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5.8 Paleontological Resources

This section presents the potential effects to paleontological resources from the construction and operation of the Pecho Energy Storage Center (PESC) in unincorporated San Luis Obispo County, California. Figure 5.8-1 presents the PESC project location and boundaries. This section of the Application for Certification (AFC) meets all siting regulations of the California Energy Commission (CEC) and conforms to the recommendations of the Society of Vertebrate Paleontology (SVP). The CEC and SVP regulations and recommendations address the assessment of and mitigating impacts to paleontological resources resulting from earthmoving activities (CEC 2000; CEC 2007; and SVP 2010). Paleontology is the scientific study of life in the geologic past, based on examination of fossilized remains of once living organisms. Fossilized remains include traces of organisms' existence, plants, invertebrates, vertebrates, and microfossils. Microfossils are very small organisms that require magnification to identify.

The paleontological resources inventory and impact assessment for the PESC project was prepared by Jennifer DiCenzo of Rincon Consultants Inc. (Rincon). Ms. DiCenzo has been a professional paleontologist since 2012 and is the current Paleontological Program Manager for Rincon. Rincon presented their findings to Hyrdostor, Inc. (Applicant) in the *Pecho Advanced Compressed Air Energy Storage Facility Project Paleontological Resources Technical Report* dated October 2021 (Rincon 2021). Ms. DiCenzo has over 10 years of experience in California paleontology and archaeology. She received her B.A. degree in anthropology in 2012 with a focus in archaeology and a minor in geology with a focus on paleontology, at San Diego State University. She has made substantial contributions in surveying, researching, data recovery, fossil salvage, and fossil preparation throughout California. She has been a primary report author for several surveys, assessments/evaluations, and data recovery assignments throughout California.

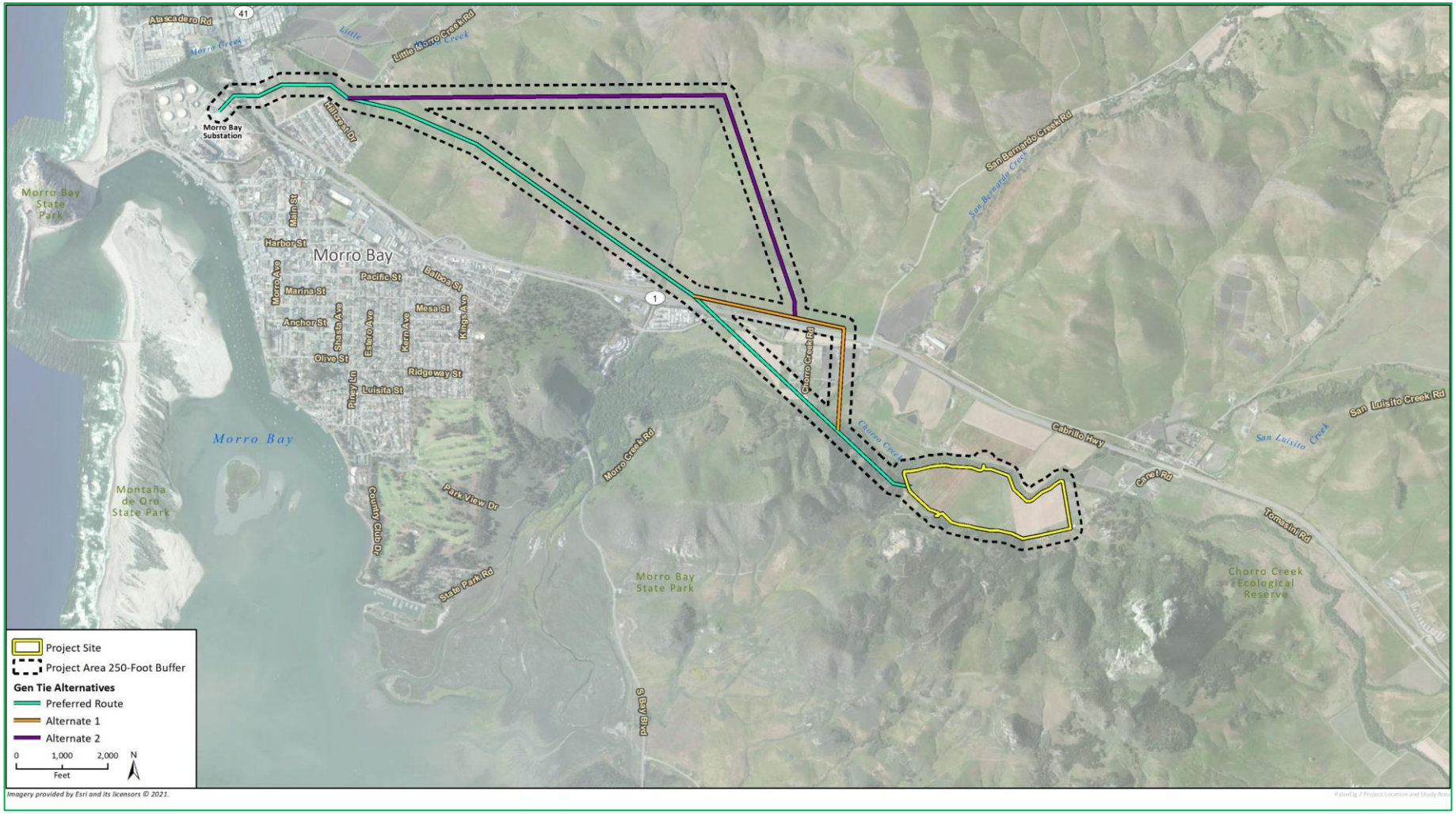
This evaluation of paleontological resources within the study area includes the following elements: Section 5.8.1 discusses the affected environment, including the resource inventory and its results; Section 5.8.2 presents the environmental analysis and impact assessment; Section 5.8.3 considers cumulative effects to paleontological resources; Section 5.8.4 presents the Applicant's proposed mitigation measures; Section 5.8.5 discusses applicable laws, ordinances, regulations, and standards (LORS); Section 5.8.6 lists involved agencies; Section 5.8.7 lists permits, and Section 5.8.8 provides the references consulted.

