the Aviation/Century Station.



3.0 METHODOLOGY FOR IMPACT EVALUATION

This section describes the processes for identifying cultural resources, determining the significance of those resources, evaluating potential effects from construction and operation of the project including potential permanent changes to historic properties and/or their contextual settings; this section also states the thresholds of significance that are applied to potential impacts. Section 4.0 describes the historic properties identified in the project area and their significance. Section 5.0 evaluates potential direct, indirect, and cumulative impacts to these resources from construction and operation.

3.1 Definition of Historic Resources and Standards of Significance

3.1.1 Federal

A number of Federal laws address the protection of historic and cultural resources. The analysis of potential effects to cultural resources is primarily guided by the National Environmental Policy Act of 1969 (NEPA), Section 106 of the National Historic Preservation Act (NHPA), and Section 4(f) of the Department of Transportation Act (DOT Act) of 1966.

3.1.1.1 National Environmental Policy Act

The intent of NEPA is to protect the environment, including historic properties, from adverse effects resulting from Federal actions. Before a Federal agency may proceed with a proposed action, an environmental evaluation must be made to determine whether the action may have a significant effect on the environment. Effects on historic properties are usually assessed in coordination with the process established under Section 106 of the NHPA. Normally, the Section 106 process must be completed before an Environmental Impact Statement can be finalized.

Generally under NEPA, historic and cultural resources include properties that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Although NEPA does not provide specific definitions or criteria for determining the significance of historic properties, California Environmental Quality Act (CEQA) guidelines direct agencies to comply with Section 106 of the NHPA in order to be in compliance with NEPA.

NEPA does require Federal agencies to evaluate the significance of potential project-related effects including both direct (tangible, such as demolition or alteration) and indirect (less tangible, such as noise or visual) effects. NEPA does provide guidance for determining significance as a measure of impact intensity (Section 1508.27).

Intensity refers to the severity of impact. Decision makers must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

- Impacts may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.



- The degree to which the proposed action affects public health or safety.
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
- The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

3.1.1.2 National Historic Preservation Act

This report was completed under the provisions of NHPA Section 106 (and its implementing regulation, 36 Code of Federal Regulations [C.F.R.] 800) in its applications for determining “effects,” or impacts, as described in Part 800.5(a)(1).

Section 106 of the NHPA requires that Federal agencies take into account effects on “historic properties” that may be caused by undertakings, and that the Advisory Council on Historic Preservation be afforded the opportunity to comment on those undertakings (16 United States Code [U.S.C.] 470a, 36 C.F.R. Part 800). Section 106 requires that historic properties be identified, that effects be analyzed, and if adverse effects would be expected, that appropriate mitigation be identified and implemented under a Memorandum of Agreement.

Section 106 defines a historic property as:

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. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National



Register criteria (36 C.F.R. Part 800 Protection of Historic Properties, Section 800.16 Definitions(l)(1)).

Properties of traditional religious and cultural importance (i.e., Traditional Cultural Properties/Places) to Native Americans are considered under Section 101(d)(6)(A) of the NHPA. Traditional Cultural Properties/Places can be NRHP-eligible under any of the NRHP criteria listed below.

National Register of Historic Places

The NRHP is the nation’s official list of districts, sites, buildings, structures, and objects worthy of preservation. At present, the NRHP includes approximately 80,000 listings, including icons of American architecture, engineering, culture, and history. Overseen by the National Park Service, under the Department of the Interior, the NRHP was authorized under the NHPA, as amended. Its listings encompass all National Historic Landmarks, as well as historic areas administered by the National Park Service. For a property to be listed in or determined eligible for NRHP listing, it must be demonstrated to have the quality of significance in American history, architecture, archaeology, engineering, and culture. This quality can be present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association. To be eligible, a property must meet at least one of the following criteria:

- A. be associated with events that have made a significant contribution to the broad patterns of our history; or
- B. be associated with the lives of persons significant in our past; or
- C. 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. have yielded or may be likely to yield, information important in prehistory or history.

Integrity is defined in the National Park Service’s NRHP guidance as the ability of a property to convey its significance. To be listed in the NRHP, a property must not only be shown to be significant under the NRHP criteria, but it also must retain integrity.

The NRHP guidance asserts that properties be at least 50 years old to be considered for eligibility. Properties completed less than 50 years before they are evaluated must be “exceptionally important” (Criteria Consideration G) to be considered eligible for listing, or under certain circumstances they must be part of a historic district whose period of significance extends forward to a date less than 50 years ago.

