4.5 Cultural Resources

The information in this section is largely derived from reports prepared for the San Francisco County Transportation Authority (SFCTA). These include the Archaeological and Native American Cultural Resources Sensitivity Assessment (ASA), and a Historic Resources Inventory and Evaluation Report (HRIER) and Finding of Effect (FOE). Since the publication of the Draft EIS/EIR, to analyze modifications to the Hybrid Alternative/LPA, an addendum to the ASA was prepared (June 2017), the HRIER was updated (April 2017), and the FOE was updated (July 2017) to include specific archaeological findings. Due to the sensitive nature of the specific identification of archaeological/historic resources, the ASA, HRIER, and FOE are on file with SFCTA. However, Appendix E includes maps of both the Architectural and Archaeological areas of potential effect (APE maps) along with correspondence from the California State Historic Preservation Officer (SHPO). Appendix E also includes FTA's September 14, 2017 request to include the six minor project modifications in its consultation, and the SHPO's October 2017 concurrence with the lead agency's determinations for the project pursuant to Section 106 of the National Historic Preservation Act (NHPA).

4.5.1 | Regulatory Setting

Various federal, state, and local regulations are relevant to cultural resources.

4.5.1.1 | FEDERAL REGULATIONS

4.5.1.1.1 THE NATIONAL HISTORIC PRESERVATION ACT

The NHPA (54 U.S.C. 300101 et seq.) established a national program to preserve the country's historical and cultural resources, including both archaeological resources and historic architectural resources.

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties and provide the President's Advisory Council on Historic Preservation (ACHP) opportunity to comment on any proposed action before implementation. The goal of Section 106, as outlined in the regulations promulgated by the ACHP at Title 36 CFR Part 800, is to identify historic properties that could be affected by a project, assess the project's potential effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects to historic properties. The NHPA also requires that, in carrying out the requirements of Section 106, each federal agency must consult with any federally-recognized Native American tribe that attaches religious and cultural significance to historic properties that may be affected by the agency's undertakings.

Cultural resources of particular concern are those that are eligible for listing in the National Register of Historic Places (NRHP). The NRHP eligibility criteria (36 CFR 60.4) state that the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design,

setting, materials, workmanship, feeling, association, and that meet one or more of the following criteria:

> Criterion A: The resource is associated with events that have made a significant contribution to the broad patterns of our history.
>
> Criterion B: The resource is associated with the lives of persons significant in our past.
>
> Criterion C: The resource embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.
>
> Criterion D: The resource has yielded, or may be likely to yield, information important to prehistory or history.

Impacts to NRHP-eligible resources are considered adverse when "an undertaking may alter directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" (36 CFR 800.5[1]).

Section 106 of the NHPA requires the lead federal agency to consult with the appropriate State Historic Preservation Officer (SHPO). The SHPO's role in Section 106 consultation includes review and comment on the Area of Potential Effect, review and concurrence with inventories of historic resources potentially affected by the project, review and concurrence with the assessment of adverse effects, and assistance in the resolution of any adverse effects identified.

Since this project is located entirely in the State of California, the California SHPO is the appropriate SHPO with which to consult. The lead agency initiated consultation with the California SHPO on April 20, 2015. Efforts to involve the public in the Section 106 process have included:

- Establishment of the Geary BRT Technical Advisory Committee (TAC) composed of staff from primary local participating and responsible agencies.
- Issuance of a Notice of Preparation (NOP) to prepare an Environmental Impact Report on November 20, 2008
- Issuance of a Notice of Intent (NOI) to prepare an Environmental Impact Statement on November 24, 2008.
- Various scoping and general community meetings.
- Dissemination of online, print media notices and mailings.
- Establishment of a Citizens Advisory Committee (CAC)
- Meeting with a variety of local community and business groups.

The lead agency sent letters to interested parties on September 20, 2013 to inform area planning agencies, local governments, historical societies, museums and other parties interested in historic preservation issues. No responses were received. Copies of the transmittals letters are included in Appendix E. The following organizations received this letter:

- San Francisco Architectural Heritage
- San Fran cisco Beautiful
- San Francisco History Association
- San Francisco Museum and Historical Society
- DOCOMOMO US/Northern California
- American Institute of Architects, Historic Resources Committee
- San Francisco Historic Preservation Commission
- The Victorian Alliance of San Francisco
- Art Deco Society of California
- California Historical Society
- Western Neighborhoods Project
- San Francisco City Guides
- San Francisco Cable Car Museum
- National Japanese American Historical Society
- Friends of 1800
- SPUR

The lead agency contacted the Native American Heritage Commission (NAHC) on November 21, 2008, and requested that they conduct a search of their Sacred Lands file to determine if there were known cultural sites within or near the Study Area for the current project. On December 5, 2008, the NAHC responded stating that no Native American cultural resources were reported from the Sacred Lands file records search. A list of interested Native American groups and individuals was also requested on November 21, 2008. All six contacts on that list were sent letters requesting input on December 8, 2008. A follow up email was then sent to all six contacts on February 19, 2009. Mr. Andrew Galvin responded on February 19, 2009, requesting a copy of this study so that he could provide comment as appropriate. No other responses were received. On October 21, 2011, a second letter was sent to the six contacts on the list. This letter informed them of the expansion of the project eastward and requested input from them. No responses were received.

On October 17, 2017, SHPO concurred with the lead agency's finding that the undertaking would have no adverse effects to historic properties. See Appendix E for pertinent correspondence.

4.5.1.2 | STATE REGULATIONS

4.5.1.2.1 CALIFORNIA REGISTER OF HISTORIC RESOURCES (CRHR)

The California Register of Historic Resources (CRHR) is established under California Public Resources Code (PRC) section 5024.1. The CRHR encourages public recognition and protection of cultural and historic resources. Generally, a resource should be considered by a lead agency to be historically significant if the resource has integrity and meets one of the criteria for CRHR listing listed below (CEQA Guidelines 15064.5 [a][3]). These criteria resemble NRHP criteria but are more narrowly targeted toward California history. The CRHR also encompasses properties listed in or eligible for listing in the NRHP, as well as California Historical

Landmarks numbered 770 or higher. The CRHR also includes locally designated city or county landmarks under a local preservation ordinance when the designation criteria are consistent with California Register criteria. The CRHR criteria are:

- The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- The resource is associated with the lives of persons important in California's past.
- The resource embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
- The resource has yielded, or may be likely to yield, information important in prehistory or history.

The CRHR is similar to the NRHP in that any resource determined eligible for the NRHP is also automatically eligible for the CRHR. However, the treatment of historical resources under the California Environmental Quality Act (CEQA) and in the CRHR is more inclusive in that resources listed in local historical registers may be included.

Projects that would impact CRHR-listed and -eligible resources and resources listed in local historical registers may result in a significant effect on the environment if the project would cause an adverse change in the significance of a historical resource.[10] Adverse change in the significance of a historical resource refers to physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that [its] significance would be materially impaired.[11] Material impairment means demolition of the resource, or alteration of the physical characteristics that make the resource eligible for listing such that it would no longer be eligible for the CRHR or a local historical register.[12]

4.5.1.3 | LOCAL REGULATIONS

The City and County of San Francisco maintains a comprehensive list of its locally designated landmarks and historic districts. Landmarks can be buildings, sites, or landscape features. Districts are defined generally as an area of multiple historic resources that are contextually united. A list of landmarks and descriptions of each historic district can be found in Article 10 of the Municipal Planning Code. None of the recognized historic districts overlap with the Geary corridor.

Article 11 of the Municipal Planning Code identifies several Downtown Conservation Districts. Buildings within the Conservation Districts may be designated as contributory elements of the district based on architectural significance of the building. The Geary corridor travels through one Downtown Conservation District (Kearny-Market-Mason-Sutter) and is adjacent to one other (New Montgomery-2nd Street).

[10] Public Resources Code Section 21084.1.
[11] CEQA Guidelines Section 15064.5[b][1].
[12] CEQA Guidelines Section 15064.5[b][2].

The San Francisco Historic Preservation Commission makes recommendations to the Board of Supervisors on the designation of landmark buildings, historic districts, and significant buildings, as well as any construction, alteration, or demolition that would affect listed sites and resources.

4.5.2 | Affected Environment

4.5.2.1 | BACKGROUND ON CULTURAL RESOURCE TYPES

4.5.2.1.1 ARCHAEOLOGICAL RESOURCES BACKGROUND

Archaeology is the study of both prehistoric and historical human activities and cultures. Archaeological resources typically fall into three different categories.

- **Prehistoric Archaeological Sites**: In California, prehistoric archaeological sites are places where one can find evidence of human activities prior to 1769 AD, which is generally accepted as the date of European arrival and exploration leading to permanent settlement. Prehistoric sites typically contain human burial or subsistence remains and artifacts or tools made by people. Objects that may be found on a prehistoric archaeological site include tools, beads, ornaments, ceremonial items, rock art, and inedible remains of food sources.
- **Historic Archaeological Sites**: Historic archaeological sites are places where evidence exists of human activities between 1769 AD and the early 20th century. Many historic archaeological sites are places where houses formerly existed and contain ceramic, metal, glass refuse resulting from the transport, preparation and structural remnants, such as windowpane glass, lumber, and nails. Historical archaeological sites can also be nonresidential, resulting from ranching, farming, industrial, and other activities.
- **Traditional Cultural Properties:** Traditional cultural properties are specific locations that are largely associated with the history of the community. These places are typically associated with the cultural practices or beliefs of a living community, such as locations where ceremonial activities were performed.

4.5.2.1.2 HISTORIC ARCHITECTURAL RESOURCES BACKGROUND

Historic architectural resources (or "built environment") resources are structures or buildings that served residential, commercial, industrial, transportation, and other purposes during historic periods (more than 50 years ago). These generally consist of buildings of all types, as well as dams, bridges, roads, and other infrastructure. In addition, districts (recognized and/or established through federal, state, and/or local criteria) are also considered historic architectural resources.

4.5.2.1.3 PALEONTOLOGICAL RESOURCES BACKGROUND

Paleontological resources are fossilized remains of plants and animals. Generally, paleontological resources are those that are more than 10,000 years old and are typically found below ground surface in sedimentary rock units.

4.5.2.2 | ARCHAEOLOGICAL RESOURCES

4.5.2.2.1 ARCHAEOLOGICAL AREA OF POTENTIAL EFFECT

The archaeological evaluation begins with the delineation of the Area of Potential Effects (APE). The APE is generally defined as the maximum geographic area or areas both horizontally and vertically within which a proposed project (referred to as an "undertaking" under Section 106 regulations) may cause direct or indirect changes in the character or use of historic properties, should any such properties be present. Appendix E includes the APE maps prepared for the project.