5.8.1 Affected Environment

This section describes the affected environment for paleontological resources. It begins by describing the physiographic and geological context of the project area, and then continues by describing the nature and types of fossil resources that have been recorded near PESC. It concludes by providing an assessment of the scientific importance of fossils that workers may encounter during the construction of PESC.

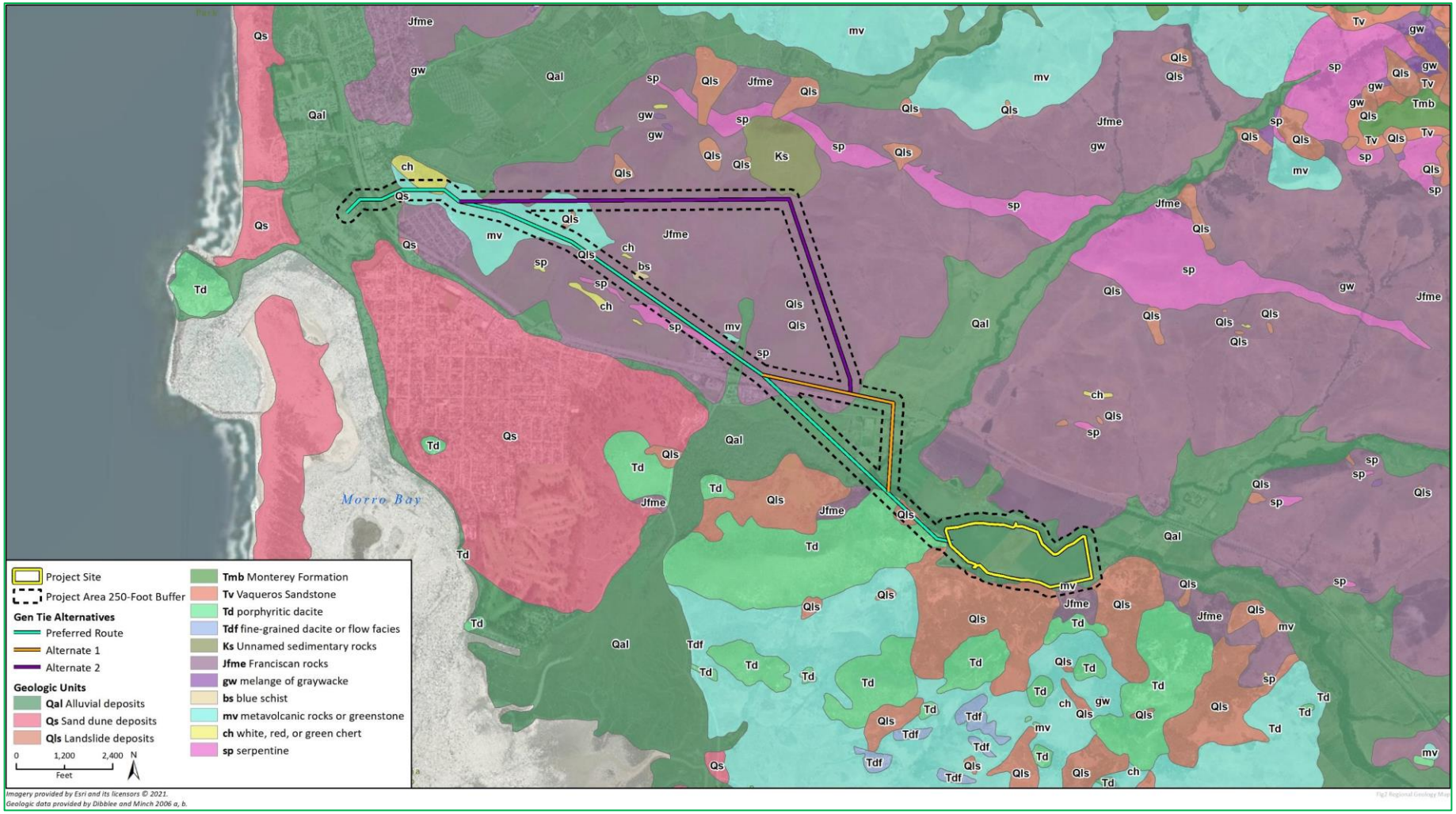
5.8.1.1 Physiographic and Geologic Setting

The project area is situated in the Coast Ranges, one of 11 major geomorphic provinces in California (California Geological Survey 2002). A geomorphic province is a region of unique topography and geology that geologist can readily distinguish from other regions based on its landforms and tectonic history. Figure 5.8-2 illustrates the project area and regional geology. The Coast Ranges province extends about 600 miles from the Oregon border south to the Santa Ynez River in Santa Barbara County. The Coast Ranges are characterized by numerous north-south–trending peaks and valleys that range in elevation from approximately 500 feet above mean sea level (amsl) to 7,581 feet amsl at the highest summit (Norris and Webb 1990).



Source: Rincon 2021.

Figure 5.8-1: Project Location and Boundaries



Source: Rincon 2021.

Figure 5.8-2: Regional Geology

5.8.1.2 Physiographic and Geologic Setting

The Coast Ranges province record a thick sequence of sedimentary strata dating back to the Mesozoic Franciscan Mélange (approximately 251 million years ago). The southern portion of the Coast Ranges province contain granitic and metamorphic rocks of the Salinian block (Norris and Webb 1990). The basement rocks of the Coast Ranges include the plutonic Salinian Block and the Jurassic to Cretaceous metasedimentary and metavolcanic rocks of the Franciscan Assemblage. During the Mesozoic Era and into the Cenozoic Era, the Coast Ranges province was covered by seawater and a thick deposit of marine to nonmarine shale, sandstone, and conglomerate accumulated on the Franciscan basement rock (Barron 1989; Bartow and Nilsen 1990; Graymer et al. 1996). The Cenozoic era began 66 million years ago and extends to the present day.

