

E.1.7 Cultural and Paleontological Resources

Section E.1.7 covers both Cultural and Paleontological Resources. Sections E.1.7.1 through E.1.7.4 refer only to Cultural Resources and Sections E.1.7.6 through E.1.7.10 refer only to Paleontological Resources.

Cultural Resources

E.1.7.1 Environmental Setting

The Interstate 8 Alternative extends from the Imperial Substation in Imperial County nearly to the City of Poway, in the vicinity of the Inland Valley to Coastal Link transition zone. As a result, this alternative passes through nearly all of the climatic zones and cultural regions identified in the complete cultural setting provided in Appendix 9A. In brief summary, these zones include: the Colorado desert, which most often provides evidence of Late Prehistoric Period occupation including ceramic and lithic artifact scatters, as well as historic transportation and water control features; the San Diego Mountains, whose prehistoric sites most frequently include bedrock milling features, and historic sites typically indicate ranching and mining activities; and the inland valleys, a transition zone between the mountains and coast with prehistoric sites bearing appropriate transitional evidence such as bedrock milling, lithic artifact scatters, and temporary camps and habitations, while historic sites contain evidence of settlement and ranching throughout the Mexican and American periods.

The Interstate 8 Alternative is 94.12 miles long and a cultural resources records search was conducted for its entire length, using a 0.5-mile search radius around the alternative. To date, archaeologists from EIR/EIS consultants Applied EarthWorks, Inc. (AE) and SWCA Environmental Consultants (SWCA) have completed intensive cultural resources survey for 29.3 percent (27.58 miles) of the Interstate 8 Alternative on behalf of the CPUC and BLM. An additional 8.88 percent (8.35 miles) of the alternative would be constructed underground in existing paved roads in the community of Alpine. For the underground portion of the Interstate 8 Alternative, an SWCA archaeologist conducted a reconnaissance “windshield” survey, inspecting and noting all buildings and structures that appeared historic in age located adjacent to the alignment. A total of 38.18 percent (35.93 miles) of the Interstate 8 Alternative has been visually inspected for cultural resources through a combination of the intensive pedestrian survey and reconnaissance survey results. An SWCA architectural historian also inspected specific resources along this alternative to consider the NRHP eligibility of the resources, as well as the potential of the construction and long-term presence of this alternative to impact these resources. Permission for cultural resources records search data was requested but not granted for any Native American reservations within the SRPL alternatives study areas. Specifically, 3.31 miles (3.52 percent) of the Interstate 8 Alternative are located within the Campo Indian Reservation (Campo), 1.94 miles (2.06 percent) of the Interstate 8 Alternative are located within the La Posta Indian Reservation (La Posta), and 0.02 miles (0.02 percent) of the Interstate 8 Alternative are located within the Viejas Indian Reservation (Viejas); no cultural resources records search data was acquired nor was survey conducted for any lands within these reservations.

Sites exhibiting a broad range of past human activity have been identified within the Interstate 8 Alternative. These include, but are not limited to, prehistoric artifact scatters, trails, temporary camps, habitation sites, quarries, and isolates, and historic roads, highways, railroads, refuse scatters, quarries, and walls. A total of 206 cultural resources has been identified within the 300-foot-wide study corridor for the Interstate 8 Alternative (see Table Ap.9B-83 in Appendix 9B).

- Forty-seven (47) of the 206 resources are isolates, typically defined as three or fewer artifacts not associated with a defined, discrete archaeological site, and therefore not eligible for NRHP or CRHR inclusion.
- Of the 159 resources that are not isolates, 145 are prehistoric in age; one is multi-component with both historic and prehistoric aspects; 10 are historic era resources, while the age and affiliation of three sites is unknown.
- The Interstate 8 Alternative crosses the San Diego & Arizona Eastern Railroad, which, as a whole, has been recommended NRHP-eligible under Criteria A, C, and D by SWCA. Features and portions of this railroad outside the Interstate 8 Alternative alignment have been determined not eligible in the past; however, it is likely that other portions of this historically significant railroad remain NRHP and CRHR eligible.
- The Interstate 8 Alternative is partially located within the historical Old Highway 80. This former intercontinental highway once called the “Broadway of America” has been designated as a County of San Diego “Historic Route” and has been nominated as a “State Historic Route.” A 33-mile portion of the route that includes the Interstate 8 Alternative area has been recommended eligible for NRHP and CRHR under Criteria A and C, with specific contributing and non-contributing elements (Lortie, 2000).
- Site CA-SDI-6706, a large prehistoric habitation site with numerous features, is known to contain human remains.
- The Desert View Tower (CHL 939), a cylindrical stone-masonry tower at a roadside attraction near the San Diego–Imperial County line, is NRHP/CRHR-listed under Criteria A and C. This historic architectural resource is located within 0.5 miles of the Interstate 8 Alternative.

Of the 206 resources within this alternative alignment: 112 were identified during previous cultural surveys; 50 were recorded by Gallegos & Associated during surveys for the Proposed Project yet also fall within the 300-foot-wide survey corridor of this alternative; 44 resources were newly recorded by SWCA and AE (2007a).

Native American consultation indicated that there are many cultural resources and landscape features important to local Native Americans in the vicinity of the Interstate 8 Alternative. Important landscape features include springs, mountains, travel corridors, and viewsheds.

E.1.7.2 Environmental Impacts and Mitigation Measures

Table E.1.7-1 summarizes the cultural resources impacts of the Interstate 8 Alternative.

Table E.1.7-1. Impacts Identified – Interstate 8 Alternatives – Cultural Resources

Impact No.	Description	Impact Significance
Interstate 8 Alternative		
C-1	Construction of the project would cause an adverse change to known historic properties	Class I or II
C-2	Construction of the project would cause an adverse change to sites known to contain human remains	Class I
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II

Table E.1.7-1. Impacts Identified – Interstate 8 Alternatives – Cultural Resources

Impact No.	Description	Impact Significance
C-5	Operation and long-term presence of the project would cause an adverse change to known historic properties	Class I or II
C-6	Long-term presence of the project would cause an adverse change to known historic architectural (built environment) resources	Class II
Interstate 8 Alternative Substation		
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
Campo North Option		
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
Buckman Springs Underground Option		
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
West Buckman Springs Option		
C-1	Construction of the project would cause an adverse change to known historic properties	Class II
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
C-5	Operation and long-term presence of the project would cause an adverse change to known historic properties	Class I or II
South Buckman Springs Option		
C-1	Construction of the project would cause an adverse change to known historic properties	Class II
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
C-5	Operation and long-term presence of the project would cause an adverse change to known historic properties	Class I or II
Chocolate Canyon Option		
C-1	Construction of the project would cause an adverse change to known historic properties	Class II
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
C-5	Operation and long-term presence of the project would cause an adverse change to known historic properties	Class I or II
Future Transmission System Expansion for Interstate 8		
C-1	Construction of the project would cause an adverse change to known historic properties	Class II
C-3	Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains	Class I or II
C-4	Construction of the project would cause an adverse change to Traditional Cultural Properties	Class I or II
C-5	Operation and long-term presence of the project would cause an adverse change to known historic properties	Class I or II

There are 206 known cultural resources located within the 300-foot-wide survey corridor for the Interstate 8 Alternative. There is also the potential to encounter undiscovered cultural resources during additional surveys or project construction. Forty-seven (47) of the cultural resources within in the Interstate 8 Alternative are isolates not eligible for NRHP or CRHR inclusion; impacts to these resources would not be adverse. Two resources, Old Highway 80 and the San Diego & Arizona Eastern Railroad, are recommended NRHP-eligible. One prehistoric village site (CA-SDI-6706) is known to contain human remains and is presumed NRHP/CRHR-eligible. The NRHP/CRHR eligibilities of the remaining 152 resources have not been determined. Formal eligibility determinations would be made by the BLM prior to construction for any resources that would be affected if the Interstate 8 Alternative is selected and built. Because known cultural resources that are potentially eligible for the NRHP or CRHR exist within the alternative corridor, as well as the potential for encountering undiscovered cultural resources, the following impacts would occur during project construction or operation.

Impact C-1: Construction of the project would cause an adverse change to known historic properties (Class I or II)

As currently mapped, 99 of the sites identified within the Interstate 8 Alternative are located in areas of direct impact (see Table Ap.9B-84 in Appendix 9B). One linear cultural resource, Old Highway 80 (P-37-024023) would be directly impacted by the Interstate 8 Alternative. This resource has been recommended eligible for listing on the NRHP and CRHR. Prehistoric archaeological site CA-SDI-6706, partially located within the Interstate 8 Alternative, is known to contain human remains and is therefore presumed eligible. Other sites to be impacted include historical trail segments, bedrock milling sites, temporary camps, lithic and ceramic scatters, as well as a historic era quarry. An additional 152 known cultural resources located within 150 feet of the alternative centerline are potentially eligible for NRHP or CRHR listing. Prehistoric resources along the Interstate 8 Alternative include village and habitation sites, temporary camps, rockshelters, lithic and ceramic artifact scatters, roasting pits, bedrock milling features, trails, and isolated artifacts. Historical resources within 150 feet of the alternative centerline include residential and industrial buildings, artifact scatters, roads, railroads, cairns, mines, quarries, and isolated artifacts.

A portion of the Interstate 8 Alternative would be constructed underground within Alpine Boulevard; from approximately MP 74.3 to MP 80 of this underground segment, Alpine Boulevard is also Old Highway 80. As projected on the basis of the known distribution and density of resources along the Interstate 8 Alternative, as many as 331 additional resources, including isolated resources, could be encountered during additional surveys conducted prior to construction. These might include prehistoric artifact scatters, temporary camps, bedrock milling stations, habitation sites (possibly including human burials or cremations), or historic roads or refuse pits. As discussed in Section D.7.9, potentially adverse construction impacts would be mitigated to a level less than significant (Class II) by implementing Mitigation Measures C-1a, C-1b, C-1c, C-1d, C-1e, and C-1f. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties

- C-1a** **Inventory and evaluate cultural resources in Final APE.**
- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1e** **Monitor construction.**
- C-1f** **Train construction personnel.**

C-1g Avoid and protect Old Highway 80 (P-37-024023). A portion of the Interstate 8 Alternative would be constructed underground within Alpine Boulevard; from approximately MP 74.3 to MP 80 of this underground segment, Alpine Boulevard is also Old Highway 80. Construction impacts to contributing elements of this resource shall be minimized by avoidance of highway segments that retain integrity, as well as associated historic road signs and monuments located on the shoulder. If avoidance is not possible, affected segments shall be formally evaluated to assess their contribution to the NRHP eligibility of the resource as a whole. Additional protective measures are required to reduce adverse effects include formal documentation (i.e., HABS/HAER), and interpretive signage.

