

4.4 PALEONTOLOGY

The analysis in this section provides focused updates to Paleontology, which was discussed in Chapter 4.6 Geology, Soils, and Mineral Resources in the 2011 Comprehensive Land Use Update (CLUU) Program Environmental Impact Report (PEIR). The analysis is based on the 2011 CLUU PEIR, with an emphasis on conditions that may have changed since approval of the 2011 CLUU PEIR.

4.4.1 Existing Conditions

4.4.1.1 Geologic Setting

Paleontological Sensitivity

The potential for fossil remains at a location (i.e., sensitivity) can be predicted through previous patterns of discovery within the specific geologic formations within which they are buried. For this reason, knowledge of the geology of a particular area and the paleontological resource sensitivity of particular rock formations make it possible to predict where fossils will or will not be encountered.

Paleontological sensitivity is defined as follows:¹

- **High:** High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleontological, and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered most likely to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.
- **Moderate:** Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains.
- **Low:** Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific significance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to the geologic understanding of the area.
- **Marginal:** Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcanoclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability of producing fossils from certain formations at localized outcrops. Volcanoclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks contained paleontological resources, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.
- **No Potential:** No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, including artificial fill materials that lose the stratigraphic/geologic context of any contained organic remains (e.g.,

¹ County of San Diego, Guidelines for Determining Significance Paleontological Resources, March 19, 2007 <https://www.sandiegocounty.gov/dplu/docs/Paleo-Guidelines.pdf>

fossils) and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential—i.e., they are not sensitive.

Geologic Formations

The City of National City contains several geologic formations, which include a sequence of marine and non-marine sedimentary rock units that record portions of the last 140 million years of earth history (see Figure 4.4-1 and Figure 4.4-2). Over this time period, the relationship of land and sea has fluctuated drastically, such that today there are ancient marine rocks preserved up to elevations about 900 feet above sea level. The local geology of National City consists primarily of Holocene and Pleistocene Formations (see Figure 4.4-1).² The listed geologic units and their paleontological sensitivity are summarized in Table 4.4-1.

Table 4.4-1 Paleontological Sensitivities of Geologic Formations in National City

Geologic Formation		Paleontological Sensitivity
Qya	<i>Young alluvial flood-plain deposits (Holocene and late Pleistocene)</i>	Low
Qop6	<i>Bay Point Formation - Old paralic deposits, undivided (late to middle Pleistocene) Unit 6</i>	High
Qvop	<i>Lindavista Formation - Very old paralic deposits, undivided (middle to early Pleistocene)</i>	Moderate
Tdss	<i>San Diego Formation (early Pleistocene and late Pliocene) - marine sandstone</i>	High
af	<i>Artificial Fill</i>	None
Source: Mira Costa College, Geology of the San Diego Quadrangle (1:100,000 scale), National City, CA 1:24,000 Quadrangle, April 23, 2017 https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/maps_geology/national_city.html https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/images/legend_SD.jpg		