The Franciscan Mélange records deposition of volcanic and clastic sediments into a subduction zone during the Mesozoic era, followed by subsequent metamorphism (Wakabayashi 1992). The Franciscan Mélange is known to contain a wide range of fossils, including radiolarians, mollusks, diatoms, foraminifers, and marine vertebrates. However, fossil discoveries from the Franciscan Mélange deposits are rare (Schlocker 1974; Elder 2015; Hilton 2003). A search of the University of California Museum of Paleontology (UCMP) online collection database shows that radiolarians, mollusks, diatoms, foraminifers, and marine vertebrates fossils have all been recovered from Franciscan rocks in and around San Luis Obispo County (UCMP 2021). The most impressive of these fossils is a large marine reptile, *Plesiosaur hesternus*, recovered from Oakley Ranch (Hilton 2003; UCMP 2021).

Later, in the late Miocene to Pliocene epochs, a mountain-building episode occurred near the present-day Coast Ranges province, resulting in their uplift above sea level. Epochs are a division in geologic time. Subsequently, from the late Pliocene to Pleistocene epochs, extensive deposits of terrestrial alluvial fan and fluvial sediments were deposited in the Coast Ranges province, with the Pleistocene marked by glacially controlled sea level fluctuations and tectonic uplift. During this epoch, the shoreline advanced and retreated as much as 30 miles across the continental shelf (Norris and Webb 1990; Hall 2007).

As the sea level advanced, it cut a system of marine terraces, 12 of which are exposed in the Point San Luis area located eight to nine miles southwest of the City of San Luis Obispo. These terraces range in age from 83,000 to 49,000 years and reach elevations of 79 feet amsl. The formations that compose these terraces are the most paleontologically productive in the region (City of San Luis Obispo 2014). Modern beaches, which date from the late Pleistocene to recent time, overlie marine terraces at various depths (Hanson et al 1994, Orme 1990, 2005).

Three vertebrate localities have been reported along the coast within nine miles of the City of San Luis Obispo (Jefferson 1991). These localities occur in Pleistocene fluvial deposits overlying marine terraces and include assemblages of the Rancholabrean mammals *Equus sp*. and *E. occidentalis* (horse); *Camelops sp*. and *C.hesternus* (camel); *Bison antiquus* and *B. latifrons* (bison), and *Mammut americanum* (mammoth) (UCMP 2021).

5.8.1.2.1 Resource Inventory Methods

Paleontological resources occur within the geologic deposits or bedrock that underlies the soil layer. Therefore, to determine whether a given project area has the potential to contain significant fossil resources at the subsurface, it is necessary to review relevant scientific literature to determine the geology and stratigraphy of the area. To identify the geologic units, present at and below the surface within the project boundary, the Applicant's paleontologist reviewed published geologic maps, fossil locality data, and literature.

On July 21, 2021, the Applicant's paleontologist requested a formal paleontological locality search of the project area from the Natural History Museum of Los Angeles County (NHMLAC). In addition, the Applicant's

paleontologist reviewed the online paleontological collections database of the UCMP. The NHMLAC records and UCMP database searches were performed to identify known fossil localities in San Luis Obispo County from geologic formations like those identified in the project area. Following the literature review, the Applicant's paleontologist preformed a field reconnaissance survey to visually inspect the ground surface for exposed fossils and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface.

