

3.12 PALEONTOLOGICAL RESOURCES

This section describes paleontological resources in the planning area, provides a summary of applicable regulations that pertain to paleontological resources, and provides an analysis of potential impacts to paleontological resources associated with the implementation of the proposed General Plan of the City of San Marcos. Potential environmental impacts associated with implementation of the proposed General Plan, and appropriate mitigation measures where applicable, are described.

3.12.1 EXISTING ENVIRONMENTAL SETTING

Paleontological resources represent a limited, nonrenewable, and impact-sensitive scientific and educational resource. As defined in this section, “paleontological resources” (i.e., fossils) are the remains and/or traces of prehistoric plant and animal life. Fossils such as bones, teeth, shells, and leaves are found in geologic deposits (rock formations) within which they were originally buried. Paleontological resources include not only fossils, but also collecting localities and the geological formations containing those localities.

Regional Geography

The planning area lies within the western foothills of the Peninsular Ranges (Mesozoic age; ~125 to 90 million years old [Ma]), which are overlain by younger sedimentary deposits (Cenozoic age; ~45 Ma to 11,000 years old (Deméré and Siren 2010)). Young and older alluvium is found in the lowest areas, sedimentary and crystalline rocks in the intermediate elevation hills, and metavolcanic/crystalline rocks in the higher hills and mountains. The alluvial surface in the central section of the planning area and in the City Hall, or Richmar, neighborhood area is underlain young alluvium over crystalline tonalite “hard” bedrock. Older alluvium occupies limited valley bottoms in the eastern position of the City along portions of SR-78, Woodland Parkway, and Rock Springs Road. A relatively “soft” bedrock formation underlies the westernmost portions of the City and consists of poorly bedded sandstone, siltstone and claystone with conglomerate. The Cerro de las Posas Mountains, which include Mt. Whitney, Double Peak, and Frank’s Peak as well as the surrounding higher hills around Twin Oaks Valley, are underlain by “hard” metavolcanic rocks with some plutonic crystalline rocks. These units are cut by San Marcos Creek and numerous unnamed secondary drainages filled with younger alluvium consisting of slightly consolidated silt, sand, and gravel (Wilson 2009).

Older Pleistocene-age alluvial deposits have the potential to yield “Ice-age” fossils. In composition, these deposits consist of “moderately well consolidated, poorly sorted, permeable, commonly slightly desiccated gravel, sand, silt, and clay-bearing alluvium.” These Pleistocene alluvial deposits are locally capped by Holocene alluvium and artificial fill, and at depth, are underlain by Cretaceous and older igneous rocks. Pleistocene old alluvial flood plain deposits in northern San Diego County and include recorded fossil collecting localities in Vista, Carlsbad, and Oceanside. These localities have yielded fossils of terrestrial plants, freshwater and terrestrial invertebrates such as clams and snails, and terrestrial mammals such as ground sloth, rodents, horse, tapir, camel, llama, deer, mastodon, and mammoth (Deméré and Walsh 1993). Given that no fossils have been recovered from the sediments mapped as old

alluvial flood plain deposits in the planning area or vicinity, it is suggested that these deposits have an unproven and/or undetermined paleontological sensitivity (Deméré and Siren 2010).

Paleontological Resource Assessment Criteria

The potential paleontological importance of the planning area can be assessed by identifying the paleontological importance of exposed rock units within the planning area. Because the aerial distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of the planning area that are of higher and lower sensitivity for paleontological resources and to delineating parts of the planning area that may require monitoring during construction.

A paleontologically important rock unit is one that has a high potential paleontological productivity rating and is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed in the planning area refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the planning area. Exposures of a specific rock unit in the planning area are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the planning area.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (SVP 1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity. In keeping with the significance criteria of the Society of Vertebrate Paleontology (SVP 1995), all vertebrate fossils are generally categorized as being of potentially significant scientific value.

A “unique paleontological resource or site” is one that is considered significant under the professional paleontological standards described below. An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- A type specimen (i.e., the individual from which a species or subspecies has been described);
- A member of a rare species;
- A species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;

- A skeletal element different from, or a specimen more complete than, those now available for its species; or
- A complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions, such as for a research project. Marine invertebrates are generally common; the fossil record is well developed and well documented, and marine invertebrates would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

Unique Geological Features

A unique feature may be the best example of its kind locally or regionally, it may illustrate a geologic principle, it may provide a key piece of geologic information, it may be the "type locality" of a fossil or formation, or it may have high aesthetic appeal. Unique geologic features may be exposed or created from natural weathering and erosion processes or from man-made excavations. These unique geological features provide aesthetic, scientific, educational, and recreational value.

