Appendix F

Paleontological Resources Technical Report

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Paleontological Resources Technical Report

Rosedale-Rio Bravo Water Storage District
Dillard Groundwater Recharge and Solar Study
Rosedale, Kern County, California

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Executive Summary

This technical report provides a paleontological resources assessment of the Rosedale-Rio Bravo Water Storage District's (RRBWSD) proposed Dillard Groundwater Recharge and Solar Study project (Project) site, located in the southwestern portion of the census-designated place of Rosedale, about 16 miles west of downtown Bakersfield, in an unincorporated area of Kern County, California. The purpose of this report is to identify and summarize any paleontological resources that occur in the vicinity of the Project site, identify Project elements (if any) that may negatively impact paleontological resources, and provide, if necessary, recommendations to reduce any potential negative impacts to less than significant levels. The report includes the results of an institutional records search conducted at the San Diego Natural History Museum (SDNHM) and a records search that was previously conducted by the Natural History Museum of Los Angeles County (NHMLA) for the Stockdale Integrated Banking Project (whose footprint encompasses the current Project site).

The Project site consists of an approximately 50-acre, trapezoidal-shaped parcel (Assessor's Parcel Number [APN] 104-292-09) located east of Enos Lane, south of Brimhall Road, west of Superior Road, and north of Stockdale Highway. The site is bounded to the southwest by railroad tracks, and on all other sides by existing agricultural fields. The Project proposes to construct two to three groundwater recharge basins, up to three water control structures, and associated utilities for interconnection to the Central Intake Conveyance Connection pipeline distribution system. The Project also includes the construction and operation of a photovoltaic (PV) solar facility and associated infrastructure necessary to generate up to 7,500 kW of renewable electrical energy with the ability to store up to 16,000 kWh or 4,000 kW of energy in an onsite Battery Energy Storage System (BESS). Approximately 20 miles of utility lines are anticipated to support the necessary facilities associated with the Project located both on- and off-site. Laydown areas will be located on the Project site and along the utility line alignment. In addition, a legal access path will connect the Project site to Superior Road. The purpose of the Project is to support up to 4,000 acre-feet per year of groundwater recharge, when surface water is available, to the Rosedale-Rio Bravo Water Storage District and to generate solar energy to support the groundwater recharge facilities with excess production anticipated to support the California energy grid. path

The Project site is located within the southern San Joaquin Valley portion of the Great Valley geomorphic province, and is entirely underlain at the surface by Holocene-age alluvial deposits associated with the Kern River alluvial fan, which were derived from regional erosion of the southern Sierra Nevada. Presumably, the Holocene-age deposits transition in the subsurface into older, Pleistocene-age deposits. Because the nearest surface exposures of Pleistocene-age alluvial deposits occur approximately 6.5 miles to the northeast of the Project site, the depth of this transition is here conservatively estimated to occur at 15 feet or more below ground surface (bgs).

Based on the results of the paleontological record searches and literature review, fossils have not been documented specifically from Holocene- or Pleistocene-age alluvial deposits within a five-mile radius of the Project site. However, fossils are known from older Quaternary-age alluvial deposits exposed elsewhere in the southern San Joaquin Valley. These deposits have yielded fossil remains of freshwater snails, bony fish, insects, frogs, lizards, birds, small-bodied mammals (e.g., rabbits and hares, pocket mice, kangaroo rats, geomyid rodents, shrews) and large-bodied mammals (e.g., horse, deer, pronghorn, dog).

Following the paleontological potential criteria developed by the Society of Vertebrate Paleontology, the Quaternary alluvial fan deposits underlying the Project site are assigned a low paleontological potential at depths of less than 15 feet bgs (where they are assumed to be Holocene in age) and an undetermined paleontological potential at depths greater than 15 feet bgs (where the strata may represent older

sedimentary deposits of Pleistocene age). By convention, geologic units with undetermined paleontological potential are considered to be potentially fossil-bearing until proven otherwise.

Following a conservative approach, Project-related earthwork that would disturb deposits with an undetermined potential (i.e., earthwork extending greater than 15 feet bgs) are assumed to have the potential to result in impacts to paleontological resources unless mitigated, while earthwork extending less than 15 feet bgs will not impact paleontological resources. Project site earthwork, including grading, trenching, and control structure installation, are proposed to only require shallow excavation extending less than 5 feet bgs. Excavation for the overhead utility lines are proposed to require excavation of six- to eight-foot deep holes measuring 12 inches in diameter. In addition, earthwork involving placement of fill will not require excavation. If the Project is modified to include any components that will require excavation extending more than 15 feet bgs, these should be separately evaluated for their potential to impact paleontological resources.