5.8.1.2.2 Resource Inventory Results

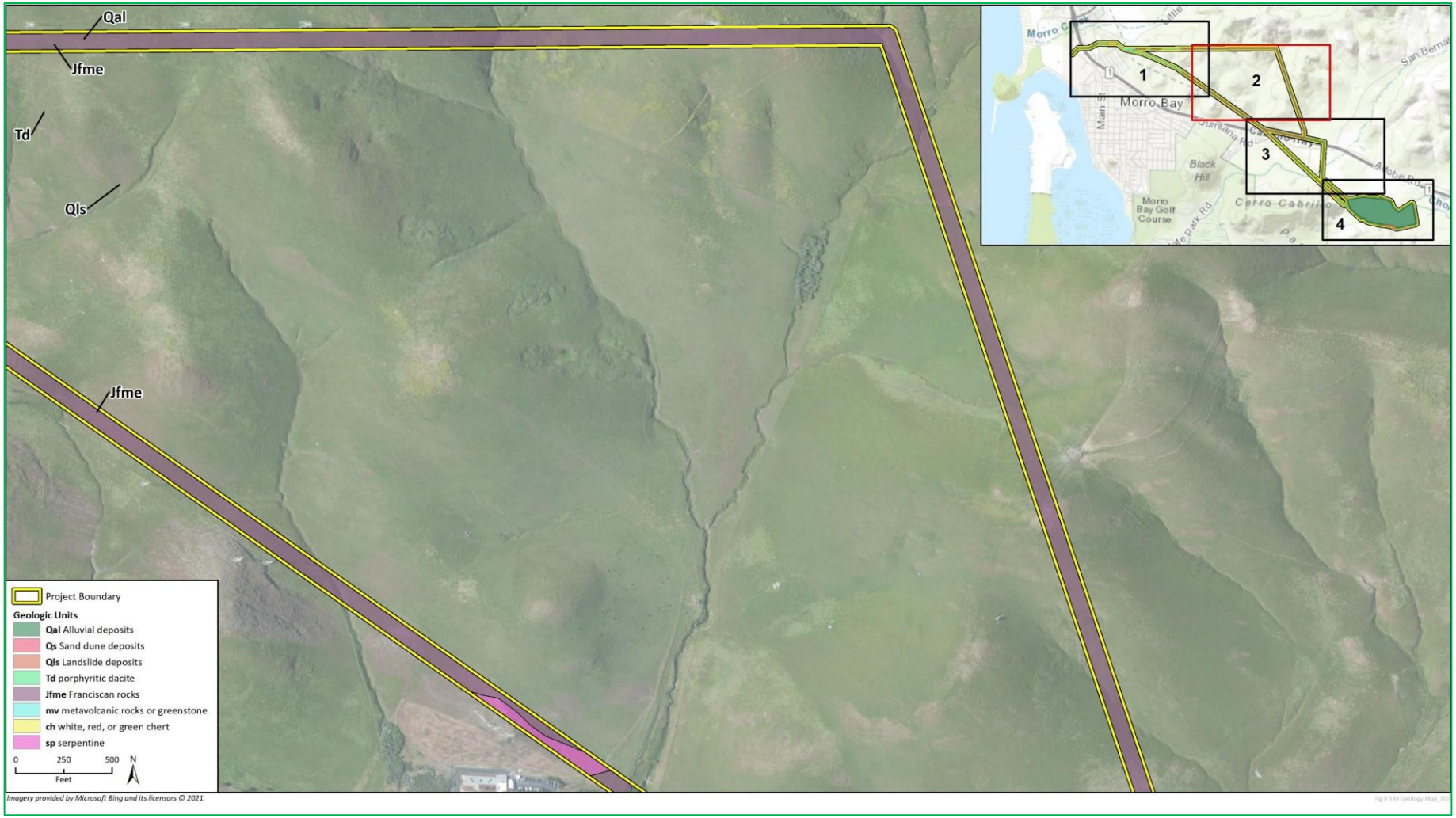
5.8.1.2.3 Geological Units

The project site includes five mapped geologic units at the ground surface: Quaternary (Holocene) alluvium (Qal), sand dune deposits (Qs), Quaternary (Holocene) landslide deposits (Qls), Tertiary porphyritic dacite (Td), Jurassic Franciscan Mélange (Jfme) that includes Franciscan metavolcanic rocks (mv), chert (ch), and Franciscan Mélange with Serpentinite (s) (Dibblee and Minch 2006a; Dibblee and Minch 2006b). Figures 5.8-3 through 5.8-6 illustrate the mapped geologic units within the project area.

- **Quaternary Alluvium (Qal)**: According to geologic mapping by Dibblee and Minch (2006 a, b), a portion of the project is underlain by Holocene-age Quaternary alluvium consisting of cobble-pebble gravel, sand, silt, and clay.
- **Quaternary Young (Holocene) Sand Dune/Aeolian Deposits (Qs)**: Geologic mapping shows the western portion of the project is underlain by Quaternary young (Holocene) sand deposits (Qs), consisting of unconsolidated white to brown, windblown (aeolian) sand, including older stabilized sand dune deposits (Dibblee and Minch 2006 a, b). Sand dune deposits underlie the western portion of the project near the Morro Bay Mutual Water facility. The sand dune deposits in the vicinity of the project are very disturbed at the surface and may overlie older terrace deposits at unknown depths.
- **Quaternary Young (Holocene) Landslide Deposits (Qls)**: The lithology of landslide deposits is dependent on source material. Near the project area, the landslide deposits on the eastern end of the project area most likely consists of nearby Franciscan Mélange.
- **Tertiary Porphyritic Dacite (Td)**: Porphyritic dacite (Morro Rock complex) is a volcanic intrusive (into Franciscan Assemblage) and is composed of phenocrysts of andesine, biotite, clay, hornblende, quartz, and magnetite with a ground mass of plagioclase, biotite, quartz, and hornblende. Flow banding is common in these rocks.
- **Jurassic Franciscan Mélange (Jfme)**: The Franciscan Mélange is a pervasively sheared mélange (large-scale breccia) of graywacke (gw), which is in large part composed of sheared green claystone, and includes exotic blocks of conglomerate (cg), blue schist (bs), schist (sch), metavolcanic rocks or greenstone (mv) and volcanic rocks (v), white, red, or green chert (ch), and serpentinite (s), and is probably Jurassic in age (Hall 1973).

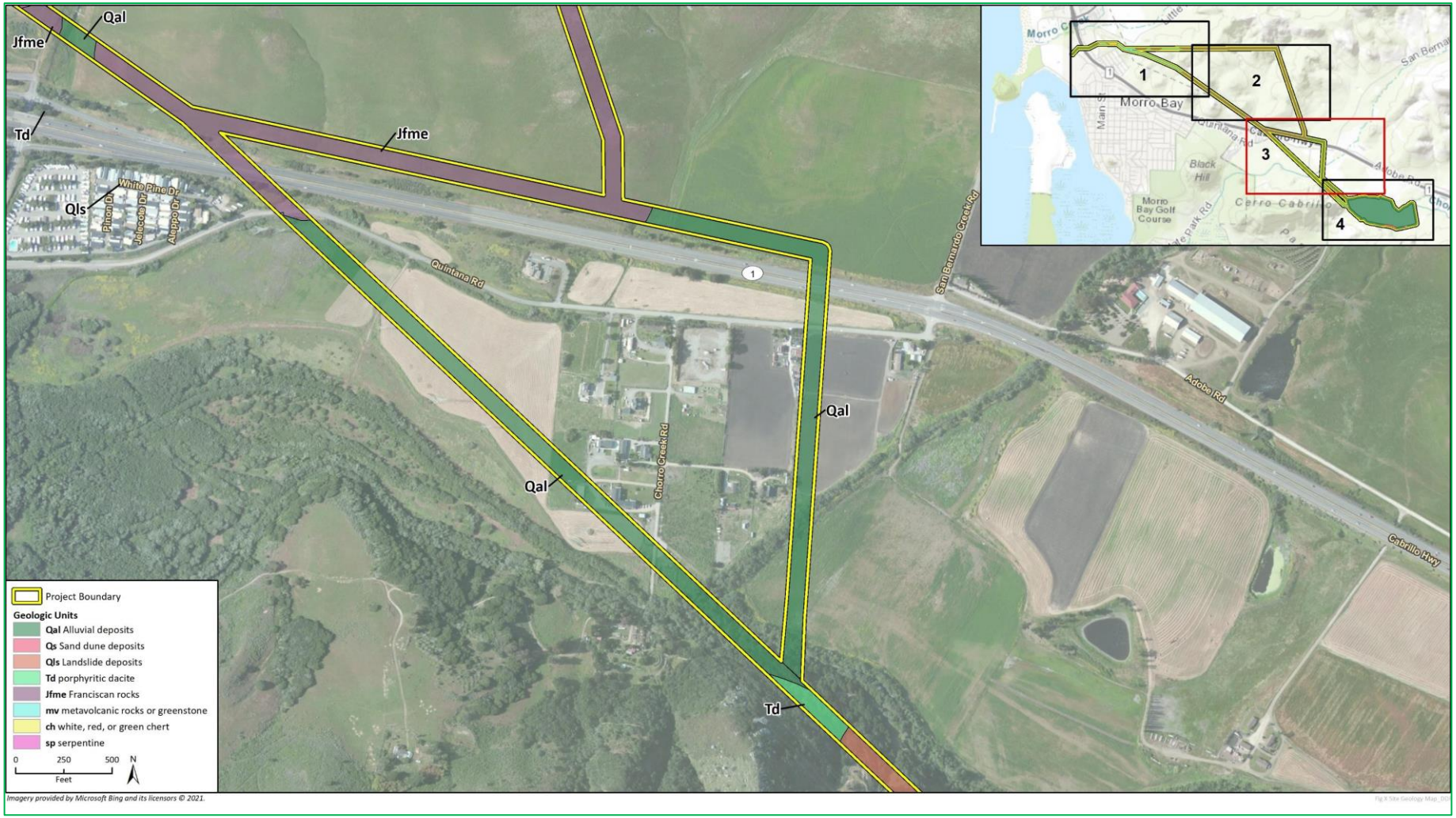
Source: Rincon 2021.