Impact C-2: Construction of the project would cause an adverse change to sites known to contain Native American human remains (Class I)

One archaeological site known to contain human remains (CA-SDI-6706) would be adversely affected by construction of the Interstate 8 Alternative (see Table Ap.9B-85 in Appendix 9B). It is also possible that additional prehistoric archaeological sites identified during pre-construction surveys or discovered during the course of construction could contain human remains. Any adverse effect to human remains is considered significant (Class I). CR-APM-3 outlines procedures for the treatment of unanticipated discoveries during construction; however, this APM is superseded by Mitigation Measures C-1b, C-1c, C-1d, C-1e, C-1f, and C-2a. Impacts to human remains would be partially mitigated by implementing Mitigation Measure C-2a; however, the impacts would still be considered significant (Class I). Impacts to Native American human remains are considered an adverse effect, even after mitigation (36 CFR 800).

Mitigation Measures for Impact C-2: Construction of the project would cause an adverse change to sites known to contain Native American human remains

- C-1b Avoid and protect potentially significant resources.**
- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1e Monitor construction at known ESAs.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the Interstate 8 Alternative include prehistoric resources such as buried living surfaces, artifact deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits, privies, and structural foundations. Buried archaeological resources may be encountered during vegetation removal at tower and pull site locations, grading of access roads, or excavation associated with tower construction or undergrounding of power lines. Impacts to most unknown significant prehistoric and historic archaeological sites would be significant but would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**
- C-3a Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no Traditional Cultural Properties (TCPs) have been identified that would be directly impacted by the Interstate 8 Alternative. However, Native American consultation has indicated that there are prehistoric rock art sites, springs, and sacred mountains in the vicinity of this alternative. Additionally, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations.

The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA, has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. BLM consultation with Viejas Tribal Government has indicated that Viejas has concerns about cultural resources in its vicinity. The presence of sensitive archaeological sites in this alternative suggests that future consultation with the Tribes could identify TCPs, but as of December 12, 2007, no areas of specific concern have been identified, nor have these concerns indicated that the Interstate 8 Alternative has the potential to impact TCPs. Though impacts to TCPs are often significant and unmitigable (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant levels (Class II).

Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), with creative approaches to reduce direct impacts to the qualities that make these places culturally, spiritually, or religiously important. Such mitigation could include avoidance of direct physical impacts, screening of visual impacts, or even payment of compensatory damages. Nonetheless, impacts to TCPs normally will result in significant impacts (Class I), even after mitigation.

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

- C-4a Complete consultation with Native American and other Traditional Groups.**

Impact C-5: Operation and long-term presence of the project would cause an adverse change to known historic properties (Class I or II)

Direct and indirect impacts would occur to historic properties within and in the vicinity of the project area during operation and long-term presence of the project. There are two linear historical resources (Old Highway 80 and the San Diego & Arizona Eastern Railroad) recommended eligible for NRHP,

one prehistoric village site (CA-SDI-6706) presumed NRHP-eligible, and 152 other known resources that may be register eligible located within the Interstate 8 Alternative that are potentially subject to long-term and operational impacts. Direct impacts to these resources or other newly identified resources could result from maintenance or repair activities, while increased erosion could result as an indirect project impact. These impacts would be significant, but would be mitigated to a level that is less than significant (Class II) by implementing site protection measures and monitoring procedures, as detailed in Mitigation Measure C-5a (Protect and monitor NRHP and/or CRHR-eligible properties), as well as implementation of Mitigation Measures C-2a (Properly treat human remains) and C-4a (Complete consultation with Native Americans and other traditional groups). Impacts to human remains would remain significant (Class I).

Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties

- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-2a** **Properly treat human remains.**
- C-4a** **Complete consultation with Native American and other Traditional Groups.**
- C-5a** **Protect and monitor NRHP and/or CRHR-eligible properties.**

Impact C-6: Long-term presence of the project would cause an adverse change to known historic architectural (built environment) resources (Class II)

The presence of transmission lines and towers would result in an indirect visual impact to historic architectural resources. Four historic architectural or built environment resources within 0.5 miles of the Interstate 8 Alternative were considered by SWCA (2007) for indirect visual impacts (see Table Ap.9B-86 in Appendix 9B). These resources include Old Highway 80, the San Diego & Arizona Eastern Railroad (SD&AE), and two resources not within the 300-foot-wide study corridor, but located within 0.5-mile of the alternative centerline. The resources outside the study corridor but potentially subject to visual impacts are the NRHP/CRHR-listed Desert View Tower (CHL 939), a cylindrical stone-masonry tower at a roadside attraction near the San Diego–Imperial County line, and the presumed NRHP/CRHR-eligible Westside Main Canal (P-13-008334/CA-IMP-7834). Visual impacts would not be significant to the SD&AE or the Westside Main Canal as there are numerous existing powerlines visible from these resources in the vicinity of this alternative.

Visual impacts to Old Highway 80 would be adverse for certain portions of the resource, particularly in the Bankhead Springs area; other portions of Old Highway 80 are crossed by existing powerlines and/or have been greatly modified from the period of significance. Visual intrusions associated with the construction of towers along the Interstate 8 Alternative would compromise the integrity of setting and feeling for those segments of Old Highway 80 that retain these aspects of integrity. As historic properties must retain sufficient integrity in addition to meeting at least one of the four NRHP eligibility criteria, visual impacts which degrade the integrity of setting and feeling for any historic property would be considered adverse.

Visual impacts to the NRHP-listed Desert View Tower would be adverse. The tower is listed under Criteria A (association with important events in history) and C (architecture) and the incredible vistas over the desert and other historic resources such as Old Highway 80 from the tower are part of its significance as evaluated through integrity of feeling, setting, and association. Although a small portion of the existing SWPL transmission line is visible from the Desert View Tower, the Interstate 8 Alternative

would be constructed closer to the Tower, and at a higher elevation, constituting a more substantial visual intrusion. These impacts are significant, but would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-6a, C-6e, C-6f, and V-3a.

Mitigation Measures for Impact C-6: Long-term presence of the project would cause an adverse change to known historic architectural (built environment) resources

C-6a Reduce adverse visual intrusions to historic built environment properties.

C-6e Reduce adverse visual intrusions to portions of Old Highway 80. Visual intrusion by the aboveground portion of this alternative, on portions of Old Highway 80 that retain integrity of setting shall be minimized by a combination of minimizing tower height, screening, and painting towers to match the surroundings. In addition, since segments of Old Highway 80 would be crossed by the overhead portion of the alternative, compensatory mitigation including new signage shall be employed. If this alternative is constructed, SDG&E shall develop a protection plan for Old Highway 80 that defines resources to be protected, includes input from visual resources specialists, and evaluates a menu of protection options. The report shall be provided to the CPUC and BLM for review and approval at least 60 days before the start of construction.

C-6f Reduce adverse visual intrusions to the Desert View Tower viewshed. Visual intrusion to the Desert View Tower viewshed, caused by the aboveground portion of this alternative shall be minimized by a combination of minimizing tower height, screening, and painting towers to match the surroundings. Specific measures to minimize visual effects to the Desert View Tower shall be developed in consultation with the owner of this resource. If this alternative is constructed, SDG&E shall develop a protection plan for the Desert View Tower viewshed that defines resources to be protected, includes input from visual resources specialists, and evaluates a menu of protection options. The report shall be provided to the CPUC and BLM for review and approval at least 60 days before the start of construction.

V-3a Reduce visual contrast of towers and conductors.

E.1.7.3 Interstate 8 Alternative Substation

The Interstate 8 Alternative Substation is 37.2 acres in size and a cultural resources records search was conducted for the entire substation and a 0.5-mile radius around it. Preliminary engineering data indicate that one additional area (15.05 acres) would also be developed in the vicinity of the Interstate 8 Alternative Substation if it is selected; this area was included within the records search. SWCA and AE archaeologists have conducted intensive cultural resources survey of 100 percent of both portions of the Interstate 8 Alternative Substation. No cultural resources have been identified within either of the Interstate 8 Alternative Substation areas.

Environmental Impacts and Mitigation Measures

No known cultural resources are located within the 37.2-acre or 15.05-acre Interstate 8 Alternative Substation areas. There remains, however, the potential to encounter undiscovered cultural resources during project construction. These resources might include prehistoric bedrock milling sites, lithic and ceramic artifact scatters, and habitation sites. Historical resources, such as refuse scatters and transportation routes, may also be encountered. Because there is the potential for encountering undiscovered cultural resources, the following impacts could occur during project construction or operation.

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered within the Interstate 8 Substation Alternative Substation include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal, grading of access roads, or excavation associated with substation construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be significant but would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**
- C-3a Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the Interstate 8 Substation Alternative. However, the Sacred Lands File search conducted for the PEA noted that lands sacred to Native Americans are present in the vicinity of the substation alternative, in an undisclosed location. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups could potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

- C-4a Complete consultation with Native American and other Traditional Groups.**

E.1.7.4 Interstate 8 Route Options

Campo North Option

The Campo North Option is 1.37 miles long and located entirely within the Campo Indian Reservation. The Campo Band of Mission Indians did not authorize cultural resources records searches or surveys for their lands. As a result, no cultural resources have been identified within the 300-foot-wide study corridor for the Campo North Option. Based on the density of prehistoric and historic period resources in the vicinity, as well as the known occupation of the area, it is assumed that cultural resources would be encountered during records search and survey of this option.

