

# Appendix F-3

---

## Paleontological Resources Technical Report



---

# Paleontological Resources Report

# San Diego State University Evolve Student Housing Project

---

**NOVEMBER 2024**

*Prepared for:*

**SAN DIEGO STATE UNIVERSITY**

5500 Campanile Drive

San Diego, California 92182-1624

Contact: Kara Peterson, Director of Planning

*Prepared by:*

*Michael Williams, PhD; Sarah Siren, MSc;  
and Russell Silberberger, BS*

**DUDEK**

605 Third Street  
Encinitas, California 92024



---

# Table of Contents

SECTION	PAGE NO.
Acronyms and Abbreviations.....	iii
1 Introduction .....	1
1.1 Paleontological Resources.....	1
2 Regulatory Framework.....	3
2.1 California Environmental Quality Act.....	3
3 Methods.....	5
3.1 Geological Map, Literature, and Geotechnical Report Review .....	5
3.2 Paleontological Records Search.....	5
4 Results.....	7
4.1 Geological Map Literature and Geotechnical Report Review .....	7
4.2 Paleontological Records Search.....	7
5 Summary and Management Recommendations .....	9
6 References .....	11

## TABLE

1 Paleontological Resources Sensitivity Criteria .....	2
--	---

## FIGURE

1 Project Location .....	13
--------------------------	----

## APPENDIX

A (Confidential) SDNHM Records Search Results	
---	--

INTENTIONALLY LEFT BLANK

---

# Acronyms and Abbreviations

Acronym	Definition
bgs	below ground surface
CEQA	California Environmental Quality Act
mya	million years ago
SDNHM	San Diego Natural History Museum
SDSU	San Diego State University
SVP	Society of Vertebrate Paleontology

INTENTIONALLY LEFT BLANK



---

# 1 Introduction

This report documents the results of the paleontological resources inventory conducted by Dudek for the proposed San Diego State University (SDSU) Evolve Student Housing Project (Project or Proposed Project). The Project site consists of two components and is located on and adjacent to the western and southern portions of the main SDSU campus in San Diego, California. The Project site falls within Sections 15 and 22, Township 16 South, Range 2 West of the La Mesa Quadrangle, California, U.S. Geological Survey 7.5-minute topographic quadrangle map (Figure 1, Project Location).

The Project proposes the expansion of on-campus student housing facilities within the SDSU main campus and would involve demolition and development at two locations within campus to accommodate the two proposed student-housing complex components of the Project. These two components include the Peninsula Component and the University Towers East Component. The Peninsula Component would be located within an approximately 10.3-acre site adjacent to the northwest portion of campus at the end of 55th Street, just south of Interstate 8 and west of Canyon Crest Drive. Development of the Peninsula Component would include demolition of all 13 existing on-site buildings and the phased development of a 2-story amenities building, a 9-story student housing building, and five 13-story student housing buildings that would together contain a total of approximately 4,450 student beds. The proposed University Towers East Component would be developed on an approximately 1.1-acre site located immediately south of Montezuma Road that is currently utilized as a parking lot for University Towers located at 5505 Montezuma Road. The existing parking lot would be demolished to allow for redevelopment of the site to include a new 9-story student-housing building that would accommodate approximately 720 beds. Development of the Project would result in 5,170 new student beds, or 4,468 additional student beds over existing conditions.

To determine the paleontological sensitivity of the Project site, Dudek performed a paleontological resources inventory for the Project to comply with the California Environmental Quality Act (CEQA) and City of San Diego's (2022) thresholds of significance. The inventory consisted of a San Diego Natural History Museum (SDNHM) paleontological records search (Confidential Appendix A) and a review of geological mapping and geological and paleontological literature. The results of the paleontological records search were negative for paleontological resources within the Project site; however, the museum reported 26 fossil localities within 1 mile of the Project site.

## 1.1 Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in Earth's crust and, per the Society of Vertebrate Paleontology (SVP) guidelines, are older than written history or older than approximately 5,000 years (SVP 2010). They are limited, nonrenewable resources of scientific and educational value and are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (Title 13 of the California Public Resources Code, Section 21000 et seq.) and California Public Resources Code Section 5097.5. This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high, moderate, low, marginal, and no paleontological resource potential or sensitivity, as set forth by the County of San Diego (2009); these definitions have also been assigned to geological units within the City of San Diego (2022).

**Table 1. Paleontological Resources Sensitivity Criteria**

Resource Sensitivity/Potential	Definition
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.
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).
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.
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.
No Sensitivity	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).