Implementation of a paleontological mitigation program is **not** recommended for the Project because Project-related earthwork, as currently outlined, is not anticipated to negatively impact paleontological resources (i.e., mitigable earthwork will not extend deep enough to impact geologic units with undetermined resource potential). In the unlikely event that fossils are encountered during earthwork on the Project site, potential impacts to paleontological resources should be minimized through implementation of the recommended contingency mitigation measures, which are designed to address inadvertent fossil discoveries. Implementation of these measures will reduce such impacts to a level below the threshold of significance.

Contents

1.0 Introduction

1.1 Project Description

This technical report provides a paleontological resources assessment for the Rosedale-Rio Bravo Water Storage District's (RRBWSD) proposed Dillard Groundwater Recharge and Solar project (Project) site, located in the southwestern portion of the census-designated place of Rosedale, about 16 miles west of downtown Bakersfield, in an unincorporated area of Kern County, California (Figure 1). The Project site consists of an approximately 50-acre, trapezoidal-shaped parcel (Assessor's Parcel Number [APN] 104-292-09) located east of Enos Lane, south of Brimhall Road, west of Superior Road, and north of Stockdale Highway. The site is bounded to the southwest by railroad tracks, and on all other sides by existing agricultural fields. The utility line alignment includes branches going south to the Cross Valley Canal, west of Bussell Road, east to Greeley Road, and spurs off of these branches.

The Project proposes to construct two to three groundwater recharge basins with five-foot berms, up to three water control structures, and associated utilities for interconnection to the Central Intake Conveyance Connection pipeline distribution system. The Project also consists of the construction and operation of a photovoltaic (PV) solar facility and associated infrastructure necessary to generate up to 7,500 kW of renewable electrical energy with the ability to store up to 16,000 kWh or 4,000 kW of energy in an onsite Battery Energy Storage System (BESS). The groundwater recharge basins will contain pole-mounted solar panels elevated above the recharge areas to minimize water loss from evaporation and mitigate algae growth within the recharge basins. Approximately 20 miles of utility lines are anticipated to support the necessary facilities associated with the Project located both on- and off-site. Laydown areas will be located on the Project site and along the utility line alignment. In addition, a legal access path will connect the Project site to Superior Road.

The purpose of the Project is to support up to 4,000 acre-feet per year of groundwater recharge, when surface water is available, to the Rosedale-Rio Bravo Water Storage District and to generate solar energy to support the groundwater recharge facilities with excess production anticipated to support the energy grid.

1.2 Scope of Work

The Project is located in an area underlain by native sedimentary deposits. For this reason, a paleontological resource assessment was conducted in order to determine whether construction of the Project has the potential to negatively impact paleontological resources. This technical report is intended to summarize existing paleontological resource data within the Project site, discuss the significance of these resources, examine potential Project-related impacts to paleontological resources, and suggest mitigation measures to reduce potential impacts to paleontological resources to less than significant levels, as needed. The assessment also includes the results of a literature review of relevant geological and paleontological reports, an institutional records search of the paleontological collections at the San Diego Natural History Museum (SDNHM), and a records search that was previously conducted by the Natural History Museum of Los Angeles County (NHMLA) for the Stockdale Integrated Banking Project (whose footprint encompasses the current Project site). This technical report was prepared by Zev Brook, Katie M. McComas, and Thomas A. Deméré of the Department of PaleoServices, SDNHM.

