

APPENDIX F – PHASE I PALEONTOLOGICAL RESOURCES REPORT



**PHASE 1 PALEONTOLOGICAL RESOURCES
REPORT FOR THE OTAY LAKES CAMPGROUND
PROJECT
SAN DIEGO COUNTY, CALIFORNIA**

Project Common Name: BSOA Otay Lakes Campground

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SECTION 1.0 – INTRODUCTON

1.1 PROJECT DESCRIPTION

The County of San Diego (County), as the lead agency under the California Environmental Quality Act (CEQA), has prepared this initial study (IS), which this technical report supports, to evaluate the potential environmental impacts associated with the Otay Lakes Campground Project (Proposed Project). The Proposed Project includes the development of new camping facilities, a flag plaza, archery range, fire ring and amphitheater, zip-line, demolition of existing restroom and construction of a new and larger restroom facility with showers overlapping the existing restroom footprint, development of an activity/program area ('Camporee Field'), construction of a fenced storage facility, development of six Challenging Outdoor Personal Experience (COPE) stations, and minor road improvements on County property adjacent to Otay Lakes County Park (Figure 1).

The paleontological resources assessment was conducted in accordance with the California Environmental Quality Act (CEQA) and the County of San Diego Guidelines for Determining Significance (County of San Diego 2009). The County of San Diego will serve as lead agency for the purposes of CEQA.