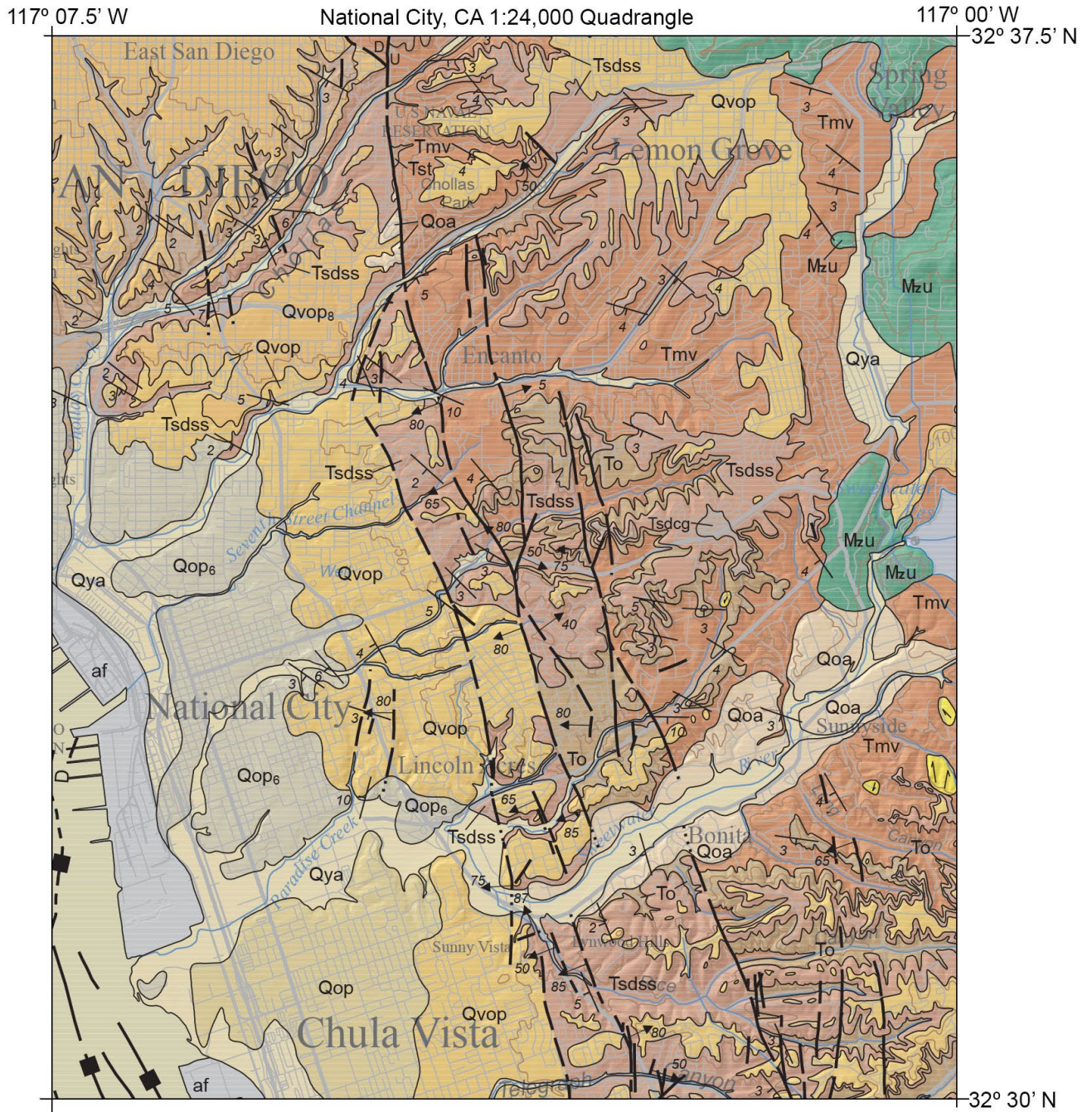
Young alluvial flood-plain deposits (Holocene and late Pleistocene) (Qya)

Holocene- and late Pleistocene-age alluvial flood plain deposits occur in modern floodplains. These deposits are generally less than 11,700 years old and range in composition from unconsolidated to moderately consolidated silt, sand, pebbly and cobbly sand, and boulders. Young alluvial flood plain deposits are assigned a low paleontological sensitivity based on their relatively young geologic age and lack of recorded fossil collection localities. However, these deposits commonly overlie geologic units of high or moderate paleontological sensitivity that could be impacted by construction where the contact is relatively shallow.³ These formations are present along the entire west coast of the Planning Area and also branch across the Planning Area in narrow bands, especially along the southern edge of the Planning Area following Paradise Creek.

² Mira Costa College, Geology of the San Diego Quadrangle (1:100,000 scale), National City, CA 1:24,000 Quadrangle, April 23, 2017
https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/maps_geology/national_city.html
https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/images/legend_SD.jpg