Figure 5.8-3: Mapped Geologic Unit (Area 1)



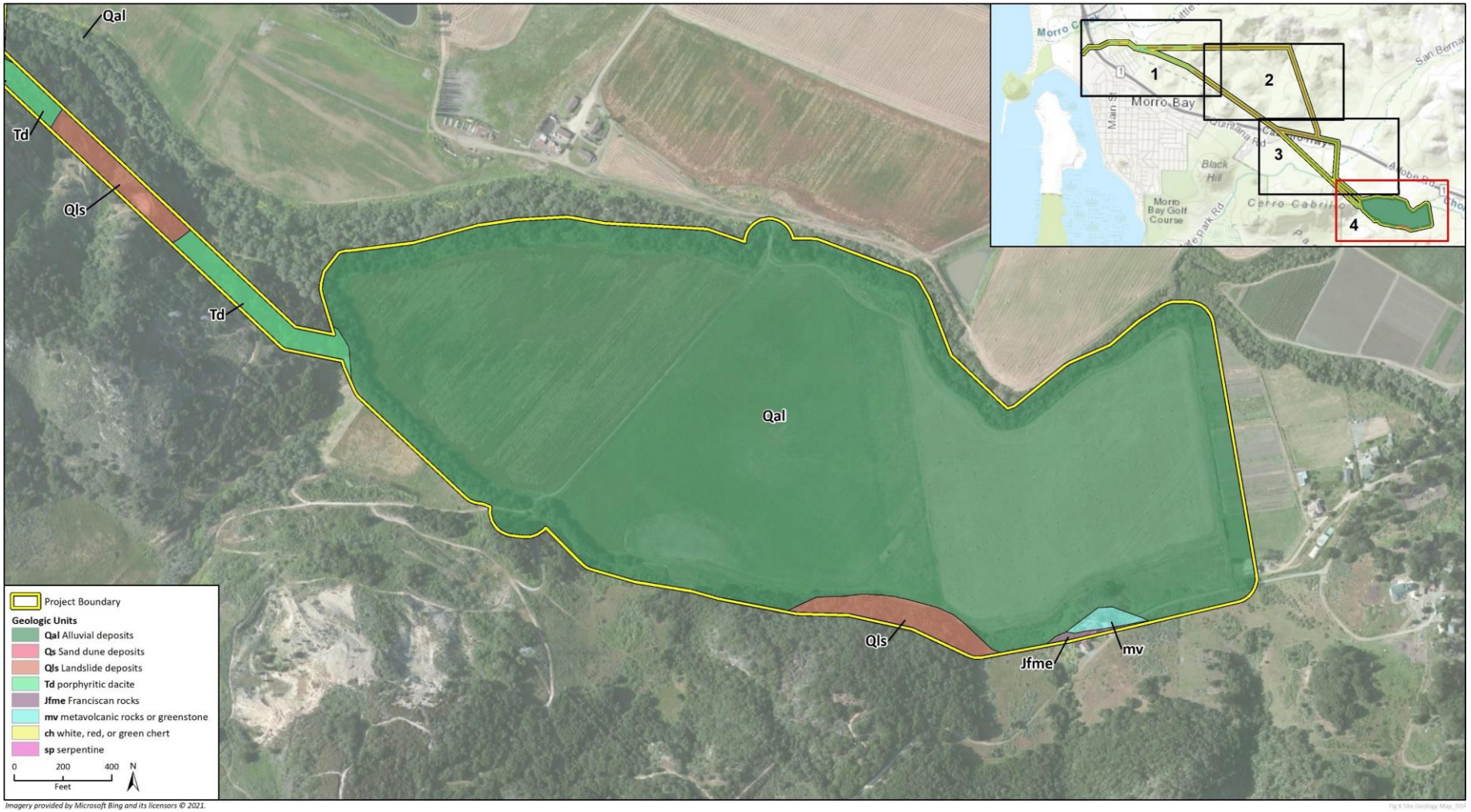
Source: Rincon 2021.

Figure 5.8-4: Mapped Geologic Unit (Area 2)



Source: Rincon 2021.

Figure 5.8-5: Mapped Geologic Unit (Area 3)



Source: Rincon 2021.

Figure 5.8-6: Mapped Geologic Unit (Area 4)

5.8.1.2.4 Results of the Records Search and Literature Review

A search of the paleontological locality records at NHMLAC found no previously recorded fossil localities occurring within the project boundary. However, the records search indicated that at least five vertebrate localities do occur on the surface and at shallow or unknown depths near the PESC project area. The fossil localities are from the same sedimentary deposits that occur within PESC's project boundaries. Table 5.8-1 presents the results of locality records search and literature review. A description of each locality referenced in Table 5.8-1 is presented below.