Effects on historic properties under Section 106 of the NHPA are defined in the assessment of adverse effects in 36 C.F.R. Part 800.5(a)(1):



An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register [NRHP] in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Adverse effects on historic properties are defined and include, but are not limited to:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the *Secretary's Standards for the Treatment of Historic Properties* (36 C.F.R. Part 68) and applicable guidelines;
- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (viii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 C.F.R. Part 800.5(a) (2))

To comply with Section 106, the criteria of adverse effect are applied to historic properties in the project area of potential effects (APE), pursuant to 36 C.F.R. Part 800.5 (a)(1). A finding of no adverse effect may be appropriate when the undertaking's effects do not meet the thresholds set forth in the criteria of adverse effect, or in certain cases when the undertaking is modified to avoid or lessen effects, or conditions are imposed to ensure review of rehabilitation plans for conformance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (codified in 36 C.F.R. Part 68). If adverse effects findings are made, mitigation would be proposed and resolution of adverse effects occurs through consultation pursuant to 36 C.F.R. Part 800.6(a) to avoid, minimize, or mitigate adverse effects on historic properties.



3.1.1.3 U.S. Department of Transportation Act, Section 4(F)

Section 4(f) (23 C.F.R. 774) of the U.S Department of Transportation Act of 1966, as amended (49 U.S.C. 1653(f)), defines impacts of DOT projects as the “use” of certain types of resources, including “historical sites.”

DOT agencies, including the Federal Transit Administration (FTA), cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and historical sites (defined as listed in or determined eligible for listing in the NRHP) unless the following conditions apply:

- There is no feasible and prudent alternative to the use of land.
- The action includes all possible planning to minimize harm to the property resulting from use (FHWA, 2009).

In the Federal Highway Administration (FHWA) guidance “What is Section 4(f)?” the regulations are described as applying to “any publicly or privately owned historic site listed or [determined] eligible for listing on the National Register [NRHP]” (FHWA, 2009). The guidance defers to the definitions of “historical sites” found in the NHPA and its NRHP criteria for historic properties as described in Section 3.1.1.2.

Impacts to 4(f) properties, defined as use of the property, must be either avoided, minimized, or mitigated, in that order. FTA follows FHWA procedures for resolving “*de minimis*” impacts through recorded administrative decisions, and mitigating impacts through 4(f) procedures (FHWA, 2009).

3.1.1.4 Other Federal Regulations

Other Federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others. Section 106 and NEPA procedures, particularly through involvement of Native American and other public constituents in the identification, evaluation and mitigation processes, might address impact resolution through these other Federal laws.

3.1.2 State

3.1.2.1 California Environmental Quality Act

Concurrently with the Federal process, CEQA (Public Resources Code [P.R.C.], Section 5024) requires evaluation of proposed projects that may cause significant effects on historical resources. Under CEQA, “historical resources” must be identified, expected impacts must be analyzed, and mitigation must be identified and implemented as above, where necessary. For CEQA conformance, historical resources include the built environment as well as “unique paleontological resources” or “unique geologic features.”

CEQA guidelines define a “historical resource” as:



- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHC (P.R.C. Section 5024.1, Title 14 CCR, Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency’s determination is supported by substantial evidence in light of the whole record.

CEQA equates a “substantial adverse change” in the historic significance of a resource with a significant effect on the environment (P.R.C. Section 21084.1). Thresholds of substantial adverse change are established in P.R.C. Section 5020.1 as demolition, destruction, relocation, or “alteration activities that would impair the significance of the historic resource.” If a project is expected to result in an effect on historic resources, CEQA guidelines require analysis of a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most the basic objectives of the project and avoid or substantially lessen any significant effects on the historical resource.

A proposed project that may affect historic resources is submitted to the State Historic Preservation Officer for review and comment prior to project approval by the lead CEQA agency, and before any project-related clearance, demolition, or construction activities commence.

If any CEQA impact conditions are met by the project’s effects on historic properties, mitigation measures are recommended for avoidance, to minimize impacts, or to provide balanced compensation for adverse effects. See Sections 5.0 and 7.0 for an evaluation of project effects and impacts on those properties, and Section 6.0 for recommended mitigation measures.

3.1.2.2 California Register of Historical Resources

Under California P.R.C. Section 5024.1, the California Register of Historical Resources (CRHR) was established to serve as an authoritative guide to the state’s significant historic and archaeological resources. A resource is considered historically significant if it meets the criteria for listing in the CRHR (P.R.C. Section 5024.1, Title 14 CCR, Section 4852). For a property to be considered eligible for listing in the CRHR, it must be found to be significant under at least one of the following four criteria by the State Historical Resources Commission. A resource is significant if it:

- Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- Is associated with the lives of persons important in our past.



- 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.
- Has yielded, or may be likely to yield, information important in prehistory or history.

In addition to possessing one of the above-listed characteristics, to be eligible for listing in the CRHR, resources must retain “substantial” integrity to their period of significance. The seven aspects or qualities of integrity are the same as those applied to NRHP-eligible properties: location, design, setting, materials, workmanship, feeling, and association.