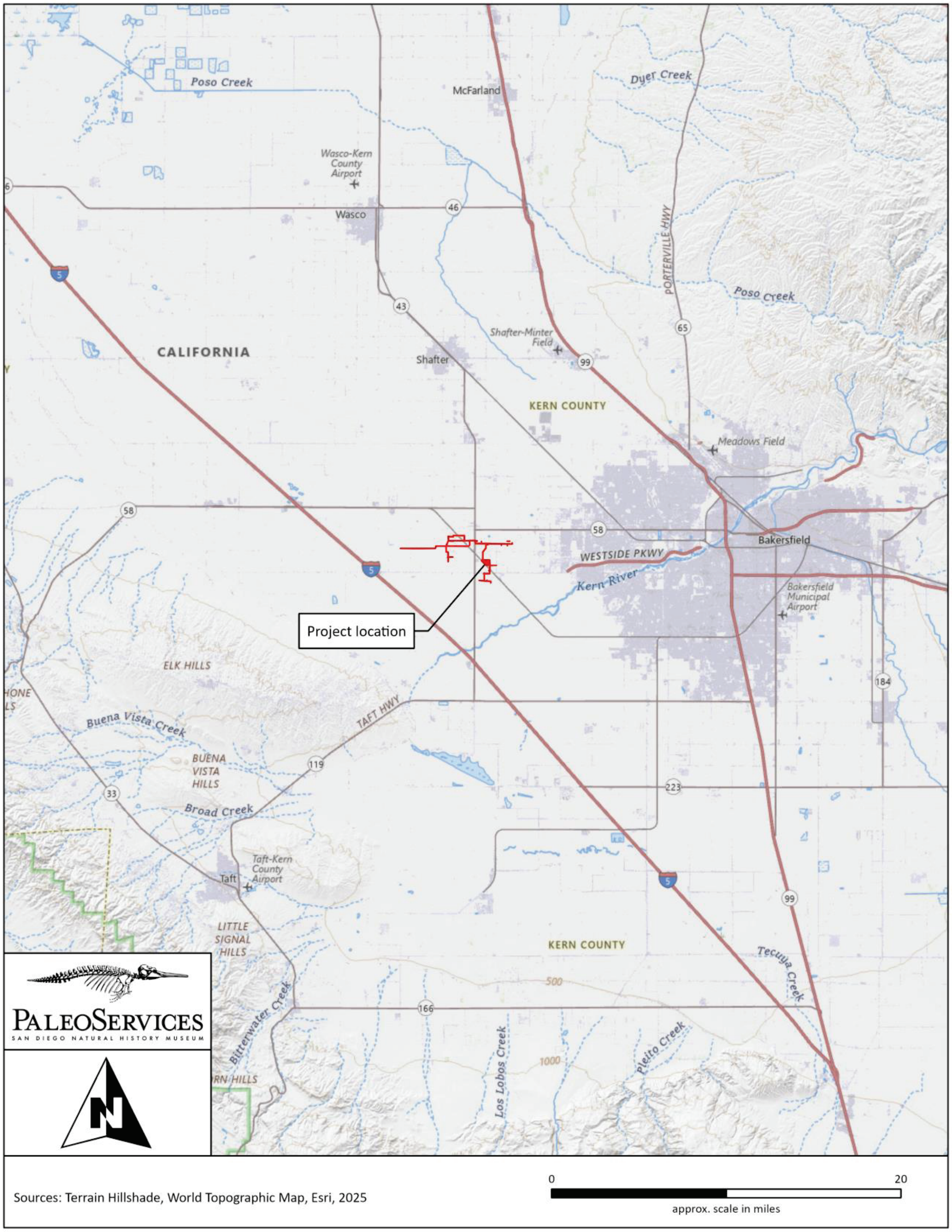

Figure 1. Project index map, Dillard Groundwater Recharge and Solar Project, Rosedale, Kern County, California.

1.3 Definition of Paleontological Resources

As defined here, paleontological resources (i.e., fossils) are the buried remains and/or traces of prehistoric organisms (i.e., animals, plants, and microbes). Body fossils such as bones, teeth, shells, leaves, and wood, as well as trace fossils such as tracks, trails, burrows, and footprints, are found in the geologic units/formations within which they were originally buried. The primary factor determining whether an object is a fossil or not is not how the organic remain or trace is preserved (e.g., "petrified"), but rather the age of the organic remain or trace. Although typically it is assumed that fossils must be older than ~11,700 years (i.e., the generally accepted end of the last glacial period of the Pleistocene Epoch), organic remains older than recorded human history and/or older than middle Holocene (about 5,000 radiocarbon years) can also be considered to represent fossils (Society of Vertebrate Paleontology [SVP]; SVP, 2010).

Fossils are considered important scientific and educational resources because they serve as direct and indirect evidence of prehistoric life and are used to understand the history of life on Earth, the nature of past environments and climates, the membership and structure of ancient ecosystems, and the pattern and process of organic evolution and extinction. In addition, fossils are considered to be non-renewable resources because typically the organisms they represent no longer exist. Thus, once destroyed, a particular fossil can never be replaced.

Finally, paleontological resources can be thought of as including not only the actual fossil remains and traces, but also the fossil collection localities and the geologic units containing those localities. The locality includes both the geographic and stratigraphic context of fossils—the place on the earth and stratum (deposited during a particular time in Earth's history) from which the fossils were collected. Localities themselves may persist for decades, in the case of a fossil-bearing outcrop that is protected from natural or human impacts, or may be temporarily exposed and ultimately destroyed, as is the case for fossil-bearing strata uncovered by erosion or construction. Localities are documented with a set of coordinates and a measured stratigraphic section tied to elevation detailing the lithology of the fossil-bearing stratum as well as that of overlying and underlying strata. This information provides essential context for any future scientific study and educational use of the recovered fossils.

1.3.1 Definition of Significant Paleontological Resources

SVP has further defined significant paleontological resources as consisting of "fossils and fossiliferous deposits[…]consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information" (SVP, 2010).

1.4 Regulatory Framework

Paleontological resources are considered scientifically and educationally significant nonrenewable resources, and as such they are protected under state (e.g., California Environmental Quality Act [CEQA]; Public Resources Code) and local (Kern County) laws, ordinances, and regulations, outlined below.