The horizontal archaeological APE boundaries includes the entire public right-of-way comprising the full travel length of 38 Local and 38 Rapid buses from 48th Avenue on the west to the Transbay Transit Center on the east (see Figure 4.5-1). This includes the entirety of the Geary corridor. Horizontal archaeological APEs – the maximum area potentially affected on the ground surface – were developed for each build alternative based on design (as reflected in plan sets included in Appendix A), as each build alternative has slight variations in anticipated ground disturbance related to proposed locations of project features. In all, the horizontal archaeological APEs extend about 8.9 miles in length; each covers approximately 131 acres in area.

Figure 4.5-1 Archaeological Area of Potential Effect

Source: Far Western, 2014

The vertical archaeological APE has not yet been formally established but would be based upon maximum anticipated excavation depths. For Alternative 2 and the Hybrid Alternative/LPA, the maximum expected excavation depth is 16 feet (for light poles and potential underground sewer line relocations). Alternatives 3 and 3 Consolidated would have a maximum excavation depth of about 30 feet (related to the prospective removal of an underground pump station at the Geary/Fillmore intersection). Based on these known maximum depths, the general limits of the vertical APE are understood.

As part of its consultation with the lead agency under Section 106 of the NHPA, the SHPO reviewed the table of anticipated maximum construction depths (see Table 4.15-2) as part of its review of the horizontal APEs. The SHPO stated that the horizontal APEs were reasonable for the proposed undertaking and noted that the maximum construction depths constituted a reasonable basis for the ultimate determination of a vertical APE once construction-level design plans are prepared.

4.5.2.2.2 KNOWN ARCHAEOLOGICAL RESOURCES

A records search found that 244 archaeological studies have taken place within the records search area for the project (which encompasses the composite total archaeological APE as well as a surrounding quarter-mile buffer area). While these studies documented 26 formally recorded archaeological resources (including both prehistoric and historic-era sites) along with five potential/not formally recorded archaeological resources, none of the resources are documented as extending into or within the archaeological APE (see Appendix E).

Eight historic period resources are situated immediately adjacent to the archaeological APE.

No Native American cultural resources were reported from the Native American Heritage Commission sacred lands file records search. Nor were any areas of Native American concern identified by the list of Native American contacts provided by the Commission. The SFCTA sent letters to Native American contacts in 2009 and again in 2011. Consistent with Section 106, the lead agency sent invitations regarding government to government consultation in 2015. The lead agency will consult with the appropriate Native American tribes as needed.

4.5.2.2.3 ARCHAEOLOGICAL RESOURCE SENSITIVITY EVALUATION

The lack of previous recordation of archaeological resources within the archaeological APE does not necessarily lead to a conclusion of absence of such resources beneath the ground surface of the Geary corridor. Virtually the entire Geary corridor is covered by some amount of artificial fill and therefore, even the historical surface is not visible.

As it would be prohibitively disruptive and infeasible to remove the entire ground surface of the Geary corridor to more conclusively determine whether archaeological resources may be present, the ASA included an examination of the sensitivity or likelihood of encountering previously unrecorded or unknown archaeological resources during excavation associated with the construction of any of the project alternatives. The sensitivity assessment included consideration of geologic setting, previous nearby archaeological studies, and known historic events. Sensitivity was assessed for both prehistoric and historic-era resources.

Prehistoric-Era Sensitivity. Generally, prehistoric archaeological sites in California are most often located on relatively level landforms near water. Thus, there is increased potential for buried prehistoric archaeological sites in areas near past or present water sources.

Two main areas within the archaeological APE are considered to have a high potential for prehistoric archaeological sites. This includes a large area near the eastern end of study area and a similar area at the western end of the study area. Both geomorphic contexts are sand dunes near productive shoreline resources. These areas comprise approximately 32 percent of the archaeological APE.

In contrast, much of the central portion of the archaeological APE is considered to have a low potential for prehistoric sites. This includes portions of the corridor that are situated atop areas formerly covered in sand dunes. These areas lacked sustained water sources and therefore have low sensitivity for encountering buried archaeological sites. These low-sensitivity areas comprise about 61 percent of the archaeological APE.

Portions of the Geary corridor that are situated on top of bedrock (in the vicinity of Presidio Avenue and between Webster and Gough Streets), have no sensitivity for buried sites. Approximately seven percent of the archaeological APE would be considered to have no likelihood of uncovering prehistoric archaeological resources.

Historic-era sensitivity. Two portions of the archaeological APE are considered to have moderate to high sensitivity of yielding historic-era archaeological resources. These include the Yerba Buena Cove area northeast of First Street, which is considered to have a high sensitivity to contain resources associated with the Gold Rush time period. The portion of the Geary corridor between Masonic and Gough streets is believed to have a moderate sensitivity to yield remains of late-nineteenth/early twentieth-century residential and cemetery uses, though it is considered likely that construction of Geary Boulevard itself (particularly the widening, underpass, and tunneling in this area) would have removed or destroyed any intact archaeological resources. Finally, City infrastructure features (such as those associated with water systems) may occur throughout the archaeological APE. The depth below the modern surface in which old infrastructure features may be encountered and whether or not subsequent development has destroyed them is uncertain and undoubtedly highly varied throughout the archaeological APE.

4.5.2.3 | HISTORIC ARCHITECTURE

4.5.2.3.1 HISTORIC ARCHITECTURAL STUDY AREA

In contrast to archaeological properties, historic architectural resources are property types such as buildings, structures, objects, and districts that, in general, are still used and/or maintained. The evaluation of historic architectural resources begins with delineation of the architectural APE. A single architectural APE was developed to encompass "footprint" variations associated with all build alternatives and to account for potential direct and indirect effects. For portions of the Geary corridor where improvements would be confined to the curb-to-curb roadway, the APE is set to the public right-of-way. In areas where a new side platform associated with a new BRT station is proposed or where there are new or moved local bus stops, the architectural APE expands outwardly to encompass one adjacent parcel. In April 2015, the lead agency initiated consultation with the SHPO. In May 2015, SHPO

concurred with the architectural APE. Appendix E includes maps of the architectural APE.

In the case of the Kearny/Market/Mason/Sutter Conservation District and the Uptown Tenderloin Historic District, the architectural APE encompasses only those portions of the districts directly fronting proposed side BRT stations and/or new or moved local stops.

Once the architectural APE was established, the area was surveyed to account for all buildings, structures, objects that appeared to be 45 years of age or greater[13] and to confirm the current condition of properties already listed or determined eligible for listing in the NRHP and/or CRHR, California Historical Landmarks, and the California Points of Historic Interest.

4.5.2.3.2 HISTORIC ARCHITECTURAL RESOURCES

The architectural APE contains 123 buildings or groups of buildings and structures that required formal evaluation. All of these surveyed properties were constructed in 1968 or before. Of these properties:

- 70 are not eligible for listing in the NRHP or CRHR.[14]
- 31 are currently listed in the NRHP and the CRHR (Table 4.5-1)
- 22 are eligible for the NRHP (Table 4.5-2)[15]
    - 21 through previous survey efforts
    - 1 found eligible as a result of this project's study (St. Francis Square Cooperative).

The 53 properties identified as either currently listed in the NRHP and/or the CRHR as well as those that are eligible for the NRHP are considered historical resources under CEQA.

All but one of the 31 properties listed in Table 4.5-1 are located east of Van Ness Avenue. Approximately 18 of these structures have mixed-use functions and the remainder are residential. Thirty of these historical resources are located within the federally recognized Uptown Tenderloin Historic District (and are considered contributing elements thereto).

[13] The California SHPO recommends evaluation of properties that are 45 years old or greater in recognition that there can be a lengthy time gap between resource identification and the date that planning decisions are made.

[14] Of these 70 properties, one is considered to be a historic resource only for the purposes of the California Environmental Quality Act (CEQA). In its October 2017 concurrence with the lead agency's Section 106 determination for the project, SHPO concurred that the remaining 69 properties are ineligible for the NRHP. See SHPO correspondence in Appendix E.

[15] In its October 2017 concurrence with the lead agency's Section 106 determination for the project, SHPO concurred with the eligibility determinations for all 22 of these properties. Although 21 had been found potentially eligible in previous survey efforts, that eligibility had not been submitted to the SHPO for concurrence. See SHPO correspondence in Appendix E.

Table 4.5-1 Properties listed in or previously determined eligible for listing in the NRHP

ADDRESS	RESOURCE NAME	YEAR BUILT	NRHP CRITERIA
945-999 Van Ness Avenue	Ingold Chevrolet Showroom	1937	A, C
946 Geary Street	Briscoe Apartments	1916	A, C
447-453 O'Farrell Street	Wilchar Apartments	1908, 1912	A, C
573-577 O'Farrell Street	El Capitan Apartments	1927	A, C
765 O'Farrell Street	Rockwell Apartments	1924	A, C
401-411 O'Farrell Street	Columbia Hotel	1909-1910	A, C
415-421 O'Farrell Street	Strand Hotel	1908	A, C
433-445 O'Farrell Street	Hotel Winton	1907	A, C
501-525 Taylor Street	Geary-Taylor Apartments	1919-1920	A, C
516-528 Geary Street	St. Francis Arms Apartments	1922-1923	A, C
545 O'Farrell Street	Atherstone Apartments	1910	A, C
555 O'Farrell Street	Palace Court Apartments	1924	A, C
579 O'Farrell Street	Kohlen Lodgings/Sonny Hotel	1907	A, C
587-593 O'Farrell Street	The McCormick	1914	A, C
595-599 O'Farrell Street	Harding Apartments	1918	A, C
746 Geary Street	None Listed	1917,1923	A, C
771-775 O'Farrell Street	None Listed	1923	A, C
777-775 O'Farrell Street	None Listed	1926-1927	A, C
801-815 O'Farrell Street	Burnett Apartments	1913-1914	A, C
835 O'Farrell Street	Hotel Iroquois	1913,1996	A, C
838-842 Geary Street	None Listed	1923	A, C
845 O'Farrell Street	Barbett Apartments	1924	A, C
846-854 Geary Street	Kirkland Apartments	1922	A, C
900-914 Geary Street	Hotel Toronto/Leahi Hotel	1909	A, C
920-924 Geary Street	Hotel Earle	1906	A, C
936-940 Geary Street	Geary Apartments, Francine Apartments	1916,1922-1923	A, C
928-930 Geary Street	None Listed	1923	A, C
954-958 Geary Street	Oswald Apartments	1924	A, C
970 Geary Street	Gray Moor Apartments	1922	A, C
859 O'Farrell Street	Blanco's Café/Music Box	1908	A, C
851 O'Farrell Street	Blanco's Hotel & Restaurant	1908	A, C