**Source:** County of San Diego 2009.

---

## 2 Regulatory Framework

### 2.1 California Environmental Quality Act

CEQA and the CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. CEQA Guidelines, Appendix G, Geology and Soils section, provides the criterion against which a proposed project is to be analyzed for potential impacts related to earthquake fault, landslides, soil erosion, unstable soil or geologic units, expansive soils, and paleontological resources.

Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This study satisfies project requirements in accordance with CEQA (Title 13 California Public Resources Code, Section 21000 et seq.).

INTENTIONALLY LEFT BLANK

---

## 3 Methods

### 3.1 Geological Map, Literature, and Geotechnical Report Review

Published geological maps and published geological and paleontological reports were reviewed to identify geological units on the site and determine their paleontological sensitivity.

### 3.2 Paleontological Records Search

A paleontological records search request was sent to the SDNHM on August 23, 2024. The purpose of the records search was to determine whether there are any known fossil localities in or near the Project site and identify the geological units present within the Project site boundaries. The paleontological records search also aided in determining whether a paleontological mitigation program was warranted to avoid or minimize potential adverse effects of construction on paleontological resources during Project construction.

INTENTIONALLY LEFT BLANK

---

## 4 Results

### 4.1 Geological Map Literature and Geotechnical Report Review

The Project site lies within the Peninsular Ranges Geomorphic Province (CGS 2002). This province extends from the tip of the Baja California Peninsula to the Transverse Ranges (e.g., the Santa Ynez, Santa Monica, San Gabriel and San Bernardino Mountains) and includes the Los Angeles Basin, offshore islands (Santa Catalina, Santa Barbara, San Nicholas, and San Clemente), and the continental shelf. The eastern boundary is the Colorado Desert Geomorphic Province (CGS 2002). The ancestral Peninsular Ranges were formed by uplift of plutonic igneous rock resulting from the subduction of the Farallon Plate underneath the North American Plate during the latter portion of the Mesozoic era (approximately 125 million years ago [mya] to 90 mya) (Abbott 1999).

According to the published geological mapping at a 1:100,000 scale by Kennedy and Tan (2008), the SDNHM records search results, and the chronostratigraphic chart (Cohen et al. 2023), the Project site is underlain by the middle Eocene (approximately 47.8 mya to 41.2 mya) (Confidential Appendix A) Mission Valley Formation (map unit Tmv), the middle Eocene (approximately 47.8 to 41.2 mya) Stadium Conglomerate (map unit Tst), and early Pleistocene (approximately 2.58 mya to 0.774 mya) very old paralic deposits (map unit Qvop7; equivalent to the Lindavista Formation). The Pleistocene deposits are possibly underlain by late Pliocene to early Pleistocene (approximately 3.6 to 2.58 mya) San Diego Formation (map unit Tsd) on the southern portion of the Project site along Montezuma Road (Confidential Appendix A).

The geotechnical study conducted for the Project by Group Delta Consultants Inc. recorded sandstone between 5 and 6 feet below ground surface (bgs) mapped as very old paralic deposits underlying the University Towers East Component. Geotechnical borings at the southern end of the Peninsula Component encountered very old paralic deposits/Mission Valley Formation from 6 inches to approximately 35 feet bgs, and the Stadium Conglomerate from 35 to 47 feet bgs (Group Delta Consultants Inc. 2024).

### 4.2 Paleontological Records Search

The SDNHM records search results letter was received on September 5, 2024. A total of 26 fossil localities were reported within a 1-mile radius of the Project site (Confidential Appendix A). Of these localities, 14 are from the San Diego Formation, 6 are from the Mission Valley Formation, and 1 is from the Stadium Conglomerate. The remaining localities are from the Friars Formation, which is not expected to be impacted by Project construction.

Quaternary very old paralic deposits (equivalent to the Lindavista Formation) deposited by shoreline estuary environments produced significant paleontological resources (marine invertebrates and sparse marine vertebrates) elsewhere in San Diego. The Lindavista Formation has a moderate paleontological resource sensitivity locally (Confidential Appendix A; City of San Diego 2007).

In its response to the search request, the SDNHM indicated that the San Diego Formation likely underlies the southern portion of the Project site at subsurface depths. This formation has yielded significant paleontological resources in and around the vicinity of the Project site (Confidential Appendix A). Fossilized specimens within the formation include trace fossils, marine invertebrates, marine vertebrates, and rare terrestrial vertebrate specimens

(Deméré and Walsh 1993). The San Diego Formation is assigned high paleontological sensitivity (Confidential Appendix A; City of San Diego 2007).