1.4.1 State

The California Environmental Quality Act (CEQA, Public Resources Code Section 21000 *et seq.*) protects paleontological resources on both state and private lands in California. This act requires the identification of environmental impacts of a proposed project, the determination of significance of the impacts, and the identification of alternative and/or mitigation measures to reduce adverse environmental impacts. The Guidelines for the Implementation of CEQA (Title 14, Chapter 3, California Code of Regulations: 15000 *et seq*.) outlines these necessary procedures for complying with CEQA.

Paleontological resources are specifically included as a question in the CEQA Environmental Checklist (Section 15023, Appendix G): "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature."

Most CEQA lead agencies follow the definitions and guidelines provided by SVP (2010), which are in line with industry standards (e.g., Murphey et al., 2019). SVP (2010) additionally provides criteria for determining the significance of paleontological resources (see sections 1.3.1 and 2.2), and for appropriate measures to minimize impacts to paleontological resources. As advised by SVP (2010), impacts to paleontological resources can be minimized to a level below the threshold of significance through 1.) the permanent preservation of a fossil locality and its contained fossil resources); or 2.) the implementation of a paleontological mitigation program that would reduce any adverse impacts to a level below the threshold of significance through the salvage and permanent storage of any salvaged fossils in an established scientific institution.

Other state requirements for paleontological resource management are included in the Public Resources Code (Chapter 1.7), Section 5097.5 and 30244. These statutes prohibit the removal of any paleontological site or feature on public lands without permission of the jurisdictional agency, defines the removal of paleontological sites or features as a misdemeanor, and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state) lands.

1.4.2 Local: Kern County

The 2009 Kern County General Plan addresses paleontological resources in Chapter 1 (Land Use/Conservation/Open Space Element), Section 1.10 (General Provisions), Subsection 1.10.3 (Archaeological, Paleontological, Cultural, and Historical Preservation).

- **Policy 25**: The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.
    - **Implementation Measure M**: In areas of known paleontological resources, the County should address the preservation of these resources, where feasible.

2.0 Methods

2.1 Paleontological Records Search and Literature Review

A paleontological records search was conducted at the SDNHM in order to identify known fossil collection localities within an approximately five-mile radius of the Project site. The results of a paleontological records search that was previously conducted by the NHMLA for the Stockdale Integrated Banking Project (whose footprint encompasses the current Project site) were also reviewed.

In addition, a literature review was conducted to gain a greater understanding of the geologic history of the area surrounding the Project site, as well as to determine the types of fossils that specific geologic units underlying the Project site have produced. The review included examination of relevant published geologic maps and reports, peer-reviewed papers, and other relevant literature (e.g., field trip guidebooks, unpublished theses and dissertations, archived paleontological mitigation reports). This approach was followed in recognition of the direct relationship between paleontological resources and the geologic units within which they are entombed. Knowing the geologic history of a particular area and the fossil productivity of geologic units that occur in that area, it is possible to predict where fossils may or may not be encountered. Understanding the fossil content of a geologic unit everywhere it occurs is important for outlining the types of fossils that may occur within the geologic unit and confidently assigning a paleontological potential rating.

2.2 Paleontological Resource Assessment Criteria

The SVP has developed mitigation guidelines for paleontological resources (SVP, 2010) that were developed with input from a variety of federal and state land management agencies and conform with industry standards (Murphey et al., 2019). As described in Section 1.4.1, use of the SVP (2010) guidelines is common practice by CEQA lead agencies.

The SVP (2010) guidelines recognize that significant paleontological resources are considered to include not only actual fossil remains and traces, but also the fossil collecting localities and the geologic units containing those fossils and localities, and thus evaluate paleontological potential (or paleontological sensitivity) of individual geologic units within a project area. Paleontological potential is determined based on the existence of known fossil localities within a given geologic unit, and/or the potential for future fossil discoveries, given the age and depositional environment of a particular geologic unit. The SVP guidelines include four classes of paleontological potential: High Potential, Low Potential, No Potential, or Undetermined Potential (SVP, 2010). The criteria for each paleontological potential ranking is outlined below, as defined by SVP (2010).

2.2.1 High Potential

Geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary geologic units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.). Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Geologic units which contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.

2.2.2 Undetermined Potential

Geologic units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these geologic units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these geologic units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

2.2.3 Low Potential

Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some geologic units have low potential for yielding significant fossils. Such geologic units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule (e.g., basalt flows or Recent colluvium). Geologic units with low potential typically will not require impact mitigation measures to protect fossils.