The CRHR also includes properties that:

- Have been determined eligible for listing in, or are listed in the NRHP.
- Are registered State Historical Landmark No. 770 and all consecutively numbered landmarks above Number 770 (see Section 3.1.2.3).
- Are points of historical interest that have been reviewed and recommended to the State Historical Resources Commission for listing (see Section 3.1.2.4).
- Are city- and county-designated landmarks or districts. Historic districts are a concentration of historic buildings, structures, objects, or sites within precise boundaries that share a common historical, cultural or architectural background. Individual resources within an historic district may lack individual significance but be considered a contributor to the significance of the historic district.
- Are identified as significant in a historic resource survey meeting the following criteria:
 - 1) The survey has been or will be included in the State Historical Resources Inventory.
 - 2) The survey and the survey documentation were prepared in accordance with [Office of Historic Preservation] procedures and requirements.
 - 3) The resource is evaluated and determined by the office to have a significance rating of category “1 - 5” on California Department of Parks and Recreation series 523 form.
 - 4) If the survey is five or more years old at the time of its nomination for inclusion in the CRHR, the survey is updated to identify historical resources which have become eligible or ineligible due to changed circumstances or further documentation and those which have been demolished or altered in a manner that substantially diminishes the significance of the resource (P.R.C. Section 5024.1[g]).

3.1.2.3 California Historical Landmarks

Designated California Historical Landmarks are numbered sequentially as they are listed by the State Historical Resources Commission. California Historical Landmarks numbered 770 and higher are automatically listed in the CRHR. According to P.R.C. Section 5031(a), to be eligible for California Historical Landmark designation, a property must be of “statewide historical importance” and must demonstrate its statewide significance by meeting one of the following three requirements:



- The property is the first, last, only, or most significant historical property of its type in the region. The regions are Southern California, Central California, and Northern California. If a property has lost its historic appearance (integrity), it may be listed as a site.
- The property is associated with an individual or group having a profound influence on the history of California. The primary emphasis should be the place or places of achievement of an individual. Birthplace, death place, or place of interment shall not be a consideration unless something of historical importance is connected with his or her birth or death. If a property has lost its historic appearance (integrity) it may be listed as a site.
- The property is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction, or...it is one of the more notable works, or the best surviving work in a region of a pioneer architect, designer, or master builder.

3.1.2.4 California Points of Historical Interest

California Points of Historical Interest include “sites, buildings, features, or events that are of local (city or county) significance and have an anthropological, cultural, military, political, architectural, economic, scientific, or technical, religious, experimental, or other value.” Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. To be designated, a property must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (city or county).
- Associated with an individual or group having a profound influence on the history of the local area.
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

3.2 Delineation of Area of Potential Effects

A proposed project-specific APE (Appendix A) was established in accordance with 36 C.F.R. Part 800.16 (d), which defines an APE as:

the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The proposed project APE was delineated to ensure identification of significant historic and architectural resources that may be directly or indirectly affected by the proposed project and are listed in or eligible for inclusion in the NRHP and/or CRHR. The APE was established using methodology consistent with those of previous Metro projects.



For historic and architectural resources, the proposed indirect APE generally includes all parcels adjacent to both sides of the proposed project alignment, including stations, subway or open cut construction areas, and areas proposed for acquisition. In addition, the indirect APE includes areas that may be subject to potential project-related effects, including visual or audible effects, and settlement effects that may result from construction or implementation the proposed project.

For archaeological resources, the proposed direct APE includes the proposed at-grade and underground right-of-way and/or areas of direct ground disturbance. The direct APE also includes areas with permanent site improvements and areas for staging and temporary construction activities. The proposed vertical APE extends from approximately 25 feet above to approximately 80 feet below the existing ground surface.

Because the proposed project is expected to be constructed by 2018, identification efforts are focused on resources dating to or before 1968 (2018–50 years=1968). Those resources will be evaluated for NRHP and CRHR eligibility as part of the project identification phase, and all previously identified historic properties and historical resources will be noted.

3.3 Native American Coordination

SWCA contacted the California Native American Heritage Commission (NAHC) by letter on June 15, 2010, requesting a review of the Sacred Lands File and a list of appropriate Native American contacts for the project. The NAHC search of the Sacred Lands File indicated the presence of Native American cultural resources within 0.5 mile of the project area. The NAHC also provided a list of nine Native American contacts.

SWCA sent letters via U.S. mail (or via e-mail, if a physical mailing address was not available) to each Native American contact on July 7, 2010, requesting information regarding potential cultural resources that may be located within the project APE. These letters included location maps and a description of the proposed project and its related APE (Appendix B). Due to project delays, SWCA sent a second series of nearly identical letters to the contacts on January 7, 2011. SWCA followed up with each contact via telephone on January 24, 2011 (Table 3-1).

SWCA received two responses to these contact efforts. On January 19, 2011, Andy Salas, Chairperson of the Shoshonean Gabrielino Band of Mission Indians, stated via e-mail that the project is within a culturally sensitive area, and he recommended a Native American monitor be on-site for ground-disturbing activities. On January 26, 2011, Anthony Morales of the Gabrielino/Tongva San Gabriel Band of Mission Indians expressed concern about sites in the project area but did not mention specific sites or site locations. He requested to be updated on the project as it continues.