Unique geological features in the San Diego region were documented in the 1975 San Diego County General Plan (amended April 2002), which listed San Marcos Gabbro as a unique geological feature. San Marcos Gabbro is found in the San Marcos Mountains north of the planning area and is composed of a dark, basic intrusive rock that weathers into reddish Las Posas clay. It contains a high iron and magnesium content compared with light-colored granites and granodiorites. San Marcos Gabbro outcrops in north Twin Oaks Valley are excavated and used for polished counter tops and tiles. Because of its density and outstanding resistance to expansion and warping, thick gabbro table tops are used to support precision scientific instruments (Armstrong and Sherman 1981).

3.12.2 REGULATORY SETTING

The following provides a general description of the applicable regulatory requirements for the planning area, including federal, state, regional, and local guidelines.

Federal Regulations

Native American Consultation

Government Code Section 65352.3 (Senate Bill 18) requires local governments to consult with California Native American tribes identified by the California NAHC prior to the adoption or amendment of a General Plan or specific plan. The purpose of this consultation is to preserve or mitigate impacts to cultural places.

State Regulations

Public Resources Code 5097.5

Section 5097.5 of the California PRC prohibits excavation or removal of any “vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.” Section 30244 requires reasonable mitigation of adverse impacts to paleontological resources from development on public land. Penal Code Section 623 spells out regulations for the protection of caves, including their natural, cultural, and paleontological contents. It specifies that no “material” (including all or any part of any paleontological item) will be removed from any natural geologically formed cavity or cave.

Local Plans and Policies

No local plans or policies govern paleontological resources.

3.12.3 THRESHOLDS FOR DETERMINING SIGNIFICANCE

The impact of the proposed project related to public services and utilities would be considered significant if it would exceed the following thresholds of significance, in accordance with Appendix G of the CEQA Guidelines:

- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

3.12.4 ANALYSIS OF ENVIRONMENTAL IMPACTS

Paleontological Resources

The planning area is underlain by old alluvial flood plain deposits of an unproven/undetermined paleontological sensitivity (Deméré and Siren 2010). Though no specific paleontological resources are documented in the planning area, buried paleontological resources may exist.

Implementation of the proposed General Plan would not result in any direct impacts regarding paleontological resource disturbance within the planning area. Ground-disturbing activities, such as construction associated with development, and/or expansion of infrastructure, have the potential to impact buried paleontological resources. Thus, development of land pursuant to the proposed General Plan has the potential to impact significant known and unknown paleontological resources. However, the majority of development anticipated under the proposed General Plan will involve redevelopment of or new development within existing developed areas. Substantial excavation activities for installation of new infrastructure would be limited to new development in undeveloped areas; potential for this type of development does exist but is limited by the proposed General Plan. Thus, the likelihood of finding new or undiscovered paleontological resources is limited.

Existing City of San Marcos review processes and conservation/management policies protect prominent land forms, reduce run off, and limit human interaction with unmanaged open space. The City assesses and mitigates the potential impacts of private development and public facilities and infrastructure to these resources pursuant to the provisions of CEQA. The City will continue to review future development proposals to ensure that paleontological resources are conserved in compliance with CEQA requirements.

With adherence to and implementation of existing regulations and City review processes, impacts to paleontological resources will be **less than significant**. No mitigation is required.

Unique Geological Features

San Marcos Gabbro outcrops in north Twin Oaks Valley are identified by the San Diego County General Plan as unique geological features. These outcrops are currently excavated and used for polished counter tops and tiles, and are used to support precision scientific instruments. Because this unique geological feature is currently disturbed and a functioning part of the local economy, the implementation of the proposed General Plan would not directly or indirectly destroy the feature. Hence, impacts to unique geological resources will be **less than significant**. No mitigation is required.

3.12.5 MITIGATION MEASURES

Impacts to paleontological resources will be **less than significant**. No mitigation is required.

3.12.6 SIGNIFICANCE AFTER MITIGATION

Impacts would be **less than significant** without mitigation.

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