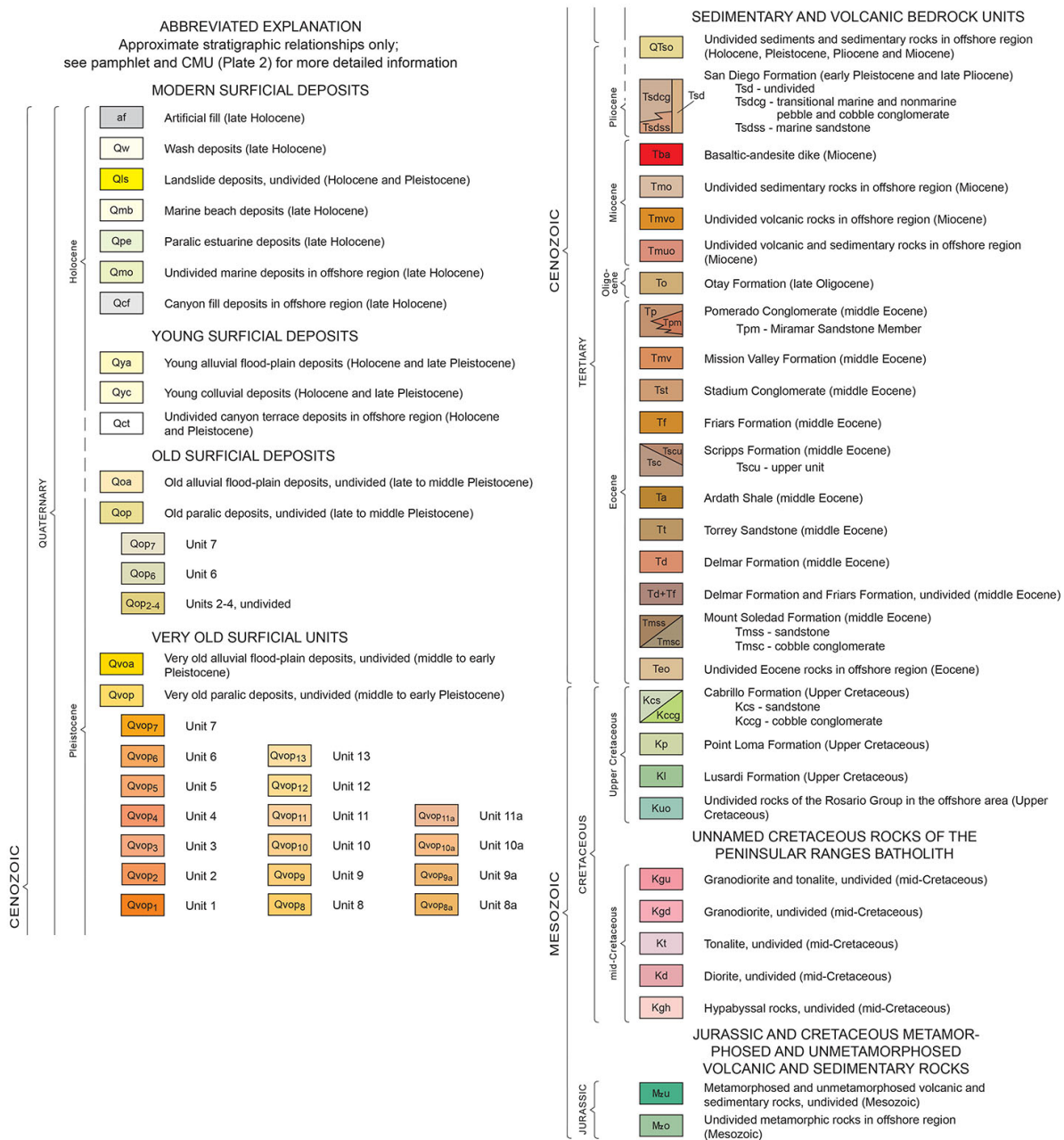
³ San Diego Natural History Museum, Appendix N Paleontological Resources Review Memorandum for the Carmel Mountain Ranch Golf Course Project Attachment A Paleontological Records Search Results Letter, January 21, 2020,
https://www.sandiego.gov/sites/default/files/dsd_appendix_n_paleo_resources_review_memo.pdf

Figure 4.4-1 National City Quadrangle – Geologic Formations



Source: Mira Costa College, Geology of the San Diego Quadrangle (1:100,000 scale), National City, CA 1:24,000 Quadrangle, April 23, 2017
https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/maps_geology/national_city.html

Figure 4.4-2 National City Quadrangle – Geologic Formations (Key)