Environmental Impacts and Mitigation Measures

As noted above, no cultural resources have been identified within the Campo North Option. There is the potential to encounter undiscovered cultural resources, such as prehistoric habitation sites, during records searches, surveys, or project construction. Because there is the potential for encountering undiscovered cultural resources, the following impacts would be expected to occur during project construction or operation.

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the Campo North Option include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower and pull site locations, grading of access roads, or excavation associated with tower construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**
- C-3a Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the Campo North Option. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural

values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

C-4a Complete consultation with Native American and other Traditional Groups.

Buckman Springs Underground Option

Environmental Setting

The Buckman Springs Underground Option is generally located east of Interstate 8, on the east side of Cottonwood Valley in the Laguna Mountains. Cottonwood Valley was heavily occupied during the Late Prehistoric Period and large habitation sites with hundreds of bedrock milling features have been identified in the area; however, none have been identified within the Buckman Springs Underground Option study corridor.

The 2.38-mile Buckman Springs Underground Option would bypass and underground a portion of the Interstate 8 Alternative in the vicinity of a recreational hang-glider landing area. SWCA and AE archaeologists have conducted intensive pedestrian cultural resources survey for 100 percent of the 300-foot-wide study corridor.

- One cultural resource, a newly recorded isolated prehistoric flake (ISO-JB-12) has been identified within the Buckman Springs Underground Option (see Table Ap.9B-87 in Appendix 9B). Because this isolated artifact is not associated with a defined, discrete archaeological site, it is not eligible for NRHP or CRHR inclusion.

Environmental Impacts and Mitigation Measures

Only one cultural resource has been identified within the 300-foot-wide study corridor for the Buckman Springs Underground Option. There remains, however, the potential to encounter undiscovered cultural resources during project construction. Because there is the potential for encountering undiscovered cultural resources, the following impacts could occur during project construction or operation.

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the Buckman Springs Underground Option include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Buried archaeological resources may be encountered during vegetation removal, grading of access roads, or excavation associated with undergrounding the transmission line. Impacts to most unknown significant prehistoric and historic archaeological sites would be significant but would be miti-

gated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the Buckman Springs Underground Option. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. Additional Native American consultation currently being conducted may result in the disclosure of additional culturally sensitive areas. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA, has initiated required government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

C-4a Complete consultation with Native American and other Traditional Groups.

West Buckman Springs Option

The West Buckman Springs Option is 5.59 miles long and a cultural resources records search was conducted for its entire length using a 0.5-mile search radius around the alternative. This option would bypass a portion of the Interstate 8 Alternative. SWCA and AE archaeologists have completed intensive cultural resources survey for 38.78 percent (2.17 miles) of the West Buckman Springs Option. Prehistoric camps with bedrock milling and lithic and ceramic artifact scatters are the predominant site type within this alternative. Historic period transportation features are also present. A total of 13 cultural resources has been identified within the 300-foot-wide study corridor for the West Buckman Springs Option.

- Seven of the resources are prehistoric in age, including two lithic scatters, three temporary camps and two bedrock milling sites. The NRHP/CRHR eligibility of the seven prehistoric cultural resources have not been determined. Formal eligibility determinations would be made by the BLM prior to construction for any resources that would be affected if the West Buckman Springs Alternative is selected and built.
- One of the 13 resources is an isolate, typically defined as three or fewer artifacts not associated with a defined, discrete archaeological site, and therefore not eligible for NRHP or CRHR inclusion.
- One of the three historic resources, Old Highway 80, is recommended NRHP and CRHR eligible. The others, a historical road segment and a historical stacked rock wall are potentially eligible for the NRHP and CRHR, but have not been formally evaluated.

Seven of the resources within the West Buckman Springs Option were identified during previous cultural resources surveys; the remaining six resources were newly recorded by SWCA / AE (2007a) (see Table Ap.9B-88 in Appendix 9B).

Environmental Impacts and Mitigation Measures

As currently proposed, the West Buckman Springs Option would directly impact seven cultural resources (Table Ap.9B-89 in Appendix 9B). There is also the potential to encounter undiscovered cultural resources during additional surveys or project construction such as additional prehistoric sites with bedrock milling features. An additional 19 resources (including isolates) are likely to be encountered during additional surveys. One of the known cultural resources within in the West Buckman Springs Option is an isolate not eligible for NRHP or CRHR inclusion; impacts to this resource would not be adverse. One linear resource, Old Highway 80, is recommended NRHP-eligible. The remaining 11 resources are potentially eligible for the NRHP and CRHR.

The portion of Old Highway 80 within the West Buckman Springs Option was also considered by SWCA (2007) for indirect visual impacts. Visual impacts to Old Highway 80 may be adverse for certain portions of the resource; however, the portion of Old Highway 80 crossed by the West Buckman Springs Option is located adjacent to other modern features such as Interstate 8. Therefore, indirect visual impacts to this portion of the resource would not be significant.

Because known cultural resources that are potentially eligible for the NRHP or CRHR exist within the alternative corridor, as well as the potential for encountering undiscovered cultural resources, the following impacts would occur during project construction or operation.

Impact C-1: Construction of the project would cause an adverse change to known historic properties (Class II)

One linear cultural resource recommended eligible for NRHP and CRHR-listing, Old Highway 80 (P-37-024023), is crossed by the West Buckman Springs Option. Eleven other known cultural resources are potentially eligible for NRHP or CRHR listing. An additional 17 resources, such as bedrock milling features with lithic and ceramic scatters, are likely to be encountered during surveys conducted prior to construction. As discussed in Section D.7.9, adverse construction impacts would be mitigated to a level less than significant (Class II) by implementing Mitigation Measures C-1a, C-1b, C-1c, C-1d, C-1e, and C-1f.

Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties

- C-1a** **Inventory and evaluate cultural resources in Final APE.**
- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1e** **Monitor construction.**
- C-1f** **Train construction personnel.**

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the West Buckman Springs Option include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower and pull site

locations, grading of access roads, or excavation associated with tower construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be significant but would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**
- C-3a Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the West Buckman Springs Option. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

- C-4a Complete consultation with Native American and other Traditional Groups.**

Impact C-5: Operation and long-term presence of the project would cause an adverse change to known historic properties (Class I or II)

Direct and indirect impacts would occur to historic properties within and in the vicinity of the project area during operation and long-term presence of the project. There is one linear historical resource (Old Highway 80) recommended eligible for the NRHP located within the West Buckman Springs Option that is potentially subject to long-term and operational impacts. Any of the known archaeological sites and yet to be discovered archaeological sites that are determined register-eligible are also potentially subject to long-term and operational impacts. Direct impacts to these resources or other newly identified resources could result from maintenance or repair activities, while increased erosion could result as an indirect project impact. These impacts would be significant, but can be mitigated to a level that is less than significant (Class II) by implementing site protection measures and monitoring procedures, as

detailed in Mitigation Measure C-5a (Protect and monitor NRHP and/or CRHR-eligible properties), as well as implementation of Mitigation Measures C-2a (Properly treat human remains) and C-4a (Complete consultation with Native Americans and other traditional groups). Impacts to human remains would remain significant (Class I).

Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties

- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-2a** **Properly treat human remains.**
- C-4a** **Complete consultation with Native American and other Traditional Groups.**
- C-5a** **Protect and monitor NRHP and/or CRHR-eligible properties.**
- V-3a** **Reduce visual contrast of towers and conductors.**

South Buckman Springs Option

The South Buckman Springs Option Alternative is 4.17 miles long and a cultural resources records search was conducted for its entire length using a 0.5-mile search radius around the alternative. This option would bypass a portion of the Interstate 8 Alternative. SWCA and AE archaeologists have completed intensive cultural resources survey for 57.26 percent (2.39 miles) of the South Buckman Springs Option Alternative. Three cultural resources, including two previously recorded prehistoric sites and one newly recorded prehistoric isolate, have been identified within the 300-foot-wide study corridor for the South Buckman Springs Option Alternative.

- CA-SDI-10847 is a large, late prehistoric/ethnographic period habitation site located at a freshwater spring with 18 or more bedrock milling features, each possessing multiple milling surfaces, stacked rock walls, two rock shelters, and a large scatter of lithic and ceramic artifacts.
- CA-SDI-16233 is a bedrock milling site with a single ceramic pot sherd.
- ISO-JB-03 (temporary number) is an isolated prehistoric flake. Isolates are typically defined as three or fewer artifacts not associated with a defined, discrete archaeological site, which therefore, are not eligible for NRHP or CRHR inclusion.

Environmental Impacts and Mitigation Measures

At the time of consideration, no specific impact areas have been identified for the South Buckman Springs Option Alternative; however, three cultural resources are recorded within 150 feet of the alternative centerline (Table Ap.9B-90 in Appendix 9B). There is also the potential to encounter undiscovered cultural resources during additional surveys or project construction such as additional prehistoric habitation sites with bedrock milling features. An additional two resources (including isolates) are likely to be encountered during additional surveys. One of the known cultural resources within the South Buckman Springs Option Alternative is an isolate not eligible for NRHP or CRHR inclusion; impacts to this resource would not be adverse. The remaining two resources are potentially eligible for the NRHP and CRHR.

Because known cultural resources that are potentially eligible for the NRHP or CRHR exist within the alternative corridor, as well as the potential for encountering undiscovered cultural resources, the following impacts would occur during project construction or operation.

Impact C-1: Construction of the project would cause an adverse change to known historic properties (Class II)

Two known prehistoric cultural resources that are potentially eligible for NRHP or CRHR listing are located within the study corridor of the South Buckman Springs Option Alternative. An additional two resources, such as bedrock milling features with lithic and ceramic scatters, are likely to be encountered during surveys conducted prior to construction. As discussed in Section D.7.9.1, potentially adverse construction impacts would be mitigated to a level less than significant (Class II) by implementing Mitigation Measures C-1a, C-1b, C-1c, C-1d, C-1e, and C-1f.

Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties

- C-1a** **Inventory and evaluate cultural resources in Final APE.**
- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1e** **Monitor construction.**
- C-1f** **Train construction personnel.**

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the South Buckman Springs Option Alternative include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower and pull site locations, grading of access roads, or excavation associated with tower construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1f** **Train construction personnel.**
- C-2a** **Properly treat human remains.**
- C-3a** **Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the South Buckman Springs Option Alternative. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. The BLM, as the Fed-

eral Lead Agency under NEPA and Section 106 of the NHPA has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

C-4a Complete consultation with Native American and other Traditional Groups.

Impact C-5: Operation and long-term presence of the project would cause an adverse change to known historic properties (Class I or II)

Direct and indirect impacts would occur to historic properties within and in the vicinity of the project area during operation and long-term presence of the project. Any of the known archaeological sites and yet to be discovered archaeological sites that are determined register-eligible are potentially subject to long-term and operational impacts. Direct impacts to these resources or other newly identified resources could result from maintenance or repair activities, while increased erosion could result as an indirect project impact. These impacts would be significant, but would be mitigated to a level that is less than significant (Class II) by implementing site protection measures and monitoring procedures, as detailed in Mitigation Measure C-5a (Protect and monitor NRHP and/or CRHR-eligible properties), as well as implementation of Mitigation Measures C-2a (Properly treat human remains) and C-4a (Complete consultation with Native Americans and other traditional groups). Impacts to human remains would remain significant (Class I).

Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties

C-1b Avoid and protect potentially significant resources.

C-1c Develop and implement Historic Properties Treatment Plan.

C-2a Properly treat human remains.

C-4a Complete consultation with Native American and other Traditional Groups.

C-5a Protect and monitor NRHP and/or CRHR-eligible properties.

Chocolate Canyon Option

The Chocolate Canyon Alternative is 3.78 miles long and a cultural resources records search was conducted for its entire length using a 0.5-mile search radius around the alternative. This option would bypass a portion of the Interstate 8 Alternative. SWCA and AE archaeologists have completed cultural resources survey for 26.60 percent (1.01 miles) of the Chocolate Canyon Option. Additional cultural resources survey could not be completed at this time because the majority of the option is located on private lands with no right-of-entry. One cultural resource has been identified within the 300-foot-wide study corridor for the Chocolate Canyon Option. CA-SDI-13614 is a previously recorded prehistoric bedrock milling site that is potentially eligible for CRHR/NRHP-listing.

Environmental Impacts and Mitigation Measures

One cultural resource (CA-SDI-13614) is recorded within 150 feet of the Chocolate Canyon Option centerline (Table Ap.9B-91 in Appendix 9B). An additional cultural resource (SDM-W-671) is located outside of the alignment but within a proposed pull site impact area. There is also the potential to encounter undiscovered cultural resources during additional surveys or project construction such as additional prehistoric habitation sites with bedrock milling features. An additional three resources (including isolates) are likely to be encountered during additional surveys. The single known cultural resource within in the Chocolate Canyon Option is potentially eligible for the NRHP and CRHR.

Because a known cultural resource that is potentially eligible for the NRHP or CRHR exists within the alternative corridor, as well as the potential for encountering undiscovered cultural resources, the following impacts would occur during project construction or operation.

Impact C-1: Construction of the project would cause an adverse change to known historic properties (Class II)

One known prehistoric cultural resource that is potentially eligible for NRHP or CRHR listing is located within the study corridor of the Chocolate Canyon Option (see Table Ap.9B-92 in Appendix 9B). An additional cultural resource (SDM-W-671) is located outside of the alignment but within a proposed pull site impact area. Three more resources such as bedrock milling features with lithic and ceramic scatters are likely to be encountered during surveys conducted prior to construction. As discussed in Section D.7.9., adverse construction impacts would be mitigated to a level less than significant (Class II) by implementing Mitigation Measures C-1a, C-1b, C-1c, C-1d, C-1e, and C-1f.

Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties

- C-1a** **Inventory and evaluate cultural resources in Final APE.**
- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1e** **Monitor construction.**
- C-1f** **Train construction personnel.**

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the Chocolate Canyon Option include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower and pull site locations, grading of access roads, or excavation associated with tower construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**
- C-3a Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the Chocolate Canyon Option. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

- C-4a Complete consultation with Native American and other Traditional Groups.**

Impact C-5: Operation and long-term presence of the project would cause an adverse change to known historic properties (Class I or II)

Direct and indirect impacts would occur to historic properties within and in the vicinity of the Chocolate Canyon Option area during operation and long-term presence of the project. If the known archaeological sites or any of the yet to be discovered archaeological sites are determined register-eligible they would be potentially subject to long-term and operational impacts. Direct impacts to these resources or other newly identified resources could result from maintenance or repair activities, while increased erosion could result as an indirect project impact. These impacts would be significant, but can be mitigated to a level that is less than significant (Class II) by implementing site protection measures and monitoring procedures, as detailed in Mitigation Measure C-5a (Protect and monitor NRHP and/or CRHR-eligible properties), as well as implementation of Mitigation Measures C-2a (Properly treat human remains) and C-4a (Complete consultation with Native Americans and other traditional groups). Impacts to human remains would remain significant (Class I).

Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties

- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-2a** **Properly treat human remains.**
- C-4a** **Complete consultation with Native American and other Traditional Groups.**
- C-5a** **Protect and monitor NRHP and/or CRHR-eligible properties.**

E.1.7.5 Future Transmission System Expansion for Interstate 8 Alternative

As described in Section E.1.1, the Interstate 8 Alternative Substation that would be built as a part of the Interstate 8 Alternative would accommodate up to six 230 kV circuits and a 500 kV circuit. Only two 230 kV circuits are proposed by this alternative at this time, but construction of additional 230 kV circuits and a 500 kV circuit out of the Interstate 8 Alternative Substation may be required in the future. This section considers the impacts of construction and operation of these potential future transmission lines. There are three routes that are most likely for these future lines; each is addressed below. Figure Ap.1-29 illustrates the potential routes of the transmission lines.

Environmental Setting – 230 and 500 kV Future Transmission System Expansion

The future 230 and/or 500 kV lines from the Interstate 8 Alternative Substation would most likely follow one or more of the following routes:

Interstate 8 route including underground within Alpine Boulevard

Two additional 230 kV circuits could be installed underground within Alpine Boulevard, with appropriate compact duct banks and engineering to avoid, or possibly relocate, existing utilities. See Section E.1.7.1 and E.1.7.2 for a description of the Environmental Setting and Mitigation Measures for Cultural Resources for the Interstate 8 Alternative. The future transmission line route would follow the Interstate 8 Alternative's 230 kV route to the point where it meets the Proposed Project at MP 131. The future transmission route would then join the proposed route corridor to the west, continuing past the Sycamore Canyon Substation to the Chicarita Substation. See Sections D.7.5, D.7.6, D.7.12 and D.7.13 for a description of the environmental setting, impacts, and mitigation measures for Cultural Resources of the Inland Valley Link and the Coastal Link of the Proposed Project. The Interstate 8 230 kV future transmission route could then follow the Proposed Project's 230 kV Future Transmission Expansion route from Chicarita to the Escondido Substation shown in Figure B-12a. See Section D.7.15 for a description of the environmental setting, impacts, and mitigation measures for the Proposed Project's Future Transmission Expansion route.

Route D Alternative corridor

Additional 230 and/or 500 kV circuits could follow the Route D Alternative corridor to the north of Descanso, after following the Interstate 8 Alternative 230 kV route from the Interstate 8 Substation to MP I8-70.3. The environmental setting, impacts, and mitigation measures for Cultural Resources of the Route D Alternative can be found in Section E.3.7.1 and in Section E.3.7.2. It should be noted, however, that the Route D Alternative Cultural Resources impacts and mitigation measures are for a 500 kV transmission line, and the Interstate 8 future transmission line as detailed above could be either a 500 kV line or a 230 kV line.

The Route D corridor would connect with the Proposed Project corridor at MP 114.5, and could then follow either: (1) the Proposed Project southwest to the Chicarita Substation and then follow the Proposed Project's 230 kV Future Transmission Expansion route (see description in Section B.2.7) from Chicarita to the Escondido Substation; or (2) the Proposed Project northeast to the Proposed Central East Substation and then follow the Proposed Project's 500 kV Future Transmission Expansion route shown in Figure B-12b (see description in Section B.2.7) to connect with SCE's existing Serrano-Valley 500 kV line in Riverside County. See Section D.7.4, D.7.5, and D.7.6 for more information on the cultural setting of the Central, Inland Valley, and Coastal Links of the Proposed Project.

For the cultural setting, impacts, and mitigation measures of the Proposed Project's 230 kV Future Transmission Expansion route and the Proposed Project's 500 kV Future Transmission Expansion route see Section D.7.15.

Interstate 8 Alternative with Modified Route D alignment and West of Forest alignment

The future 230 and/or 500 kV lines could follow the proposed Interstate 8 Alternative route from the Interstate 8 Alternative Substation until reaching the Modified Route D Alternative corridor (within the 368 Corridor identified by the Department of Energy's Draft West-wide Corridor Programmatic EIS) and then follow the Modified Route D Alternative corridor south for 11 miles to MP MD-26. For the Cultural Resources Setting and Impacts along the Modified Route D corridor see Section E.4.7. At MP MD-26, new 230 or 500 kV circuits would turn west and connect with the northernmost segment of the West of Forest Alternative route as described in Section E.1.1. This route would meet up with the Interstate 8 Alternative at approximately MP I8-79 and would follow the Interstate 8 Alternative's overhead 230 kV route to the point where it meets the Proposed Project at MP 131. The future transmission route would then join the proposed route corridor to the west, continuing past the Sycamore Canyon Substation to the Chicarita Substation. It could then follow the Proposed Project's 230 kV Future Transmission Expansion route (see description in Section B.2.7) from Chicarita to the Escondido Substation.

MP MD-26 to MP I8-79

The FTSE Interstate 8 Alternative is generally located south of Interstate 8 in the Laguna Mountains. A Class I cultural resources records search including a 0.5-mile radius was conducted for all but 3.72 percent (0.93 miles) of the 25-mile FTSE Interstate 8 Alternative. Archaeologists from EIR/EIS consultants Applied EarthWorks, Inc. (AE) and SWCA Environmental Consultants (SWCA) have conducted intensive pedestrian cultural resources survey for 16.29 percent (1.24 miles) of the 300-foot-wide study corridor on behalf of the CPUC and BLM.