2.2.4 No Potential

Some geologic units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Geologic units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

2.3 Paleontological Impact Analysis

Direct impacts to paleontological resources occur when earthwork operations cut into the geologic units within which fossils are buried and physically destroy the fossil remains. As such, only those excavations that will disturb potentially fossil-bearing geologic units have the potential to significantly impact paleontological resources. As described above, potentially fossil-bearing geologic units are those rated with a high potential. Taking a conservative approach, geologic units with an undetermined potential are also considered to be potentially fossil-bearing until proven otherwise. Although impact avoidance is possible through relocation of a proposed action, paleontological monitoring during construction is typically recommended to reduce any negative impacts to paleontological resources to less than significant levels.

The purpose of the impact analysis is to determine which (if any) of the proposed Project-related earthwork activities may disturb potentially fossil-bearing geologic units, and where and at what depths these potential impacts will occur. The paleontological impact analysis involved analysis of available Project documents and comparison with geological and paleontological data gathered during the records searches and literature review.

3.0 Results

3.1 Results of the Records Search and Literature Review

3.1.1 Project Geology

Geologic setting: The Project site is located in the census-designated place of Rosedale, west of the City of Bakersfield in western Kern County, California. The Bakersfield region is located in the southern Great Valley geomorphic province, which encompasses the entire San Joaquin Valley. The San Joaquin Valley is bounded by the southern Coast Ranges to the west, the Tehachapi Mountains to the south, and the foothills of the Sierra Nevada to the east. For the most part, the San Joaquin Valley is a broad alluvial plain, the southern portion of which is primarily a closed basin with Sierran rivers like the Tule River and Kern River flowing into it and, until the 20^{th} Century, filling large and landlocked freshwater lakes (e.g., Tulare Lake, Kern Lake, and Buena Vista Lake). From the Pleistocene through the present, sediments eroded out of the surrounding highlands have been transported downstream to form extensive coalesced alluvial fans near the mountain fronts, and finer-grained fluvial and lacustrine deposits farther out on the valley floor. The extensive Kern River alluvial fan is the southernmost alluvial fan complex of the western Sierra Nevada, and consists of sediments derived from weathering and erosion of Sierran granitic rocks and transported downstream by the Kern River as it incised the Kern River gorge (Dale et al., 1966).

Project-specific geology: As mapped by Smith (1964) and Haydon and Hayhurst (2011), the Project site is underlain at the surface by alluvial fan deposits (Qf) of late Holocene age, with the utility lines also underlain at the surface by alluvial valley deposits (Qa) of late Holocene age and young alluvial fan depisits (Qyf) of early to middle Holocene age (Figure 2). All of these alluvial deposits are generally derived from erosion of the surrounding highlands and comprise part of the modern Kern River alluvial fan complex.

Presumably, the Holocene-age deposits transition in the subsurface into older, Pleistocene-age sedimentary deposits. It is estimated that the maximum thickness of Holocene-age alluvial sediments in the San Joaquin Valley measures up to 100 feet, although alluvial sediments can be found as veneers as thin as one foot thick (Dibblee, 1999). Because the nearest surface exposures of Pleistocene-age alluvial deposits occur approximately 6.5 miles to the northeast of the Project site, the depth of this temporal transition is conservatively estimated here to occur at 15 feet or more below ground surface (bgs).

3.1.2 Project Paleontology

A records search of the paleontological collections at the SDNHM found no SDNHM fossil collection localities from similar Holocene- or Pleistocene-age alluvial deposits located within a 5-mile radius of the Project site. Additionally, a records search previously conducted by the NHMLA for the Stockdale Integrated Banking project (whose footprint encompasses the current Project site) also found no NHMLA fossil localities from Holocene- or Pleistocene-age alluvial deposits in this area (ESA, 2015). However, fossil localities are known from early Holocene- and Pleistocene-age alluvial deposits elsewhere in the southern San Joaquin Basin, as documented in the paleontological literature.

In the San Joaquin Valley, vertebrate fossils are known from older Quaternary-age sites at the Eagle Crest residential development and a site identified during cutting of a canal in the City of Bakersfield (located approximately 8.5 miles southeast of the Project site); at the Buena Vista Hills Oil Field (located approximately 20 miles southwest of the Project site); at the Midway Sunset Oil Field (located approximately 25 miles southwest of the Project site); at the Arvin Landfill (located approximately 26 miles southeast of the Project site); and at additional more distant sites near Corcoran, near Delano, and near Poso Creek (Reynolds, 1990; Jefferson, 1991b; Fay and Thiessen, 1993; SDNHM unpublished collections data). Fossils recovered from these older Quaternary-age sites collectively include remains of freshwater snails, bony fish, insects, frogs, lizards, finches, small mammals (e.g., rabbits and hares, pocket mice, kangaroo rats, geomyid rodents, shrews) and large mammals (e.g., horse, deer, pronghorn, dog). Similar fossils are known from Pleistocene-age alluvial sediments in other inland valleys of California (e.g., Jefferson, 1991a,b; Reynolds and Reynolds, 1991; Scott and Cox, 2008; Springer et al., 2009, 2010), indicating the potential for the recovery of additional fossils from similar deposits in other parts of the southern San Joaquin Valley.