Source: JRP, 2015

Table 4.5-2 Properties that are Eligible for Listing in the NRHP

ADDRESS	RESOURCE NAME	YEAR BUILT	NRHP CRITERIA
3700 Geary Boulevard	Park & Ocean Railroad Company, Geary Street Car Barn	1893	A
1510 O'Farrell Street	St. Francis Square Cooperative	1962-1963	A, C
1610 Geary Boulevard	Japan Center	1965-1968	A, C
1450 Laguna Street	San Francisco Japanese Salvation Army	1936,1955,and 1963	A
601 Leavenworth Street	Casa Feliz Apartments	1924	A, C
Geary Boulevard/O'Farrell Street	Golden Triangle Light Standards	1917-1918	A, C
301-345 Powell Street	St. Francis Hotel	1904-1913	A, C
(Multiple locations across San Francisco)	Auxiliary Water Supply System	1908-1964	A,C
235-243 O'Farrell Street	Hotel Barclay	1910	C
201-219 O'Farrell Street	Marquard's Little Cigar Store	1907	C
166-170 Geary Street	Whittell Building	1906-1907	C
156 Geary Street	None Listed	1907	C
152 Geary Street	None Listed	1907	C
146 Geary Street	None Listed	1907	C
132-140 Geary Street	Sachs Building	1907	C
46-48 Stockton Street	Newman & Levinson Building	1909	C
760-784 Market Street	Phelan Building	1908	C
46 Geary Street	None Listed	1907	C
28-36 Geary Street	Rosenstock Building	1908	C
10-12 Geary Street	Schmidt Building	1907,1908	C
2 Geary Street	Fidelity Savings	1908	C
66 Geary Street	Hotel Greystone	1906	C

Source: JRP, 2015

The historic district consists of 409 contributing buildings and sites and 68 non-contributing elements within a 16-block area generally bounded by Taylor, Turk, Larkin and Geary streets. It is significant under NRHP Criterion A (and CRHR Criterion 1) "in the area of social history for its association with the development of hotel and apartment life in San Francisco during a critical period of change. As a distinctive residential area it is also associated with commercial activity, entertainment, and vice." It is also significant under NRHP Criterion C (CRHR Criterion 3) "for its distinctive mix of building types that served a new urban population of office and retail workers. Predominantly hotels and apartments, the district also includes non-residential building types associated with life in the neighborhood." The district features streetlights, granite curbs, fire hydrants, sidewalks, and other public realm elements that were recognized as part of the district's setting but not contributing elements to the district. Only the contributing buildings and structures were identified as contributing elements.

Additionally, SHPO determined the Ingold Chevrolet Showroom (945-999 Van Ness Avenue) as individually eligible for the NRHP in December 2012, also shown in Figure 4.5-2.

In October 2017, SHPO concurred that the 22 properties listed in Table 4.5-2 are eligible for listing in the NRHP and CRHR. The majority of these properties are located east of Van Ness Avenue and were previously identified as eligible in architectural surveys conducted between the 1970s and early 1990s.

Only one of these 22 properties, the St. Francis Square Cooperative (Figure 4.5-2), was found eligible through the current HRIER.

The St. Francis Square Cooperative is a low-income housing development constructed in 1963 as part of the City's redevelopment effort of the Western Addition. The complex is significant as the first racially integrated cooperative housing in San Francisco (NRHP Criterion A and CRHR Criterion 1). Additionally, the St. Francis Square Cooperative is significant under NRHP Criterion C and CRHR Criterion 3 as significant examples of their architecture style and/or as works of a master architect (Marquis & Stoller architects; Lawrence Halprin & Associates landscape architects).

The remaining 21 properties were identified as eligible through previous survey efforts. Of the 21 previously evaluated historic properties, 15 are located within the downtown area of San Francisco and significant under NRHP Criterion C (CRHR Criterion 3) as significant examples of their architecture style and/or as works of a master architect. The majority of these properties are commercial buildings that range between 3 and 16 stories in height and employ a mixture of Baroque, Renaissance, or Gothic styles.

This grouping includes some of San Francisco's more notable buildings including the Phelan, Whittle, and Newman & Levinson buildings as well as the St. Francis Hotel. All 15 properties are located within the local Kearney-Market-Mason-Sutter Conservation district; 13 are designated significant (Article 11 Category I) or contributory (Article 11 Category IV) buildings, including the Phelan Building (San Francisco Landmark No. 156), and two are unrated (Category V).

Also located east of Van Ness Avenue are the Golden Triangle Light Standards, a grouping of 189 Beaux Arts-style streetlights generally located between Mason, Market, and Sutter streets (Figure 4.5-3). Only 21 streetlights are located within the architectural APE. Designated San Francisco Landmark No. 233, the streetlights were installed between 1917 and 1918 and were previously found significant under NRHP Criterion A (CRHR Criterion 1) for their "association with the Panama-Pacific International Exposition of 1915 and the development of merchant businesses in the present-day Union Square retail district," and under NRHP Criterion C (CRHR 3) because they "typify early 20th century innovations in street lighting and embody characteristics of the City Beautiful movement." The streetlights are also significant under Criterion C (CRHR Criterion 3), as the work of master lighting engineers Walter D'Arcy Ryan and J.W. Gosling. The period of significance is 1917-1918. The locations of some streetlights have been adjusted since their installation as their spacing is not consistently uniform.

Components of the Auxiliary Water Supply System (AWSS) are located throughout San Francisco. Under the jurisdiction of the San Francisco Public Utilities Commission (SFPUC), the AWSS was initially constructed in 1908 as a secondary means of providing water for firefighting purposes. Also known as the Emergency Firefighting Water Supply System, the AWSS includes over 135 miles of high pressure underground pipeline, 172 underground cisterns, 1,600 hydrants, 3,800 valves, two pump stations, two large capacity storage tanks, a reservoir, 52 suction connections, two fireboats, and five fireboat manifolds.

Within the architectural APE for the Geary corridor are approximately 2.4 miles of pipeline, 35 fire hydrants, 90 valves, and five cisterns, each apparently installed prior to 1965. In 2009, the AWSS was found eligible, presumably at the local level, under NRHP Criterion A (CRHR Criterion 1) for its direct association with the 1906 San Francisco earthquake and San Francisco's recovery from that disaster. It is also presumably eligible for its engineering and architectural design under NRHP Criterion C (CRHR Criterion 3). The periods of significance identified (in the 2009 evaluation) extended between 1908 and 1913 (NRHP Criterion A and CRHR Criterion 1), when construction occurred, and between 1908 and 1964 (NRHP Criterion C and CRHR Criterion 3), when construction first began to the end of the historic era (45 years from 2009). Following passage of a bond measure in 2010, the SFPUC has allocated funds for restoration and seismic upgrades to the core elements of the AWSS.

The Casa Feliz Apartments (Figure 4.5-4) at 601 Leavenworth Street appears eligible for the NRHP and CRHR as a contributor to the NRHP-listed Uptown Tenderloin Historic District, which is significant under NRHP Criterion A (CRHR Criterion 1) in the area of social history for its association with the City's apartment/hotel lifestyle and commercial activity and under NRHP Criterion C (CRHR Criterion 3) for its distinguishing mixture of hotels, apartment, and commercial buildings. Constructed in 1924, the five-story building with Renaissance and Baroque details has served as an apartment building with first-floor storefront for nearly 90 years.

The remaining four historic properties are located west of Van Ness Avenue and consist of industrial, social, commercial, and residential building types.

The brick, Beaux Arts-style Park & Ocean Railroad Company Geary Street Car Barn at 3700 Geary Boulevard at Arguello was previously found eligible for the NRHP under Criterion A (NRHP Criterion 1) for its association with early streetcar transportation in the Inner Richmond District.

The Park & Ocean Railroad (Figure 4.5-5) operated successfully for 32 years from 1880 until 1912, when its franchise expired and was replaced by the San Francisco Municipal Railway's electric line. The period of significance extends from its construction in 1880 to 1912, when the Park and Ocean Railway ceased operation.

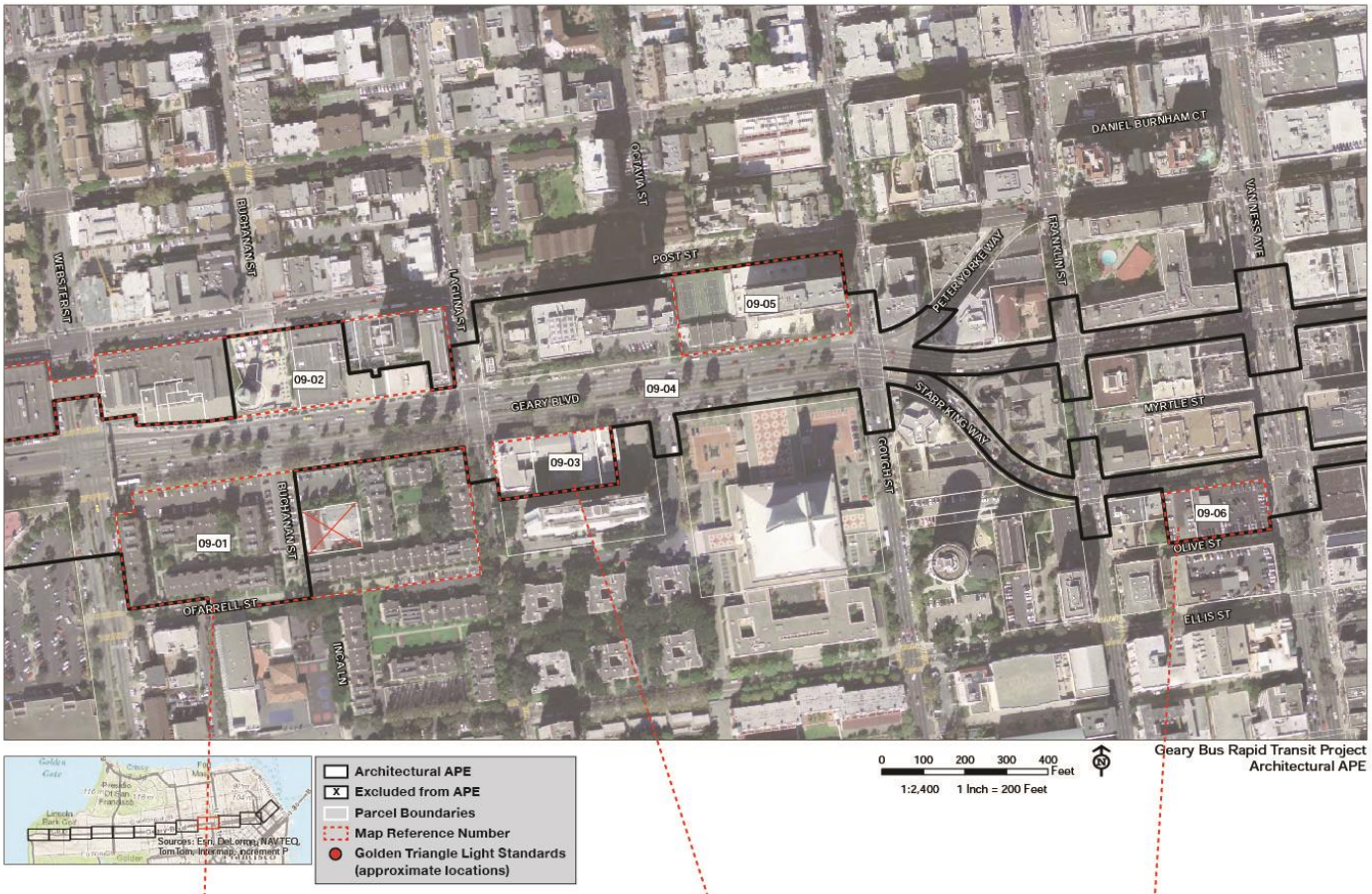
The San Francisco Japanese Salvation Army (Figure 4.5-2) located at 1450 Laguna Street is comprised of three buildings constructed between 1936 and 1955. The oldest building within this complex was previously found eligible for the NRHP, CRHR, and local register. The three-story building is significant under NRHP Criterion A (CRHR Criterion 1) for is associations with the Japanese American community between 1937, when the building was completed, and 1941, the beginning of the United States involvement in World War II. It represents the