Environmental Impacts and Mitigation Measures

Ten cultural resources have been identified within the 300-foot-wide study corridor for the FTSE Interstate 8 Alternative (see Table Ap.9B-93 in Appendix 9B). Nine of the cultural resources are prehistoric, including four bedrock milling sites, one temporary camp, one ceramic and lithic scatter, one rock feature, and two flakes. There is also one historical refuse scatter. The two flakes are isolates not considered eligible for the NRHP or CRHR; impacts to these three resources would not be adverse. There also is one linear historical resource (Old Highway 80) recommended eligible for the NRHP located within 0.5 miles of the FTSE Interstate 8 Alternative. However, because there are existing transmission lines and other modern visual impacts in the vicinity of the portion of Old Highway 80 within 0.5 miles of the FTSE Interstate 8 Alternative, this portion of the resource does not retain integrity of setting and

as such, the FTSE Interstate 8 Alternative would not create indirect visual impacts. There also remains the potential to encounter undiscovered cultural resources during project construction. Because there is the potential for encountering undiscovered cultural resources, the following impacts could occur during project construction or operation.

Impact C-1: Construction of the project would cause an adverse change to known historic properties (Class II)

Seven known prehistoric cultural resources and one historical resource are potentially eligible for NRHP or CRHR listing and are located within the study corridor of the FTSE Interstate 8 Alternative. An additional 51 resources such as bedrock milling features with lithic and ceramic scatters are likely to be encountered during surveys conducted prior to construction. As discussed in Section D.7.9, adverse construction impacts would be mitigated to a level less than significant (Class II) by implementing Mitigation Measures C-1a, C-1b, C-1c, C-1d, C-1e, and C-1f.

Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties

- C-1a** **Inventory and evaluate cultural resources in Final APE.**
- C-1b** **Avoid and protect potentially significant resources.**
- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1e** **Monitor construction.**
- C-1f** **Train construction personnel.**

Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains (Class I or II)

Types of subsurface features that could be encountered along the FTSE Interstate 8 Alternative include prehistoric resources such as buried living surfaces, refuse deposits, hearths, burials, and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower and pull site locations, grading of access roads, or excavation associated with tower construction. Impacts to most unknown significant prehistoric and historic archaeological sites would be mitigated to a level that is less than significant (Class II) by implementing Mitigation Measures C-1c, C-1d, C-1f, C-2a and C-3a. However, effects related to Native American human remains would be significant (Class I) even with mitigation.

Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains

- C-1c** **Develop and implement Historic Properties Treatment Plan.**
- C-1d** **Conduct data recovery to reduce adverse effects.**
- C-1f** **Train construction personnel.**
- C-2a** **Properly treat human remains.**
- C-3a** **Monitor construction in areas of high sensitivity for buried resources.**

Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties (Class I or II)

To date, no TCPs have been identified within the FTSE Interstate 8 Alternative. However, the Sacred Lands File search conducted for the alternatives noted that lands sacred to Native Americans are present in the vicinity of the alternatives, in undisclosed locations. The BLM, as the Federal Lead Agency under NEPA and Section 106 of the NHPA, has initiated government-to-government consultation with appropriate Native American groups and notification to other public groups regarding project effects on traditional cultural values. That consultation will determine whether there are TCPs that could be affected within this segment. Though impacts to TCPs are often significant (Class I), mitigation, as defined by NEPA (in King, 2003), can include “minimizing impacts by limiting the degree or magnitude of the action...,” rectifying or reducing the impact, and/or “compensating for the impact by replacing or providing substitute resources or environments,” which when properly coordinated with Native Americans or other traditional groups can potentially reduce the impact to less than significant (Class II). Implementation of Mitigation Measure C-4a (Complete Consultation with Native Americans and other Traditional Groups) could potentially reduce impacts to TCPs to a level that is less than significant (Class II), but in some cases impacts would remain significant (Class I).

Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties

C-4a Complete consultation with Native American and other Traditional Groups.

Impact C-5: Operation and long-term presence of the project would cause an adverse change to known historic properties (Class I or II)

Direct and indirect impacts would occur to historic properties within and in the vicinity of the project area during operation and long-term presence of the project. There is one linear historical resource (Old Highway 80) recommended eligible for the NRHP located within 0.5 miles of the FTSE Interstate 8 Alternative that is potentially subject to long-term and operational impacts. Any of the known archaeological sites and yet to be discovered archaeological sites that are determined register-eligible are also potentially subject to long-term and operational impacts. Direct impacts to these resources or other newly identified resources could result from maintenance or repair activities, while increased erosion could result as an indirect project impact. These impacts would be significant, but can be mitigated to a level that is less than significant (Class II) by implementing site protection measures and monitoring procedures, as detailed in Mitigation Measure C-5a (Protect and monitor NRHP and/or CRHR-eligible properties), as well as implementation of Mitigation Measures C-2a (Properly treat human remains) and C-4a (Complete consultation with Native Americans and other traditional groups). Impacts to human remains would remain significant (Class I).

Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties

- C-1b Avoid and protect potentially significant resources.**
- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-2a Properly treat human remains.**
- C-4a Complete consultation with Native American and other Traditional Groups.**
- C-5a Protect and monitor NRHP and/or CRHR-eligible properties.**
- V-3a Reduce visual contrast of towers and conductors.**

Paleontological Resources

E.1.7.6 Environmental Setting

The Interstate 8 Alternative is underlain by the following geologic units:

- **Quaternary alluvium.** Quaternary alluvium consists of partly dissected, mostly unconsolidated, poorly sorted sand, silt, clay, and gravel located at the margins of canyons and within valley floors. “Younger” alluvium is Holocene (10,000 years ago to Recent) in age and “Older alluvium” is Pleistocene (1.8 million years ago to 10,000 years ago) in age. Fossil localities in older alluvium deposits throughout southern California have yielded terrestrial vertebrates such as mammoths, mastodons, ground sloths, dire wolves, short-faced bears, saber-toothed cats, horses, camels, and bison (Scott, 2006). Younger alluvium is determined to have a low potential for paleontological resources but is often underlain by older alluvium, which is determined to have a high potential for paleontological resources.
- **Cahuilla Lake Beds.** The Cahuilla Lake Beds are generally composed of thinly bedded, poorly sorted, fine-grained, light grayish –brown fluvial sediments intervening with a lacustrine sequence of tan and gray fossiliferous clay, silt, sand, and gravel. These sediments are widespread and were deposited during the last seven high stands of the ancient Lake Cahuilla, believed to have existed intermittently from 270 years ago to at least 6,000 years ago. Fossil remains discovered in Cahuilla Lake Beds include freshwater diatoms, sponges, terrestrial plants, mollusks, fish, ostracodes, and small terrestrial vertebrates. Cahuilla Lake Beds are determined to have a high potential for paleontological resources.
- **The Palm Spring Group.** The Palm Spring Group includes the Diablo, Olla, and Hueso Formations, the Canebrake Conglomerate, and the Tapiado Claystone. These nonmarine units generally consist of interbedded conglomerates and arkosic sandstones and red to gray siltstones and claystones of late Pliocene to early Pleistocene age (0.9 to 3.2 million years ago). The Tapiado Claystone consists of olive-green, blue-grey, and grey claystone and limited interbeds of siltstones, sandstones, limestone, and tuff of late Pliocene to early Pleistocene age. It has been proven to be fossiliferous yielding numerous vertebrate specimens as well as fresh-water ostracodes and gastropods and is determined to have a high potential for paleontological resources. The Hueso Formation consists of tan and buff micaceous sandstone and silty sandstone, brown and buff micaceous siltstone, grey and buff very coarse-grained sandstone, and rare interbeds of olive-green, grey, and tan claystone. This formation is late Pliocene to early Pleistocene in age and has yielded the majority of the terrestrial vertebrate assemblage recovered from the Borrego Badlands region. Fossils uncovered include mostly mammals, but also reptiles and birds. This formation is determined to have a high potential for paleontological resources. The Olla Formation is laterally equivalent to the Diablo Formation and is composed of a coarse-grained basin-margin sedimentary facies. The Diablo Formation consists of 1 to 2 kilometer thick fluvial and deltaic sandstones and mudstones of late Pliocene to early Pleistocene age. Both the Olla and the Diablo Formations are fossiliferous and are determined to have a high potential for paleontological resources. The Canebrake Conglomerate is composed of gray conglomerates and granitic fanglomerates and is late Pliocene to early Pleistocene age (1 to 2 million years ago). This unit has not yet yielded fossil resources; however, its depositional history and gradational association with fossil producing units suggests that it has a moderate potential for paleontological resources.
- **Imperial Group.** The Imperial Group includes the Latrania Sand Member that is composed of coarse-grained richly fossiliferous sandstones and the upper Coyote Mountain Clay Member that is composed of yellow massive mudstones and well-cemented oyster beds. The Imperial Group was depos-

ited approximately late Miocene through early to late Pliocene, about 3 to 7 million years ago. Both members of the Imperial Group have yielded abundant marine fossils, including microfossils, macro-invertebrates, and marine vertebrates such as sharks, rays, bony fish, sea cow, whale, and walrus. The Imperial Group is determined to have a high potential for paleontological resources.