3.2 Results of the Paleontological Resource Assessment

Following the SVP (2010) resource assessment criteria as outlined in Section 2.2, Holocene-age alluvial deposits are assigned a low paleontological potential based on their relatively young age (less than about 11,700 years old) and the lack of known, scientifically significant paleontological resources from similar Holocene-age deposits in the southern San Joaquin Valley. As mentioned, however, the Holocene-age alluvial deposits likely transition to older, Pleistocene-age deposits in the subsurface, at a depth that is estimated to be as shallow as 15 feet bgs. Pleistocene-age alluvial deposits are assigned an undetermined paleontological potential (see Section 2.2.2), and therefore are considered to be potentially fossil-bearing until proven otherwise.

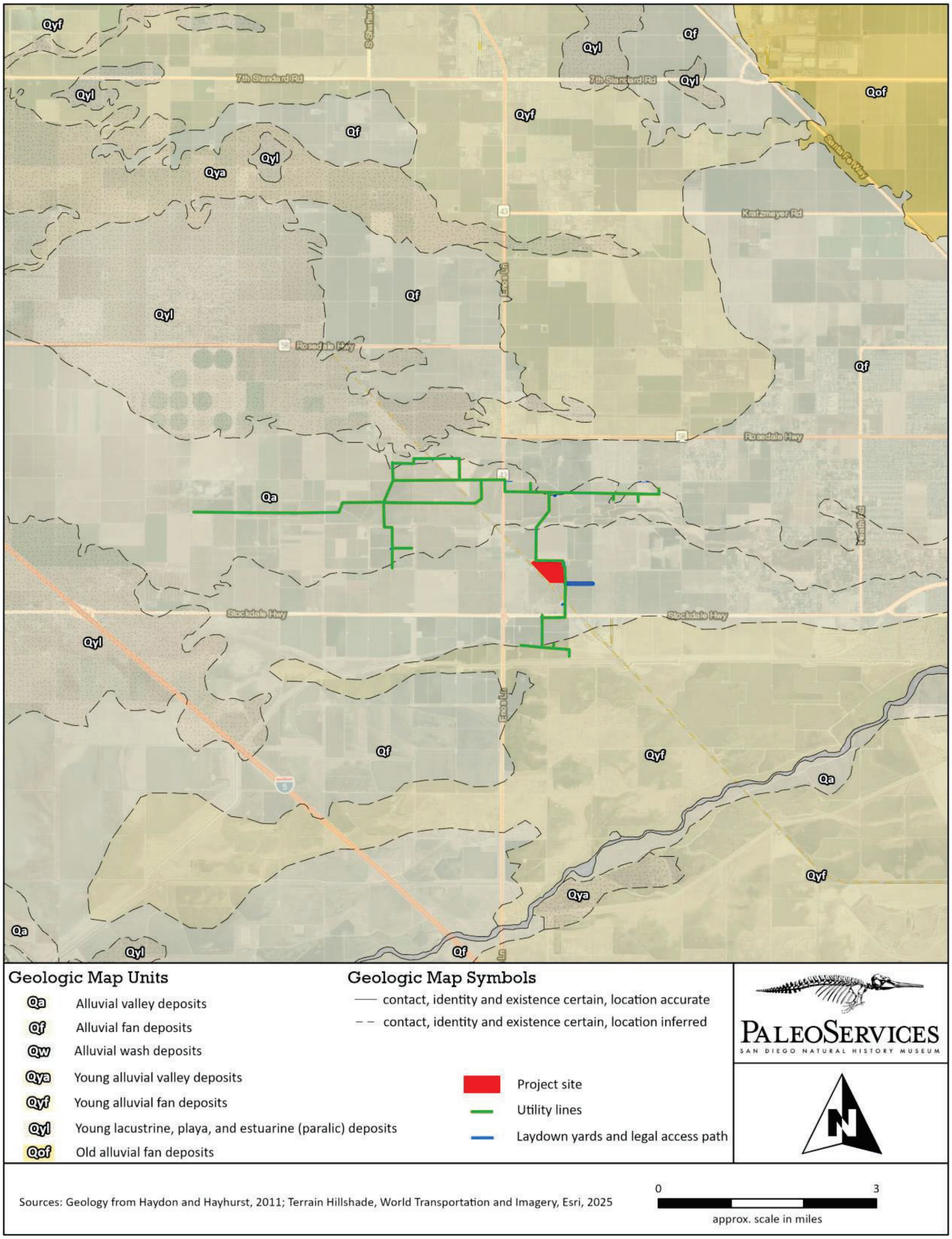

Figure 2. Geologic map, Dillard Groundwater Recharge and Solar Project, Rosedale, Kern County, California.