The Mission Valley Formation has yielded significant paleontological resources in and around the vicinity of the Project site (Confidential Appendix A). Fossilized specimens within the formation include trace fossils, marine invertebrates, marine vertebrates, and terrestrial vertebrate specimens (Deméré and Walsh 1993). Because of the significance of the previously discovered paleontological resources, the Mission Valley Formation is assigned high paleontological sensitivity (Confidential Appendix A; City of San Diego 2007).

The Stadium Conglomerate, composed of a cobble conglomerate in a muddy to sandy matrix lower assemblage and moderately sorted to well-sorted cobble to boulder conglomerate with occasional lenses of reddish tan cross-bedded sandstone upper assemblage, has yielded significant paleontological resources near the vicinity of the Project site including invertebrates (pulmonated snails) and an assemblage of terrestrial vertebrates. Therefore, the geological unit is assigned high paleontological sensitivity (Confidential Appendix A; City of San Diego 2007).



---

## 5 Summary and Management Recommendations

No significant paleontological resources were identified within the Project site as a result of the institutional records search and desktop geological review. However, 26 fossil localities are located within 1 mile of the Project site (Confidential Appendix A). Based on the SDNHM records search results, map, geotechnical report, and literature review, significant ground disturbing activities on the Proposed Project site have high potential to result in the discovery/uncovering of paleontological resources, as the Project site is immediately underlain by geological units with moderate to high paleontological resource sensitivity or potential. To reduce these potentially significant impacts, mitigation is recommended requiring that a qualified monitor be on site during significant ground disturbing activities. In the event that intact paleontological resources are discovered, ground disturbing activities in the impacted area that have the potential to destroy a unique paleontological resource or site would be suspended until appropriate safeguards are put in place. Without mitigation, the potential damage to paleontological resources during construction would result in a potentially significant impact. With implementation of the recommended mitigation measure (**MM-GEO-1**), impacts would be reduced to below a level of significance. Impacts of the Project would be **less than significant with mitigation incorporated** during construction.

**MM-GEO-1:** Prior to commencement of any ground disturbing activity on-site, San Diego State University (SDSU) or their contractor shall retain a qualified paleontologist as defined by the 2010 Society of Vertebrate Paleontology guidelines, subject to the review and approval of SDSU. The qualified paleontologist shall attend the preconstruction meeting and be on site during all rough grading and other significant ground disturbing activities in previously undisturbed Eocene Mission Valley Formation and/or Stadium Conglomerate, late Pliocene to early Pleistocene San Diego Formation, or Pleistocene very old paralic deposits. In the event that paleontological resources (e.g., fossils) are unearthed during ground disturbing activities, the paleontological monitor will temporarily halt and/or divert grading activity in the impacted area to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot-radius buffer. Once documentation and collection of the find is completed, the monitor will remove the rope and allow ground disturbing activities to recommence in the impacted area. Upon completion of the paleontological monitoring program, the qualified paleontologist shall prepare a final monitoring report documenting the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils. Costs of laboratory processing and curation of any fossils recovered during the monitoring program are the responsibility of the Project applicant.