community-building efforts of Japanese Americans in San Francisco; the importance of religion, community values, civic service, and personal betterment in Japanese American society; and the struggles for civil rights and community recognition that the Japanese Americans encountered.

The former Japanese Cultural and Trade Center, commonly known as Japan Center, is a three-block long shopping mall that has served San Francisco's Japanese American community both as a commercial center, but also as a community and cultural venue for nearly 50 years. Constructed between 1965 and 1968, Japan Center is a series of connected multi-level buildings, structures, and open space designed in the Japanese American modern-style. The center was previously evaluated and because it was less than 50 years old at the time of that survey, it was found to be potentially eligible for the NRHP. Although the resource is still less than 50 years old, it is assumed eligible under various NRHP and CRHR criteria. The center has a demonstrable association with cultural development of the Japanese American community and with the redevelopment of the Japan Town neighborhood "which has ultimately resulted in the promotion of the local Japanese American culture by housing community businesses and organizations, by providing a venue for festivals, celebrations, and social activity, and by initiating a wave of culturally relevant architecture in Japantown." It is also significant under NRHP Criterion C (CRHR Criterion 3), as an "example of culturally relevant design" by a significant Japanese American architect, Minoru Yamasaki. The center "exhibits his trademark fusion of traditional Asian and European/American styles with modern design." The period of significance is between 1965, when construction of the center began, through the present-day.

Furthermore, as part of the Japantown Better Neighborhood Plan project, the firm of Page & Turnbull prepared a potential Traditional Cultural Property (TCP) evaluation for Japantown and individual properties within the community. That study identified Japan Center as potentially meeting NRHP Criteria Consideration G and NRHP Criteria A and C as a TCP.

Figure 4.5-2 Historic Properties, Webster Street to Van Ness Avenue



1510 O'Farrell Street - St. Francis Square Cooperative

1450 Laguna Street - San Francisco Japanese Salvation Army

945-999 Van Ness Avenue - Ingold Chevrolet Showroom

Source: JRP, 2015

Figure 4.5-3 Golden Triangle Streetlights

Source: WKA, 2014

Figure 4.5-4 Casa Feliz Apartments – 601 Leavenworth Street

Source: JRP, 2014

Figure 4.5-5 Park & Ocean Railroad Co. – 3700 Geary Boulevard

Source: JRP, 2015

4.5.2.4 | PALEONTOLOGICAL RESOURCES

Historically, San Francisco Bay Area environments were typified by estuaries, coastal marsh lands, coastal prairie, and willow groves. These environments contained varied animal resources such as fish, shellfish, large mammals, and a range of plant resources. The City is primarily underlain by Franciscan Complex bedrock and surficial deposits such as dune sand and artificial fill.[16] The bedrock comprises sedimentary and metamorphic rocks of the Franciscan formation, late Jurassic or Cretaceous in age (65 to 165 million years old.)

Fossils are typically found in river, lake, and bog deposits. Franciscan complex rocks underlying the City mostly consist of sandstone, shale, serpentinite, mélange, and minor greenstone outcrops. Fossils are usually uncommon in low-grade metamorphic Franciscan rocks, but may be found scattered in the geologic deposits.

Wind-blown sand dunes covered a large part of the San Francisco peninsula until the nineteenth and twentieth centuries. The gold rush in the mid-1800s largely influenced population growth and development in San Francisco; thick deposits of artificial fill were placed around the margins of the Bay to reclaim the marshes and wetlands for human development. Thus, undifferentiated surficial deposits found in the City include beach sand, marine deposits, and artificial fill. Remains of land mammals have been reported in younger alluvium along with Holocene-age pollen, plan, and shell fossils. No fossils have been reported from artificial fill in San Francisco.

As shown in Figure 4.5-6, the Geary corridor is primarily underlain by Latest Pleistocene to Holocene-age dune sand (Qds) and artificial fill over bay mud (afbm). Dune sand consists of loose to soft, well-sorted sand deposits. Artificial fill typically consists of man-made deposits of varying character, consisting of clay, silt, sand, rock fragments, organic material, and man-made debris. Pleistocene alluvial deposits consist of crudely bedded, moderately to poorly sorted, brown gravel and clay sand. Fossil vertebrates have been found in sediments of Pleistocene alluvium in other San Francisco Bay areas.

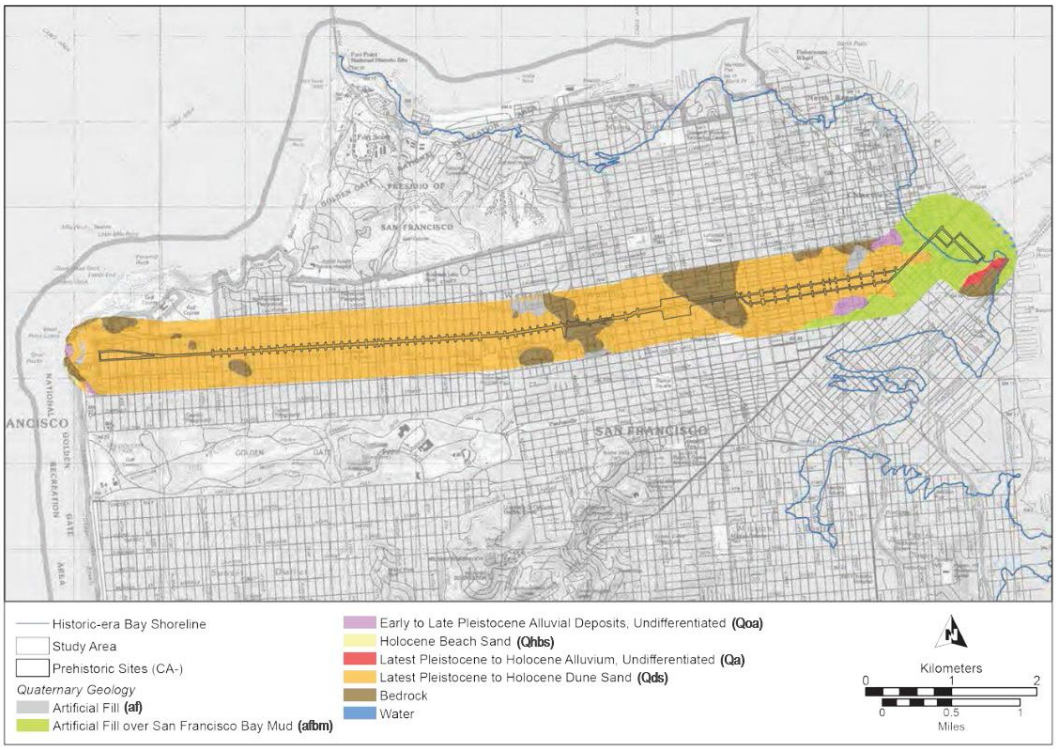
4.5.2.4.1 PALEONTOLOGICAL RESOURCE SENSITIVITY

Significant paleontological resources are fossils or groups of fossils that are unique, rare, unusual, or uncommon. According to Caltrans Standard Environmental Reference (SER), scientifically significant paleontological resources are identified sites or geologic deposits containing individual or groups of fossils that are unique, unusual, or otherwise important, and/or that add to the existing body of knowledge in specific areas.[17]

These resources can generally be anticipated based on the stratigraphic layer of the earth's surface, as some layers are more prone to paleontological significant resources. As a result, paleontological sensitivity is based on the underlying geological unit and work proposed in that area (Table 4.5-3). Caltrans uses the following scale to rate paleontological sensitivity.

[16] City and County of San Francisco Housing Element EIR, 2010.
[17] This document adapts the Caltrans scale and sensitivity definitions in the absence of locally-adopted criteria.

Figure 4.5-6 Geological Deposits within the Geary Corridor



Source: Far Western, 2014

- **High Potential** - Rock units which, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils.
- **Low Potential -** This category includes sedimentary rock units that: 1) are potentially fossiliferous, but have not yielded significant fossils in the past; 2) have not yet yielded fossils, but possess a potential for containing fossil remains; or 3) contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood.
- **No Potential** - Rock units of intrusive igneous origin, most extrusive igneous rocks, and moderately to highly metamorphosed rocks are classified as having no potential for containing significant paleontological resources.

As indicated in Figure 4.5-6 and Table 4.5-3, the vast majority of the Geary corridor and surrounding areas have low to no potential to encounter paleontological resources. None of the Geary corridor is underlain by geologic units with a high potential to encounter paleontological resources.

Table 4.5-3 Geologic Unit and Paleontological Sensitivity

GEOLOGIC UNIT	GEOLOGIC AGE	PALEONTOLOGICAL SENSITIVITY
Artificial Fill (af)	Historic	None
Artificial Fill over San Francisco Bay Mud (afbm)	Historic	Low
Holocene Beach Sand (Qhbs)	Holocene	Low
Latest Pleistocene to Holocene Dune Sand (Qds)	Latest Pleistocene to Holocene	Low
Latest Pleistocene to Holocene Alluvium, Undifferentiated (Qa)	Latest Pleistocene to Holocene	High
Early to Late Pleistocene Alluvial Deposits, Undifferentiated (Qoa)	Early to Late Pleistocene	High
Bedrock	Jurassic to Cretaceous	Low

Source: University of California Museum of Paleontology, 2014

4.5.3 | Methodology

The alternatives were evaluated for potential effects to cultural resources with reference to the evaluation of the National Register (36 CFR 60). These criteria state that 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 which:

a. Are associated with events that have made a significant contribution to the broad patterns of our history; or

b. Are 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 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 (36 CFR 60.4).