Because the transitional contact between the Holocene-age and Pleistocene-age sedimentary deposits may be as shallow as 15 feet bgs, the sedimentary deposits underlying the Project site are specifically assigned a low paleontological potential from 0–15 feet bgs where they are assumed to be Holocene in age and an undetermined paleontological potential at depths greater than 15 feet bgs where they may be Pleistocene in age (Figure 3).

3.3 Results of the Paleontological Impact Analysis

As discussed above, the Project site is immediately underlain by late Holocene-age alluvial fan deposits at the surface. In addition, the utility lines are also underlain by late Holocene-age alluvial valley deposits and early to middle Holocene-age young alluvial fan deposits. These Holocene deposits are presumably underlain by Pleistocene-age alluvial deposits at a depth that is conservatively estimated to be as shallow as 15 feet bgs. Any impacts to paleontological resources are only likely to occur during excavations at the Project site that will disturb alluvial deposits of Pleistocene-age, which are considered to be potentially fossil-bearing. Therefore, only excavations that will extend greater than about 15 feet bgs are here considered to have the potential to impact paleontological resources (Figure 3, Table 1).

Table 1. Summary of geology underlying the Project site and paleontological monitoring recommendations for the Project.

Geologic Unit	Age	Paleontological Resource Potential	Monitoring recommended?*
alluvial fan deposits (Qf)	late Holocene (Pleistocene at depth)	low potential, 0–15 feet; undetermined potential, >15 feet	No, 0–15 feet bgs; **Yes, >15 feet bgs**
alluvial valley deposits (Qa)	late Holocene (Pleistocene at depth)	low potential, 0–15 feet; undetermined potential, >15 feet	No, 0–15 feet bgs; **Yes, >15 feet bgs**
young alluvial fan deposits (Qyf)	early to middle Holocene (Pleistocene at depth)	low potential, 0–15 feet; undetermined potential, >15 feet	No, 0–15 feet bgs; **Yes, >15 feet bgs**

Although specific construction details about the extent and dimensions of earthwork that will eventually take place within the Project site have not been finalized at this time, the response to the data request from Rincon Consultants, Inc., dated 1 July 2024 indicates that the maximum excavation depth for groundwater recharge basins and solar/energy storage facilities will be five feet bgs and that the average excavation depth will be three feet bgs. Construction of the overhead utility lines will require excavation to a depth of six to eight feet bgs with a diameter of approximately 12 inches (R. Echeverria, email communication dated 3 April 2025).

Project components that will presumably require some degree of excavation include, but are not limited to:

- grading of groundwater recharge basins and construction of five-foot berms,
- installation of water control structures,
- open-cut trenching for interconnection pipelines,
- installation of pole-mounted solar panels,
- construction of the BESS facilities on an area of approximately 5,000 square feet in the northeast corner of the Project site, and
- installation of approximately 20 miles of poles for overhead utility lines.