Table 5.8- 1: Museum Records Search Results

Locality No.	Geologic Unit	Age	Taxa	Depth of Recovery
LACM VP 18137	Unknown formation	Holocene	Invertebrates (mussels (*Mytilus*), sand dollar (*Dendraster*), Venus clam (*Veneridae*)	Unreported, likely surface
LACM VP 1720, LACM IP 23386-23392	Unknown formation (marine)	Pleistocene	Squirrel (*Sciuridae*) and invertebrates (unspecified)	Surface
LACM VP 4523, LACM IP 5640	Terrace deposit	Pleistocene	Rose fish (*Sebastes*), mammals (unidentified), invertebrates (*Patellogastropoda, Lirobittium, Pseudodiala, Barleeia, Modiolus, Acteocina, Mitrella, Neostylidium, Antisabia, Lottia, Hesperaptyxis*, and others)	Unreported
LACM VP 6165	Unknown formation (landslide or colluvial fan deposit of mud, silt, gravel, and cobbles)	Pleistocene	Elephant family (*Elephantidae*)	Surface, shallow subsurface
LACM IP 24591-24592	Franciscan	Pleistocene	Gastropod (*Buchia piochii*)	Unreported
UCMP A4970	Franciscan (marine)	Jurassic	Vertebrate (*Plesiosaurus hesternus*)	Unreported

Source: Rincon 2021; Bell 2021; and UCMP 2021

- The closest vertebrate locality, LACM IP 18137, produced invertebrate remains of mussels (*Mytilus*), sand dollar (*Dendraster*), and Venus clam (*Veneridae*) less than a mile from the westernmost point of the project area near the Morro Bay Mutual Water Company building.

- LACM VP 1720 and LACM IP 23386-23392 yielded fossil specimens of Squirrel (*Sciuridae*) and invertebrates (unspecified) approximately six miles north of the project area.
- LACM VP 4523 and LACM IP 5640, located less than 10 miles south of the project, produced fossil specimens of rose fish (*Sebastes*), mammals (unidentified), invertebrates (*Patellogastropoda, Lirobittium, Pseudodiala, Barleeia, Modiolus, Acteocina, Mitrella, Neostylidium, Antisabia, Lottia, Hesperaptyxis,* and others) at unknown depths.
- LACM VP 6150 approximately 10 miles from the project area yielded fossil remains from the elephant family (Elephantidae).
- LACM IP 24591-24592 approximately 20 miles east of the easternmost edge of the project area yielded gastropod (*Buchia piochii*) remains (Bell 2021).

A supplemental review of museum records maintained in the UCMP online collections database did not yield records of any vertebrate fossil localities in the vicinity of the project area. The closest UCMP vertebrate locality on record is UCMP A4970, which produced a vertebrate, *Plesiosaurus hesternus*, fossil from Jurassic deposits. The UCMP A4970 locality is located 30 miles southeast of the PESC project site (UCMP 2021).

5.8.1.2.5 Paleontological Sensitivity of the PESC Right-of-Way

This report utilizes the SVP system to assess paleontological sensitivity and the level of effort required to manage potential impacts to significant fossil resources. SVP 2010 describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While SVP published these standards to protect vertebrate paleontological resources, all fields of paleontology have adopted these sensitivity guidelines. The following defines each of the sensitivity guidelines:

i) **High Potential**: Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable.

ii) **Low Potential**: Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

iii) **Undetermined Potential**: Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

iv) **No Potential**: Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources (SVP 2010).

The Applicant's paleontologist determined the paleontological sensitivity of the geologic units underlying the project area in accordance with criteria set forth by the SVP 2010 and the results of the paleontological literature review, NHMLAC records search, and field reconnaissance survey. The following describes the paleontological sensitivity of the geologic units underlying the project area:

- **Tertiary porphyritic dacite (Td)**: This mapped geologic unit occurs at the surface in the southeastern project area and is considered to have *no paleontological sensitivity* as their formation is not conducive to the preservation of paleontological resources.
- **Quaternary young (Holocene) landslide deposits (Qls)**: This mapped geologic unit occurs sporadically throughout the project area; however, it lacks important taphonomic and other scientific data associated with potential fossil discoveries and is assigned a *low paleontological sensitivity*.
- **Jurassic Franciscan Mélange (Jfme)**: Although this mapped geologic unit has produced a wide range of fossils, only a small number of localities have actually been reported for this complex. As a result, the Jurassic Franciscan Mélange is assigned *a low paleontological sensitivity*.
- **Holocene alluvial and aeolian sediments within the project site (i.e., Qal, Qs)**: These mapped geologic units are typically too young (i.e., less than 5,000 years old) to preserve paleontological resources and are determined to have *a low paleontological sensitivity at the surface*. However, exposures of older deposits near the project site and the stratigraphic setting in the vicinity are indicative that Quaternary old alluvial and aeolian deposits may underlie these younger units. Quaternary old deposits are from the Holocene to Pleistocene epoch. The Quaternary old alluvial and aeolian deposits may occur at moderate or unknown depths (Dibblee and Minch 2006 a, b).
  - Quaternary old (early Holocene to Pleistocene) sedimentary deposits have produced numerous significant vertebrate fossils throughout San Luis Obispo County and is assigned *a high paleontological sensitivity* (Bell 2021; UCMP 2021).
  - Although paleontologically sensitive older units may be overlain by thick units of low sensitivity younger alluvium, the depth at which geologic units transition from low sensitivity younger units to high sensitivity older units is highly variable. In some areas, low sensitivity younger alluvium may exceed 100 feet in thickness.
  - Accurately assessing the boundaries between younger and older units is generally not possible without some form of radiometric dating, or fossil analysis, so conservative estimates of the depth at which paleontologically sensitive units may occur ensures impact avoidance.
  - Based on the records search results and the stratigraphic context, Holocene sedimentary deposits (Qal, Qs) mapped within the project area are likely to grade into older sedimentary deposits of Pleistocene age at depths between 10 and 20 feet below ground surface.
  - Therefore, intact Holocene sedimentary deposits within the project site (i.e., Qal, Qs) are determined to have a low paleontological sensitivity at the surface, increasing to high below depths of approximately 10 to 20 feet (Rincon 2021)

5.8.2 Environmental Analysis

The following subsections present the environmental effects to paleontological resources from construction and operation of the PESC.