The four criteria, in addition to a property generally having to be a minimum of 50 years of age for NRHP consideration, are essential to evaluation of eligibility because they "indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). Any action that, as part of an undertaking, could affect significant cultural resources is subject to review and comment under Section 106 of the NHPA.

The definition of *effect* is contained within 36 CFR Part 800: "effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." An adverse effect occurs "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 in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

Application of the criteria of adverse effect is largely an assessment of an undertaking's impact on the historic integrity of a historic property. It is also crucial to assess how an undertaking will affect those features of a historic property that contribute to its eligibility for listing in the NRHP. Effects are divided into three groups: direct, indirect, and cumulative. Direct effects included physical destruction or damage. Indirect effects include the introduction of visual, auditory, or vibration impacts as well as neglect to a historic property, and cumulative effects are the impacts of this project taken into account with known past or present projects as well as foreseeable future projects. An effect is noted in this document only when it poses the potential to alter the characteristics of the historic property that quality it for inclusion in the NRHP such as:

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 CFR part 38) and applicable guidelines;

iii. Removal of 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

vii. 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.

The alternatives have the potential to result in construction period and/or operational period effects as noted below.

Construction-Related Effects

- Ground disturbance and excavations
- Sewer relocations
- Alterations of streetlights, granite curbs, fire hydrants, sidewalks, and other components that comprise the historic setting of the Uptown Tenderloin Historic District.
- Relocation of streetlights that are individually eligible (Golden Triangle Streetlights) or contributing elements of an eligible resource (Japan Center)
- Modification or relocation of components of the AWSS

Operational-Related Effects

- Side-running stations and bus stops

These elements of the build alternatives listed above were evaluated in terms of potentially uncovering cultural resources, relocating historic resources, and potential to create noise, air quality, or visual effects to any historic or cultural resources.

To more accurately characterize potential effects of the project alternatives, this analysis considers the cultural, historic, and paleontological environment along the Geary corridor between 2013-2014.

4.5.4 | Environmental Consequences

This section describes potential impacts and benefits for cultural resources. The analysis compares each build alternative relative to the No Build Alternative.

As set forth in Section 4.5.4.1, the modifications to the Hybrid Alternative/LPA since publication of the Draft EIS/EIR do not change the conclusions regarding impacts to cultural resources in the Draft EIS/EIR.

4.5.4.1 | HYBRID ALTERNATIVE/LPA MODIFICATIONS: POTENTIAL ADDITIVE EFFECTS SINCE PUBLICATION OF THE DRAFT EIS/EIR

As discussed in Section 2.2.7.6, the Hybrid Alternative/LPA now includes the following six minor modifications added since the publication of the Draft EIS/EIR:

1) Retention of the Webster Street pedestrian bridge;
2) Removal of proposed BRT stops between Spruce and Cook streets (existing stops would remain and provide local and express services);
3) Addition of more pedestrian crossing and safety improvements;
4) Addition of BRT stops at Laguna Street;
5) Retention of existing local and express stops at Collins Street; and
6) Relocation of the westbound center- to side-running bus lane transition to the block between 27th and 28th avenues.

This section presents analysis of whether these six modifications could result in any new or more severe impacts to cultural resources during construction or operation. As documented below, the Hybrid Alternative/LPA as modified would not result in any new or more severe impacts to cultural resources relative to what was disclosed in the Draft EIS/EIR.

Retention of the Webster Street Pedestrian Bridge

Construction: Demolition of the existing Webster Street pedestrian bridge would reduce the extent of construction activities at this location, thereby reducing the potential to encounter unrecorded archaeological or paleontological resources during construction, as well as reducing the extent of construction activities in proximity to historic structures such as the nearby Japan Center light standards. Moreover, the Draft EIS/EIR concluded that bridge demolition would not have adverse effects on historic properties (as the bridge was not itself a historic resource). Therefore, retention of the bridge would not result in any new or more severe impacts to cultural resources during the construction period.

Operation: As adverse effects to archaeological and paleontological resources are most often due to construction and other ground-disturbing activities, operational effects related to such resources are generally rare for a project like the Geary

Corridor BRT. Retention of the existing Webster Street pedestrian bridge would not pose a risk of uncovering archaeological resources or impacting a historic property during project operation. Based on the foregoing reasons, no new or more severe impacts to cultural resources would result during project operation.

Removal of Proposed BRT Stops between Spruce and Cook Streets

Construction: Because the project would no longer add previously proposed BRT stops between Spruce and Cook streets, this would eliminate construction activity outside the curb-to-curb portion of the right-of-way in this area. As a result, this modification would lessen the potential to encounter unrecorded archaeological or paleontological resources during construction. No historic architectural resources are located in the Spruce/Cook area; therefore, this modification would not affect any historic architectural resources. Therefore, this modification would not result in new or more severe cultural resources impacts during construction.

Operation: Operationally, this modification would pose no new or additional risk of uncovering archaeological resources, nor would bus stop retention change the existing neighborhood context. Therefore, no new or more severe impacts to cultural resources would result from this modification during project operation.

Addition of More Pedestrian Crossing and Safety Improvements

Construction: Implementation of additional pedestrian enhancements throughout the corridor would entail localized construction activities where new pedestrian crossing bulbs would be constructed. Construction would include excavation to a maximum depth of 1.5 feet and would occur in highly urbanized areas, in which the ground surface has been repeatedly disturbed over a century or more of urban development. Given this, the potential to encounter unrecorded archaeological resources or paleontological resources would be low and no new or more severe impacts to archaeological resources would occur during construction. Additional pedestrian crossing improvements would be located within the public right-of-way and would not cause direct or indirect adverse effects to historic properties at or near these project components. Therefore, this modification would not result in new or more severe impacts to cultural resources during construction.

Operation: Once operational, curb bulb outs would not pose risks to historic properties as they would not cause a change in the character or setting of historic properties. Similarly, project operation would not require ground disturbance that could have the potential to encounter unrecorded archaeological or paleontological resources. As such, implementation of this modification would not result in any new or more severe impacts to cultural resources during project operation.

Addition of BRT Stops at Laguna Street

Construction: Laguna Street is located in an area with high potential for encountering historic-era resources, low potential to yield prehistoric archaeological resources and low paleontological sensitivity. However, earlier extensive ground disturbance and construction associated with the construction of the "expressway" section of Geary through this area would likely have disturbed or destroyed any intact historic-era resources, so the likelihood of encountering new intact, eligible resources is low. Therefore, construction of transit islands at Laguna Street would have low potential to encounter or harm any previously unrecorded archaeological resources, paleontological resources, or intact historic-era resources. Similarly,

construction of transit islands would occur entirely within the existing transportation right-of-way, outside of historic property boundaries, and would not pose direct or indirect effects to either of the two historic properties within the vicinity; St. Francis Square Cooperative and the AWSS. Therefore, no new or more severe impacts to cultural resources would result from this modification during project construction.

Operation: Project operation would not include ground disturbance that would pose a risk of uncovering archaeological or paleontological resources. The St. Francis Square Cooperative was constructed along a primary pedestrian and automobile route (today's Geary Boulevard) that currently serves Muni bus lines, and the operation of BRT stops at Laguna Street would not significantly or importantly alter the relationship of this historic property to its transportation corridor. Shelters or other passenger amenities would be located within the transit islands and far enough away from buildings and landscape features that contribute to the significance of the St. Francis Square Cooperative, would not noticeably block views when looking to or from the historic property, and would not alter the property's character-defining features. While the BRT/local stops at Laguna Street would be visible from the cooperative, the stops would be consistent with the character of the existing transportation corridor and would not adversely alter its setting or integrity. Operation of BRT stops at Laguna Street would also have no adverse effect on the AWSS. The bus stops would be designed to avoid removal, relocation, or damage to nearby underground pipelines, fire hydrants, valves, and cisterns that contribute to the significance of the AWSS, resulting in a finding of no adverse effect. Therefore, no new or more severe impacts to cultural resources would result from this modification during project operation.

Retention of Existing Local and Express Stops at Collins Street

Construction: Similar to retaining the Spruce and Cook local and express tops, retention of the Collin Street bus stops would eliminate construction activity outside the curb-to-curb portion of the right-of-way in this location. Thus, this would lessen potential to encounter unrecorded archaeological or paleontological resources during construction. Retention of existing bus stops also would not have any effect on historic properties. Therefore, this modification would not result in new or more severe impacts to cultural resources during construction.

Operation: Operation of the existing bus stops at Collins Street and would retain existing conditions at this location and thus would not affect cultural resources. Therefore, no new or more severe impacts to cultural resources would result from this modification during project operation.

Relocation of the Westbound Center- to Side-Running Bus Lane Transition

Construction: The relocation of the westbound bus lane transition at 27th Avenue would not alter the total level of construction activities but would simply shift about half of it one block to the west. This modification would not require median removal on that block and, hence, would not require associated excavation which would have the potential to encounter unknown archaeological resources. As there are no historic architectural resources in the area, and construction would occur entirely within the existing transportation right-of-way, no new or more severe impacts to cultural resources would occur as a result of this modification during project construction.

Operation: Similarly, operation of the project with this modification would not change the nature of bus operations as described in the Draft EIS/EIR Therefore, no new or more severe impacts to cultural resources would result from this modification during project operation.

4.5.4.2 | CONSTRUCTION EFFECTS

4.5.4.2.1 CONSTRUCTION EFFECTS UPON ARCHAEOLOGICAL RESOURCES

As set forth in Section 4.5.2.2.2 above, there are no archaeological resources above ground in the Geary corridor. The Geary corridor lies in the vicinity of 26 formally recorded archaeological sites but not within any of the sites. Therefore, construction of the project alternatives would not result in any disturbance to previously recorded (i.e. known) archaeological sites.

Detailed Phase I archival investigations into the potential presence of prehistoric and historic archaeological sites have identified, to the extent possible using available data, all sites within the project APE. An initial investigation in 2014 was updated in 2017 to take into account project modifications subsequent to publication of the Draft EIS/EIR

No known sites would be affected by project impacts, and the sensitivity for buried prehistoric archaeological sites within areas of sub-surface impacts is very low, low, or moderate.