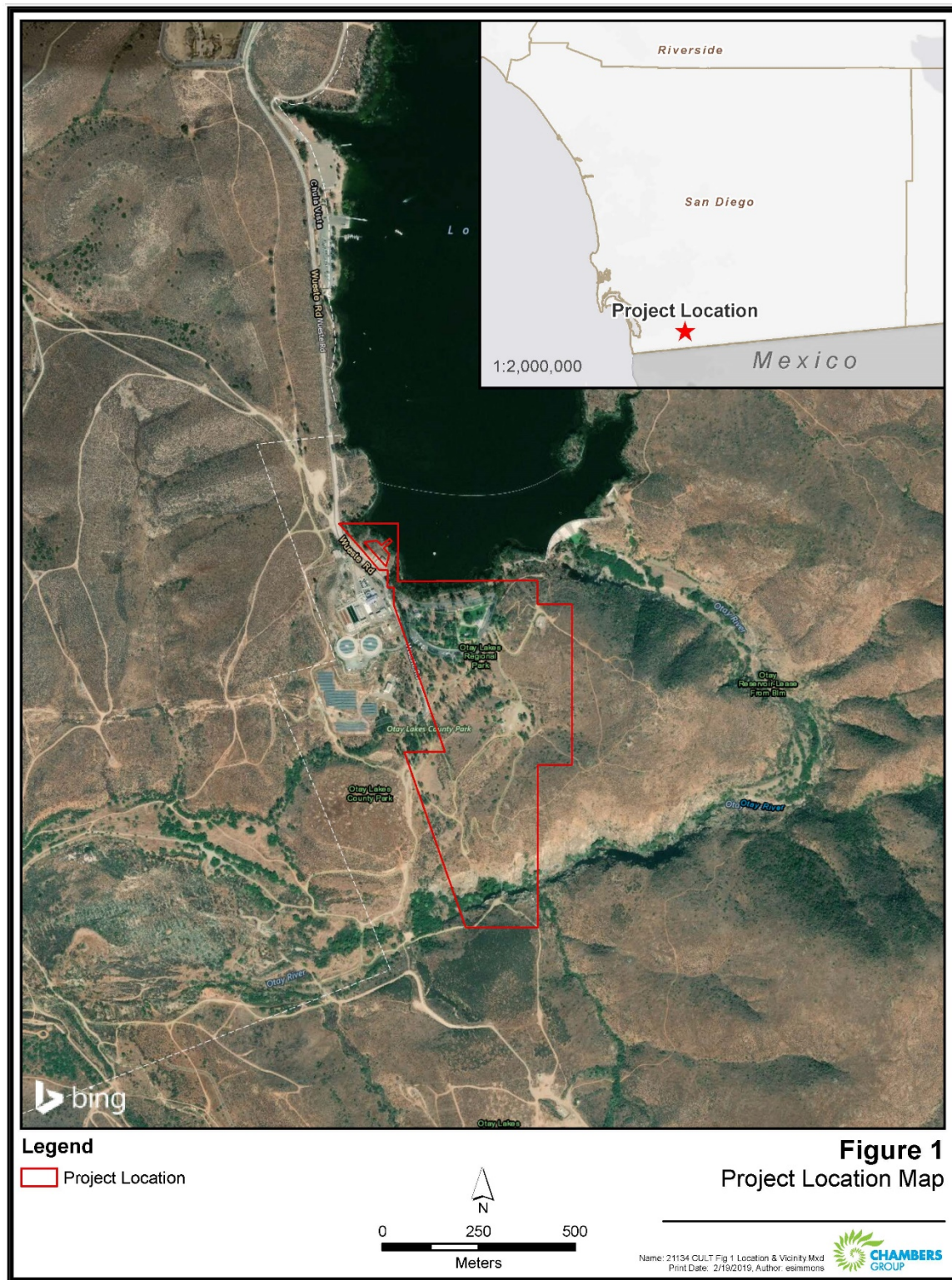


Figure 1: Project Location and Vicinity

1.2 GEOLOGIC SETTING

The project area is broadly defined as the Coastal Plain Region according to the County of San Diego (2009). The area is characterized by interbedded marine and nonmarine sedimentary rock units deposited over the last 75 million years. The sedimentary rocks overlie a buried topography of plutonic crystalline rocks composed of granite, granodiorite, etc. Many of the level surfaces in the coastal areas, including most of the mesa tops and coastal benches, are elevated marine terraces, and these, as well as the broad, level floodplains of river valleys, are characteristic features of the Coastal Plain Region (Bergen et al. 1996).

SECTION 2.0 – EXISTING REGULATIONS AND STANDARDS

In the County of San Diego, adverse impacts to paleontological resources are primarily addressed through the California Environmental Quality Act (CEQA). The County's Grading Ordinance also addresses paleontological resources. Additional federal and state regulations that govern the assessment and protection of paleontological resources can be found in Attachment B, as well as professional guidelines.

2.1 STATE REGULATIONS AND STANDARDS

Under CEQA, lead agencies are required to consider impacts to unique paleontological resources. CEQA is concerned with assessing impacts associated with the direct or indirect destruction of unique paleontological resources or sites that are of value to the region or state.

2.2 LOCAL REGULATIONS AND STANDARDS

Section 87.430 of the Grading Ordinance provides for the requirement of a paleontological monitor at the discretion of the County. In addition, the suspension of grading operation is required upon the discovery of fossils greater than twelve inches in any dimension. The ordinance also requires notification of the County Official (e.g. Permit Compliance Coordinator). The ordinance gives the County Official the authority to determine the appropriate resource recovery operations, which the permittee shall carry out prior to the County Official's authorization to resume normal grading operations.

The Conservation Element of the San Diego County General Plan provides policies for the protection of natural resources. In addition, Appendix G of the Conservation Element lists Unique Geologic Features for conservation, many of which are fossiliferous formations.

The County of San Diego Department of Planning and Land Use *Guidelines for Determining Significance for Paleontological Resources* (2009) is used by County staff during review of environmental documents pursuant to CEQA for the evaluation of significant effects.

2.3 DEFINITION OF SIGNIFICANCE

Sensitivity levels are rated for individual geologic formations, as it is the formation that contains the fossil remains. The sensitivity levels are the same as the resource potential ratings.

Based on the geologic formations in San Diego County, levels of paleontological resource potential and sensitivity have been developed (Deméré and Walsh 1993) and are shown on the "San Diego County Paleontological Sensitivity" map (Figure 2). Paleontological Resource Potential Ratings and Sensitivity of Geologic Formations in San Diego County (Table 1) lists the formations in the County that are known to contain or have the potential to contain unique paleontological resources. The resource potential ratings and geologic formation sensitivity levels are described below.

2.3.1 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, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations

with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.

2.3.2 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 (Deméré and Walsh 1993).

2.3.3 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 our geologic understanding of the area.

2.3.4 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 for 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 had paleontological resources within them, 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.