Source: Mira Costa College, Geology of the San Diego Quadrangle (1:100,000 scale), National City, CA 1:24,000 Quadrangle, April 23, 2017
https://gotbooks.miracosta.edu/fieldtrips/san_diego_maps/san_diego_maps/images/legend_SD.jpg

Bay Point Formation - Old paralic deposits, undivided (late to middle Pleistocene) Unit 6 - Qop6)

Middle to late Pleistocene-aged paralic deposits primarily consisting of interfingering strandline, beach, estuarine and colluvial deposits composed of dark reddish brown to brown, dense to very dense, fine- to medium-grained, silty to clayey sandstone with interbedded siltstone, sandstone, and conglomerate.⁴ The Bay Point Formation has been assigned a high paleontological sensitivity for the diverse and well-preserved fossils.⁴ This geologic unit underlies much of the western and central parts of the Planning Area.

Lindavista Formation - Very old paralic deposits, undivided (middle to early Pleistocene) (Qvop)

These deposits of reddish-brown interfingering strandline, beach, estuarine, and colluvial deposits are composed of siltstone, sandstone, and conglomerate. They are poorly sorted and moderately permeable and rest on the now emergent wave-cut abrasion platforms preserved by regional uplift.⁵ This geological unit is assigned moderate paleontological sensitivity due to previous yields of scientifically significant marine invertebrate and vertebrate specimens.⁶ This geologic unit underlies a majority of the eastern half of the Planning Area.

San Diego Formation (early Pleistocene and late Pliocene) - marine sandstone (Tsdss)

The San Diego Formation is a marine sedimentary rock unit of late Pliocene- to early Pleistocene-age (approximately 3.5 to 1.5 million years old), which was deposited in an open-marine embayment similar in size and shape to modern-day Monterey Bay. The San Diego Formation has produced fossils from numerous localities discovered in the San Diego coastal plain. The formation is well known for its rich fossil beds that have yielded extremely diverse assemblages of marine species and rare remains of terrestrial mammals, and therefore has been assigned a high paleontological sensitivity.⁷ This geologic unit is mostly present along the far eastern edges of the Planning Area.

Artificial Fill (af)

No fossils of paleontological interest are located in artificial fill materials, which are artificially compacted fill deposits. Any contained organic remains have lost their original stratigraphic/geologic context due to the disturbed nature of the artificial fill materials. Artificial fill materials are assigned a no paleontological resource sensitivity due to the loss of the stratigraphic/geologic context of any contained organic remains (e.g., fossils).⁷ Artificial fill mostly underlays the coastal portions of the Planning Area underneath the Naval Base down south to the Sweetwater Channel.

4.4.1.2 Paleontological Resources

There are no known resources within the Planning Area.

4.4.2 Regulatory Framework

No federal regulatory framework currently exists for paleontological resources. Paleontological resources are limited, nonrenewable resources of scientific and educational value, which are afforded protection under state laws and regulations.

4 Leighton and Associates, Inc., Geologic Study for the Barrio Logan Community Plan Update PEIR, October 19, 2012

5 Dyett and Bhatia Urban and Regional Planners, Draft Geotechnical Desktop Study for Southeastern San Diego and Encanto Neighborhoods Community Plan Updates, City of San Diego, January 13, 2015

<https://www.sandiego.gov/sites/default/files/legacy/planning/programs/ceqa/2015/150708apphgeotechnicalstudy.pdf>

6 Dudek, Paleontological Resources Inventory Report for the Encompass Health Chula Vista Project, January 2021

<https://www.chulavistaca.gov/home/showpublisheddocument/22168/637503684909130000>

7 San Diego Natural History Museum, Appendix M Paleontological Resources Assessment for the Old Town San Diego and Midway-Pacific Highway Corridor Community Plan Updates, October 14, 2013. https://www.sandiego.gov/sites/default/files/appendix_m_paleontological_resource_assessment_0.pdf

4.4.2.1 State

The California Environmental Quality Act (CEQA)

Future discretionary development projects are required to undergo environmental review pursuant to CEQA, which would include an assessment of impacts to paleontological resources and mitigation in the event of discovery.