INTENTIONALLY LEFT BLANK

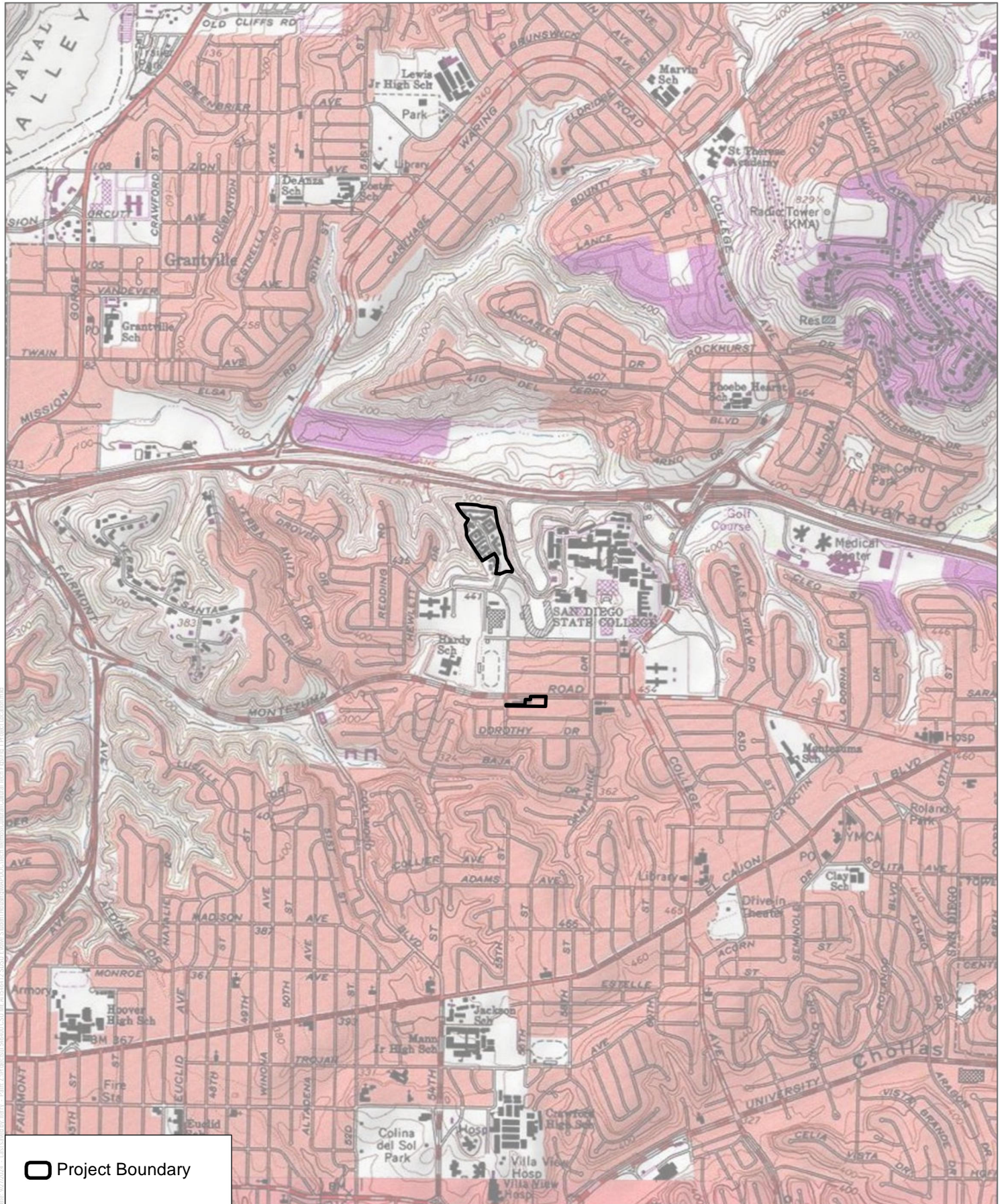
---

## 6 References

- Abbott, P.L. 1999. *The Rise and Fall of San Diego: 150 Million Years of History Recorded in Sedimentary Rocks*. San Diego, California: Sunbelt Publications.
- CGS (California Geological Survey). 2002. "California Geomorphic Provinces." CGS Note 36. Accessed June 5, 2024. <https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf>.
- Cohen, K.M., S.C. Finney, P.L. Gibbard, and J.X. Fan. 2023. "International Chronostratigraphic Chart." International Commission on Stratigraphy. <https://stratigraphy.org/ICSchart/ChronostratChart2023-09.pdf>.
- City of San Diego. 2007. "Section 3.11, Paleontological Resources." In *Final Program Environmental Impact Report for the Draft General Plan*. <https://www.sandiego.gov/planning/genplan/documents/peir>.
- City of San Diego. 2022. *California Environmental Quality Act, Significance Determination Thresholds*. Development Services Department.
- County of San Diego. 2009. *Guidelines for Determining Significance: Paleontological Resources*. San Diego, California: County of San Diego Land Use and Environment Group, Department of Planning and Land Use, Department of Public Works. Approved March 19, 2007; modified January 15, 2009.
- Deméré, T.A., and S.L. Walsh. 1993. *Paleontological Resources, County of San Diego*. Unpublished technical report prepared for the San Diego County Department of Public Works.
- Group Delta Consultants Inc. 2024. *Report of Preliminary Geotechnical Evaluation Evolve Student Housing San Diego State University San Diego California*. Prepared for San Diego State University. June 7, 2024.
- Kennedy, M.P., and S.S. Tan. 2008. "Geologic Map of the San Diego 30-Minute × 60-Minute Quadrangle, California" [map]. 1:100,000. California Geological Survey, Regional Geologic Map No. 3.
- SVP (Society of Vertebrate Paleontology). 2010. "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources." Accessed May 2024. [https://vertpaleo.org/wp-content/uploads/2021/01/SVP\\_Impact\\_Mitigation\\_Guidelines.pdf](https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf).

INTENTIONALLY LEFT BLANK





SOURCE: USGS 7.5-Minute Series La Mesa Quadrangle; Township 16S; Range 2W; Sections 15 and 22

FIGURE 1  
Project Location

INTENTIONALLY LEFT BLANK



---

## **Appendix A**

(Confidential) SDNHM Records Search Results