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

SECTION 3.0 – ANALYSIS OF PROJECT EFFECTS

3.1 GEOLOGIC ROCK UNITS UNDERLYING THE PROJECT AREA

Young alluvium – A small area in the southwestern corner of the Project site is underlain at the surface by Holocene-age young alluvium, which typically lines modern drainages. Young alluvial deposits are generally considered to be less than 10,000 years old, and range in composition from unconsolidated to moderately consolidated silt, sand, pebbly and cobbly sand, and boulders. No fossils are currently known from these deposits in the vicinity of the Project site. These deposits are assigned a low paleontological sensitivity based on their relatively young geologic age and lack of recorded fossil collection localities. However, within the Project site, these deposits appear to overlie the Friars Formation (high paleontological sensitivity, see below), which could be impacted where the contact between these two geologic units is relatively shallow, though the actual depth is currently unknown.

Friars Formation – The fluvial deposits of the middle Eocene-age (approximately 47 to 46 million years old) Friars Formation underlie the southeastern corner of the Project site, and likely underlie the Lindavista Formation at unknown depths throughout the rest of the Project site. The SDNHM does not have any fossil collection localities from the Friars Formation within a half-mile radius of the Project site. The Friars Formation is assigned a high paleontological sensitivity on the basis of the recovery of diverse and well-preserved assemblages of both marine invertebrates and terrestrial vertebrates from these deposits.

Santiago Peak Volcanics – Crystalline basement rocks of early Cretaceous age (approximately 125 to 145 million years old), mapped as the Santiago Peak Volcanics by Todd (2004) underlie the majority of the Project site. The SDNHM does not have any fossil localities from these rocks within a half-mile radius of the project sites. The metavolcanic portions of this unit rarely preserve fossils due to the high temperatures associated with their formation; some of the volcanic breccias, however, have produced petrified wood, and are assigned a marginal sensitivity (Deméré and Walsh, 1993). The metasedimentary portions have the potential to yield fossils, including siliceous microfossils (e.g., radiolarians) and marine macroinvertebrates (e.g., clams and belemnites), and are assigned a moderate paleontological sensitivity. The lack of nearby localities from these deposits indicates that fossil recovery is unlikely, so the geologic unit as a whole is assigned a low paleontological sensitivity.

SECTION 4.0 – SUMMARY AND RECOMMENDATIONS

The high paleontological sensitivity of the Friars Formation in San Diego County (Deméré and Walsh, 1993; Stephenson et al., 2009) suggest the potential for construction of the Project to result in impacts to paleontological resources. Any proposed excavation activities that extend deep enough to encounter previously undisturbed deposits of this geologic unit have the potential to impact the paleontological resources preserved therein. Since an impact to paleontological resources does not typically occur until the substratum is excavated, monitoring during excavation is the essential measure to mitigate significant impacts to paleontological resources to a level below significance. According to County guidelines, the type of monitoring required is based on the amount of excavation and the site's paleontological resource potential and sensitivity. The guidelines state that when the volume of excavation exceeds 2,500 cubic yards, the potential loss of paleontological resources is much higher than for lesser amounts of excavation. Therefore, the County requires the following monitoring, and subsequent salvage of significant paleontological resources if they are found, to adequately mitigate potentially significant impacts:

- For projects within areas of High or Moderate Paleontological Resources Potential that propose excavation equal to or greater than 2,500 cubic yards, the services of a Project Paleontologist and a Paleontological Resources Monitor are required.
- For projects within areas of High or Moderate Paleontological Potential that propose excavation of less than 2,500 cubic yards, monitoring by a Standard Monitor is required.
- For projects within areas of Low or Marginal Potential, monitoring by a Standard Monitor is required.

A Project Paleontologist is a person with a Ph.D. or Master's Degree in Paleontology or related field, and who has knowledge of San Diego County paleontology and documented experience in professional paleontological procedures and techniques. A Paleontological Resources Monitor is defined as an individual with at least one year of experience in field identification and collection of fossil materials under the supervision of a Project Paleontologist. A Standard Monitor is any one person who is on the project site during all the original cutting of undisturbed substratum. The Standard Monitor must be designated by the Applicant and given the responsibility of watching for fossils so that the project is in conformance with Section 87.430 of the Grading Ordinance.

Mitigation conditions are to be placed on grading plans, and projects must conform to the requirements of the Grading Ordinance. Section 87.430 of the Grading Ordinance provides for the requirement of a paleontological monitor at the discretion of the County. In addition, the suspension of grading operation is required upon the discovery of fossils greater than twelve inches in any dimension.

SECTION 5.0 – REFERENCES

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