Similarly, the historic-era archaeological sensitivity study determined that there is a low probability of encountering NRHP-eligible deposits.

In the unlikely event that archaeological deposits are identified, an Inadvertent Discovery Plan, which also details identification of human remains, would then be implemented. Section 4.5.5 includes measures to minimize effects if such resources are encountered.

No Build Alternative – Construction Effects upon Archaeological Resources

The improvements associated with the No Build Alternative are generally confined to surficial improvements and service level changes. Construction of such improvements would have little or no potential to have an adverse effect upon archaeological resources. However, some ground disturbance is anticipated in association with road surface improvements, curb improvements, and installation of streetscape infrastructure. Such improvements would occur in highly urbanized areas, in which the ground surface has been repeatedly disturbed over a century or more of urban development. Moreover, these improvements generally do not require deep excavation. Therefore, the potential for the No Build Alternative to encounter and harm previously unrecorded archaeological resources is considered low to very low.

Alternative 2 (Side-Lane BRT) – Construction Effects upon Archaeological Resources

This alternative includes bus-only lanes in the rightmost lane of the Geary corridor with the addition of new BRT stations on bus bulbs from 34th to Van Ness Avenue. Similar to the No Build Alternative, the improvements associated with Alternative 2 would be largely surficial. However, construction of Alternative 2 would include a more extensive installation of streetscape infrastructure (particularly bus shelters and

lighting) that would require deeper excavation in selected locations. These locations are generally within areas of low or no sensitivity to yielding previously unrecorded archaeological resources, so the potential for Alternative 2 to encounter and harm such resources is considered to be low.

Alternatives 3 and 3-Consolidated (Center-Lane BRT with Dual Medians and Passing Lanes; Center-Lane BRT with Dual Medians and Consolidated Bus Service) – Construction Effects upon Archaeological Resources

These alternatives require more extensive ground disturbance associated with the removal of existing medians, trees, and irrigation and the construction of new center-running bus lanes (with new landscaped medians and bus boarding areas) between 27th Avenue and Laguna Street. In addition, these alternatives require the relocation of sewer lines in the vicinity of Park Presidio Boulevard. Both alternatives also include the filling of the Fillmore underpass, which could include excavation and removal of the existing pump station. All of these improvements would entail deeper excavation (to approximately 16 feet below ground surface for sewer relocation; approximately 30 feet for the pump station). These improvements would occur in areas considered to have low potential to yield prehistoric archaeological resources, but high potential for encountering historic-era resources, particularly between Masonic Avenue and Gough Street. However, any high potential for historic resources is tempered by earlier extensive ground disturbance and construction associated with the construction of the Fillmore underpass (and associated pump station) as well as the Masonic tunnel. The construction of these undertakings would likely have disturbed or destroyed any intact historic-era resources, so that the likelihood of encountering new intact, eligible resources is low.

Outside these locations, Alternatives 3 and 3-Consolidated would include a similar array of physical improvements as Alternative 2. Therefore, excepting the portion of the Geary corridor between 27th Avenue on the west and Laguna Street on the east, the potential for these alternatives to encounter and harm unrecorded archaeological resources would be low.

Hybrid Alternative/LPA – Construction Effects upon Archaeological Resources

The Hybrid Alternative/LPA combines various elements of Alternatives 2, 3, and 3-Consolidated. Between 27th Avenue and Palm Avenue, the Hybrid Alternative/LPA would be similar to Alternatives 3 and 3-Consolidated in the removal of existing medians to construct new center-running bus lanes and new medians. Construction of the Hybrid Alternative/LPA would also require sewer relocations near Park Presidio Boulevard. These improvements would occur in areas considered to have low potential to encounter either pre-historic or historic-era archaeological resources. Further archaeological sensitivity analysis conducted in 2017 confirmed that the Hybrid Alternative/LPA would have a low probability of encountering any NHRP-eligible historic period archaeological resources.

4.5.4.2.2 CONSTRUCTION EFFECTS UPON HISTORIC ARCHITECTURAL RESOURCES

No Build Alternative – Construction Effects upon Historic Architectural Resources

Transit and transportation facilities and service would remain unaltered under the No Build Alternative except for various minor improvements, such as transit signal

priority, pavement maintenance and rehabilitation, replacement of traffic signal infrastructure, and construction of curb ramps and corner bulbouts. All of these improvements would occur within the existing right-of-way, which is generally lacking historic resources, except for components of the AWSS and certain streetlights in the Union Square area (the "Golden Triangle" light standards) and Japan Town. The nature of the No Build improvements are such that removal or relocation of these streetlights or AWSS components is unlikely to occur; however, if such movement was necessary, associated projects would be subject to similar mitigation measures incorporated here for the build alternatives. As such, the No Build Alternative would not be expected to have an adverse effect on historic properties.

Construction Effects upon Historic Architectural Resources Common to Alternatives 2, 3, 3-Consolidated, and the Hybrid Alternative/LPA

Alternatives 2, 3, 3-Consolidated, and the Hybrid Alternative/LPA are similar with respect to effects on historic architectural resources in the following ways:

No adverse effects in curb-to-curb roadway. The build alternatives propose a wide array of streetscape improvements, all of which would occur within the existing curb-to-curb roadway. Additionally, all construction staging and laydown areas would be located within public right-of-way areas.

Components of the AWSS are the only historic architectural resources located within the curb-to-curb roadway; specifically AWSS cisterns and valves. All of the build alternative improvements, including new or relocated bus stops/stations, would be designed to avoid the removal, relocation, or damage to these historic components of the AWSS. However, if during further refinement to project design it is determined that one or more of the contributing elements of the AWSS cannot be avoided, the AWSS cisterns, valves, etc. would be relocated to another appropriate nearby location.

While the relocation of any cistern or valve would be a direct effect to this historic property, any relocations would be required to adhere to the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (SOI Standards). Adherence to the SOI standards would ensure that the AWSS system retains its overall integrity of location, design, setting, materials, workmanship, feeling, and association and would still be able to convey its significance under Criterion A and C. Therefore, none of the curb-to-curb roadway work associated with the build alternatives would have an adverse effect on any historic property.

Side-running stations/stops would avoid or minimize any effects to historic elements in sidewalk areas: Each of these alternatives would include side-running stations and stops within the public right-of-way area. Construction of these improvements could require alterations of streetlights, granite curbs, fire hydrants, sidewalks, and other components that comprise the historic setting of the Uptown Tenderloin Historic District (but are not contributing elements to the District's eligibility). The number and location of these minor infrastructural features within the historic district are unknown. However, when considering the size and scale of the district (409 contributing buildings within an approximately 16-block area) and given that there are no more than six locations where a station or stop is proposed under any one build alternative, any potential damage to these non-contributing

features would not present an adverse effect to the overall historic district. The integrity of setting, location, association and feeling of the historic district and its contributors would remain unchanged. Set in an dense urban setting, the historic district has already been altered by the construction of modern buildings and structures and infrastructure, including the addition and/or replacement of light standards, mailboxes, signage, traffic and pedestrian light, bus shelters, parking meters, and sidewalk improvements (including corner bulbs, sidewalk extensions, curb replacement, etc.). Therefore, there will be no direct or indirect adverse effects to any of the historic district properties.

Similarly, side-running stations proposed for all build alternatives could potentially relocate the Golden Triangle Streetlights. The build alternatives are adjacent to 14 Golden Triangle Light Standards (historic property) out of 149 that currently exist within the twelve-block area. As set forth in avoidance measure **A-CUL-C5**, with regard to the Golden Triangle Streetlights, proposed stations and stops would be designed to minimize or avoid the removal, relocation, or damage to these historic structures. In the event that one or more of these streetlights must be relocated, such relocation would conform to appropriate standards. The relocation and restoration/rehabilitation according to SOI Standards would minimize potential effects to the overall historic property from the construction of side-running shared or BRT-only stops under all build alternatives and would result in no direct adverse effects to this historic property. Additionally, a Certificate of Appropriateness would be required from the Historic Preservation Commission under Article 10 of the Municipal Planning Code.

Additionally, the side running stations proposed for all build alternatives could also potentially require the relocation of one or more AWSS fire hydrants (contingent on final construction plans that will be prepared following selection of a preferred alternative). Even if all 35 AWSS hydrants within the APE needed to be relocated, this would constitute four percent or less of the estimated total of contributing hydrants. As set forth in avoidance measure **A-CUL-C5,** all proposed stations or stops under the build alternatives would be designed to avoid removal, relocation, or damage to these historic components of the AWSS. However, if one or more of the AWSS fire hydrants cannot be avoided, the hydrant would be relocated to another location immediately adjacent to or nearby its original location. While the relocation of any hydrants would be a direct effect to this historic property, it would not be adverse. All effort will be made first for relocation of hydrants within the immediate vicinity of their original location while maintaining placement (distance) of the hydrant within the sidewalk in respect to curb and/or adjacent buildings. In addition, any hydrant moved will be restored and/or rehabilitated and any inadvertent damage resulting from the relocation will be repaired in accordance with the SOI Standards.

Construction noise would not result in indirect adverse effects: Regulations at 36 CFR 800.5(a)(2)(v) stipulate that adverse effects to a historic property could result if a project were to introduce "audible elements that diminish the integrity of the property's significant historic features." None of these alternatives would result in indirect adverse effects to any of the 53 historic properties or associated historic districts from construction noise because none of these properties have an inherent quiet quality that is part of a property's historic character and significance. Instead,

all of the 53 historic properties are buildings or structures that have long been located along a major thoroughfare in a long-urbanized area.

No adverse effects from pedestrian bridge removal: Each build alternative proposes removal of the existing pedestrian bridge at Steiner Street. Alternatives 2, 3, and 3-Consolidated also propose the removal of the Webster Street pedestrian bridge. Elements of the AWSS (pipelines and cisterns) are located near the pedestrian bridges in both locations. However, the cisterns are not located directly beneath the pedestrian bridges and conform to the grade of the existing roadway, and the pipelines are located underground, as previously described in Section 4.5.2.3.2. Therefore, no adverse effects to the AWSS would be expected from demolition of either pedestrian bridge.

The Webster Street demolition activity would be conducted in the vicinity of two historic properties, the St. Francis Square Cooperative and Japan Center. All proposed work would be conducted within the existing right-of-way. There would thus be no potential to directly affect either of these historic resources. While the setting of each resource would be altered by the removal of the bridge, the relationship between these historic properties and the transportation corridor would not be significantly altered, so no indirect adverse visual effect would occur.