California Public Resources Code (PRC)

Section 5097.5

Section 5097.5 of the PRC states:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the State or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, National City is required to comply with PRC 5097.5 for its activities on publicly owned land.

4.4.2.2 Local

National City Open Space and Agricultural Element

The Open Space and Agricultural Element contains Policy OS-8.8, which would minimize or avoid impacts to paleontological resources:

Cultural and Paleontological Resources

- **Goal OS-8:** *The identification, preservation, and enhancement of the city’s historic, cultural, and paleontological resources.*
 - **Policy OS-8.8** *requires monitoring for sub-surface cultural and paleontological resources during grading and construction activities for all development projects.*

4.4.3 Significance Determination Thresholds

The 2022 CEQA Guidelines Appendix G, Issue VI. Geology and Soils includes the following significance thresholds related to Paleontology:

- f) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Discussion of impacts under thresholds (a) through (e) related to the discussion of Geology and Soils is located in Chapter 7 Comprehensive Land Use Update PEIR Subject Areas Requiring No Change in Analysis.

4.4.4 Issue 1: Paleontological Resources

Impacts would be considered significant if development would require excavation within a geologic formation with high paleontological resource sensitivity. Buildout of the Focused General Plan Update (FGPU) would not directly result in physical construction that could impact paleontological resources. However, future development consistent with the FGPU and the associated construction activities could result in direct or indirect impacts to paleontological resources, depending on the depth and quantity of ground disturbance proposed. The geologic unit upon which the proposed development is to take place would be considered in application approval. All requests for grading permits would require submittal of a preliminary geotechnical report with these geologic units identified. Construction activities such as grading and excavation within paleontologically sensitive areas may result in the accidental destruction or disturbance of paleontological resources. Additionally,

development may draw the public to gather in areas with visible paleontological resources, resulting in destruction, illicit collection, or prospecting by unauthorized persons.

Future development activities consistent with the FGPU would be required to comply with General Plan Policy OS-8.8 regarding monitoring for subsurface paleontological resources during grading and construction activities for development projects. The City only requires monitoring under this policy for vacant, undeveloped parcels as a condition for the grading permit. Future discretionary development projects would also be required to undergo environmental review pursuant to CEQA, which would include an assessment of potential impacts to paleontological resources and site-specific mitigation in the event of discovery. However, ministerial and capital projects could occur without paleontological monitoring, which may result in unanticipated discovery during construction. Furthermore, monitoring alone would not provide adequate mitigation should an inadvertent discovery of a paleontological resource occur during construction. Since site-specific development details are not available at the time of this program level of analysis, potential impacts to paleontological resources are considered *significant* (**Impact PALEO-1**).

4.4.5 Mitigation, Monitoring, and Reporting

MM-PALEO-1 Paleontological Monitoring and Excavation Plan:

All proposed site-specific projects under the Focused General Plan Update (FGPU) shall be reviewed by the Planning Department for the potential to result in impacts to paleontological resources. A project may result in impacts to paleontological resources if it:

- (a) *Is situated above any area of moderate to high paleontological sensitivity (as defined in the 2022 FGPU Supplemental Program Environmental Impact Report Chapter 4.4 Paleontology);*
- (b) *Would result in greater than 1,000 cubic yards of excavation at 10 feet or greater of depth in an area of high sensitivity; or*
- (c) *Would result in greater than 2,000 cubic yards of excavation at 10 feet or greater depth in an area of moderate sensitivity.*

Projects meeting the above criteria shall be subject to implementation of the following mitigation framework:

- (a) *A qualified paleontological monitor shall be present during ground disturbance. The monitor shall have the authority to stop and/or divert grading, trenching, or excavating within an appropriate radius of the find if a paleontological resource is encountered.*
- (b) *An excavation plan shall be implemented to mitigate the discovery. Excavation shall include the salvage of the fossil remains (simple excavation or plaster-jacketing of larger and/or fragile specimens); recording of stratigraphic and geologic data; and transport of fossil remains to laboratory for processing and curation.*

4.4.6 Significance after Mitigation

Paleontological resources represent a limited, nonrenewable, sensitive scientific and educational resource. Impacts to resources (**Impact PALEO-1**) would be *less than significant with mitigation* (**MM-PALEO-1**).