5.8.2.1 Paleontological Resource Significance Criteria

Guidelines for the implementation of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Sections 15000 et seq.) include, among the other questions to be answered in the Environmental Checklist (Section 15023, Appendix G), the following:

- "Would the project directly or indirectly destroy a unique paleontological resource or site?" and
- "Does the project have the potential to …eliminate important examples of the major periods of California…pre-history?"

These questions are answered in the affirmative based on the data and considerations provided above. In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP 2010 notes that an individual fossil specimen is considered scientifically important and significant if it meets any of the following criteria:

> *"identifiable, complete, well preserved, age-diagnostic, useful in paleoenvironmental reconstruction, a member of a rare species, a species that is part of a diverse assemblage, and a skeletal element different from, or a specimen more complete than, those now available for that species (SVP 2010)."*

For example, the SVP considers identifiable land mammal or terrestrial plant fossils scientifically important because of their potential use in determining the age and paleoenvironment of the sediments in which they occur. Fossil plants are particularly important in this regard as they are organisms anchored in place, which make them a more sensitive indicator of their paleoenvironment.

For marine and shoreline sediments, invertebrate mega-fossils are scientifically important for the same reasons that land fossils are valuable in terrestrial deposits. Mollusks and cephalopods are examples of invertebrate mega-fossils. Marine microfossils such as *foraminifera* or *radiolaria* are much more common, and consequently paleontologist do not usually consider them for resource protection because of their relative abundance. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils, their abundance in the record, and their degree of preservation.

Using these criteria and the sensitivity ratings provided above, Ms. DiCenzo assessed the significance of potentially adverse impacts of earthmoving activities to paleontological resources. Any unmitigated impact on a fossil site, or on a fossil-bearing rock unit of high or moderate paleontological sensitivity, would be considered under CEQA's criteria to be significant.

5.8.2.2 Paleontological Resource Impact Assessment

The significance of impacts of PESC-related activities on the paleontological resources of each stratigraphic unit found at the PESC site and along potential gen-tie line routes is presented in this section. All PESC components will impact younger Quaternary alluvium at shallow depths ranging from the surface to 10 to 20 feet below ground surface. Excavations for foundations and other components of the power generation facility will extend deeper than 10 feet and as such, will likely encounter older alluvial deposits. The installation of gen-tie lines components may extend below a depth of 10 feet, and as such, their installation may encounter older Quaternary alluvium deposits, as well.

5.8.2.2.1 Quaternary Alluvium

Alluvium is generally present in low-lying areas along the southern border of the SR-1, Chollas Creek, and the private agricultural land at the east end of the project, though heavily disturbed. Recent Quaternary alluvium may be underlain by older geologic units at unknown depths.

5.8.2.2.2 Sand Dune Deposits

Sand dune deposits underlie the western portion of the project near the Morro Bay Mutual Water facility. The sand dune deposits in the vicinity of the project are very disturbed at the surface and may overlie older terrace deposits at unknown depths.

5.8.2.2.3 Quaternary Landslide Deposits

Near the project area, the landslide deposits on the eastern end of the project area most likely consists of nearby Franciscan Mélange.

5.8.2.2.4 Tertiary Porphyritic Dacite

This mapped geologic unit occurs on the eastern end of the gen-tie line segments.

5.8.2.2.5 Jurassic Franciscan Mélange (Jfme)

The Jurassic -Franciscan Mélange geologic mapped unit underlies the gen-tie corridor north of SR1.

5.8.3 Cumulative Effects

Reasonably foreseeable projects within or near the project area, as well as those permitted or in a permitting process but not constructed at this time, do not involve major excavations in geological formations with a high potential for containing significant fossils. Although PESC has some potential to encounter sediments of high paleontological sensitivity during construction of the facility, the mitigation measures proposed in the following subsections will reduce potential impacts to a level less than significant. Therefore, potential for impacts on paleontological resources from PESC to combine with those of other projects to reach a cumulatively considerable impact is very low.

5.8.4 Mitigation Measures

The mitigation measures proposed below comply with CEC environmental guidelines and conform to SVP standard guidelines for mitigating adverse construction-related impacts to paleontological resources. Implementation of these mitigation measures will further assure that potential impacts from project-related ground disturbance to paleontological resources will be insignificant (CEC 2000; CEC 2007; and SVP 2010).

5.8.4.1 Project Paleontological Resources Specialist

Prior to construction, the Applicant will submit the name and resume of a qualified PRS to the CEC for review and approval. The Applicant will provide the name and contact information of the PRS to the construction management team, cultural resource monitors, and project compliance manager. The PRS will prepare a paleontological resources awareness module (PRAM) as part of the worker education program. The Applicant will make the PRS available during ground-disturbing activities in case there is an unanticipated paleontological discovery.

5.8.4.2 Construction Personnel Education

The PRS will present PRAM training to all construction personnel involved in earthmoving activities and their supervisors prior to their working on the PESC. The PRS will inform workers that they may encounter fossils and

will provide workers with information on the appearance of fossils, the role of paleontological monitors, and proper notification procedures. Construction personnel may receive subsequent paleontological trainings via video presentation and/or hard-copy training materials.

5.8.4.3 Develop and Implement a Paleontological Resources Monitoring and Mitigation Plan

Before the start of construction, the Applicant will submit for review to the CEC a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). This plan will be prepared by the PRS and outline monitoring procedures and protocols that workers will follow if they discover paleontological resources during the construction of PESC. The PRMMP will stipulate that if workers encounter paleontological resources, all work in the immediate area of the find will stop and the Applicant's construction management team will notify the paleontological resource monitor. Construction will not resume near the paleontological find until the PRS releases the area.

The PRMMP will outline monitoring protocols and reporting requirements. The PRMMP will stipulate the following:

- Monitoring requirements are to be determined by the PRS, and
- Monitoring requirements will be based solely on the PRS's judgement of the paleontological sensitivity of the sediments disturbed by construction and the PRS's professional assessment regarding the ongoing potential of impacts to said resource.