DEFINITION

CATEGORY I: Reinforced concrete buildings with steel or timber (no plaster)

CATEGORY II: Engineered concrete and masonry buildings (no plaster)

CATEGORY III: Non-engineered timber and masonry buildings

CATEGORY IV: Buildings extremely susceptible to vibration damage

Historic structure susceptibility to vibration effects depends on impact distance: As further discussed in Section 4.11 (Noise and Vibration) the vibration from most rubber-tired construction vehicles moving slowly through the construction area would not be expected to result in adverse vibration effects. Impact equipment, such as vibratory rollers, hoe rams, small bulldozers loaded trucks, and jackhammers would be used during construction for utility relocation, asphalt removal and repaving and the construction of project elements. Construction of the build alternatives would not require construction activities, such as pile driving or underground tunneling that produce high levels of vibration.

FTA has developed impact criteria for four types of buildings. Commercial type multiple-storied structures are generally represented by Categories I and II. Typical wood-framed residences fall under Category III, while any structurally fragile buildings (i.e., historical structures) fall under Category IV. The impact criteria are presented in Table 4.5-4. The vibration levels generated by construction equipment and vibration distances at which short-term construction vibration impacts may occur are shown in Table 4.5-5. The vast majority of intensive construction work would be associated with the creation of new center-running bus-only lanes and the filling of the Fillmore Street underpass. These activities would occur in the western portion of the City, where the most susceptible historic building types (category IV) are least likely to occur. Notwithstanding, until a preferred alternative is selected and design plans advanced, precise levels of construction activity and thus vibration levels at specific buildings is unknown. To avoid or minimize any potential effect upon historic structures during construction, Minimization measures **MIN-CUL-C1** through **MIN-CUL-C4** (detailed below) would set forth appropriate standards for the potential use of vibration-causing equipment in the vicinity of vibration-sensitive buildings.

Table 4.5-4 Construction Vibration Damage Criteria

BUILDING CATEGORY	PPV (IN/SEC)	APPROXIMATE L_V
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage (historic structures)	0.12	90

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006

Table 4.5-5 Vibration Velocities for Construction Equipment

EQUIPMENT	PPV AT 25 FEET (INCHES/SECOND)	IMPACT DISTANCE FOR BUILDING CATEGORY, (FT)			
		I	II	III	IV
Vibratory Roller	0.210	14	19	25	36
Hoe Ram	0.089	7	11	14	20
Jackhammer	0.035	4	5	7	11
Loaded Trucks	0.076	7	10	13	18
Small Bulldozer	0.003	1	1	2	2

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006

Construction Effects Unique to Alternative 2

Alternative 2 proposes new side-running bus-only lanes in the rightmost lane of the Geary corridor from 34th to Van Ness Avenue, continuing onto existing bus-only lanes from Van Ness Avenue to the Transbay Transit Center. The new lanes would be in close proximity to historic properties along the Geary corridor.

Bus lane and station construction: Construction of the new lanes and proposed new stations would not cause any change in use or physical features of the setting that may contribute to a property's historical significance. However, vibration effects (from vibratory rollers) used during installation of right-of-way improvements as well as associated utility relocation/demolition activities could cause physical damage or alteration to historic properties. Adherence to minimization measures **MIN-CUL-C1** through **MIN-CUL-C4** would avoid or lessen any such effects such that no adverse effect would be expected to occur.

Alternative 2 would include construction of new westbound local stops at the intersections of Geary Boulevard and Webster Street and Geary Boulevard and Buchanan Street. These stops would be near or adjacent to as many as eight light standards that contribute to the Japan Center, as well as one AWSS hydrant (corner of Webster Street and Geary Boulevard). Similarly to the Golden Triangle Streetlight historic resources discussed above, the proposed stops would be designed to avoid removal, relocation, or damage to the AWSS hydrant and the eight Japan Center light standards out of 48 extant light standards that surround the three block-long Japan Center complex. The light standards are not individually eligible but are contributing elements to the eligibility of the Japan Center. As further described in Section 4.5.6, proposed stations and stops would be designed to minimize or avoid the removal, relocation, or damage to any historic resources. In the event that one or more of these elements must be relocated, such relocation would conform to appropriate SOI Standards. The relocation and restoration/rehabilitation according to SOI standards would minimize potential effects to the overall historic properties

from the construction of side-running local stop and would result in no direct adverse effects to the Japan Center and AWSS.

Construction Effects upon Historic Architectural Resources Unique to Alternatives 3 and 3-Consolidated

Alternatives 3 and 3-Consolidated propose new center-running bus lanes between 27th Avenue and Laguna Street, and new side-running bus lanes from Laguna Street to Van Ness Avenue, connecting to existing side-running bus lanes on Geary Street at Van Ness Avenue.

Alternative 3 and 3-Consolidated propose raising Geary Boulevard to grade between Fillmore and Steiner Streets by filling of the Fillmore Street underpass. This construction activity would be conducted in the vicinity of three historic properties, the St. Francis Square Cooperative, the Japan Center, and the AWSS. These potential effects are addressed below.

Bus lane and station construction: Similar to Alternative 2, construction of the new lanes and proposed new stations would not cause any change in use or physical features of setting that may contribute to a property's historical significance. However, median stations and/or stops would be in the direct vicinity of cisterns and valves that contribute to the AWSS. As previously discussed, all proposed stations or stops under these alternatives would be designed to avoid removal, relocation, or damage to these historic components of the AWSS; thus resulting in a finding of no direct adverse effect. Furthermore, in the event relocation is necessary, these resources would be restored and/or rehabilitated in accordance with the SOI Standards.

Vibration effects (from vibratory rollers) used during installation of right-of-way improvements as well as associated utility relocation/demolition activities could cause the physical damage or alteration to historic properties. Adherence to minimization measures **MIN-CUL-C1** through **MIN-CUL-C4 w**ould avoid or lessen any such effects such that no adverse effect would be expected to occur.

Filling the Fillmore Street underpass: All proposed construction work would be conducted within the existing right-of-way; therefore, there is no potential to directly affect nearby historic resources (the St. Francis Square Cooperative and the Japan Center). While the setting would be somewhat altered by the new at-grade intersection roadway, the relationship between these historic properties and the transportation corridor would not be significantly altered, therefore this project component would not result in an indirect adverse visual effect (36 CFR 800.5[a][2][iv] and [v]) as the integrity of each of these properties' significant features and use, both of which contribute to its historic significance, would remain unchanged. No indirect effect from construction vibration would occur at either of the historic properties as application of minimization measures (Section 4.5.5) would avoid and/or minimize adverse effects to historic properties.

Components of the AWSS are located within the existing right-of-way in this location, including cisterns, valves, and pipelines. However, as previously discussed, if any of the AWSS components would be affected, they would be relocated in close vicinity to their original location. Furthermore, they would be restored and/or rehabilitated and any inadvertent damage resulting from the relocation will be

repaired in accordance with the SOI Standards. Therefore, no adverse effects would result.

Construction Effects upon Historic Architectural Resources Unique to the Hybrid Alternative/LPA

The Hybrid Alternative/LPA's effects on historic architectural resources would be the same as those described above for Alternatives 3 and 3-Consolidated, with the exception of the filling of the Fillmore underpass. The Hybrid Alternative/LPA does not include filling of the underpass. Similar to Alternative 2, construction of the Hybrid Alternative/LPA would also include construction of new westbound local stops at the intersection of Geary Boulevard and Webster Street. Therefore, the proposed stops would be designed to avoid removal, relocation, or damage to the single AWSS hydrant and the eight contributing Japan Center light standards as described for Alternative 2. In the event that one or more of these elements must be relocated, such relocation would conform to appropriate SOI standards. The relocation and restoration/rehabilitation according to SOI standards would minimize potential effects to the overall historic property from the construction of side-running local stop and would thus result in no adverse effect to this historic property.

No adverse effect findings: Each of these alternatives would have some potential indirect effects from the introduction of visual elements that differ based on components unique to each alternative, as previously described. However, these effects are negligible and do not diminish the integrity of location, setting, feeling, association, workmanship, design, or materials for any historic property, particularly with the adherence to avoidance and minimization measures incorporated herein (refer to Section 4.5.5, Avoidance, Minimization, and Mitigation Measures). Therefore, none of the alternatives would result in any adverse effect finding on the historic properties within and adjacent to the APE.

4.5.4.2.3 CONSTRUCTION EFFECTS UPON PALEONTOLOGICAL RESOURCES

Construction of improvements associated with the No Build Alternative would not require excavation or ground-disturbing activities to depths that would likely expose or damage any paleontological resources.

Similarly, Alternative 2's improvements would generally be surficial and would occur in areas with low potential to yield paleontological resources.

Alternatives 3, 3-Consolidated, and the Hybrid Alternative/LPA include construction aspects that would require deeper than surficial excavation. All three of these alternatives would require relocation of sewers in several blocks in the vicinity of Park Presidio Boulevard. Such utility work would require excavation up to 16 feet in depth. However, this portion of the Geary corridor is underlain by geologic layers with relatively low potential to encounter paleontological resources.

Alternatives 3 and 3-Consolidated include filling the Fillmore underpass area. An optional task associated with this effort is the excavation and decommissioning (and potential removal) of the existing pump station. However, geologic layers underlying this portion of the Geary corridor are composed of bedrock, which is considered to have a low potential to yield paleontological resources.

4.5.4.3 | OPERATIONAL EFFECTS

4.5.4.3.1 OPERATIONAL EFFECTS UPON ARCHAEOLOGICAL RESOURCES

Operational effects related to archaeological resources are generally rare for a project like the Geary Corridor BRT, as effects are most often due to construction and other ground-disturbing activities that would increase the potential risk to unknown and previously unrecorded archaeological resources that may exist below the ground surface on Geary corridor.

No Build Alternative – Operational Effects upon Archaeological Resources

Under the No Build Alternative, transit and transportation facilities and services would remain unaltered except for changes that are currently planned or programmed to be implemented on the Geary corridor by 2020.

Under the No Build Alternative, Geary bus service would continue and existing parking, through traffic, and turning vehicle-movements would remain unchanged. Once improved bus technology, signaling, and pedestrian facilities was in place, there would be no risk of uncovering archaeological resources from operation of these improvements as the Geary corridor is already used for transportation purposes in a highly urbanized area.

Build Alternatives – Operational Effects upon Archaeological Resources

Implementation of the build alternatives would include designated bus-only lanes, improved bus service, enhanced bus technology, and installation of transit signal priority. Additionally, the build alternatives would include improved pedestrian facilities for safety, such as corner bulbs, curb ramps, and enhanced bus station amenities. Operation of these features would not pose a risk of uncovering archaeological resources as most potential risks associated with disturbing archaeological resources would occur during construction. With implementation of the build alternatives, the Geary corridor would continue to remain for transportation and transit use.