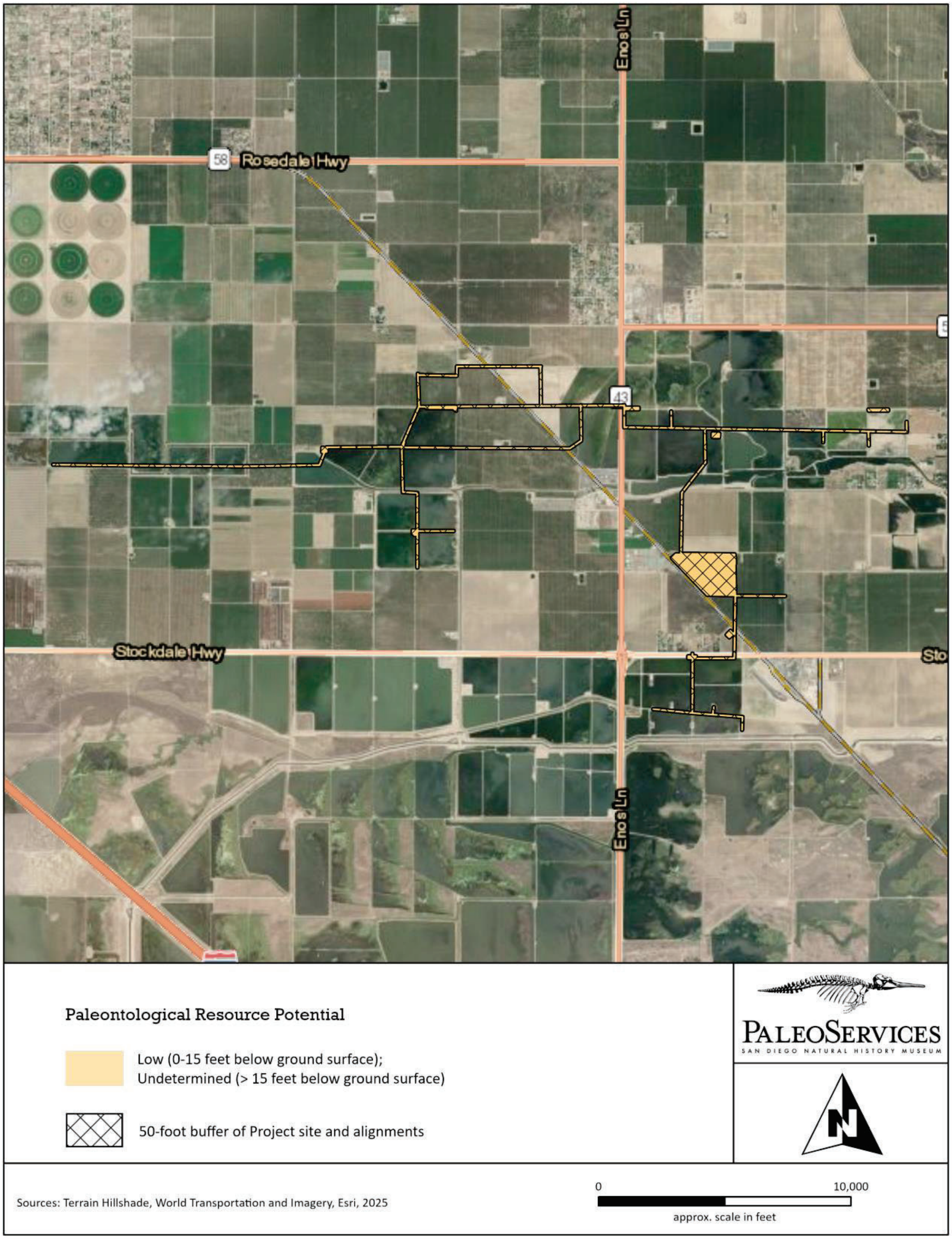

Figure 3. Paleontological resource potential map, Dillard Groundwater Recharge and Solar Project, Rosedale, Kern County, California.

Additional project components that are not anticipated to require excavation impacting previously undisturbed deposits include:

- placement of fill to construct five-foot berms around the groundwater recharge basins,
- a legal access path connecting the Project site to Superior Road, and
- use of laydown areas within the Project site or on existing banking areas.

Due to the lack of detailed information concerning the excavation dimensions and construction methods for the above Project components, only a general impact analysis, using the 15-foot depth threshold described above, can be completed. As Project details are finalized, an updated impact analysis should be conducted.

4.0 Recommendations

Implementation of a paleontological mitigation program is **not recommended** for the Project because Project-related earthwork, **as currently outlined**, is not anticipated to negatively impact paleontological resources (i.e., earthwork will not extend deep enough to impact geologic units with undetermined resource potential).

However, as noted in the previous section, as Project details are finalized and when more information is available concerning the excavation dimensions, locations, and construction methods associated with each Project component, an updated impact analysis should be completed to verify that earthwork will not exceed the 15-foot depth threshold.

In the unlikely event that fossils are unearthed during earthwork activities (i.e., an inadvertent discovery), the following mitigation measures should be implemented.

1. Upon discovery of an unearthed fossil, earthwork in the vicinity of the discovery shall immediately halt, and a qualified paleontologist should evaluate the discovery. Earthwork shall be diverted until the significance of the fossil discovery can be assessed by the qualified paleontologist. If the fossil discovery is deemed significant, the fossil shall be recovered using appropriate recovery techniques based on the type, size, and mode of preservation of the unearthed fossil. Earthwork may resume in the area of the fossil discovery once the fossil has been recovered, and the qualified paleontologist deems the discovery site has been mitigated to the extent necessary. Additional earthwork following the fossil discovery may be monitored for paleontological resources on an as-needed basis, at the discretion of the qualified paleontologist.
2. In the case of an inadvertent discovery, the recovered fossils shall be prepared, identified, catalogued, and stored in a recognized professional repository along with associated field notes, photographs, and compiled fossil locality data. For projects in Kern County, the recommended repository is the Natural History Museum of Los Angeles County. Donation of the fossils should be accompanied by financial support for specimen storage. A final summary report should be completed that outlines the results of the mitigation program. This report should include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils. This report shall be submitted to appropriate agencies, as well as to the designated repository.

5.0 References

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