- **Split Mountain Formation.** The Split Mountain Formation, deposited during the late Miocene to early Pliocene (3 to 7 million years ago) consists of four members: a lower boulder and cobble fanglomerate (interpreted as a landslide) overlain by the Fish Creek Gypsum, which is in turn overlain by a marine sandstone and shale. The uppermost member consists of a massive gray fanglomerate that is also interpreted to be a deposited as a landslide event. The two fanglomerate units have not yielded fossils; however, the marine sandstone and shale as well as the Fish Creek Gypsum have yielded microfossils. The Split Mountain Formation is determined to have a moderate paleontological resources potential.
- **Stadium Conglomerate.** The Stadium Conglomerate is composed of a massive cobble conglomerate within a dark yellowish brown coarse-grained sandstone matrix of terrestrial origin. The sandstone portion of this rock unit constitutes approximately 20 percent of the total formation. The Stadium Conglomerate is divided into an upper member and a lower member and is middle to late Eocene in age (42 to 44 million years old). Both members of the Stadium Conglomerate have yielded fossil resources. The lower member has yielded sparse but scientifically significant fossilized specimens of opossums, insectivores, primates, rodents, carnivores, rhinoceros, artiodactyls, as well as foraminifers and marine mollusks. The upper member has yielded a scientifically important assemblage of terrestrial mammals. The upper member of the Stadium Conglomerate is determined to have a high potential for paleontological resources in its western extent and a moderate potential in its easternmost outcrops. The lower member of the Stadium Conglomerate is determined to have a high potential for paleontological resources.
- **Poway Group.** The Poway Group is comprised of the Stadium Conglomerate, the Mission Valley Formation, the Pomerado Conglomerate, and Friars Formation. The Pomerado Conglomerate is composed of a thin lower conglomerate member overlain by a sandstone member (referred to as the Miramar Sandstone Member) overlain by an upper conglomerate member. The unit is middle Eocene in age (41 to 42 million years old) and overlies the Mission Valley Formation. Fossils recovered from this formation include marine mollusks and terrestrial mammals. The Pomerado Conglomerate is determined to have a high potential for paleontological resources. The Mission Valley Formation is a light olive gray, fine to medium grained marine sandstone that is middle Eocene in age (42 to 43 million years old). This formation contains interbedded brackish water claystone that comprises approximately 20 percent of the formation (Kennedy, 1975) and has yielded scientifically significant marine invertebrates and both marine and terrestrial vertebrates. The Mission Valley Formation is determined to have a high potential for paleontological resources. The Stadium Conglomerate is composed of a massive cobble conglomerate within a dark yellowish brown coarse-grained sandstone matrix of terrestrial origin. The sandstone portion of this rock unit comprises approximately 20 percent of the total formation. The Stadium Conglomerate is divided into an upper member and a lower member and is middle to late Eocene in age (42 to 44 million years old). Both members of the Stadium Conglomerate have yielded fossil resources. The lower member has yielded sparse but scientifically significant fossilized specimens of opossums, insectivores, primates, rodents, carnivores, rhinoceros, artiodactyls, as well as foraminifers and marine mollusks. The upper member has yielded a scientifically important assemblage terrestrial mammals. The upper member of the Stadium Conglomerate is determined to have a high potential for paleontological resources in its western extent and a moderate potential in its easternmost outcrops. The lower member of the Stadium Conglomerate is determined to have a high potential for paleontolog-

ical resources. The Friars Formation is composed predominantly of yellowish-gray nonmarine and lagoonal sandstone and claystone with fluvial cobble conglomerate lenses outcropping in the easternmost exposures. It is middle to late Eocene in age (44 million years ago), and is representative of a large-scale marine regression. The Friars Formation has yielded significant remains of terrestrial mammals, marine micro- and macrofossils, and fossil plants and is determined to have a high potential for paleontological resources.

- **Alverson Volcanics.** Alverson Volcanics include an upper unit of volcanic flows and a lower unit consisting of a sequence of conglomerates, sandstones, and mudstones interbedded with lava flows. The sedimentary deposits within this geologic unit have yielded fossilized algae, pollen, petrified wood, mollusks, and one occurrence of a vertebrate bone fragment. The Alverson Volcanics are assigned a moderate paleontological resource potential.
- **Metamorphic rocks.** Metamorphic rocks in this region consist of undivided biotite schist, quartzite, and gneiss of Paleozoic age. These metamorphic rocks have no potential for paleontological resources.
- **Metasedimentary rocks.** Metasedimentary rocks in the central part of San Diego County are referred to as Julian Schist, which is composed of quartz-mica schist and quartzite, with minor amounts of marble and amphibolite. These rocks have been intruded and deformed by plutonic rocks associated with the Peninsular Ranges Batholith. The age of these metasedimentary rocks is not definite; however, microfossils indicate that they are much older than Triassic in age. No fossils have been discovered in this unit within San Diego County; however, correlative units in Riverside and Orange County have yielded marine mollusks. Metasedimentary rocks in San Diego County are determined to have a marginal potential for paleontological resources.
- **Metavolcanic rocks.** This geologic unit includes mildly metamorphosed volcanic (andesite and dacite) and volcanoclastic rocks of Jurassic and Cretaceous ages. This unit has no potential for paleontological resources.
- **Granitic rocks.** Granitic rocks are composed of quartz diorite (tonalite) with minor amounts of granodiorite and granite and are Cretaceous in age. Since granitic rocks are plutonic in origin, this geologic unit is determined to have no potential for paleontological resources.
- **Gabbroic rocks.** Gabbroic rocks in this region of San Diego County include the San Marcos and Cuyamaca gabbros, as well as unnamed bodies. They are composed of mostly gabbros with proportions of norite and diorite. Since granitic rocks are plutonic in origin, this geologic unit is determined to have no potential for paleontological resources.
- **Hybrid gneiss.** This rock unit is composed of hybrid gneisses and associated granodiorite and quartz diorite of Cretaceous age. Hybrid gneiss has no potential for paleontological resources.

Museum paleontological collections records maintained by SDNHM indicate that no previously recorded fossil localities exist within this alternative or a half-mile radius; however, the geologic sediments underlying the project area are determined to have a paleontological resource potential ranging from zero to high.

E.1.7.7 Environmental Impacts and Mitigation Measures

Table E.1.7-2 lists the impact to paleontological resources identified for the Interstate 8 Alternative and Options, along with the significance of the impact. Impacts are classified as Class I (significant/adverse, cannot be mitigated to a level that is less than significant), Class II (significant, can be mitigated to a level that is less than significant), Class III (less than significant), or Class IV (beneficial). The follow-

ing sections provide a detailed discussion of the impacts identified and the locations of those impacts. Detailed maps showing resource potential (paleontological sensitivity) throughout the project area are provided in Appendix 9D.

Table E.1.7-2. Impacts Identified – I-8 Alternatives – Paleontological Resources

Impact No.	Description	Impact Significance
Interstate 8 Alternative, Interstate 8 Substation		
PAL-1	Construction of the transmission line would destroy or disturb significant paleontological resources	Class II
Campo North Option – No Impacts		
Buckman Springs Underground Option, West Buckman Springs Option, South Buckman Springs Option, Chocolate Canyon Option		
PAL-1	Construction of the transmission line would destroy or disturb significant paleontological resources	Class II

The potential to discover paleontological resources during construction of the proposed Interstate 8 Alternative ranges from zero to high. Areas determined to have paleontological sensitivity are located from MP 0 to 18.1, MP 18.3 to 23.4, MP 28.9 to 31.4, MP 28.9 to 31.4, MP 32.3 to 32.6, MP 32.7 to 38, MP 39.0 to 39.1, MP 52.2 to 52.3, MP 55.3 to 58.6, MP 63.4 to 63.7, MP 82.1 to 82.2, MP 85.9 to 86.1, MP 89.3 to 89.8, MP 90.1 to 90.2, MP 91.1 to 91.2, and MP 91.3 to 91.7 of the Interstate 8 Alternative. Paleontologically sensitive areas could be impacted by construction-related ground disturbances such as the building or improvement of access roads, borehole drilling, trenching, excavating and grading. Areas along this alternative route determined to be paleontologically sensitive based on geologic mapping and museum collection records are shown in Table E.1.7-3.

Table E.1.7-3. Paleontological Sensitivity – Interstate 8 Alternative

Mileposts	Rock Units	Sensitivity
0-5.1	Cahuilla Lake Beds	High
5.1-5.5	Alluvium	Low
5.5-5.8	Palm Spring Group	High
5.8-6.6	Alluvium	Low
6.6-6.8	Palm Spring Group	High
6.8-10.8	Alluvium	Low
10.8-12.1	Older Alluvium	High
12.1-12.4	Palm Spring Group	High
12.4-12.7	Alluvium	Low
12.7-12.9	Palm Spring Group	High
12.9-13.4	Alluvium	Low
13.4-14.7	Palm Spring Group	High
14.7-14.9	Alluvium	Low
14.9-15.5	Palm Spring Group	High
15.5-15.9	Imperial Group	High
15.9-16.6	Older Alluvium	High
16.6-16.8	Imperial Group	High
16.8-17	Older Alluvium	High
17-17.4	Alluvium	Low
17.4-18.1	Imperial Group	High

Table E.1.7-3. Paleontological Sensitivity – Interstate 8 Alternative

Mileposts	Rock Units	Sensitivity
18.1-18.2	Metamorphic Rocks	Zero
18.2-22.1	Alluvium	Low
22.1-22.4	Split Mountain Formation	Moderate
22.4-22.9	Alluvium	Low
22.9-23.3	Alverson volcanics	Moderate
23.3-23.4	Alluvium	Low
23.4-25.2	Granitic Rocks	Zero
25.2-25.6	Metamorphic Rocks	Zero
25.6-28.9	Granitic Rocks	Zero
28.9-30.4	Alluvium	Low
30.4-30.6	Alverson volcanics	Moderate
30.6-31.4	Alluvium	Low
31.4-31.8	Hybrid Gneiss	Zero
31.8-32.1	Granitic Rocks	Zero
32.1-32.3	Hybrid Gneiss	Zero
32.3-32.6	Alluvium	Low
32.6-32.7	Hybrid Gneiss	Zero
32.7-34.3	Alluvium	Low
34.3-34.9	Alverson volcanics	Moderate
34.9-35.2	Alluvium	Low
35.2-38	Metasedimentary Rocks	Marginal
38-39	Granitic Rocks	Zero
39-39.1	Alluvium	Low
39.1-52.2	Granitic Rocks	Zero
52.2-52.3	Alluvium	Low
52.3-55.1	Granitic Rocks	Zero
55.1-55.3	Hybrid Gneiss	Zero
55.3-58.6	Metasedimentary Rocks	Marginal
58.6-63.4	Granitic Rocks	Zero
63.4-63.7	Metasedimentary Rocks	Marginal
63.7-64.3	Granitic Rocks	Zero
64.3-65.9	Metasedimentary Rocks	Zero
65.9-74.6	Granitic Rocks	Zero
74.6-74.7	Gabbroic Rocks	Zero
74.7-82.1	Granitic Rocks	Zero
82.1-82.2	Alluvium	Low
82.2-85.9	Granitic Rocks	Zero
85.9-86.1	Metasedimentary Rocks	Marginal
86.1-86.9	Granite	Zero
86.9-87.1	Tonalite	Zero
87.1-89.3	Granite	Zero
89.3-89.6	Metasedimentary Rocks	Marginal
89.6-89.8	Alluvium	Low
89.8-90.1	Tonalite	Zero
90.1-90.2	Stadium Conglomerate	High
90.2-91.1	Poway Group	High
91.1-91.2	Metasedimentary Rocks	Marginal
91.2-91.3	Granodiorite	Zero