4.5.4.3.2 OPERATIONAL EFFECTS UPON HISTORIC ARCHITECTURAL RESOURCES

No Build Alternative – Operational Effects upon Historic Architectural Resources

The No Build Alternative would generally maintain existing transit and transportation facilities except for changes that were previously approved to be implemented on the Geary corridor by 2020. Such improvements include transit signal priority, pavement maintenance, and other activities that are typical for a roadway. Operation of such improvements would occur within the existing right-of-way and would have no potential to effect historic properties within the Geary corridor.

Build Alternatives – Operational Effects upon Historic Architectural Resources

No operational noise or vibration effects: None of the build alternatives would result in indirect adverse effects to any of the 53 historic properties or associated historic districts from operational noise because none of these properties have an inherent quiet quality that is part of a property's historic character and significance. Additionally, none of these alternatives would cause indirect adverse effects from

operational vibration as buses have rubber tires and suspension systems that isolate vibrations from the ground. Furthermore, the Geary corridor is already a high capacity transit way for buses, so BRT service would not represent a major change in the operational noise of vibration associated with the roadway.

Bus lane operation: As the new bus lanes would be created by reconfiguring existing lanes and not adding new lanes, Alternative 2 would not cause an indirect visual effect to any historic property lining the Geary corridor.

Similar to Alternative 2, the side-running bus-only lane is proposed in Alternatives 3, 3-Consolidated, and the Hybrid Alternative/LPA east of Gough Street and west of 27th Avenue, and would be in close proximity to historic properties along the corridor. From a visual perspective, the new bus lane would be created by reconfiguring existing lanes, not adding new lanes, and thus would not cause an indirect visual effect to any historic property. The center bus-only lane portions of Alternatives 3 and 3-Consolidated (Gough Street to 27th Avenue) and the Hybrid Alternative/LPA (Palm Avenue to 27th/28th Avenue), would be far enough away from historic properties so as not to result in any adverse effects. Additionally, the Geary Corridor is already a high capacity transit way for buses so BRT service would not represent a major change in the character of the roadway.

New station operations: Operation of new side-running stations and stops have the potential to create indirect visual effects. In Alternative 2, new BRT/local stations would be constructed in new bus bulbs that would be adjacent to 31 historic properties. BRT-only and local stops within the median would be far enough away to not cause any adverse effects to historic properties; therefore, only side-running stations and stops have potential for indirect visual effects. Similar to Alternative 2, no side-running BRT-only stations are proposed in Alternative 3. However, Alternative 3-Consolidated would include the construction of BRT-only stations that would operate near 41 historic properties and a proposed shared station near one historic property. Alternatives 3 and 3-Consolidated would not cause any indirect adverse effects to any of the 53 historic properties or associated new visual elements as all of the historic properties are currently served by automobile routes and Muni bus lines. Notwithstanding the Uptown Tenderloin Historic District and Golden Triangle Streetlight and Japan Center light standards discussed above, the new stations and relocated bus shelters would be far enough away from the historic properties as to not create an indirect visual effect to the historic properties within and adjacent to the APE. Thus operation of the proposed BRT stations and new and relocated local bus stops would not alter the relationship of any historic building or associated district to its transportation corridor.

Filling the Fillmore Street Underpass: Implementation of Alternatives 3 and 3-Consolidated in the long-term would include operation of the new at-grade roadway at Fillmore Street and Geary Boulevard. This would somewhat alter (or restore) the setting, the extent of alteration would be minor in terms of the resources. Therefore, there would be no adverse visual effect upon these resources.

4.5.4.3.3 OPERATIONAL EFFECTS UPON PALEONTOLOGICAL RESOURCES

Similar to the operational archaeological effects discussion, potential effects to paleontological resources are generally due to construction and other ground-disturbing activities that would increase the potential risk to unknown and previously unrecorded resources that may exist below the ground surface on Geary

corridor, and operational effects are generally unlikely. Operation of the No Build and build alternatives would not pose a risk of uncovering paleontological resources as most potential risks associated with disturbing paleontological resources would occur during construction. Furthermore, geologic layers underlying this portion of the Geary corridor are composed of bedrock, which is considered to have a low potential to yield paleontological resources. The Geary corridor would continue to remain for transportation and transit use.

4.5.4.4 | COMPARATIVE EFFECTS OF ALTERNATIVES

As demonstrated in the preceding subsections, all project alternatives are similar in that none of the alternatives (No Build or build alternatives), would adversely affect historic architectural resources, archaeological resources, or paleontological resources. All build alternatives feature minimization measures to avoid or minimize any potential effects to cultural resources.

4.5.5 | Avoidance, Minimization, and/or Mitigation Measures

Operation of any of the project alternatives would not result in any adverse effects upon cultural resources.

However, the following avoidance, minimization, and improvement measures are proposed to be implemented as part of the construction of any of the build alternatives to avoid or minimize any potential effects upon archaeological, historic architectural, or paleontological resources.

4.5.5.1 | CONSTRUCTION MEASURES

MIN-CUL-C1. Limit the use of construction equipment that creates high vibration level, such as vibratory rollers.

MIN-CUL-C2. Develop and implement a Vibration Reduction and Minimization Plan, which would include the identification of vibration-sensitive structures using distance impact thresholds.

MIN-CUL-C3. During advanced conceptual engineering or final design phases, an individual assessment of vibration-sensitive structures' would be conducted where construction activities and equipment would exceed FTA's impact distance guidance for category IV structures.

MIN-CUL-C4. Conduct vibration monitoring during construction.

A-CUL-C5. Design proposed stations and stops in the vicinity of the Golden Triangle Streetlights, Japan Center light standards, and components of the AWSS to avoid the removal, relocation, or damage to these historic structures.

OR

MIN-CUL-C6. In the event that avoidance of the Golden Triangle Streetlights, Japan Center light standards, and AWSS are infeasible, all effort will be made first for relocation of such elements within the immediate vicinity of their original location while maintaining placement (distance) within the sidewalk in respect to curb and/or adjacent buildings. For the light standards, additional effort would be made to relocate a light standard within the same block if there is a site where the original light standard has been removed or replaced by modern standards; and last,

relocation to an available site within the historic property boundary where an original standard has been removed or replaced by modern standards.

I-CUL-C7. Harmonize the visual qualities of built elements of the project alternatives with adjacent historic properties through careful consideration of design, lighting, materials, and color choices that would complement and be sensitive to nearby historic properties.

MIN-CUL-C8. Focused archival research will identify any specific areas within the APE that may be likely to contain potentially significant remains, and methods and findings will be documented as an addendum to the current report. The Phase I addendum report will be submitted to the City's Environmental Review Officer (ERO) and the SHPO for concurrence. Research will be initiated once the project's APE map is finalized identifying the major Areas of Direct Impact. The Addendum Survey Report would include:

- A contextual and documentary research section that addresses the development of urban infrastructure that provides a basis for evaluating potential resources as they relate to the history of San Francisco.
- A cut-and-fill reconstruction of the corridor, comparing the modern versus mid-1800s ground surface elevations, to fine-tune the initial prehistoric sensitivity assessment, and refining the location of high-sensitivity locations where prehistoric remains may be preserved.
- Relevant profiles and plan views of specific blocks to illustrate the methods used in analyzing available documentation.
- Summary and conclusions to provide detailed information on locations that have the potential to contain extant historic-era and prehistoric archaeological remains that might be evaluated as significant resources, if any.

Two results are possible based on documentary research:

- No or low potential for sensitive locations: major Areas of Direct impact have no potential to retain extant archaeological remains that could be evaluated as significant resources. No further work would be recommended, beyond adherence to the Unanticipated Discovery Plan.
- Potential sensitive locations: if major Areas of Direct Impact contain locations with moderate to high potential to retain extant historic or prehistoric archaeological remains that could be evaluated as significant resources, further work would be carried out, detailed in a Testing and Treatment Plan.

MIN-CUL-C9. Depending on the results of archival research, in concert with the City's ERO, project avoidance areas or, more likely, areas requiring presence/absence investigations for cultural resources will be identified and fieldwork undertaken following exposure of the ground surface, but prior to construction to identify buried cultural resources.

MIN-CUL-C10. A Testing and Evaluation/Treatment Plan, if required, will provide archaeological protocols to be employed immediately prior to project construction to test areas identified as potentially significant or having the potential to contain buried cultural resources. In case such areas might be unavoidable,

minimization measures will be proposed. The procedures detailed in the Treatment Plan would be finalized in consultation with the City's ERO and the SHPO.

For historic-era resources, work would initially entail detailed, focused documentary research to evaluate the potential significance of any archaeological material identified during initial research that might be preserved. Significance would be based on the data-potential of possible remains applied to accepted research designs. Two results could ensue:

- No potentially significant remains: if no locations demonstrate the potential for significant remains, no further archaeological testing would be recommended.
- Potentially significant remains: if any locations have the potential to contain significant remains, then appropriate field methods will be proposed, including compressed testing and data-recovery efforts. Testing will be initiated immediately prior to construction, when there is access to historic ground levels. Should a site or site feature be found and evaluated as potentially significant, data recovery would take place immediately upon discovery if avoidance of the site is still not possible.

For prehistoric resources, a Treatment Plan will identify relevant research issues for resource evaluation, and pragmatic methods to identify, evaluate, and conduct data recovery if needed. This may include a pre-construction geoarchaeological coring program or a compressed three-phase field effort occurring prior to construction when the ground surface is accessible.

MIN-CUL-C11. Upon completion of all fieldwork, a technical report shall be prepared. This Final Archaeological Resources Report (FARR) shall document all field and laboratory methods, analysis, and findings. The FARR shall be subject to review and approval by the City's ERO and the SHPO. Copies of the approved FARR shall be submitted to the City's ERO, the SHPO, and the Northwest Information Center (NWIC), together with any associated archaeological site records.

MIN-CUL-C12. If buried cultural resources are encountered during construction activities, construction will be halted and the discovery area isolated and secured until a qualified archaeologist assesses the nature and significance of the find.

MIN-CUL-C13. If human remains are discovered, the County coroner will be notified as soon as is reasonably possible (CEQA Section 15064.5). There will be no further site disturbance where the remains were found. If the remains were determined to be Native American, then the coroner is responsible for contacting the California Native American Heritage Commission (NAHC) within 24 hours. The NAHC, pursuant to Public Resources Code (PRC) Section 5097.98 will notify those persons it believes to be the most likely descendant (MLD). Treatment of the remains will be dependent on the views of the MLD.

MIN-CUL-C14: In the event that paleontological resources are encountered during any phase of project construction, all soil-disturbing activity within 100 feet of the find shall be temporarily halted until a qualified paleontologist can assess the significance of the find and provide proper management recommendations.