5.8.4.4 Develop a Final Paleontological Resources Report

5.8.5 Laws, Ordinances, Regulations, and Standards

Paleontological resources are nonrenewable scientific resources, and several federal and state statutes protect their preservation (California Office of Historic Preservation, 1983; Scott and Springer, 2003; Fisk and Spencer, 1994). Most notably the 1906 Federal Antiquities Act and other subsequent federal legislation and policies, and by CEQA, Section 15064.5. The SVP have established professional standards for assessment and mitigation of adverse impacts on paleontological resources. The Applicant will design, construct, and operate the PESC in accordance with all LORS applicable to paleontological resources. Table 5.8-2 summarizes the federal, state, and local LORS applicable to paleontological resources. The following subsections include a discussion regarding each of the LORS presented in Table 5.8-2 along with professional standards for paleontological resources assessment and impact mitigation.

Table 5.8- 2: LORS Applicable to Paleontological Resources

Jurisdiction	LORS	Applicability	Application for Certification Reference	Project Conformity
Federal	Antiquities Act of 1906	Not applicable – No federal land involved, or federal entitlement required	Not applicable	Not applicable
Federal	National Environmental Policy Act	Not applicable – No federal land involved, or federal entitlement required	Not applicable	Not applicable
State	CEQA, Appendix G	Applicable – Requires assessment of the potential to affect paleontological resources during earthmoving activities	Sections 5.8.2, 5.8.3, and 5.8.5	Conformity Confirmed
State	PRC, Sections 5097.5/5097.9	Not applicable – Applies to state-owned land	Not applicable	Not applicable
County	Goal CR 4 / Policy CR 4.5	Protect paleontological resources from the effects of development by avoiding disturbance where feasible.	Sections 5.8.2, 5.8.3, and 5.8.5	Conformity Confirmed

5.8.5.1 Federal LORS

Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (Public Law [P.L.] 59-209; 16 United States Code 431 et seq.; 34 Stat. 225). The Antiquities Act of 1906 calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land. The Antiquities Act of 1906 forbids disturbance of any object of antiquity on federal land without a permit issued by the responsible managing agency. This act also establishes criminal sanctions for unauthorized appropriation or destruction of antiquities. The Federal Highways Act of 1958 clarified that the Antiquities Act applied to paleontological resources and authorized the use of funds appropriated under the Federal Highways Act of 1956 for paleontological salvage in compliance with the Antiquities Act and any applicable state laws. In addition to the Antiquities Act of 1906, the National Environmental Policy Act of 1969 (P.L. 91-190, 31 Stat. 852, 42 United States Code 4321-4327) requires that important natural aspects of our national heritage be considered in assessing the environmental consequences of any project. Since the PESC project will not occur on federal lands or require federal approval, federal LORS do not apply.

5.8.5.2 State LORS

The CEC environmental review process under the Warren-Alquist Act is equivalent to that of CEQA (PRC Sections 21000 et seq.). CEQA requires that public agencies and private interests identify the environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California (Division I, California PRC: 5020.1 [b]). The CEQA Guidelines in Public Resource Code (PRC) Sections 15000 et seq., define procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G in Section 15023 of CEQA provides an Environmental Checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts. PRC Section 21081.6, entitled Mitigation Monitoring Compliance and Reporting, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process.

California PRC Chapter 1.7, Section 5097.5/5097.9 (Stats. 1965, c. 1136, p. 2792) entitled Archaeological, Paleontological, and Historical Sites provides other state requirements for paleontological resource management. This statute defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor, and it specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. PRC Section 5097.5/5097.9 does not apply to PESC because construction or other related project impacts will not occur on state-owned or managed lands and because no state agency is intended to obtain ownership of project lands during the term of the project license.

5.8.5.3 Local LORS

Paleontological resources are addressed under the Conservation and Open Space Element of the County of San Luis Obispo General Plan (County of San Luis Obispo 2010), Goal CR 4, Policy CR 4.5, and Implementation strategies CR 4.5.1 and 4.5.2 state the following:

- **Goal CR 4.** The county's known and potential Native American, archaeological, and paleontological resources will be preserved and protected.
- **Policy CR 4.5 Paleontological Resources**: Protect paleontological resources from the effects of development by avoiding disturbance where feasible. Paleontological studies require a paleontological resource assessment and mitigation plan to:
  - Identify the extent and potential significance of the resources that may exist within the proposed development, and
  - Provide mitigation measures to reduce potential impacts when existing information indicates that a site proposed for development may contain biological, paleontological, or other scientific resources.
- **Implementation Strategy CR 4.5.1 Paleontological Studies.** Require a paleontological resource assessment and mitigation plan to 1) identify the extent and potential significance of the resources that may exist within the proposed development and 2) provide mitigation measures to reduce potential impacts when existing information indicates that a site proposed for development may contain biological, paleontological, or other scientific resources.

- **Implementation Strategy CR 4.5.2 Paleontological Monitoring.** Require a paleontologist and/or registered geologist to monitor site-grading activities when paleontological resources are known or likely to occur. The monitor will have the authority to halt grading to determine the appropriate protection or mitigation measures. Measures may include collection of paleontological resources, curation of any resources collected with an appropriate repository, and documentation with the County.

5.8.5.4 Professional Standards

The SVP, an international organization of professional paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing paleontologists in the nation follow the SVP's guidelines and extend those to address other types of fossils of scientific significance such as invertebrate fossils and paleobotanical specimens.

5.8.6 Agencies and Agency Contacts

There are no agencies having blanket jurisdiction over paleontological resources. The CEC has jurisdiction over paleontological resources for this project. The San Luis Obispo County General Plan requires that paleontological resources assessments and mitigation be performed by a professional paleontologist. If encountered, scientifically significant fossil specimens and associated site records will be submitted to the closest regional repository in operation, which is the NHMLAC. Table 5.8-3 presents the agency contacts for the NHMLAC.

Table 5.8- 3: Agency Contacts for Paleontological Resources

Issue	Agency	Contact
Paleontological Resources Documentation and Specimen Repository	Natural History Museum of Los Angeles County	John M. Cahoon Collections Manager, History (Seaver Center for Western History Research) 900 Exposition Blvd. Los Angeles, CA 90007 Phone: (213) 763-3325 jcahoon@nhm.org

5.8.7 Permits and Permit Schedule

No state, county, or city agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earthmoving on this project site.

5.8.8 References

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