Table E.1.7-3. Paleontological Sensitivity – Interstate 8 Alternative

Mileposts	Rock Units	Sensitivity
91.3-91.4	Stadium Conglomerate	High
91.4-91.7	Poway Group	High
91.7-92.8	Granodiorite	Zero
92.8-92.9	Metavolcanic Rocks	Zero

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

Construction of the Interstate 8 Alternative and associated access roads would require excavation, grading, and vegetation removal in paleontologically sensitive geologic units. Without mitigation, the fossils contained in sensitive geologic units, as well as the paleontological data they could provide if properly salvaged and documented, would be adversely impacted (destroyed), rendering them permanently unavailable for future scientific research. Implementation of the following mitigation measures would reduce project effects to a level of less than significant (Class II).

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a Inventory and evaluate paleontological resource in the Final APE.**
- PAL-1b Develop Paleontological Monitoring and Mitigation Plan.**
- PAL-1c Monitor construction for paleontology.**
- PAL-1d Conduct paleontological data recovery.**
- PAL-1e Train construction personnel.**

E.1.7.8 Interstate 8 Alternative Substation

Environmental Setting

The Interstate 8 Alternative Substation is entirely underlain by metasedimentary rocks that are determined to have a marginal paleontological resource potential.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during the construction of the Interstate 8 Alternative Substation is marginal, but possible. Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a level of less than significant (Class II)

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a Inventory and evaluate paleontological resource in the Final APE.**
- PAL-1b Develop Paleontological Monitoring and Mitigation Plan.**
- PAL-1c Monitor construction for paleontology.**
- PAL-1d Conduct paleontological data recovery.**

PAL-1e Train construction personnel.

E.1.7.9 Interstate 8 Route Options

All of the Interstate 8 Alternative Route Options are underlain by the following geologic units:

- **Quaternary alluvium.** Quaternary alluvium consists of partly dissected, mostly unconsolidated, poorly sorted sand, silt, clay, and gravel located at the margins of canyons and within valley floors. “Younger” alluvium is Holocene (10,000 years ago to Recent) in age and “Older alluvium” is Pleistocene (1.8 million years ago to 10,000 years ago) in age. Fossil localities in older alluvium deposits throughout southern California have yielded terrestrial vertebrates such as mammoths, mastodons, ground sloths, dire wolves, short-faced bears, saber-toothed cats, horses, camels, and bison (Scott, 2006). Younger alluvium is determined to have a low potential for paleontological resources but is often underlain by older alluvium, which is determined to have a high potential for paleontological resources.
- **Metasedimentary rocks.** Metasedimentary rocks in the central part of San Diego County are referred to as Julian Schist, which is composed of quartz-mica schist and quartzite, with minor amounts of marble and amphibolite. These rocks have been intruded and deformed by plutonic rocks associated with the Peninsular Ranges Batholith. The age of these metasedimentary rocks is not definite; however, microfossils indicate that they are much older than Triassic in age. No fossils have been discovered in this unit within San Diego County; however, correlative units in Riverside and Orange County have yielded marine mollusks. Metasedimentary rocks in San Diego County are determined to have a marginal potential for paleontological resources.
- **Granitic rocks.** Granitic rocks are composed of quartz diorite (tonalite) with minor amounts of granodiorite and granite and are Cretaceous in age. Since granitic rocks are plutonic in origin, this geologic unit is determined to have no potential for paleontological resources.

Campo North Option

Environmental Setting

The Campo North option is entirely underlain by granitic rocks, which are determined to have no paleontological resource sensitivity.

Environmental Impacts and Mitigation Measures

The construction of the Campo North option would have no impact on paleontological resources because the underlying geologic unit is determined to have no paleontological sensitivity. Therefore, no impacts would be expected to occur.

Buckman Springs Underground Option

Environmental Setting

The I-8 Buckman Springs Underground Option is underlain by the following three geologic units: (1) Alluvium, (2) Granitic rocks, and (3) Metasedimentary rocks. Museum paleontological collections records maintained by SDNHM indicate that no previously recorded fossil localities exist within this alternative or a half-mile radius; the geologic units underlying the project area are determined to have a paleontological resource potential ranging from zero to low.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during construction of the proposed I-8 Buckman Springs Underground Option ranges from zero to low. Areas determined to have paleontological sensitivity are located between MP 0.1 and 0.2, MP and 2.3 to 2.4. Areas along the alternative route determined to be paleontologically sensitive based on geologic mapping and museum collection records are shown in Table E.1.7-4. Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a level of less than significant (Class II)

Table E.1.7-4. Paleontological Sensitivity – I-8 Buckman Springs Underground Option Alternative

Mileposts	Rock Units	Sensitivity	Fossil Localities
0-0.1	Granitic Rocks	Zero	None
0.1-0.2	Alluvium	Low	None
0.2-2.3	Granitic Rocks	Zero	None
2.3-2.4	Metasedimentary Rocks	Marginal	None

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a Inventory and evaluate paleontological resource in the Final APE.**
- PAL-1b Develop Paleontological Monitoring and Mitigation Plan.**
- PAL-1c Monitor construction for paleontology.**
- PAL-1d Conduct paleontological data recovery.**
- PAL-1e Train construction personnel.**

West Buckman Springs Option

Environmental Setting

The I-8 West Buckman Springs Option Alternative is underlain by the following geologic units: (1) Alluvium, (2) Metasedimentary rocks, and (3) Granitic rocks. The geologic sediments underlying the project area are determined to have a paleontological resource potential ranging from zero to low.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during construction of the proposed I-8 West Buckman Springs Option Alternative ranges from zero to low. Areas determined to have paleontological sensitivity are located between MP 1.2 and 1.5, MP 2.9 and 3.3, and MP 5.2 and 5.6. Areas along the Alternative route determined to be paleontologically sensitive based on geologic mapping are shown in Table E.1.7-5. Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a level of less than significant (Class II)

Table E.1.7-5. Paleontological Sensitivity – I-8 West Buckman Springs Option Alternative

Mileposts	Rock Units	Sensitivity	Fossil Localities
0-1.2	Granitic Rocks	Zero	None
1.2-1.5	Alluvium	Low	None
1.5-2.9	Granitic Rocks	Zero	None
2.9-3.3	Alluvium	Low	None
3.3-5.2	Granitic Rocks	Zero	None
5.2-5.6	Metasedimentary Rocks	Marginal	None

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a Inventory and evaluate paleontological resource in the Final APE.**
- PAL-1b Develop Paleontological Monitoring and Mitigation Plan.**
- PAL-1c Monitor construction for paleontology.**
- PAL-1d Conduct paleontological data recovery.**
- PAL-1e Train construction personnel.**

South Buckman Springs Option

Environmental Setting

The Buckman Springs South Option is underlain by Quaternary alluvium and granitic rocks. These geologic units have a paleontological resources sensitivity ranging from zero to low.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during the construction of the Interstate 8 Alternative South Buckman Springs Option ranges from zero to low. Areas determined to have paleontological sensitivity are located from MP 1.5 to 2.4, MP 3.4 to 3.7, and MP 3.9 to 4.2. Areas along the alternative route determined to be paleontologically sensitive based on geologic mapping are shown in Table E.1.7-6. Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a less than significant level (Class II)

Table E.1.7-6. Paleontological Sensitivity – Interstate 8 Alternative: South Buckman Springs Option

Mileposts	Rock Units	Sensitivity
0.0–1.5	Granitic Rocks	None
1.5–2.4	Quaternary Younger Alluvium	Low
2.4–3.4	Granitic Rocks	None
3.4–3.7	Quaternary Younger Alluvium	Low
3.7–3.9	Granitic Rocks	None
3.9–4.2	Quaternary Younger Alluvium	Low
4.2–4.3	Granitic Rocks	None

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a** Inventory and evaluate paleontological resource in the Final APE.
- PAL-1b** Develop Paleontological Monitoring and Mitigation Plan.
- PAL-1c** Monitor construction for paleontology.
- PAL-1d** Conduct paleontological data recovery.
- PAL-1e** Train construction personnel.

Interstate 8 Mitigation Reroute: Chocolate Canyon Option

Environmental Setting

The Interstate 8 Chocolate Canyon Option is underlain by granitic rocks and Quaternary alluvium. Museum paleontological collections records maintained by SDNHM indicate that no previously recorded fossil localities exist within this alternative or a half-mile radius; the geologic units underlying the project area are determined to have a paleontological resource potential ranging from zero to low.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during the construction of the Interstate 8 Option: Chocolate Canyon route ranges from zero to low. Areas determined to have paleontological sensitivity are located from MP 0 to 0.5. Areas along the alternative route determined to be paleontologically sensitive based on geologic mapping and museum collection records are shown in Table E.1.7-7 Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a level of less than significant (Class II)

Table E.1.7-7. Paleontological Sensitivity – Interstate 8 Chocolate Canyon Option

Mileposts	Rock Units	Sensitivity
0.0–0.5	Quaternary Younger Alluvium	Low
0.5–0.9	Granitic Rocks	None
0.9–1.0	Water	None
1.0–3.8	Granitic Rocks	None

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a** Inventory and evaluate paleontological resource in the Final APE.
- PAL-1b** Develop Paleontological Monitoring and Mitigation Plan.
- PAL-1c** Monitor construction for paleontology.
- PAL-1d** Conduct paleontological data recovery.
- PAL-1e** Train construction personnel.

E.1.7.10 Future Transmission System Expansion for Interstate 8 Alternative

As described in Section E.1.1, the Interstate 8 Alternative Substation that would be built as a part of the Interstate 8 Alternative would accommodate up to six 230 kV circuits and a 500 kV circuit. Only two 230 kV circuits are proposed by this alternative at this time, but construction of additional 230 kV circuits and a 500 kV circuit out of the Interstate 8 Alternative Substation may be required in the future. This section considers the impacts of construction and operation of these potential future transmission lines. There are three routes that are most likely for these future lines; each is addressed below. Figure Ap.1-29 illustrates the potential routes of the transmission lines.

Environmental Setting – 230 and 500 kV Future Transmission System Expansion

The future 230 and/or 500 kV lines from the Interstate 8 Alternative Substation would most likely follow one or more of the following routes:

Interstate 8 route including underground within Alpine Boulevard

Two additional 230 kV circuits could be installed underground within Alpine Boulevard, with appropriate compact duct banks and engineering to avoid, or possibly relocate, existing utilities. See Section E.1.7.6 and E.1.7.7 for a description of the environmental setting, impacts, and mitigation measures for Paleontological Resources for the Interstate 8 Alternative. The future transmission line route would follow the Interstate 8 Alternative's 230 kV route to the point where it meets the Proposed Project at MP 131. The future transmission route would then join the proposed route corridor to the west, continuing past the Sycamore Canyon Substation to the Chicarita Substation. See Sections D.7.25, D.7.31, and D.7.32 for a description of the environmental setting, impacts, and mitigation measures for Paleontological Resources of the Inland Valley Link and the Coastal Link of the Proposed Project. The Interstate 8 230 kV future transmission route could then follow the Proposed Project's 230 kV Future Transmission Expansion route from Chicarita to the Escondido Substation shown in Figure B-12a. See Section D.7.34 for a description of the environmental setting, impacts, and mitigation measures for the Proposed Project's Future Transmission Expansion route.

Route D Alternative corridor

Additional 230 and/or 500 kV circuits could follow the Route D Alternative corridor to the north of Descanso, after following the Interstate 8 Alternative 230 kV route from the Interstate 8 Substation to MP I8 70.3. The environmental setting, impacts, and mitigation measures for Paleontological Resources of the Route D Alternative can be found in Section E.3.7.4 and in Section E.3.7.5. It should be noted, however, that the Route D Alternative Paleontological Resources impacts and mitigation measures are for a 500 kV transmission line, and the Interstate 8 future transmission line as detailed above could be either a 500 kV line or a 230 kV line.

The Route D corridor would connect with the Proposed Project corridor at MP 114.5, and could then follow either: (1) the Proposed Project southwest to the Chicarita Substation and then follow the Proposed Project's 230 kV Future Transmission Expansion route (see description in Section B.2.7) from Chicarita to the Escondido Substation; or (2) the Proposed Project northeast to the Proposed Central East Substation and then follow the Proposed Project's 500 kV Future Transmission Expansion route shown in Figure B-12b (see description in Section B.2.7) to connect with SCE's existing Serrano-Valley 500 kV line in Riverside County. See Section D.7.25 for more information on the paleontological resources setting of the Central, Inland Valley, and Coastal Links of the Proposed Project.

For the paleontological setting, impacts, and mitigation measures of the Proposed Project's 230 kV Future Transmission Expansion route and the Proposed Project's 500 kV Future Transmission Expansion route see Section D.7.34.

Interstate 8 Alternative with Modified Route D alignment and West of Forest alignment

The future 230 and/or 500 kV lines could follow the proposed Interstate 8 Alternative route from the Interstate 8 Alternative Substation until reaching the Modified Route D Alternative corridor (within the 368 Corridor identified by the Department of Energy's Draft West-wide Corridor Programmatic EIS) and then follow the Modified Route D Alternative corridor south for 11 miles to MP MD-26. For the Paleontological setting and impacts along the Modified Route D corridor see Section E.4.7.3 and E.4.7.4. At MP MD-26, new 230 or 500 kV circuits would turn west and connect with the northernmost segment of the West of Forest Alternative route as described in Section E.1.1. This route would meet up with the Interstate 8 Alternative at approximately MP I8-79 and would follow the Interstate 8 Alternative's overhead 230 kV route to the point where it meets the Proposed Project at MP 131. The future transmission route would then join the proposed route corridor to the west, continuing past the Sycamore Canyon Substation to the Chicarita Substation. It could then follow the Proposed Project's 230 kV Future Transmission Expansion route (see description in Section B.2.7) from Chicarita to the Escondido Substation.

Environmental Setting

The Future Transmission System Expansion for Interstate 8 Alternative is underlain by the following geologic units:

- **Quaternary alluvium.** Quaternary alluvium consists of partly dissected, mostly unconsolidated, poorly sorted sand, silt, clay, and gravel located at the margins of canyons and within valley floors. "Younger" alluvium is Holocene (10,000 years ago to Recent) in age and "Older alluvium" is Pleistocene (1.8 million years ago to 10,000 years ago) in age. Fossil localities in older alluvium deposits throughout southern California have yielded terrestrial vertebrates such as mammoths, mastodons, ground sloths, dire wolves, short-faced bears, saber-toothed cats, horses, camels, and bison (Scott, 2006). Younger alluvium is determined to have a low potential for paleontological resources but is often underlain by older alluvium, which is determined to have a high potential for paleontological resources.
- **Metasedimentary rocks.** Metasedimentary rocks in the central part of San Diego County are referred to as Julian Schist, which is composed of quartz-mica schist and quartzite, with minor amounts of marble and amphibolite. These rocks have been intruded and deformed by plutonic rocks associated with the Peninsular Ranges Batholith. The age of these metasedimentary rocks is not definite; however, microfossils indicate that they are much older than Triassic in age. No fossils have been discovered in this unit within San Diego County; however, correlative units in Riverside and Orange County have yielded marine mollusks. Metasedimentary rocks in San Diego County are determined to have a marginal potential for paleontological resources.

- **Metavolcanic rocks.** This geologic unit includes mildly metamorphosed volcanic (andesite and dacite) and volcanoclastic rocks of Jurassic and Cretaceous ages. This unit has no potential for paleontological resources.
- **Lusardi Formation.** The Lusardi Formation is mostly composed of a reddish-brown, poorly sorted, pebble to boulder conglomerate and contains lenses of arkosic sandstone. It is late Cretaceous in age (approximately 80 million years old) and is believed to have been deposited by alluvial fans along the western margin of the coastal mountain range. No vertebrate fossil remains have been discovered in this formation; however, its depositional setting suggests that it may have unproven fossil potential. The Lusardi Formation is determined to have a moderate potential for paleontological resources.
- **Gabbroic rocks.** Gabbroic rocks in this region of San Diego County include the San Marcos and Cuyamaca gabbros, as well as unnamed bodies. They are composed of mostly gabbros with proportions of norite and diorite. Since granitic rocks are plutonic in origin, this geologic unit is determined to have no potential for paleontological resources.
- **Granitic rocks.** Granitic rocks are composed of quartz diorite (tonalite) with minor amounts of granodiorite and granite and are Cretaceous in age. Since granitic rocks are plutonic in origin, this geologic unit is determined to have no potential for paleontological resources.

Environmental Impacts and Mitigation Measures

Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources (Class II)

The potential to discover paleontological resources during the construction of the Future Transmission System Expansion for Interstate 8 Alternative ranges from zero to moderate. Areas determined to have paleontological sensitivity are located from MP 0 to 0.8, MP 21.0 to 21.2, and MP 23.9 to 24.2. Areas along the Alternative route determined to be paleontologically sensitive based on geologic mapping are shown in Table E.1.7-8 Implementation of the Mitigation Measures PAL-1a, PAL-1b, PAL-1c, PAL-1d, and PAL-1e would reduce project effects to a level of less than significant (Class II)

Table E.1.7-8. Paleontological Sensitivity – Future Transmission System Expansion for Interstate 8 Alternative:

Mileposts	Rock Units	Sensitivity
0.0–0.8	Metasedimentary and Metavolcanic rocks	Marginal
0.8–3.0	Granitic rocks (Tonalite)	Zero
3.0–3.3	Metavolcanic rocks	Zero
3.3–5.7	Granitic rocks	Zero
5.7–6.1	Gabbroic rocks	Zero
6.1–7.1	Granitic rocks (Tonalite)	Zero
7.1–9.4	Gabbroic rocks	Zero
9.4–14.1	Granitic rocks	Zero
14.1–14.3	Gabbroic rocks	Zero
14.3–14.5	Granitic rocks	Zero
14.5–14.8	Gabbroic rocks	Zero
14.8–21.0	Granitic rocks	Zero
21.0–21.2	Quaternary Younger Alluvium	Low
21.2–21.5	Granitic rocks (Tonalite)	Zero
21.5–21.7	Metavolcanic rocks	Zero
21.7–21.8	Granitic rocks (Tonalite)	Zero
21.8–21.9	Gabbroic rocks	Zero
21.9–22.1	Granitic rocks (Tonalite)	Zero
22.1–22.3	Gabbroic rocks	Zero
22.3–22.4	Metavolcanic rocks	Zero
22.4–22.5	Gabbroic rocks	Zero
22.5–23.9	Granitic rocks	Zero
23.9–24.0	Quaternary Younger Alluvium	Low
24.0–24.2	Lusardi Formation	Moderate
24.2–24.5	Granitic rocks	Zero
24.5–24.6	Metavolcanic rocks	Zero
24.6–25.0	Granitic rocks (Tonalite)	Zero

Mitigation Measure for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources

- PAL-1a** Inventory and evaluate paleontological resource in the Final APE.
- PAL-1b** Develop Paleontological Monitoring and Mitigation Plan.
- PAL-1c** Monitor construction for paleontology.
- PAL-1d** Conduct paleontological data recovery.
- PAL-1e** Train construction personnel.